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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT): Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of October 3, 1978.

DONALD W. BANNER,
Nov. 7, 1978. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,585,010, Re. S.N. 948,972, Filed Oct. 5, 1978, Cl. 428/608, CONDUCTING ELEMENT FOR PRINTED CIRCUIT AND METHOD OF MAKING SAME, Betty M. Luce, et al., Owner of Record: *Gould Inc., Chicago, Ill.,* Attorney or Agent: Russell E. Banmann, et al., Ex. Gp.: 223

3,671,542, Re. S.N. 951,051, Filed Oct. 12, 1978, Cl. 260/30.8 R, OPTICALLY ANISOTROPIC AROMATIC POLYAMIDE DOPES, Stephanie Louise Kwolek, , Owner of Record: *E. I. Du Pont de Nemours and Company, Wilmington, Del.,* Attorney or Agent: Joseph M. Fitzpatrick, Ex. Gp.: 144

3,819,468, Re. S.N. 949,384, Filed Oct. 6, 1978, Cl. 428/99, HIGH TEMPERATURE INSULATION MODULE, Robert A. Sauder, et al., Owner of Record: *Sauder Industries, Inc., Emporia, Kans.,* Attorney or Agent: Alan H. Gordon, Ex. Gp.: 164

3,824,365, Re. S.N. 948,831, Filed Oct. 5, 1978, Cl. 219/10.55, MICROWAVE OVEN CONTROL SYSTEM, William R. Tapper, Owner of Record: *Litton Systems, Inc., Beverly Hills, Calif.,* Attorney or Agent: Walter R. Thiel, et al., Ex. Gp.: 213

3,827,808, Re. S.N. 950,603, Filed Oct. 11, 1978, Cl. 356/199, METHOD AND APPARATUS FOR MEASURING THE OPACITY OF SHEET MATERIAL IN WHICH THE TRANSMITTANCE SIGNAL IS COMPENSATED FOR THE REFLECTIVITY OF THE MATERIAL, Boong Y. Cho, Owner of Record: *Industrial Nucleonics Corporation, Columbus, Ohio,* Attorney or Agent: C. Henry Peterson, Ex. Gp.: 257

3,984,014, Re. S.N. 946,617, Filed Sep. 28, 1978, Cl. 214/75 R, LIFT ASSEMBLY FOR A VAN OR THE LIKE, Leo Pohl, Owner of Record: *Inventor,* Attorney or Agent: Ernest Peter Johnson, Ex. Gp.: 314

3,993,237, Re. S.N. 949,386, Filed Oct. 6, 1978, Cl. 228/140, METHOD FOR PROVIDING HIGH TEMPERATURE INTERNAL INSULATION, Robert A. Sauder, et al., Owner of Record: *Sauder Industries, Inc., Emporia, Kans.,* Attorney or Agent: Alan H. Gordon, et al., Ex. Gp.: 323

4,016,575, Re. S.N. 943,940, Filed Sep. 20, 1978, Cl. 354/33, EXPOSURE CONTROL SYSTEM FOR FLASH PHOTOGRAPHY, Takashi Uchiyama, et al., Owner of Record: *Inventor,* Attorney or Agent: David Toren, et al., Ex. Gp.: 211

4,052,285, Re. S.N. 950,793, Filed Oct. 12, 1978, Cl 204/195 C, ION SELECTIVE ELECTRODE, John Vincent Dobson, Owner of Record: *National Research Development Corporation, London, England,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 114

4,062,190, Re. S.N. 949,110, Filed Oct. 6, 1978, Cl. 60/682, GAS TURBINE ENGINE, Lindsay G. Dawson, Owner of Record: *Rolls-Royce Limited, London, England,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 341

4,081,369, Re. S.N. 951,078, Filed Oct. 13, 1978, Cl. 210/22 R, COMMON ION EFFECT TO ASSIST LM SEPARATION, Norman N. Li, et al., Owner of Record: *Exxon Research & Engineering Co., Florham Park, N.J.,* Attorney or Agent: Jerome E. Luecke, Ex. Gp.: 176

PATENT NOTICES

Certificates of Correction for the Week of Dec. 5, 1978

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3,772,667
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4,119,659

Disclaimers

3,789,600.—*Paul Leonard Chapman,* Mortlake, London, England. ELECTRONIC TIME MEASUREMENT. Patent dated Feb. 5, 1974. Disclaimer filed Oct. 2, 1978, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3 and 4 of said patent.

3,964.519.—*Kenneth W. De Baun,* Santa Rosa, Calif. FLUID VELOCITY EQUALIZING APPARATUS. Patent dated June 22, 1976. Disclaimer filed Sept. 25, 1978, by the inventor.

Hereby enters this disclaimer to claims 1, 3, 4, 5, 6 and 8 of said patent.

4,067,055.—*Phillip W. Koetsch,* San Diego, Calif. HIGH-SPEED INDUCTANCE DRIVER. Patent dated Jan. 3, 1978. Disclaimer filed Sept. 6, 1978, by the assignee, *NCR Corporation.*

Hereby enters this disclaimer to all claims of said patent.

Patents Available for License or Sale

3,674,167. VEHICLE AMBULANCE. Bissett J. Roberts, P.O. Box 351, Waynesboro, Pa. 17268.

3.757.703. SUPPORT AND GUIDE MECHANISM FOR PIVOTING A PLATFORM. Bissett J. Roberts, P.O. Box 351, Waynesboro, Pa. 17268.

3,773,198. VEHICLE AMBULANCE. Bissett J. Roberts, P.O. Box 351, Waynesboro, Pa. 17268.

The following five patents are offered for sale. Inquiries should be directed to David C. Jacobson, Esq., 8000 Sears Tower, Chicago, Ill. 60606.

3,960,313. AUTOMATIC SETUP CARTON CONSTRUCTIONS.
3,964,374. CARTON FOLDING AND GLUEING DEVICE.
4,007,869. CORRUGATED CARTON CONSTRUCTIONS.
4,012,996. APPARATUS FOR FOLDING AND COMPRESSION OF CORRUGATED CONTAINER BLANKS.
Re. 29,442. APPARATUS FOR PRODUCING CARTONS.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents & Trademarks, Washington, D.C. 20281, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications can be purchased from the National Technical Information Service (NTIS), Springfield, Virginia 22161 for $4.00 ($8.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, 1900 Half St., SW., Washington, D.C. 20824

Patent 4,077,857. Method for the Preparation of Perfluoroethers. Filed Feb. 23, 1977. Patented Mar. 7, 1978. Not available NTIS.

Patent 4,078,417. Test Panel for Evaluating Inspection Penetrants. Filed Mar. 24, 1977. Patented Mar. 14, 1978. Not available NTIS.

Patent 4,080,203. Silver Base Brazing Alloy. Filed Dec. 29, 1976. Patented Mar. 21, 1978. Not available NTIS.

Patent 4,081,473. Fluoroalkyleneether Difunctional Compounds. Filed Oct. 29, 1976. Patented Mar. 28, 1978. Not available NTIS.

Patent 4,086,232. Bis-Ethynyl Heterocyclic Compositions and Method of Synthesis. Filed Dec. 23, 1976. Patented Apr. 25, 1978. Not available NTIS.

Patent 4,086,248. Ethynyl-Substituted Aromatic Anhydrides. Filed Dec. 15, 1976. Patented Apr. 25, 1978. Not available NTIS.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 3,988,429. Kit for the Rapid Preparation of ^{99M}Tc Red Blood Cells. Filed Apr. 16, 1975. Patented Oct. 26, 1976. Not available NTIS.

Patent 3,993,754. Liposome-Encapsulated Actinomycin for Cancer Chemotherapy. Filed Oct. 9, 1974. Patented Nov. 23, 1976. Not available NTIS.

Patent 4,021,669. Nuclear Fuel Microsphere Gamma Analyzer. Filed Mar. 15, 1976. Patented May 3, 1977. Not available NTIS.

Patent 4,055,199. Nozzle Seal. Filed June 3, 1975. Patented Oct. 25, 1977. Not available NTIS.

Patent 4,073,624. Method for Fluorinating Coal. Filed Dec. 21, 1976. Patented Feb. 14, 1978. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20014

Patent application 860,086. Carbocyclic Analogs of Cytosine Nucleosides. Filed Dec. 13, 1977.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts., NW.
Washington, D.C. 20240

Patent application 895,694. Rotary Jaw Crusher. Filed Apr. 12, 1978.

Patent 4,055,830. Sonic Measuring System. Filed July 14, 1976. Patented Oct. 25, 1977. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research—
Code 302, Arlington, Va. 22217

Patent 4,082,583. Solventless Double Base Propellants and Method for Plasticizing MTN Nitrocellulose Propellants Without Use of Solvents. Filed Jan. 14, 1974. Patented Apr. 4, 1978. Not available NTIS.

Patent 4,082,709. Low Leaching Antifouling Organometallic Polyesters. Filed June 24, 1976. Patented Apr. 4, 1978. Not available NTIS.

Patent 4,082,798. Aromatic Phosphinic Acids Containing Sulfone Linkage. Filed Feb. 9, 1977. Patented Apr. 4, 1978. Not available NTIS.

Patent 4,083,081. Acoustic Presence Detection Method and Apparatus. Filed July 23, 1970. Patented Apr. 4, 1978. Not available NTIS.

Patent 4,083,285. Compressor Stall Warning System. Filed May 25, 1977. Patented Apr. 11, 1978. Not available NTIS.

Patent 4,084,047. Stable Alkaline Zinc Electrode. Filed Nov. 29, 1976. Patented Apr. 11, 1978. Not available NTIS.

National Aeronautics and Space Administration

Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

Patent application 910,992. Urine Collection Device. Filed May 30, 1978.

Patent application 923,758. Passive Propellant System. Filed July 11, 1978.

Patent 4,087,962. Direct Heating Surface Combustor. Filed July 26, 1976. Patented May 9, 1978. Not available NTIS.

Patent 4,088,018. Magnetic Suspension and Pointing System. Filed June 17, 1977. Patented May 9, 1978. Not available NTIS.

Patent 4,088,094. Tread Drum for Animals. Filed Mar. 31, 1976. Patented May 9, 1978. Not available NTIS.

Patent 4,088.270. Two Dimensional Wedge/Translating Shroud Nozzle. Filed Mar. 31, 1976. Patented May 9, 1978. Not available NTIS.

U.S. Department of the Air Force

AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent application 900,621. Flutter Prevention Means for Aircraft Primary Flight Control Surfaces. Filed Apr. 27, 1978.

Patent application 900,948. Real Time Digital Recording System for Thermovision Data. Filed Apr. 28, 1978.

U.S. Department of Energy

Assistant General Counsel for Patents
Washington, D. C. 20545

Patent 4,035,156. Filter Type Rotor for Multistation Photometer. Filed Jan. 21, 1977. Patented July 12, 1977. Not available NTIS.

U.S. Department of the Navy

Assistant Chief for Patents, Office of Naval Research—
Code 302, Arlington, Va. 22217

Patent application 842,840. Magnetometer Calibration Method and Apparatus. Filed Oct. 17, 1977.

Patent application 852,120. Diver's Composite Umbilical. Filed Nov. 16, 1977.

Patent application 861,236. Telephone System for Diver Communication. Filed Dec. 16, 1977.

Patent application 873,027. Temperature Measuring System. Filed Jan. 27, 1978.

Patent application 876,958. Laser Pile Cutter. Filed Feb. 13, 1978.

Patent application 882,040. Pneumatic Valve. Filed Feb. 28, 1978.

Patent application 882,849. Quick Response Humidity Chamber. Filed Mar. 3, 1978.

Patent application 888,266. Adaptive Line Enhancer. Filed Mar. 20, 1978.

Patent application 899,945. Releasable Electrical Connector. Filed Apr. 25, 1978.

Patent application 901,553. Weak Link Superconducting Switching Apparatus and Method. Filed May 1, 1978.

Patent application 908,487. System for Measuring In-Situ Acoustic Energy Properties of Ocean Floor Soils. Filed May 22, 1978.

Patent application 965,323. Power Line Transient Suppressors. Filed May 12, 1978.

Patent 4,084,255. Positional, Rotational and Scale Invariant Optical Correlation Method and Apparatus. Filed Nov. 2, 1976. Patented Apr. 11, 1978. Not available NTIS.

Patent 4,084,511. Electrolytic Timing Element. Filed June 7, 1960. Patented Apr. 18, 1978. Not available NTIS.

National Aeronautics and Space Administration

Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

4,088,806. Intumescent-Ablator Coatings Using Endothermic Fillers. Filed Dec. 23, 1976. Patented May 9, 1978. Not available NTIS.

Patent application 710,798. Flame Retardant Formulations and Products Produced Therefrom. Filed May 30, 1978.

Patent application 912,276. Method of Manufacture of Bonded Fiber Flywheel. Filed June 5, 1978.

Patent application 916,655. Self-Reconfiguring Solar Cell System. Filed June 19, 1978.

Patent application 918,585. Viscosity Measuring Instrument. Filed June 28, 1978.

Patent application 918,537. A Method of Prepurifying Metallurgical Grade Silicon Employing Reduced Pressure Atmospheric Control. Filed June 23, 1978.

Patent application 918,867. A Transparent Photovoltaic Module. Filed June 26, 1978.

Patent application 920,878. Low Density Bismaleimide-Carbon Microballoon Composites. Filed June 30, 1978.

Patent application 920,879. An Improved Solar Cell and Method of Forming the Same. Filed June 30, 1978.

Patent application 920,947. On-Site Ammonia Plant. Filed June 30, 1978.

Patent application 921,626. Chelate-Modified Polymers for Atmospheric Gas Chromatography. Filed June 30, 1978.

Patent application 921,627. Method for Analyzing Radiation Sensitivity of Integrated Circuits. Filed June 30, 1978.

Patent 4,087.902. Field Effect Transistor and Method of Construction Thereof. Filed June 23, 1976. Patented May 9, 1978. Not available NTIS.

Patent 4,088.312. Variable Contour Securing System. Filed Sept. 27, 1977. Patented May 9, 1978. Not available NTIS.

Patent 4.088,408. Device for Measuring the Contour of a Surface. Filed Nov. 8, 1976. Patented May 9, 1978. Not available NTIS.

Parent 4.088,532. Targets for Producing High Purity I–123. Filed Sept. 4, 1973. Patented May 9, 1978. Not available NTIS.

Patent 4,088,926. Plasma Cleaning Device. Filed May 10, 1976. Patented May 9, 1978. Not available NTIS.

Patent 4,088,965. Charge Transfer Reaction Laser With Preionization Means. Filed July 12, 1976. Patented May 9, 1978. Not available NTIS.

Patent 4,089.209. Remote Water Monitoring System. Filed Aug. 4, 1977. Patented May 16, 1978. Not available NTIS.

Patent 4,089,705. Hexagon Solar Power Panel. Filed July 28, 1976. Patented May 16, 1978. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
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	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
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	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 7, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-4-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-16-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	5-1-78
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-3-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-23-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-16-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-6-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-19-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	4-3-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	1-3-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-3-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	12-19-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-28-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-31-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—G. M. FORLENZA, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-24-77

Expiration of patents: The patents within the range of numbers indicated below expire during October 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents.......... Numbers 3,002,192 to 3,007,168, inclusive
Plant Patents.......... Numbers 2,095 to 2,100, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED DECEMBER 5, 1978

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T977,001

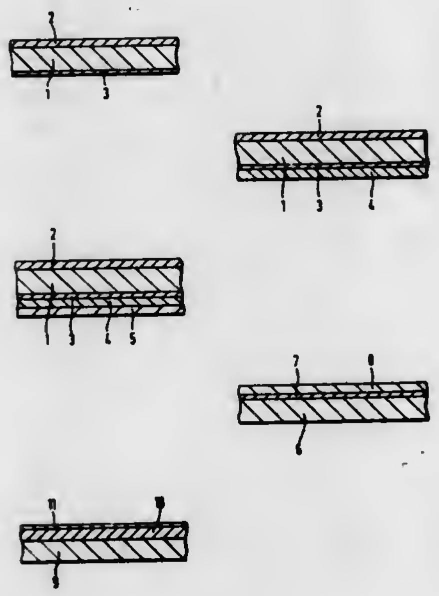
LIGHT-SENSITIVE VESICULAR RECORDING MATERIALS

Roy F. Huffey, Ipswich; David E. Lothian, Colchester; Stuart C. Rennison, Hadleigh, and Michael K. Titman, Colchester, all of England, assignors to Bexford Limited Imperial Chemical House, London, England

Filed Oct. 17, 1977, Ser. No. 843,060

Claims priority, application United Kingdom, Jul. 7, 1977, 28532/77

Int. Cl.² G03C *1/52, 1/40, 1/90, 1/78*
U.S. Cl. 96—75
1 Sheets Drawing. 18 Pages Specification



Light-sensitive vesicular imaging materials, suitable for the production of labels, etc., comprise a light-sensitive vesicular imaging layer applied to one surface of a self-supporting plastics sheet or film preferably a polyester film, e.g., an oriented and heat-set film of polyethylene terephthalate, said light-sensitive vesicular imaging layer comprising a polymeric vehicle having uniformly dispersed therein a sensitizing agent which releases a vesicle-forming gas upon exposure to light and may comprise a nitrogent-liberating diazonium salt, said polymeric vehicle comprising a thermoplastic polymer having a nitrogent permeability constant (as defined in the specification) in the range 1×10^{-15} to 1×10^{-10} and being softenable upon heating above ambient temperature to permit the gas released by the sensitizing agent in the light-struck areas to form light-scattering or reflecting vesicles therein, e.g., a vinylidenechloride copolymer, and at least one light-reflecting metal layer such that an image formed in the light-sensitive vesicular imaging layer is viewed by means of light reflected by the metal layer, e.g., aluminum. The metal is preferably applied as a single layer on the opposite side of the sheet or film from the imaging layer. A dye may be included in the imaging layer and a self- or pressure-sensitive adhesive layer may be applied to the assembly.

T977,002

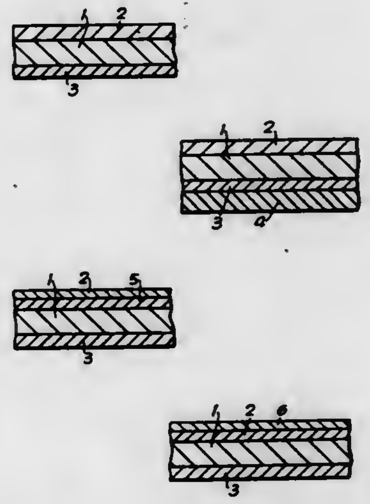
VESICULAR RECORDING MATERIALS HAVING AN ADHESIVE LAYER

Roy F. Huffey, Ipswich; David E. Lothian, Colchester; Stuart C. Rennison, Hadleigh, and Michael K. Titman, Colchester, all of England, assignors to Bexford Limited Imperial Chemical House, London, England

Filed Oct. 17, 1977, Ser. No. 843,059

Claims priority, application United Kingdom, Jul. 7, 1977, 28533/77

Int. Cl.² G03C *1/52, 1/40, 1/49, 1/78*
U.S. Cl. 96—75
1 Sheets Drawing. 14 Pages Specification



Light-sensitive vesicular imaging materials, suitable for the production of labels, etc., comprise a light-sensitive vesicular imaging layer applied to one surface of an opaque self-supporting plastics sheet or film, preferably a polyester film, e.g., an oriented and heat-set film of polyethylene terephthalate, said light-sensitive vesicular imaging layer comprising a polymeric vehicle having uniformly dispersed therein a sensitizing agent which releases a vesicle-forming gas upon exposure to light and may comprise a nitrogen-liberating diazonium salt, said polymeric vehicle comprising a thermoplastic polymer having a nitrogent permeability constant (as defined in the specification) in the range of 1×10^{-15} to 1×10^{-10} and being softenable upon heading above ambient temperature to permit the gas released by the sensitizing agent in the light-struck areas to form light scattering or reflecting vesicles therein, and an adhesive layer applied to the other surface of the sheet or film. The imaging layer may be pigmented or dyed or a pigmented or dyed layer may be applied over the imaging layer or between it and the plastics sheet or film. Imaging may be achieved by conventional vesicular imaging techniques.

T977,003

JOINT CEMENT COMPOSITIONS CONTAINING MICA AND QUATERNARY COMPOUNDS

Armand J. Desmarais, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 22, 1978, Ser. No. 908,493
Int. Cl.² C08L *1/28, 3/02*
U.S. Cl. 260—17 R
No Drawing. 9 Pages Specification

Asbestos-free joint cement compositions are disclosed comprised of a binder, mica, calcium carbonate, a thickener, and a specified quaternary ammonium compound.

It has been conventional to replace asbestos with attapulgite clay to provide the body and anti-sagging properties usually associated with asbestos. Attapulgite, however, must be employed at levels which give rise to a severe cracking problem. The interaction of the quaternary compound with the mica gives the formulations sufficient body that the attapulgite and its attendant cracking problem can be substantially eliminated.

T977,004
FIRE RETARDANT POLYMER COMPOSITIONS

Joseph Dulat, Fetcham, and Leonard T. Arthur, Tolworth, both of England, assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 783,925, Apr. 1, 1977, abandoned. This application Mar. 20, 1978, Ser. No. 888,061

Int. Cl.^{2} C08K *5/09*

U.S. Cl. 260—23 S

No Drawing. 11 Pages Specification

A non-halogenated polymer such as polystyrene, polyesters, polymono-olefins or ABS resins is made fire retardant by a low loading combination of a halogenated hydrocarbon fire retardant, zinc borate and a metal soap. The halogenated hydrocarbon preferably contains bromine or a combination thereof with chlorine. Suitable zinc borates are the hydrated zinc borates well known in the art. Metal soaps are preferably those of the metals calcium, zinc, aluminum, barium, cadmium and combinations thereof.

Both synergistic fire retardancy and lower smoke emission are exhibited as compared to compositions excluding the metal soap.

T977,005
STEP ASSEMBLY FLEXIBLY MOUNTED

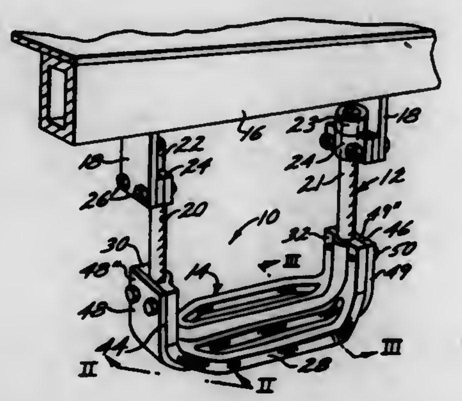
Peter Sidles, Jr., 31 Timberlake Trail, Oswego, Ill. 60543, and Bernard J. Wulff, 1224 Johnston Dr., Aurora, Ill. 60506

Filed Mar. 24, 1978, Ser. No. 889,703

Int. Cl.^{2} B60R *3/02*

U.S. Cl. 280—163

1 Sheets Drawing. 5 Pages Specification



A step assembly for a vehicle includes a cable supported step member that has retaining elements which function to prevent rotation of the step about the cable.

T977,006
READ ONLY MEMORY WITH OPTIMIZED DIMENSION FOR IMPROVED PERFORMANCE AND CHIP AREA UTILIZATION

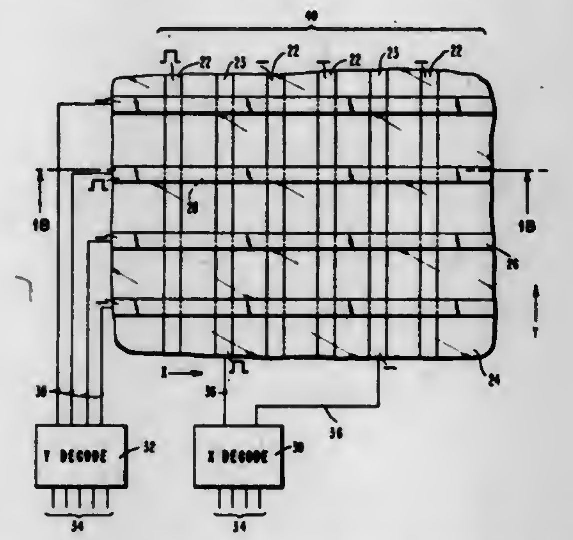
Peruvemba S. Balasubramanian; Edwin C. Grazier; John D. Henke; Robert P. Latham, and Martin J. Myers, all of Manassas, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 747,140, Dec. 3, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,615

Int. Cl.^{2} G11C *17/00*

U.S. Cl. 357—45

2 Sheets Drawing. 16 Pages Specification



A read only memory on a semiconductor substrate having metal word lines and diffused bit lines with optimized dimensions for a selected performance and storage capacity with the metal lines being along an X dimension and the diffused lines being orthogonally related to the metal lines along a Y dimension. The X dimension for the substrate is given by the relation $X = 2^N \cdot WL \cdot K1$ where 2^N is an integer definitive of the number of words on a metal line where N is any integer power greater than zero; WL is word length which equals the number of storage devices per word selected for a word and K1 is a constant definitive of the average spacing in mils between the storage devices along the first length, and the Y dimension being given by a second relation $Y = K2 \cdot Q/2^N$ where K2 is a constant definitive of the spacing in mils between the adjacent rows of storage devices along the second length and Q is the number of said words. Changing the aspect ratio for an array permits the performance of a read only memory to be changed to a different set of X and Y dimensions.

T977,007
PROGRAM MODIFICATION REGISTERS FOR NUMERICALLY CONTROLLED MACHINE TOOLS

Douglas S. Selander, New Berlin, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Feb. 1, 1978, Ser. No. 874,340

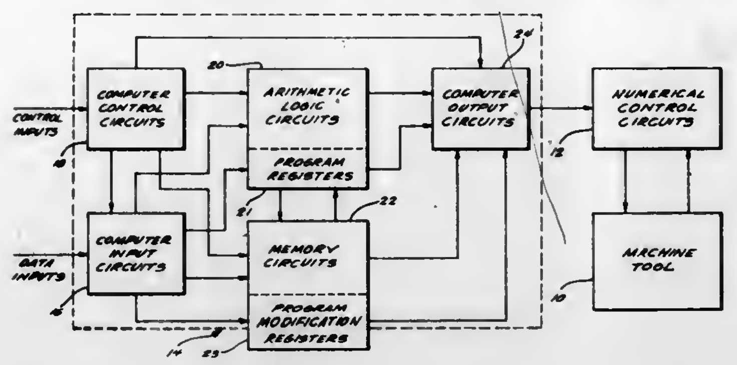
Int. Cl.^{2} G06F *15/46*

U.S. Cl. 364—474

2 Sheets Drawing. 7 Pages Specification

By utilizing a set of program modification registers, a numerically controlled machining program can be written with loops and branches like a computer program. The order and action

of the program blocks can be made dependent upon data contained in the program modification registers. The register data



may be altered by the program as it runs or by external inputs to the control circuits.

T977,008
CONTROL OF NEMATODES WITH SELECTED N-AMINOSULFENYL, N-ARYLSULFENYL AND N-ACYLAMIDOSULFENYL DERIVATIVES OF 2,3-DIHYDRO-2,2-DIMETHYL-7-BENZOFURANYL METHYLCARBAMATE

Carmine P. Di Sanzo, and John F. Engel, both of Medina, N.Y., assignors to FMC Corporation, Philadelphia, Pa.

Continuation of Ser. No. 739,218, Nov. 5, 1976, abandoned. This application Mar. 20, 1978, Ser. No. 890,543

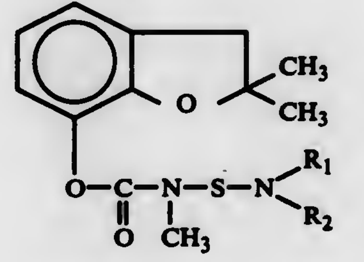
Int. Cl.^{2} A01N *9/28, 9/00, 9/22*

U.S. Cl. 424—285

No Drawing. 45 Pages Specification

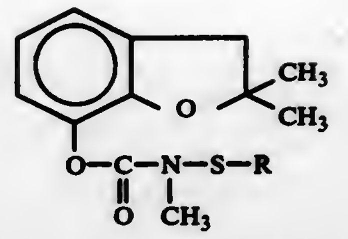
A method is disclosed for the control of nematodes which comprises applying to the situs of infestation certain N-aminosulfenyl carbamates of the formula

I



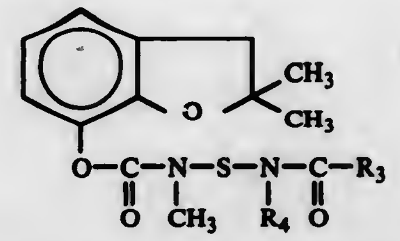
N-arylsulfenyl carbamates of the formula

II

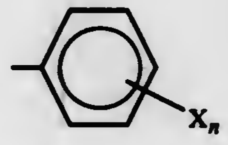


or N-acylamidosulfenyl carbamates of the formula

III



wherein R_1 and R_2 are each independently selected from straight or branched chain alkyl or alkoxyalkyl having 1 to 8 carbon atoms, cycloalkyl having 3 to 7 carbon atoms, phenyl, halophenyl, phenyl(lower)alkyl, halophenyl(lower)alkyl and loweralkoxybenzyl; and wherein R_1 and R_2 may be taken together with the nitrogen to form an optionally substituted heterocyclic ring of 5 to 8 members which may contain one additional hetero atom consisting of oxygen, sulfur, or nitrogen; R is



wherein each X is independently selected from halogen and lower alkyl, and *n* is an integer of *0* to *5* inclusive; and R_3 is hydrogen or lower alkyl and R_4 is straight or branched chain alkyl having 1 to 7 carbon atoms, cycloalkyl having 3 to 7 carbon atoms, phenyl, or benzyl; and wherein R_3 and R_4 may be taken together with the carbonyl and the nitrogen to form an optionally substituted heterocyclic ring of 5 to 8 members, which may contain one additional hetero atom selected from oxygen, nitrogen, and sulfur.

T977,009
GYPSUM WALLBOARD AND METHOD FOR PRODUCING SAME

David H. Dumas, Wilmington, and David R. Warren, New Castle County, both of Del., assignors to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 791,437, Apr. 27, 1977, abandoned. This application Mar. 24, 1978, Ser. No. 889,693

Int. Cl.^{2} B32B *27/10*

U.S. Cl. 428—476

No Drawing. 11 Pages Specification

Disclosed is a paper-covered gypsum board comprised of a gypsum core and a paper cover sheet covering at least one side of said core, the surface of said paper cover sheet adjacent the gypsum core being surface sized with a sizing composition initially comprised of a hydrophobic cellulose reactive sizing agent and a nitrogen-containing condensation product.

REISSUES

DECEMBER 5, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

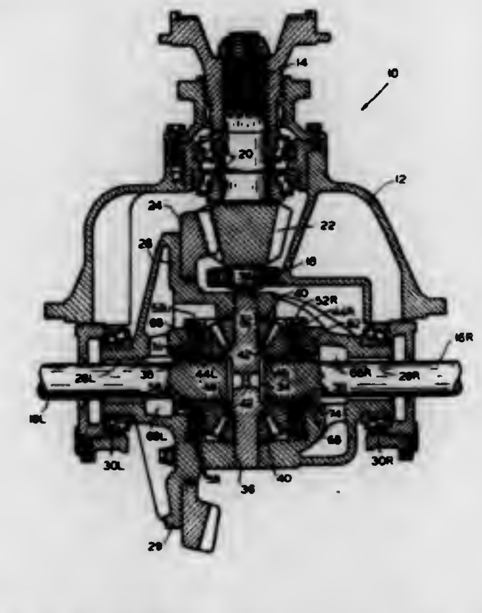
Re. 29,854
LIMITED SLIP DIFFERENTIAL WITH NEGLIGIBLE BIAS UNDER LIGHT LOAD CONDITIONS

Noah A. Shealy, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Original No. 3,929,036, dated Dec. 30, 1975, Ser. No. 428,265, Dec. 26, 1973. Application for reissue Sep. 9, 1977, Ser. No. 831,840

Int. Cl.² F16H ***1/44***

U.S. Cl. 74—711 **3 Claims**



8. A limited slip differential mechanism comprising:
a. a differential carrier housing;
b. a cross disposed within said carrier housing and connected for rotation with the carrier housing;
c. an axle shaft rotatably carried by said carrier housing;
d. a planetary gear carried by said cross;
e. a side gear disposed within said carrier housing, and rotatable about the carrier housing axis of rotation, said side gear being disposed adjacent to said cross, with the teeth of said side gear engaging with the teeth of said planetary gear, with the inner end of said axle shaft being drivingly connected with said side gear;
f. friction clutch means for transmitting torque between the carrier housing and said side gear, said clutch means being disposed between an adjacent part of said carrier housing and an inner annular side surface of said side gear and including first friction means connected to the carrier housing and second friction means connected to said side gear whereby an axial force applied to said side gear, via said planetary gear, urges said clutch means first and second friction means into engagement and thus restrict the differential action of said mechanism; and
g. spring means capable of exerting a predetermined force, situated between a further adjacent part of said carrier housing and a first annular thrust side surface of said side gear adjacent to said spring means and axially spaced from said side gear inner annular end surface whereby said side gear is urged in a direction opposite to the direction of said axial force applied to said side gear via said planetary gear, thereby normally tending to urge said clutch means first and second friction means into disengagement as long as said predetermined force is greater than said axial force, thereby providing negligible bias to said axle shaft under light load conditions, wherein said spring means comprises a Belleville spring, with one radial surface thereof engaging said further adjacent part of said carrier housing and the other radial surface thereof engaging said side gear first annular thrust side surface, thereby normally tending to urge said clutch means first and second friction means into disengagement as long as said axial force is less than said predetermined force.

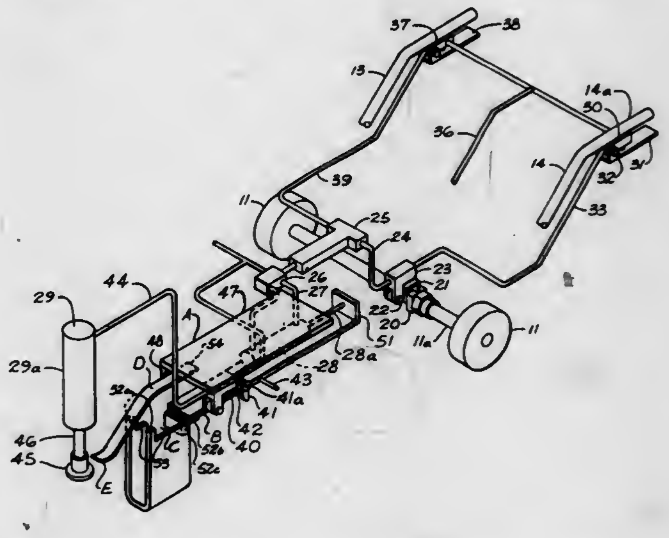
Re. 29,855
FASTENER POSITIONING DEVICE

Edward L. Thomas, 103 Chapman Rd., Greenville, S.C. 29603

Original No. 4,015,746, dated Apr. 5, 1977, Ser. No. 652,298, Jan. 26, 1976. Application for reissue Nov. 9, 1977, Ser. No. 850,245

Int. Cl.² B65H ***3/36***

U.S. Cl. 221—263 **2 Claims**



8. A device for feeding fasteners having an enlarged impact receiving head and an elongated shank portion extending outwardly from an intermediate position thereof to a fastener receiving means comprising:
a housing;
an elongated member slidably carried by said housing;
means at one end of said elongated member open at an end and side of said elongated member receiving a fastener with the shank projecting therebelow;
a retaining means maintaining the fastener on the elongated member;
means moving said elongated member forwardly carrying the fastener for reception by the fastener receiving means prior to rearward movement of the elongated member permitted by means open at an end releasing said shank portion formerly disposed therein; and
a wheeled vehicle on which said device is carried including fastener feeding means for presenting fasteners for reception at said side of said means at one end of said elongated member.

Re. 29,856
PROJECTION LENS FOR MASK PATTERN PRINTING

Ichiro Kano, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Japan

Original No. 3,897,138, dated Jul. 29, 1975, Ser. No. 498,286, Aug. 16, 1974. Continuation of Ser. No. 307,389, Nov. 17, 1972, abandoned. Application for reissue Apr. 20, 1976, Ser. No. 678,542

Claims priority, application Japan, Nov. 24, 1971, 46-93709

Int. Cl.² G02B ***9/64, 13/24***

U.S. Cl. 350—183 **7 Claims**

1. A projection lens for mask pattern printing, *corrected for chromatic aberration with respect to at least three wave lengths,* comprising a photographic lens arrangement which is interposed between [an image plane] *a photo-sensitive means* an an

REISSUES

DECEMBER 5, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,854

LIMITED SLIP DIFFERENTIAL WITH NEGLIGIBLE BIAS UNDER LIGHT LOAD CONDITIONS

Noah A. Shealy, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

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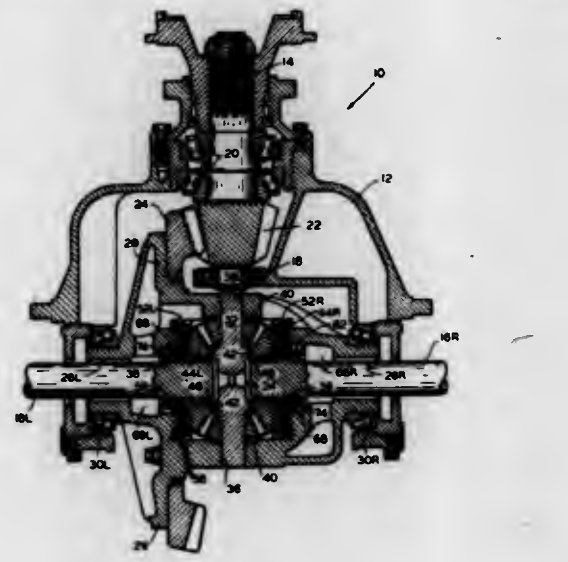
Int. Cl.² F16H *1/44*

U.S. Cl. 74—711 **3 Claims**



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a. a differential carrier housing;

b. a cross disposed within said carrier housing and connected for rotation with the carrier housing;

c. an axle shaft rotatably carried by said carrier housing;

d. a planetary gear carried by said cross;

e. a side gear disposed within said carrier housing, and rotatable about the carrier housing axis of rotation, said side gear being disposed adjacent to said cross, with the teeth of said side gear engaging with the teeth of said planetary gear, with the inner end of said axle shaft being drivingly connected with said side gear;

f. friction clutch means for transmitting torque between the carrier housing and said side gear, said clutch means being disposed between an adjacent part of said carrier housing and an inner annular side surface of said side gear and including first friction means connected to the carrier housing and second friction means connected to said side gear whereby an axial force applied to said side gear, via said planetary gear, urges said clutch means first and second friction means into engagement and thus restrict the differential action of said mechanism; and

g. spring means capable of exerting a predetermined force, situated between a further adjacent part of said carrier housing and a first annular thrust side surface of said side gear adjacent to said spring means and axially spaced from said side gear inner annular end surface whereby said side gear is urged in a direction opposite to the direction of said axial force applied to said side gear via said planetary gear, thereby normally tending to urge said clutch means first and second friction means into disengagement as long as said predetermined force is greater than said axial force, thereby providing negligible bias to said axle shaft under light load conditions, wherein said spring means comprises a Belleville spring, with one radial surface thereof engaging said further adjacent part of said carrier housing and the other radial surface thereof engaging said side gear first annular thrust side surface, thereby normally tending to urge said clutch means first and second friction means into disengagement as long as said axial force is less than said predetermined force.

Re. 29,855

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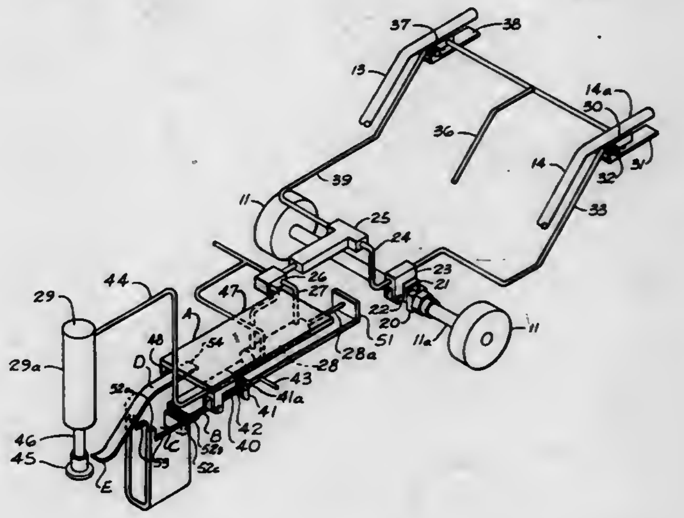
Original No. 4,015,746, dated Apr. 5, 1977, Ser. No. 652,298, Jan. 26, 1976. Application for reissue Nov. 9, 1977, Ser. No. 850,245

Int. Cl.² B65H *3/36*

U.S. Cl. 221—263 **2 Claims**



8. A device for feeding fasteners having an enlarged impact receiving head and an elongated shank portion extending outwardly from an intermediate position thereof to a fastener receiving means comprising:

a housing;

an elongated member slidably carried by said housing;

means at one end of said elongated member open at an end and side of said elongated member receiving a fastener with the shank projecting therebelow;

a retaining means maintaining the fastener on the elongated member;

means moving said elongated member forwardly carrying the fastener for reception by the fastener receiving means prior to rearward movement of the elongated member permitted by means open at an end releasing said shank portion formerly disposed therein; and

a wheeled vehicle on which said device is carried including fastener feeding means for presenting fasteners for reception at said side of said means at one end of said elongated member.

Re. 29,856

PROJECTION LENS FOR MASK PATTERN PRINTING

Ichiro Kano, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Japan

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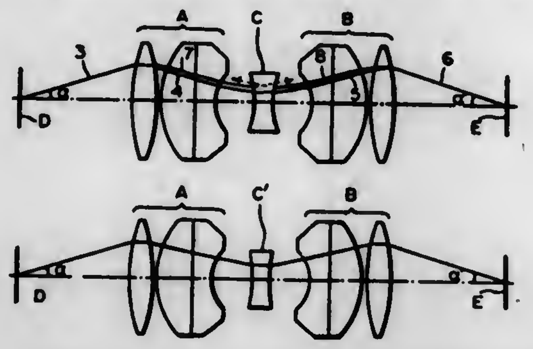
Claims priority, application Japan, Nov. 24, 1971, 46-93709

Int. Cl.² G02B *9/64, 13/24*

U.S. Cl. 350—183 **7 Claims**

1. A projection lens for mask pattern printing, *corrected for chromatic aberration with respect to at least three wave lengths,* comprising a photographic lens arrangement which is interposed between [an image plane] *a photo-sensitive means* an an

object plane and used for both the alignment and the printing, and including at least one group of fixedly spaced lenses [corrected for chromatic aberrations with respect to at least four wavelengths,] and a pair of interchangeable lens elements which are interchangeably inserted into said arrangement at identical axial positions therein, *the photographic lens arrangement, with* one of said interchangeable lens elements, being corrected for chromatic aberrations for [at least two of said wavelengths] *an alignment light which does not sensitize said photo-sensitive means* and being designed for the alignment and [inserted] *used* during alignment; *the photographic lens arrangement, with* the other of said interchangeable lens elements, being corrected for chromatic aberrations for [at least the other] two wavelengths, *among those of the printing light, which sensitize said photo-sensitive means* and being designed for the printing and [inserted] *used* during printing; the axial spacing between said photographic lens arrangement [image plane] *and the photo-sensitive means* remaining the same during both alignment and printing, and the axial spacing between the object plane and the [image plane] *photosensitive* remaining the same during both alignment and printing.



Re. 29,857

CONVERSION WITH ZSM-5 FAMILY OF CRYSTALLINE ALUMINOSILICATE ZEOLITES

Robert J. Argauer, Kensington, Md., and George R. Landolt, Audubon, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Original No. 3,790,471, dated Feb. 5, 1974, Ser. No. 254,799, May 18, 1972. Division of Ser. No. 865,472, Oct. 10, 1969, Pat. No. 3,702,886, and a continuation-in-part of Ser. No. 630,933, Apr. 14, 1967, abandoned. Application for reissue Jan. 3, 1978, Ser. No. 866,576

Int. Cl.² C10G *13/06;* C07C *15/02;* B01J *8/24, 29/28*

U.S. Cl. 208—111 **16 Claims**

1. A process for converting a hydrocarbon charge which comprises contacting the same under hydrocarbon conversion conditions with a catalyst resulting from thermal treatment of a crystalline aluminosilicate zeolite having a composition in terms of mole ratios of oxides as follows:

$$0.9\pm0.2M_{2/n}O:Al_2O_3:YSiO_2:zH_2O$$

wherein M is at least one cation having a valence n, Y is at least 5 and z is between 0 and 40, said thermally treated aluminosilicate catalyst having the X-ray diffraction lines of Table 1 of the specification.

Re. 29,858

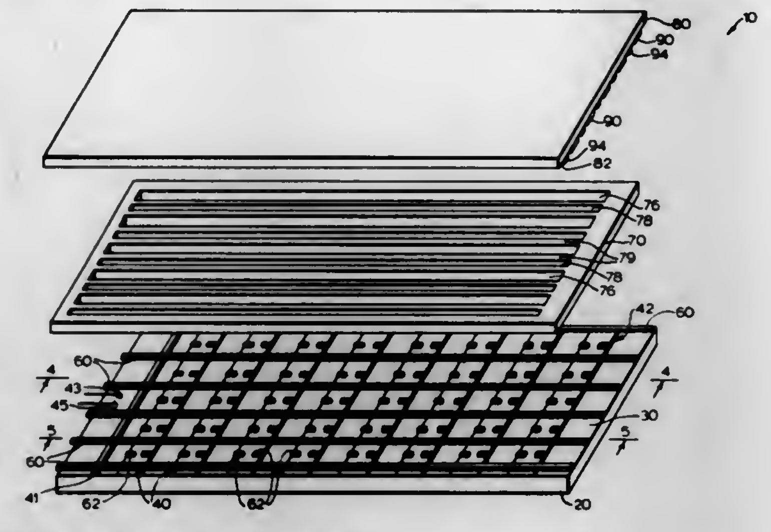
DISPLAY PANEL

Donald E. Miller, Stockton, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Original No. 3,995,185, dated Nov. 30, 1976, Ser. No. 636,919, Dec. 2, 1975. Continuation-in-part of Ser. No. 551,359, Feb. 20, 1975, abandoned. Application for reissue Nov. 28, 1977, Ser. No. 855,594

Int. Cl.² H01J *61/06*

U.S. Cl. 313—217 **18 Claims**



1. A display panel comprising

a gas-filled envelope including a base plate and a face plate having a viewing window,

a plurality of columns of coplanar operating cathode areas which are electrically connected in each such column, all of said cathode operating areas having upper surfaces facing said viewing window,

said columns of cathode areas including display cathode areas and priming cathode areas, said priming cathode areas providing excited particles for said display cathode areas through gas communication paths extending along said columns of cathode areas,

said display areas and said priming areas also being disposed in rows,

barrier means between said base plate and face plate and having portions which delineate said rows of display areas and said rows of priming areas, [and] *said gas communication paths extending beneath said barrier means from priming cathode areas to display cathode areas, and*

a priming anode overlying each row of priming cathode areas and a display anode overlying each row of display cathode areas, said barrier means also effectively separating adjacent anodes from each other.

Re. 29,859

BROADBAND WAVEGUIDE MIXER

Lloyd T. Yuan, Rancho Palos Verdes, and Jack S. Honda, Palos Verdes Peninsula, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Original No. 3,932,815, dated Jan. 13, 1976, Ser. No. 560,917, Mar. 21, 1975. Application for reissue Jan. 17, 1977, Ser. No. 759,968

Int. Cl.² H04B *1/26*

U.S. Cl. 325—445 **11 Claims**

1. A broadband waveguide mixer suitable for use in the microwave and millimeter wave regions comprising:

a. a first waveguide;

b. a second waveguide, said waveguides being disposed substantially parallel *to* and spaced from each other;

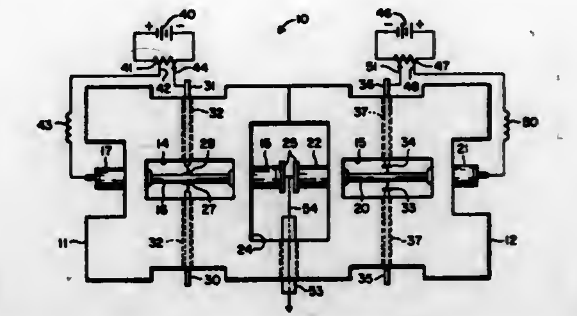
c. a first elongated conductive element extending transversely through said *first* waveguide;

d. a second elongated conductive element extending transversely through said second waveguide, said elements being disposed substantially on a common axis and being spaced from each other;

e. a first pair of diodes arranged back-to-back and disposed in said first waveguide and in contact with said first element;

f. a second pair of diodes arranged back-to-back and disposed in said second waveguide and in contact with said second element, said first pair of diodes having a polarity opposite to that of said second pair of diodes; and

g. a coaxial conductor connected to the adjacent ends of said elements, whereby when [a first wave is impressed on said first waveguide and a second wave of different frequency is impressed on said waveguide, the difference frequency wave is derived from said coaxial conductor] *first and second waves of different frequencies are impressed on each of said first and second waveguides with one of said first and second waves out of phase with the corresponding other first or second wave, a wave having a frequency equal to the difference in frequencies of said first and second waves is derived from said coaxial conductor.*



PLANT PATENTS

GRANTED DECEMBER 5, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,338
PLUMCOT TREE

C. Floyd Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351
Filed Dec. 20, 1977, Ser. No. 862,632
Int. Cl.^{2} A01H *5/03*
U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plumcot tree (plum × apricot) substantially as illustrated and described, which bears medium, firm, freestone fruit having mottled yellow-red flesh and a red exterior color; said fruit has a soft down covering similar to an apricot and a pronounced aroma which is predominantly apricot but suggestive of plum, the fruit is further characterized by early ripening and good eating quality.

4,339
APRICOT TREE

C. Floyd Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351
Filed Dec. 20, 1977, Ser. No. 862,633
Int. Cl.^{2} A01H *5/03*
U.S. Cl. Plt.—39 **1 Claim**

1. A new and distinct variety of apricot tree, substantially as herein shown and described, characterized particularly as to novelty by its ability to be a regular and productive bearer of large fruit of good commercial quality in warm winter areas, by having a low winter chilling requirement, the tree is further characterized by its even distribution of fruit throughout the tree and its uniform ripening of large, firm, freestone fruit of good eating and shipping quality.

4,340
EUONYMUS PLANT

Peter R. Nielsen, Oakville, Canada, assignor to Dugan Nurseries Incorporated, Perry, Ohio
Filed Jan. 9, 1978, Ser. No. 867,829
Int. Cl.^{2} A01H *5/00*
U.S. Cl. Plt.—63 **1 Claim**

1. A new and distinct cultivar of *Euonymus fortunei,* known by the cultivar name Sunspot, and characterized particularly as to uniqueness by the combined characteristics of rounded, compact and shapely habit of growth; good winter hardiness, and thick broadleaf evergreen foliage having pronounced yellow centers with dark green margins of irregular depth, with the leaves inside the plant being of the same variegated color as the stem tips, thereby giving the plant as a whole a distinctive and striking yellow spotted appearance.

4,341
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Grantsville, W. Va., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Jan. 17, 1978, Ser. No. 870,256
Int. Cl.^{2} A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium;* Ramat., known by the cultivar name Splatter and particularly characterized as to uniqueness by the combined characteristics of spider capitulum type; flat capitulum form; medium yellow ray floret color; diameter across face of capitulum from 100 to 115 mm. at maturity; uniform 10 week flowering response to photoperiodic short-day control; tall plant height; and semi-upright branching pattern.

PATENTS

GRANTED DEC. 5, 1978

ERRATA

For CLASS	See PATENT NO.
015–250.42	4,127,916
405–036	4,127,990
405–202	4,127,991
405–061	4,127,992
362–378	4,128,226
128–305	4,128,351
428–439	4,128,377
400–478	4,128,382
432–058	4,128,392
422–029	4,128,397
422–101	4,128,400
526–036	4,128,510
528–424	4,128,511
521–055	4,128,512
521–050	4,128,513
528–053	4,128,531
528–079	4,128,532
528–279	4,128,533
528–279	4,128,534
528–272	4,128,535
427–054	4,128,536
528–049	4,128,537
546–429	4,128,548
546–202	4,128,549
546–214	4,128,550
546–293	4,128,551
546–294	4,128,552
546–293	4,128,553
546–317	4,128,554
546–290	4,128,555
546–026	4,128,556
562–406	4,128,572
562–465	4,128,573
562–473	4,128,574
562–579	4,128,575
568–571	4,128,587
548–313	4,128,718
548–321	4,128,719
560–009	4,128,720
560–016	4,128,721
365–073	4,128,879

PATENTS

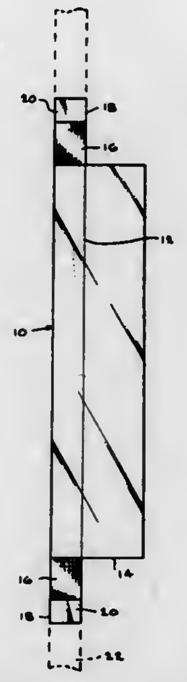
GRANTED DECEMBER 5, 1978

GENERAL AND MECHANICAL

4,127,902

STRUCTURE SUITABLE FOR IN VIVO IMPLANTATION

Charles A. Homsy, 11526 Raintree Cir., Houston, Tex. 77024
Continuation of Ser. No. 694,054, Jun. 7, 1976, abandoned, which is a division of Ser. No. 489,453, Jul. 17, 1974, Pat. No. 3,971,670. This application Mar. 17, 1978, Ser. No. 887,512
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1 **23 Claims**

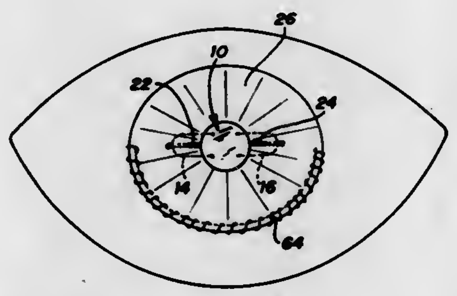


1. A structure suitable for in vivo implantation comprising
a biocompatible fabric,
a biocompatible film being heat formed into at least a portion of said fabric to set the fabric,
said fabric being heat stable at the heat forming temperature of said film,
said fabric having a weave in which fibers extending in one direction are disposed in twisted pairs whereby when said film is heat formed into at least a portion of said fabric said structure has substantially no permanent yield in one direction responsive to physiological stresses.

4,127,903

HORIZONTALLY MOUNTED INTRAOCULAR LENS AND THE METHOD OF IMPLANTATION THEREOF

Ronald A. Schachar, 213 N. Barrett, Denison, Tex. 75020
Filed Feb. 3, 1977, Ser. No. 765,385
Int. Cl.² A61F *1/16, 1/24*
U.S. Cl. 3—13 **10 Claims**

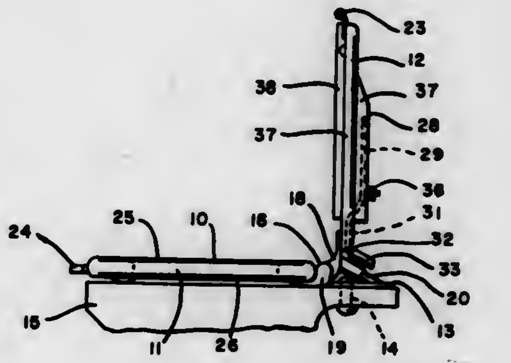


1. An intraocular lens comprising:
an optic lens dimensioned to be implanted in the anterior chamber of an eye and having a constant radius less than the distance from the center of the lens portion of the eye to the mid region of the iris of the eye,
a pair of elongated rod members each formed into a loop, said loops disposed on opposite sides of said optic lens and extending radially outwardly from said optic lens in opposite directions and dimensioned in radial length to extend from the edge of the pupillary margin of the iris portion of the eye slightly past the mid region of the eye iris, said loops attached at the ends of said rod members to peripheral regions of said optic lens, and
a pair of pin members each attached at one end to said optic lens between the ends of one of said rod members, each pin member having a length at least as great as the length of one of said loops and further having a length such that said optic lens may be implanted in the lens area of the anterior chamber of the eye with said pin members substantially horizontally extending through apertures formed through the mid region of the iris and clipped behind said loops at a position past the mid region of the iris.

4,127,904

WATER CLOSET SEAT AND BIDET ASSEMBLY

Arnold E. Junker, 24 Sunburst Rd., Bridgeport, Conn. 06606
Filed Sep. 6, 1977, Ser. No. 830,556
Int. Cl.² A47K *3/22*
U.S. Cl. 4—7 **9 Claims**



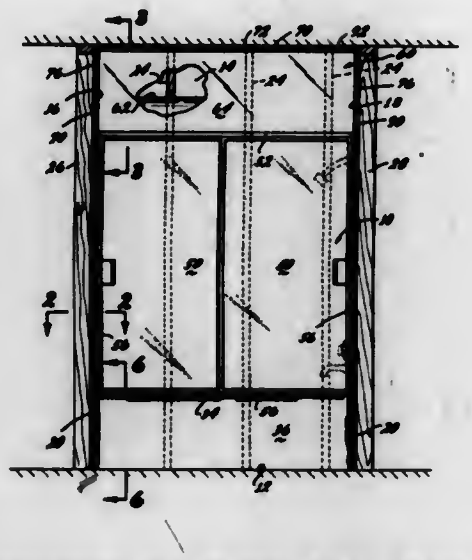
1. A combination toilet seat and bidet assembly adapted for use on a conventional water closet to provide both a normal seat and cover assembly and also a bidet assembly, comprising a seat member and a cover member which are hingedly connected to each other adjacent the rear areas of each to adapt said members to be pivoted between open and closed positions relative to each other, said seat member comprising a generally U-shaped member having both the upper and lower surfaces thereof contoured to adapt both surfaces for use as seating surfaces for the user, said lower surface also being adapted to support said assembly on a water closet, said cover member comprising a generally U-shaped frame having an upper surface adapted to support said assembly in inverted position on a water closet and a lower surface adapted to engage the upper surface of said seat member when said assembly is in closed position, said frame substantially surrounding a central well having walls extending from said frame to the floor of said well in a direction away from the lower surface of said frame, said assembly being adapted for use in (a) normal position on said water closet in which the lower surface of said seat member engages the water closet, the upper surface of said seat member is adapted for sitting by the user and the cover member is adapted to be moved between closed position over said upper surface and open position in which it is substantially perpendicular to said seat member, and (b) inverted or bidet position on said water closet in which the upper surface of said cover member engages the water closet, the central well thereof extends within said water closet and the said seat member extends over said cover member so that said upper surface of said seat member engages the lower surface of said cover

member while said lower surface of the cover member is adapted for sitting by the user.

4,127,905

BATHING FACILITY

Duane C. Bowen, 2551 State St., Carlsbad, Calif. 92008
Filed Jun. 3, 1974, Ser. No. 475,404
Int. Cl.^{2} A47K *3/04, 3/16*
U.S. Cl. 4—148 11 Claims

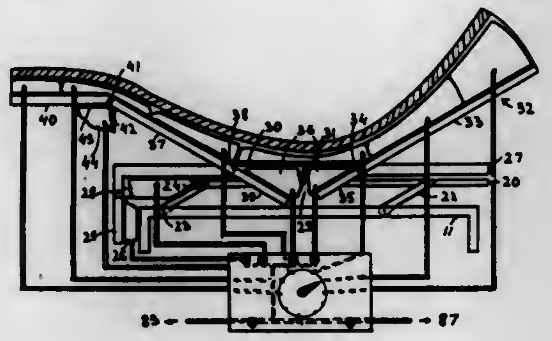


1. The improvement in a bathing facility factory manufactured separately and placed in an end of a bathroom which was constructed as part of a building, comprising:
(a) said bathroom having floor members, ceiling members, and studding forming a first bathroom rear and second and third bathroom end walls meeting said rear wall at right angles,
(b) a prefabricated bathing facility at least partly molded of fiber-reinforced plastic material, said facility having a top horizontal rail and a front closure supported from said rail, said facility resting on said floor members and extending upwardly to a horizontal plane near to the height of said rail and spaced from said ceiling members, said facility having a bottom and having rear and end walls molded of plastic and rising from said botton to said horizontal plane, the lower and major portions of said facility rear and end walls being spaced from said studding and said facility rear and end walls having upper, minor marginal portions extending at angles to the remainders of those facility walls to meet said studding and said upper marginal portions ending in upwardly-directed flanges secured to said studding,
(c) a prefabricated body formed of sheet-like, fiber-reinforced plastic material and molded as one piece and forming a top for said bathing facility, said body being formed separately from said bathing facility and being connected thereto during installation in said bathroom,
(d) said body including an upright wall molded as a unitary part of said body extending substantially vertically from said ceiling members to the top of said rail and from said second to said third bathroom end wall, said upright wall having a first flange at its upper edge secured to said ceiling members and having second and third flanges at the ends thereof secured to said studding of said second and third bathroom end walls, said bathroom having ceiling finishing sheet-thickness materials and wall finishing sheet materials lapping and concealing said first flange and said second and third flanges respectively,
(e) said body extending from a forward portion near said rail rearwardly and ending in rear and end portions substantially meeting the upper margins of said rear and end walls of said bathing facility substantially at said horizontal plane and together therewith forming rear, end and top watertight walls for said bathing facility, said body being domed between its forward and rear portions with the central portion thereof higher than said forward and rear portions thereof, and
(f) said ceiling members and said studding being unfinished above, to the rear of and to the ends of said body, said bathing facility and said body together forming the finish for said end of said bathroom.

4,127,906

ADJUSTABLE BED-CHAIR

Henry C. Zur, 10 W. Griswold, Phoenix, Ariz. 85021
Filed Jul. 15, 1976, Ser. No. 705,543
Int. Cl.^{2} A61G *7/10*
U.S. Cl. 5—66 16 Claims



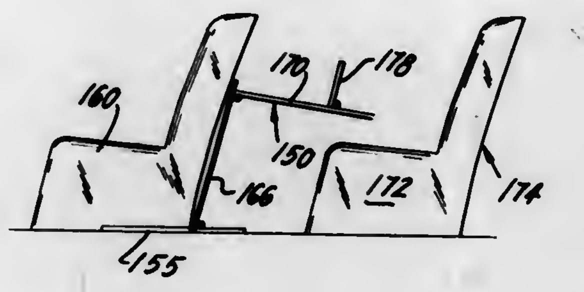
1. In an adjustable power tilted bed,
(a) a base frame comprising a rectangular top and four legs depending from the corners thereof;
(b) a first panel mounted on said frame and movable relative thereto;
(c) power means for adjusting the first panel relative to said frame;
(d) a second panel pivoted at one end to an end of said first panel and formed with a central downwardly opening recess defined by an upper back and presenting open ends;
(e) a body supporting assembly comprising a back support, a knee support, and a leg support;
(f) a pivotal connection between said back support and said second panel at one end of said recess whereby an end portion of said back support extends into said recess;
(g) power means between the back of said recess and said end portion for adjusting said back support relative to said second panel;
(h) a pivotal connection between said knee support and the second panel at the other end of said recess whereby an end portion of said middle support extends into said recess;
(i) power means between the back of said recess and the end portion of said knee support for adjusting said middle support relative to said second panel;
(j) a pivotal connection between said leg support and said knee support at the end of the latter remote from its pivotal connection to said second panel.

4,127,907

SUPPORT FRAMES ADAPTED FOR USE WITH CAR SEATS AND BEDS

Henry Fleischer, 18 Notch Park Rd., Little Falls, N.J. 07424
Division of Ser. No. 758,846, Jan. 12, 1977, Pat. No. 4,075,720.
This application Dec. 14, 1977, Ser. No. 860,622
Int. Cl.^{2} A47D *7/04*
U.S. Cl. 5—94 13 Claims

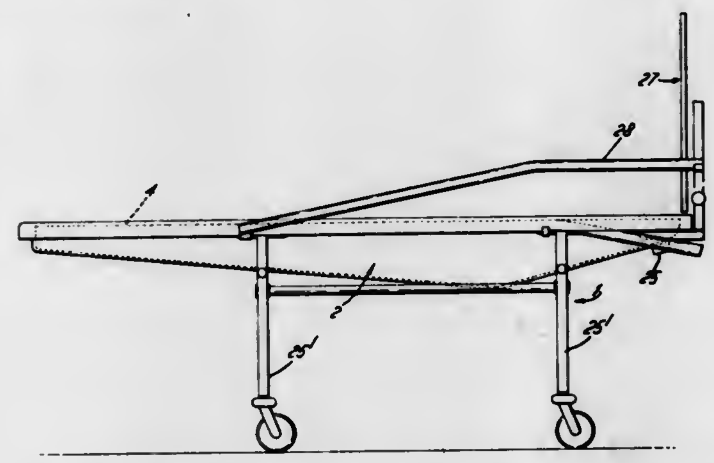
1. A universal-type locking frame for supporting or limiting movement of a car bed or car seat, said frame being adapted to be employed in an automobile, comprising, in combination, a support base, at least a portion of which is adapted to extend under an automobile seat, at least a pair of longitudinal spaced apart members, the space between said members being sufficiently large to allow a car bed or car seat to be disposed between said members, each of said members being connected at their lower portions to said support base so that said longitudinal members extend up from said support base and are adapted to be deployed in close proximity to and extending above the bench portion of an automobile seat in their use position and pivoted downwardly to a folded position substantially transverse to the fore and aft direction of the automobile, and a pair of normally horizontally disposed arm members, an arm member being connected to each of the longitudinal members, said arm members in their working position being disposed above said support base and extending out from the longitudinal members over the bench portion of an automobile seat for supporting or restricting movement of a car bed or car seat deployed on said automobile seat, repositioning means associated with said horizontally disposed arm members and said longitudinal members for moving and repositioning said horizontally disposed arm members with respect to said longitudinal members said arm members by means of said repositioning means being adapted to be disposed and positioned at various desired locations on said longitudinal members, whereby a car bed or car seat may be positioned on the automobile seat in a manner such that the car bed or car seat extends between and through the space between the longitudinal members so that the longitudinal members and horizontally disposed arm members in conjunction with the backrest portion of the automobile seat may limit movement of the car bed or car seat from side to side and/or front to back, and means for holding said longitudinal members in their use position.



4,127,908

WATERBEDS

David J. Colwell, London, England, assignor to Keep View Ltd., London, England
Filed Apr. 23, 1976, Ser. No. 679,646
Claims priority, application United Kingdom, Apr. 30, 1975, 18082/75
Int. Cl.^{2} A47C *27/08*
U.S. Cl. 5—370 7 Claims

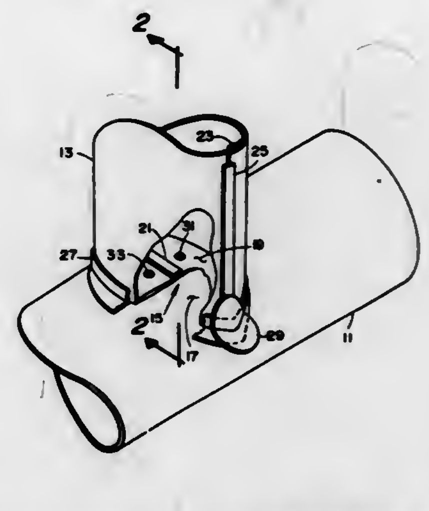


1. A waterbed comprising in combination an elongate tray having side walls sloping upwardly and outwardly from a position of maximum depth intermediately located nearer to one end than the other of the waterbed and being of non-uniform depth substantially throughout its extent, heating means associated with the tray for heating the waterbed, and an elongate flexible hollow water fillable envelope container shaped to fit correspondingly within and on the tray and having a substantially flat upper surface supportable on and by a selective volume of water correspondingly filling the container, the depth of which increases progressively from the periphery of the tray towards the position of maximum depth.

4,127,909

INFLATABLE RAFT CONSTRUCTION AND METHOD

Frank Pizzo, South San Francisco, Calif., assignor to C. J. Hendry Company, San Francisco, Calif.
Filed Sep. 27, 1976, Ser. No. 726,842
Int. Cl.^{2} B63C *9/04*
U.S. Cl. 9—11 A 6 Claims

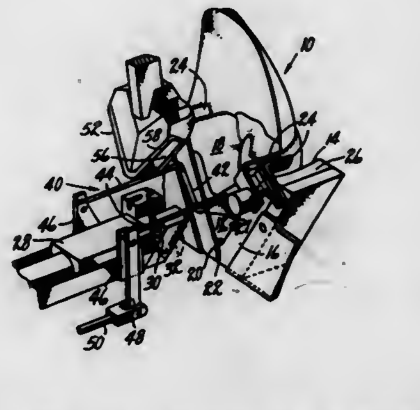


1. In a method of constructing an inflatable raft, the steps comprising forming a first flat sheet of fabric into at least a partially formed tube by cementing together the longitudinal edges of the fabric at one end thereof, sealing said one end of the tube, placing the partially formed tube on a second flat sheet of fabric, cementing the sealed end of the at least partially formed tube to said second flat sheet of fabric across one-half a surface of cylindrical intersection, folding said second flat sheet over the end of the partially formed tube and cementing the partially formed tube to the second sheet of fabric across the remainder of said surface of cylindrical intersection.

4,127,910

PROCESS FOR STIFFENING FLEXIBLE SHEET MATERIAL

John G. Hollick, Beverly, Mass., assignor to USM Corporation, Farmington, Conn.
Filed Jun. 14, 1977, Ser. No. 806,559
Int. Cl.^{2} A43D *00/00*
U.S. Cl. 12—146 D 10 Claims

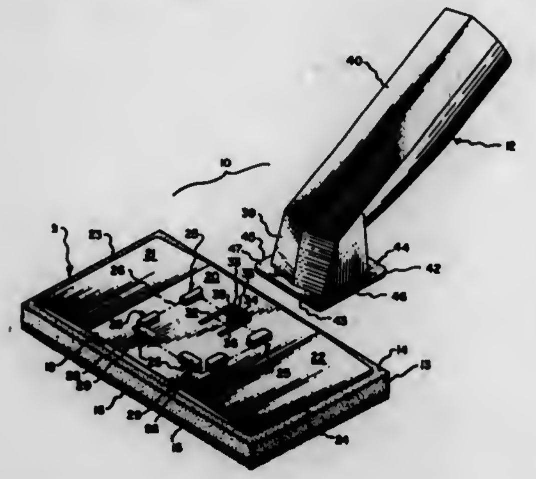


1. The process for stiffening a selected area of flexible sheet material such as an end portion of a shoe upper comprising depositing a pre-determined quantity of hot molten resin as a body of substantial thickness on portions of said area, leaving other portions of said area substantially free from resin, thereafter pressing said area of sheet material and resin together against a press surface while said resin is in hot molten condition to cause said molten resin to flow and spread as a layer substantially thinner than said body of resin extending over said other portions in wetting substantially non-penetrating

relation to sheet material throughout said area, forming said sheet material to a pre-determined three dimensional shape while said resin remains in hot moldable condition and cooling said resin layer to a stiff resilient condition firmly bonded to said sheet material to hold said area substantially in said predetermined shape.

4,127,911
APPLICATOR WITH MULTI-POSITIONAL HANDLE

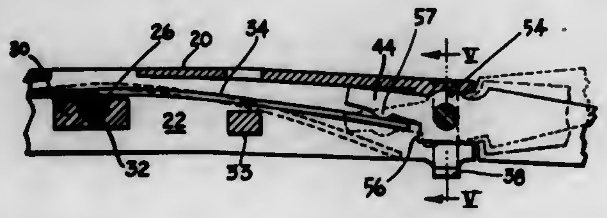
Charles D. Cupp, Lancaster; Bruce J. Matthies, Clarence Center, and Frederick J. Wood, Jr., Lancaster, all of N.Y., assignors to Shur-Line Manufacturing Co., Inc., Lancaster, N.Y.
Filed Nov. 2, 1977, Ser. No. 847,763
Int. Cl.² B05C *17/00;* B25G *1/06, 3/18, 3/30*
U.S. Cl. 15—210 R **9 Claims**



1. An applicator for applying a liquid coating comprising:
a pad including a cushion having upper and lower planar surfaces, working means applied to said cushion lower surface, and a backing plate having a lower surface attached to said cushion upper surface and also having an upper surface, said plate being provided with at least three hooks extending upwardly from its upper surface, one of said hooks being arranged along each of three sides of an imaginary square, said hooks being arranged to face inwardly of said imaginary square to capture an object slidably inserted into said imaginary square from the fourth side thereof; and
a handle having adjacent one end a square plate-like flange extending outwardly therefrom, the dimensions of said flange being slightly smaller than the dimensions of said imaginary square, said flange being adapted to be slidably inserted into said imaginary square to be captured by said hooks;
whereby said handle may be mounted on said pad in any of four positions at which the sides of said flange will be parallel to the sides of said imaginary square.

4,127,912
WIPER BLADE

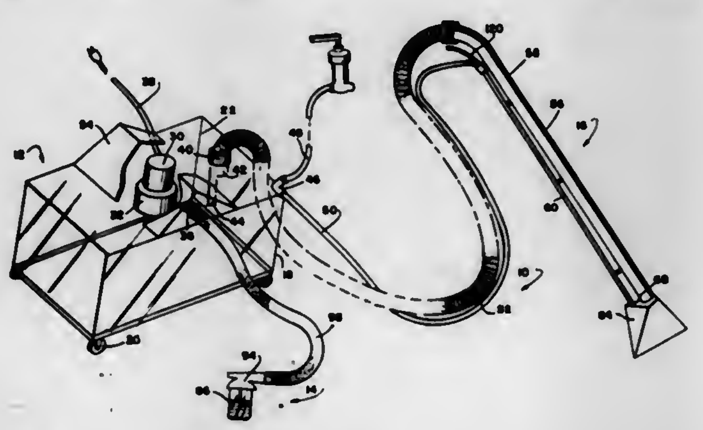
Raymond A. Deibel, West Falls; Neil A. Gowans, Buffalo, and William C. Riester, Williamsville, all of N.Y., assignors to Trico Products Corporation, Buffalo, N.Y.
Filed Dec. 15, 1977, Ser. No. 860,669
Int. Cl.² B60S *1/04, 1/38*
U.S. Cl. 15—250.42 **17 Claims**



1. In a windshield wiper blade assembly including a flexible, articulated pressure distributing superstructure comprising a central primary lever and a pair of secondary end levers, said levers being arranged end to end, said secondary levers being pivotally connected to said primary lever on transverse axes each at an opposite end of said primary lever; said primary lever comprising a web and depending side walls, said secondary levers each having a connecting projection extending telescopically between said side walls inwardly beyond said transverse axes, a flat leaf spring nestled between said side walls extending longitudinally for substantially the entire length of said primary lever and being fulcrumed medially between the ends thereof, said connecting projections engaging said leaf spring adjacent its ends and interleaved between said web and said leaf spring whereby the outer ends of the secondary levers are urged toward the surface to be wiped.

4,127,913
FABRIC CLEANING DEVICE

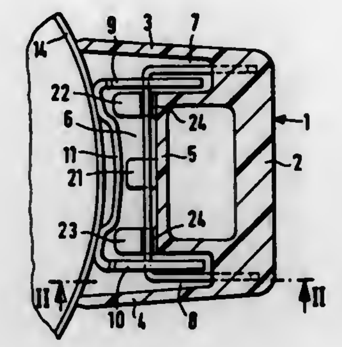
Clifford L. Monson, 49-789 Kam Hwy., Kaawa, Hi. 96730
Filed Nov. 11, 1977, Ser. No. 850,570
Int. Cl.² A47L *7/00*
U.S. Cl. 15—321 **16 Claims**



1. Cleaning apparatus comprising
a tank,
a vacuum pump assembly operatively connected to the tank for creating a vacuum within the tank,
means connected to the vacuum pump assembly for communicating electrical power from a source of electrical power to the vacuum pump assembly,
cleaning head means having lower mouth means adapted to be positioned in contact with a surface to be cleaned for drawing waste substances from the surface,
vacuum conduit means connected to the cleaning head means and tank for communicating waste substances from the lower mouth means to the interior of the tank under vacuum pressure,
discharge means connected to the cleaning head means for dispensing rinsing fluid onto the surface adjacent the lower mouth means,
fluid conduit means connected to the discharge means for communicating rinsing fluid from a pressurized source of rinsing fluid to the discharge means,
a cleaning fluid container for storing cleaning fluid,
spray means connected to the cleaning fluid container for directing pressurized air toward the container to urge cleaning fluid from the container and spray the fluid urged from the container onto the surface,
air outlet means connected to the vacuum pump assembly for discharging pressurized air from the vacuum pump assembly, and
air conduit means connected to the air outlet means and spray means for communicating pressurized air from the air outlet means to the spray means.

4,127,914
HANDLE FOR A POT

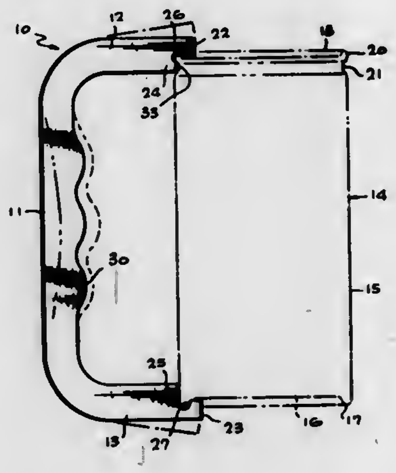
Wolfgang Fischbach, Daaden, Germany, assignor to Heinrich Baumgarten Eisen- und Blechwarenfabrik, Siegen, Germany
Filed Jun. 1, 1977, Ser. No. 802,415
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1976, 2624478
Int. Cl.² A47J *45/06*
U.S. Cl. 16—110 A **11 Claims**



1. In a handle for a container which includes two plates adapted to be welded to the container as carriers for said handle, the plates lying substantially in the fixing direction of the handle, each plate having two oblique edges orientated at an obtuse angle to each other, and at least one spring which, when the handle is pushed onto the carrier plates, is tensioned by means of one of the oblique edges, and which towards the end of the push-on movement comes behind the other edge of the carrier plate and then presses the handle against the container and the carrier plates, the improvement comprised in that the spring consists of a U-shaped steel wire, the handle offering for each shank end of the spring an anchorage which allows the full bending of the spring when the handle is pushed onto the carrier plates, in that the carrier plates engage the bridge of the U-shaped spring, and in that at least one groove is so formed in the handle that the bridge between the shanks of the fully bent spring is engaged with the groove and prevents detachment of the handle from the spring.

4,127,915
SNAP LOCK HANDLE

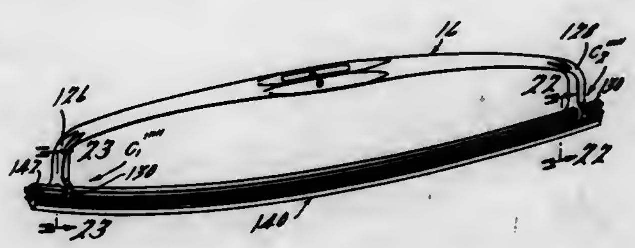
Thomas D. Logan, 3740 Dover Pl., Los Angeles, Calif. 90039, and Edwin S. Nelson, 140 S. Buena Vista St., Apt. V, Burbank, Calif. 91505
Filed Mar. 28, 1977, Ser. No. 781,562
Int. Cl.² B65D *23/10, 25/28*
U.S. Cl. 16—114 R **2 Claims**



1. A handle for a beverage can comprising:
an elongated handle of a substantially U-shaped configuration and constant thickness;
said handle having a flexible central portion and an upper and a lower connection element outwardly cantilevered at the opposite ends of said central portion in spatial relationship and adapted to move away and towards each other as said central portion is flexed;
said connection elements terminating in free ends, said ends having snap lock attachment means comprising an inner and an outer leg defining a transverse channel therebetween provided in their respective free ends for releasably engaging with the opposite end of the can; and said connection elements being normally biased towards each other;
said inner leg of said lower connection element is flat and of reduced length so as to conform with the adjacent flat surface of the can;
said inner leg of said upper connection element is champered and of reduced length so as to snap lock with a bead carried on the can to yieldably retain the bead in said channel of its associated connection element;
said outer legs are of elongated length so as to project over the respective top and bottom surface of the can; and
said handle is composed of a plastic material so as to provide integral spring bias.

4,127,916
WINDSHIELD WIPER CONSTRUCTION

Johan H. van den Berg; Alex H. van Eekelen, both of Hasselt, and Albert G. Hoebrechts, Mechelen-Bovelingen, all of Belgium, assignors to Monroe Auto Equipment Company, Monroe, Mich.
Division of Ser. No. 438,038, Jan. 30, 1974, Pat. No. 3,978,544.
This application Aug. 19, 1976, Ser. No. 715,994
Int. Cl.² B60S *1/38*
U.S. Cl. 15—250.42 **1 Claim**



1. A windshield wiper blade assembly comprising,
an elongated wiper element having a flexor member embedded therein and adapted to operatively support said wiper element,
a one-piece molded polymeric bridge member generally coextensive of said flexor member and including an intermediate section adapted to be operatively secured to an associated wiper arm or the like,
means connecting said bridge member to said flexor member whereby to permit said flexor member and wiper element supported thereon to shift longitudinally of said bridge member to accommodate for windshields of varying configurations, said means comprising a pair of opposed claw portions at each end of said bridge member, one of said pair of said claw portions clampingly engaging said wiper element and the other of said pair of claw portions relatively loosely embracing said wiper element and thereby being freely slidable along said wiper element.

4,127,917

PELTING OF ANIMALS

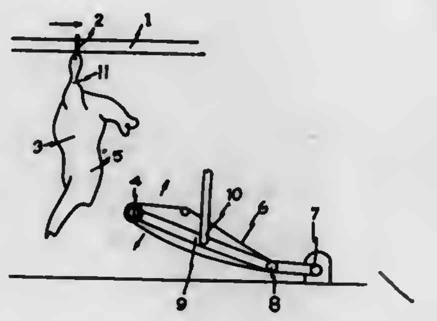
James N. Pohio, 3 Cridland St., Kaiapoi; Douglas E. Richards, 73 Te Awakura St., Christchurch 8; Angus A. J. Robertson, No. 1 R.D., Rangiora; William Williams, CLWYD, Main North Rd., Kaiapoi RD, and Kenneth J. Garnett, 56 Godden Crescent, Mission Bay, Auckland, all of New Zealand

Filed Jul. 12, 1977, Ser. No. 815,004

Claims priority, application New Zealand, Jul. 12, 1976, 181447

Int. Cl.² A22B *5/16*

U.S. Cl. 17—21 **39 Claims**



34. Apparatus for pelting an animal selected from sheep, hoggets and lambs comprising a chain capable of suspending the carcass to be pelted by forelegs thereof with the rear legs free and with the backbone of the carcass disposed away from the direction of movement of said chain, and a roller having its axis of rotation substantially parallel to the direction of movement of said chain at the pelting station, said roller being mounted from a support to move in an arcuate path such that in one position said roller is adjacent to the head of a carcass supported in use on said chain at said pelting station when said head region is stretched outwards and another position away from said animal, the roller being capable between said positions of progressing from said first mentioned position to said second mentioned position while substantially following the contour of the backbone and at least a portion of the rear legs of said carcass, the roller including means capable of engaging a portion of the head region of the pelt of said animal when the pelt on the carcass has been appropriately worked up for pelting, winding said pelt from the carcass during the course of the roller's movement relative thereto so as to accumulate the pelt therearound with the inside of the pelt exposed, and reversing the direction of rotation thereof at said second mentioned position to assist in the removal of the pelt therefrom.

4,127,918

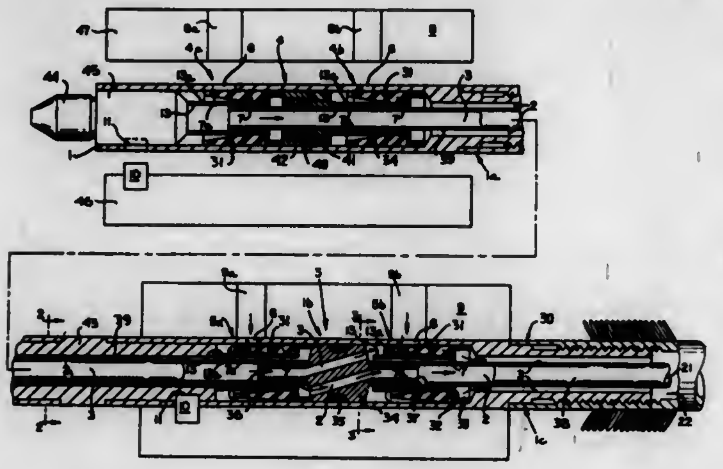
SHIRRING MACHINE MANDREL

Roy L. Trimble, Danville, Ill., assignor to Teepak, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 729,562, Oct. 4, 1976, Pat. No. 4,086,684. This application Apr. 7, 1977, Ser. No. 785,771

Int. Cl.² A22G *11/02*

U.S. Cl. 17—41 **15 Claims**



1. An elongated member particularly adapted for continuously separately supplying two fluids from longitudinally spaced alternating supply sources, said member having first and second receiving areas longitudinally spaced in accordance with the intended spacing of said supply areas, said first receiving area including a first inlet for a first of the fluids and a second inlet spaced from said first inlet in the direction of said second receiving area for receiving a second of the fluids, said second receiving area including in longitudinal sequence a third inlet for receiving the second fluid and a fourth inlet for receiving the first fluid, and passage defining means within said member defining a first flow passage in communication with said first and fourth inlets and a second flow passage in communication with said second and third inlets.

4,127,919

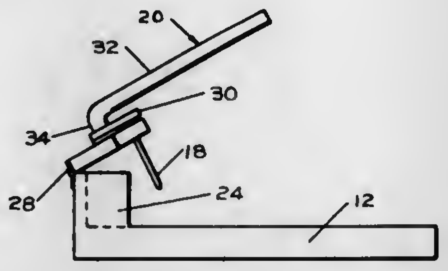
COMBINED CATFISH KILLER AND HOLDER

William A. Buddecke, 820 Paul, Florissant, Mo. 63031

Filed Oct. 18, 1976, Ser. No. 733,098

Int. Cl.² A22C *25/06*

U.S. Cl. 17—70 **1 Claim**



1. A catfish holder for cleaning catfish, said holder comprising a flat base member, a positioning and restraining member for the head of the catfish, said positioning member comprising a vertical transverse member which serves as a stop for the front of the head and a pair of spaced and opposed side wall members for restraining side movement of the head and piercing means for piercing the head of the catfish and impaling the head to pin the head to the holder while cleaning the fish comprising a spike means hingedly mounted to the positioning member spaced a substantial distance above the base member and a handle provided to drive the spike from a head disengaged position to a head engaged position, said spike means comprising a rigid plate-like member hingedly mounted to one of said wall members above the base and a spike fixed to the bottom of said plate-like member, said plate-like member being hingedly mounted on said transverse member above the base member and in a rest position being supported on top portions of said side wall members and said spike in the rest position being hingedly spaced closely above the flat base member.

4,127,920

APPARATUS FOR FEEDING A TEXTILE FIBER BAND COMPOSED OF STAPLE FIBERS

Hermann Gasser, Zurich, Switzerland, assignor to Luwa AG, Zurich, Switzerland

Filed Oct. 14, 1977, Ser. No. 842,051

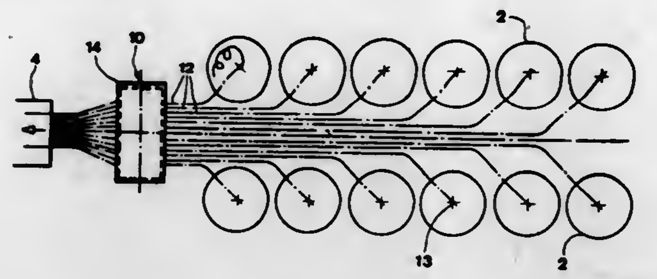
Int. Cl.² D01H *5/00*

U.S. Cl. 19—236 **6 Claims**

1. An apparatus for feeding a textile fiber band composed of staple fibers, comprising:

means defining a feed path for movement of at least one fiber band in a predetermined direction of travel;
said means defining said feed path comprising a tube having a cross-sectional area amounting to a multiple of the cross-sectional area of a related fiber band moving through said tube;
means operatively connected with said tube for producing a suction flow therein;
a multiplicity of said tubes; said suction flow-producing

means defining a common chamber at which terminate said multiplicity of tubes;
said suction flow-producing means including means defining a source of negative pressure operatively connected with said common chamber;
outlet means provided for said common chamber for the delivery of the fiber bands from said common chamber;
means cooperating with said outlet means for supporting the fiber bands;



a plurality of driven rolls provided for said chamber;
at least one of said driven rolls comprising said means for supporting the fiber bands;
means cooperating with said outlet means in order to produce a pressure equalization during such time as the fiber bands are supported by said supporting means;
said one roll comprising a sieve drum; and
a stationary guide comb operatively associated with said sieve drum.

4,127,921

HOSE CLIPS

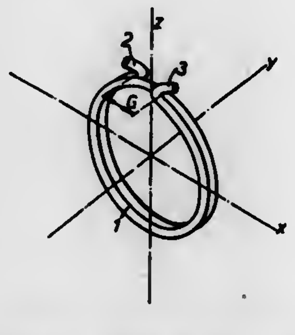
David J. Townsend, Fairbourne, Wales, assignor to Innovation and Technical Development Co., Leeds, England

Continuation of Ser. No. 614,170, Sep. 16, 1975, abandoned. This application May 3, 1977, Ser. No. 793,240

Claims priority, application United Kingdom, Sep. 16, 1974, 40242/74

Int. Cl.² B65D *63/10*

U.S. Cl. 24—27 **11 Claims**



1. A hose clip providing a constant locked diameter less than its characteristic unlocked diameter and comprising a coil of generally coil spring configuration and which has two mutually engageable hooked end portions each (a) being reflexed with respect to the coil; (b) projecting in mutually opposite senses and out of the plane of said coil so as to cross over at least one adjacent turn of said coil; and (c) being spaced apart from one another when the hose clip is in its relaxed condition, the hose clip having, in its relaxed condition, at least one complete turn of a first, common characteristic diameter and an incomplete turn, and being elastically deformable without plastic deformation to bring hooks defined by said hooked end portions into mutual engagement for locking said clip, the hose clip assuming in its position with said hooks engaged the configuration of a coil spring having at least two complete turns.

4,127,922

LATCH DEVICE FOR A SAFETY BELT BUCKLE IN A VEHICLE AND METHOD OF ASSEMBLING THE SAME

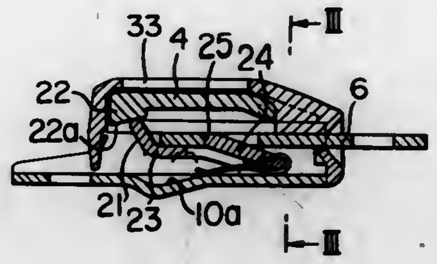
Akira Mita, Fujisawa, Japan, assignor to NSK-Warner, K.K., Tokyo, Japan

Filed Dec. 30, 1976, Ser. No. 755,651

Claims priority, application Japan, Feb. 18, 1976, 51-16837; Oct. 19, 1976, 51-139657[U]

Int. Cl.² A44B *11/25*

U.S. Cl. 24—230 A **8 Claims**



1. In a safety belt buckle assembly including a tongue and a latch device for receiving and locking the tongue, the latch device comprising:

a base including a central portion having a downwardly projected recess portion, integral longitudinally extending walls on opposite sides of the central portion having opposed aligned openings, the side walls having integral inwardly directed upper end portions, the side walls having projections for positioning the tongue between the inwardly directed upper end portions and the projections;
a latch member having means at one end pivotally supported in said aligned openings, the latch member having at its opposite end a forward upwardly projecting portion for engagement by a push button, the latch member having an upwardly projecting latching portion substantially centrally thereof and between its ends for locking the tongue, and a flat shoulder portion between said forward upwardly projecting portion and said upwardly projecting latching portion for positioning the tongue thereupon and under said inwardly directed upper end portions;
biasing means disposed between said central portion of the base and said latch member so that the latch member is biased toward tongue-locking position;
a push button for actuating the latch member, the push button being formed at one end with a portion on its underside for engaging said forward upwardly projecting portion of the latch member so that the push button, when operated, will move the latch member to unlocking position where said flat shoulder portion is partially received in said recess portion of the base; and
a cover having an inlet for inserting the tongue therethrough and an opening through which the push button may be operated, the cover being formed therewithin with a portion for pivotally supporting an end of the push button.

4,127,923

DEVICE FOR RELEASABLY SECURING AN AUXILIARY TOOL TO A MANUALLY HELD POWER DRILL

Albrecht Schnizler, Jr., Nürtingen, Germany, assignor to Metabowerke KG Closs, Rauch & Schnizler, Nürtingen, Germany

Filed Jun. 12, 1975, Ser. No. 586,405

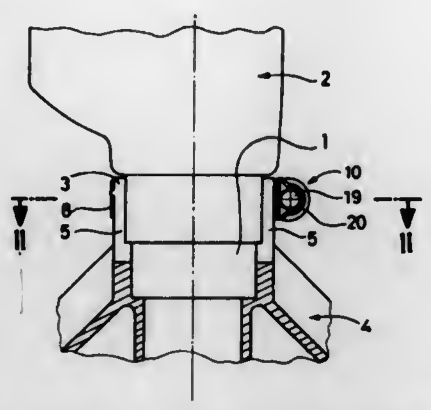
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1974, 2428610

Int. Cl.² B65D *63/00*

U.S. Cl. 24—270 **13 Claims**

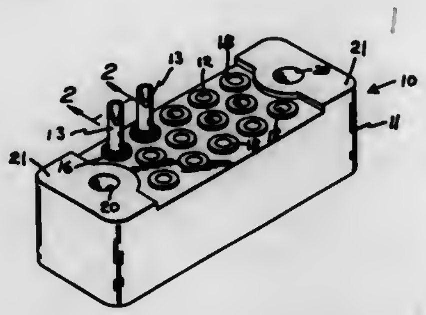
1. A device for releasably securing the spindle neck of a manually held power drill with an auxiliary tool unit, comprising a manually held power drill having an auxiliary tool unit which is to be powered by the power drill and has a slotted sleeve dimensioned to surround the spindle neck thereof; tensioning means for tensioning said slotted sleeve about the

spindle neck so as to frictionally connect said auxiliary tool unit to the power drill to be powered by the same, said tensioning means comprising a tensioning band surrounding said sleeve and having two end portions; and tool-lessly manually operable means for rapidly engaging and disengaging said tensioning means, comprising a hand lever having one end articulated to one of said end portions and another end adapted to be gripped by a user, and further comprising a lug connected with the other of said end portions and articulated to said lever intermediate said ends thereof, said lug having one side facing toward and another side facing away from said sleeve, at least said one side being curved in conformance with the circumferential curvature of said sleeve.



4,127,924
METHOD OF ASSEMBLING ELECTRICAL CONNECTORS

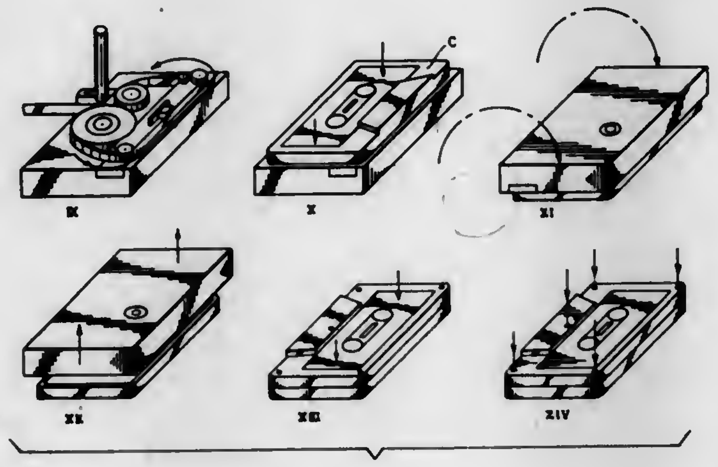
Milton I. Ross, 400 College Ave., Haverford, Pa. 19041
Division of Ser. No. 725,962, Sep. 23, 1976, Pat. No. 4,043,452. This application Jun. 6, 1977, Ser. No. 803,846
Int. Cl.² B23P *17/00*
U.S. Cl. 29—413 **7 Claims**



1. In the manufacture of electrical connectors of the type having a row of a plurality of closely spaced tubular openings in an electrically insulative body, and connector pins in said openings and having free ends extending beyond at least a generally planar surface of said body, the method which comprises: inserting a plurality of such pins in said openings a predetermined distance so that they extend as recited; providing an array of "C" rings having a dimension affording frictional retention thereof upon snapping of said rings on said free ends, said array of "C" rings being carried on support means by frangible connections so that they have a center-to-center spacing corresponding to the like spacing of said pins; moving said support means to snap a plurality of said "C" rings onto a plurality of said pins in their region of projection through the recited surface of said body, and relatively moving said support means and said body to break the recited frangible connections of the "C" rings and lock the pins in place.

4,127,925
METHOD OF MANUFACTURING AND LOADING MAGNETIC TAPE CASSETTES, PARTICULARLY COMPACT CASSETTES

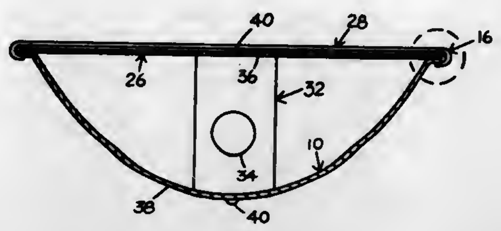
Dieter Gaiser, Diersheim; Josef Woellhaf, Ludwigshafen; Klaus Schoettle, Heidelberg; Friedrich Guenther; Eugen Kamm, both of Willstaett, and Erich Wendt, Lampertheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 635,177, Nov. 25, 1975, abandoned. This application Nov. 12, 1976, Ser. No. 741,357
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1974, 2455755
Int. Cl.² B23P *19/04. 21/00*
U.S. Cl. 29—430 **5 Claims**



1. A process for the manufacture of magnetic tape cassettes in an automated production line utilizing a movable support having accurately shaped and dimensioned recesses formed therein corresponding to the structure of one of said cassette halves for the receipt of the functional elements of the cassette assembly, such as tape guide elements, pressure pads, tape reels and magnetic tape, said process comprising the steps of:
- placing the functional elements of said cassette assembly in the corresponding recesses of said movable support by means of mechanical positioning devices;
- clipping the magnetic tape to a first tape reel positioned for rotation on said movable support in the plane of said functional elements;
- winding a predetermined length of magnetic tape on said first reel by rotating it at high speed;
- wrapping said wound magnetic tape about a predetermined path about said functional elements of said cassette assembly;
- clipping the free end of said wound magnetic tape to the second tape reel positioned on said movable support;
- positioning the inverted lower half of said cassette housing having recesses formed therein corresponding to said functional elements of the cassette assembly over the top of said movable support;
- rotating said movable support and positioned lower half of said cassette housing substantially 180° so that said movable support is located above said positioned lower half;
- raising said movable support from said lower half of said cassette housing thereby transferring said functional elements, including the wound magnetic tape pack and second reel to said lower cassette half; and
- placing the upper half of the cassette housing having recesses formed therein corresponding to said functional elements of the cassette assembly over said lower cassette half and fastening said cassette halves together.

4,127,926
METHOD OF MAKING SOLAR REFLECTORS

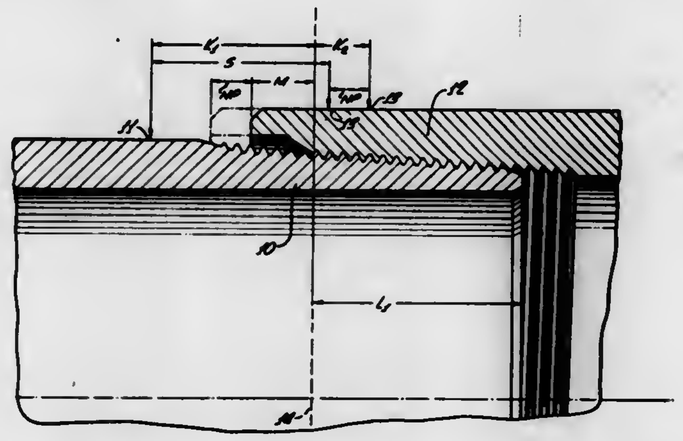
George White, Asheville, N.C., assignor to Whiteline, Inc., Asheville, N.C.
Filed Jun. 16, 1977, Ser. No. 807,236
Int. Cl.² B23P *11/02*
U.S. Cl. 29—453 **4 Claims**



1. In a method of making a reflector from a flat rectangular sheet of reflecting material into a substantially parabolic cross-sectional shape to form a part of a solar heat collecting system wherein said reflector is supported to concentrate the rays of the sun on a pipe through which liquid is circulated, the novel combination of steps comprising
- bending permanently said sheet substantially along its longitudinal center line so that each half portion of said sheet is at a minor angle to the horizontal
- bending the longitudinal edges of said sheet back upon themselves to form slotted hook portions
- bending said half portions of said sheet toward each other below the breaking points of their elasticity so that the open ends of the hook portions face each other and the elasticity of said portions urges them to return to their original bent position and
- inserting the longitudinal edges of a transparent sheet into said hook portions whereby upon release from bending said hook portions press against the top surface of said transparent sheet to hold the assembly together as a unit.

4,127,927
METHOD OF GAGING AND JOINING PIPE

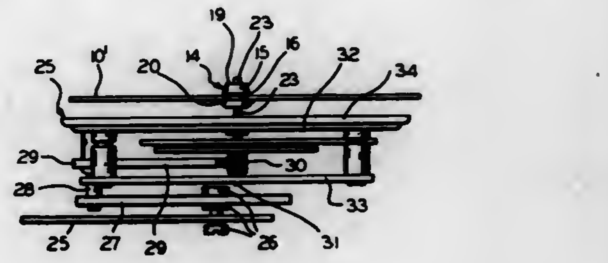
Ernest D. Hauk, 1315 E. 23rd St., Signal Hill, Calif. 90806; Thomas D. Hauk, 5313 Mezzanine Way, Long Beach, Calif. 90808, and Kenneth J. Carstensen, 1811 E. 42nd St., Odessa, Tex. 79762
Continuation-in-part of Ser. No. 728,148, Sep. 30, 1976, abandoned. This application May 2, 1977, Ser. No. 792,568
Int. Cl.² B23Q *17/00*
U.S. Cl. 29—407 **44 Claims**



1. The method of joining threaded frustoconical pipe and collar members, comprising:
- (a) marking each of said members at a predetermined axial distance from the hand tight plane thereof,
- (b) threading said members together at a predetermined makeup torque,
- (c) measuring the distance between said marks in a direction axially of the pipe and collar, and
- (d) thereafter determining whether or not the distance between the thus-made marks, axially of the pipe, is within a predetermined desired range.

4,127,928
MEASURING METER POINTER ASSEMBLY

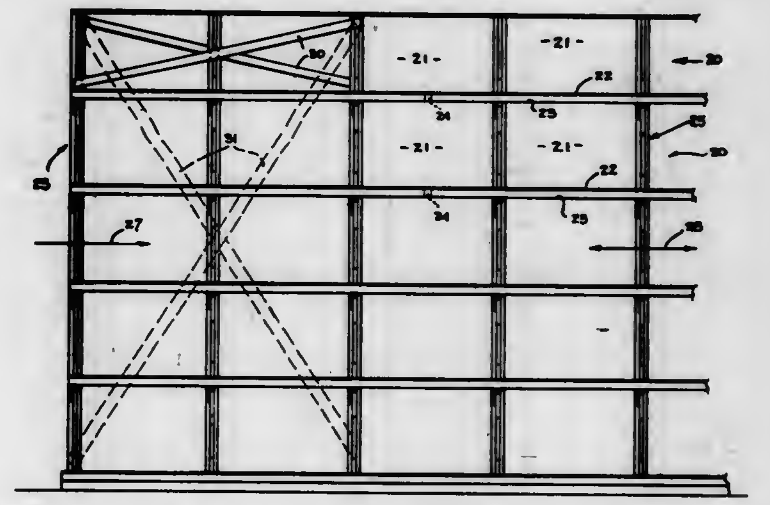
Talmage O. Green, Schaumburg, Ill., assignor to Snap-on Tools Corporation, Kenosha, Wis.
Continuation of Ser. No. 541,151, Jan. 15, 1975, abandoned. This application Feb. 16, 1977, Ser. No. 769,175
Int. Cl.² B23P *19/02*
U.S. Cl. 29—453 **3 Claims**



1. A method of articulating the joinder of a flat pointer flexible body with a bearing mount of substantially frusto-conical shape which consists in providing a slitted but peripherally solid mounting hole in said flat pointer flexible body of somewhat larger diameter than the smallest diameter of said frusto-conical bearing mount, telescoping said flat pointer flexible body hole partially over said smallest diameter of said frusto-conical bearing mount, there being a peripheral groove in said frusto-conical bearing mount conical body, and then in a one-step stamping operation press-fitting said flat pointer flexible body over the larger diameter of said frusto-conical bearing mount to lodge the flat pointer flexible body in said peripheral groove of the bearing mount intermediate thereof for permanent deformed clutching engagement with said substantially frusto-conical bearing mount responsive to the deformation of the hole in said flat pointer flexible body.

4,127,929
LAMINATED WOOD WAREHOUSE SUPPORT STRUCTURE

Gerald A. Zapara, Santa Ana, and Lyle G. Zapara, Newport Beach, both of Calif., assignors to National Storage Systems, Inc., Newport Beach, Calif.
Filed Mar. 2, 1977, Ser. No. 773,513
Int. Cl.² A47B *57/00; E04B 1/26*
U.S. Cl. 29—469 **10 Claims**



1. A method of making a multilevel wooden storage rack structure from stock lumber including the steps of:
- prefabricating a plurality of central towers formed by a pair of columns having a laminated ground support junction permanently joining a pair of oppositely-directed lateral

ground arms to the base of the central tower, and having additional laminated support junctions vertically spaced predetermined distances from the ground support junction and from each other, permanently joining pairs of oppositely-directed lateral suspended arms to the central tower without any support underlying the free ends of the suspended arms;

standing the central towers in upright position on their lateral ground arms in spaced apart aligned relationship;

connecting floor joists between the corresponding lateral arms of adjacent central towers with the floor joists in substantial horizontal alignment with the lateral arms; and

laying flooring material on the floor joists.

4,127,930

COATING WITH ANTIFRICTION METAL

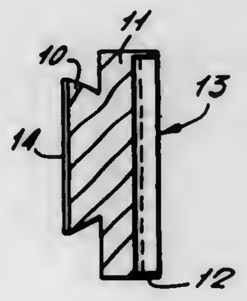
John C. Thomas, Chester-le-Street, England, assignor to Vickers Limited, London, England

Filed Oct. 15, 1976, Ser. No. 732,768

Claims priority, application United Kingdom, Oct. 16, 1975, 42572/75

Int. Cl.^{2} B22D *31/00*

U.S. Cl. 29—527.6 **6 Claims**



1. A method of manufacturing a thrust pad, the method comprising:

casting a metallic thrust pad base, the base having a surface for receiving a molten antifriction metal, the periphery of the surface being formed with a rim which completely surrounds the surface so as to form a recess to retain the molten antifriction metal on the surface;

filling the recess with molten antifriction metal to form a layer of antifriction metal on said surface;

causing the antifriction metal to solidify; and

machining the thrust pad base and the layer of antifriction metal attached thereto to remove those parts which are unwanted in the finished thrust pad.

4,127,931

SEMICONDUCTOR DEVICE

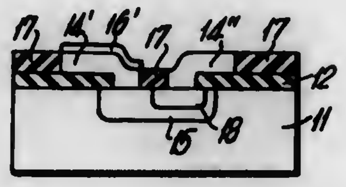
Hiroshi Shiba, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 773,658, Mar. 2, 1977, Pat. No. 4,074,304, which is a continuation of Ser. No. 618,419, Oct. 1, 1975, abandoned. This application Nov. 2, 1977, Ser. No. 848,015

Claims priority, application Japan, Oct. 4, 1974, 49-114408

Int. Cl.^{2} B01J *17/00*

U.S. Cl. 29—571 **18 Claims**



1. A method of producing a semiconductor device comprising the steps of:

preparing an opening in an insulating film covering one main surface of a semiconductor substrate to expose a portion of the surface of said substrate;

depositing a silicon film on the surface of said insulating film and on the exposed surface of said substrate so as to make direct contact with said exposed surface of said substrate;

selectively oxidizing a portion of said silicon film to form a silicon oxide film having at least a portion in contact with a part of said exposed portion of said substrate, said silicon oxide film forming a plurality of electrode wiring paths of said silicon film; and

introducing an impurity through at least one of said plurality of electrode wiring paths into said semiconductor substrate.

4,127,932

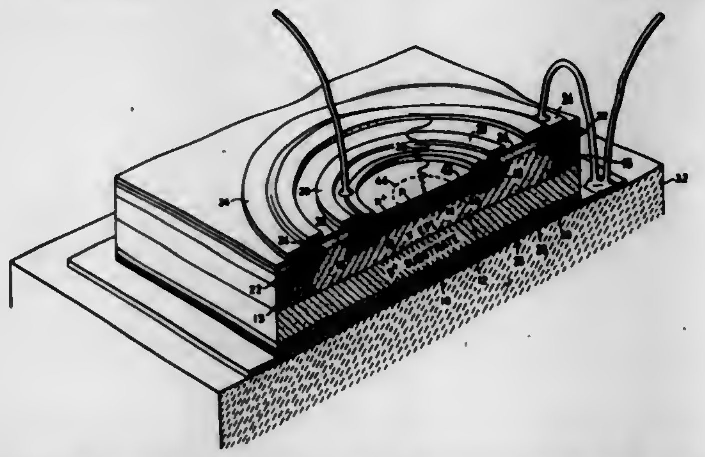
METHOD OF FABRICATING SILICON PHOTODIODES

Adrian R. Hartman, Westfield, N.J.; Hans Melchior, Pfaffhausen, Switzerland; David P. Schinke, Berkeley Heights, and Richard G. Smith, Basking Ridge, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 712,392, Aug. 6, 1976, abandoned. This application May 4, 1977, Ser. No. 793,493

Int. Cl.^{2} B01J *17/00*

U.S. Cl. 29—590 **20 Claims**



1. A method of fabricating a front-illuminated silicon photodiode comprising the steps of:

(a) epitaxially growing a high resistivity π-type silicon layer on a low dislocation density, high conductivity p-type silicon substrate;

(b) forming an n-type guard ring in the π-layer by phosphorus diffusion;

(c) forming in the π-layer a p-type channel stop around the guard ring by boron diffusion;

(d) ramping the diffusion temperature during steps (b) and (c) to reduce crystalline defects;

(e) forming an n^+-layer in the π-layer;

(f) forming an antireflection coating on at least the n^+-layer and a passivation coating on the region between the guard ring and channel stop;

(g) forming electrical contacts to the substrate, the guard ring and the channel stop so that the guard ring contact overlaps the surface portion of the π-n metallurgical junction and the channel stop contact overlaps the surface portion of the π-p metallurgical junction.

6. A method of fabricating a front-illuminated n^+-p-π-p^+ silicon avalanche photodiode comprising the steps of:

(a) epitaxially growing a high resistivity π-type silicon layer on a low dislocation density, high conductivity p-type silicon substrate;

(b) forming an n-type guard ring the π-layer by phosphorus diffusion;

(c) forming in the π-layer a p-type channel stop around the guard ring by boron diffusion;

(d) implanting boron ions in a surface portion of the π-layer within the guard ring;

(e) driving in the implanted boron ions by heating to form a p-layer;

(f) introducing phosphorus into the backside of the substrate effective to getter defects and/or impurities;

(g) ramping the diffusion temperature during steps (b), (c), (e), and (f) to reduce crystalline defects;

(h) forming an n^+-layer in the p-layer;

(i) forming an antireflection coating on at least the n^+-layer and a passivation coating on the region between the guard ring and channel stop by the steps of

  (1) forming a thin layer of SiO_2;

  (2) annealing the SiO_2 layer at an elevated temperature in an atmosphere containing HCl;

  (3) forming an Si_3N_4 layer about onequarter wavelength thick on the SiO_2 layer;

(j) forming electrical contacts to the substrate, the guard ring and the channel stop so that the guard ring contact overlaps the surface portion of the π-n metallurgical junction and the channel stop contact overlaps the surface portion of the π-p metallurgical junction; and

(k) mutually adapting the implanting step (d), the driving step (e) and the forming step (h) in combination with subsequent steps which involve heating so that the resultant electric field profile in the p-layer is substantially triangular and of the desired magnitude.

4,127,933

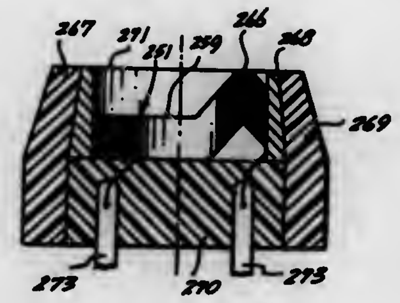
METHOD OF MAKING WORK COIL FOR AN ELECTROMAGNETIC DENT REMOVER

Karl A. Hansen, and I. Glen Hendrickson, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 646,068, Jan. 2, 1976, Pat. No. 4,061,007, which is a continuation-in-part of Ser. No. 489,920, Jul. 7, 1974, Pat. No. 3,998,081. This application Sep. 14, 1977, Ser. No. 833,280

Int. Cl.^{2} H01F *41/06*

U.S. Cl. 29—605 **6 Claims**



1. A method of fabricating an electromagnetic dent removal coil having a stressing region of predetermined geometry for establishing a localized concentrated flux region, said method comprising the steps of:

spirally winding a length of flat conductive material and an insulation material to form a tubular coil having a plurality of convoluted conductive layers with electrical insulation interposed between adjacent convoluted layers wherein the edge boundaries of said convolutions and said insulation collectively define first and second oppositely disposed annular coil faces that are spaced apart by a predetermined coil length; and,

machining said coil to form said magnetic stressing region in said first annular face of said tubular coil, said machining including the step of forming an aperture in said second annular face of said tubular coil, said aperture having an axial centerline substantially parallel with each interface between convoluted layers of said tubular coil and having a depth greater than one-half said length dimension of said coil, said aperture having a cross-sectional geometry that corresponds to said predetermined geometry of said stressing region.

4,127,934

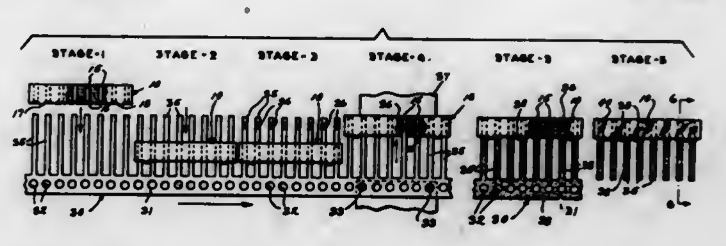
METHOD OF MAKING TERMINAL CONSTRUCTION FOR ELECTRICAL CIRCUIT DEVICE

John E. Bartley, Greenfield; Orville R. Pearod, and Lawrence D. Radosevich, both of Muskego, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Division of Ser. No. 609,780, Sep. 2, 1975, abandoned. This application Jul. 5, 1977, Ser. No. 813,069

Int. Cl.^{2} H05K *3/32*

U.S. Cl. 29—626 **6 Claims**



1. A method of anchoring and connecting terminal leads to a substrate containing electrical circuit components on a surface thereof, comprising the steps of:

forming a substrate having a circuit supporting planar surface, oppositely disposed planar sidewall surfaces depending from and disposed angularly relative to said circuit supporting surface, and including a plurality of transversely disposed, spaced apart openings extending through said substrate and intersecting each of the sidewall surfaces at opposite ends of each of said openings;

depositing a conducting termination coating area disposed transversely of at least one of said sidewall surfaces across one end of each of said openings and overlapping a portion of said circuit supporting surface;

depositing a layer of electrical circuit components on said circuit supporting surface with connecting portions electrically connected to the said termination coating;

providing a plurality of terminal leads; inserting individual leads into their respective openings in said substrate with a portion of each lead extending outwardly from the opposite sidewall of the substrate;

deforming the extending portion of said leads; and

moving said substrate and said leads in a direction away from one another to cause the deformed portion of each of said leads to re-enter the respective opening and to be positioned for intimate contact with the surface of said opening.

4,127,935

METHOD FOR ASSEMBLY OF ELECTRICAL CONNECTORS

John P. Ammon, Dallas, Tex., assignor to Elfab Corporation, Dallas, Tex.

Continuation of Ser. No. 659,764, Feb. 20, 1976, abandoned, which is a division of Ser. No. 534,442, Dec. 19, 1974, abandoned. This application Feb. 6, 1978, Ser. No. 875,535

The portion of the term of this patent subsequent to Aug. 17, 1993, has been disclaimed.

Int. Cl.^{2} H01R *9/16, 13/04, 43/00*

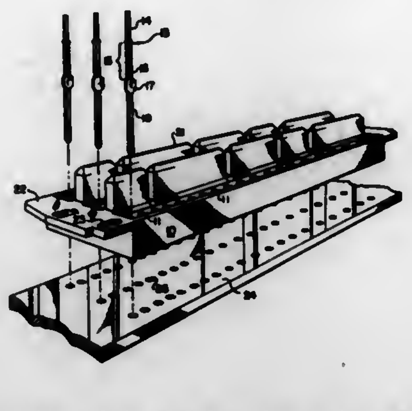
U.S. Cl. 29—629 **5 Claims**

1. A method of assembling an electrical connector which includes an insulative block having a plurality of sleeves formed therethrough by affixing the insulative block to a substrate by means of contacts extending through and frictionally engaging the walls of said sleeves, said method comprising:

inserting contacts through the sleeves in said insulative block, said contacts being retained within the sleeves by frictional engagement with the inner walls thereof;

guiding the portions of said contacts protruding from beneath the insulative block into aligned receiving apertures in a mounting substrate; and

press fitting said contacts into the apertures in said mounting substrate to rigidly secure said contacts to said substrate and permit said insulative block to be readily removed from said contacts for access thereto by applying an upward force to overcome the frictional engagement between said contacts and the inner walls of the sleeves through said insulative block.



4,127,936

DEVICE FOR ASSEMBLING ELECTRONIC COMPONENTS ON A PRINTED CIRCUIT BOARD

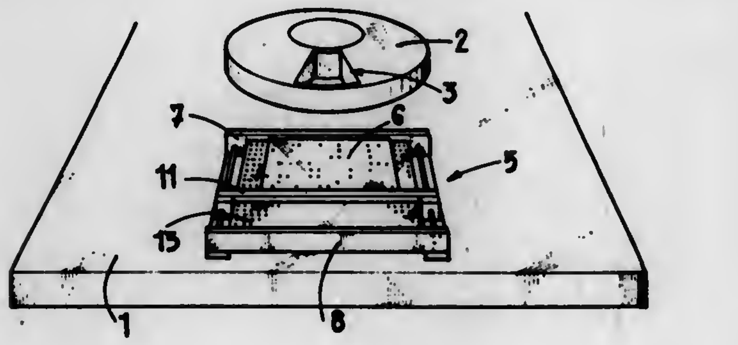
Gustave E. Schlup, Longeau-prés-Bienne, and Edwin Berger, Port, both of Switzerland, assignors to G. E. Schlup & Co., Berne, Switzerland

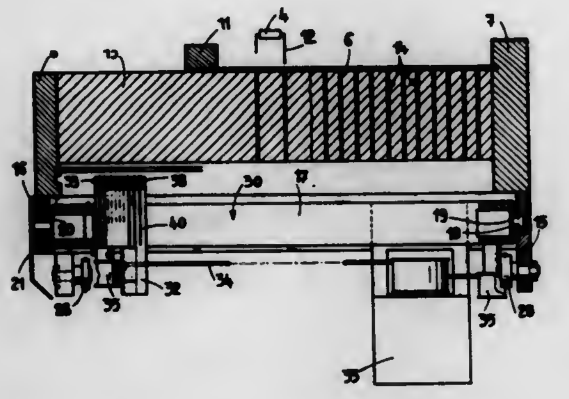
Filed Apr. 4, 1977, Ser. No. 784,185

Claims priority, application Switzerland, Apr. 2, 1976, 4122/76

Int. Cl.^{2} B23P *19/04, 21/00*

U.S. Cl. 29—721 3 Claims





1. A device for fitting electronic components and their connecting leads onto printed circuit boards of a first size, by illuminating the respective holes in the circuit boards through which the respective component leads are to be inserted, said device comprising:

means for mounting at least one circuit board in a first plane;

illuminating matrix means of a second size less than said first size and including a grid of holes having a spacing therebetween at least as close as the closest pair of holes on said circuit board into which said component leads are to be inserted;

carriage means having said matrix means mounted thereon and movable to align selected holes of said illuminating matrix means with respective holes of said printed circuit board into which said leads are to be inserted;

illuminating means for illuminating said selected holes of said illuminating matrix means and said respective holes of said printed circuit board;

said carriage means is movable in a second plane substantially parallel to said first plane in a first direction relative to said printed circuit board; and

said matrix means being movable on said carriage means in a second direction perpendicular to said first direction.

4,127,937

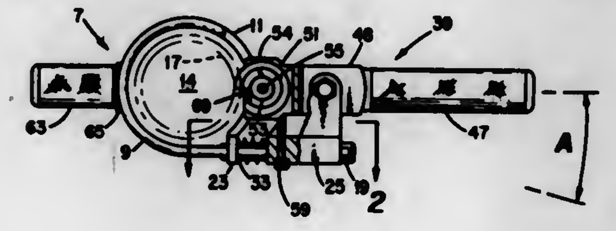
TOOL FOR CUTTING INSULATION FROM ELECTRICAL CABLES

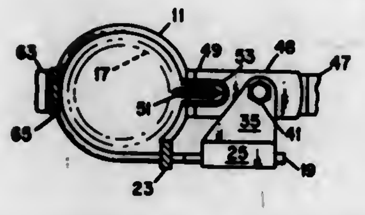
Charles E. Harless, Metropolis, and Ward G. Taylor, Vienna, both of Ill., assignors to The United States Department of Energy, Washington, D.C.

Filed Jan. 11, 1978, Ser. No. 868,637

Int. Cl.^{2} B21F *13/00;* B26B *27/00*

U.S. Cl. 30—90.7 10 Claims





1. A hand tool for slitting a sheath of insulation emcompassing an electrical cable, said tool comprising:

a rigid frame including cable-encompassing means defining a region for receiving a section of said cable extending along the axis of said means, said means being provided with a pair of straight arms extending transversely therefrom in side-by-side relation;

a bracket slidably mounted to said arms for movement toward and away from said means;

a handle carried by said frame for turning said frame about said axis;

an insulation-cutting blade carried by and extending axially from said handle; and

means for pivotally mounting said handle to said bracket in either of two orientations: (1) a first orientation where pivotal movement of said handle effects arcuate slicing movement of said blade in a plane normal to said axis between a position where said blade is disposed outside said region and another position where said blade extends within said region, and (2) a second orientation where said handle is displaced angularly from said first orientation by approximately 90° and where said handle is pivotally movable in said plane to a position where said blade is coplanar with said axis.

4,127,938

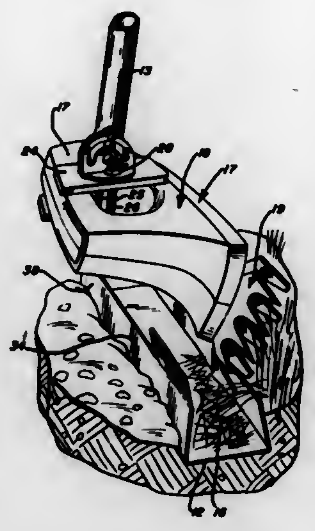
VEGETATION TRIMMER WITH CUTTINGS CATCHER

Henry H. Slingerland, Jr., 2800 Ramona Ct., Wilmette, Ill. 60091

Filed Jun. 3, 1977, Ser. No. 803,343

Int. Cl.^{2} B26B *19/48;* A01G *3/04*

U.S. Cl. 30—132 6 Claims



1. In a vegetation trimmer having powered means for cutting in an upright cutting place, the improvement comprising means for catching the cut vegetation including an upwardly opening U-shaped collecting portion having a front portion underlying the bottom of said cutting means, said front U-shaped portion being defined by first and second upstanding legs, said first leg having a height substantially greater than said second leg, and an upwardly opening U-shaped rear portion extending from said front portion to substantially rearwardly of the bottom of said cutting means, said rear U-shaped portion being defined by third and fourth upstanding legs continuing rearwardly from said first and second legs, respectively, said fourth leg having a height substantially greater than said third leg, said powered cutting means being secured to said fourth leg and having cutting blades generally aligned with and extending above said second wall defining said cutting plane.

4,127,939

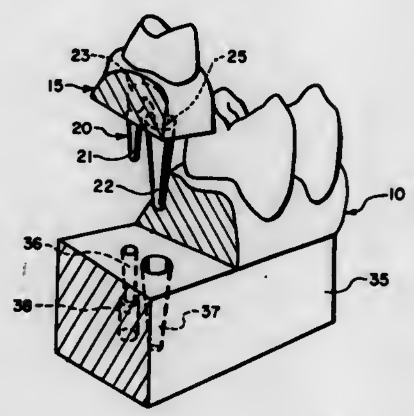
J-SHAPED PIN FOR MAKING DENTAL PROSTHESIS WITH MEANS FOR DEBRIS ESCAPE

Robert A. Samuel, 3603 Ethan Ct., San Jose, Calif. 95123; Gerald W. Kaminski, 760 Mansfield Dr., San Jose, Calif. 95128, and Michael W. Layne, 112 Capistrano Dr., Los Gatos, Calif. 95030

Filed Jan. 19, 1977, Ser. No. 760,754

Int. Cl.^{2} A61C *13/00*

U.S. Cl. 32—11 9 Claims



1. An assembly for prosthetic dentistry comprising:

(a) a base, said base being formed with an indexing leg-receiving opening, a locator leg-receiving opening, and a debris-collecting opening, said debris-collecting opening communicating with said indexing leg-receiving opening;

(b) a model secured to said base;

(c) a die in said model removably attached to said base; and

(d) a pin fixed in said die, said pin comprising an indexing leg projecting from said die and received by said indexing leg-receiving opening formed in said base, a locator leg projecting from said die and received by said locator leg-receiving opening formed in said base, and a retention member interconnecting said locator leg and said indexing leg and embodied in said die.

4,127,940

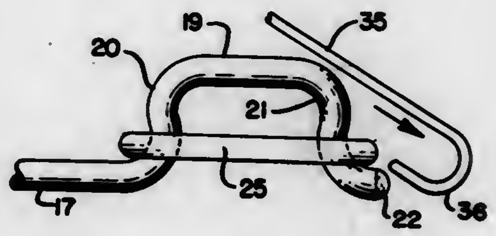
ORTHODONTIST'S INSTRUMENT FOR APPLYING ELASTIC ARCH WIRE-RETAINING RINGS

Douglas J. Shilliday, 4848 Slate Run Ct., Columbus, Ohio 43220

Filed Mar. 2, 1977, Ser. No. 773,743

Int. Cl.^{2} A61C *7/00*

U.S. Cl. 32—66 2 Claims



1. An orthodontist's instrument for applying an elastic retaining band comprising a relatively elongated handle and a wire-like operative tip rigidly connected with and projecting outwardly from an end of said handle; said tip consisting of a single, substantially rigid wire formed with a generally U-shaped, laterally projecting bight portion having opposed, relatively spaced apart side legs curved slightly inwardly toward one another and defining on the bight portion of said tip a relatively shallow undercut region for the readily releaseable support of an encircling, tensioned, elastic band.

4,127,941

MEANS AND GRAPHICAL METHOD OF CALCULATING MOMENTS OF INERTIA

Richard L. Hoover, Box DY 582 Cave Creek Stage, Phoenix, Ariz. 85020

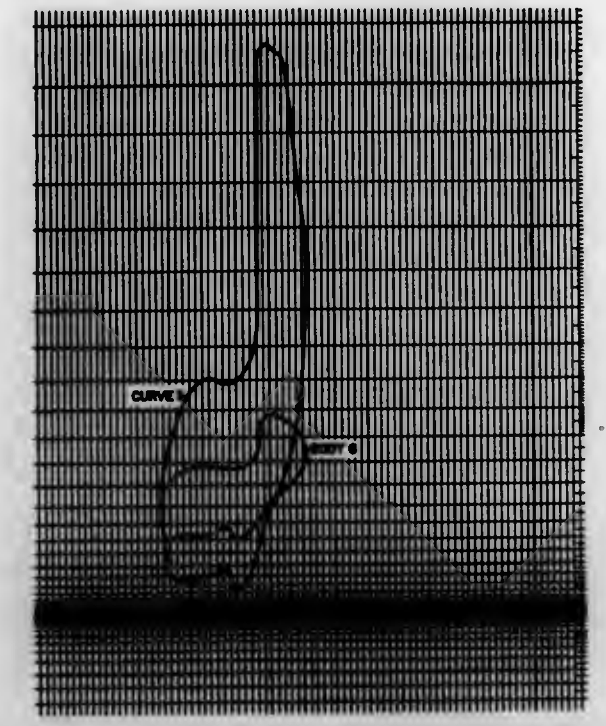
Filed Aug. 1, 1977, Ser. No. 820,713

Int. Cl.^{2} B43L *13/20;* G01B *5/26;* G09B *23/06*

U.S. Cl. 33—1 C 3 Claims

1. A method for determining the Moment of Inertia of a plane surface of interest about an axis of rotation comprising the steps of projecting an area proportional to said plane surface of interest on a specially designed graph paper having an axis and having parallel lines that are proportional to $d^3/3$ where d is the distance from any given point on said plane surface of interest to its axis of rotation, generating a corresponding plane surface on said specially designed graph paper using said projected plane surface of interest and having every point on said corresponding plane surface being equal to $d^3/3$

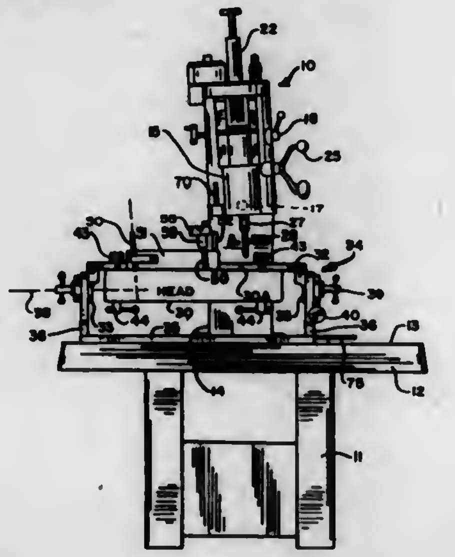
as compared to the corresponding point on said projected plane surface of interest, and calculating the area under said



corresponding plane surface which is proportionally equal to the Moment of Inertia of said plane surface of interest.

4,127,942
METHOD AND APPARATUS FOR RECONDITIONING CYLINDER HEADS

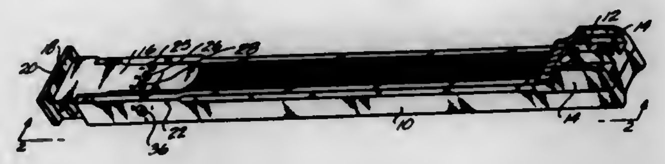
James F. Flaten, Burnsville, Minn., assignor to Tobin-Arp Manufacturing Company, Eden Prairie, Minn.
Filed Feb. 25, 1977, Ser. No. 771,933
Int. Cl.² G01B *3/30*
U.S. Cl. 33—181 AT **8 Claims**



1. An alignment tool for use in alignment of a cylinder head for an engine having a plurality of valve guides in the cylinder head each of which has an axis at the same compound angle with respect to a reference surface of the cylinder head to permit reconditioning said valve guides and for establishing a plane parallel to the plane defined by at least two of said valve guide axes when at least two bore pins having exterior surfaces are placed in two of said valve guides and positioned with the pin exterior surfaces parallel to the axis of the respective valve guides, and for use in combination with a bubble level having a receptacle for mounting said bubble level, said receptacle being oriented to have a receptacle axis perpendicular to the level axis of the bubble level, said tool comprising a bar member having at least one flat side surface adapted to extend between and bear against at least two bore pins mounted in two different valve guides in said head to place the flat side surface parallel to the plane defined by the axes of said valve guides, and having a straight edge extending along said flat surface, an auxiliary pin mounted on said bar and having an auxiliary pin axis parallel to said flat side surface and perpendicular to said straight edge, said auxiliary pin being of size to fit within the receptacle of a level indicator, and means on said bar member to mount said bar means to at least one of said two bore pins with the flat surface thereof physically engaging the exterior surfaces of both of said two bore pins.

4,127,943
GUN SIGHT

Leonard A. Tiritilli, 631 E. Norman Ave., Arcadia, Calif. 91006
Filed Aug. 22, 1977, Ser. No. 826,469
Int. Cl.² F41G *1/28*
U.S. Cl. 33—260 **22 Claims**



1. A gun sight comprising a gun sight body; a sight leaf movably secured to the gun sight body; a movable cam between the gun sight body and the sight leaf; a plurality of movable cam followers, each cam follower being independently movable toward or away from the cam; and means for moving the cam into a plurality of predetermined positions for separately engaging each cam follower for providing separate adjustments in the elevation of the sight leaf relative to the gun sight body, each elevation adjustment being independently controllable by the movement of a respective cam follower relative to the cam.

4,127,944
METHOD FOR DRYING WATER-ABSORBENT COMPOSITIONS

Bartolo J. Giacobello, Watchung, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.
Filed Oct. 17, 1977, Ser. No. 842,775
Int. Cl.² F26B *3/00*
U.S. Cl. 34—9 **9 Claims**

1. A method for drying a water-absorbent composition comprising the steps of:

(a) forming a slurry or wet cake of said composition with water and a water-miscible alcohol such that the slurry contains from 20 to 35% solids, by weight, and from 15 to 85% water on solids, by weight, and the wet cake contains 36 to 55% solids, by weight, and from 15 to 50% water on solids, by weight;

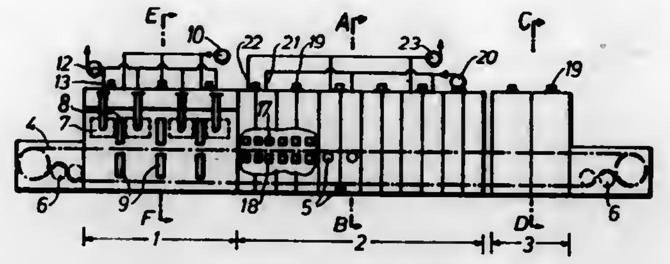
(b) feeding the slurry or wet cake onto a heated drum dryer having a surface temperature of 250° to 380° F. at a rate to produce a film of from 10 to 100 mils in thickness;

(c) recovering the dried product in flake form from the drum surface, whereby the dried product is obtained in granular, agglomerated form and has improved water dispersibility and absorbent properties.

4,127,945
PROCESS AND A DRYER FOR DRYING POLYCHLOROPRENE SHEETS

Karl Nöthen, Dormagen; Francisco B. Creixell, Leverkusen, and Bodo Ehrig, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation of Ser. No. 691,532, Jun. 1, 1976, abandoned. This application Nov. 30, 1976, Ser. No. 746,189
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1976, 2645921
Int. Cl.² F26B *7/00*
U.S. Cl. 34—18 **10 Claims**

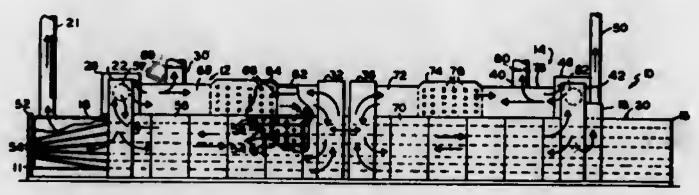
1. A process for drying a wet polychloroprene sheet comprising the steps of transporting the sheet in a path, applying a flow of warm air simultaneously to both surfaces of the sheet at a rate of 5 to 30 m/sec. at a temperature of 100 to 400° C.,



after application of the warm air applying a flow of cool air to the transported sheet to substantially cool it to ambient temperature, and the rate at which the sheet is transported ranging between 1 and 100 m. per minute.

4,127,946
METHOD FOR STEAM DRYING

Adolf Buchholz, 11694 SE. Clover La., Portland, Oreg. 97266
Division of Ser. No. 550,573, Feb. 18, 1975, Pat. No. 4,026,037. This application May 23, 1977, Ser. No. 799,362
Int. Cl.² F26B *3/00*
U.S. Cl. 34—28 **10 Claims**



1. A drying method for removing water from a water containing material to provide a dried product which comprises the steps of:

contacting said water containing material, in a drying zone at drying conditions, with a recycled drying fluid comprising at least a major portion of superheated steam at a first temperature above the boiling temperature of water, whereby at least a portion of the water in said material is vaporized, removed from said material, and comingled with said drying fluid to form an effluent gas stream comprising steam at a second temperature lower than said first temperature;

removing said effluent gas stream from said drying zone and heating said effluent gas stream to about said first temperature;

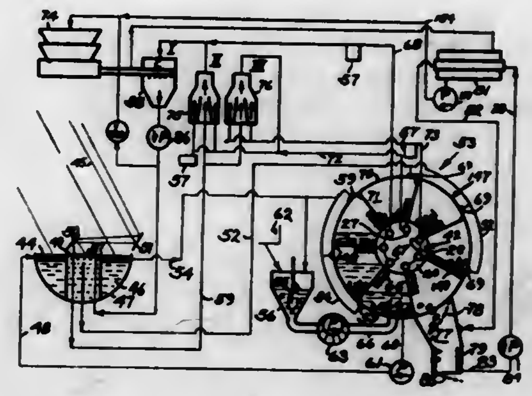
discarding a minor first portion of said heated effluent gas stream and recycling a major second portion of said heated effluent gas stream to said drying zone to provide said recycled drying fluid;

producing a negative pressure in said drying zone along at least a major portion of its length, said negative pressure being below the ambient pressure of the atmosphere surrounding said drying zone; and

transporting said material through said drying zone along its length from an inlet to an outlet during drying and removing said material from said outlet to provide said dried product.

4,127,947
METHOD AND APPARATUS FOR EVAPORATION OF MOISTURE FROM FRUIT AND VEGETABLE PARTICLES

Wells A. Webb, Buckskin Mountain, Star Rte., Box 23, Orovada, Nev. 89425, and William R. Webb, Berkeley, Calif., assignors to Wells A. Webb, Winnemucca, Nev.
Division of Ser. No. 544,959, Jan. 29, 1975, Pat. No. 4,006,260. This application Dec. 20, 1976, Ser. No. 752,254
Int. Cl.² F26B *13/30*
U.S. Cl. 34—92 **6 Claims**



1. A system for dehydrating food particles comprising in combination:

a pressure vessel having inlet and outlet means;

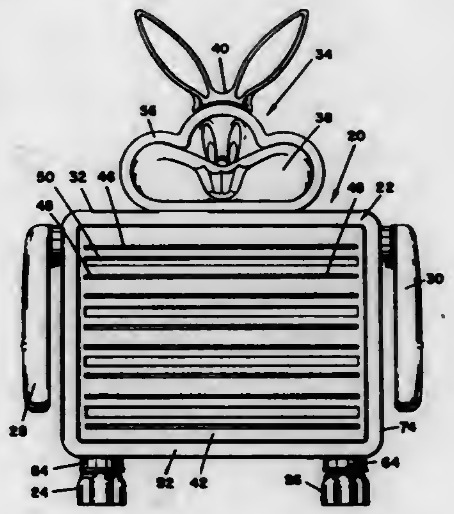
means defining a plurality of movable chambers moving between said inlet and said outlet and for moving particles via said movable chambers to said outlet;

means for selectively and simultaneously evacuating separate chambers in said vessel and thereby simultaneously establishing separate and distinct pressure zones within said vessel; and

means for selectively communicating a liquid heat transfer medium to said separate chambers within said vessel for establishing separate temperature zones within said vessel so that particles transmitted through said vessel from said inlet to said outlet pass through said separate pressure and temperature zones.

4,127,948
PLAY DESK

Manuel Goy Yu Chin, Santa Ana, and Derek J. Gay, Rancho Palos Verdes, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Sep. 12, 1977, Ser. No. 832,416
Int. Cl.² G09B *1/06*
U.S. Cl. 35—60 **19 Claims**



1. In a positionable play desk, the combination comprising:

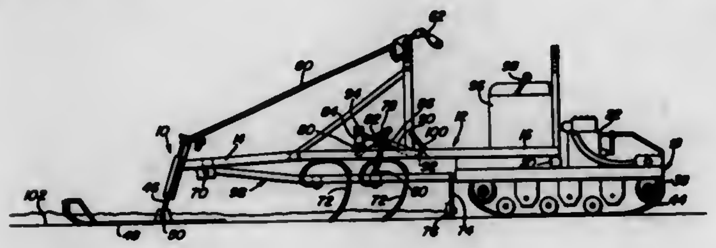
a main body member having first and second play surfaces on opposite sides thereof;

first and second arm members pivotally secured adjacent opposite sides of one edge of said body member;
support members pivotally secured to the edge of said body member opposite said one edge, said support members being positional for supporting said body member in a vertical position on a supporting surface; and
a head member secured to said body member generally centrally with respect to said one edge, said body member, said arm members, said support members and said head member being configured to simulate a character.

4,127,949
SNOWMOBILE TRAIL GROOMER

Gerald Sabrowsky, and Chancy M. Walker, both of Manawa, Wis., assignors to S & W Sales, Inc., Manawa, Wis.

Filed Sep. 9, 1977, Ser. No. 832,106
Int. Cl.^{2} E01C *19/00*
U.S. Cl. 37—13 **6 Claims**



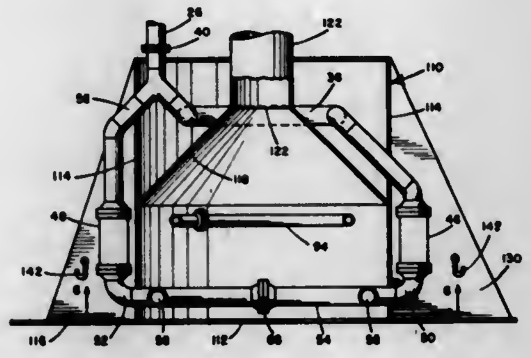
1. A snowmobile trail groomer including an elongated main frame including front and rear end portions, an elongated dual track drive assembly oscillatably supported from said rear end portion of said frame for angular displacement about a first horizontal transverse axis, a front dirigible ski equipped support assembly carried by the front end portion of said frame forward of said endless track drive assembly, an elongated longitudinally extending sub-frame including front and rear portions and supported from said main frame front end portion for angular displacement about a second horizontal axis extending transversely of said main frame and the front end portion of said sub-frame, the rear end portion of said sub-frame being disposed forward of said drive assembly and including transversely spaced depending packed and icy snow cover working tines and an upstanding transverse blade member rearward of said tines and including a generally horizontal lower edge portion, and lift means operatively connected between said sub-frame and main frame for selective angular displacement of said sub-frame about said second axis to raise and lower the rear end portion of said sub-frame, and thus said tines and blade member relative to snow cover over which said trail groomer is being forwardly advanced, said endless drive track assembly including a prime mover drivingly connected to the dual tracks of said track assembly and supported from the latter for oscillation therewith relative to said main frame, said lift means including means establishing a lost motion connection between said main frame and said sub-frame, whereby the downward limit of swinging movement of the rear end portion of said sub-frame may be adjustably varied and the rear end of said sub-frame may swing upwardly independent of said lift means.

4,127,950
BOTTOM JETTING DEVICE

William S. Tillinghast, Humble, and William R. Rochelle, Houston, both of Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed Jun. 2, 1977, Ser. No. 802,819
Int. Cl.^{2} E02F *3/88*
U.S. Cl. 37—62 **10 Claims**

1. An apparatus for jetting and removing material from a submerged surface, said apparatus comprising:
housing means having
  a generally upright axis when said apparatus is disposed in a submerged location to effect material jetting and removing in relation to a submerged surface,
  a generally downwardly facing, material-receiving opening means extending generally transversely of said upright axis,
  said housing means being operable to be supported by means extending downwardly from floating vessel means through a body of water, with said material-receiving opening means being disposed above a submerged surface to be jetted and operable to receive material jetted free of said surface;
liquid transmitting manifold means connected with said housing means and including
  a plurality of at least partially downwardly directed jetting nozzles operable to direct material-removing jets of liquid against said submerged surface and remove material therefrom, and
  a plurality of at least partially upwardly directed material impelling nozzles operable to impel material removed from said submerged surface by said jetting nozzles upwardly into the interior of said housing means;
gas transmitting manifold means including
  a plurality of gas outlets operable to direct pressurized gas into the interior of said housing means and provide a gas lift effect acting on said material removed from said submerged surface by said jetting nozzles and tending to induce upward passage of said removed material through said housing means;

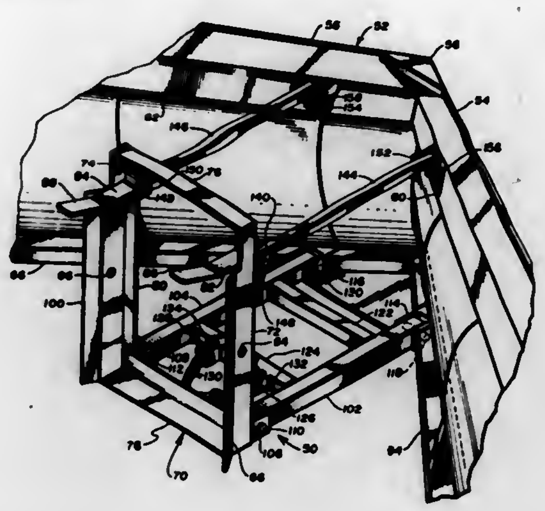


removed material discharging means connected with an upper portion of said housing means, said material discharging means being operable to
  receive said removed material from the interior of said housing means, and
  transmit said removed material to the exterior of said housing means; and
liquid jetting intensifying and localizing means including
  liquid-transmitting manifold divider means operable to divide said liquid-transmitting manifold means into a plurality of separate and independently operable jetting and lifting zones, each containing at least some of said jetting nozzles and at least some of said material impelling nozzles, and
  liquid flow control means selectively operable to direct liquid alternately to selective ones of said jetting and lifting zones and direct said liquid to the totality of said jetting and lifting zones;
said liquid-transmitting manifold divider means and said liquid flow control means being selectively operable, in cooperation, to
  intensify and localize the material removing and impelling effects provided by said jetting nozzles and
  material impelling nozzles of said liquid-transmitting manifold means in the vicinity of a selected one of said jetting and lifting zones,
  or
  provide generally uniform jetting and lifting effects throughout the interior of said housing means.

4,127,951
AUTOMATIC COUPLING MECHANISM FOR SNOW-PLOWS AND THE LIKE

Richard W. Hatch, Rte. #2, Box 31A, Milaca, Minn. 56353

Filed Jun. 30, 1977, Ser. No. 811,591
Int. Cl.^{2} E01H *5/04*
U.S. Cl. 37—44 **8 Claims**



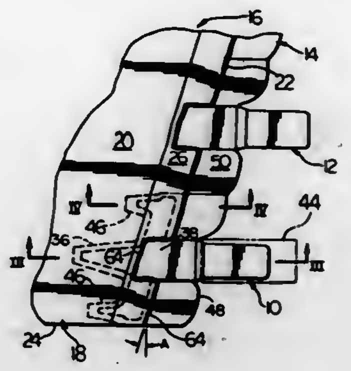
1. An automatic coupling mechanism for snow-plow comprising:
(a) first frame means attachable to a propelling vehicle for cooperating with a plow frame structure of such a snow-plow for movement of the plow along the road;
(b) second frame means constructed and arranged to be connected to such a plow frame structure for lockably connecting with said first frame means;
(c) guide means attached to one of said frame means for guiding said first frame means into lockable relative position with said second frame means;
(d) automatic securing means carried by one of said frame means for locking said first and second frame means to one another when in such position and constructed and arranged to prevent relative horizontal and vertical motion between said first and second frame means when so connected;
(e) free-floating parallelogram pivotal support means carried by said second frame means and constructed and arranged to be pivotally connected in supporting relation between said second frame means and the plow frame structure for supporting such plow and allowing free relative vertical movement thereof with respect to said first and second frame means, and for cooperatively controlling orientation of such a plow relative to said second frame means; and
(f) power lift means connected with one of said frame means and engageable with said support means.

4,127,952
REPLACEABLE ADAPTER FOR AN EARTHWORKING TOOL

Richard W. Chamberlain, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 20, 1977, Ser. No. 807,944
Int. Cl.^{2} E02F *9/28*
U.S. Cl. 37—141 R **8 Claims**

1. A replaceable adapter (10), for an earthworking tool (16) having a normal working direction of travel and including a floor (18) having a bottom surface (28), a leading edge (22), a top surface (20), and an upwardly facing inclined front surface (26) between the top surface (20) and the leading edge (22), comprising:
a bifurcated body portion (30) having a rearwardly extending upper arm (38), a rearwardly extending lower arm (36), and a forwardly extending nose portion (42); and
a wing portion (32) having a rearwardly extending lower arm (46), forwardly extending cutting edge (48), and an upwardly facing inclined front surface (50), said wing portion (32) being integrally connected to said body portion (30), said adapter (10) being connected to said tool (16) such that said body portion (30) is engaged against said bottom surface (28) and said inclined front surface (26) of said floor (18), said body and wing portions (30,32)

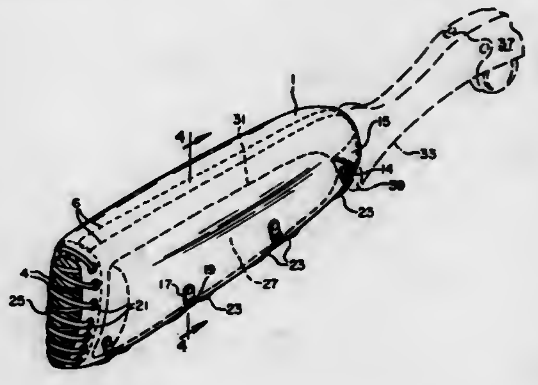


are disposed substantially below said top surface (20) of said floor (18), said lower arms (36,46) of said body and wing portions (30,32) are secured against said bottom surface (28) of said floor (18) at laterally offset locations, and said inclined front surfaces (26,50) are arranged in substantially coplanar relation.

4,127,953
ANTI-RECOIL BOOT

Willis M. McBride, Elsie Rt., Box 430, Seaside, Oreg. 97138

Filed Aug. 11, 1977, Ser. No. 823,593
Int. Cl.^{2} F41C *27/00*
U.S. Cl. 42—1 W **9 Claims**



1. An anti-recoil boot for a firearm comprising:
a first outer shell;
a second inner shell connected to the outer shell to form a pocket;
and a metal recoil reducing weight of relatively substantial mass within the pocket.

4,127,954
EXTENDED CAPACITY CARTRIDGE MAGAZINE STRUCTURE

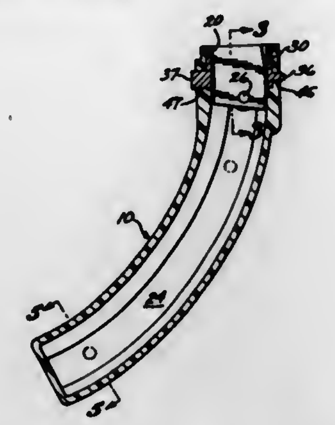
Erich Hausmann, 1025 S. Westlake, Los Angeles, Calif. 90006

Filed Apr. 7, 1977, Ser. No. 785,330
Int. Cl.^{2} F41C *25/02*
U.S. Cl. 42—50 **8 Claims**

1. In a cartridge magazine adapted for use with a firearm having a bolt mechanism, said cartridge magazine including a dispensing opening conformed to cooperate with said bolt mechanism, the improvement comprising:
a. housing including a first and second opposingly mating structures secured to surround said dispensing opening at one end thereof;
a follower disposed between said first and second mating structures for sliding articulation therebetween;
a spirally wound spring attached to a first lateral side of said

follower at one end thereof and to said first mating structure proximate said dispensing opening at the other end thereof;

a first longitudinal recess formed within said first mating structure for receiving said spring therein in coiling translation within said housing;



a second longitudinal recess formed in said second mating structure in substantially opposing relationship with said first longitudinal recess; and

a guide projection extending from the other lateral surface of said follower for sliding translation within said second longitudinal recess.

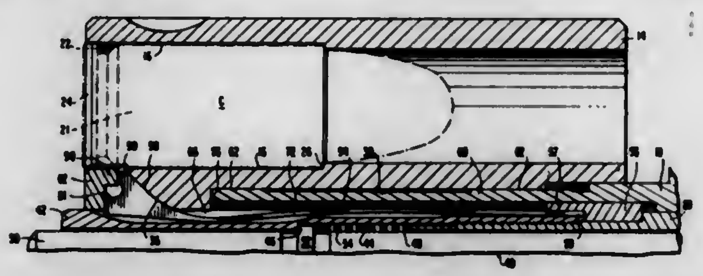
4,127,955
EXTRACTOR ASSEMBLY FOR RIMLESS CARTRIDGES

Roger J. Curran, Stratford, Conn., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed May 18, 1977, Ser. No. 798,051

Int. Cl.² F41C ***15/00, 1/00***

U.S. Cl. 42—68 **22 Claims**



1. A cartridge casing extractor assembly for use in a revolver having an annular array of cartridge receiving chambers in its cylinder comprising:

an extractor rod carried concentrically within the cylinder for axial reciprocating movement relative thereto between first and second axial positions,

a plurality of circumferentially spaced extractor segments carried by said extractor rod for reciprocating movement therewith and lying in substantial radial alignment with the respective cylinder chambers, each said extractor segment having an extractor tip movable in a radially outward direction for engagement with the rim of a cartridge casing disposed in the radially aligned chamber,

means carried by said assembly for biasing each said extractor tip for movement in said radially outward direction,

means for preventing radial outward movement of said extractor tips when said extractor rod lies in said first position and enabling radial outward movement of said extractor tips to engage the cartridge casings and extract them from the cylinder chambers in response to axial movement of said rod from said first position toward said second position, and

means carried by said rod for limiting the extent of radial outward movement of said extractor tips.

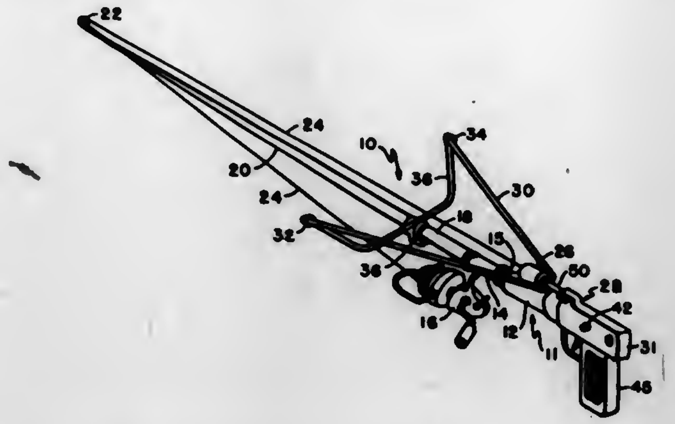
4,127,956
TARGET CASTING APPARATUS

Douglas J. Hertkorn, Key Largo, Fla., assignor to Robert J. McNair, Jr., Cincinnati, Ohio

Filed Aug. 25, 1977, Ser. No. 827,552

Int. Cl.² A01K ***91/02***

U.S. Cl. 43—19 **9 Claims**



1. Fishing apparatus for casting a baited hook into a target area, comprising:

a fishing rod consisting of, in combination, a hand grip having a butt end, the other end of the hand grip being joined to one end of a reel seat, said reel seat having provisions for affixing thereto a fishing line reel assembly, the second end of the reel seat continuing as a fore-grip section whose second end joins with a flexible rod section, the outermost end of said flexible rod section being terminated by a line guide;

a reel secured to the reel seat of said fishing rod, said reel containing a supply of fishing line, one end of said fishing line being attached to said reel, the other end of said line passing through said line guide and terminating at a baited hook;

a triggering mechanism having at its front end an open ended cylindrical barrel sized to accept the butt of the hand grip section of said fishing rod, said triggering mechanism including a longitudinal slot opening toward the front, said slot having a depressible catch mounted at a cross-axis position therein;

an elastic member having its ends secured by structural support means to the fore-grip section of said fishing rod; and

a bait cup having an open top and a closed bottom, the bottom of said bait cup being secured to the center of said elastic member by one end of a short shaft extending axially outward from the bottom of said bait cup, the second end of said shaft having a cross-axis aperture therethrough, said aperture being penetrable by the catch of said triggering mechanism when the shaft containing said aperture is inserted in the open end of said triggering mechanism slot on the stretching of said elastic member, whereby subsequent depressing of the catch on said triggering mechanism releases the bait cup allowing the elastic member to propel the baited hook with line attached from its repository in the bait cup toward a selected target.

4,127,957
FISHHOOK EXTRACTOR

Thomas E. Bourquin, deceased, late of Savannah, Ga., and by Maggie B. Sanders, executrix, 2806 Clairborne Rd., Huntsville, Ala. 35810

Filed Oct. 3, 1977, Ser. No. 838,587

Int. Cl.² A01K ***97/00***

U.S. Cl. 43—53.5 **2 Claims**

1. The method of removing a fish from a fishhook by an extractor wherein:

the extractor comprises:

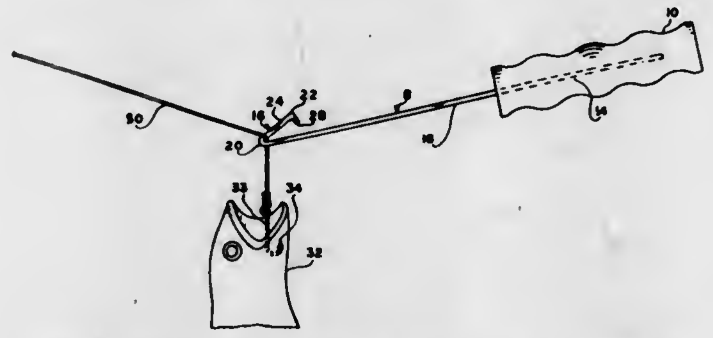
a handle,

a rod of ⅛ to ¼ inch in thickness having a straight portion

extending from said handle and a hook-shaped end region generally lying in a plane with said straight portion, said hook-shaped end region formed by first and second spaced bends in said rod and wherein:

said first bend forming said straight portion an acute angle, and said second bend spaced along said rod ⅜ to 1 ⅜ inches from said first bend, and said second bend turning at an angle of approximately 90° in the same direction as said first bend, and

an extreme end region of said rod extending from said second bend toward and within ⅛ to ¼ inch of said straight portion of said rod, and the inward side of the hook — shaped region provided by said extreme end region of said rod being turned slightly inward, at least at its end, whereby a fishing line under tension are sliding against the inner side of the rod between bends would be blocked from exit from the hook — shaped region, but a loose line may be freely removed from said hook — shaped region,



by the steps comprising:

grasping said handle in one hand and said fishing line in the other hand and moving said hook — shaped region into the mouth of the fish and around the fishhook and moving the hands apart, causing the fish to be suspended by the fishing line and extractor, and

then moving the hands in generally parallel planes in a circular motion about a generally horizontal axis, said circular motion being in a direction, whereby the hook member is rotated upward, inside, between said axis and the body of the operator, over said axis, and downward on the outside of the axis, whereby a hooked fish is rotated in the same direction of rotation, and when near the bottom of the arc of rotation, the fishhook and fish separate by virtue of the described motion and weight of the fish.

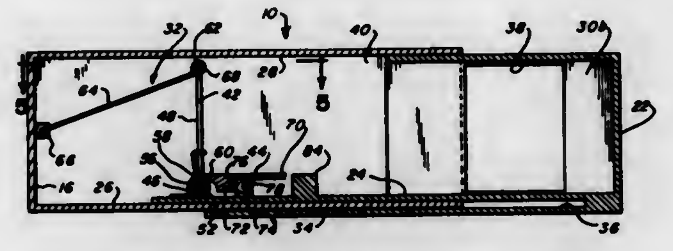
4,127,958
MOUSE TRAP

John Peters, P. O. Box 548, and Edward E. Thompson, P. O. Box 134, both of Norwood, Colo. 81423

Filed Jul. 8, 1977, Ser. No. 813,804

Int. Cl.² A01M ***23/20***

U.S. Cl. 43—81 **10 Claims**



1. A mouse trap device comprising in combination:

first housing means having an open end therein,

second housing means slidably connected to said first housing means and movable between open and closed positions,

passage means providing access to the interior of at least one of said first and second housing means when said second housing means is in its open position, said first and second housing means cooperating to block said passage when said second housing means is in its closed position, and

releasable spring biased means in one of said housing means operable upon release to deliver a striking blow to a mouse, said spring biased means being operably connected to at least one of said housing means to move said second housing means to its closed position when said spring biased means is released.

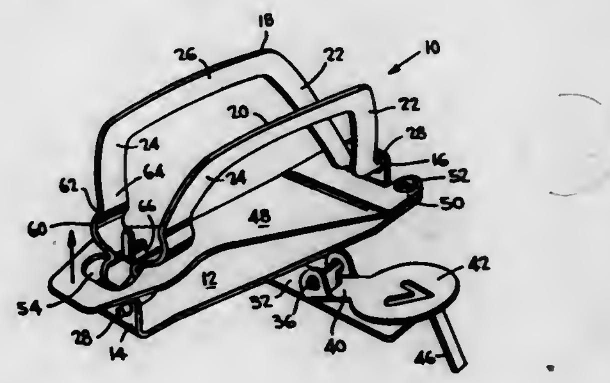
4,127,959
LOW IMPACT ANIMAL TRAP

Herbert H. Loeffler, Cambridge, Mass., assignor to Woodstream Corporation, Lititz, Pa.

Division of Ser. No. 660,387, Feb. 23, 1976, Pat. No. 4,065,871. This application Jul. 13, 1977, Ser. No. 815,451

Int. Cl.² A01M ***23/24***

U.S. Cl. 43—88 **3 Claims**



1. In an animal trap of the leghold type having a base, a pair of U-shaped coacting jaws swingably mounted on said base, spring means biasing said jaws to a closed position, and trigger means for locking said jaws in an open position until released, the improvement comprising means for reducing the impact of said jaws when they close without significantly reducing the closing speed or holding power, said base being elongated and having upstanding first and second ears at the ends thereof; said jaws each comprising a pair of substantially parallel spaced legs and a cross member, said legs terminating in laterally outwardly directed pintles journalled through bores in said ears; said spring means being a leaf spring and comprising an eye at one end thereof, said eye encircling one leg of each jaw so that when said jaws are in the open position and said spring is released the eye thereof rides up said one leg of each jaw to thereby close said jaws, said impact reducing means comprising escapement means, said escapement means comprising said one leg of each jaw being offset inwardly toward the other at one portion thereof, and a cross-bar through said eye of said spring and passing between said one leg of said jaws, whereby when said trigger is released said spring moves along said one leg to close said jaws, when said spring reaches the offset portion of said legs, the direction of travel of said legs is momentarily reversed, and when said spring passes said offset portion of said legs said jaws resume their original direction of travel to thereby close with reduced impact.

4,127,960
TRIGGER FOR ROTATING FRAME TRAPS

Frank Conibear, Victoria, Canada, assignor to Woodstream Corporation, Lititz, Pa.

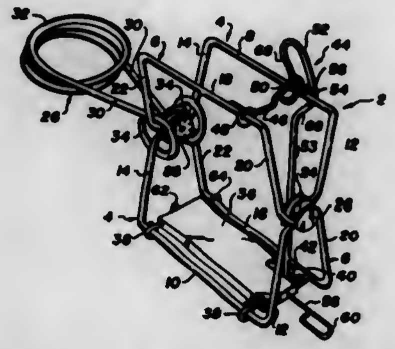
Filed Jan. 31, 1977, Ser. No. 764,271

Claims priority, application Canada, Dec. 7, 1976, 267335

Int. Cl.² A01M ***23/26***

U.S. Cl. 43—92 **19 Claims**

1. An animal trap having first and second similar frames each frame having first and second jaw forming sides that lie in a common plane and ends extending therebetween to support said jaw forming sides, said ends having a central portion in which the frames are pivotally connected through adjacent



ends for rotation about a common axis between set and closed positions and outer portions on each side of the central portion extending to said jaws, at least one actuator, capable of rapidly and forcefully effecting such rotation, which has two arms spring-biased at one end so that the other ends, which terminate in rings encircling adjacent ends of both frames on opposite sides of said axis, would,, if unobstructed, move apart to a distance substantially greater than the length of said frame ends, and a trigger means for releasably maintaining the trap in set position, said trigger means comprising a pivotally mounted treadle extending between the second jaw forming side of the first frame and the first jaw forming side of the second frame; engagement means on the treadle; a lever means connected by a pivotal link to the second jaw forming side of the second frame and extending, when the trap is in the set position from said pivotal link over and around the first jaw forming side of the first frame and terminating in a free end in engagement with said engagement means, said lever means in the set position of the trap preventing the second jaw forming side of the second frame and the first jaw forming side of the first frame from moving apart under the influence of said actuator and the treadle in the set position being pivotally movable to release said free end of said lever means from said engagement means to release the trap from the set position.

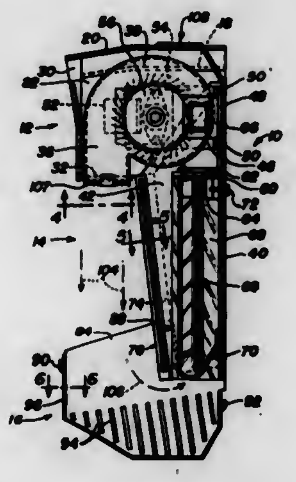
4,127,961
APPARATUS FOR ENTRAPPING INSECTS

Dennis G. Phillips, Lititz, Pa., assignor to Pestolite Inc., Lancaster, Pa.

Filed Mar. 29, 1976, Ser. No. 671,367

Int. Cl.² A01M *1/08*

U.S. Cl. 43—139 12 Claims



8. An apparatus for entrapping insects comprising a housing having upper and lower sections, air blower means in said upper section having a discharge portion for providing a direct, non-turbulent air curtain between said upper and lower sections, an ultraviolet light source disposed between said upper and lower sections and rearwardly of said air curtain to attract said insects toward said air curtain, collecting means directly below said discharge portion and defining an open chamber, and cannister means having a tacky surface and including means for attaching said cannister means to said collecting means for enclosing said open chamber and providing an enclosed terminus for said air curtain to receive and trap said insects therein.

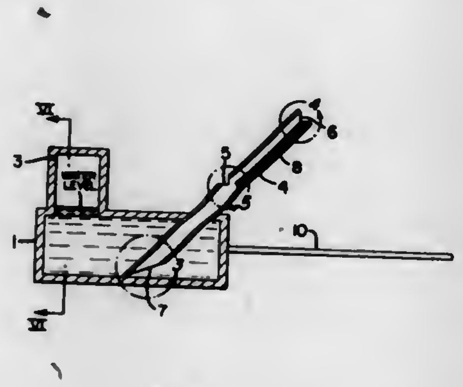
4,127,962
WHISTLE HAVING ANGULARLY JOINED CYLINDRICAL CHAMBERS

Rurico Arzola, Calle San Martin, No. 69-Urb. Villa Sol, Mayaguez, P.R. 00708

Continuation-in-part of Ser. No. 600,503, Jul. 31, 1975. This application Apr. 7, 1977, Ser. No. 785,524

Int. Cl.² G10K *5/00*

U.S. Cl. 46—179 16 Claims



1. A musical whistle comprising resonant chamber means for controlling resonances of air introduced into said chamber means,

wherein said resonant chamber means includes a first elongated cylindrical chamber, said first chamber having a cylindrical wall being closed at opposite ends, and a truncated cylindrical chamber mounted in communication with said first chamber through a part of said cylindrical wall, said truncated chamber having a small aperture communicating the interior with the exterior; and

means for introducing air pulses into said resonant chamber means to produce mimicking sounds of birds,

wherein said means for introducing air pulses includes an elongated tubular member extending through said cylindrical wall of said first chamber to near an opposite interior cylindrical wall of said first chamber, said tubular member being open at respective ends, and including an intermediate aperture exterior to said first chamber, and said tubular member including an elongated member extending within said tubular member from the exterior open end to said intermediate aperture.

4,127,963
TOY DRAWING DOLL

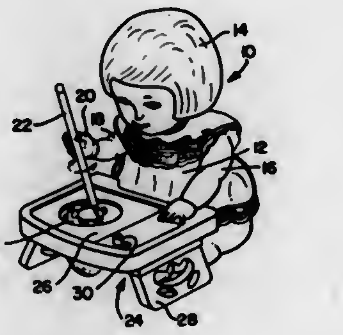
Hisashi Shiraishi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Nov. 18, 1976, Ser. No. 742,880

Claims priority, application Japan, Apr. 16, 1976, 51-48556[U]

Int. Cl.² A63H *33/24*

U.S. Cl. 46—265 15 Claims



1. A toy drawing doll, comprising:

a doll having a torso, a first arm movably mounted to said torso for holding a drawing instrument, and a second arm mounted to said torso;

a platform having a rotatably mounted plate thereon for holding a medium to be drawn on;

a motor within said torso hidden from view;

means operatively connecting said first arm and said motor to move said first arm with respect to said torso such that the drawing instrument to be held by said first arm moves in relationship to said plate of said platform; and means operatively connecting said motor and said plate through said second arm so as to be hidden from view for rotating said plate and the drawing medium to be carried thereby, such that the design imparted by the drawing instrument to be carried by said first arm on the medium to be carried by said plate is the result of both the movement of said first arm and the movement of said plate.

4,127,964
MUSHROOM COMPOSTING

Henry M. Mee, Castro Valley, Calif., assignor to The Kinoko Company, Oakland, Calif.

Filed Nov. 8, 1976, Ser. No. 739,392

Int. Cl.² A01G *1/04*

U.S. Cl. 47—1.1 5 Claims

1. A method for growing mushrooms requiring a casing which comprises preparing a growth medium bed comprising pasteurized mixture of a cold manure and a naturally occurring colloidal particle having a significant amount of humic acid, and prepared by combining about 1 part by weight of said cold manure with from about 0.5 to 1 part by weight of said naturally occurring collodial particle matter and from about 50 to 70 weight percent based on the dry mixture of water and pasteurizing said mixture at a temperature from about 35° to 120° C for a period of from about 0.5 to 4 hrs;

inoculating said bed with spawn;

incubating said inoculated mixture for up to three weeks at a temperature of about 20° to 25° C;

applying a casing to said composting bed; and

maintaining said case mixture at a temperature of about 18° +/−2° C to produce fruiting bodies.

4,127,965
METHOD FOR GROWING WOOD MUSHROOMS

Henry M. Mee, Castro Valley, Calif., assignor to The Kinoko Company, Oakland, Calif.

Filed Nov. 8, 1976, Ser. No. 739,393

Int. Cl.² A01G *1/04*

U.S. Cl. 47—1.1 21 Claims

1. A method for preparing an article useful for the growth of tree mushrooms which comprises:

preparing a tree mushroom substrate by mixing water in from about one to two parts by weight per part of a dry mixture having a major portion of the particles of a naturally derived cellulosic material and minor portions of starch and protein sources to form a permeable mass;

introducing said substrate into a flexible container, sealing said container and sterilizing said substrate;

while in said container, inoculating said substrate with tree mushroom spawn and incubating said inoculated substrate under substantially asceptic conditions, at least initially while in a form for a time sufficient to allow substantial permeation of the mycelial from said spawn throughout said substrate to provide a formed article; and

removing said container from said form to provide a formed article capable of producing fruiting bodies.

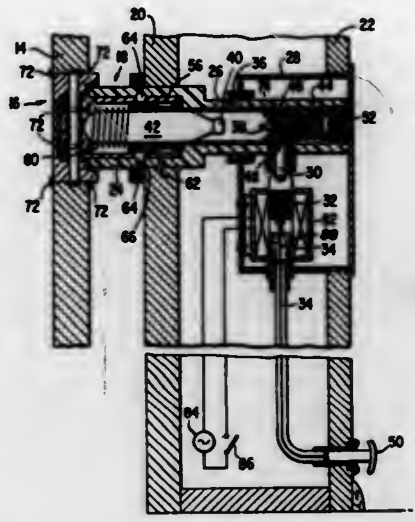
4,127,966
LOCKING AND EMERGENCY RELEASE SYSTEM FOR BARRED WINDOWS

Oscar W. Schmidt, Hesperia, Calif., assignor to New Pneumatics, Inc., Greeley, Colo.

Filed Aug. 22, 1977, Ser. No. 826,535

Int. Cl.² E06B *9/02*

U.S. Cl. 49—141 6 Claims



1. A locking and emergency release system for barred windows or doors comprising:

a movable burglar-proof barrier for a window or door;

positive and rigid mechanical latching means for normally locking said barrier into its closed position across a window or door in a building;

said latching means including movable piston means located in a cylinder, constituting first and second telescoping mechanically interlocking means secured to the barrier and the building;

a cannister of pressurized gas mounted in said cylinder;

actuating means, including cannister piercing means for releasing said gas, and for unlocking said positive mechanical latching means and moving said barrier away from said window or door with said gas applying opening force to said barrier, to permit egress from said building;

said actuating means including a plunger telescopically enclosed within said cylinder;

spring means for supplying actuating force to said actuating plunger;

detent means for restraining said plunger against movement; and

manual or electrical means for releasing said detent means to thereby release said actuating means to unlock said latching means, pierce said cannister of gas and apply opening force to said barrier.

4,127,967
BURGLAR-RESISTANT DOOR ASSEMBLY

Gertrude K. Franzl, 105-25 65th Ave., Forest Hills, New York, N.Y. 11375

Filed Oct. 6, 1976, Ser. No. 730,132

Int. Cl.² E06B *7/28*

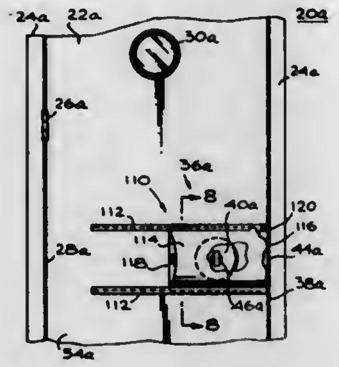
U.S. Cl. 49—171 4 Claims

1. Improved burglar-resistant door assembly, said assembly comprising, in combination:

a. a door frame;
b. a door hingedly connected to one side of said frame;
c. door latch means connected to the inside surface of said door;
d. a peephole device extending through said door;
e. a protective cover device releasably disposed over said latch means on the inside surface of said door so as to prevent tampering with said latch means from outside said door, said cover device having a top portion, two oppositely disposed sides, one closed end integral with said top

portion, and a completely open end disposed opposite said closed end;

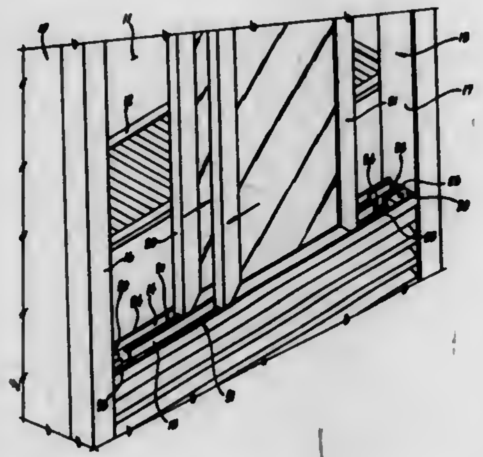
f. wherein said cover device comprises a pair of spaced parallel tracks mounted on said door inner surface on opposite sides of said latch means and running from about the edge of said door containing said latch means to a location past said latch means and away from said door edge, and a cover slideably mounted on said tracks over said latch means, said cover having a closed face overlying said latch means, and a closed end and an opposite open end, the latter end facing toward said door edge and the portion of said door frame adjacent said door edge;



g. wherein said open cover end extends to about said door edge and wherein said track is of sufficient length to permit said cover to be slid therealong away from said door edge to expose said latch means; and

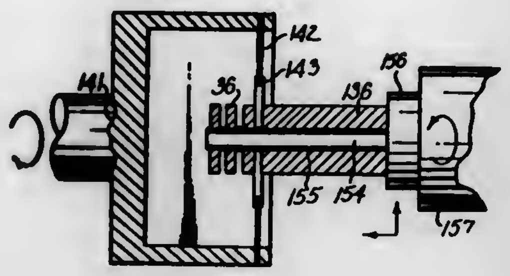
h. wherein said cover device includes a hood adjacent the end of said tracks near said door edge and extending over and around said open cover end to prevent tampering therewith.

4,127,968
DEBRIS-COLLECTING ASSEMBLY FOR SLIDING DOOR TRACK
James A. Trulaske, St. Louis, Mo., assignor to True Manufacturing Co., Inc., O'Fallon, Mo.
Filed Apr. 27, 1978, Ser. No. 900,436
Int. Cl.² E05D *15/06*
U.S. Cl. 49—404 11 Claims



1. A debris-collecting assembly, comprising:
(a) a door frame including an elongate lower channel,
(b) a door slidably mounted in the channel for movement between open and closed positions, and
(c) a top-open pan removably located in the channel, the pan being open at one end to receive debris swept along the channel when the door is in its open position, and to receive the door in its closed position.

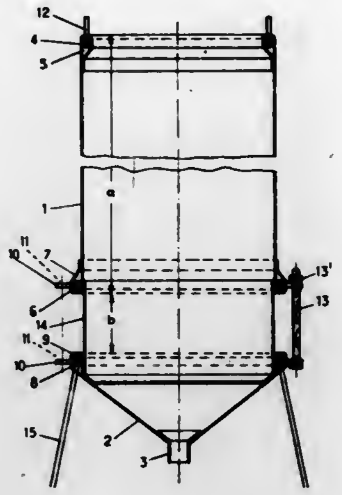
4,127,969
METHOD OF MAKING A SEMICONDUCTOR WAFER
Kinji Hoshi, Sagomichoro, and Kazuhiro Sugita, Yokohama, both of Japan, assignors to Sony Corporation; Tokyo, Japan
Division of Ser. No. 178,732, Sep. 8, 1971, abandoned. This application Dec. 11, 1975, Ser. No. 639,806
Claims priority, application Japan, Sep. 8, 1970, 45-78583; Sep. 8, 1970, 45-96065
Int. Cl.² B24B *1/00;* Feb. 5, 1971, 46-4885
U.S. Cl. 51—283 R 12 Claims

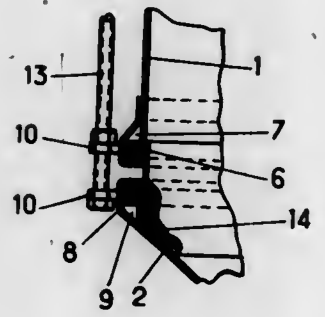


1. The method of making a semi-conductor wafer, said method comprising the steps of:
mounting on a rod a semi-conductor ingot having a longitudinal hole extending at least part way longitudinally through said ingot;
temporarily adherently joining said ingot to said rod to form a unitary structure without slippage between said ingot and said rod;
providing relative rotation between said unitary structure and a cutting edge to slice said ingot through to said hole from all radial directions to form a wafer having smooth surfaces, said wafer still being adherently attached to said rod after both main surfaces of said wafer have been formed by such slicing; and subsequently removing said wafer from said rod.

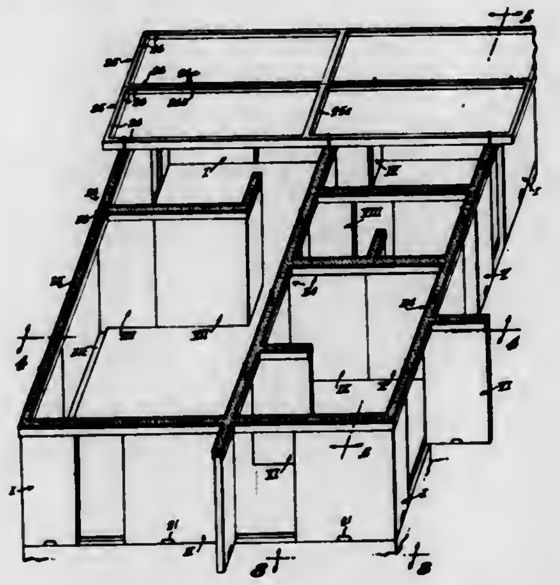
4,127,970
SUSPENDED FLEXIBLE CONTAINER
Wolfgang Reichert, Bietigheim-Bissingen, Fed. Rep. of Germany, assignor to Walter Krause, Waldheim, Fed. Rep. of Germany
Filed Nov. 2, 1976, Ser. No. 738,237
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1975, 2550526
Int. Cl.² E04H *7/24;* E04B *1/12, 1/347*
U.S. Cl. 52—63 9 Claims

1. An arrangement for pretreating suspended flexible containers of the type including an upper tubular part of flexible material and a rigid lower bottom part, comprising: means for suspending said container by an upper edge portion of said upper tubular part; pulling means for pulling a lower edge portion of said upper tubular part in a longitudinal direction towards said lower bottom part, and for subsequently fixedly connecting said lower edge portion of said upper tubular part to said lower bottom part; first means for connecting said pulling means to said upper tubular part, said first means including an upper pocket-shaped member connected to said lower edge portion of said upper tubular part and having openings with substantially horizontal axes, a circumferentially closed upper reinforcing member extending through said upper pocket-shaped members, and projections fixedly connected to said upper reinforcing member and extending through said openings, said projections having upper bores with substantially vertical axes; and second means for connecting said pulling means to said lower bottom part.



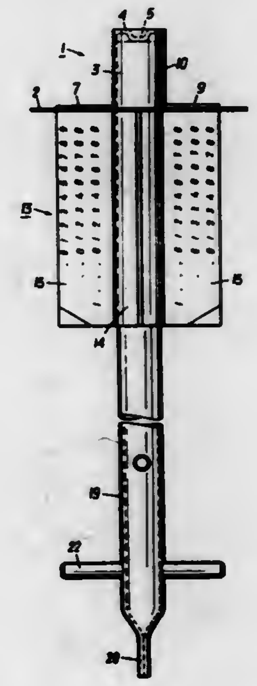


4,127,971
BUILDING CONSTRUCTED OF PRECAST L-SHAPED CONCRETE UNITS
Agustin Rojo, Jr., Paseo del Parque Z-12, Garden Hills, Bayamon, P.R.
Filed May 16, 1977, Ser. No. 797,292
Int. Cl.² E04H *1/12, 9/06*
U.S. Cl. 52—79.11 6 Claims



1. A building comprising a concrete foundation having reinforced footings with L-shaped seats arranged in a predetermined floor plan for positioning roof supporting structural walls, a plurality of concrete L-shaped units, each precast as a vertical freestanding structure formed with right angular wall sections each having a cutout extending as a recess from the bottom edge thereof, one of said L-shaped units being positioned on each of said seats, a first tie rod precast and embedded in each of said wall sections and having a threaded end extending vertically downwardly into each of said cutouts, a second tie rod embedded in said foundation having a threaded end extending vertically above each of said seats into each of said cutouts in predetermined relation to said first tie rods, bracket and tightening means located within said cutout interconnecting said threaded ends of said first and second tie rods as anchoring means securing each unit to the foundation, said L-shaped units being arranged according to said floor plan in groups whereby one of said walls sections of the L-shaped units in each group are aligned in coplanar relation defining one of said roof supporting structural walls, a metal H-beam extending the length of each of said structural walls as an upper coplanar border, the top edges of the wall sections extending into the downfacing channel of said H-beam with the cross-piece resting on said edges, a third embedded tie rod vertically extending from the top of each of said wall sections through said H-beam cross-piece and into the upfacing trough thereof, poured concrete filling the upfacing trough of each of said H-beams forming a composite beam for said building, a plurality of fourth vertical tie rods spaced along said composite beam embedded in said concrete and extending above said H-beam at predetermined spaced intervals, a plurality of roof slabs, each precast as an elongated relatively thin rectangular body having a flat bottom side resting on said composite beams and thickened peripheral borders projecting above the top side thereof and having interior sides, said roof slabs being located in longitudinal side-by-side relation with said fourth tie rods extending between said peripheral borders of adjacent roof slabs, elongated strips extending along each pair of adjacent peripheral borders and having a cross-sectional contour to fit against the two adjacent borders and the interior sides thereof, said fourth tie rods having threaded ends extending through openings formed in said elongated strips and being engaged by nuts tightening against the strips anchoring said roof slabs to said composite beams.

4,127,972
MEANS FOR MARKING OF POINTS WITHIN THE TERRAIN
Fritz Reimoser, Klammstrasse 21, Weiz, Austria (8160)
Filed Feb. 17, 1977, Ser. No. 769,751
Claims priority, application Austria, Feb. 17, 1976, 1097/76
Int. Cl.² E01F *9/02;* G01C *15/02*
U.S. Cl. 52—103 11 Claims

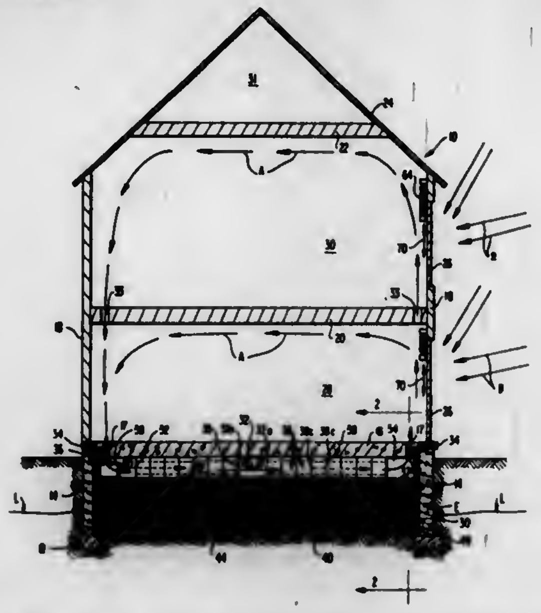


1. A marking device for permanently indicating ground locations as for identifying surveying points, paths and the like, said device comprising a marking element and an anchoring element, said marking element including a first component and a second component, said first component having a disc-like

flange and said second component having a central tubular hug and a plurality of circumferentially spaced flaps extending radially outwardly from said hub, said disc-like flange positioned above and supported by upper edges of said flaps such that said first and second components of said marking element are longitudinally positioned with respect to each other and said flaps longitudinally extend in a direction normal to the plane of said flange, said disc and said flaps presenting planar surface portions having identifying indicia permanently formed thereon whereby particular indicia may be permanently delineated on said surface portions such that extensive information concerning the ground location so marked may be conveyed to an observer of said device, and means for fixing the relative longitudinal and rotational position of said flange with respect to said flaps such that the information permanently delineated on said planar surface portions of said disc and said flaps may be interrelated, said anchoring element having a generally tubular body over which each of said components is adapted to be disposed with upper portions of the tubular body of said anchoring element disposed within said central tubular hub of said second component such that said marking element is supported by said anchoring element such that said device when said anchoring element is positioned in the ground may identify surveying points and the like.

4,127,973
SOLAR-HEATED CONCRETE SLAB BUILDING STRUCTURE

James Kachadorian, Royalton, Vt. 05068
Continuation of Ser. No. 782,811, Mar. 30, 1977, Pat. No. 4,089,142. This application Feb. 28, 1978, Ser. No. 881,942
The portion of the term of this patent subsequent to May 16, 1995, has been disclaimed.
Int. Cl.² E02D *27/32;* F24H *7/00*
U.S. Cl. 52—169.11 1 Claim



1. In a building structure comprising a building structure foundation supporting a building enclosure mounted thereon, said building enclosure comprising laterally spaced, opposed sidewalls, the improvement comprising:

a concrete slab underlying said building structure, being within said foundation, forming at least a portion of the ground floor of said building structure and being interposed between said building enclosure and the ground,

thermal insulation surrounding the periphery of said concrete slab and extending from the surface of the ground to a level below the ground frost line,

an array of hollow cinder blocks, said cinder blocks underlying said concrete slab, and being in situ with said slab,

a layer of gravel interposed between said cinder blocks and the ground and extending below the frost line such that the gravel forms in addition to the concrete slab and cinder blocks a portion of a composite three-layer heat sink,

said array of hollow cinder blocks comprising generally parallel rows of end-to-end abutting generally axially aligned hollow cinder blocks, forming multiple horizontal air flow paths through said cinder blocks directly beneath said concrete slab, said cinder blocks extending substantially the full lateral extent of said concrete slab, with said multiple horizontal air flow paths extending transversely of said sidewalls,

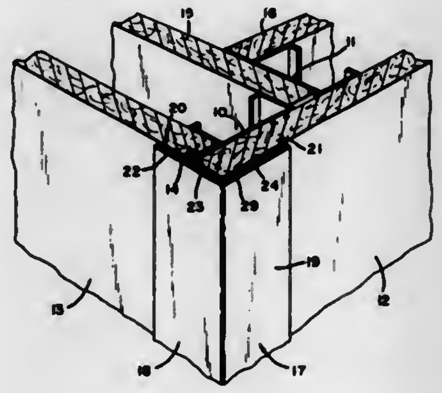
one of said opposed sidewalls having windows extending over substantial area thereof,

means defining air passages extending longitudinally along both ends of said array of cinder blocks and being open to the air flow paths through said cinder blocks,

vertical air flow paths extending through said concrete slab from said building enclosure interior to said air passages, one of said vertical air flow paths being adjacent to the interior of said one sidewall and the other of said vertical air flow paths opening to the building enclosure at a point remote from said one sidewall, said one sidewall facing major solar radiation, such that direct solar radiation through the windows of said one sidewall into said building enclosure interior and onto said slab causes a natural thermal siphonic air circulation loop through said building enclosure interior, said vertical air flow paths within said solar slab and said horizontal air flow paths through said cinder blocks as a result of air temperature differential set up within said building enclosure with said concrete slab, said cinder blocks and said gravel constituting a low thermal impedance heat sink for reception and release of heat transmitted to the building by conduction from the ground through the cinder blocks, by direct solar radiation of the concrete slab and by convection of air passing over the concrete slab with said heat sink effectively storing heat during solar radiation of said building structure but remaining at a temperature less than that of said building enclosure interior.

4,127,974
OUTSIDE CORNER TRIM FOR BUILDING

Alan C. Wendt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.
Filed May 5, 1977, Ser. No. 794,194
Int. Cl.² E04C *2/38*
U.S. Cl. 52—288 1 Claim

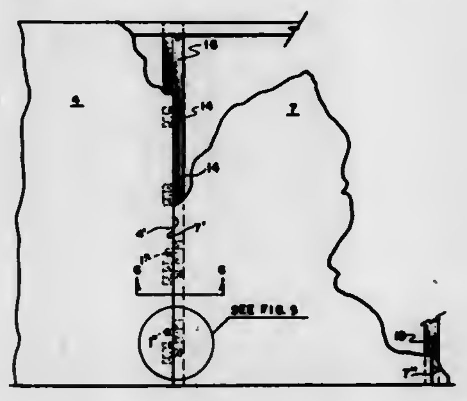


1. An outside corner trim piece of integral one piece construction, said piece comprising an extrusion and is extruded from a plastic material such as rigid vinyl and having a pair of flanges of substantially equal length disposed substantially at right angles to each other, a bulb edge on each said flange defining the depth of at least one pocket on the inner side of each flange, a flange projecting inwardly at substantially right angles from one of said first-named flanges, and a pointed barb on the free end of the inwardly projecting flange having sharp shoulders projecting up on opposite sides of the last-named flange said pointed barb of said inwardly projecting flange entering an opening betweeen an edge of a wall member and an adjacent inside face of an adjacent wall member at an outside building corner and said sharp shoulders holding the barb

against withdrawal to retain the corner trim piece in position, and wherein said corner trim piece includes mastic cement in said pockets adhering said corner trim piece to the supporting outside building corner surface.

4,127,975
CONCEALED FASTENERS FOR WALL PANELS

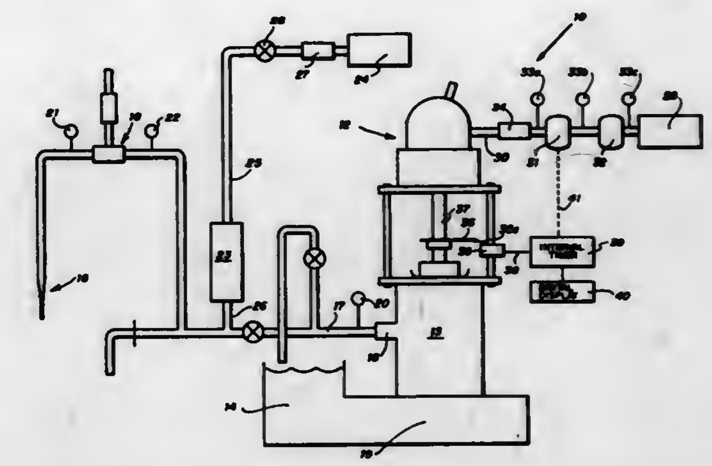
Thomas Judkins, 116 W. University Pkwy., Baltimore, Md. 21210
Continuation of Ser. No. 705,517, Jul. 15, 1976, abandoned. This application Aug. 26, 1977, Ser. No. 828,097
Int. Cl.² E04B *5/52*
U.S. Cl. 52—489 2 Claims



1. A modular wall construction comprising in combination, at least first and second parallel mounted panel boards, an associated wall supporting stud extending along the line of jointure between the panel boards and a plurality of fasteners for mounting each of said panel boards to said wall support stud, each said fastener comprising a continuous main base portion having a width equal to the width of the fastener, an extension portion extending outwardly from a central portion of the base portion in substantially the same plane therewith, said extension portion having an aperture therethrough adapted to attach the fastener to a said stud and including an end part which extends outwardly therefrom and which is bent away from the plane thereof so as to assist in guiding the fastener into place, at least one vertical wall section extending upwardly from said base portion and including at least one pointed panel engaging element located in a place parallel to and spaced from the said base portion, at least one integrally formed spacer element formed at least partially in the base portion of the fastener at a central location therein and extending outwardly from the plane of the base portion on the opposite side of the base portion from the pointed panel engaging element and being of such a depth as to provide a space between the panel board and the stud, said plurality of fasteners comprising at least two said fasteners each of which is secured to said first panel board by the said pointed panel engaging element thereof and is attached to said stud by securing means extending through the aperture in said extension portion of said main base portion and at least one further said fastener secured to the second panel board by the pointed panel engaging element thereof with the extension portion of the main base portion thereof being unconnected to said stud and being received in the space between the first panel board and the stud, provided by the spacer elements of said two fasteners secured to said first panel board, so as to constitute the tongue of a tongue and groove arrngement.

4,127,976
METHOD AND APPARATUS FOR MAKING DUAL COMPARTMENT CONTAINERS

Charles E. Jablonski, and John W. Kreiger, both of Bethlehem, Pa., assignors to Atlas Powder Company, Dallas, Tex.
Filed Aug. 24, 1977, Ser. No. 827,154
Int. Cl.² B65B *9/12, 57/14*
U.S. Cl. 53—450 2 Claims



1. In an apparatus for making a dual compartmented container and loading a high viscosity fluid which is subject to fluctuations in viscosity in one compartment and a second fluid in the second compartment, the apparatus comprising:

means for directing a continuous web of pliable material having first and second longitudinal edges to a forming anvil,

means for folding the first edge of said web onto the remainder of said web to form a two-ply side portion,

means for forming said web into a continuous tube with the overlying flap of the two-ply portion facing outwardly and with the second edge of said web overlying the side portion,

means for attaching the first edge of said web to the web adjacent therebelow forming a first compartment and for attaching the second edge of said web to the outer layer of the two-ply margin along a second seam to form a dual compartmented tube from said web,

an air driven pump for pumping a high viscosity fluid from a storage location into said second compartment,

an air supply communicating with said pump to drive said pump,

a timer for measuring the cycle speed of said pump,

means for varying the pressure from said air supply to said pump in response to changes in cycle speed occasioned by fluctuations in viscosity of said high viscosity fluid to thereby maintain a constant output of said high viscosity fluid,

means for loading a second fluid into said first compartment, and

means for gathering and sealing the compartments at spaced lengths along the longitudinal lengths thereof.

4,127,977
CARTON HANDLING AND ERECTING MACHINE

Herbert F. Roehn, Prospect Heights, Ill., assignor to SMW Packaging Corporation, Prospect Heights, Ill.
Filed Oct. 11, 1977, Ser. No. 840,720
Int. Cl.² B65B *43/32*
U.S. Cl. 53—565 14 Claims

12. A packaging machine for packaging articles into cartons said cartons having walls and flaps, said walls being joined along first intervening fold lines and pairs of said flaps being joined to opposed ends of said walls along second intervening fold lines, said cartons being folded about said first and second intervening fold lines to an initially flat condition,

said improved machine comprising, in combination:

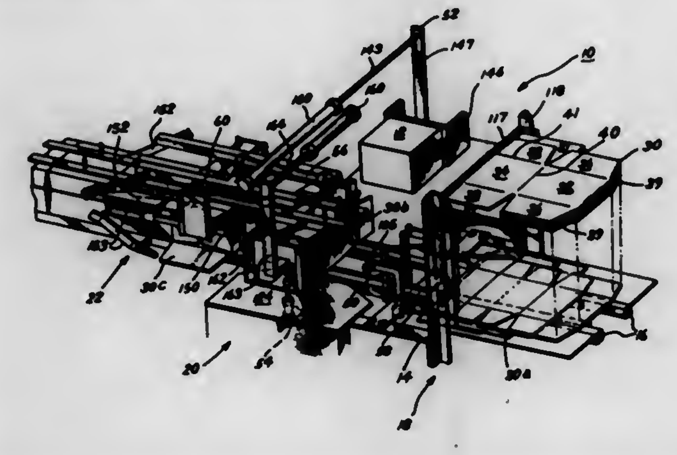
a frame having ways defining an axis and an axial path for movement of said cartons with stations therealong, said stations including a carton storage station, a carton erecting-loading station forward of said storage station, and a flap folding station forward of said carton erecting-loading station;

an intermittently actuable and axially reciprocating carton advancing-erecting mechanism mounted on said frame, said mechanism reciprocating through a forward stroke and a return stroke, said mechanism including

carton pick-up means operable on said forward stroke for individually moving said cartons in said initially flat condition along said path of movement from said carton storage station to said carton erecting-loading station,

carton advancing means operating on said forward stroke for advancing cartons forward from said flap folding station,

carton advancing-erecting means (i) operating on said forward stroke for moving said cartons from said carton erecting station to said flap folding station, and (ii) operating on said return stroke for erecting said cartons to a partially erect condition;



flap separating means for separating at least one of said flaps as said cartons are moved to said carton erecting-loading station, said flap separating means attached to said frame between said carton storage station and said carton erecting-loading station in the path of movement of said flaps;

intermittently actuable clamping means for clamping the separated flap of cartons stationed at the carton erecting-loading station to substantially prevent linear and rotational movement of one of said walls, said clamping means attached to said frame at said carton erecting-loading station;

intermittently actuable final carton erecting means for erecting said cartons stationed at said carton erecting-loading station from said partially erect condition to a fully erect condition, said loading means attached to said frame at said carton erecting-loading station;

intermittently actuable loading means for loading said articles into said cartons in said fully erect position at said carton erecting-loading station, said loading means attached to said frame at said carton erecting-loading station; and

flap folding plows attached to said frame at said flap folding station for folding the flaps of said cartons.

4,127,978
DEVICE FOR PLACING A BAND ON A BALL

Florian Lucke, Mengen, Fed. Rep. of Germany, assignor to Croon & Lucke Maschinenfabrik GmbH & Co. KG, Fed. Rep. of Germany

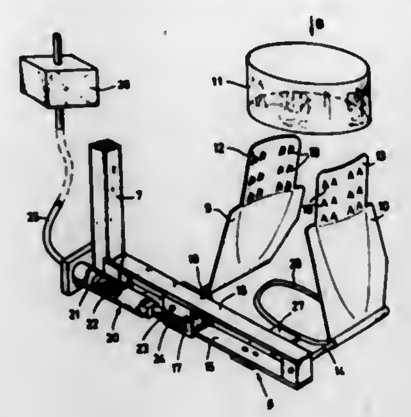
Filed May 9, 1977, Ser. No. 794,994

Claims priority, application Fed. Rep. of Germany, May 11, 1976, 2620690

Int. Cl.² B65B *13/00, 27/06*

U.S. Cl. 53—585 **7 Claims**

1. In a device for placing a ring-shaped band on a ball of yarn or the like wherein the band is placed on the ball by means of a first and a second band carrier mounted on a support which is displaceable with respect to the ball, the ball being held between the band carriers, the improvement comprising a guiding slideway on said support, means slidably supporting said first band carrier in said slideway, means rigidly attaching said second band carrier to said support, biasing means normally urging said first band carrier away from said second band carrier, power drive means reciprocating said first band carrier in said slideway relative to said second band carrier, and control means for said power drive means for moving said first band carrier towards said second band carrier during application of the band on said band carriers and after placing the band onto the ball, to thereby grip said ball, by displacement of said support carrying said band carriers, the ball being held between said band carriers during displacement of the support.



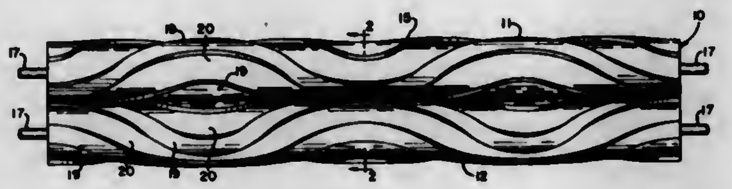
4,127,979
HAY CONDITIONING ROLL

Manfried L. Hoch, Romeoville, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 24, 1977, Ser. No. 761,577

Int. Cl.² A01D *49/00*

U.S. Cl. 56—1 **6 Claims**



1. A hay conditioning roll comprising an elongated cylindrical elastomeric body having a plurality of substantially equally circumferentially spaced elastomeric ribs extending continuously across the axial length of the body, said ribs comprising an interconnected series of alternately inverted arcuate shapes having a slope relative to the axis of said roll reversing from positive to negative at least once across the axial length of said roll, the absolute value of said slope gradually decreasing to zero, passing therethrough, and gradually increasing upon approaching and passing the point of reversal such that lateral accumulation of crops at the points of reversal is avoided.

4,127,980
CROSSFLOW MOWER WITH AUTOMATIC BRAKE/SHARPENER

Hugo S. Ferguson, c/o Duffers Associates, Inc., Box 85, R.D. 5, Troy, N.Y. 12180

Continuation-in-part of Ser. No. 741,132, Nov. 11, 1976. This application Jul. 29, 1977, Ser. No. 820,226

Int. Cl.² A01D *69/08, 75/08*

U.S. Cl. 56—11.3 **6 Claims**

1. A mower of the cross-flow blower type comprising

(a) a carriage,

(b) a cylindrical rotor mounted on said carriage with the axis

thereof substantially horizontal and extending laterally of the carriage,

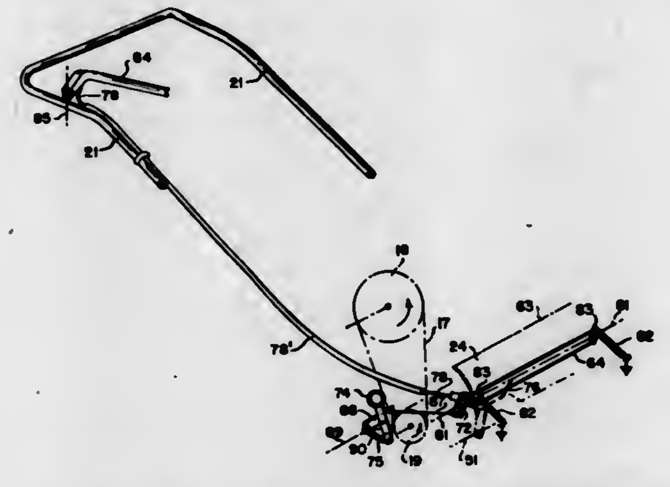
(c) said rotor having one or more sections along the axis thereof with a plurality of circumferentially-spaced approximately helical fixed blades in each section moving in the same path of travel and spaced from the rotor axis to leave the major portion of the interior of the rotor free for air flow through the rotor transversely thereof,

(d) motor means for driving said rotor,

(e) the outer leading edges of the blades being sharp to form cutting edges and the cross-section of the blades having at least a portion on the leading side thereof which slopes backwardly and inwardly with respect to the direction of rotation of the rotor,

(f) a blower conduit cooperating with said rotor to form therewith a cross-flow blower,

(g) said conduit comprising two wall sections extending laterally along the length of the rotor and having respective portions close to the rotor at circumferentially spaced positions separating inlet and outlet regions of the blower,



(h) said inlet region opening downwardly and forwardly with a portion of the rotor therein exposed to material to be mowed,

(i) the portions of the mower adjacent the rotor being non-shearingly spaced from the path of travel of said blades during moving operation,

(j) clutch means for engaging said motor means with said rotor and disengaging the motor means therefrom,

(k) one of said wall sections of the conduit having an abrasive panel facing said rotor,

(l) means mounting said abrasive panel for movement between a mowing position in which the panel is spaced from the rotor and a brake/sharpening position in which the panel is contacted by the rotor blades,

(m) and means for automatically moving said abrasive panel to said brake/sharpening position when said clutch means is disengaged and to said mowing position when the clutch means is engaged.

4,127,981
DRIVE MEANS FOR A CROP HARVESTING MACHINE

Charles A. Parrish, New Holland, and Bryant F. Webb, Ephrata, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Jan. 17, 1977, Ser. No. 759,708

Int. Cl.² A01D *41/02*

U.S. Cl. 56—14.4 **9 Claims**

1. A crop harvesting machine, comprising:

a mobile frame adapted for movement across a field in a forward direction, said frame including a main portion extending transversely to said forward direction and a side portion;

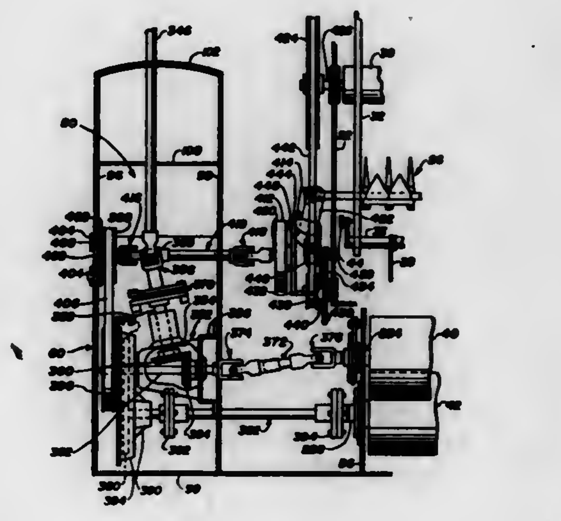
an elongated header suspended from said mobile frame so as to be vertically movable relative to said mobile frame and disposed in transverse relationship to said forward direction forwardly of said transverse main frame portion and laterally adjacent said side frame portion, said header operatively mounting means for severing and delivering crop from the field to rearwardly of said header;

a pair of upper and lower elongated conditioner rolls rotatably mounted on said main portion of said mobile frame so as to be disposed in transverse relationship to said forward direction rearwardly of said header, said rolls being operable for receiving crop delivered rearwardly of said header and conditioning said delivered crop, said upper roll being mounted for movement toward and away from said lower roll;

a gearbox assembly mounted on said side frame portion and including generally fore-and-aft extending rotary input drive transmission means and a transversely extending rotary output shaft drivingly coupled to said input means, said output shaft having one end extending toward said conditioner rolls and an opposite end extending away from said rolls;

upper telescopible shaft means articulately intercoupling said one output shaft end with said upper roll for rotatably driving the latter while accommodating movement of said upper roll relative to said lower roll;

gear means mounted on said side frame portion and on said opposite end of said output shaft and extending downwardly thereform;



lower transversely extending shaft means drivingly intercoupling a lower portion of said gear means with said lower roll, said gear means, in turn, drivingly intercoupling said lower transverse shaft means with said opposite end of said output shaft such that said lower roll is rotatably driven in a direction opposite to that in which said upper roll is driven by said one output shaft end;

drive mechanism on the side of said header adjacent said side frame portion for operating said severing and delivering means of said header;

drive transmission means mounted on said side frame portion and on said opposite end of said output shaft adjacent said gear means and extending generally forwardly therefrom; and

forward telescopible shaft means articulately intercoupling a forward portion of said drive transmission means with said drive mechanism on said header side for rotatably driving the latter for operating said severing and delivering means while accommodating movement of said header relative to said frame, said drive transmission means, in turn, drivingly intercoupling said forward shaft means with said opposite end of said gearbox assembly output shaft.

4,127,982
METHOD OF AND AN APPARATUS FOR MANUFACTURING A SZ TWISTED STRAND OF ELONGATED ELEMENTS FOR TELECOMMUNICATION CABLES

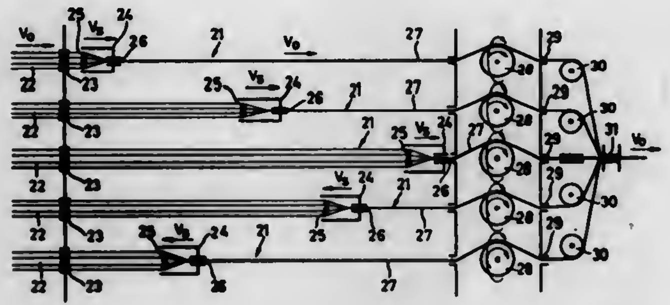
Dieter Braun, Bergisch Gladbach, and Hugo Cramer, Cologne, both of Fed. Rep. of Germany, assignors to Felten & Guilleaume Kabelwerke GmbH, Cologne, Fed. Rep. of Germany

Filed Oct. 21, 1977, Ser. No. 844,425

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1976, 2648140; Oct. 26, 1976, 2648368

Int. Cl.² H01B *13/04;* D07B *3/00*

U.S. Cl. 57—294 **22 Claims**



5. An apparatus for manufacturing an SZ-twisted strand of elongated elements for use in cables, particularly telecommunication cables, comprising means for advancing the elements at a constant advancement speed along a path; a spacing element for maintaining the elements at a distance from one another; an inlet nipple for joining the elements into a bundle downstream of said spacing element; a twisting head for twisting the bundle into the strand at a constant twisting speed and in the same direction downstream of said inlet nipple; an outlet nipple downstream of said twisting head; means for mounting said spacing element for displacement along said path in a trajectory toward and away from said twisting head between two terminal positions; and means for cyclically reciprocating said spacing element in said trajectory, including means for displacing said spacing element at a displacement speed lower than said advancement speed, and means for increasing said displacement speed during the displacement of said spacing element in a section of said trajectory commencing at, and in direction away from, at least one of said terminal positions.

4,127,983
YARN GUIDING AND THREADING MECHANISMS FOR USE WITH TEXTILE YARN PROCESSING MACHINES

Gert Munker, Krefeld, Germany, assignor to Palitex Project Company GmbH, Krefeld, Germany

Filed Oct. 26, 1977, Ser. No. 845,719

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1976, 2648621

Int. Cl.² D01H *15/00, 1/10*

U.S. Cl. 57—279 **29 Claims**

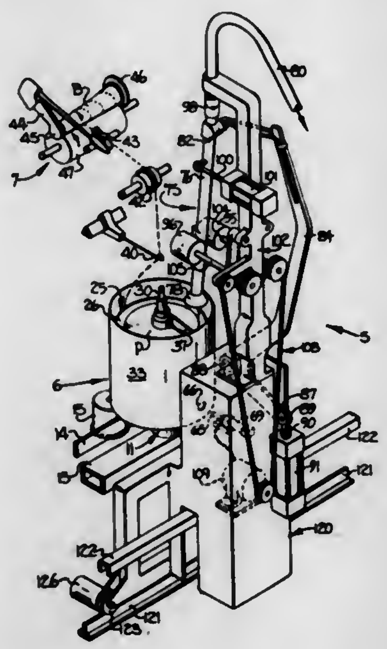
1. In a textile yarn processing machine, such as a two-for-one twister or the like, the combination of:

a plurality of spindle assemblies mounted in generally side-by-side relationship along the outside of said machine and each including a driven rotating rotor mechanism, a stationary carrier mechanism for carrying a hollow supply package of yarn and having a basket device surrounding the supply package, a balloon limitor device surrounding said basket device and providing a space therebetween, and an elongate yarn passageway extending downwardly through the top of said carrier mechanism along the axis of said spindle assembly and radially outwardly through said rotor mechanism into said space between said basket device and said balloon limitor for the passage of yarn from the supply package downwardly and outwardly through said passageway and upwardly through said space during yarn processing;

a processed yarn take-up assembly positioned above each of said spindle assemblies for forming a take-up package of processed yarn and including a cradle device having centering discs for carrying a driven take-up bobbin therebetween for the winding of processed yarn thereon;

selectively-operable pneumatic threading mechanisms for being operated to automatically thread a free end of yarn withdrawn from the supply package through said yarn passageway and through said space between said basket device and said balloon limitor during threading-up of said spindle assemblies by creating a suction through the yarn entry portion of said passageway and a positive air stream through the yarn exit portion of said passageway and through said space between said basket device and said balloon limitor; and

yarn guiding and threading means operatively associated with each of said spindle and take-up assemblies for being positioned generally at the front thereof and comprising a generally vertically-extending elongate tube having an air passageway therethrough and a source of suction connected to the upper end thereof for creating a suction therethrough for receiving at the lower end thereof the free end of yarn passing upwardly from between said basket device and said balloon limitor during pneumatic threading of said spindle assembly and for guiding the free end of yarn upwardly through said tube, a slot extending from the outside of said tube to said passageway along substantially the length thereof and positioned on the side thereof facing said spindle assembly for removal of the yarn from said tube, and a yarn carrier including means movably mounting said carrier for movement between a first position for engaging the yarn passing through said tube to a second position closely adjacent the take-up bobbin in said cradle device of said take-up assembly for conveying the yarn from said tube through said slot therein and positioning the yarn on the take-up bobbin to complete threading-up of said spindle assembly and said take-up assembly to eliminate manual handling of the yarn during threading-up operations.



4,127,984
SLIP MECHANISM OF CLOCK

Masuo Ogihara; Kozo Chimura, and Nobuo Shinozaki, all of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

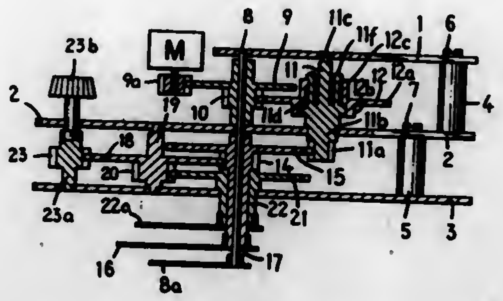
Filed Feb. 28, 1977, Ser. No. 772,566

Claims priority, application Japan, Feb. 26, 1976, 51-22302[U]; Mar. 3, 1976, 51-25097[U]

Int. Cl.² G04B *13/02, 33/00;* F16D *7/02*

U.S. Cl. 58—7 **7 Claims**

1. A slip mechanism for a clock having a gear train, said slip mechanism comprising in said gear train a gear and a pinion integral with a shaft coaxial with said gear, said gear and pinion having interengaging circular guide portions for centering and rotatively guiding said gear and pinion relative to one another, one of said gear and pinion having an annular circular friction surface concentric with said shaft and the other of said gear and pinion being formed of plastic material in one piece with resilient finger means which extend axially therefrom and which resiliently, frictionally and radially engage said annular friction surface to frictionally couple said gear and pinion with one another.



4,127,985
WATCH

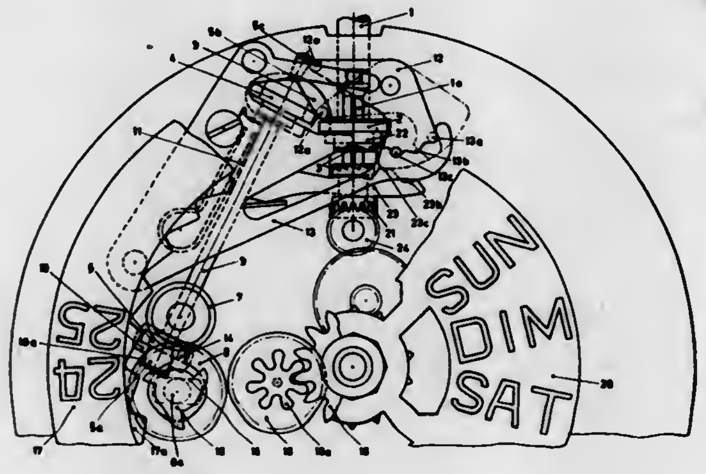
Kurt Mürrle, Pforzheim, Fed. Rep. of Germany, assignor to Pforzheimer Uhren-Rohwerke Rudolf Wehner, Pforzheim, Fed. Rep. of Germany

Filed Nov. 26, 1976, Ser. No. 745,053

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1975, 2556314

Int. Cl.² G04B *19/24*

U.S. Cl. 58—58 **14 Claims**



1. A watch comprising

time-indicating means,

time-setting means operable to set said time-indicating means,

a setting shaft which is axially movable to first and second positions and arranged to be operatively connected to said time-setting means in said first position,

rotatable calendar-indicating means provided with a circular series of gear teeth,

a calendar-correcting pinion non-rotatably mounted on said setting shaft,

a calendar-correcting shaft, which extends at an angle to said setting shaft and has first and second end portions,

first and second pinions non-rotatably mounted on said calendar-correcting shaft on said first and second end portions thereof, respectively,

a mounting plate having an aperture in which said second end portion is mounted to permit of a pivotal movement of said calendar-correcting shaft toward and away from said setting shaft between an operative position, in which said first pinion is in mesh with said calendar-correcting pinion, and at least one inoperative position, in which said first pinion is disengaged from said calendar-correcting pinion,

a bias spring urging said calendar-correcting shaft to said operative position,

a bell-crank lever operatively connected between said setting shaft and said calendar-correcting shaft and arranged to hold said calendar-correcting shaft in an inoperative position against the action of said bias spring when said setting shaft is in said first position and arranged to permit said calendar-correctingshaft to assume said operative position when said setting shaft is in second position,

resilient detent means arranged to yieldably retain said bell-crank lever in positions corresponding to said first and second positions of said setting shaft, and

calendar-correcting means in mesh with said second pinion and adapted to mesh with said gear teeth.

4,127,986
PENDULUM CLOCK MECHANISM

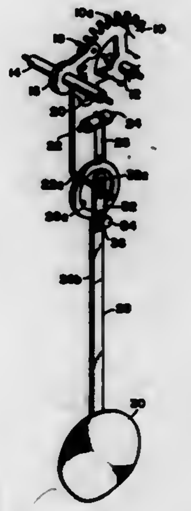
Kazutoshi Nozawa; Yasue Ashibe; Hatsuo Aruga, all of Kamiina, and Kunio Tatsuzawa, Ina, all of Japan, assignors to Rhythm Watch Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1976, Ser. No. 755,549

Claims priority, application Japan, May 1, 1976, 51-50374

Int. Cl.² G04B *17/16*

U.S. Cl. 58—134 **2 Claims**



1. A clock mechanism comprising:

a pendulum;

an escape wheel having plurality of escape teeth disposed on the periphery of said escape wheel;

an anchor coupled to a rotatable pallet arbor and having two symmetrical pallet pins engageable with said escape wheel;

a swing rod coupled to said arbor;

a resilient swing member coupled to a pivot point at a first end and to said pendulum at a second end;

a pivot pin provided on said swing member;

a lever rotatably provided on said pivot pin at one end and coupled to said swing rod at the other end; and

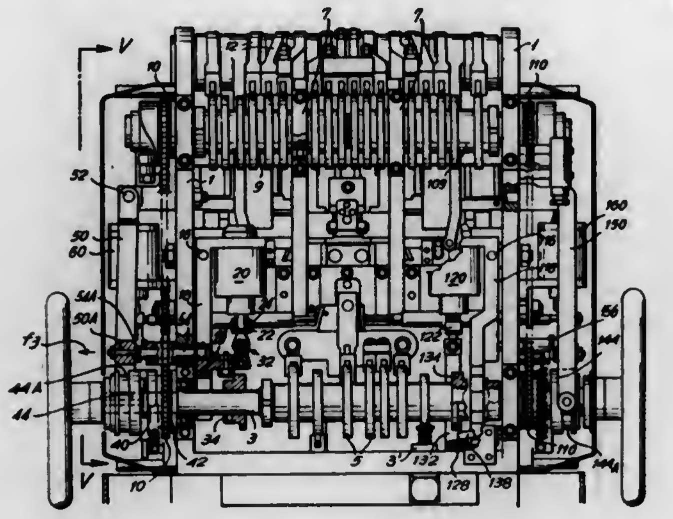
a slip spring provided on said pivot pin and applying a compressive force on said lever such that said lever is frictionally held at some first angle relative to said pendulum and such that whenever a torque greater than predetermined magnitude is exerted on said lever, said lever rotates to and maintains a second angle relative to said pendulum,

whereby said escapement executes accurate time keeping motions without substantial dependence on alignment of said clock mechanism with the vertical as defined by gravity by automatically compensating for misalignments.

4,127,987

MACHINE FOR MANUFACTURING CHAINS HAVING DIFFERENTIATED LINKS

Ezio Tega, and Danilo Volpi, both of Arezzo, Italy, assignors to Metalmeccanica Gori & Zucchi MGZ S.p.A., Arezzo, Italy
Filed Mar. 28, 1977, Ser. No. 781,971
Claims priority, application Italy, Mar. 30, 1976, 9393 A/76
Int. Cl.² B21L *11/00*
U.S. Cl. 59—16 **8 Claims**



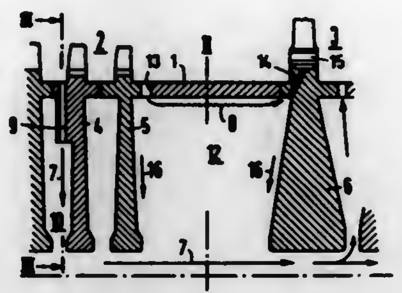
1. In a machine for manufacturing chains, a frame, a main camshaft and means for continuously rotating the same, first and second alternatively operable camshafts journaled for independent rotation in said frame, first chain-link forming mechanism operated by one of said alternatively operable camshafts, second chain-link forming mechanism operated by the other of said alternatively operable camshafts, further chain-link forming mechanism serving both said first and second forming mechanisms and operated by said main camshaft, each of said forming mechanisms having one link-forming cycle per revolution of said main camshaft, first and second electrically operated means associated with the respective alternatively operable camshafts for connecting a selected one to the exclusion of the other of said alternatively operable camshafts to said main camshaft, and program means connected to said electrically operative means and operative to determine a predetermined number of cycles of one of said alternatively operable camshafts in alternation with a predetermined number of cycles of the other of said alternatively operable camshafts, whereby in the circumstance of said first and second chain-link forming mechanisms being respectively set up to form chain links of different character, said program means will establish a predetermined pattern of successively formed chain links of different character.

4,127,988

GAS TURBINE INSTALLATION WITH COOLING BY TWO SEPARATE COOLING AIR FLOWS

Bernard Becker, Mulheim, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim, Germany
Filed Jul. 20, 1977, Ser. No. 817,228
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1976, 2633291
Int. Cl.² F02C *7/18*
U.S. Cl. 60—39.66 **4 Claims**

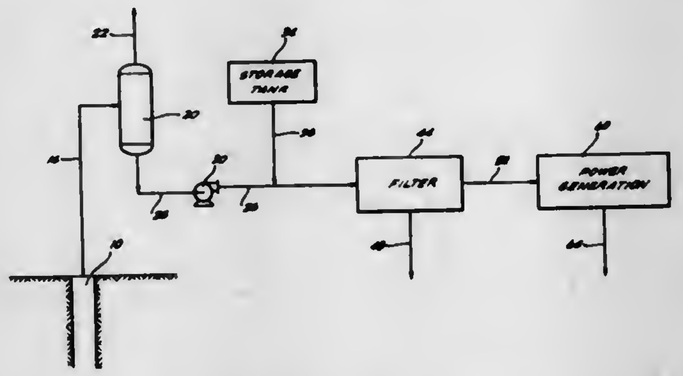
1. Gas turbine installation with a compressor and a gas turbine and having a rotor including rotary parts of the compressor and the gas turbine, the compressor having an air flow path therethrough external to the rotor, comprising a system for cooling the parts of the gas turbine including means defining two different air flow paths within the rotor, one of said cooling air flow paths within the rotor branching from the external air flow path at an intermediate stage of the compressor at which the absolute velocity of the air flow into the rotor is relatively low and extending to an axial region of the rotor, and the other of said cooling air flow paths within the rotor branching from the external air flow path at a location downstream from the compressor in flow direction of the external air flow at which the circumferential velocity of the air flow into the rotor is relatively high and extending into a radially outwardly disposed region of the rotor, both of said cooling air flow paths extending mutually concentrically through a non-partitioned chamber in the rotor to the rotary parts of the gas turbine.



4,127,989

METHOD FOR SEPARATING METAL VALUES FROM BRINE

Grant A. Mickelson, Yorba Linda, Calif., assignor to Union Oil Company of California, Brea, Calif.
Filed Jan. 25, 1978, Ser. No. 872,104
Int. Cl.² C01G *1/12*
U.S. Cl. 60—641 **12 Claims**



11. A process for separating and recovering metal values from a geothermal brine having at a temperature of about 500° F. or above and containing dissolved heavy metal ions and/or transition metal ions which comprises:

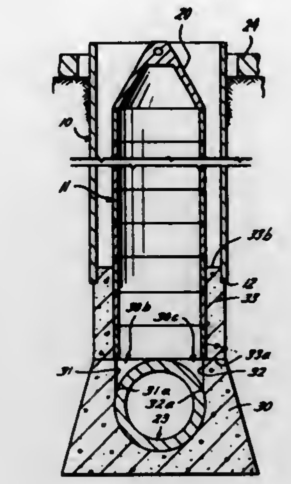
(a) pressuring said geothermal brine to a pressure of about 700 p.s.i.g., said pressure being in excess of the bubble point pressure of said geothermal brine;
(b) adding an aqueous solution of sodium sulfide and/or sodium polysulfide to said pressurized geothermal brine to form insoluble heavy and/or transition metal sulfide precipitates while maintaining said pressurized geothermal brine at a pressure in excess of its bubble point pressure;
(c) filtering said insoluble precipitates from said pressurized geothermal brine in a high pressure filter while maintaining said pressurized geothermal brine at a pressure in excess of its bubble point pressure.
(d) recovering metal values from said filtered insoluble heavy and/or transition metal sulfide precipitates; and
(e) deriving useful energy from said geothermal brine from which said insoluble precipitates have been filtered.

12. The process of claim 11 wherein said metal values are manganese, iron, copper, silver, lead and/or zinc.

4,127,990

DRAINAGE STRUCTURE FORMING METHOD

Otis L. Morrow, 727 Eastlake, Houston, Tex. 77034
Filed Jan. 21, 1977, Ser. No. 761,002
Int. Cl.² E02D *29/12*
U.S. Cl. 405—36 **24 Claims**



1. A method for forming a drainage structure, such as a manhole having a bottom portion and an upwardly extending wall portion for communication with a subterranean sewer pipe, comprising the steps of:

forming a first excavation in the earth from the surface to a subterranean sewer pipe;
positioning a removable outer form means in the excavation extending from the surface to the uppermost wall portion of the sewer pipe and fitting tightly with wall portions of the first excavation to prevent caving in thereof;
undercutting the sewer pipe by forming a second excavation in the soil surrounding the sewer pipe to a depth below the lowermost wall portion of the sewer pipe;
pouring concrete into the excavation surrounding the sewer pipe to a level adjacent the uppermost wall portion of the sewer pipe to form the bottom portion;
positioning a removable inner form means within the outer form means extending upwardly from the uppermost wall portion of the sewer pipe; and
pouring concrete in the space between the outer and inner form means for forming the upwardly extending wall portion to a predetermined height.

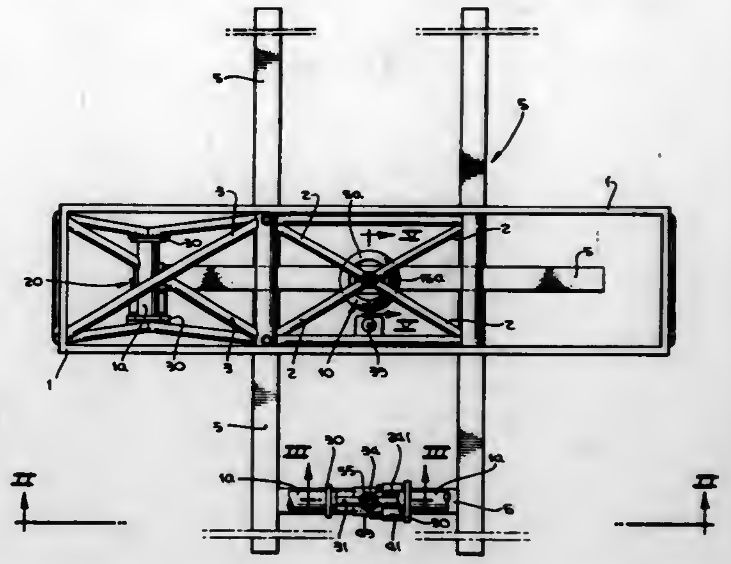
4,127,991

APPARATUS FOR LEVELING AND SUPPORTING A SUB-SEA DRILLING TEMPLATE

A. Michael Regan, Huntington Beach, Calif., assignor to Regan Offshore International, Inc., Torrance, Calif.
Filed Aug. 8, 1977, Ser. No. 822,697
Int. Cl.² E02D *21/00*
U.S. Cl. 405—202 **11 Claims**

1. A remotely operable sub-sea drilling template and leveling support apparatus for sub-sea well drilling operations, comprising:

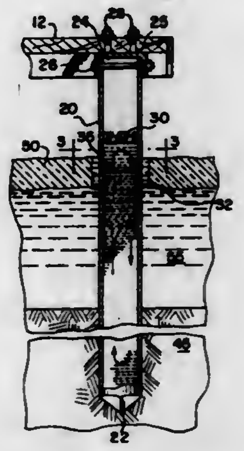
a sub-sea well drilling template;
support frame means for providing a stable reference surface for said template when positioned beneath the sea surface relative to an underlying sea bottom;
pivot means for interconnecting said support frame means and said template for pivotally supporting said template with respect to said sea bottom;
leveling means interconnected between said support frame means and said template for varying the angular orientation of said template beneath said sea surface about said pivot means relative to said support frame means; and
control means at a location remote from said levelling means and connected thereto for operating said leveling means to level said template beneath said sea surface.



4,127,992

PERMANENT PIER PILING

Donald Bogosh, 2646 Willow St., Franklin Park, Ill. 60131
Filed Jun. 13, 1977, Ser. No. 806,157
Int. Cl.² 405 *218;* E02B *17/00;* E02D *31/00*
U.S. Cl. 405—61 **5 Claims**

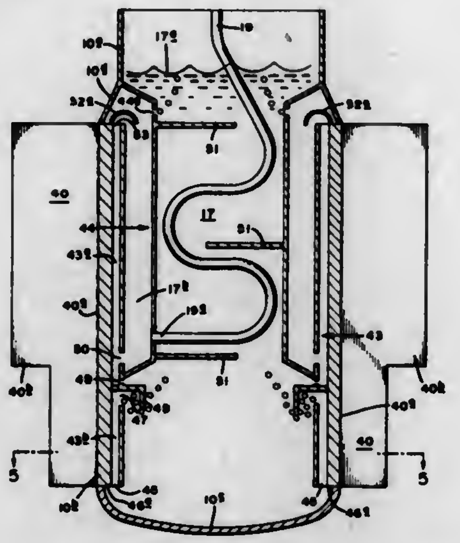


1. A hollow piling which is permanently embedded in a bed beneath a body of water, which water may have a fluctuating level, the piling having a construction for preventing ice from forming on the piling and forcing the piling upwardly when the water level changes comprising, in combination, a hollow pipe having outer walls and a lower end portion which is fluid-tightly sealed, a substantial length of the piling being embedded in the bed of the body of water, an antifreeze liquid within said pipe, said antifreeze liquid having an upper surface level above the high water level of the body of water, said piling and said antifreeze liquid extending into the bed a sufficient depth to transfer latent heat from the bed to said antifreeze liquid through said outer walls of said piling to develop a natural thermal convection current of said antifreeze liquid within said pipe and cycle said latent heat from the bed upwardly within said pipe, said natural thermal convection being the sole source of movement of said antifreeze liquid within said piling, said natural cycling being effective to retain the temperature of said antifreeze liquid above the freezing point of said body of water whereby said outer walls are heated by the cycling liquid sufficiently to prevent ice from forming around the walls of said piling at any level below the level of said antifreeze.

4,127,993
METHOD AND GENERATOR UNIT OF AN ABSORPTION HEAT PUMP SYSTEM FOR SEPARATING A RICH LIQUOR INTO A REFRIGERANT AND A SOLUTION LOW IN REFRIGERANT CONTENT

Benjamin A. Phillips, Benton Harbor, Mich., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed May 12, 1977, Ser. No. 796,493
Int. Cl.² F25B *15/00, 33/00*
U.S. Cl. 62—101 **36 Claims**



1. A generator unit of an absorption heat pump system for separating rich liquor into refrigerant vapor and weak liquor, and including a boiler portion at the lower portion thereof and comprising:
(a) an upstanding housing defining therewithin a central space with a reservoir zone in the lower portion thereof for storing the rich liquor solution and also defining a plurality of vertical tubular conduits around the reservoir zone, each tubular conduit having a lower opening communicating with the reservoir zone for drawing solution therefrom and an upper opening for releasing refrigerant vapor and weak liquor;
(b) heat transfer means for collecting heat from an external source and transferring the heat into said tubular conduits; and
(c) separation means communicating with the upper openings of said tubular conduits for separating refrigerant vapor from weak liquor.

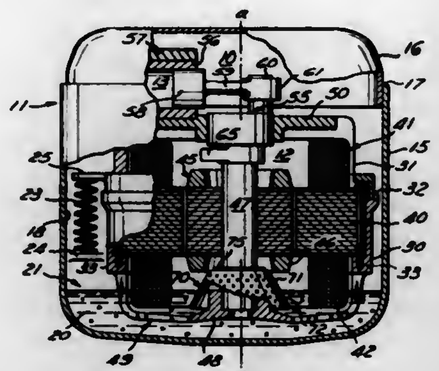
22. A method of separating a rich liquor comprising a refrigerant and a higher-boiling absorbent into refrigerant vapor and a solution low in refrigerant content comprising the steps:
(a) drawing the rich liquor into a lower inlet of a vertical tubular conduit at a temperature at which bubbles of refrigerant vapor are forming in the rich liquor,
(b) heating the rich liquor in the conduit thereby increasing the formation of bubbles of refrigerant vapor,
(c) driving the rich liquor upward in the vertical tubular conduit with increasing speed by the vapor lift action of refrigerant bubbles to an upper outlet of the vertical tubular conduit, and
(d) separating the fluid coming out of the upper outlet of the vertical tubular conduit into refrigerant vapor and a solution low in refrigerant content.

4,127,994
OIL STIRRER FOR REFRIGERATION COMPRESSOR

Ralph E. Niven, Grove City, Ohio, assignor to White-Westinghouse Corporation, Pittsburgh, Pa.

Filed Jan. 26, 1977, Ser. No. 762,829
Int. Cl.² F25B *43/02;* **B04B** *17/00, 35/00;* **F04B** *17/00*
U.S. Cl. 62—469 **7 Claims**

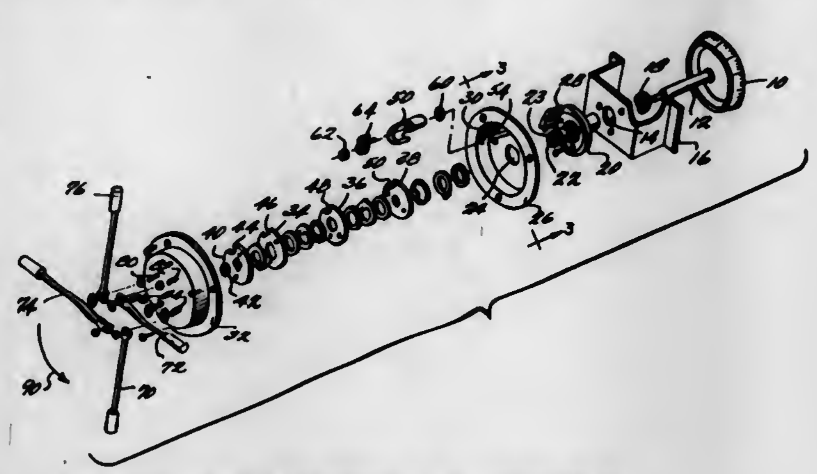
1. A refrigeration apparatus comprising:
a shell containing a gas;
a motor compressor assembly mounted within said shell, said motor-compressor assembly having a rotatable shaft with a longitudinal axis of rotation;
a body of oil contained within said shell; and
an oil stirrer for aerating said body of oil with said gas, said stirrer being fixed to said shaft, said oil stirrer having a portion formed of thin sheet material having a large plurality of closely spaced apertures said material being shaped into an open-ended truncated cone with an apex portion and a base portion, said apex portion being fixed to said shaft and being above said body of oil, said base portion extending into and immersed in said body of oil.



4,127,995
MULTIPLE BOLT COMBINATION LOCK

Norman Miller, Lafayette, Ind., assignor to Schwab Safe Co., Inc., Lafayette, Ind.

Filed Apr. 15, 1977, Ser. No. 787,934
Int. Cl.² E05B *37/08, 63/14*
U.S. Cl. 70—119 **3 Claims**



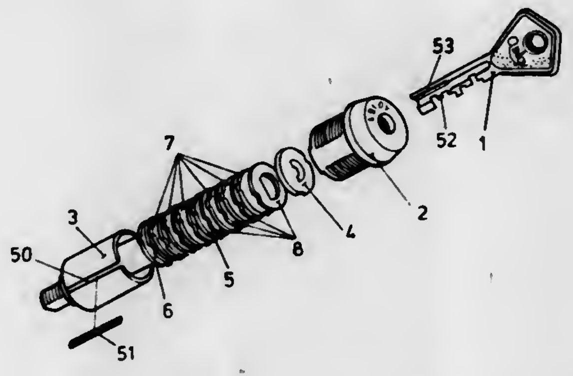
1. A multiple bolt combination lock comprising:
a combination dial having a shaft rotatable therewith;
a plurality of locking wheels disposed about said shaft, each having a slot gate, the gate of each wheel aligning in a given position when the dial is rotated to the correct combination;
a bottom lock pan having an aperture through which said shaft extends;
a top lock pan fastened to said bottom lock pan to define a space therebetween in which said wheels are disposed;
a lever arm;
means for mounting said lever arm on said bottom lock pan in said space so that said lever arm pivots to engage said slot gates when said wheels are aligned at said given position and so that said lock pans then rotate with said shaft;
spring means for urging said lever arm into engagement with said slot gates;
a plurality of locking rods pivotably fastened to one of said lock pans at a distance from the center of rotation thereof so that rotation of said one lock pan in one direction retracts said rods and rotation of said one lock pan in the opposite direction advances the rods into a latch position;

a lock stand having an aperture through which said shafts extends; and
a wheel post having a bore and fixed to said lock stand with said bore and aperture in alignment, said post including a cam portion extending through a slot in said top pan to engage said lever arm to rotate said lever arm out of said slot gates when said one pan is rotated in said opposite direction and said rods are in said latch position.

4,127,996
KEY PROFILE SYSTEM

Henrikki Malminen, and Kaarlo Martikainen, both of Joensuu, Finland, assignors to Oy Wartsila AB, Helsinki, Finland

Filed Sep. 28, 1977, Ser. No. 837,641
Claims priority, application Finland, Oct. 4, 1976, 762819
Int. Cl.² E05B *19/02, 27/08*
U.S. Cl. 70—365 **8 Claims**

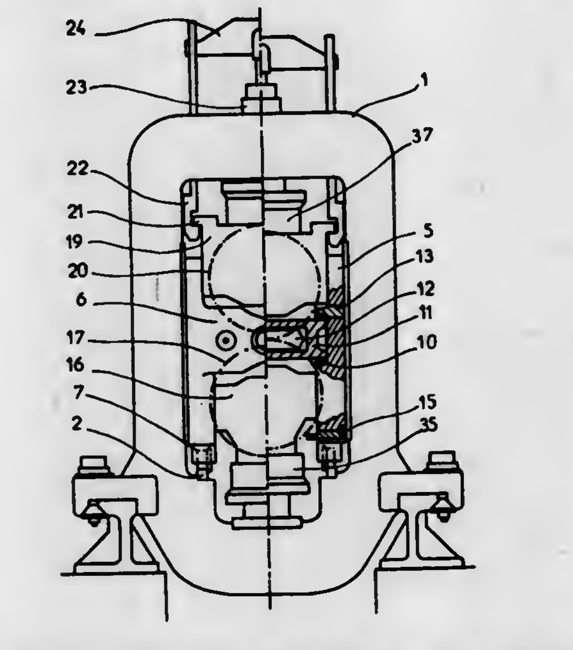


1. A locking system comprising several disc cylinder locks provided with turnable locking discs and several keys having different key profiles, said key profiles being of a form includable within the border line of a basic key blank profile and having at least one key profile adapted to fit functionally into a lock adapted to receive keys of another profile, said key profile being defined by a form of a key receiving opening in said turnable locking disc and having common elements of said cylinder locks respectively similar to each other.

4,127,997
ROLLING MILL STAND

Andre Quehen, Pontoise, France, assignor to SECIM, Courbevoie, France

Filed Dec. 12, 1977, Ser. No. 859,508
Claims priority, application France, Dec. 17, 1976, 76 38143
Int. Cl.² B21B *37/08, 1/10*
U.S. Cl. 72—19 **6 Claims**

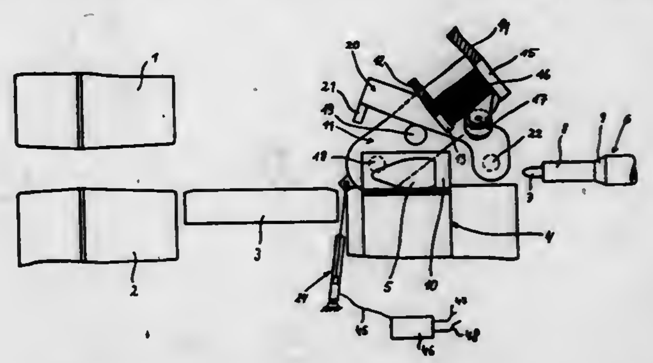


1. A stand of a continuous rolling mill for producing beams and similar sections including two horizontal and two vertical rolls, the stand being centered on the pass line of the beam to be rolled and having fixed roll housings in the rolling line for receiving a removable cassette for supporting said rolls and their chocks for each said rolls, the improvement comprising:
hydraulic tightening jack means for a different chock of each horizontal roll, a said jack means located between a chock and associated housing and being supportable by an associated housing,
servo-valve means for said jack means for supplying hydraulic fluid to said jack means from an hydraulic power means,
linear position sensor means for each horizontal roll for producing a signal representative of the actual position during rolling of at least one associated jack means,
pressure sensor means for producing a signal representative of the working pressure of at least one of said jack means for each horizontal roll, and
control means including means for producing signals representing the modulus for each portion of the stand associated with a different horizontal roll, means for receiving said pressure sensor signals and combining them with the modulus signal for the same stand portion to produce position reference signals for each horizontal roll, means for receiving said linear position signals, and means for comparing said corresponding position reference signals with said corresponding signals representing the actual positions of corresponding jack means for said horizontal rolls to generate command signals for operating said servo-valve means for said jack means for each roll for maintaining a constant web thickness and a symmetrical web position relative to a flange portion of the beam.

4,127,998
MANDREL CHANGING DEVICE FOR A PIERCING ROLLING MILL

Hans Meurer, and Klaus Rehag, both of Mönchen-Gladbach, Fed. Rep. of Germany, assignors to Wean United, Inc., Pittsburgh, Pa.

Filed Dec. 6, 1977, Ser. No. 858,047
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1976, 2657059
Int. Cl.² B21B *25/06*
U.S. Cl. 72—97 **8 Claims**



1. In combination with a piercing rolling mill or the like and a mandrel changing device, which has at least two mandrel supporting members which can be alternately positioned in the rolling line of the mill in order to transfer mandrels to and from the rolling line, and wherein a mandrel rod carries at its front end a pin on which a mandrel is mounted in a manner to be quickly replaced by another,
a mandrel stripper device comprising:
first means for restricting a mandrel from moving in one direction coaxially with the rolling line when supported by one of said supporting members positioned in said rolling line,
second means for restricting a mandrel from moving in an axial direction opposite said first direction when supported by said one supporting member,
a first lever for supporting said first restricting means,
means for causing movement of said first lever so as to bring

said first restricting means into and out of its operative position,

a second lever for supporting said second restricting means, and

means for causing movement of said second lever so as to bring said second restricting means into and out of its operative position,

whereby when said restricting means are in their operative mandrel restricting positions said supported mandrel will be stripped from said mandrel rod and maintained in a predetermined position on said rolling line, and when said restricting means are in their inoperative non-mandrel restricting positions a mandrel, mandrel rod and tube blank are free to move in said rolling line.

4,127,999
GRIPPING ARRANGEMENT

Horst Lorenz, Solingen, Fed. Rep. of Germany, assignor to Th. Kieserling & Albrecht, Solingen, Fed. Rep. of Germany

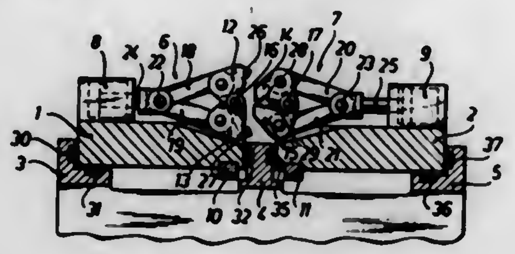
Continuation-in-part of Ser. No. 641,188, Dec. 16, 1975, Pat. No. 4,048,833. This application Jun. 24, 1977, Ser. No. 809,937

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1974, 2460168

The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.

Int. Cl.² B21C *1/14, 1/28*

U.S. Cl. 72—290 **11 Claims**



1. A gripping arrangement for continuously advancing elongated workpieces longitudinally thereof in an advancement path, comprising, in combination, elongated guide means parallel to a section of the advancement path; a pair of supports each mounted on said guide means for reciprocatory movement along the same in a reciprocatory path that is parallel to, offset from, and coextensive with, the advancement path section and the reciprocatory path of the other support; means for reciprocating each of said supports in the respective reciprocatory path thereof in an advancement and a return direction, respectively, past the other support; at least a pair of jaws for each respective support; means for mounting each respective jaw pair on the respective support for displacement relative thereto between a closed and an open position in which said respective jaw pair engages, and is disengaged from, a workpiece, respectively, and for joint reciprocation with said respective support, when in said closed position, in a first path having a path portion about the advancement path section in common with the first path of the other jaw pair, and, when in said open position, in a second path spaced from the advancement path section and from said common path portion; and means for so displacing said jaws of each respective pair between said positions thereof that at least one of said jaw pairs is always in said closed position thereof while moving with the respective support in said advancement direction for engaging and continuously advancing the workpiece, while each of said jaw pairs is in said open position thereof at least while moving with the respective support in said return direction past the other jaw pair for avoiding interference with the movement of the latter by moving in said second path that is outside said common path portion.

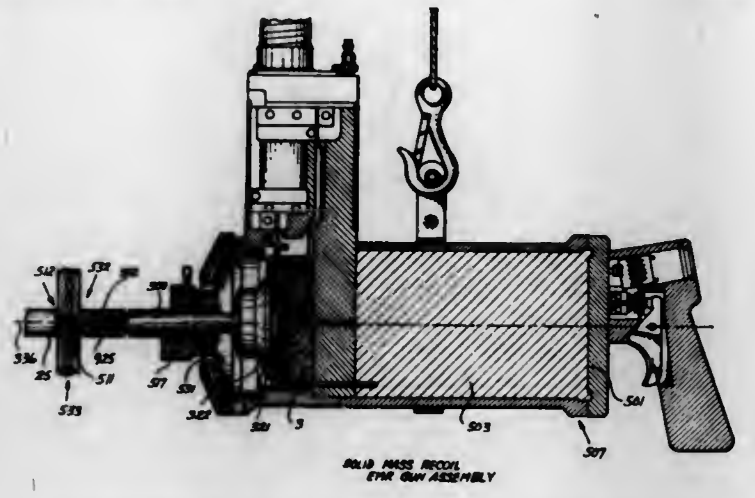
4,128,000
ELECTROMAGNETIC HIGH ENERGY IMPACT APPARATUS

Franciscus Hogenhout, Bellevue, and Arthur W. McDermott, Maple Valley, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 28, 1977, Ser. No. 837,486

Int. Cl.² B21J *7/30, 15/24*

U.S. Cl. 72—430 **1 Claim**



1. In combination, in an electromagnetic work tool;

a housing having a rear wall, said rear wall having an inner surface;

the improvement comprising: an electromagnetic high energy pulse coil having a working face and a major surface opposite said working face;

a ram assembly comprising a ram shaft, conductive driving plate, driving disc, insulator plug, and including a plurality of longitudinally disposed machine screws for securing said driving disc, insulator plug and ram shaft together, and further including a plurality of roll pins for securing said conductive driving plate and driving disk together; and

a recoil assembly comprising a solid mass disposed between said major surface of said electromagnetic high energy pulse coil and said rear wall of the inner surface of said housing, said solid mass having the front wall surface thereof disposed perpendicular to the centerline of said ram assembly.

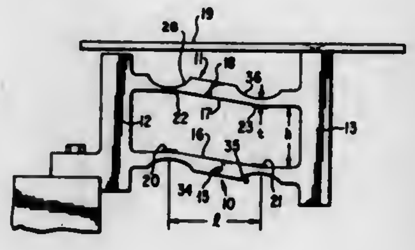
4,128,001
PARALLEL BEAM LOAD CELL INSENSITIVE TO POINT OF APPLICATION OF LOAD

Eugene A. Marks, Riverside, Calif., assignor to Transducers, Inc., Whittier, Calif.

Filed Sep. 16, 1977, Ser. No. 833,818

Int. Cl.² G01L *1/22, 25/00*

U.S. Cl. 73—1 B **37 Claims**



32. A method of reducing the sensivity to moments created by misalignments of applied loads with the support in a parallel beam load cell of the type having a pair of spaced parallel beams rigidly connected at their respective ends and a plurality

of strain responsive means responsive to strain at selected regions of said beams which comprises the steps of:

(a) determining the change in output of said load cell with respect to a change in position of application of load in a direction parallel to the longitudinal axes of said beams;

(b) determining the change in output of said load cell with respect to the change in position of application of load in a direction transverse to the longitudinal axes of said beams;

(c) shifting the location of the neutral axis of one of said beams at one of said selected regions whereby the change in load cell output due to a transverse change in position of load will be reduced; and

(d) altering the cross sectional area of one of said beams at one of said selected regions whereby the change in load cell output due to a longitudinal change in position of load will be reduced.

4,128,002
METER PROVING APPARATUS

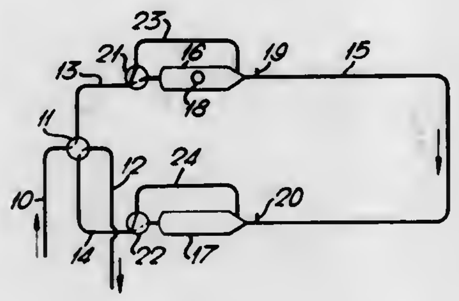
Ian F. Cameron, Newark, and Michael Layhe, Worksop, both of England, assignors to Automatic Oil Tools Limited, Hounslow, England

Continuation of Ser. No. 608,888, Aug. 29, 1975, abandoned. This application Apr. 25, 1977, Ser. No. 790,576

Claims priority, application United Kingdom, Jun. 16, 1975, 25607/75

Int. Cl.² G01F *25/00*

U.S. Cl. 73—3 **8 Claims**



1. A proving apparatus for a flow meter comprising a calibration conduit for receiving a fluid, a plug locatable in the conduit to be carried along the conduit by fluid flow, two end stations at the ends of the conduit for accommodating the plug prior to a test operation, two plug detector devices spaced apart along the conduit between the ends of the stations to signal the passing of the plug along the conduit, a second conduit connected to one of the end stations, a first diverter valve in said second conduit, a third conduit extending from the first diverter valve to the said one end station at a location between the connections of the second concuit and of the calibration conduit with said one end station to provide a by-pass for a part of said one end station, a fourth conduit connected to the other end station, a second diverter valve located in the fourth conduit, a fifth conduit extending from the second diverter valve to said other end station between the connections of the fourth conduit and of the calibration conduit with said other end station to provide a by-pass for a part of said other end station and a further valve for connecting supply and return conduits to the second and fourth conduits to establish a fluid flow in either direction through the calibration conduit, the by-passes for the end stations permitting a stabilized flow rate to be established in the calibration conduit, with said plug being located in the by-passed part of one of said end stations, prior to a test operation so that during a test, the fluid flow rate moving said plug through said conduit is substantially constant.

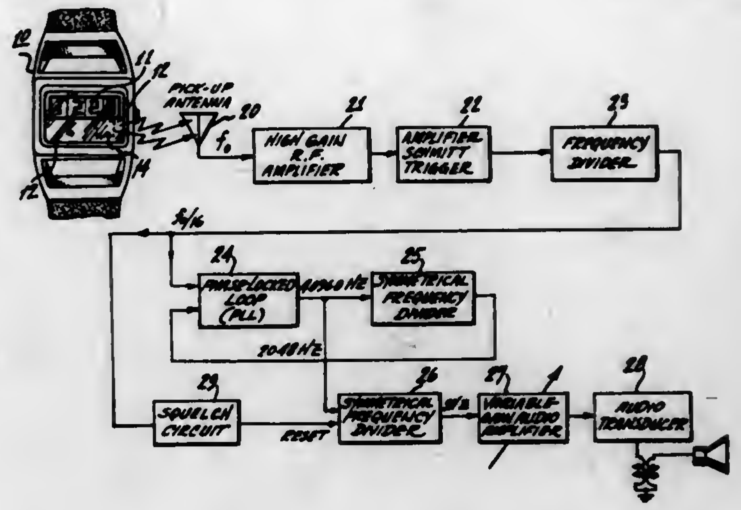
4,128,003
ACOUSTIC COUPLERS FOR HOROLOGICAL CALIBRATION INSTRUMENTS

Louis A. Zanoni, Trenton, and James W. Pollack, New Egypt, both of N.J., assignors to Zantech, Inc., Trenton, N.J.

Filed Jan. 21, 1977, Ser. No. 761,261

Int. Cl.² G04C *21/00*

U.S. Cl. 73—6 **10 Claims**



1. Apparatus for converting a radiated high frequency output signal from a reference oscillator employed in an electronic timepiece to an audible signal corresponding to the ticking rate of a conventional mechanical timepiece, comprising:

(a) pickup means responsive to said radiated signal to provide at an output, an amplified version of said high frequency radiated signal,

(b) means coupled to said pickup means and responsive to said amplified signal to provide at an output a low frequency signal synchronized to said radiated signal and of a repetition rate relatively equal to the rate of ticks per second of a mechanical timepiece, and

(c) audio transducing means responsive to said low frequency signal to provide an audible output signal manifesting the ticking of a mechanical timepiece.

4,128,004
METHOD AND APPARATUS FOR DETERMINING PERMEABILITY OF FILTER MEDIA

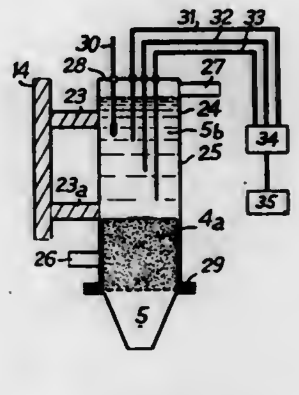
Jacques Caron, Courbevole; Jean-Claude Poncet, and Bernard Varney, both of Villers Cotterets, all of France, assignors to Société Anonyme dite: CECA S.A., Velizy-Villacoublay, France

Filed Sep. 22, 1978, Ser. No. 835,701

Claims priority, application France, Oct. 8, 1976, 76 30351

Int. Cl.² G01N *15/08*

U.S. Cl. 73—38 **7 Claims**



1. In a method of measuring the permeability of a filtering medium by passing liquid through a cake of the medium, the improvement which comprises preforming a cake by:

introducing into a cake holder of predetermined dimensions a suspension of the medium in a liquid, the suspension being introduced under pressure, a pair of electrodes being located above a predetermined level of the medium in the cake holder;

terminating said introduction of the suspension when a portion of the medium above said predetermined level at least partially engulfs said electrodes while continuing to apply said pressure;

Interrupting said pressure when said portion of medium attains a predetermined degree of dehydration as sensed by electrical means including said electrodes, the remainder of the media not being subjected to any drying; and

removing said partially dried medium portion to leave a cake of medium of predetermined dimensions and maximum moisture content through which the liquid is passed to measure the permeability of the medium.

4,128,005

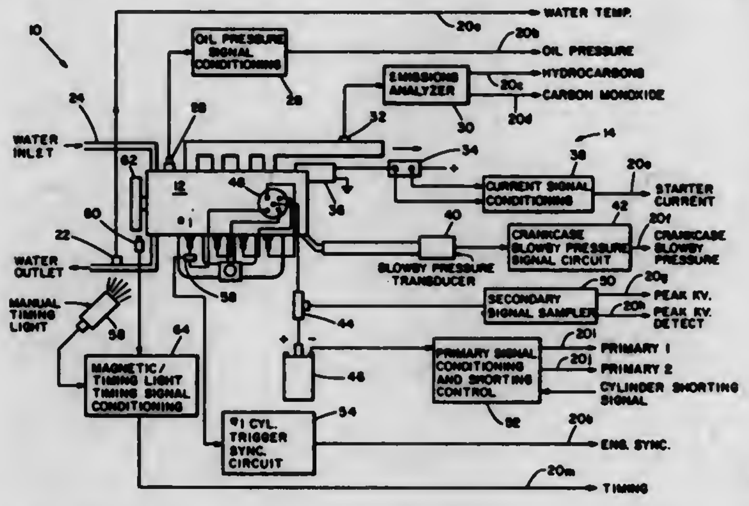
AUTOMATED ENGINE COMPONENT DIAGNOSTIC TECHNIQUES

Robert W. Arnston, Schaumburg; Gerald C. Trussell, Park Ridge, both of Ill., and Leo G. Rich, Rochester, Mich., assignors to Sun Electric Corporation, Chicago, Ill.

Filed Jun. 16, 1977, Ser. No. 807,186

Int. Cl.^{2} G01M *15/00*

U.S. Cl. 73—117.3 **12 Claims**


10
WATER TEMP.
OIL PRESSURE SIGNAL CONDITIONING
OIL PRESSURE
EMISSIONS ANALYZER
HYDROCARBONS
CARBON MONOXIDE
WATER INLET
WATER OUTLET
MANUAL TIMING LIGHT
CURRENT SIGNAL CONDITIONING
STARTER CURRENT
CRANKCASE BLOWBY PRESSURE SIGNAL CIRCUIT
CRANKCASE BLOWBY PRESSURE
BLOWBY PRESSURE TRANSDUCER
SECONDARY SIGNAL SAMPLER
PEAK KV.
PEAK KV. DETECT
MAGNETIC/ TIMING LIGHT TIMING SIGNAL CONDITIONING
PRIMARY SIGNAL CONDITIONING AND SHORTING CONTROL
PRIMARY 1
PRIMARY 2
CYLINDER SHORTING SIGNAL
#1 CYL. TRIGGER SYNC. CIRCUIT
ENG. SYNC.
TIMING

1. An apparatus for diagnosing an internal combustion engine including a plurality of engine components and a plurality of engine operating parameters, said engine having engine specifications for said engine operating parameters, comprising in combination:

input means for providing input signals representative of said engine operating parameters;

memory means for storing said engine specifications in the form of discrete coded data specifying a problem level associated with one or more of the operating parameters;

processor means for:

(i) respectively comparing said input signals and said engine specifications;

(ii) generating a plurality of diagnostic signals, each of said diagnostic signals representing the correlation between a said engine operating parameter and a said engine specification;

(iii) selectively analyzing at least one of said diagnostic signals; and

(iv) generating an instructional signal indicating an operating state of at least one of said engine components; and

display means for visually displaying said instructional signal.

4,128,006

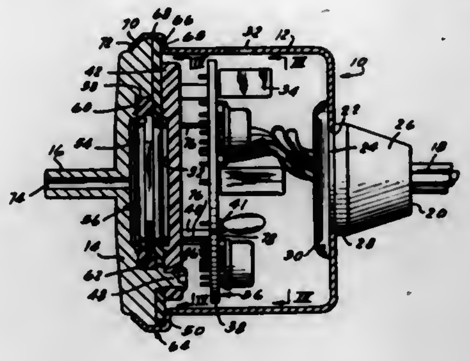
PACKAGING OF PRESSURE SENSOR CELLS

Ronald D. Grabow, Delavan, Wis., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Dec. 13, 1976, Ser. No. 749,809

Int. Cl.^{2} G01L *9/12*

U.S. Cl. 73—724 **26 Claims**



1. Pressure transducer apparatus comprising:

a pressure capsule including a pair of capacitances which are variable in response to pressure;

chamber forming means defining a sealed chamber including a port for connection in fluid communication with a pressure to be detected, said capsule mounted in and dividing said chamber into two parts, said port opening into one of said chamber parts;

an electric circuit connected to said capacitances and responsive to the capacitance thereof to produce an output signal indicative of the detected pressure;

resilient means mounting said capsule in said chamber to prevent capacitance changes in response to deliterious environmental changes; and

a fluid passageway extending through said resilient means to connect said two parts of said chamber in fluid communication so that each of said capacitances is subjected to the same pressure.

4,128,007

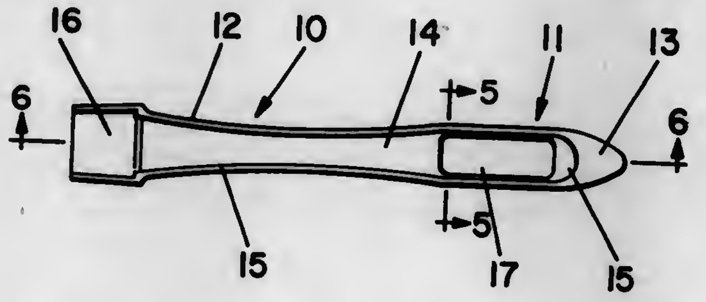
SUPPORT MEMBER FOR A DISPOSABLE THERMOMETER

Roy A. Ulin, Wyckoff, N.J., assignor to Akzona Incorporated, Asheville, N.C.

Filed Jan. 16, 1978, Ser. No. 869,406

Int. Cl.^{2} G01K *11/12*

U.S. Cl. 73—352 **13 Claims**



1. An adapter for use with an attachment to a disposable thermometer comprising:

an elongated substantially rigid member;

said member having a forward section and a rearward section;

said member further having means to retain a disposable thermometer thereto;

said forward section having an opening therethrough for providing improved thermal conductivity to the thermometer.

4,128,008

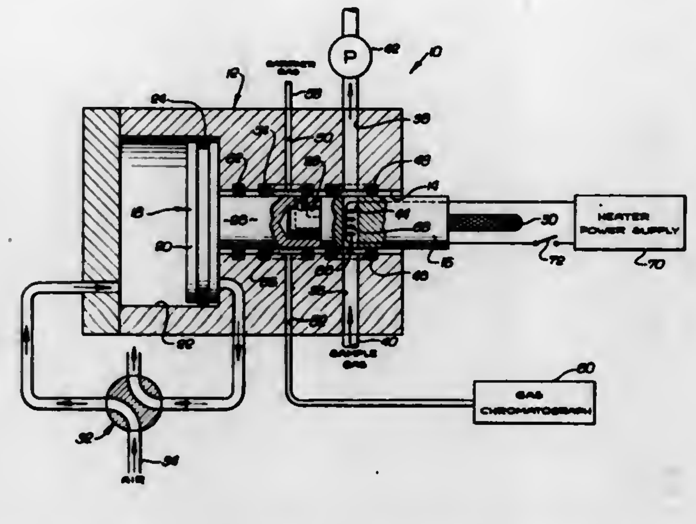
CONCENTRATION VALVE FOR A GAS DETECTING APPARATUS, OR THE LIKE

Amos Linenberg, North Hollywood, Calif., assignor to Xonics, Inc., Van Nuys, Calif.

Filed May 4, 1977, Ser. No. 793,608

Int. Cl.^{2} G01N *1/22*

U.S. Cl. 73—422 GC **3 Claims**



1. In a concentration valve for a gas detecting apparatus, or the like, the combination of:

(a) a cylinder having circumferentially spaced, diametrically opposed inlet and outlet ports for a sample gas, and having circumferentially spaced, diametrically opposed inlet and outlet ports for a carrier gas longitudinally spaced from and in the same longitudinal plane as the sample-gas inlet and outlet ports;

(b) a cylindrical plug provided with a diametrical passage therethrough having ends respectively adapted to communicate with said sample-gas inlet and outlet ports, or with the carrier-gas inlet and outlet ports, said cylindrical plug being movable longitudinally of said cylinder between a sampling position wherein said passage therethrough communicates with said sample-gas inlet and outlet ports and an analyzing position wherein said passage therethrough communicates with said carrier-gas inlet and outlet ports;

(c) adsorbing means in said passage through said cylindrical plug and operable to adsorb in said sampling position;

(d) means for heating said adsorbing means in said analyzing position;

(e) actuating means for longitudinally moving said cylindrical plug between said sampling and analyzing positions, said actuating means comprising a second cylinder coaxial with the cylinder first mentioned, a piston in said second cylinder, means for securing said cylindrical plug to said piston, and valve means for selectively directing air under pressure to opposite ends of said piston; and

(f) said means for securing said cylindrical plug to said piston comprising a readily releasable connecting means.

4,128,009

ADJUSTABLE DILUTING DEVICE

Eric Marteau D'Autry, 69-72 rue Gambetta, 95 Villiers-le-Bel, France

Filed Aug. 11, 1977, Ser. No. 823,552

Claims priority, application France, Aug. 18, 1976, 76 25081

Int. Cl.^{2} B01L *3/02*

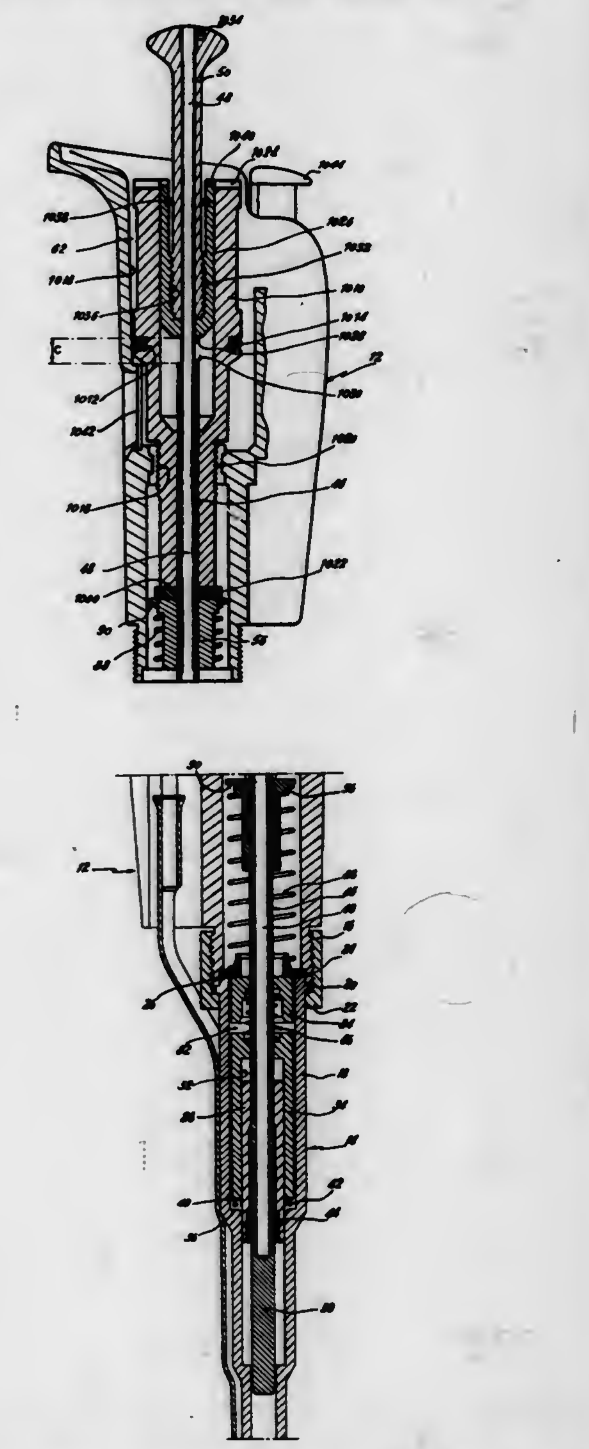
U.S. Cl. 73—425.6 **14 Claims**

1. An adjustable diluting device intended for mixing a predetermined volume of a liquid sample and a predetermined volume of a liquid diluent, of the type comprising an oblong casing, internally defining an essentially cylindrical cavity, and a lower tapered tubular element, or nose member, said casing and said nose member being made fast with each other, and comprising a plunger unit adapted for reciprocal movement in tight manner inside said casing and said nose member, said plunger unit itself comprising:

a first piston having a central cylindrical recess opening on its lower surface, this first piston being so arranged as to slide in tight manner inside said nose member,

a second cylindrical piston of circular cross-section adapted to slide in said central cylindrical recess made in the first piston, with the interposition, between said central cylindrical recess and the second piston, of a sealing ring acting at the same time as frictionally mounted joint;

a sleeve for controlling the first piston, which is fast with said first piston, and which presents on its outer surface an annular shoulder adapted to cooperate with a stop for limiting the upward stroke of the first piston, and



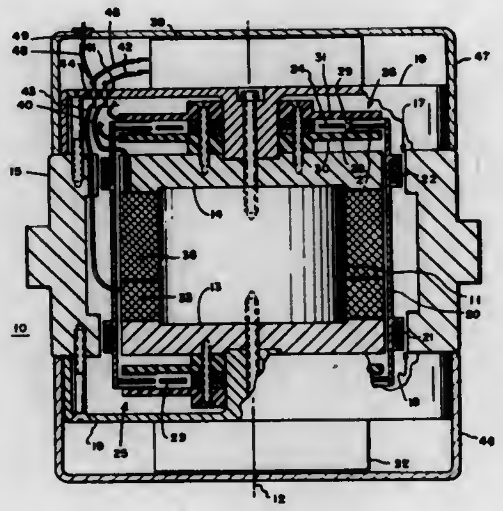
a shaft for controlling the second piston, which is fast with said second piston and which is adapted to slide inside the sleeve for controlling the first piston,

said diluting device further comprising:

a member for regulating the stroke of the first piston, said regulating member being housed in said cavity of the casing, coaxially with respect to said cavity, and having on at least a part of its outer surface a thread adapted to cooperate with a corresponding thread made on the inner surface of said cavity, the lower end of said regulating member acting as stop for limiting the upward stroke of the first piston, whilst the upper part of said regulating member terminates in a sleeve open at its upper end;

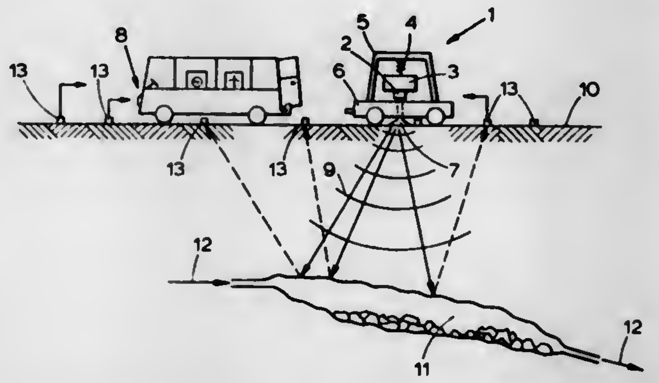
- a tubular adjusting member adapted to move freely inside the upper part of the regulating member, the lower end of which has a stop surface adapted to cooperate with the free upper end of the sleeve for controlling the first piston and of which at least a part of the inner surface is threaded, and,
- a tubular push element made fast with the shaft for controlling the second piston, the lower end of which is provided with an outer thread adapted to cooperate with said inner thread made on the inner surface of the tubular adjusting member, a frictionally mounted joint being interposed between said tubular push element and the inner surface of the tubular adjusting member.

4,128,010
TEMPERATURE COMPENSATED PERMANENT MAGNET/MOVING COIL ACCELEROMETER
Vernon H. Aske, Hopkins, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Sep. 21, 1977, Ser. No. 835,272
Int. Cl.² G01P *15/08*
U.S. Cl. 73—497 **10 Claims**



1. A temperature compensated accelerometer comprising:
- a housing;
- permanent magnet means mounted in said housing for producing a magnetic field in a defined region;
- a mass having a coil thereon lying in a plane perpendicular to a central axis of the coil;
- a suspension system for mounting said mass so that said coil is positioned in the defined region with the axis of the coil transverse to the direction of magnetic field, said suspension system permitting movement of said mass relative to said housing;
- position sensing means for producing a position signal indicative of displacement of said mass from a predetermined position relative to said housing;
- servo amplifier means for producing a rebalance current in response to the position signal;
- electrical conductor means for supplying the rebalance current to said coil, whereby said mass is maintained in the predetermined position;
- a temperature sensing winding for producing a temperature signal indicative of the temperature of said permanent magnet means;
- an auxiliary winding associated with said permanent magnet means for augmenting the magnetic field produced in the defined region;
- a differential amplifier having inverting and noninverting input terminals and an output terminal;
- means for connecting said auxiliary and temperature sensing windings in series in a negative feedback circuit between the output and inverting input terminals of said differential amplifier; and
- biasing means for supplying biasing voltages to the inverting and noninverting input terminals of said differential amplifier.

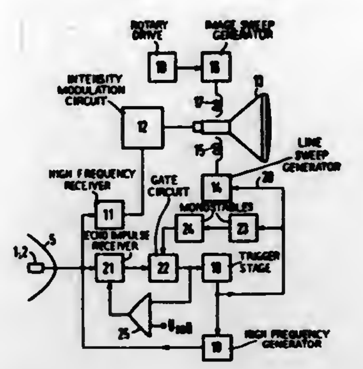
4,128,011
INVESTIGATION OF THE SOUNDNESS OF STRUCTURES
Robert J. Savage, Ulverley House, Woodland Way, Kingswood, Surrey, England
Filed Jul. 15, 1975, Ser. No. 596,120
Claims priority, application United Kingdom, Jul. 16, 1974, 31500/74; Nov. 28, 1974, 51660/74; Dec. 12, 1974, 53803/74
Int. Cl.² G01N *29/00*; G01V *1/14*
U.S. Cl. 73—579 **24 Claims**



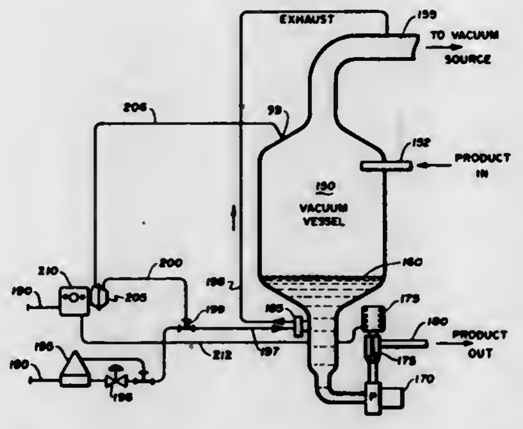
1. A method of locating and determining the extent of any near surface structural void, shear plane, fault, inclusion zone, weakness or anomaly within a structure said method comprising the steps of:
- transmitting a vibration wave of momentary fixed frequency over a large frequency range into and through said structure from a specific vibration input location and thereby producing vibration responses at various points in said structure;
- detecting the vibration responses at a plurality of detection locations spaced from said vibration input location over at least a substantial two dimensional structure area;
- determining the first frequency vibration responses at said detection locations; and
- plot connecting the detection location points of maxima or resonance frequency to indicate the presence and to define by contour outline the location, size and nature of a void, shear plane, fault, inclusion, zone of weakness, or anomaly within said structure.

4,128,012
ULTRASONIC EXAMINATION APPARATUS OPERATING ACCORDING TO THE IMPULSE-ECHO METHOD
Richard Soldner, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Oct. 27, 1977, Ser. No. 846,161
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1976, 2651001
Int. Cl.² G01N *29/00*
U.S. Cl. 73—611 **7 Claims**

1. Ultrasonic examination apparatus operating according to the impulse-echo method, particularly intended for medical purposes, comprising an ultrasonic transmitting/receiving system for radiating ultrasonic impulses into a subject to be examined, and having a precursor path through which the ultrasonic impulses are transmitted, an echo impulse imaging device, operated in dependence upon the transmit impulses, for forming an image of the echo impulses of each transmit pulse arriving at the receiver in chronological succession corresponding to the time sequence of their occurrence, characterized by an additional installation with a time measuring means (21 through 25) for determining the precursor time (T_v) of each transmit impulse through the precursor path (6), and an adjustment means (19) for adjusting the impulse sequence time (T_s) of respective consecutive transmit impulses to the measured precursor time.

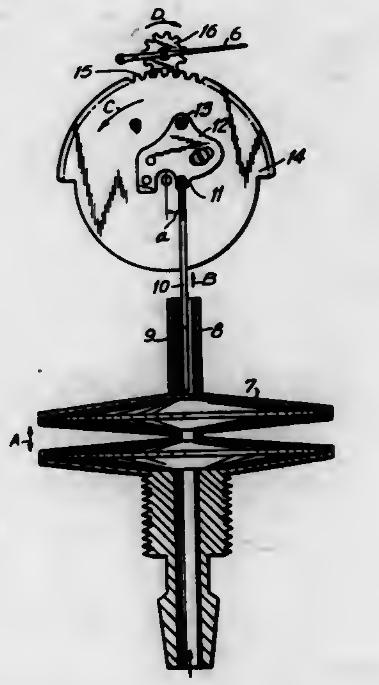


4,128,013
PRESSURE TRANSDUCER
Joseph A. Perry, 1815 Eleanor Ave., St. Paul, Minn. 55116
Filed Jul. 8, 1977, Ser. No. 813,932
Int. Cl.² G01L *7/08*
U.S. Cl. 73—701 **8 Claims**



1. A pressure transducer adapted to be mounted in the wall of a container having an opening therein for sensing pressure within the container, comprising, a mounting member for said transducer having a body portion adapted to be sealed to said container over the opening therein, said mounting member having an inner flange at one end thereof adjacent the container with an opening therein communicating with the opening in the container, an outer flange upon said mounting member at the other end thereof for mounting said transducer within said mounting member, said mounting member having a bore therethrough between said inner and outer flanges, a flat pressure sensitive diaphragm positioned in the mounting member, sealing members positioned on both sides of said diaphragm around the edges thereof, a transducer body positioned within the bore of the mounting member, means clamping said transducer body within said mounting member with said diaphragm positioned between said inner flange of said mounting member and an inner end of said transducer and with said sealing members sealing said diaphragm to said mounting member and said end of said transducer body to permit movement of the diaphragm toward and away from said transducer body and with said diaphragm exposed to the opening in said container, said diaphragm forming a pressure chamber with the end of said transducer body, an exhaust passage means positioned centrally through said transducer body communicating with said pressure chamber, an exhaust nozzle mounted in the said exhaust passage and adapted to be adjustably positioned axially therein relative to said diaphragm, additional passage means through said transducer body communicating with said pressure chamber adapted to be connected to a fluid pressure source for establishing a pressure within said chamber which is controlled by the position of said diaphragm relative to said exhaust passage nozzle and is equal to the fluid pressure within said container, said exhaust passage means being a tapped aperture through the transducer body with the exhaust nozzle having a threaded exterior surface and a centrally located aperture therein such that the exhaust nozzle may be threaded into the exhaust passage, means in the end of the exhaust nozzle remote from the diaphragm for adjusting the position of the exhaust nozzle axially in the exhaust passage, and means connected to exhaust passage means to remove exhaust air to a subatmospheric destination.

4,128,014
FINE-ADJUSTING ARRANGEMENT FOR A SPHYGMOMANOMETER
Shachio Enatsu, Tokyo, Japan, assignor to Bristoline Inc., Island Park, N.Y.
Filed Dec. 12, 1977, Ser. No. 859,746
Claims priority, application Japan, Dec. 14, 1976, 51-167682[U]
Int. Cl.² G01L *7/06*
U.S. Cl. 73—729 **12 Claims**

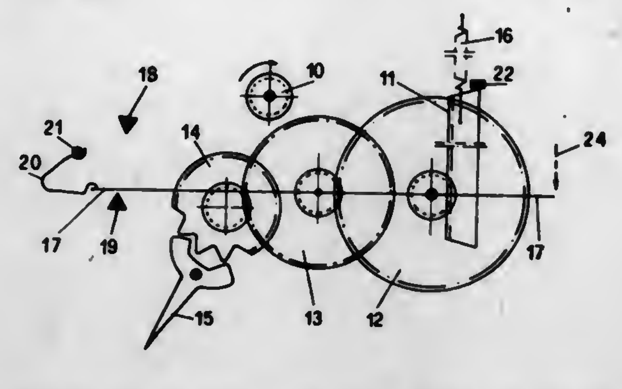


1. In an apparatus for measuring pressure, particularly a sphygmomanometer, a combination comprising:
- (a) a movable indicator;
- (b) actuating means movable in response to changes in air pressure generated in the apparatus;
- (c) coupling means operatively connected to said actuating means and said indicator for moving the latter along a path between a floating starting position and an end measuring position, said coupling means including a pair of coupling members spaced from each other at a spacing which determines the position of said indicator along the path; and
- (d) fine-adjusting means for shifting said coupling members relative to each other to thereby vary said spacing and for setting said indicator with fine continuous adjustment to said starting position, including
  - an elongated adjustment member having a threaded shaft portion, and
  - a support mounted on one of said coupling members and having a passage in which said shaft portion is mounted in threaded engagement therewith for infinite variable displacement relative to the other of said coupling members.

4,128,015

DEVICE FOR THE STORAGE OF POWER AND ITS CONTROLLABLE, SLOW RATE RELEASE

Rodolfo Cicatelli, Lugano, Switzerland, assignor to Autovox, S.p.A., Rome, Italy
Filed Feb. 2, 1977, Ser. No. 765,024
Claims priority, application Italy, Feb. 2, 1976, 47899 A/76
Int. Cl.² F16H *27/02*
U.S. Cl. 74—89.17 10 Claims

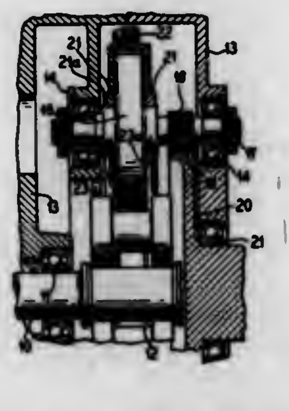


1. A device for the storage of power and its controllable, slow rate release, comprising: a storage member coupled to a drive member; a wheelwork alternatively operated by a motor and by the storage member; a lever fulcrumed to at least one wheel of the wheelwork and oscillating between two fixed positions; and an escapement means selectively coupled to said wheelwork; wherein, when said lever is in one of said fixed positions, the wheels of the wheelwork are in meshing engagement with a motor driven wheel and the storage member stores the power transmitted to it, and, when said lever is in said other fixed position, the wheelwork is disengaged from said motor and cooperates with and is coupled to, by movement of said level, one portion of a double-action member of said escapement means for selectively locking and slowly releasing the storage member.

4,128,016

HYBRID ROLLER GEAR TRANSMISSION

Algirdas L. Nasvytis, 10823 Magnolia Dr., Cleveland, Ohio 44106
Filed Jul. 6, 1976, Ser. No. 702,434
Int. Cl.² F16H *13/02*
U.S. Cl. 74—206 7 Claims

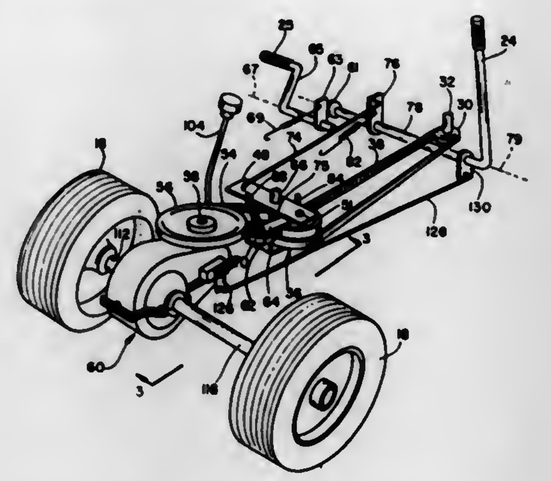


1. In combination in a power transmission device, a friction roller sun gear member, a plurality of rows of friction rollers including, a first circumferential row of friction rollers in driven contact with said sun member, a second row of circumferential rollers in contact with said first row, each roller of said first row contacting a pair of said second row rollers, a pair of peripherally fixed anti-friction bearing means rotatably supporting each roller of the outermost row, and axially spaced on opposite sides of each such roller, annular free-floating preload distributing ring means encircling and contacting the outermost row of said friction rollers, and drive output positive pinion gear means carried by each of said outermost row rollers between said bearing means and in positive drive connection with an annular output gear, the contact between said friction rollers comprising solely friction contact and the positive pinion gear drive output means comprising solely toothed contact.

4,128,017

VARIABLE SPEED DRIVE

George C. Clarke, 10509 Penfield Ave., Chatsworth, Calif. 91311
Filed Apr. 27, 1977, Ser. No. 791,373
Int. Cl.² F16H *55/52, 7/10*
U.S. Cl. 74—230.17 D 33 Claims

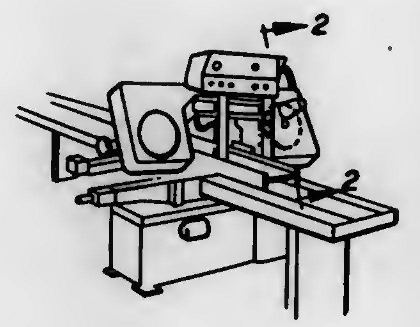


1. A variable speed drive comprising a frame; a driving pulley and a driven pulley each rotatably mounted with respect to said frame; a double pulley variable speed sheave assembly; a first belt reeved about said driving pulley and sheave assembly; a second belt reeved about said driven pulley and sheave assembly; first means carrying said sheave assembly and including means for shifting the position of said sheave assembly with respect to said driving and driven pulleys for altering the drive ratio of said sheave assembly through a range of low to high speed operating positions; and second means including an idler pulley for engaging one of said belts, means for movably mounting said idler pulley to said first means, and means for yieldably urging said idler pulley into engagement with said one of said belts.

4,128,018

DRIVE WHEEL

Andy Muntean, 20827 Sparta La., Olympia Fields, Ill. 60461
Filed Sep. 28, 1977, Ser. No. 837,081
Int. Cl.² F16H *1/06, 55/12*
U.S. Cl. 74—413 4 Claims



1. A drive wheel assembly for a machine tool of the band saw type comprising:

a rim section comprising a circular ring having a generally flat radially outer surface adapted to engage and drive an endless saw band or the like;

said rim section being provided with a plurality of circumferentially spaced, radially inwardly extending gear teeth on its radially inner surface, said teeth being adapted to engage and be driven by a rotatable driven pinion gear;

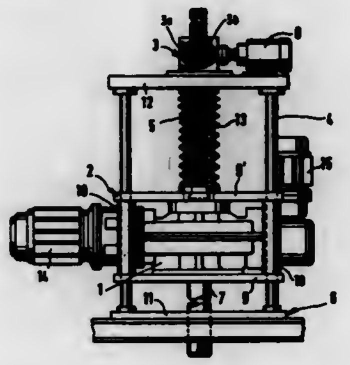
a hub section comprising a generally flat plate provided with a centrally located hub section adapted to permit rotation of said plate about an axis perpendicular to said plate; and

mechanical attaching means for attaching said hub section to said rim section with said axis collinear with the axis of said rim section.

4,128,019

STIRRING MECHANISM FOR A CLEARING VAT EMPLOYED IN BREWERIES

Dieter Kupka, Binger Landst. 37a, 6570 Kirn, Nahe, Germany
Filed Apr. 26, 1977, Ser. No. 790,894
Claims priority, application Fed. Rep. of Germany, May 22, 1976, 7616495[U]
Int. Cl.² F16H *27/02, 1/18*
U.S. Cl. 74—424.8 R 10 Claims

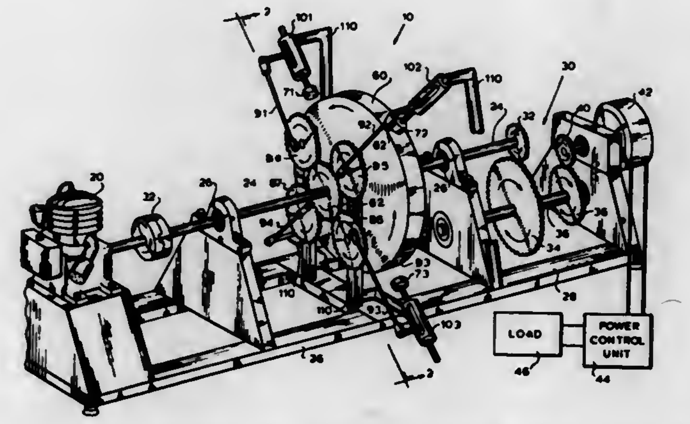


1. A stirring mechanism for clearing vats which are used in breweries, comprising a movable frame, an electric drive motor mounted on said movable frame, a worm gear drive connected to said electric drive motor for operation thereby and being mounted on said movable frame, a stirrer shaft connected to said worm gear and being rotatable thereby and depending from and rotatably supported on said movable frame, a fixed support frame having guide rod means for guiding said movable frame for upward and downward movement, an intermediate member secured to said movable frame and guided on said fixed support frame, and an elevating motor mounted on said fixed support frame and connected to said intermediate member to drive said intermediate member and said frame upwardly and downwardly.

4,128,020

ENERGY STORAGE AND TRANSMISSION APPARATUS

Archie B. Gray, 4521 San Pedro Sq., Orlando, Fla. 32807
Filed Apr. 12, 1976, Ser. No. 675,994
Int. Cl.² F16F *15/30;* H02K *7/06, 21/22, 33/00*
U.S. Cl. 74—572 12 Claims



1. An energy storage and transmission apparatus comprising in combination:

a flywheel for storing kinetic energy in the rotational movement thereof, said flywheel having flywheel magnets attached thereto, said flywheel magnets being equidistantly spaced about a circumferential surface of said flywheel;

disengagable flywheel actuating means coupled to said flywheel for supplying rotary kinetic energy thereto;

coacting magnet means spaced from said flywheel for coacting with said flywheel magnets, said coacting magnet means comprising a plurality of peripheral magnets circumferentially spaced about said circumferential surface of said flywheel;

linkage means coupled between said coacting magnet means and said flywheel for moving said coacting magnet means in a timed relation with said flywheel magnets for imparting further rotation to said flywheel;

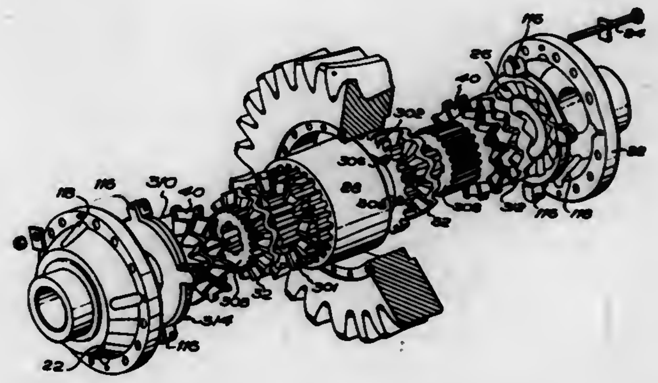
said linkage means further comprising eccentric means coupled between said flywheel and said peripheral magnets for transforming the rotational motion of said flywheel into linear motion of said peripheral magnets and said linear motion of said peripheral magnets being directed radially towards a center of rotation of said flywheel; and

power take off means coupled to said flywheel for removing kinetic energy therefrom.

4,128,021

DIFFERENTIAL MECHANISM

Reginald Knowles, Montrose, The Cliffe, Tansley, Matlock, Derbyshire, England
Filed Mar. 29, 1977, Ser. No. 782,447
Claims priority, application United Kingdom, Apr. 5, 1976, 13736/76
Int. Cl.² F16H *35/04*
U.S. Cl. 74—650 7 Claims

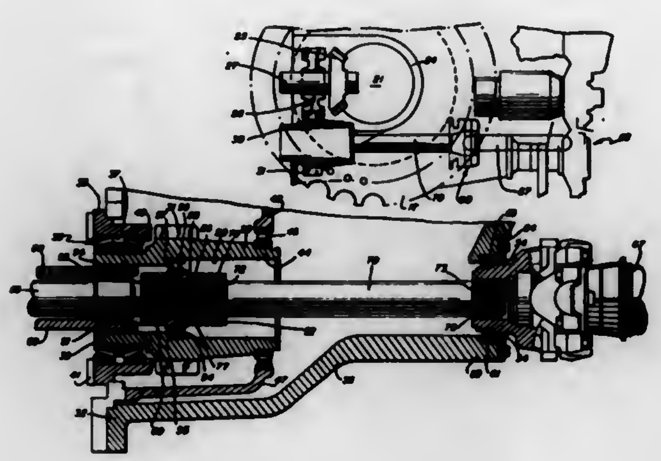


1. A differential mechanism including a pair of toothed-plate elements drivably connected to a cage assembly; a pair of toothed reaction members for driving respective output shafts extending through opposite sides of said cage assembly; a central toothed abutment member between the pair of toothed reaction members; respective axially-movable intermediate toothed-plate members disposed between the first mentioned toothed-plate elements and the reaction members; and means coupling together the intermediate toothed-plate members and the central abutment member for simultaneous rotational movement; the teeth of the toothed-plate elements and of the central toothed abutment member, and the teeth which are formed on front and back faces of the reaction members, being radiating teeth having flanks which are inclined relative to the general planes of the elements, the arrangement being such that, when the reaction members are being driven at a common rate of rotation, their driving disc portions abut against the central abutment member without relative movement and receive drive equally but such that, when one of the reaction members is required to rotate faster than the other, it can "precess" relative to the other by its teeth sliding up and down the flanks of the teeth of the central abutment member and of the intermediate plate member between which it is disposed, accompanied by alternate axial movements in opposite directions.

4,128,022

ROTATABLE SHAFT COUPLING

Arthur J. Ritter, Metamora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Feb. 14, 1977, Ser. No. 768,121
Int. Cl.² F16H *47/02*
U.S. Cl. 74—694 9 Claims



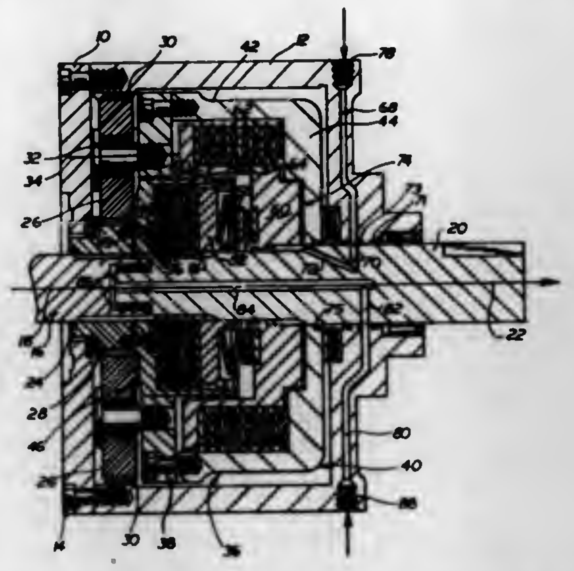
5. A rotatable coupling assembly mounted within a housing (33) having openings (37, 63) at opposite ends (32, 59) thereof, said coupling assembly comprising:

- an output sleeve (30) rotatably supported by said housing (33) at one open end (32) thereof, said output sleeve (30) having an axial bore (50) extending between its respective opposed ends (35, 44) with one end (35) opening externally of said housing (33) and being internally splined;
- a bearing assembly (36) disposed adjacent each end of said output sleeve (30) between said housing (33) and said output sleeve (30) for rotatably supporting said output sleeve (30) in said housing (33);
- a coupling sleeve (52) rotatably supported within said output sleeve (30) and having an internally splined bore (77) extending between its respective opposed ends (79, 80);
- a bearing assembly (54) disposed between said coupling sleeve (52) and said output sleeve (30) for rotatably mounting said coupling sleeve (52) for rotation independent of output sleeve rotation;
- a first shaft (70) coaxial with said coupling sleeve (52) and having one end (72) externally splined and extending into one end (79) of the bore (77) of said coupling sleeve (52) to releasably connect said first shaft (70) therewithin, said first shaft being rotatably supported by said housing at the opposite open end (59) and extending through the opening (63) in said housing (33) at the end opposite said output sleeve (30);
- a second shaft (83) coaxial with said first shaft (70) having one end (85) externally splined and extending into the other end (80) of the bore (77) of said coupling sleeve (52) to releasably connect said second shaft (83) therewithin; and
- a third shaft (88) coaxial with said first and second shafts (70, 83) and with said output sleeve (30), said third shaft (88) having an axial bore (89) extending between its respective opposed ends (93), said second shaft (83) being rotatably supported within the bore (89) and extending from one end (93) thereof into said coupling sleeve (52), one end (93) being externally splined and extending into said one end (35) of said output sleeve (30) to releasably connect said third shaft (88) therewithin, the other end of said third shaft (88) extending externally of one end of said housing (33), whereby said coupling sleeve (52) joins said first and second shafts (70, 83) together in coaxial relation for independent rotation relative to said third shaft (88).

4,128,023

COUPLING APPARATUS

Mark R. Kinder, Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio
Filed Jul. 19, 1976, Ser. No. 706,447
Int. Cl.² F16H *3/44;* F16D *25/00*
U.S. Cl. 74—750 R 11 Claims



1. Apparatus comprising a two-speed transmission unit for coupling a rotatable input shaft to a rotatable output shaft, said unit comprising a sun gear rotatable about a central axis thereof, means for fixedly mounting said sun gear on said input shaft for rotation in response to rotation of the input shaft, a ring gear encircling said sun gear, at least one planet gear in meshing engagement with said sun gear and said ring gear with the central axis of said planet gear adapted to orbit about the central axis of said sun gear, a planet carrier carrying said planet gear and rotatable therewith about the central axis of said sun gear, means supporting said planet carrier for rotation about an axis coaxial with the axes of said input shaft and said sun gear, first clutch means selectively engageable to connect said sun gear to said output shaft for rotating said output shaft at a first angular velocity equal to the angular velocity of said sun gear, second clutch means selectively engageable to connect said planet carrier to said output shaft for rotating said output shaft at a second angular velocity at a speed equal to the angular velocity of the planet carrier about the sun gear, means continuously biasing both of said first and second clutch means into engaged condition, and means for selectively placing either of said first and second clutch means in a disengaged condition, said biasing means serving to place both of said first and second clutch means in engaged condition to lock said input and output shafts against rotation whenever neither of said first nor said second clutch means is placed in disengaged condition.

4,128,024

FUSE-MATE

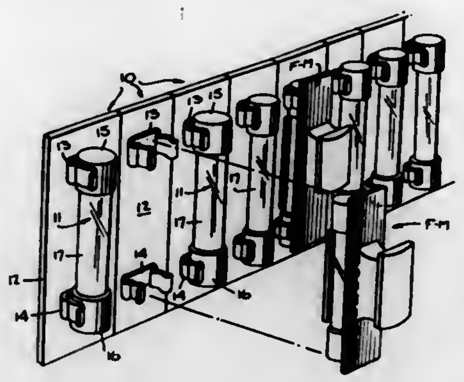
Irving Hyams, Philadelphia; Harold S. Koch, Plymouth Meeting, and Herman C. Aafjes, Hatfield, all of, Pa., assignors to Fischer & Porter Co., Warminster, Pa.
Continuation-in-part of Ser. No. 785,526, Apr. 7, 1977, Pat. No. 4,094,212. This application Oct. 26, 1977, Ser. No. 845,588
The portion of the term of this patent subsequent to Jun. 13, 1995, has been disclaimed.
Int. Cl.² B23P *17/00*
U.S. Cl. 81—3.8 6 Claims

1. A fuse-mate formed of insulating material and adapted to be coupled to a cartridge-type fuse having a cylindrical casing whose ends are enclosed by terminal caps, said caps being engageable by the spring clips of a fuse holder, said fuse-mate facilitating the insertion or extraction of said fuse with respect to said holder and comprising:

A. a block-shaped socket whose length is substantially equal to that of said casing, said socket having a longitudinally-extending channel formed therein adapted to accommodate said fuse casing, and lateral inlet jaws which are dilatable under pressure to admit an inserted casing into the channel, the jaws then reverting to their normal position in which they serve to lock the casing within the channel;

B. a shield whose underside is secured to the upper surface of the socket and extending beyond either end thereof to overlie and protectively cover the caps of the socketed fuse; and

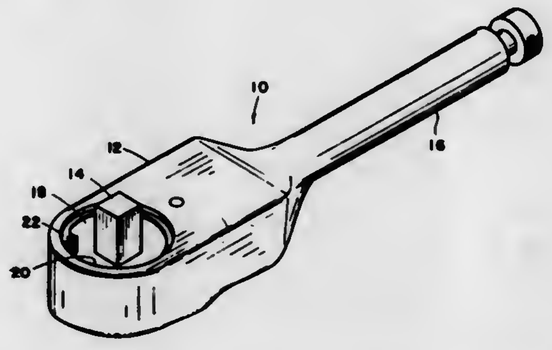
C. a handle secured to the upper side of the shield, the lower surface of said block defining a shelf to maintain said fuse in said channel when an outward pulling force applied to said handle to extract said fuse from the holder is resisted by said spring clips.



4,128,025

BOLT STARTING DEVICE

Harvey M. Main, 820 E. Grove, Dewey, Okla. 74029, and Doug Main, 12954 E. 32nd, Tulsa, Okla. 74134
Filed Aug. 8, 1977, Ser. No. 822,749
Int. Cl.² B25B *13/00*
U.S. Cl. 81—58.1 6 Claims

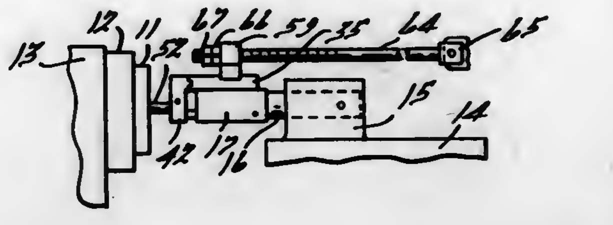


1. An improvement in a ratchet wrench having selectable ratcheting action to rotate a drive stud in either direction, and an elongated handle member, the improvement comprising a three position ratchet pawl switch, a first position to effect ratcheting action in one direction, a second position to effect ratcheting action in the opposite direction, and third position to effect disengagement of the ratcheting action, means to rotate the drive stud in either direction when the ratchet pawl switch is in the third position, and remote control member disposed at the outer end of the handle member and operably connected with the ratchet pawl switch and the means to rotate the drive stud for remote manipulation of said ratchet pawl switch and for remote rotation of said drive stud when said ratchet pawl switch is in said third position.

4,128,026

TOOL HOLDER

John R. Scaduto, 14460 E. State Fair, Detroit, Mich. 48205
Filed Dec. 23, 1975, Ser. No. 643,691
Int. Cl.² B23B *5/00*
U.S. Cl. 82—11 1 Claim

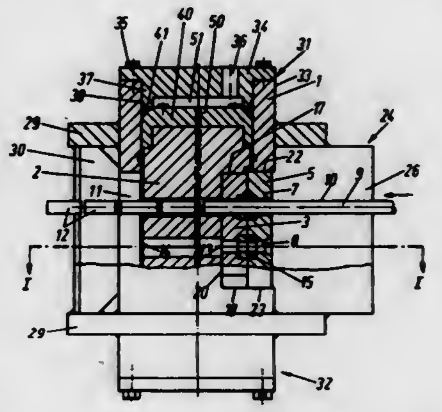


1. In a tool holder for advancing a cutting tip laterally of an advancing shank, a head on said shank having a recess, a slide holder within said recess for adjustment angularly therein, a dovetail slide in said holder, a stop plate adjustably supported on said slide, spring means biasing said stop plate forwardly of said head and shank, means for stopping said stop plate during its advancement to cause the slide and stop plate to stop and be advanced laterally as the slide holder and head continue to advance, means to angularly position said slide and slide holder in said recess, the stop plate and slide and the slide holder and head have aligned apertures, a dowel pin in the apertures in the stop plate and slide, a dowel pin in the apertures in the slide holder and head, and means for clamping said slide holder to the head and said slide to the stop plate after the adjustment thereof in said recess, the sides of said recess having portions which are parallel to each other along the direction of movement of the head, the remaining portions being parallel but at an angle to the first said portion.

4,128,027

SHEARING DEVICES

Ernst E. Fuchs, Schmerikon, Switzerland, assignor to Mecafina S.A., Switzerland
Filed Jul. 20, 1977, Ser. No. 817,128
Claims priority, application Switzerland, Jul. 23, 1976, 9494/76; Jul. 4, 1977, 8177/77
Int. Cl.² B26D *1/06, 3/16*
U.S. Cl. 83—198 11 Claims



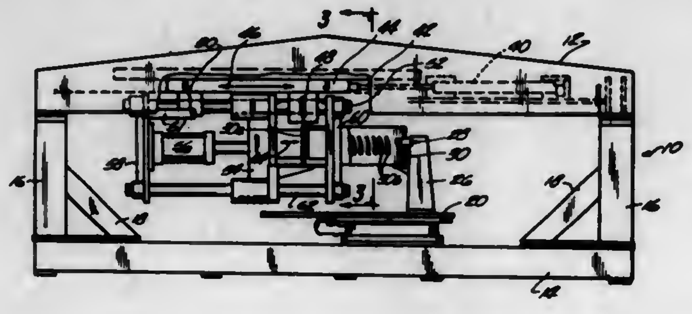
1. A shear for severing sections of a profiled material comprising a cylindrical housing disposed horizontally and having it its wall a recess, a stationary shear beam removably mounted in said recess, a yoke on said housing mounted on both sides of said recess and bridging said recess, said stationary shear beam bearing against said yoke, a cylindrical body in said cylindrical housing, said cylindrical body having on one side a recess, a movable shear beam being removably mounted in said recess, each of said shear beams having at least one shear opening, said opening having a profile adapted to that of said material to be severed, said cylindrical housing and said cylindrical body having inlet and outlet openings for said material in alignment with the shear opening in the respective shear beam, a plurality of pressure pistons arranged in cylindrical bores inside said

cylindrical body and disposed above and below said openings in said cylindrical body for biasing the movable shear beam and the stationary shear beam towards one another transverse to the direction of motion of said cylindrical body, at least during severance of said profiled material, said cylindrical body being movable in said housing by a hydraulic driving mechanism, said housing being in communication with said bores provided with said pressure pistons.

4,128,028

PIERCING APPARATUS

Jan C. Knibbe, Detroit, and Willard J. McPhee, Bloomfield Hills, both of Mich., assignors to Springfield Tool & Die, Inc., Dearborn, Mich.
Division of Ser. No. 596,995, Jul. 18, 1975, Pat. No. 4,038,894. This application Feb. 22, 1977, Ser. No. 770,525
The portion of the term of this patent subsequent to Aug. 2, 1994, has been disclaimed.
Int. Cl.² B26F *1/02*
U.S. Cl. 83—411 R **4 Claims**



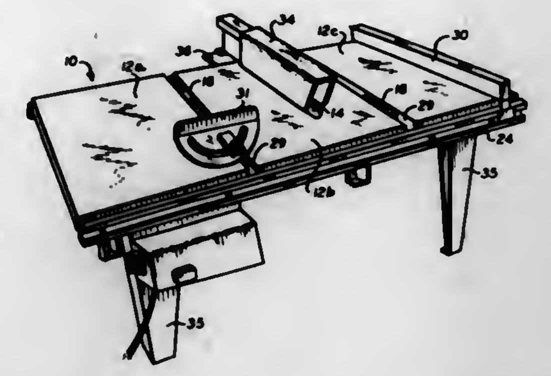
1. Apparatus for performing work on a workpiece, said apparatus comprising;
 a frame;
 an index table mounted to said frame, said table being selectively rotatable about an axis;
 means for mounting said workpiece to said table;
 work performing means mounted to said frame and including a portion selectively movable in a direction substantially perpendicular to the axis of rotation of said index table to perform work on said workpiece in a different location at each rotated position of said table;
 said work performing means comprising at least one bar mounted to said frame, said bar extending in the direction of movement of said work performing means, and a work performing assembly slidably mounted on said bars and a first cylinder means mounted to said bar for selectively moving said work performing assembly along said bar toward and away from said workpiece; and
 a second cylinder means mounted to said frame for selectively moving said bar with respect to said frame and said index table to adjust the position of said work performing means with respect to said workpiece to permit said work performing means to be utilized with different size workpieces.

4,128,029

SUPPORT TABLE FOR CIRCULAR SAW

Danny Gay, Richmond; James Horine; James C. Hudson, both of Lexington; Joseph P. Sallee, and Hershel R. Wininger, both of Richmond, all of Ky., assignors to Irvin Industries, Inc., Stamford, Conn.
Filed Dec. 12, 1977, Ser. No. 859,963
Int. Cl.² B27B *5/22, 25/10, 27/06*
U.S. Cl. 83—437 **7 Claims**

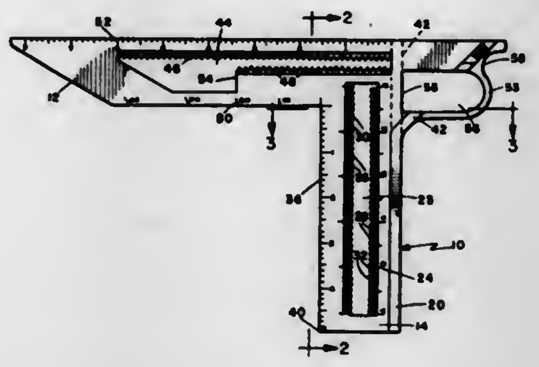
1. A table to support and position a circular saw comprising:
 a table top having a work supporting surface and four legs supporting said table top,
 said table top comprising first, second and third longitudinally spaced segments,
 said first and said second table segments being spaced longitudinally a predetermined distance to provide a first lateral slot and said second and third table segments being spaced longitudinally a predetermined distance to provide a second lateral slot,
 said first and second lateral slots providing first and second tracks for the rail of a mitre gauge,
 a plurality of laterally spaced spacer elements and a plurality of vertically spaced spacer elements in each of said lateral slots, each of said spacer elements having a predetermined width and being positioned between said table segments and in contact with the facing edges of said segments to provide a predetermined uniform width for said first and second lateral slots, and
 front and back longitudinally disposed rails extending, respectively, across the front and back edges of said table segments and fastened to said table segments to provide front and rear rigid supports for said table segments.



4,128,030

CUTTING GUIDE SQUARE

Peter Kundikoff, Rte. 1, Box 204, Escondido, Calif. 92025
Continuation-in-part of Ser. No. 584,134, Jun. 5, 1975, Pat. No. 4,028,976. This application Jun. 6, 1977, Ser. No. 803,616
Int. Cl.² B27B *9/04*
U.S. Cl. 83—745 **5 Claims**

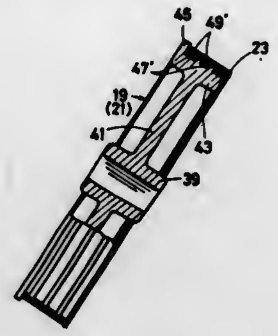


1. A cutting guide square for use with a power saw having a blade extending below the plane of the base comprising:
 a planar guide member and a co-planar base member,
 said guide member comprising a thickness of sheet material and having an outer straight guiding edge,
 said base member having a flange means for engaging the edge of a workpiece on which said base member may be received, said flange lying in a plane perpendicular to said planar guide member and said straight guiding edge,
 said flange being secured along and extending from at least one side of said base member, at least a portion of said base member lying between the adjacent portion of said flange and said guide member,
 blade-platform edge offset indicia means for establishing the distance by which the blade of a power saw is offset from the edge of the saw platform and for positioning the guiding edge of said square on a workpiece at the corresponding distance from the location of a line of intended cut,
 said guide member incorporating at least one finger grip means comprising an opening for grasping said square and said workpiece through said square.

4,128,031

HORIZONTAL BANDSAW MACHINES

Masao Sato, Hatano, Japan, assignor to Amada Company, Limited, Isehara, Japan
Filed Sep. 2, 1977, Ser. No. 830,180
Claims priority, application Japan, Sep. 8, 1976, 51-107591
Int. Cl.² B23D *55/08;* B27B *13/06*
U.S. Cl. 83—820 **2 Claims**

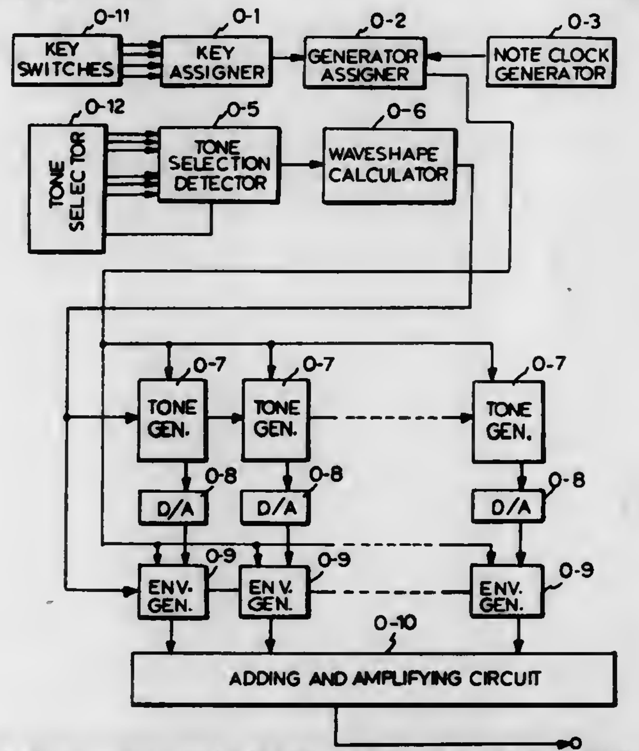


1. In a bandsaw having a bandsaw blade trained around at least one bandsaw wheel rotatably carried on a cutting head, the improvement comprising: laterally spaced grooves in the periphery of said wheel, said grooves each being dovetailed in cross-section with the wider groove section being at the groove bottom, and annular rubber-like members with round cross-sections received in said grooves and protruding therefrom beyond the wheel periphery to provide radial support for the bandsaw blade at a plurality of laterally spaced locations.

4,128,032

ELECTRONIC MUSIC INSTRUMENT

Ryoichi Wada, Habikino; Katsumi Fujisaki, Katano; Masaya Nakajima, Neyagawa; Masahiko Tsunoo, Suita, and Takeji Kimura, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Oct. 30, 1975, Ser. No. 627,473
Claims priority, application Japan, Nov. 14, 1974, 49-131704
Int. Cl.² G10H *1/00*
U.S. Cl. 84—1.01 **13 Claims**

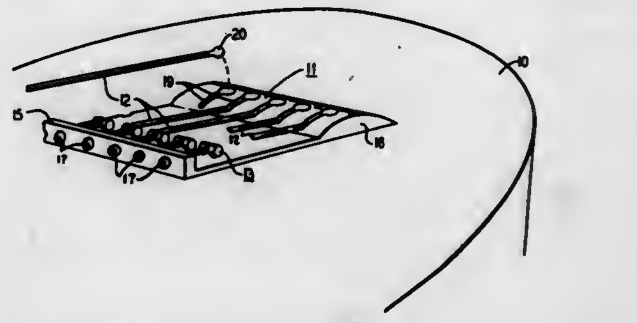


1. An electronic musical instrument comprising at least one tone selecting means for selecting musical tones; waveshape calculating means coupled to said tone selecting means for calculating a waveshape represented by amplitudes at two or more than two sampled points for the selected musical tone, said calculating means being operative whenever one of said tone selecting means is actuated; a plurality of waveshape memory means coupled to said waveshape calculating means for temporarily memorizing said calculated waveshapes; a plurality of clock signal generating means corresponding to said waveshape memory means, respectively, for generating clock signals with high frequencies corresponding to pitches of depressed keyswitches of said musical instrument, said clock signal generating means being operative whenever the keyswitches are depressed; a plurality of reading means corresponding to said waveshape memory means, respectively, and coupled to said waveshape memory means for repetitively and successively reading out said memorized waveshape amplitudes by the corresponding clock signals generated by said clock signal generating means, respectively; and converting means coupled to said reading means for converting said waveshape amplitudes read out by said reading means to a musical tone, whereby a musical tone is generated by repetitively reading out the temporarily memorized musical waveshape, wherein said tone selecting means comprises coefficient determining means for determining coefficients specifying the relative amplitude of each of harmonics of the tone signal, and wave waveshape calculatng means comprises sine wave memory means for memorizing amplitudes at two or more than two sampled points of a sine wave signal of one period; and said waveshape calculating means is operative whenever said coefficient determining means is actuated, and calculates and synthesizes the waveshape by repetitively calculating the amplitude of each sampled point of a waveshape, corresponding to tone signal selected by said tone selecting means, provided in accordance with the coefficient signal from said coefficient determining means and the amplitudes of the sine wave memorized in said sine wave memory means.

4,128,033

TAILPIECE

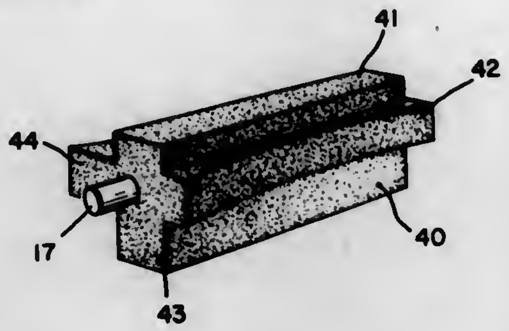
Phillip J. Petillo, 1206 Herbert Ave., Ocean, N.J. 07712
Filed Jul. 25, 1977, Ser. No. 812,102
Int. Cl.² G10D *3/12*
U.S. Cl. 84—299 **4 Claims**



1. In a mechanism for anchoring strings on a stringed instrument, the combination comprising:
 a bridge assembly including support means for holding said string, lateral adjusting means for positioning said support means parallel to the surface of said instrument and vertical adjusting means for positioning said support means vertically with respect to the surface of said instrument, and
 a tailpiece assembly including anchoring means for fixing the ends of said strings with respect to said instrument, said anchoring means including a raised shoulder which is massive in cross section and is perforated by a plurality of generally upwardly directed, communicating slots-and-socket pairs wherein each slot defines a string bearing ramp and each socket is adapted to anchor a string, frame means for supporting said lateral adjusting means and seat means for supporting said vertical adjusting means, said seat means rigidly joining said anchoring and frame means to form a single unitary structure.

4,128,034
PRESSURE BAR FOR A CAPO TASTO

Elliott L. Myerson, 1815 Grismer St., Burbank, Calif. 91504, and Richard W. Gillis, 5661 Cleon St., North Hollywood, Calif. 91601
Continuation-in-part of Ser. No. 650,147, Jan. 19, 1976, Pat. No. 4,048,894. This application Jun. 20, 1977, Ser. No. 807,797
The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.
Int. Cl.^{2} G10D *3/04*
U.S. Cl. 84—318 **4 Claims**

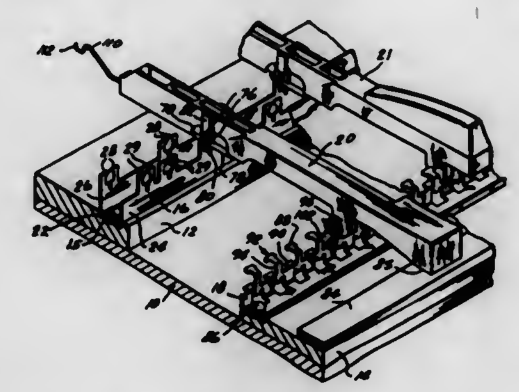


1. An improved pressure bar to be used in combination with a capo tasto, which attaches itself to a stem of a stringed instrument, having a fret board and strings adjacent to the fret board, and which depresses the strings against the fret board, the capo tasto includes:

- a. mounting means for mounting said pressure bar on the stem of the stringed instrument so that it is disposed perpendicular to the longitudinal axis of the stem and parallel to the transverse axis of the stem adjacent to the fret board; and
- b. pressure applicating means for applying pressure to the surface of the stem oppositely disposed to the surface on which the fret board is placed so that the pressure is transmitted through said mounting means to said pressure bar, said pressure applicating means coupled to said mounting means, said improved pressure bar, comprising:
  - a. a multi-surface member having a length adapted to extend across the fret board, said multi-surface member being mechanically coupled to said mounting means so that it may rotate on its longitudinal axis and said multi-surface member also having a first plurality of flat surfaces and a second plurality of concave surfaces, each of which differ in degrees of concavity.

4,128,035
KEYBOARD ASSEMBLY

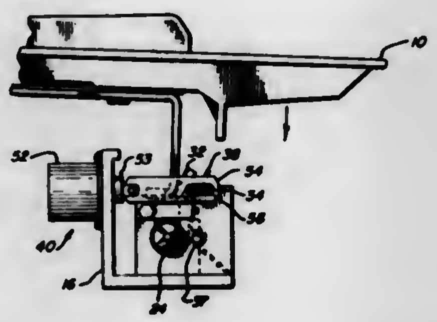
Norman Erickson, 1328 Evergreen, and James Meier, 1033 Crabtree La., both of Des Plaines, Ill. 60016
Filed Jun. 25, 1976, Ser. No. 699,946
Int. Cl.^{2} G10C *3/12;* G10H *1/00*
U.S. Cl. 84—433 **15 Claims**



1. A keyboard assembly having an elongate key member, said key member having a downwardly extending pivot wall, a pair of pivot members supported below said pivot wall, said pivot members each having a pointed portion with the pointed portions of said pair facing each other, said pivot wall being received between said pointed portions and pivotally supported thereby.

4,128,036
ELECTRO-MECHANICAL KEYBOARD MEMORY FOR AN ELECTRONIC MUSICAL INSTRUMENT

Donald R. Sauvey, Palatine, and Robert E. Magnuson, Mt. Prospect, both of Ill., assignors to Hammond Corporation, Chicago, Ill.
Filed Sep. 17, 1976, Ser. No. 724,166
Int. Cl.^{2} G10C *3/12*
U.S. Cl. 84—441 **4 Claims**

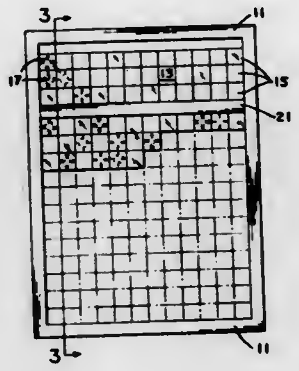


1. An electro-mechanical memory device for use in a keyboard electronic musical instrument having a plurality of accompaniment chord and bass note playing keys and a plurality of melody playing keys both depressible by an instrument player and returnable to a horizontal position after the downward pressure from said instrument player is removed comprising:

- at least 20 contact leg members each attached to the bottom of a different one of said accompaniment playing keys and extending downward therefrom;
- a lower stationary bar rotatably mounted below said accompaniment playing keys;
- a plurality of support arms spaced apart and attached to said stationary bar and extending upwardly therefrom;
- an upper retention rod attached to said support arms and extending parallel to said stationary bar, said support arms positioning the retention rod above and slightly in front of said stationary bar;
- a guide member secured beneath said stationary bar intermediate its ends for limiting downward movement of the intermediate portion of the bar, said stationary bar and said retention rod extending beneath the contact leg members of at least 20 keys of said accompaniment playing keys;
- said rod having a first position in which it engages said contact leg of a depressed accompaniment playing key and retains said accompaniment playing key depressed after the pressure from said instrument player is removed, and said rod having a second position in which it is pivoted out of the downward path of said leg members and permits unrestricted travel of the contact leg of a depressed accompaniment playing key;
- a bias means connected to said rod for forcing said rod into said first position;
- an electro-mechanical bistable control means which has an extending arm coupled to said retention rod, said extending arm having a normal position and a release position, for imparting pivotal motion through said arm to said retention rod; and
- the extending arm of said control means in said normal position forcing said rod to pivot into said second position and the extending arm of said control means in said release position allowing said bias means to force said rod to pivot into said first position so that when one or more of said accompaniment playing keys are substantially simultaneously depressed said contact leg of each depressed accompaniment playing key engages said retention rod and each said accompaniment playing key remains depressed.

4,128,037
APPARATUS FOR DISPLAYING PRACTICE LESSONS FOR DRUMMERS

Nicholas J. Montemurro, 128 Sanford Ave., Lyndhurst, N.J. 07071
Filed Jun. 30, 1977, Ser. No. 811,635
Int. Cl.^{2} G09B *15/02*
U.S. Cl. 84—476 **5 Claims**

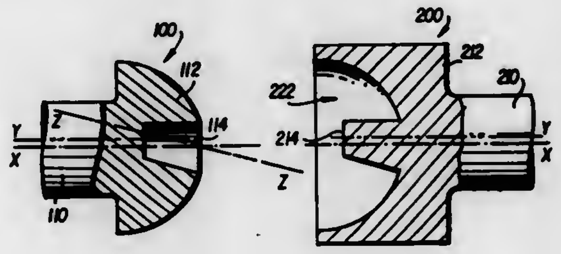


1. Apparatus for scoring and displaying indicia in the nature of notation for the playing of a percussion instrument such as a drum or the like, comprising in combinating:

- a frame defining an enclosed area and also defining a generally planar base
- a plurality of tiles, each of said tiles having in said base plane the same general dimensions as the other tiles in said plurality, said tiles being disposable within said frame so as to substantially fill said area in tesselated array,
- at least some of said tiles bearing indicia relating to the playing of said percussion instrument,
- said tiles being interchangeable as to their respective positions in said tesselated array,
- said indicia and said respective positions cooperating to display information constituting a rhythmic pattern to be played on said percussion instrument, and at least some of said tiles being provided with a plurality of indicia associated with a plurality of sides of said tiles, said indicia associated with any one of said tile sides of any respective tile being the same as the indicia associated with each of the other of the sides of said respective tile thus providing for said tiles to be viewed and read in a plurality of angular directions.

4,128,038
ROTARY DRIVE FASTENER

Peter T. Urwin, Fergus, Canada, assignor to Pay Television Corporation, New York, N.Y.
Filed Nov. 23, 1977, Ser. No. 854,351
Int. Cl.^{2} F16B *23/00*
U.S. Cl. 85—45 **2 Claims**

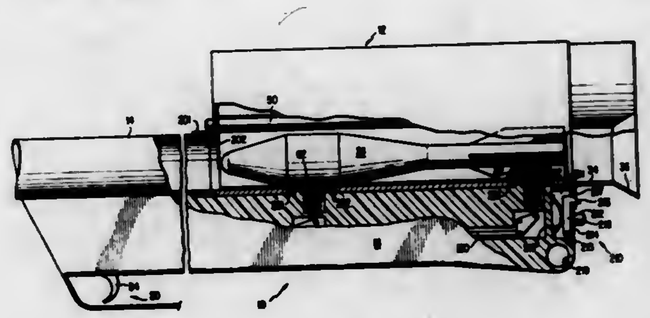


1. Rotary drive fastener providing integral construction which is preclusive of compromise, comprising:

- (A) fastening means having a central axis at extremes of which are driving and driven ends;
- (B) a driver engageable head on the driving end of the fastening means, said head having its central axis aligned with the central axis of the fastening means, the head in exterior configuration, forming a hemispherical dome;
- (B1) a tapered asymetric cavity located generally centrally within the dome of the head, said cavity defining a circular open outer end and a circular closed inner end, the inner end being of smaller dimension than the outer end, the center of the open outer end being coaxial with the central axis of the head and the center of the closed inner end being offset therefrom, the respective ends of the cavity being concentric to each other, said asymetric cavity comprising two portions interconnecting the open outer end and the closed inner end, one portion of the cavity being generated about a first axis which is parallel to said central axis and a second portion of the cavity being generated about a second axis which is at an acute angle relative to the central axis of the head and fastening means, the respective second axis of the cavity and central axis of the head and fastener intersecting at the top of the head whereby the cavity in said dome provides means for the engagement of a corresponding tool having a recessed head for the application of torsional force to the fastener, said fastener being, by reason of the positioning of the axis described above, subject to captivation, the bottom portion of the cavity serving as a repository for the transfer of torque from the driver tool by means of a driving pin.

4,128,039
ROCKET LAUNCHING MECHANISM

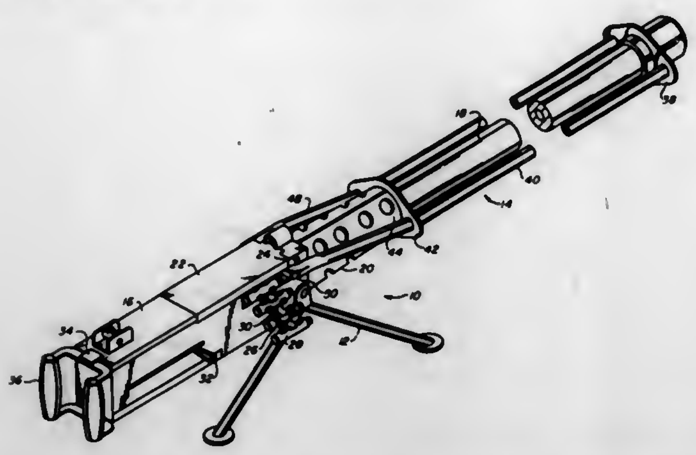
Lewis E. Skliris, 335 Potomac Ave., Quantico, Va. 22134
Continuation-in-part of Ser. No. 637,192, Dec. 3, 1975, Pat. No. 3,999,460. This application Dec. 8, 1976, Ser. No. 748,767
Int. Cl.^{2} F41F *3/04*
U.S. Cl. 89—1.803 **4 Claims**



1. A rocket launcher comprising: a stock; a barrel mounted on a forward portion of said stock; a magazine for containing a plurality of rockets to be fired removably secured to a rearward portion of said stock; said magazine including a cylindrical outer housing member, an inner rotor member rotably mounted within said housing member, said rotor member having a plurality of longitudinally extending grooves cooperating with said housing member, each defining a rocket chamber, means for rotationally driving said rotor member with respect to said housing member, and door means in said housing member for access to a chamber for loading and removing rockets; means carried by said stock for stopping the rotation of said rotor member when a said chamber is aligned with said barrel; means carried by said stock for firing a rocket in a chamber aligned with said barrel; and releasable latch means for securing said magazine to the assembly of said stock and barrel.

4,128,040
BLANK FIRING ADAPTER

Robert C. Schuetz, 2125 Quiemuth St., Olympia, Wash. 98503
Filed Jun. 2, 1977, Ser. No. 802,687
Int. Cl.² F41D *11/00*
U.S. Cl. 89—14 E **8 Claims**



1. A blank firing adapter for a gun having a longitudinally reciprocating barrel, said adapter comprising:

a muzzle restricter adapted to fit over the end of a gun barrel when said barrel is extended forwardly,

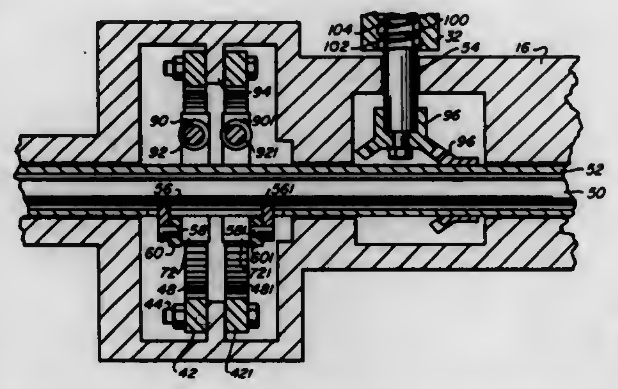
a U-shaped member having a base portion adapted to pass across the feed tray of said gun where cartridges in an ammunition belt are fed into said gun, said base portion preventing passage of live cartridges into said gun while permitting passage of blank cartridges,

said U-shaped member having legs extending forwardly to engage said muzzle restrictor, and

means maintaining said muzzle restrictor in fixed position when said gun barrel reciprocates rearwardly.

4,128,041
WEAPON ELEVATING MECHANISM HAVING AN AUTOMATIC CLUTCH

Robert J. Schulz, Davenport, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Oct. 3, 1977, Ser. No. 838,775
Int. Cl.² F41F *21/04*
U.S. Cl. 89—41 R **10 Claims**



1. An artillery elevating mechanism for elevating a gun tube and cradle, said mechanism comprising:

a non-rotatable sleeve housing 32 attached to said gun tube and cradle,

a rotatable shaft 54 within said housing operable on rotation to adjust the elevation of said housing,

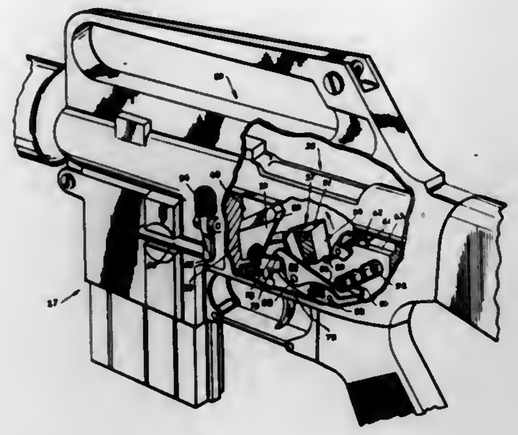
said rotatable shaft being geared to and driven by an outer output shaft 52,

a manually operable rotatable inner input shaft 50,

clutch means interconnecting said input shaft with said output shaft whereby rotation of said input shaft adjusts the elevation of said gun tube and cradle.

4,128,042
AUTOMATIC BOLT CATCH RELEASE APPARATUS FOR FIREARM

Maxwell G. Atchisson, 6695 Ridgemoore Dr., Doraville, Ga. 30360
Continuation of Ser. No. 645,362, Dec. 30, 1975, Pat. No. 4,057,003. This application Jul. 25, 1977, Ser. No. 818,768
Int. Cl.² F41D *11/00*
U.S. Cl. 89—138 **3 Claims**



1. Bolt catch automatic release apparatus for an M16 firearm which has been converted to fire with an open bolt, and which includes a receiver housing, a reciprocating bolt mechanism mounted within said receiver housing, and a hammer-operated firing pin carried by said bolt mechanism, comprising;

sear means disposed within said receiver housing and selectably operative to engage and retain said bolt mechanism in a fireable open position;

trigger means operatively associated with said sear means to move said sear means so that said bolt mechanism moves forward from said fireable open position to a closed firing position to fire a round;

a bolt catch which retains said bolt mechanism in a non-fireable open position independently of said sear means in response to firing the last round in a magazine;

magazine release means operative to release a magazine from said firearm; and

means operative in response to operation of said magazine release means to release said bolt catch so that said bolt mechanism can move forward from said non-fireable open position into engagement with said sear means for retention in said fireable open position by said sear means, so that said converted open-bolt firearm is in fireable condition when a fresh magazine is substituted for the released magazine.

4,128,043
TOOL CHANGER APPARATUS

Reinhold Grassl, 142 S. Miraleste Dr., Apt. 203, Miraleste, Calif. 90732
Continuation-in-part of Ser. No. 664,880, Mar. 8, 1976, abandoned. This application Jan. 10, 1977, Ser. No. 757,987
Int. Cl.² B23C *5/26*
U.S. Cl. 90—11 D **21 Claims**

1. A quick release tool changing apparatus for holding a tool holder, incorporating a holding flange formed concentrically with a frustoconical male taper, a spindle movable between a holder locking position and a holder releasing position, and comprising:

an elongated hollow spindle housing formed at one extremity with a socket defining a female taper flaring radially outwardly toward said one end and projecting axially therefrom to form a second end;

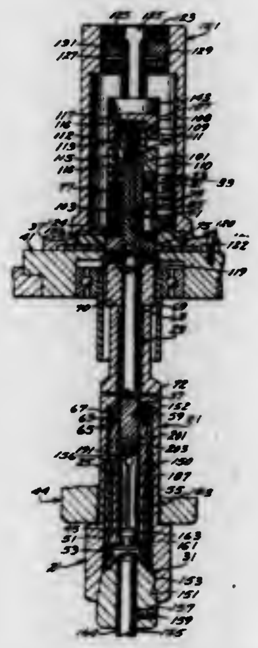
a hollow closer mounted on said one end of said spindle;

gripper means received in said closer and operable upon axial shifting in the direction opposite said one end to engage said closer and close on said flange and upon further axial shifting in that direction to engage said male taper with said female taper to center said tool holder in said socket;

an elongated draw bar connected on one end with said gripper means and projecting through said spindle housing to said second end;

an actuator mounted on said apparatus proximate said second end and including a radially inwardly facing actuating surface;

elongated locking toggle link means interposed between said second end of said spindle and said draw bar and including a pair of longitudinal toggle links pivotally connected on their remote ends from said second end of said spindle and said draw bar, respectively, and further being pivotally connected together on their proximate ends and being pivotable about such remote ends from a collapsed release position with said proximate ends disposed radially outwardly from alignment between said remote ends to a locked, tightening position with said proximate ends passing a position of alignment between said remote ends to draw said draw bar toward said one end relative to said spindle housing, one of said proximate ends being further formed with a radially outwardly facing cam surface for engaging said actuating surface upon relative longitudinal movement between said actuator and toggle link means to urge said toggle link means to said locked position; and



release means mounted on said apparatus proximate said second end of said spindle, including an axial release bore formed in said draw bar, a release pin telescopable axially in such bore and pusher means engagable between one end of said pin and the proximate ends of said links, said pin being operative upon axial shifting in one direction thereof in said bore to engage said pusher means and pivot said proximate ends of said link means radially outwardly to said releasing position to extend said draw bar to disengage said gripper means from said closer, allowing said gripper means to open thereby releasing said tool holder.

4,128,044
METHOD OF CONTROLLING APPARATUS AND SERVOACTUATOR THEREFOR

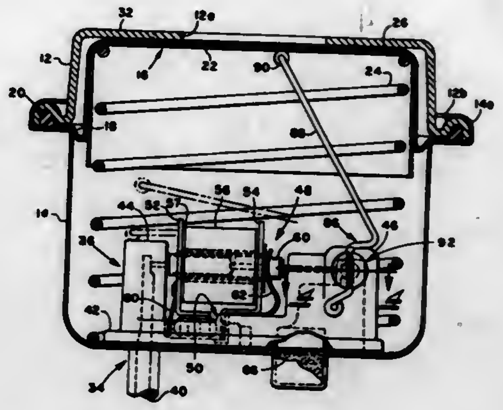
Gerald L. Larson; William A. Treadwell, and James Seaver, all of Battle Creek, Mich., assignors to Eaton Corporation, Cleveland, Ohio
Filed Sep. 27, 1976, Ser. No. 726,728
Int. Cl.² F15B *13/044*
U.S. Cl. 91—20 **14 Claims**

1. The method of controlling plural functions of an apparatus in response to an electrical input control signal comprising the steps of:

(a) providing a housing defining a fluid pressure chamber and having port means venting same to the atmosphere, and pressure port means adapted for connection to a source of fluid pressure for communicating fluid pressure to said chamber;

(b) moving a valve member alternately between a position closing said pressure port means and a position closing said vent port means for controlling fluid therethrough in response to said electrical input signal;

(c) providing actuator means movable in response to the fluid pressure level in said chamber;

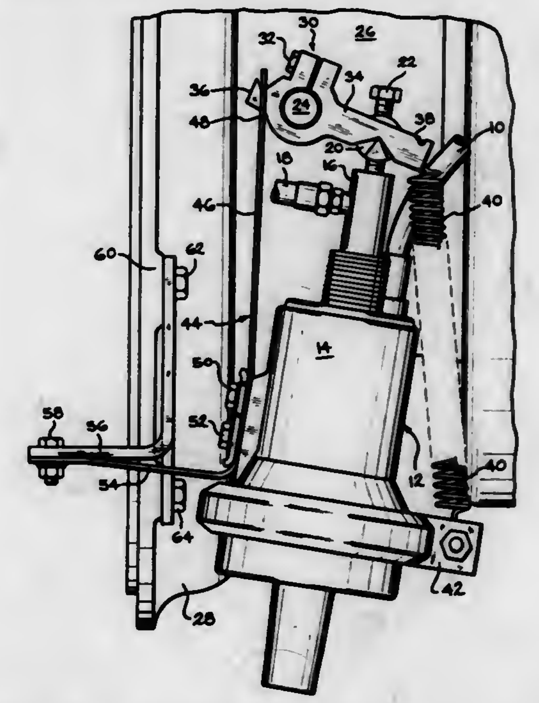


(d) providing an auxiliary valve member movable with respect to said vent and pressure port means; and

(e) sensing movement of said actuator means and moving said auxiliary valve member relative to said actuator means in response to said sensed movement for controlling the effective flow area of said vent port means.

4,128,045
SYSTEM FOR ROTATING A CONTROL SHAFT

William H. Sink, Auburn, Ind., assignor to Dana Corporation, Toledo, Ohio
Filed Jul. 15, 1977, Ser. No. 815,810
Int. Cl.² F01B *15/02;* F16D *25/08*
U.S. Cl. 91—217 **7 Claims**



1. A system for rotating a control shaft comprising:

support means including means for journalling the control shaft;

lever means secured to the control shaft having at least two radially extending arm members;

a motor having at least two extensible members;

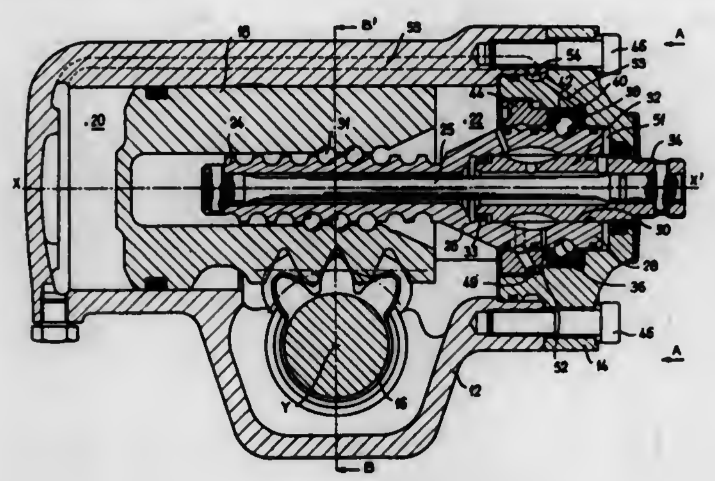
means interconnecting one of the extensible members of said motor to one of the arms of said lever means;

means interconnecting the other of the extensible members of said motor to the other arm member of said lever means; and

leaf spring means connecting said motor to said support means whereby during operation said motor may cant relative to said support means.

4,128,046
POWER STEERING MECHANISM

Jorge E. Rosell, Barcelona, Spain, assignor to Bendiberica, S. A., Barcelona, Spain
Filed Jan. 7, 1977, Ser. No. 757,809
Int. Cl.² F15B *9/10;* F16J *11/02*
U.S. Cl. 91—375 A 6 Claims



1. A power steering mechanism comprising:

a housing supporting a steering member and having a cover;

a piston movably mounted within the housing to form pressure chambers and connecting with the steering member;

a shaft coupled to said piston; and

a pressure fluid distributor valve communicating with the pressure chambers; said pressure fluid distributor valve including a sleeve moving in unison with said shaft and a rotor disposed within said sleeve;

said shaft and said rotor being connected to opposite ends of a torsion bar, said shaft forming a bore at one end for receiving said rotor and defining said sleeve at the bore; and

said shaft being rotatably mounted in said housing by means of a ball thrust bearing having inner and outer ball races for supporting at least two balls therebetween, said ball thrust bearing being substantially defined by a groove in the sleeve which forms the inner ball race and a pair of rings held axially and radially in said housing cover which forms the outer ball race;

said cover of the housing including a fluid inlet orifice and a fluid outlet orifice, the orifices leading respectively to an annular inlet compartment and an annular outlet compartment which enable fluid to flow through the distributor valve, said cover being attached to the housing by identical fixing means spaced around the periphery of said cover to permit variable angular orientation of the inlet and outlet orifices of said cover relative to the housing.

4,128,047
ACTUATOR WITH LOCKING VALVES

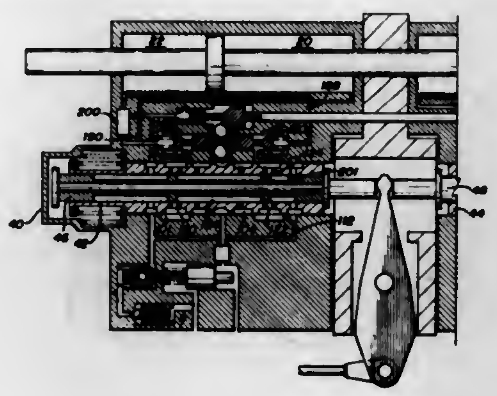
Jose G. Caero, Fort Worth, Tex., assignor to Textron Inc., Providence, R.I.
Continuation of Ser. No. 604,625, Aug. 14, 1975, abandoned. This application Jul. 14, 1977, Ser. No. 815,675
Int. Cl.² F15B *11/08, 13/04*
U.S. Cl. 91—420 9 Claims

1. A valve system for controlling the flow of fluid from a pressure fluid source to a hydraulic actuator having an actuator piston which comprises:

a primary spool responsive to translation in a control range to supply pressurized fluid from said pressure fluid source to one side of said piston and receive fluid flow from the other side of said piston,

a plurality of blocking valves in fluid communication with said primary spool and said piston,

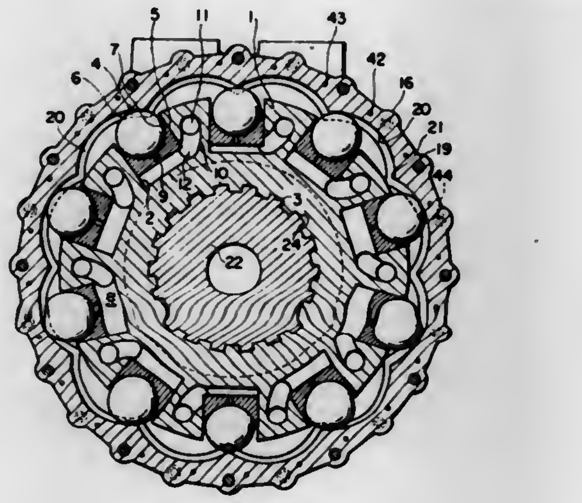
means operable when said spool is in said control range and pressurized fluid is present in said system for maintaining said blocking valves open and operable when said spool is in said control range and upon loss of pressurized fluid for closing said blocking valves to prevent movement of said piston during pressure loss, thereby permitting said piston to resist reactive loads exerted thereon, and



means associated with said primary spool and responsive to over travel of said primary spool outside of said control range to open said blocking valves, thereby equalizing pressure on both sides of said piston to permit movement of said piston during a pressure failure.

4,128,048
RADIAL PISTON TYPE HYDRAULIC PUMP-MOTOR

Kenzo Nishiba, Gifu, Japan, assignor to Teijin Seiki Company Limited, Osaka, Japan
Filed Dec. 16, 1976, Ser. No. 751,321
Claims priority, application Japan, Dec. 27, 1975, 51-157533
Int. Cl.² F01B *13/06*
U.S. Cl. 91—491 11 Claims



1. A radial piston type hyraulic pump-motor comprising:

a cylinder block formed with a plurality of radial cylinders circumferentially equally spaced and each opened at its radially outer end;

a plurality of piston assemblies each radially slidably accommodated in each of said radial cylinders of said cylinder block to provide a cylinder chamber defined by said radial cylinder and said piston assembly;

a plurality of inlet-outlet passages each including a horizontal bore disposed between said adjacent two piston assemblies and radially outwardly of a radially inner end of said radial cylinder, said horizontal bore horizontally extending throughout and opened at the side faces of said cylinder block, and a cylinder bore having one end opened at said cylinder chamber defined when said piston assembly is moved to the radially inward stroke end and the other

end communicated with the longitudinally intermediate portion of said horizontal bore;

a housing accommodating therein said cylinder block and said piston assemblies and having a radially inner face held in contact with the radially outer ends of said piston assemblies;

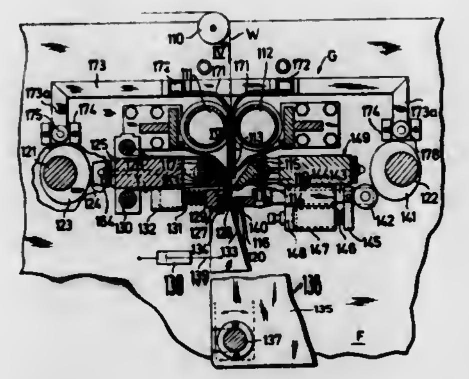
at least an introducing passage partially formed in said housing and including a main introducing passage having one end exteriorly opened and a plurality of branch introducing passages having one ends opened in communication with the other end of said main introducing passage and the other ends opened circumferentially equally spaced and communicatable with the other ends of said inlet-outlet passages;

at least a discharge passage partially formed in said housing and including a main discharge passage having one end exteriorly opened and a plurality of branch discharge passages having one ends opened in communication with the other end of said main discharge passage and the other ends opened circumferentially equally spaced and communicatable with the other ends of said inlet-outlet passages in alternative relation with the other ends of said branch introducing passages; and

a shaft connected rotatably with said housing and coupled with said cylinder block.

4,128,049
APPARATUS FOR MANUFACTURE OF PAD STACKED BAGS OR THE LIKE

Hans Lehmacher, Hummerich, 5216 Niederkassel-Mondorf, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 282,193, Jul. 17, 1972, Pat. No. 3,966,524, and Ser. No. 567,073, Apr. 10, 1975, Pat. No. 4,046,257. This application Nov. 14, 1975, Ser. No. 632,141
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1971, 2141045; Jun. 19, 1972, 2229728; Jul. 7, 1972, 2233408; Jul. 26, 1972, 2236523
Int. Cl.² B31B *23/00*
U.S. Cl. 93—33 H 62 Claims



1. Apparatus for manufacture, from thermoplastic synthetic plastic film in the form of a longitudinally advanced continuous two-layer web, of bags such as carrying bags or the like packaging, stacked and connected with one another through welding into a tear-off type pad, comprising:

cooperating opposed jaws on opposite sides of a web path with at least one jaw reciprocatingly movable relative to the other in a plane perpendicular to the web advancing in said path, the jaws operating on the web to produce a bag and including a web severing device to separate it from the web, and

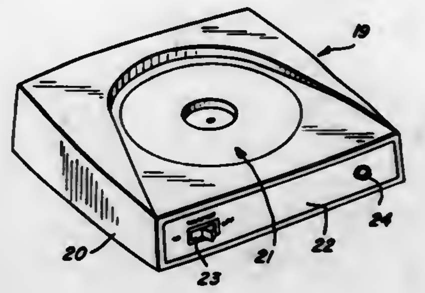
a bag stacking and padding device located, in the direction of web motion, immediately beyond the severing device,

said stacking device including a reciprocating padding welding device for welding each of the successively produced bags to the preceding bag as each is added to a bag stack being formed;

the said severing device and said padding welding device moving in parallel planes.

4,128,050
BEVERAGE BREWER STRUCTURE

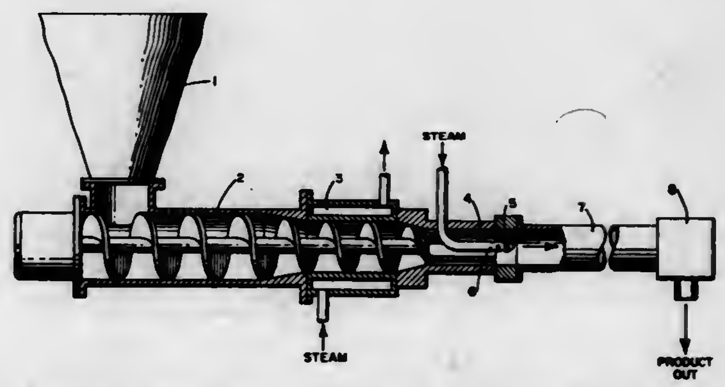
Stanton H. Petry, Arlington Heights, Ill., assignor to Cory Food Services, Inc., Chicago, Ill.
Filed Feb. 27, 1976, Ser. No. 661,843
Int. Cl.² A47J *31/00;* A23F *1/08*
U.S. Cl. 99—304 9 Claims



1. A beverage brewer structure comprising: a beverage brewing apparatus having a heating tank and top portion defining an upwardly opening basin for conducting water to said tank and having an opening defined by a wall portion thereof; a cover selectively overlying said basin; removable securing means extending through said cover and engaging a connecting portion of the tank for selectively retaining the cover in overlying relationship to said basin; a warmer station having a heater for heating a decanter placed thereon and control means for controlling operation of the heater; and wall means on said warmer station for engagement by said securing means for selectively permitting the warmer station to be used selectively (a) separately from the brewing apparatus, and (b) mounted on said cover and secured thereto by said securing means, as desired, said warmer station wall means comprising a bottom wall thereof and said securing means extending through said basin opening and securing said bottom wall to said tank in closely superposed relationship to said cover.

4,128,051
PROTEIN TEXTURIZATION BY EXTRUSION WITH INTERNAL STEAM INJECTION

William M. Hildebolt, Mickleton, N.J., assignor to Campbell Soup Company, Camden, N.J.
Division of Ser. No. 645,614, Dec. 31, 1975, Pat. No. 4,039,691. This application May 16, 1977, Ser. No. 797,420
Int. Cl.² A23P *1/00*
U.S. Cl. 99—348 5 Claims



1. Apparatus for texturizing protein material comprising:

(a) means for mixing a source of protein and water to form a protein dough;

(b) means communicating with said means for mixing for advancing said dough without imparting excessive work to said dough;

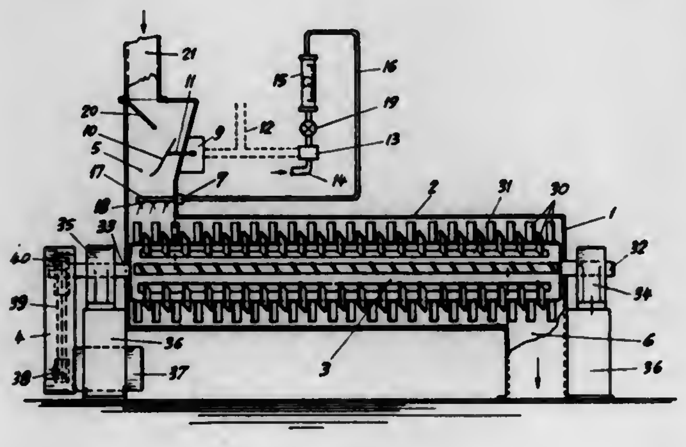
(c) means communicating with said means for advancing for extruding said dough in the form of continuous tubular shell of semi-rigid material;

(d) means for blowing said protein shell into discrete pieces of irregularly shaped protein material, said means for blowing said shell into pieces comprising means for inject-

ing a gaseous stream into the interior of said shell as said shell leaves said means for extruding;
(e) means defining a confined treating zone communicating with said extrusion means whereby said injected gaseous stream propels said pieces into and through said confined zone;
(f) back pressure maintaining means disposed at the discharge end of said confined zone, said back pressure maintaining means maintaining a predetermined back pressure to said confined zone; and
(g) means communicating with said back pressure maintaining means for recovering said texturized protein material.

4,128,052
APPARATUS FOR MOISTENING WHOLE GRAINS

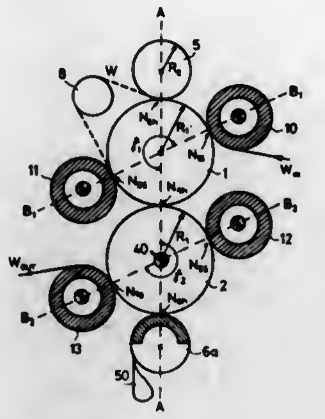
Roman Mueller, Niederuzwil, Switzerland, and Josef Kalapos, Mommenheim, Germany, assignors to Gebrueder Buehler AG, Uzwil, Switzerland
Continuation of Ser. No. 547,357, Feb. 5, 1975, abandoned. This application Feb. 28, 1977, Ser. No. 772,919
Int. Cl.^{2} A23B *9/00*
U.S. Cl. 99—516 **28 Claims**



1. Apparatus for uniformly moistening whole grain kernels to a predetermined uniform moisture content in preparation for milling, comprising:
(a) a closed, circular vessel having an inlet at one end through which whole grain kernels may be admitted and an outlet at the other end through which uniformly moistened kernels may be discharged, the vessel defining an inner circumferential wall;
(b) means for metering quantities of water within the vessel in the vicinity of the inlet for contact with said admitted whole grain kernels;
(c) and means for accelerating the admitted grain kernels circumferentially within the vessel and for creating a whirling tubular veil of generally freely moving grain kernels in the vicinity of the inner circumferential wall of the vessel that moves substantially continuously lengthwise of the vessel, and means comprising
  (i) a rotor that extends axially within the vessel, the rotor having a plurality of individual blades projecting transversely of the rotor axis and having free outer ends;
  (ii) the rotor blades being spaced over substantially the entire length of the rotor and generally uniformly spaced around its circumference, the blades numbering at least twenty blades for each square meter of surface area of the inner circumferential wall;
  (iii) and means for rotating the rotor at a speed requisite for imparting to the outer ends of the blades a circumferential velocity of between substantially 6 m. per second and 30 m. per second,
(d) whereby said whole grain kernels are impacted within the whirling tubular veil by the rotating blades and caused to frictionally engage each other, thereby effecting uniform moistening of the grain kernels.

4,128,053
SUPERCALENDERS

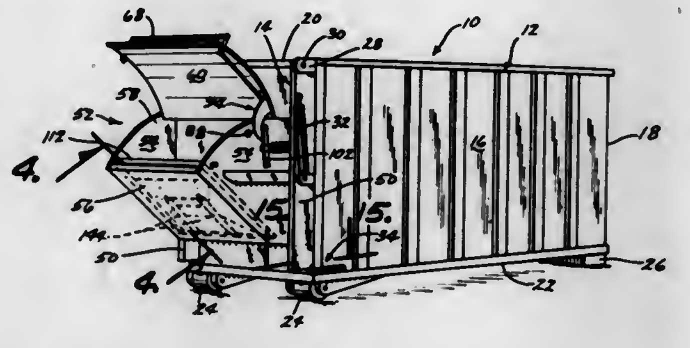
Matti Kankaanpää, Espoo, Finland, assignor to Valmet Oy, Finland
Filed Jun. 16, 1977, Ser. No. 807,298
Claims priority, application Finland, Jun. 17, 1976, 761764
Int. Cl.^{2} B30B *3/00*
U.S. Cl. 100—162 R **23 Claims**



1. In a supercalender, an upright series of metal rolls defining between themselves a plurality of hard nips and including top and bottom end rolls and between the latter at least a pair of intermediate rolls one of which is an upper intermediate roll situated next to said top roll and the other of which is a lower intermediate roll situated next to said bottom roll, and at least two filled rolls situated next to at least one of said pair of intermediate rolls and defining therewith a pair of soft nips, so that a web travelling around said one intermediate roll between the latter and said two filled rolls and between said one intermediate roll and one of said end rolls will be subjected at said one intermediate roll to at least three nips at least one of which is a hard nip defined between said one end roll and said one intermediate roll and the other two of which are soft nips defined between said two filled rolls and said one intermediate roll.

4,128,054
TRASH COMPACTOR

Louis A. Chenot, Grundy Center, Iowa, assignor to Mid-Equipment, Inc., Grundy Center, Iowa
Continuation-in-part of Ser. No. 789,348, Apr. 21, 1977. This application Nov. 1, 1977, Ser. No. 847,664
Int. Cl.^{2} B30B *15/06*
U.S. Cl. 100—233 **2 Claims**

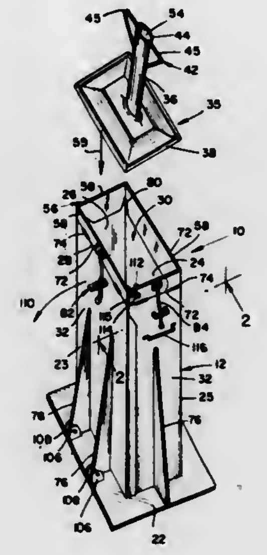


1. A compactor comprising:
a container having side walls, top and bottom walls and an end wall;
a compactor blade pivotally mounted adjacent one end of said container for pivotal movement about a horizontal axis from an initial position to a compacting position, said compactor blade having upper and lower ends, said compactor blade being pivotally mounted adjacent its lower end;
power means connected to said compactor blade for pivotally moving said compactor blade;

a curved plate mounted on the lower end of said compactor blade having a radius defined by said horizontal axis;
and a stationary flat plate positioned below said curved plate and closely spaced therefrom for preventing refuse from passing beneath the lower end of said compactor blade.

4,128,055
MANUAL TRASH COMPACTOR

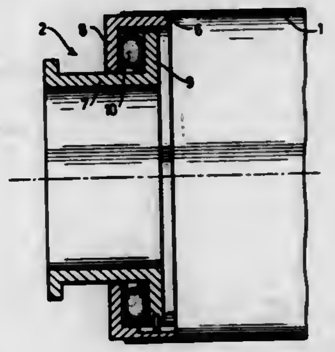
James J. Hellmann, 6600 SW. 127th St., Miami, Fla. 33156
Filed Jul. 13, 1977, Ser. No. 815,221
Int. Cl.^{2} B30B *1/04*
U.S. Cl. 100—245 **27 Claims**



1. A manual trash compactor comprising:
A. a housing adapted to receive therein a bag having upstanding walls terminating in an open top for containing the trash,
B. said housing comprises a base with panels extending vertically and upwardly from said base and terminating in an upper open end, such that a rectangular configuration is formed to gain access to said housing,
C. pressure applying means for compacting the trash within the bag,
D. weighting means associated with said pressure applying means to increase the weight thereof to facilitate the compacting of the trash within the bag,
E. retaining means for releasably securing the open top of the bag within said housing during operation of said pressure applying means,
F. said retaining means comprises a plate operatively associated with at least two of said panels to provide retention of the open top of the walls of the bag in fixed relationship to said panels,
G. mounting means for pivotally securing each one of said plates with respect to one of said panels between an open position and a closed position, said open position permitting the bag to be removed from said housing and said closed position compressing the upstanding walls of the bag against said panels,
H. latching means for releasably retaining each one of said plates in said closed position,
I. said plates each include an upper section and a lower section, and said lower section in the closed position of said plate extending in overlapping relationship to a corresponding one of said panels with the portion of the wall of the bag extending therebetween, so as to have the bag supported at its open top such that trash may be received therein,
J. said upper section extends above said upper open end of said housing in said closed position, with said latching means including a latch operable with each one of said plates, and said latch is coupled to said panel and said plate and operable to maintain said plate in said closed position, and
K. each said plate is hingeably mounted on one of said panels intermediate said upper section and said lower section.

4,128,056
PLASTICALLY DEFORMABLE, INELASTIC STENCIL END RING CONNECTION

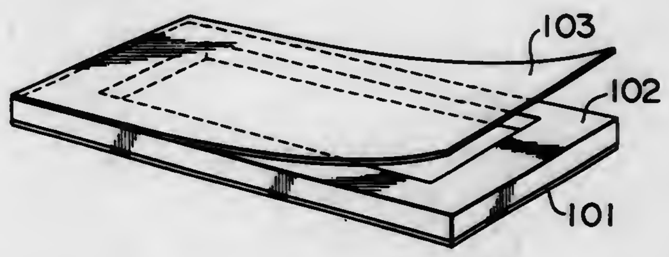
Jacobus G. Vertegaal, Boxmeer, Netherlands, assignor to Stork Brabant B.V., Boxmeer, Netherlands
Continuation-in-part of Ser. No. 582,814, Jun. 2, 1975, abandoned. This application Feb. 4, 1977, Ser. No. 765,777
Claims priority, application Netherlands, Jul. 2, 1974, 7408974
Int. Cl.^{2} B41F *15/38*
U.S. Cl. 101—128.1 **5 Claims**



1. A cylindrical stencil for a rotary screen printing machine comprising a thin-walled screen sleeve and two end rings on the ends of said sleeve, at least one end ring comprising two coaxial parts each having a flange, a connection between said coaxial parts and said connection being movable but free from play in a direction of rotation of said sleeve and end rings, said connection comprising a plastically deformable inelastic member disposed between and in contact with said flanges such that a straight mounting of said cylindrical stencil with reference to the driving member is obtained without applying an uneven load to the stencil.

4,128,057
STENCIL PAPER ASSEMBLY

Noboru Hayama, Tokyo, and Yoshio Tsuji, Koganei, both of Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan
Filed Mar. 12, 1976, Ser. No. 666,305
Claims priority, application Japan, Mar. 13, 1975, 50/30475; Apr. 16, 1975, 50/51306[U]; Apr. 24, 1975, 50/56261[U]; Apr. 24, 1975, 50/56262[U]
Int. Cl.^{2} B41F *15/34*
U.S. Cl. 101—128.2 **4 Claims**



1. A stencil paper assembly comprising:
a stencil sheet, an ink-impermeable sheet and a frame sheet element interleaved between said stencil sheet and said ink-impermeable sheet;
said stencil sheet being connected to said frame sheet element at least at a part of peripheral portions thereof while said ink-impermeable sheet is connected to said frame sheet element only at a part of peripheral portions thereof;
said stencil sheet and said ink-impermeable sheet defining

with interposition of said frame sheet element a space therebetween for retaining a relatively viscous liquid ink substance sandwiched by the stencil sheet and said ink-impermeable sheet without the use of a pad or other porous carrier.

4,128,058

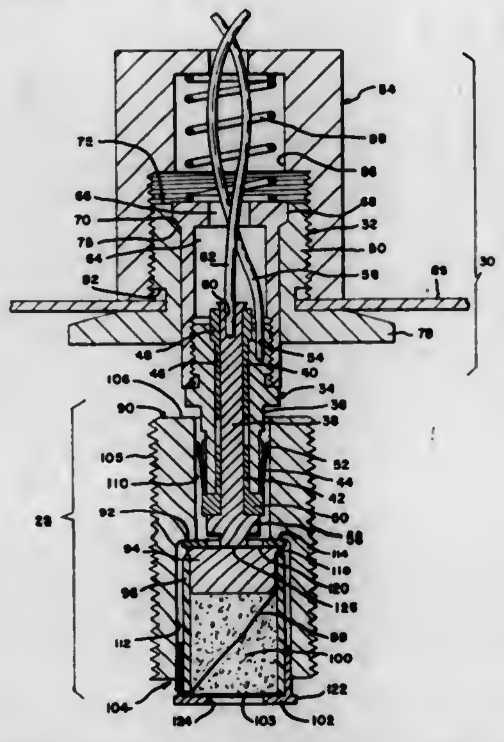
IGNITOR ASSEMBLY

James L. Mixon, Jr., Harrisburg, and Walter M. Werner, Dowingtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 14, 1977, Ser. No. 806,570

Int. Cl.² F42C *19/12*

U.S. Cl. 102—28 R **2 Claims**



1. A firing assembly for igniting a propellant contained in a chamber of an explosively actuated cable connector having an opening to the chamber, which comprises:

a. an ignitor subassembly comprising a conductive tubular body member having a passage therethrough, an insulated housing positioned in the lower part of the passage, said housing containing a propellant therein, a heating wire extending through the propellant with a first end being electrically contactable in said passage and a second end being in electrical contact with the tubular body member, said housing further having a covered aperture in the base thereof with the covering being flammable, said ignitor subassembly being positionable in the opening with the aperture adjacent to the chamber;

b. a remote firing subassembly comprising:

   i. a contact member having a conductive outer shell with a conductive center post positioned therein and electrically isolated therefrom with the lower end of the post extending below the lower end of the shell,

   ii. a retaining bushing connected to the top of the outer shell so that the contact member depends therefrom,

   iii. a housing comprising upper and lower units joined together with an aligned passage therethrough, and with the retaining bushing slidably mounted in the passage in the housing with a coil spring in the passage biasing the bushing downwardly,

c. belt means for holding the remote firing subassembly on the connector with the contact member in the passage of the tubular body member with the center post in electrical contact with the first end of the heating wire and the outer shell in electrical contact with the second end of the heating wire via the tubular body member; and

d. first and second electrical wires connectable at one end to a power source, the first wire being connected to the center post and the second wire being connected to the outer shell so that a current may flow through the heating wire from the first wire and to the second wire through the tubular body member whereby the heating wire becomes hot and ignites the propellant with the flames therefrom burning through the covering and igniting the propellant in the chamber.

4,128,059

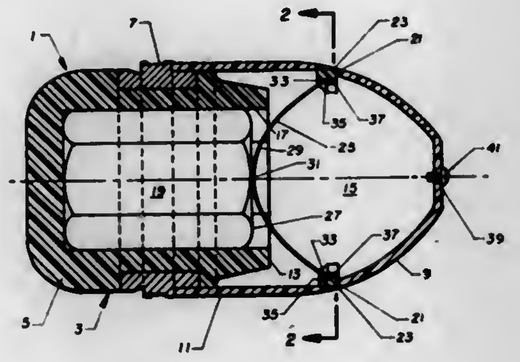
COLOR-DISSEMINATING PROJECTILE FOR TRAINING CARTRIDGE

Walter L. Black, Baltimore County, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 20, 1977, Ser. No. 817,303

Int. Cl.² F42B *11/18*

U.S. Cl. 102—92.7 **5 Claims**



1. A color dissimainting projectile for a training cartridge, comprising:

a generally cylindrical base member having a prism-shaped axial recess of non-circular cross-section, closed at the rear end and open at the front end;

a prism-shaped heavy piston of similar non-circular cross-section slidably disposed in said recess;

a cup-shaped ogive member of frangible material, closed at one end and open at the other end, having its open end attached to the open end of said base member to form a cavity therebetween, said ogive member having an annular interior groove forming an annular weak region therein;

spring means resiliently interposed between said ogive member and the front end of said piston, for preventing forward movement of said piston prior to impact; and

a mass of finely-divided color-producing material substantially filling said cavity;

whereby, on target impact, said piston moves forward by inertia, engages said ogive member, breaks said weak region, and disseminates said material into the air, thus producing an easily-visible aerosol color signal in the region of impact.

4,128,060

SHORT-RANGE PROJECTILE FOR PRACTICE AMMUNITION

Heinz Gawlick, Vagen Post Feldkirchen-Westerham, and Axel Homburg, Bensberg, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

Filed Apr. 7, 1977, Ser. No. 785,529

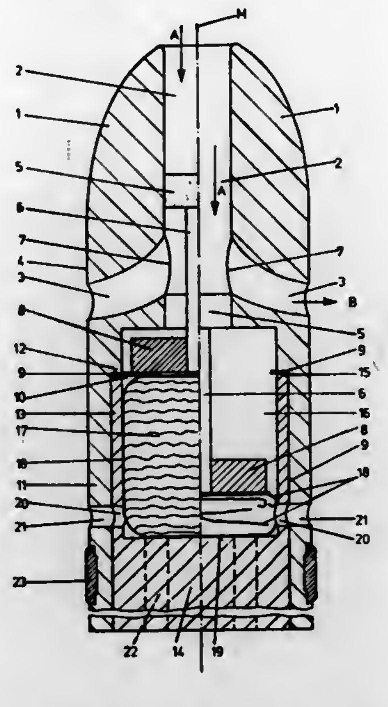
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1976, 2616209

Int. Cl.² F42B *13/20*

U.S. Cl. 102—92.7 **24 Claims**

1. A short-range projectile for practice ammunition comprising axial air inlet duct means emanating from the front end of the projectile, at least one outlet duct means connecting the inlet duct means with the jacket of the projectile, at least one of the inlet and outlet duct means being blocked during the initial flight path of the projectile, and blocking means for blocking one of the inlet and outlet duct means, the blocking

means being displaceable within the projectile in a chronologically controlled manner in response to an air pressure head occurring during flight of the projectile from a starting position in the projectile for preventing the influx of air from the inlet duct means to the outlet duct means to a final position in the projectile wherein communication and influx of air from the inlet duct means to the outlet duct means is completely enabled.



4,128,061

SAFETY SYSTEM FOR A PROJECTILE FUSE

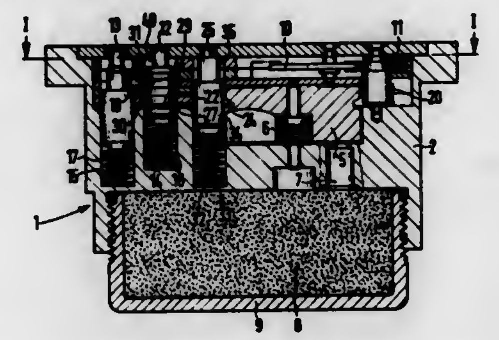
Hans Kaiser, Konigsfeld, Germany, assignor to Gebruder Junghans GmbH, Schramberg, Germany

Filed Sep. 8, 1977, Ser. No. 831,388

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1976, 2643828

Int. Cl.² F42C *9/04*

U.S. Cl. 102—249 **6 Claims**



1. A fuse for detonating a projectile, said fuse being of the type comprising a rotatable rotor; a detonator carried by said rotor, said rotor and detonator being rotatable to displace said detonator from a firing position; power storing means energized in response to such displacement of said detonator to urge said rotor and detonator back toward the firing position; restraining means for controlling the rate of return of said detonator to the firing position, said restraining means comprising an armature wheel connected to said rotor, and a swinging arm connected to said armature wheel for regulating the rotation of said armature wheel to regulate the rate of rotation of said rotor; a safety mechanism comprising first and second pins arranged parallel to one another, axially compressed power storing elements urging said pins to a safety position in which one of said pins prevents rotation of said restraining mechanism; said pins being axially displaceable in response to firing of said projectile to release said restraining mechanism; and a locking ball disposed between said pins for being shifted into axial alignment with said one pin by the other pin to prevent return of said one pin to a safety position; the improvement comprising:

an additional safety mechanism which functions independently of said first-named safety mechanism, said additional safety mechanism comprising:

a plurality of safety pins displaceable independently of one another in response to acceleration forces such that one safety pin tends to release said rotor for rotation and the other tends to restrain said rotor from until acceleration diminishes;

spring means for resisting such displacement of said safety pins; and

means connecting said additional safety mechanism and said first-named safety mechanism such that one of said safety mechanisms is actuable in response to acceleration forces to release said rotor only following displacement of the other of said safety mechanisms by the acceleration forces.

4,128,062

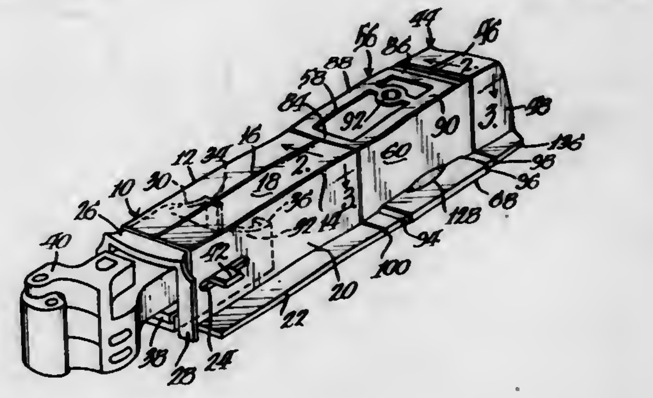
CENTER BRACE MEMBER

Leslie N. Roberts, Columbus, Ohio, assignor to Buckeye International, Inc., Columbus, Ohio

Continuation of Ser. No. 583,054, Jun. 2, 1975, abandoned. This application Jan. 6, 1977, Ser. No. 757,453

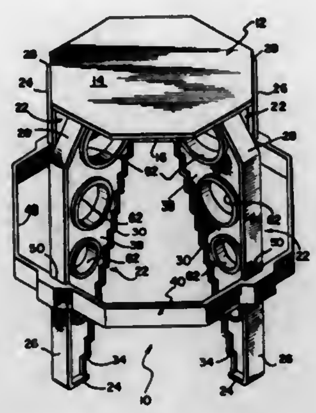
Int. Cl.² B61F *1/02*

U.S. Cl. 105—420 **2 Claims**



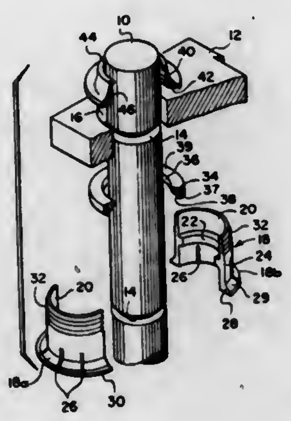
1. A unitary cast center sill portion to be welded between outboard and inboard center sill sections in longitudinal alignment therewith to form an elongated center sill for a railway car, at least one of said center sill sections being of the double-Z type having opposed horizontal side flanges at the lower end thereof, said unitary cast center sill portion comprising, in combination, a horizontal top wall, a pair of vertical side walls depending from said top wall, side flanges extending horizontally outwardly from the lower end of said side walls along the entire length of said center sill portion, a pair of rear draft lugs formed at the outboard end of said center sill portion, said outboard end, including said rear draft lugs, and the inboard end of said center sill portion, being of reduced dimensions so as to telescrope respectively into the adjacent ends of said outboard and inboard center sill sections with the top wall, side walls and horizontal flanges of said center sill portion in substantially coplanar relation with corresponding walls and flanges of at least one of said center sill sections, a king post cast integral with said center sill portion extending from the bottom wall to the top wall thereof so as to be reinforced by both said walls, said king post having a vertical hole formed therein which is of a reduced diameter adjacent the lower end of said king post and is of increased diameter for the remainder of the length of the post, and a recessed area formed in said top wall of said center sill portion intermediate the boundaries thereof for reducing the area required to be machined to render said top wall substantially coplanar with the top walls of said outboard and inboard center sill sections.

4,128,063
STOOL
Hillard M. Avery, R.R. 3, Box 140A, Morgantown, Ind. 46160
Filed Sep. 21, 1977, Ser. No. 835,059
Int. Cl.² A47B *7/00*
U.S. Cl. 108—91 **10 Claims**



1. A supporting stand comprising a top providing an upwardly facing supporting surface and a downwardly facing surface providing a plurality of channels, and a plurality of legs, each leg having a top portion for engagement with a respective channel on the downwardly facing surface, the legs being readily disengageable from the top to render the stand collapsible, each leg further including a central web-like portion surrounded by a reinforcing flange portion providing said top portion, a supporting foot portion which is parallel with the leg top portion, a generally flat radially outer edge which extends generally perpendicularly from its said foot portion toward said leg top portion to a distance between the leg foot portion and top portion, and then tapers upwardly and inwardly toward the leg top portion.

4,128,064
FREE STANDING SHELVES
Ming-To Chung, and Ming-Sum Chung, both of Apt. #511, 670 Parliament St., Toronto, Ontario, Canada
Filed Sep. 12, 1977, Ser. No. 832,748
Int. Cl.² A47B *3/00*
U.S. Cl. 108—111 **15 Claims**



1. A shelf structure which comprises: a shelf including an opening;

a post extending freely through said opening and having a plurality of first abutment means mutually spaced apart and on said post; and a shelf-supporting and clamping means releasably engaged with said post and which in turn comprises:

a collar surrounding said post;

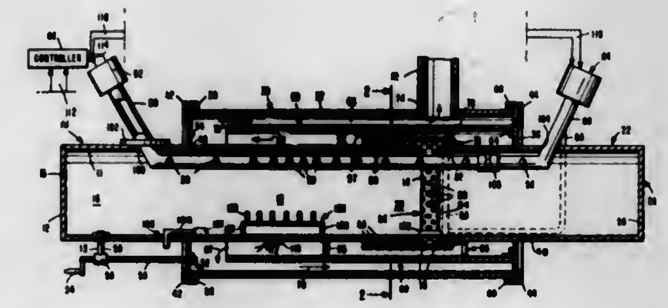
a second abutment means on said collar and engaging one of said plurality of first abutment means on said post whereby said collar is securely held in a fixed position relative to said post;

a fastening means removably encircling said collar so as to maintain said second abutment means and said one of said plurality of first abutment means in engagement with each other;

a shelf-supporting surface on said fastening means and in supporting juxtaposition with an undersurface of said shelf, and,

a shelf-clamping means releasably abutting a top surface of said shelf to clamp said shelf between said clamping means and said fastening means.

4,128,065
GENERAL PURPOSE INCINERATOR/COMBUSTOR
James F. Kelly, and Edwin Johnson, both of Silver Spring, Md., assignors to Materials Recovery Corporation, Silver Spring, Md.
Filed Jul. 25, 1977, Ser. No. 818,708
Int. Cl.² F23G *3/00*
U.S. Cl. 110—211 **17 Claims**



1. A multi-fuel incinerator, comprising:

an elongated combustion chamber having a generally horizontal axiz and having first and second ends, said combustion chamber defining a centrally located fire zone;

an ash chamber having a generally horizontal axis and first and second ends, said ash chamber being coaxial with said combustion chamber and axially spaced therefrom to define a circumferential exhaust outlet;

means for varying the spacing between said combustion chamber and said ash chamber to vary the size of said exhaust outlet;

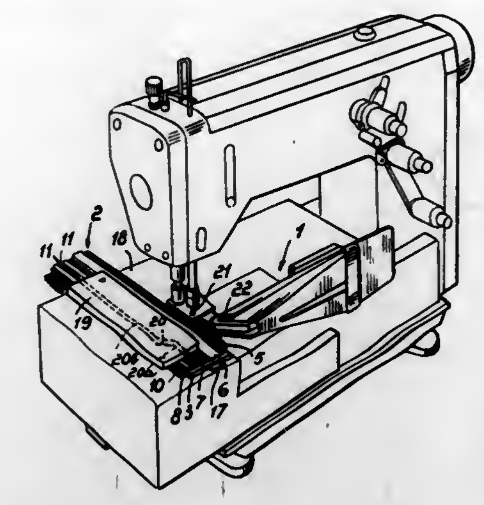
an afterburner casing coaxial with and coextensive with at least the fire zone portion of said combustion chamber and surrounding said exhaust outlet;

baffle means within said afterburner and surrounding said exhaust outlet;

means for supplying air under pressure to said fire zone in a direction to create a vortex flow within said fire chamber; and

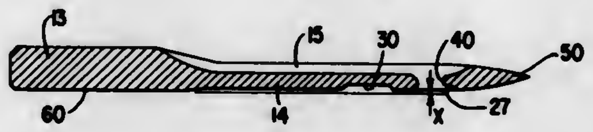
means for placing materials to be burned in said fire zone.

4,128,066
APPARATUS FOR SEWING TOGETHER PORTIONS OF KNITTED ARTICLES
Alessandro Peloggio, P.za dei Canonici Lateranensi, 12, Bergamo, Italy
Filed Nov. 5, 1976, Ser. No. 739,383
Claims priority, application Italy, Nov. 21, 1975, 29537 A/75; Sep. 14, 1976, 27185 A/76
Int. Cl.² D05B *7/00*
U.S. Cl. 112—27 **8 Claims**



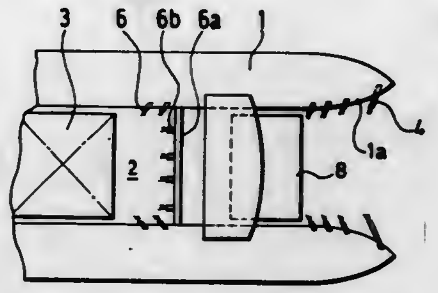
1. An apparatus for sewing together portions of knitted fabric, comprising a sewing machine having a needle and means for advancing one of said knitted fabric portions to be sewn, at least one supporting member including a bed, means for moving said supporting member in a plane substantially perpendicular to said needle and said bed along a path aligned at least in proximity of said needle with the path wherealong said advancing means cause said one of said knitted fabric portions to advance, a plurality of impaling pins axially slidable within said bed in a direction substantially perpendicular to said needle between an unloading position whereat they are withdrawn within said bed and a loading position whereat they project outwardly of said bed for the orderly application thereon of the loops of the other of said knitted fabric portions along the path of the line to be sewn with said one of said knitted fabric portions, and means for controlling said impaling pins between said loading and unloading positions, effective to cause the withdrawal of said impaling pins within said bed as they pass in proximity of said needle.

4,128,067
SEWING MACHINE NEEDLES
Josef Zocher, Aachen, Haaren, Fed. Rep. of Germany, assignor to The Singer Company, New York, N.Y.
Division of Ser. No. 705,859, Jul. 26, 1976. This application Apr. 4, 1977, Ser. No. 784,000
Int. Cl.² D05B *85/00*
U.S. Cl. 112—222 **2 Claims**



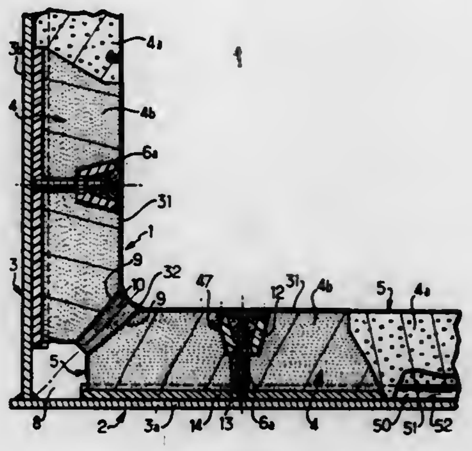
1. A sewing machine needle having a butt portion and a blade portion formed with a long groove extending from said butt portion to closely adjacent the free extremity of said blade portion, two lengthwise extending flanges formed on said blade portion, each of said flanges by means of a substantially flat inside surface thereon defining one side of said long groove, an eye formed from said long groove transversely through said blade portion adjacent the free extremity of said blade portion, a point formed on said blade portion free extremity, each of said flanges being formed with an outside surface substantially parallel to the flat inside surface thereof, said parallel surfaces of the two flanges at least adjacent to said eye diverging from said long groove at an angle at least 30°.

4,128,068
FLOATING-REFUSE-COLLECTING BOAT
Hajime Ogura; Haruma Asakawa; Junichi Kondoh, all of Yokohama; Masashi Nakamura, Isehara, and Sadamn Oyaide, Yokohama, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 6, 1977, Ser. No. 813,251
Claims priority, application Japan, Jul. 10, 1976, 51-82310
Int. Cl.² B63B *35/32*
U.S. Cl. 114—26 **5 Claims**



1. A floating-refuse-collecting boat comprising a twin hull arranged to float in the water having a water level with a portion of said twin hull located above the water level and the remaining part below the water level and including a pair of hulls each having a fore end and an aft end with the fore ends and aft ends positioned opposite one another and with said hulls spaced laterally apart and forming therebetween a water channel extending from the fore ends to the aft ends of said twin hull, a floating-refuse collector having a fore end and an aft end, said collector located in said water channel between said pair of hulls, the fore end of said collector spaced from the fore ends of said hulls in the direction toward the aft ends thereof, said fore end of said collector being open for receiving floating refuse flowing into said water channel, a plurality of main water-jet units mounted on the fore ends of each of said hulls forwardly of the fore end of said collector and arranged to direct jets of water into said water channel generally rearwardly toward the fore end of said collector, said main water-jet units located on said hull both above and below the water level, a plurality of auxiliary water-jet units mounted on said twin hull and located rearwardly of said main water-jet units and forwardly of the fore end of said collector and arranged to direct jets of water into said water channel toward the fore end of said collector for preventing refuse within said collector from flowing out of the fore end thereof when said boat moves astern, and a guide plate extending transversely between said pair of hulls across the water channel therebetween and below the water level of said hulls and said guide plate located rearwardly of said main water-jet units and forwardly of said auxiliary water-jet units, said guide plate arranged to aid said main water-jet units in inducing the flow of water with floating refuse into said water channel toward the fore end of said collector.

4,128,069
METHOD OF MOUNTING A HEAT-INSULATING COMPOSITE WALL STRUCTURE IN A LIQUEFIED GAS TRANSPORTATION AND/OR STORAGE TANK
Michel Kotcharian, Paris, France, assignor to Technigaz, France
Filed Jul. 27, 1977, Ser. No. 819,599
Claims priority, application France, Aug. 10, 1976, 76 24415
Int. Cl.² B63B *25/08*
U.S. Cl. 114—74 A **12 Claims**



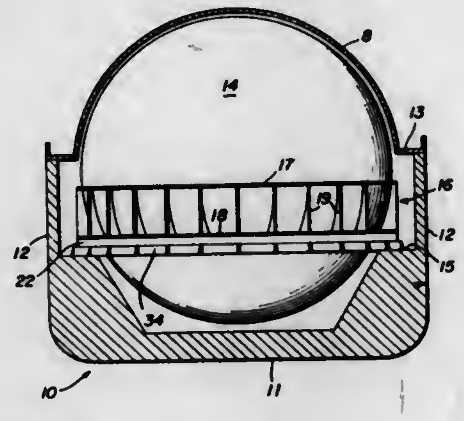
1. A method of mounting and assembling a wall structure comprising a rigid outer wall constituted by a ship's double hull forming a secondary barrier, a wall of heat-insulating material such as a rigid polyurethane foam injected directly onto the secondary barrier, and an inner, substantially flexible wall or sealing membrane forming a primary barrier secured on the said insulating wall, for a tank of, for example the built-in, integrated or incorporated type intended to contain, in particular liquefied petroleum gases, wherein it consists:

in securing for example welding, rows of fastening studs on

each internal face of the secondary barrier at predetermined spaced points thereof,
in laying between the said rows of studs strips or bands of a material such as glass cloth for improving the adherence of the secondary barrier,
in mounting a series of stiffening blocks or elements of a predetermined length in longitudinal relationship to the straight edge line of each dihedral angle of the tank near the ends of the two adjacent internal faces of the tank defining the said dihedral angle,
in fastening the said stiffening blocks or elements by means of the said studs and of, for example, a suitable material interposed between the stiffening blocks or elements and the secondary barrier to cause the said stiffening blocks or elements to correctly adhere to the secondary barrier,
in injecting within the frame defined by the stiffening blocks or elements at each face of the tank the insulating wall through the medium of moulds over a thickness corresponding substantially to the thickness of the said stiffening blocks or elements,
in placing the primary barrier on the insulating wall after the polymerization of the injected polyurethane foam,
in ensuring the continuity of the insulating wall between the two rows of stiffening blocks or elements at each dihedral angle by interposing shim elements therebetween, and
in applying at least in the region of the shim elements a curved joint-strap embracing each dihedral angle of the tank to ensure continuity between the primary barriers of the two tank faces defining the said dihedral angle.

4,128,070
SHIP TANKS WITH CONTINUOUS SUPPORT SYSTEM

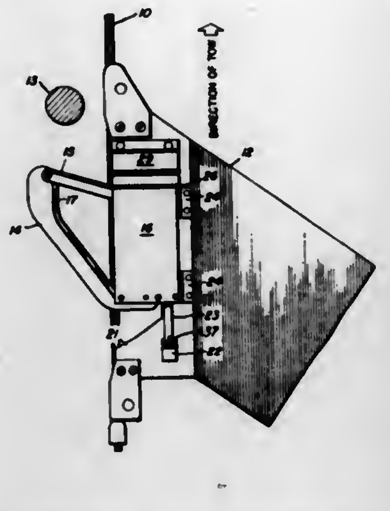
Fahim E. Shadid, Downers Grove, and Paul R. Johnson, Oak Lawn, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.
Filed Aug. 17, 1977, Ser. No. 825,281
Int. Cl.^{2} B63B *25/08*
U.S. Cl. 114—74 A **24 Claims**



1. In combination:
a tank with a circular horizontal cross-section, which expands and contracts in service,
a tank support element on the tank and above the tank bottom extending horizontally around the tank and having a flat horizontal surface,
a support base on which the tank support element flat horizontal surface rests in radial slidable contact,
a horizontal collar member having a face circular in section,
a horizontal ring member having a face circular in section,
wherein one of the collar member and the ring member is joined to the tank and the other one of the collar member and the ring member is joined to the support base, and the collar member face is located around the ring face, and
restraining means which prevents lateral movement of the tank when empty and at nonservice temperature.

4,128,071
UNDERWATER MINE CHAIN/CABLE CUTTER

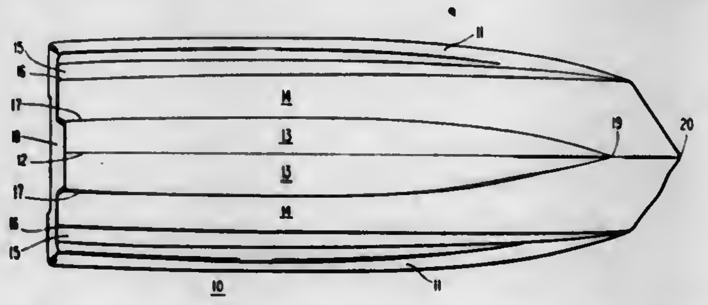
Bobby C. Layman, and Lanny G. Burdge, both of Dahlgren, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 29, 1963, Ser. No. 327,150
Int. Cl.^{2} B63B *43/00;* B63C *7/16, 11/50;* B26D *1/00*
U.S. Cl. 114—221 A **15 Claims**



1. In an improved paravane the combination comprising;
a body unit,
a charge housing,
means for slideably engaging said charge housing with said body unit,
a mooring line engaging means pivotally connected to and extending from said charge housing,
an explosive charge disposed in said charge housing,
a detonation means attached to said body unit and connected to said explosive charge for actuating said explosive charge upon a predetermined amount of relative movement between said charge housing and said body unit, and
a locking means disposed in said charge housing between said mooring line engaging means and said detonation means for preventing relative movement between said charge housing and said body unit prior to movement of said mooring line engaging means.

4,128,072
POWER BOAT HULL

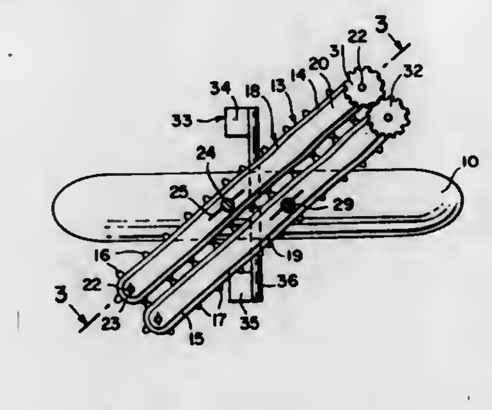
Garfield A. Wood, Jr., Monroe, La., assignor to Woodstream Corporation, Lititz, Pa.
Filed Mar. 21, 1977, Ser. No. 779,845
Int. Cl.^{2} B63B *1/20*
U.S. Cl. 114—291 **5 Claims**



1. A power boat hull having sides and a bottom, said bottom being formed of a series of vertically stepped panels disposed symmetrically on either side of the hull center line, said series of panels on either side of the hull center line including an inboard panel and a center panel and an outboard panel, vertical risers joining the adjacent edges of said center and outboard panels, vertical risers joining the adjacent edges of said center and inboard panels and extending on opposite sides of the hull center line from the stern to a point of intersection on the center line adjacent the bow to provide soft riding qualities, said panels being angled upwardly from the horizontal outwardly of the hull center line with such angularities decreasing between successive panels in the outboard direction at all stations along the length of the hull except at the stern, the angularities of each said inboard and center panels increasing from the stern toward the bow while the angularities of said outboard panels remain constant thereby stabilizing the hull both while running at all speeds and at rest.

4,128,073
WATER SPORTS CRAFT

George L. Rossmann, 917 Ridge Rd., Island Lake, Ill. 60042
Filed Apr. 8, 1977, Ser. No. 785,747
Int. Cl.^{2} B63H *16/00*
U.S. Cl. 115—22 **5 Claims**

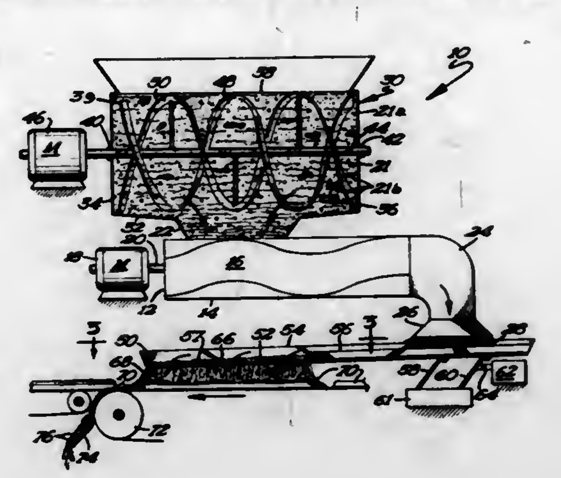


1. A water sports craft comprising: a pair of laterally spaced elongated pontoons, steering means mounted on one of said pontoons, and inclined tread-mill propulsion means constructed and arranged in fixed position between said laterally spaced pontoons such that one end of said propulsion means extends above said pontoons and the opposite end of said propulsion means extends below said pontoons into the water when said craft is launched, said tread-mill propulsion means comprising two endless belts, a plurality of cleats arranged transversely on the outer surface of each belt, said cleats being equally spaced longitudinally thereof, and belt mounting frame members constructed and arranged to support said belts in superposed relationship whereby linear movement of one belt in one direction effects linear movement of the other belt in the opposite direction, said belt mounting frame members comprising spaced parallel side plates, transversely arranged roller shafts at opposite ends respectively of said side plates and belt supporting rollers on said shafts, the corresponding roller shafts of each superposed frame member being provided with a spur gear, said spur gears arranged to be in contact for providing positive drive between the superposed belts.

4,128,074
APPARATUS FOR COATING FOOD PRODUCTS

Jack J. Rejsa, Minneapolis, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.
Filed Mar. 15, 1977, Ser. No. 777,879
Int. Cl.^{2} B05C *5/00, 11/11*
U.S. Cl. 118—24 **3 Claims**

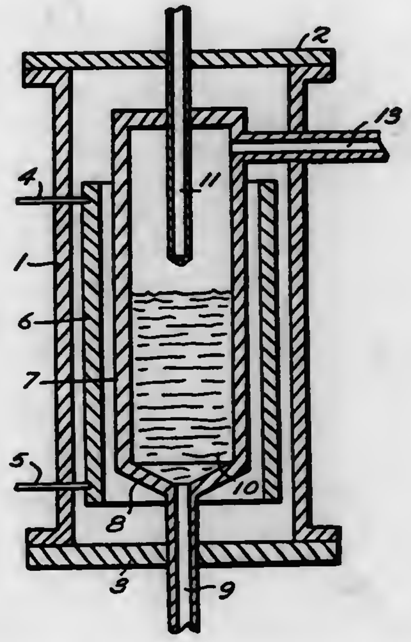
1. An apparatus for assembling composite food products by depositing a fluid food product dispersion comprising, macerated, ground, chopped, or an otherwise subdivided food product onto food bases, said apparatus comprising:
(a) a tank means for storing a supply of said dispersion, said tank including side and end walls;
(b) a metering means communicating with the bottom of the tank for withdrawing and expelling said dispersion from the tank at a controlled rate;
(c) a nozzle connected to the outlet of the metering means for dispensing said dispersion in a downward direction;
(d) a vibrating tray feeder means generally horizontally disposed above a food base and below said nozzle, said feeder means having an outlet edge over which said dispersion is allowed to fall as a uniform continuously descending curtain after passing across the surface thereof; said outlet edge being positioned above the food bases traveling beneath said feeder means and being of sufficient width to distribute said dispersion onto the upper surface of the food bases, vibratory support means for said feeder



means, motor means for imparting vibratory motion thereto; and
(e) a conveyor beneath said feeder means for conveying the food bases.

4,128,075
APPARATUS FOR COATING FUEL FERTILE OR ABSORBER MATERIAL CONTAINING PARTICLES FOR HIGH TEMPERATURE FUEL ELEMENTS

Hans Huschka, and Wolfgang Warzawa, both of Grossauheim, Germany, assignors to HOBEG Hochtemperaturreaktor-Brennelement G.m.b.H, Grossauheim, Germany
Division of Ser. No. 500,017, Aug. 23, 1974, Pat. No. 4,056,641.
This application Mar. 29, 1977, Ser. No. 782,509
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1973, 2343123
Int. Cl.^{2} C23C *13/08;* G21C *3/14*
U.S. Cl. 118—49.1 **5 Claims**

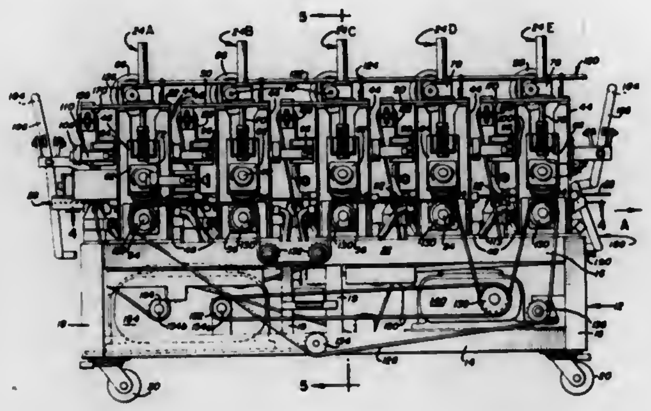


1. An apparatus for coating particles of a member of the group consisting of fuel, fertile material and absorber materials comprising
a vertically positioned reaction tube, the bottom of which is cone-shaped, containing a fluidized bed of said particles,
an inlet means to said tube for carrier gas to maintain said bed in fluidized condition, said inlet being below said bed,
a gas outlet means from said reaction tube and above said bed,
at least one inlet supply means for coating gas terminating in a nozzle above said fluidized bed, and

means for retracting said nozzle so that it remains above said bed as the bed expands during the coating.

4,128,076
APPARATUS FOR DECORATING EMBOSSED PANELS

Lyn R. Daunheimer, Batavia, Ill., assignor to Masonite Corporation, Chicago, Ill.
Filed Aug. 30, 1976, Ser. No. 719,069
Int. Cl.² B05C *11/02*
U.S. Cl. 118—70 **11 Claims**

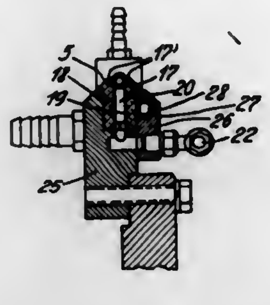


1. Apparatus for removing liquid colorant from the surface of sheet material such as decorative panels and the like comprising:
- a drive roll means underlying said panels for moving the same along a generally horizontal work path at a selected speed;
- at least one driven wiping roll means supported on an axis above said work path having a cylindrical resilient wiping surface driven to wipingly engage an upper surface of said panels passing under said wiping roll means carried by said driven roll means;
- said wiping roll means including motor means for driving said wiping surface to contact said upper surface of said moving panels at a speed at least 15% higher than said speed of said panels along said work path;
- means resiliently supporting said wiping roll means for movement toward and away from said work path to provide selectively adjustable wiping pressure against said surface of said moving panels;
- blade means angularly engaging said wiping surface of said wiping roll means along a line of contact spaced away from the area of wiping contact with said panels for removing liquid colorant from said wiping surface; and
- trough means adjacent opposite ends of said blade means for receiving liquid colorant removed from said wiping surface.

4,128,077
APPLICATION AND DOSING DEVICE HAVING A MINI APPLICATION ROLLER AND A SEALINGLY SUPPORTED DOCTOR ROD

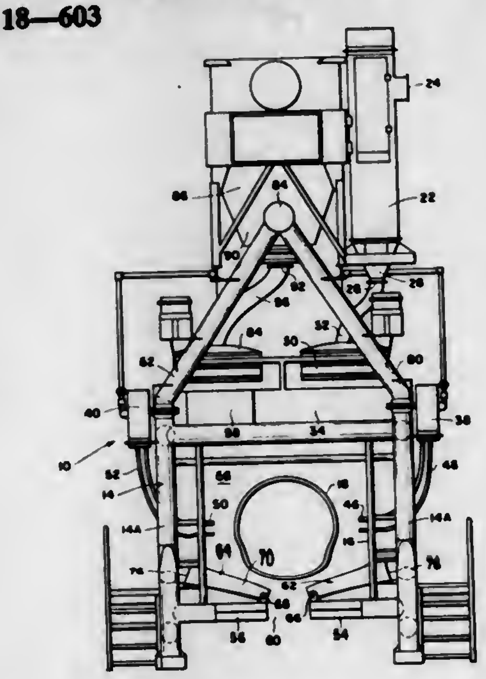
Paul Meier, Winkel, Switzerland, assignor to Bachofen & Meier, Bulach, Switzerland
Filed Aug. 1, 1977, Ser. No. 821,001
Claims priority, application Switzerland, Aug. 5, 1976, 10044/76
Int. Cl.² B05C *11/02*
U.S. Cl. 118—104 **1 Claim**

1. In an application and dosing device for the distribution of a highly fluid medium onto a sheet of material, said device being of the kind including an application roller, and a doctor rod disposed adjacent to said application roller, the improvement wherein the application roller is in the form of a mini roller having a diameter less than 60 mm, the application roller having an axial channel therethrough for passage of cooling water, the doctor rod being supported for rotation in a bearing which partly embraces the lower side of said rod, said bearing comprising a bearing support which supports two spaced bearing members fabricated of a viscoelastic material, the doctor rod being sealingly engaged by and supported under resilient clamping pressure between said bearing members along substantially the entire length of said doctor rod, said bearing members having scraper edges adjacent their upper edges respectively in engagement with spaced portions of the lower side of said rotatable doctor rod, said bearing members having respective portions which extend in generally parallel relation to one another below said doctor rod to define the sides of a wash water channel immediately below the doctor rod, a ledge secured to said bearing support and having a transverse groove therein, an elastic compressed air tube supported in said groove and constituting an adjustable pressure element, one of said bearing members being movable and being abutted by said adjustable pressure element, said pressure element being operative to resiliently urge said one bearing member towards the other bearing member so as to provide adjustment between said bearing members and said doctor rod to maintain said sealing engagement when the bearing becomes worn.



4,128,078
APPARATUS FOR APPLYING POWDERED COATING MATERIALS TO THE OUTER PERIPHERY OF OBJECTS

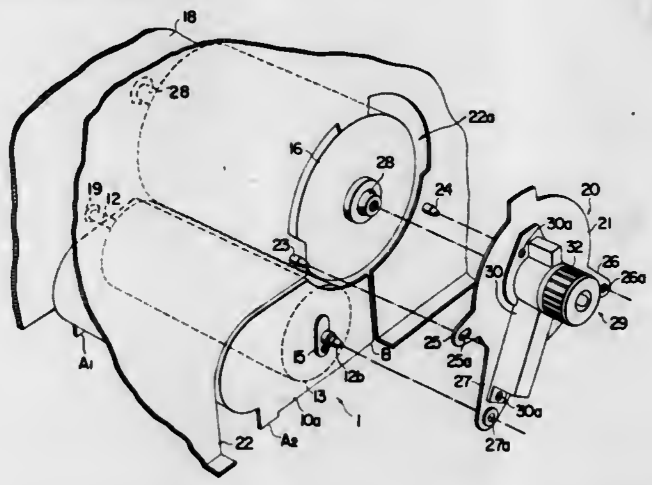
Woodrow W. Stoltz, and Charles R. Thatcher, both of P.O. Box 35103, Tulsa, Okla. 74135
Filed Jul. 15, 1977, Ser. No. 815,905
Int. Cl.² B05C *19/00*
U.S. Cl. 118—603 **6 Claims**



1. Apparatus for applying powdered coating materials to the outer periphery of objects and comprising main framework means having an internal spraying chamber for receiving the object therethrough, gun battery means carried by said framework means and arranged for directing a spray pattern in a direction toward the object within the spraying chamber, new powder reservoir means carried by said framework means for receiving a supply of new powdered coating material therein, fluidizing means in communication with the new powder reservoir means for receiving the new powder therefrom, means operably connecting said fluidizing means with said gun battery means for directing the fluidized powder to the gun battery means for spraying thereof onto the outer periphery of the object, filtered overspray capturing chamber means carried by said framework means for retrieving powder overspray during a spraying operation, reclaimed powder reservoir means in communication with said overspray capturing chamber means for receiving the reclaimed powder therefrom, second fluidizing means in communication with said reclaimed powder reservoir for receiving the reclaimed powder therefrom, said second fluidizing means being in communication with the first-mentioned fluidizing means for directing the reclaimed powder therefor for application of the reclaimed powder to the outer periphery of the object.

4,128,079
MOUNTING APPARATUS FOR A DRUM AND DEVELOPING ROLL IN A DEVELOPING UNIT OF MAGNETIC BRUSH TYPE

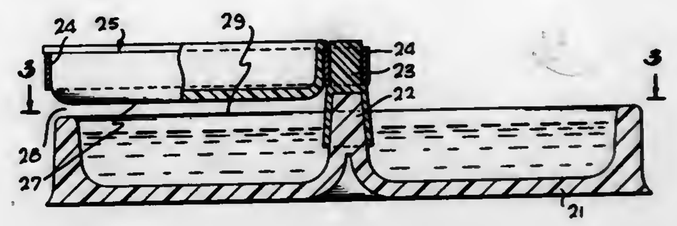
Minoru Suzuki, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Aug. 15, 1977, Ser. No. 824,294
Claims priority, application Japan, Aug. 18, 1976, 51-110426; Oct. 20, 1976, 51-125907
Int. Cl.² G03G *15/09*
U.S. Cl. 118—658 **15 Claims**



1. A developing unit of magnetic brush type comprising:
- a casing means for holding developer;
- a magnet disposed in said casing means;
- means, disposed in parallel relationship with said casing means, for defining a first central axis of rotation of a photosensitive member in the form of a drum, said defining means comprising two ends extending from the opposite sides of said drum;
- a rotatable sleeve means for surrounding the magnet;
- means for mounting said magnet and sleeve means on a second central axis of rotation of a magnetic brush to be formed on the sleeve means, said mounting means being supported on the casing means and having opposite ends projecting out of the casing means;
- a fixed, first positioning means, detachably receiving one of said two ends of said defining means and one of said opposite ends of said mounting means in respective support apertures therein, for supporting said one end at a predetermined distance from each other;
- a stationary member; and
- a second positioning means, detachably fitted on the other of said two ends of said defining means and having a support aperture detachably receiving the other of said opposite ends of said mounting means on the second central axis of rotation associated with the magnetic brush, for supporting said other ends at said predetermined distance from each other on said stationary member.

4,128,080
ANIMAL FEEDER

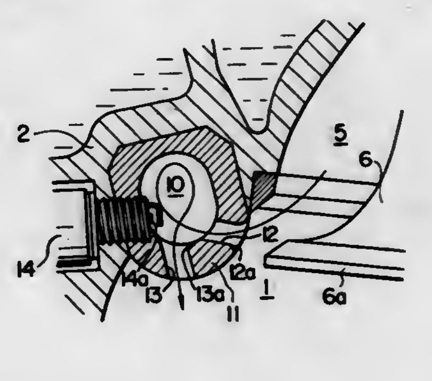
C. Rex Haney, 14160 Sayre St., Sylmar, Calif. 91342
Filed Apr. 6, 1977, Ser. No. 785,056
Int. Cl.² A01K *5/00*
U.S. Cl. 119—51.5 **2 Claims**



1. An improved animal feeder comprising a rectangular water dish, said water dish having a base with a non-circular post extending upwardly from said base near the center of said water dish, a rectangular bracket which attaches to, and is supported on, said post, said rectangular bracket extending to one side only of said post, and a rectangular food dish which rests on said bracket to one side of said post such that the bottom of said food dish is supported a short distance above the top rim of said water dish.

4,128,081
TORCH IGNITION TYPE INTERNAL COMBUSTION ENGINE

Masaaki Noguchi, Nagoya; Masaharu Sumiyoshi, Toyota; Yukiyasu Tanaka, Okazaki, and Taro Tanaka, Chiryu, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Continuation-in-part of Ser. No. 610,889, Sep. 5, 1975, which is a continuation-in-part of Ser. No. 434,216, Jan. 17, 1974, Pat. No. 3,974,818. This application Dec. 28, 1976, Ser. No. 754,961
Claims priority, application Japan, Mar. 29, 1976, 51-34888
Int. Cl.² F02B *19/10, 19/16*
U.S. Cl. 123—32 SP **47 Claims**



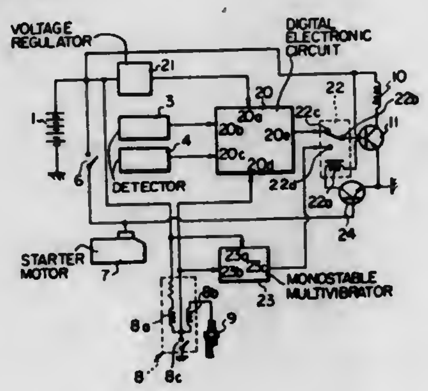
1. A torch ignition type internal combustion engine comprising:
- a cylinder;
- a piston in said cylinder;
- a cylinder head cooperating with said cylinder and said piston to define a main combustion chamber;
- an intake port in said cylinder head;
- an intake valve having a valve stem and a valve head connected thereto;
- means for supplying said main combustion chamber with an air-fuel mixture through said intake port;
- a trap chamber disposed in said cylinder head and having at least two apertures which are always in communication with said main combustion chamber during the time when said intake valve is kept closed and which are positioned such that a portion of said air-fuel mixture is introduced into said trap chamber through one of said apertures and residual gases remaining in said trap chamber are discharged through the other of said apertures into said main combustion chamber when said intake valve is opened and such that a part of the air-fuel mixture supplied into said main combustion chamber is introduced into said trap

chamber through both of said apertures on a compression stroke;
said trap chamber having a substantially smoothly continuous inner surface to which at least one of said apertures is substantially tangential to thereby cause a vortex flow of the air-fuel mixture in said trap chamber when said air-fuel mixture part is introduced from said main combustion chamber through said aperture into said trap chamber;
a spark plug having a set of electrodes for igniting the air-fuel mixture in said trap chamber to produce therein a combustion flame which runs through both of said apertures into said main combustion chamber;
said apertures being small enough to confine and form the runs of combustion flame into torch jets whereby the air-fuel mixture in said main combustion chamber is ignited.

4,128,082

ELECTRONIC FUEL INJECTION CONTROL DEVICE

Keiji Aoki, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Aichi, Japan
Filed Sep. 21, 1977, Ser. No. 835,167
Claims priority, application Japan, Mar. 18, 1977, 52-31976[U]
Int. Cl.^{2} F02P *3/02*
U.S. Cl. 123—32 EA **6 Claims**



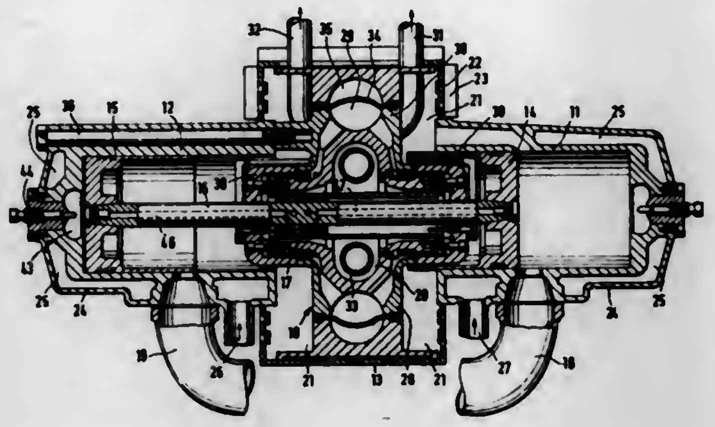
1. An electronic fuel injection control device of an internal combustion engine having fuel injection valves disposed upstream of intake valves of said engine and driving means of said injection valves, comprising:
a means for detecting a condition of said engine and for generating an electrical signal being indicative of said condition;
an electronic circuit for calculating a fuel injection period of said injection valves in accordance with said electrical signal, and for supplying a control signal based on said calculated fuel injection periods to each said driving means;
a means for generating a control signal having a predetermined pulse width, said generating means consisting of a C-MOS type element, and;
a switching means for feeding said driving means of said injection valves with said control signal provided from said generating means, when said engine is being started.

4,128,083

GAS CUSHIONED FREE PISTON TYPE ENGINE

Rudolf Bock, Palmerstrasse 9, 7031 Holzgerlingen, Fed. Rep. of Germany
Filed Jun. 24, 1977, Ser. No. 809,999
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1976, 2630004
Int. Cl.^{2} F02B *71/00*
U.S. Cl. 123—46 R **16 Claims**

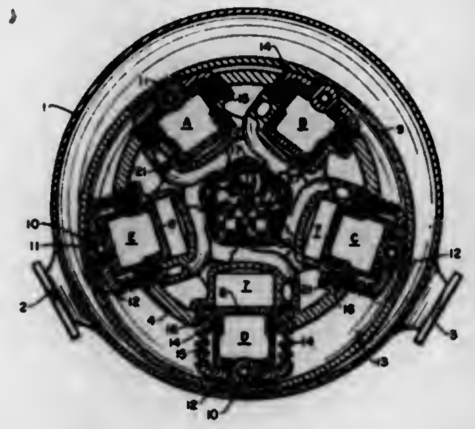
1. In a gas cushioned free piston type engine, a combination comprising a pair of oppositely arranged combustion cylinders axially spaced from each other; a central engine part having an inner section projecting with opposite end portions respectively into said combustion cylinders radially inwardly spaced therefrom and an outer section; piston means comprising a pair of pistons respectively arranged in said combustion cylinders; common piston rod means rigidly connecting said pair of pistons of said piston means, said pistons having open ends of predetermined inner diameters facing each other; pump piston means having opposite faces impingeable by fluid and being fixedly mounted on said piston rod means, one of said means being eccentrically arranged with respect to the other of said means; a pump cylinder in which said pump piston means is reciprocable, said pump cylinder being arranged in said inner section of said central part, said opposite end portions of said inner sections of said central part having a smaller outer diameter than said predetermined inner diameter of each of said pair of pistons, and the stroke of the latter being such that said end portions of said inner section of said central part respectively extend into the open ends of said pistons during reciprocation of the latter.



4,128,084

ROTARY ENGINE

Alexander R. Sutherland, Sydney, Australia, assignor to Iris Jean Carrington Sutherland, Sydney, Australia, a part interest
Filed Jul. 20, 1976, Ser. No. 706,954
Claims priority, application Australia, Jul. 25, 1975, 2520/75
Int. Cl.^{2} F02B *75/22*
U.S. Cl. 123—55 AA **4 Claims**

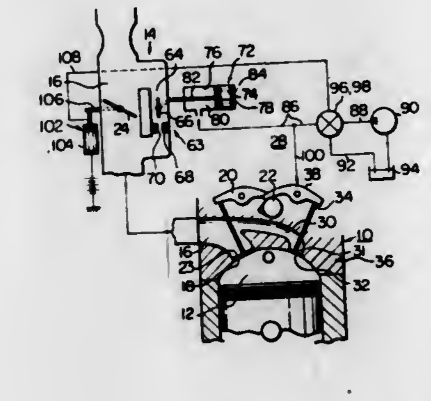


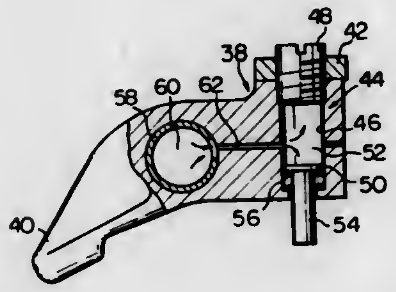
1. An internal combustion engine comprising a stator, a shaft rotatably mounted in and supported by the stator, a plurality of cylinders mounted on the stator with their axes radially arranged relative to the shaft axis and angularly spaced around the shaft axis, a piston reciprocately mounted in each cylinder, an orbitor fixed to the shaft, a gear fixed to the shaft, a toothed bore in the stator larger in diameter than said gear, a track on the stator concentric with the toothed bore, a roller mounted on the orbitor with the axis of rotation of the roller eccentric to but parallel with the shaft axis and with the roller engaging said track to maintain meshing engagement between some teeth of the gear and some teeth of said toothed bore, a follower on each piston, curved support surface means on the orbitor concentric with the shaft axis and resilient means to urge the followers into contact with said support surface means.

4,128,085

ENGINE MECHANICAL LOSS REDUCING SYSTEM

Kazuya Kunii, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan
Filed May 16, 1977, Ser. No. 797,139
Claims priority, application Japan, May 17, 1976, 51/56217
Int. Cl.^{2} F02B *75/06*; F04L *1/18*
U.S. Cl. 123—75 E **6 Claims**



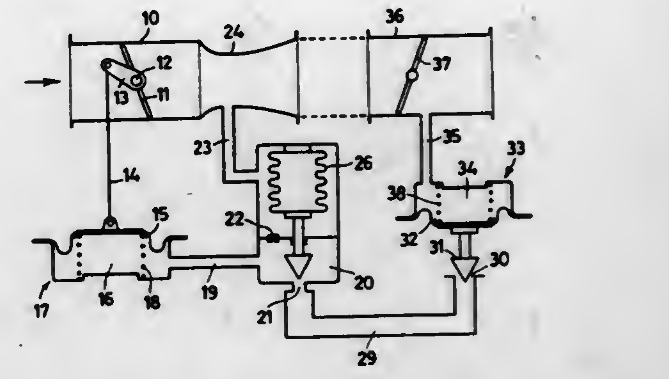


1. A mechanical loss reducing system of an internal combustion engine including
a combustion chamber,
a main intake passageway providing communication between the atmosphere and the combustion chamber through an intake port,
a main intake valve for opening and closing the intake port, and
output control means for controlling the output of the engine, said mechanical loss reducing system comprising
flow increasing means for increasing the flow of air passing through the main intake passageway during low load operations of the engine for feeding an excessive air-fuel mixture to the combustion chamber,
an auxiliary intake passageway branching off from the main intake passageway and opening into the combustion chamber,
an auxiliary intake valve for opening and closing said auxiliary intake passageway,
operating means for causing said auxiliary intake valve to open said auxiliary intake passageway at the intake stroke during the engine low load operations for causing said excessive air-fuel mixture to be drawn into the combustion chamber and for causing said auxiliary intake valve to close said auxiliary intake passageway later than the main intake valve at the compression stroke during the engine low load operations for expelling said drawn excessive air-fuel mixture from the combustion chamber.

4,128,086

AUTOMATIC DEVICE FOR CONTROLLING THE PRESSURE OF THE INTAKE AIR OF AN I.C. ENGINE AS ITS OPERATING ALTITUDE VARIES

Giampaolo Garcea, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy
Filed Feb. 10, 1977, Ser. No. 767,446
Claims priority, application Italy, Feb. 10, 1976, 20045 A/76
Int. Cl.^{2} F02B *75/02*; F02M *1/10*
U.S. Cl. 123—75 D **8 Claims**



1. An I.C. engine particularly for motor vehicles, provided with carburetion means for forming the in-drawn air and fuel mixture, provided with means for adjusting the mixture flow under different conditions of engine use and also provided with an automatic device for controlling the pressure of the air drawn in as the engine operating altitude varies, said device comprising first valve means adapted to induce in the air flow reaching the engine carburetion means a fall in pressure variable between a maximum value at zero altitude and a minimum value at a predetermined altitude so as to keep the pressure downstream of said valve means substantially constant and equal to the external pressure corresponding to said predetermined altitude independently of the altitude of operation of the engine, and also comprising first actuator means which control said first valve means and are operated by an operating pressure which, as the altitude of operation of the engine increases, assumes intermediate values between the external atmospheric pressure and the pressure existing downstream of said first valve means, at said predetermined altitude the operating pressure assuming a value equal to the substantially constant value existing downstream of said first valve means, and the device also comprising second valve means controlled by second actuator means sensitive to an absolute pressure which is a function of the external atmospheric pressure, said valve means controlled by said second actuator means modulating the operating pressure reaching said first actuator means.

4,128,087

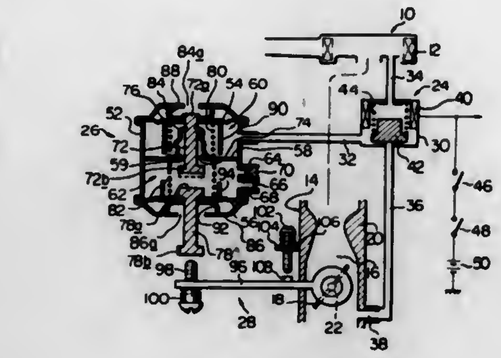
THROTTLE VALVE OPERATING MECHANISM

Makio Hayashi, and Takashi Hisatomi, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Japan
Filed Jun. 28, 1977, Ser. No. 810,792
Claims priority, application Japan, Jun. 30, 1976, 51-85929[U]
Int. Cl.^{2} F02D *11/08*
U.S. Cl. 123—103 E **10 Claims**

1. A throttle valve operating mechanism for a carburetor having an intake passage containing therein a throttle valve which is biased to close said passage, said mechanism comprising:
a casing having therein a partition wall;
first and second movable walls covering respective open ends of said casing so as to define in said casing first and second chambers, said second chamber communicating through a flow restrictor with the atmosphere;
first and second biasing means respectively disposed in said first and second chambers for biasing said first and second movable walls in directions to separate from each other;
position setting means for setting the extreme position of said second movable wall in response to the movement of said

first movable wall, the expansion of said first chamber inducing a first extreme position of said second movable wall and the contraction of said first chamber inducing a second extreme position of said second movable wall;

transmitting means for controlling the throttle valve in such a manner that said throttle valve is nearly fully closed when said second movable wall takes said first extreme position, and said throttle valve is opened by a predetermined amount from said nearly closed position when said second movable wall takes said second extreme position; and



switching means for providing a fluid communication between said first chamber and the atmosphere to achieve the expansion of said first chamber when an engine driven power consuming device stops to run, and a fluid communication between said first chamber and a vacuum source to achieve the contraction of said first chamber when said engine driven power consuming device begins to run.

4,128,088

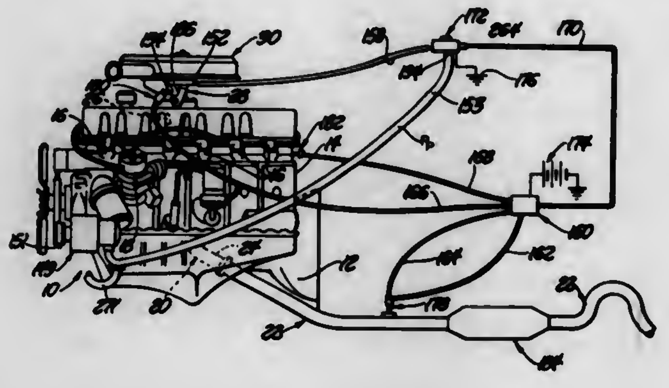
APPARATUS AND SYSTEM FOR CONTROLLING THE AIR-FUEL RATIO SUPPLIED TO A COMBUSTION CARBURETOR

Ronald E. Herman, Romeo, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed May 10, 1976, Ser. No. 684,548

Int. Cl.² F02M *11/00*

U.S. Cl. 123—119 EC **24 Claims**



1. A carburetor for a combustion engine, comprising induction passage means for supplying motive fluid to said engine, a source of fuel, main fuel metering system means communicating generally between said source of fuel and said induction passage means, idle fuel metering system means communicating generally between said source of fuel and said induction passage means, selectively controlled pressure responsive modulating valving means effective to controllably increase or decrease the rate of metered fuel flow through each of said main fuel metering system means and said idle fuel metering system means, said modulating valve means being constructed so as to be effective to so alter said rate of metered fuel flow in response to a single control signal means generated as a consequence of selected indicia of engine operation, and pressure passage means effective for communicating with a source of superatmospheric fluid pressure for supplying a superatmospheric working pressure to said modulating valving means.

4,128,089

EXHAUST GAS RECIRCULATION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

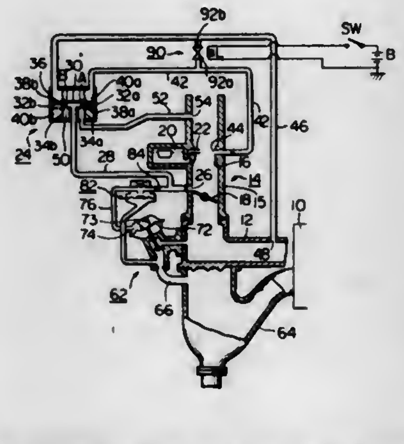
Masatami Takimoto; Mitsuyoshi Teramura, and Masahiro Urushidani, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 25, 1977, Ser. No. 781,426

Claims priority, application Japan, Jan. 6, 1977, 52-524

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **2 Claims**



1. In an internal combustion engine including an intake system comprising a carburetor having a venturi portion, an exhaust system and a vacuum operated valve for controlling flow of exhaust gas from said exhaust system to said intake system, the improvement that comprises:

an air introducing pipe means which has one end thereof opened to said intake system of said engine for introducing an extra amount of air into said intake system in order to supply a lean air-fuel mixture into said engine;

an air control valve for closing the other end of said air introducing pipe means for stopping the introduction of an extra amount of air in order to supply a rich air-fuel mixture into said engine, when said engine is in a running condition that both the vacuum level in the venturi portion of the carburetor and the vacuum level in said intake system are lower than respective predetermined values thereof, and;

a vacuum signal passageway means adapted for communicating said air introducing pipe means with said vacuum operated flow control valve, so that a vacuum signal from said air introducing pipe means is received by said flow control valve when said air introducing pipe means is closed for supplying a rich air-fuel mixture into said engine.

4,128,090

EXHAUST GAS RECIRCULATION SYSTEM

Syunichi Aoyama, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Jun. 21, 1977, Ser. No. 808,554

Claims priority, application Japan, Jun. 23, 1976, 51-74168

Int. Cl.² F02M *25/06*

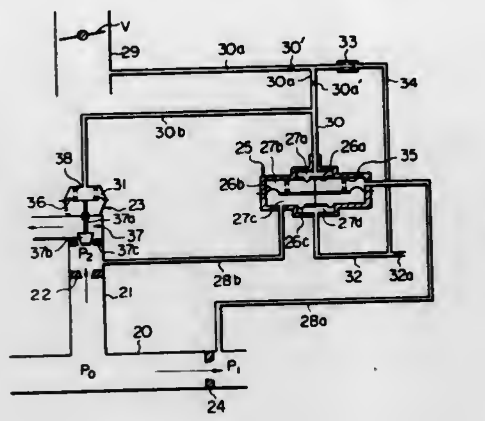
U.S. Cl. 123—119 A **9 Claims**

1. An EGR system for an internal combustion engine having an induction manifold and an exhaust conduit comprising:

means defining an EGR passage fluidly interconnecting the induction manifold and the exhaust conduit for recirculating a portion of the exhaust gases emitted from the engine into the exhaust conduit into the induction manifold for introduction into the combustion chamber;

EGR control valve means operatively disposed in the EGR passage for controlling the amount of exhaust gas passing therethrough in response to a vacuum signal fed to said EGR control valve means from the induction manifold;

pressure regulating means fluidly communicating with the atmosphere, the EGR passage and the exhaust conduit for receiving respectively therefrom atmospheric air, first pressure signal and a second pressure signal and also communicating said EGR control valve means in such a manner as to modulate, via the introduction of atmospheric air, the vacuum signal fed from the induction manifold to the EGR control valve means, in response to the pressure differential between said first and second pressure signals; and



first and second restriction means disposed in the EGR passage and the exhaust conduit respectively, the pressure prevailing in the chamber defined between said first restriction means and the EGR control valve neans functioning as the source of said first pressure signal and the pressure prevailing in the region immediately downstream of the said second restriction means functioning as the source of said second pressure signal.

4,128,091

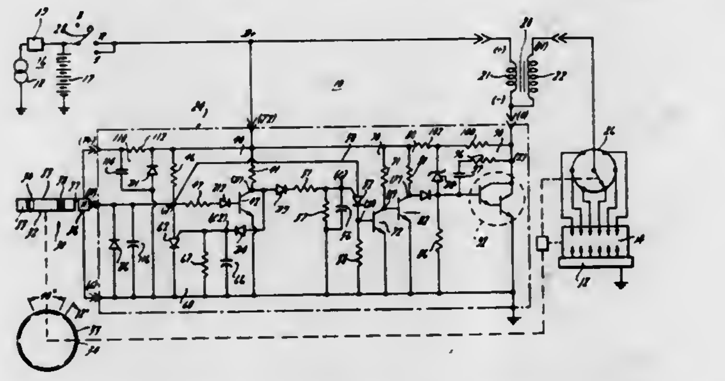
HALL EFFECT ELECTRONIC IGNITION CONTROLLER WITH PROGRAMMED DWELL AND AUTOMATIC SHUT-DOWN TIMER CIRCUITS

Isadore Balan, Oak Park, and Joseph J. Kopera, Trenton, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 18, 1976, Ser. No. 742,824

Int. Cl.² F02P *3/04*

U.S. Cl. 123—148 E **24 Claims**



1. In a breakerless electronic ignition system including a triggerable electronic ignition controller for an internal combustion engine having a source of low tension electrical energy, at least one sparking device and an ignition coil having a primary winding connected for energization from said source and another winding for supplying high tension energy to said sparking device, said controller adapted to be triggered from an engine-driven pickup device developing substantially rectangular-shaped electrical signal pulses of a pulse repetition rate proportional to engine speed and a fixed duty cycle or ratio of ON to ON and OFF period,

said controller comprising a first controllable semiconductor switching means adapted to be connected in series with the primary winding of the ignition coil directly across the source to receive the full voltage of said source across the said coil primary winding without any external current limitation upon conduction of said first controllable semiconductor switching means,

second controllable semiconductor switching means adapted to receive trigger signal pulses from said pickup device to change its state of conduction from one state to its other state directly in accordance with the ON period and OFF period of said signal pulses, said second semiconductor switching means being in one state of conduction when said first semiconductor switching means is in its conduction state and coupled in conductivity controlling relation to said first semiconductor switching means to change the conduction state of the latter when the conduction state of the second semiconductor switching means is changed by said trigger signal, and

time delay switching means coupled between said second and first controllable semiconductor switching means and operable to block conduction of said first semiconductor switching means during an initial portion of the said one state of conduction of said second semiconductor switching means and to delay the return to conduction of the first controllable semiconductor switching means from the return of said second controllable semiconductor switching means to its said one state for a controlled delay period which is a function of engine speed and prevents dissipation of energy in the coil at low engine speeds without impairment to the dwell period of the controller at high engine speeds, said time delay switching means including a timing capacitor connected to be charged from said energy source in a circuit in parallel with the energization circuit of the ignition coil primary winding and serially-connected first controllable semiconductor switching means.

4,128,092

INTERNAL COMBUSTION ENGINE WITH AN AUXILIARY COMBUSTION CHAMBER

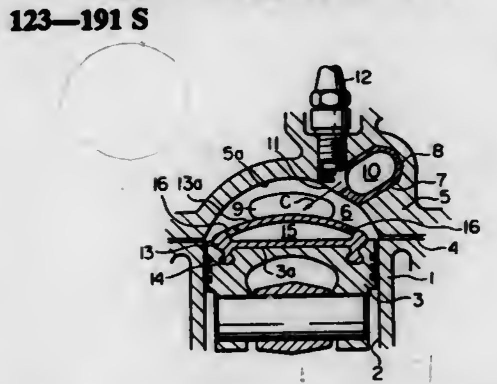
Masato Yokota, and Hideo Kobayashi, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 18, 1977, Ser. No. 788,425

Claims priority, application Japan, Nov. 15, 1976, 51-136242

Int. Cl.² F02B *23/00, 19/10*

U.S. Cl. 123—191 S **15 Claims**



1. An internal combustion engine comprising:

a cylinder block;

a cylinder head fixed onto said cylinder block and having an inner surface;

a piston reciprocally movable in said cylinder block and having a top surface, said inner surface and said top surface forming a wall defining a main combustion chamber;

means for feeding a combustible mixture into said main combustion chamber;

means for discharging the exhaust gas from said main combustion chamber into the atmosphere;

a bore formed in said cylinder head defining a first auxiliary combustion chamber having a first connecting passage of a cross-sectional area which is smaller than that of said first auxiliary combustion chamber, said first connecting passage defining a path of flow from said auxiliary combustion chamber solely to said main combustion chamber;

a single spark plug located in said bore;

a second auxiliary combustion chamber formed in said wall defining said main combustion chamber having a second connecting passage of a cross-sectional area which is smaller than that of said second auxiliary combustion chamber and which opens on said inner wall at a position remote from the path of flow of said first connecting passage so that a burning jet injected from said first connecting passage does not directly impinge upon said second connecting passage, said second auxiliary combustion chamber being connected via said second connecting passage solely to said main combustion chamber;

said first and second auxiliary combustion chambers being mutually isolated except through said main combustion chamber.

4,128,093
DRESSING DEVICES FOR PROFILING GRINDING WHEELS FOR THE FORM GRINDING OF INVOLUTE GEARS

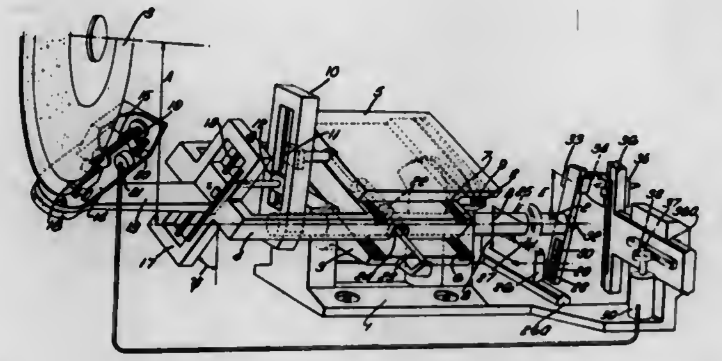
Paul F. Aschwanden, and Milan Bartosek, both of Zürich, Switzerland, assignors to Maag Gear-Wheel & Machine Co. Ltd., Zürich, Switzerland

Filed Aug. 16, 1976, Ser. No. 714,965

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1975, 2536895

Int. Cl.² B24B *53/08*

U.S. Cl. 125—11 T **8 Claims**



1. Dressing device for profiling grinding wheels for the form grinding of helically toothed involute cylindrical gears, the device comprising an arcuate roller guide, a rolling straight edge, means connecting said straight edge to the roller guide for restraining the straight edge to roll on the roller guide, a tool-holder slide guideway, mounting means for said guideway permitting angular adjustment of the guideway thereon according to the base helix angle of the toothing to be ground, means connecting said mounting means to the straight edge for imparting an involute motion thereto from the movements of said straight edge, a tool-holder slide, displaceable along the tool holder slide guideway and carrying a tipped or pointed dressing tool,

a pivot member constrained to be displaced with said rolling of the straight edge so as to participate in the pivotal movement of the straight edge about the axis of the roller guide but not in its rectilinear rolling movement component, a first crank slide, means locating said first slide for reciprocating movement and means for causing said first slide movements in dependence upon the pivotal movements of the pivot member, a crank, a fixed pivot mounting for said crank and a first slider connecting the crank to said first crank slide for movement of the crank by said first crank slide, a second crank slide, means guiding said second slide for movement parallel to the first crank slide and a second slider connecting the crank to said second crank slide for movement of said second slide by the crank, means connecting said second crank slide to the tool-holder slide for said displacement of the tool-holder slide along its guideway in dependence upon the movement of said second slide, the arrangement being such that said displacement of the tool-holder slide modifies said involute motion for profiling a grinding wheel for the form grinding of a helically toothed involute cylindrical gear.

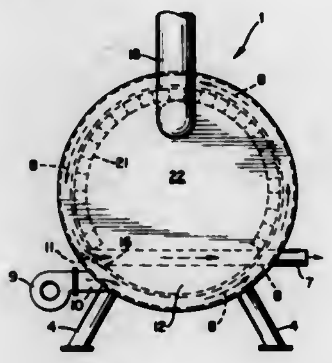
4,128,094
HEATER

Oscar D. Lewis, 1963 19th Ave. Ct., NW., Hickory, N.C. 28601

Filed Oct. 5, 1977, Ser. No. 839,754

Int. Cl.² F24H *3/08*

U.S. Cl. 126—110 B **3 Claims**



1. A hot air heater comprising: first and second enclosures, said first enclosure having a set of holes and said second enclosure having a first and second set of holes, the first set being aligned with and located opposite from said second set, said first enclosure completely surrounding and spaced apart from said second enclosure forming an air chamber therebetween, the enclosures being positioned relative to one another so that the holes of said first enclosure are in alignment with at least one set of holes of said second enclosure; a plurality of conduits disposed in said enclosures, positioned in a spaced apart relationship one to another in a common plane and received in said holes so that terminal portions of one end of said conduits bridge said air chamber and are in open communication with the outside air and their opposite ends are in communication with said air chamber; baffle means disposed in said air chamber for diverting air moving in said chamber into said conduits; and, a blower means in communication with said air chamber for circulating air from outside of the heater through the bottom portion of said air chamber, across the bridging portions of said conduits, through the balance of said air chamber, through said conduits and thence into a space desired to be heated.

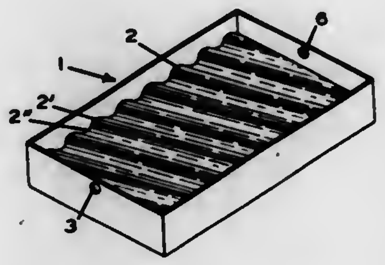
4,128,095
SOLAR ENERGY COLLECTOR

Jess W. Oren, III, Washington Boro; Eugene M. Kirchner, Maytown, and Charles F. Wehry, Jr., Lancaster, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Sep. 19, 1977, Ser. No. 834,320

Int. Cl.² F24J *3/02*

U.S. Cl. 126—270 **1 Claim**



1. A solar energy collector comprising:

(a) an outer member substantially transparent to solar energy rays;

(b) a corrugated, thermally conductive absorbent transformer means spaced from said outer member;

(c) a longitudinal fluid space having an inlet aperture and an outlet aperture disposed between said transformer means and said outer member;

(d) a gas within said longitudinal fluid space wherein said absorbent transformer means heats said gas;

(e) means for directing said gas from said inlet aperture to said outlet aperture through said longitudinal fluid space; and

(f) said absorbent means having its corrugations so constructed and arranged as to be diagonally disposed to the flow of said gas and said outer member means being spaced from said corrugations of said absorbent transformer means so as to induce helical flow of said gas from the inlet aperture to the outlet aperture.

4,128,096
SOLAR HEATERS

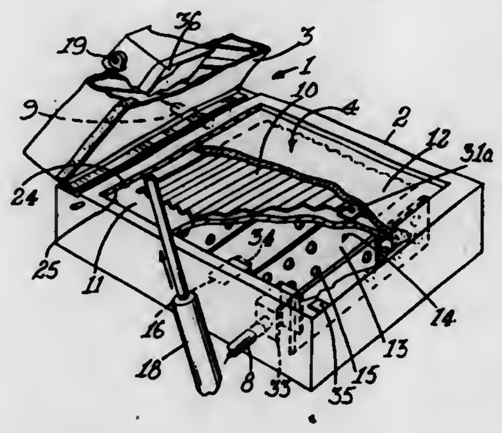
Solly Katz, P.O. Box 78036, Sandton, South Africa (2146)

Filed Aug. 12, 1976, Ser. No. 713,827

Claims priority, application South Africa, Aug. 13, 1975, 75/5220; Oct. 13, 1975, 75/6445; Mar. 12, 1976, 76/1562

Int. Cl.² F24J *3/02*

U.S. Cl. 126—271 **40 Claims**



1. A solar heater adapted to receive water under pressure from a source outside the heater, the heater including a celestial radiation receiving collector, receiving said water; an insulating lid for covering the collector when the celestial radiation decreases below a predetermined value; and a water pressure responsive means including a piston being operated by water under pressure from said source for closing and opening the lid when the celestial radiation drops below and rises above the aforesaid predetermined value.

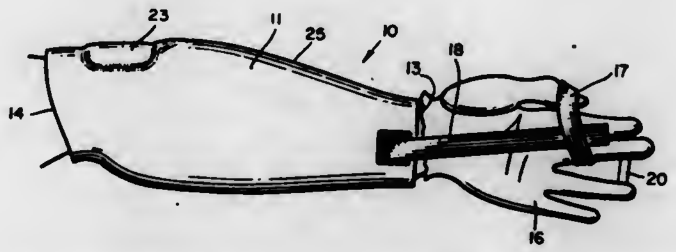
4,128,097
COMPRESSION DEVICE FOR TENNIS ELBOW

Michael C. Bilinsky, 515 Kelton Ave., Los Angeles, Calif. 90024, and Robert L. Gold, 5967 E. Pacific Coast Hwy., Long Beach, Calif. 90803

Filed Aug. 4, 1976, Ser. No. 711,566

Int. Cl.² A61F *13/00*

U.S. Cl. 128—165 **2 Claims**



1. A compression device for compressing the common extensor muscle group of an individual so that he may exercise this muscle group of an individual so that he may exercise this muscle group in order to prevent the occurrence of tennis elbow, said compression device comprising:

a. An elastic member formed out of an elastic material and having a tubular shape adapted to provide a compressive force on the group of muscles and tendons of the individual, said elastic member having an inner surface and an outer surface; and

b. a non-compressible member formed out of a non-rigid material and disposed on said inner surface of said elastic member, said non-compressible member being adapted to cover the group of muscles and tendons to be protected;

c. a non-compressible pad formed out of a non-rigid material and disposed on said inner surface of said elastic member so that it covers the attachment area of the common extensor muscle group;

d. a glove having compartments for a thumb and four fingers, with said compartments for the thumb and first two fingers being fastened together; and

e. means for anchoring the thumb and first two fingers so that they cannot move, mechanically coupled to said glove and to said outer surface of said elastic member.

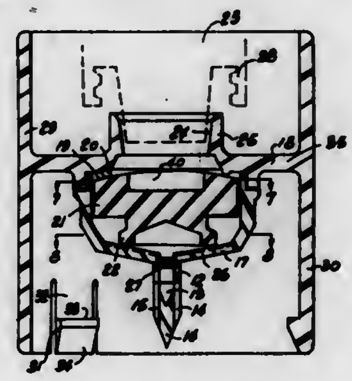
4,128,098
VALVED SPIKE TRANSFER DEVICE

William G. Bloom, Los Angeles; Pradip V. Choksi, Northridge, and Walter Seemayer, Burbank, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Dec. 6, 1976, Ser. No. 747,416

Int. Cl.² A61J *1/00*

U.S. Cl. 128—272.3 **18 Claims**



17. A valved spike transfer device comprising: a forwardly extending rigid tubular spike; and a nozzle coupler rigidly connected to the spike, said nozzle coupler including a valve that has a tubular rearwardly projecting nozzle receiver and a movable sealing means that opens upon insertion of a blunt tubular nozzle into the coupler and closes upon removal of such nozzle from the coupler; a protector skirt projecting rearwardly beyond the tubular nozzle receiver and spaced radially outward therefrom to define an annular recess of a size to receive a collar approximately the size of a conventional threaded syringe collar, which collar surrounds the nozzle, said tubular nozzle receiver having a wall sufficiently thin to be received between such nozzle and surrounding skirt; and a vial coupling means permanently joined at a fixed location to a unit formed by the nozzle coupler and spike.

4,128,099
SINGLE-POLE COAGULATION FORCEPS

Siegfried Bauer, Heidelsheim, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Sep. 20, 1977, Ser. No. 835,011

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1976, 2642489

Int. Cl.² A61N *3/04*

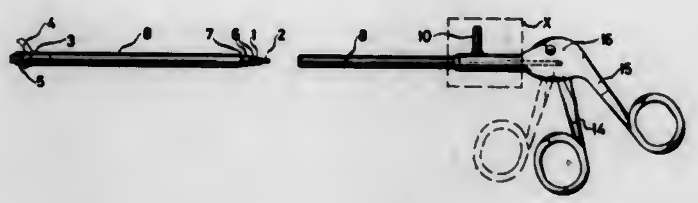
U.S. Cl. 128—303.17 **6 Claims**

1. A single-pole coagulation forceps instrument for endoscopy, said forceps comprising

(a) a traction rod having jaw means at one end, and said rod comprising two spaced apart axially aligned parts which are insulatingly interconnected by an insulating body, said jaw means being connected to one of said parts;

(b) an electrically conductive, externally insulated guide barrel through which said traction rod passes and which includes a connection element connectable to a HF terminal, said jaw means being adjacent one end of said barrel;

(c) handle means connected to the other of said rod parts for moving said traction rod axially in said barrel for opening and closing said jaw means;



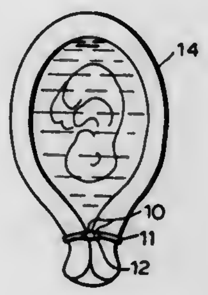
(d) means electrically connecting said jaw means to said barrel;

(e) an insulating sleeve secured to the other end of said barrel and having a greater cross-section than that of said barrel, and

(f) said insulating sleeve defining a cavity which is spaced from said other end of said barrel and in which said insulating body is disposed and is axially displaceable when said traction rod is moved axially by said handle means.

4,128,100
SUTURE

Erwin R. Wendorff, 1303 Garden La., Reading, Pa. 19611
Filed Oct. 8, 1976, Ser. No. 730,798
Int. Cl.^{2} A61L *17/00;* A61B *17/04*
U.S. Cl. 128—335.5 5 Claims

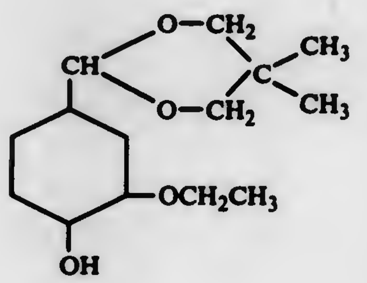


1. A method for the treatment of stress urinary incontinence or the incompetent cervix in pregnancy comprising forming a loop from a flexible surgical suture submucosally at the level of the internal os of a mammal, placing the ends of said suture in lapping relationship in a cylindrical crimpable sleevem and crimping said sleeve so as to impinge on the ends of said suture and lock the suture in the form of a loop.

4,128,101
TOBACCO COMPOSITIONS CONTAINING 3-ETHOXY-4-HYDROXYBENZALDEHYDE 2,2-DIMETHYL PROPANEDIOL ACETAL

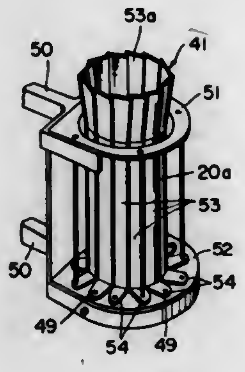
Kurt Kulka, New York, N.Y.; Frank Mild, Westwood, N.J., and Frank Fischetti, Jr., Flushing, N.Y., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.
Filed May 10, 1977, Ser. No. 797,508
Int. Cl.^{2} A24B *3/12*
U.S. Cl. 131—17 R 8 Claims

1. A composition comprising tobacco having incorporated therein the compound 3-ethozy-4-hydroxy-4-benzaldehyde 2,2-dimethyl-propandiol acetal having the formula:



4,128,102
INCORRECT COIN STACKING DETECTING DEVICE IN A COIN PACKAGING MACHINE

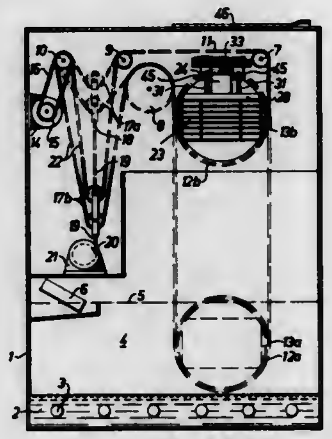
Kazuto Asami, and Hirokuni Matono, both of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Himeji, Japan
Filed Aug. 30, 1977, Ser. No. 829,093
Claims priority, application Japan, Sep. 2, 1976, 51-117888[U]
Int. Cl.^{2} G07D *9/04*
U.S. Cl. 133—1 A 3 Claims



1. In a coin packaging machine in which after a predetermined number of coins fed into a coin stacking cylinder are stacked in a predetermined stacking state, a wrapping paper is wrapped around the coins thus stacked, the improvement comprising an incorrect coin stacking detecting device which comprises a coin stacking cylinder provided with a plurality of terminal boards electrically insulated from one another, said terminals being arranged along the inner wall of said coin stacking cylinder in such a manner that said terminal boards extend in the axial direction of said coin stacking cylinder and are connected to the positive and negative terminals of an electric source so that adjacent terminal boards are opposite in polarity.

4,128,103
DEGREASING APPARATUS

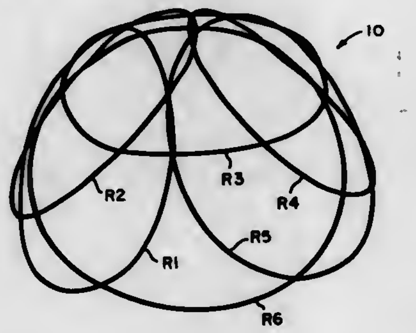
Göte J. W. Nörstrom, Karlstad, Sweden, assignor to Uddeholms Aktiegolag, Gagfors, Sweden
Filed Dec. 14, 1977, Ser. No. 860,387
Claims priority, application Sweden, Jan. 21, 1977, 7700669
Int. Cl.^{2} B08B *3/08, 3/10*
U.S. Cl. 134—143 3 Claims



1. Degreasing apparatus comprising a container (1) for liquid or gaseous solvent, a basket-holder (12, 13) arranged to receive open baskets (23) containing the goods to be degreased, a lifting means (17 - 22) to lower the basket-holder (12, 13) into and lift it out of the solvent, a rotary means (14 -16) to set the basket-holder (12, 13) in rotation, and a lid (25) fitted in the basket-holder (12, 13) to close the basket (23) during the degreasing operation, characterized in that the basket-holder (12, 13) includes levers (31) arranged to cooperate with the lid (25) and also, during the lifting movement of the basket-holder (12, 13), to come into contact with a stationary stop (33) and thus lift the lid (25) from the basket (23) when the basket-holder (12, 13) is in its highest position.

4,128,104
RING STRUCTURE

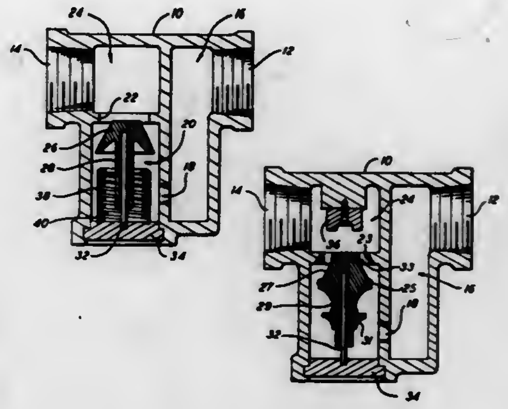
Bernard S. Corey, Corpus Christi, Tex., assignor to Foy McCullough and Lyle D. Galbraith, both of Redmond, Wash.
Filed Dec. 19, 1977, Ser. No. 861,645
Int. Cl.^{2} A45F *1/00*
U.S. Cl. 135—3 R 3 Claims



1. A structure composed of a plurality of ring members at least five in number, each ring member extending over and under at least four other ring members in a manner such that each ring extends, in sequence, over and under a first ring member, over a second ring member, under a third ring member, over and under a fourth ring member, over the third ring member, and under the second ring member.

4,128,105
AUTOMATIC SHUT-OFF VALVE AND METHOD OF OPERATION THEREOF

John L. Follett, 14554 Richmond Ave., Fair Haven, N.Y. 13064
Continuation-in-part of Ser. No. 538,537, Jan. 6, 1975, abandoned, which is a continuation-in-part of Ser. No. 322,735, Jan. 11, 1973, abandoned. This application Jun. 9, 1976, Ser. No. 694,206
Int. Cl.^{2} F16K *17/28, 17/38*
U.S. Cl. 137—1 9 Claims



1. An automatic shut-off valve operable to seal off flow in a fluid supply line in response to the rate of flow exceeding a predetermined value, said valve comprising, in combination:

(a) a valve body having inlet and outlet ends with a fixed valve seat therebetween;

(b) a flow control chamber between said inlet end and said valve seat defined by an interior wall of said valve body;

(c) a closure element movable between open and closed positions relative to said seat;

(d) means supporting said closure element within said chamber in a position between said inlet end and said valve seat;

(e) a permanent magnet associated with one and a magnetically permeable material with the other of said closure element and said valve body, said magnet and material being so arranged that the attractive force exerted by said magnet on said material is insufficient to move said closure element when the latter is in said open position, and is sufficient to maintain said closure element in said closed position when moved thereto by said excess flow rate, until reset to said open position; and

(f) said closure element including a plug tapering downwardly and outwardly from its upper end and having an upwardly disposed surface spaced from said seat when in said open position and in engagement with said seat when in said closed position, and a downwardly disposed surface likewise tapering downwardly and outwardly from its upper end and fully exposed to fluid flow through said flow control chamber, whereby said closure element is maintained by gravity on said support means until moved to engage said upwardly disposed surface with said valve seat by a flow rate in excess of said predetermined value by fluid flow acting on said downwardly disposed surface.

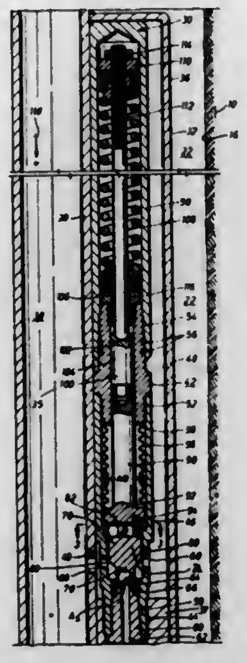
4,128,106
GAS LIFT VALVE WITH A TENSION SPRING BIASING ELEMENT

Bolling A. Abercrombie, Montgomery, Tex., assignor to McMurry Oil Tools, Inc., Houston, Tex.
Filed Mar. 10, 1977, Ser. No. 776,204
Int. Cl.^{2} F04F *1/20*
U.S. Cl. 137—155 13 Claims

1. A gas lift valve adapted to permit communication between the interior of a production tubing string and an annular region defined between the exterior of the string of a well casing comprising:

a valve housing having an inlet port and an outlet port adapted to permit communication between the annular region and the interior of the production tubing string;

a hollow spring housing removably connected at one end of the valve housing, the interior of the spring housing defining a spring chamber therein, the spring chamber being physically isolated from the inlet and outlet ports;
a valve seat fixedly connected to the valve housing adjacent to the inlet port;
a valve element longitudinally and radially movable within the housing from a first, closed, position to a second, open, position, the valve element in the first, closed, position blocking communication between the inlet and the outlet;

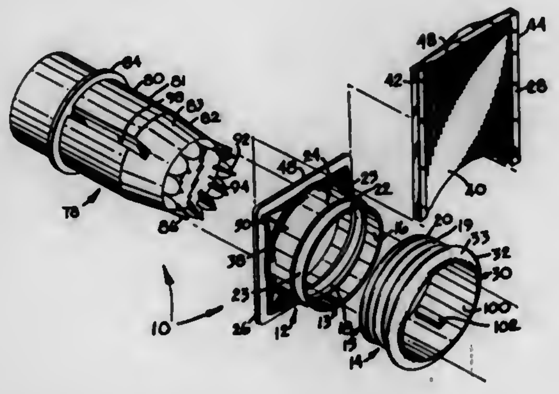


a spacer extending through the valve housing, the spacer being disconnected from and physically independent of the valve element yet adaptable to abut the valve element to transmit a biasing force thereto; and,
a tension spring disposed within the spring chamber and adapted to generate a biasing force transmissible through the spacer to the valve element to bias the valve element toward the closed position.

4,128,107
SURFACE IRRIGATION GATE

Harold Blumhardt, Ashley, N. Dak., assignor to Blumhardt Mfg., Inc., Ashley, N. Dak.

Filed Mar. 1, 1977, Ser. No. 773,200
Int. Cl.² F16K *43/00*
U.S. Cl. 137—318 **23 Claims**

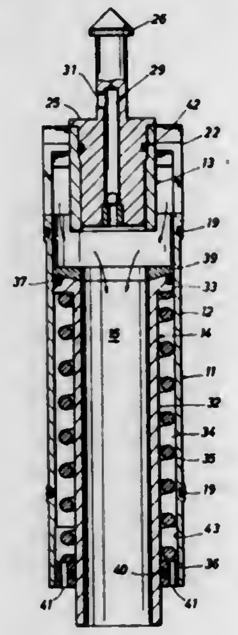


15. An outlet fitting for flexible wall surface irrigation tubing in which apertures are punctured to discharge water, comprising:
(a) a first outlet member having a continuous side wall defining a first axial passageway between first and second ends thereof;
(b) a second outlet member having a continuous side wall defining a second axial passageway between first and second ends thereof, said first end of said second outlet member having a rim portion and said second end of said second outlet member received within said first end of said first outlet member with said axes aligned for axial translation of said second outlet member between a first extended position in which said outlet fitting is inserted into an aperture in said tubing and a second tightened position in which said rim portion secures the edge of said flexible wall defining said aperture against said first outlet member providing a water-tight seal thereabout; and
(c) a tube piercing member having a longitudinal axis and piercing and grasping portions, said tube piercing member axially and removably insertable within said first and second outlet members such that said piercing portion extends beyond said first end of said second outlet member and said grasping portion extends beyond said second end of said first outlet member, said piercing portion having a cutting edge and a riding surface tapering outwardly from said cutting edge in a direction generally away from said longitudinal axis toward said rim of said second outlet member; and
means for securing said tube piercing member to said second outlet member whereby said outlet fitting may be placed in said irrigation tubing by holding said grasping portion of said tube piercing member and puncturing an aperture in said tubing with said piercing portion, the edge of said flexible tubing defining said aperture riding up said riding surface/ and over said rim portion during insertion, and said second outlet member may then be tightened against said first outlet member to provide said water-tight seal.

4,128,108
MUD RETAINING VALVE

Bill B. Parker, Lafayette; Rudy Beynand, Broussard, and Arthur J. Cormier, Lafayette, all of La., assignors to American International Tool Company, Inc., Houston, Tex.

Filed Apr. 20, 1977, Ser. No. 789,018
Int. Cl.² F16K *43/00*
U.S. Cl. 137—327 **6 Claims**



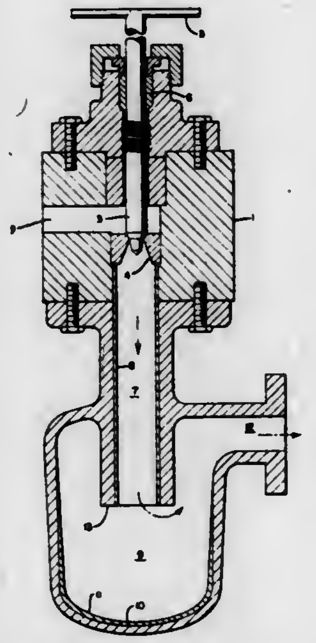
1. In a valve for retaining mud in the kelly when the drill pipe is disconnected therefrom, the combination comprising:
a tubular body adapted to be inserted in a radially enlarged portion of a kelly saver sub;
a downwardly extending closure member supported by said body, said closure member having a bore extending axially therethrough;
an axially movable piston disposed within said body, said piston having a flange extending radially outwardly therefrom into contact with said body and a passage for the flow of drilling mud therethrough, said passage being substantially coaxial with said bore;
a plug inserted within said bore, said plug being removable from said bore by the application of an upward tension

force thereto so that wire line tools may be passed through said bore and said passage;
a check valve in said plug to allow mud to flow upwardly therethrough when said passage is blocked by said closure member so that downhole pressure may be detected;
and means for urging said piston axially upward so that said passage is blocked by said closure member, thereby preventing the downward flow of mud therethrough.

4,128,109
PRESSURE LET-DOWN VALVE ASSEMBLY FOR HANDLING ABRASIVE LIQUIDS

Michael C. Chervenak, Pennington, N.J., and Ronald H. Wolk, San Jose, Calif., assignors to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Dec. 30, 1975, Ser. No. 645,408
Int. Cl.² F16K *47/00*
U.S. Cl. 137—375 **11 Claims**



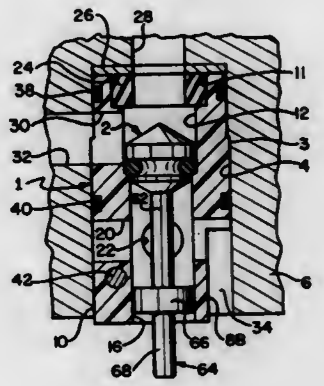
1. A let-down valve assembly comprising:
(a) a valve adapted for handling pressurized liquids containing particulate abrasive solids, and
(b) flow reversal means for receiving liquid from said valve and changing the direction of flow of said liquid, said flow reversal means including
(1) a chamber for receiving liquid from said valve and having a configuration which permits a sufficient amount of said liquid to accumulate in said chamber to absorb the momentum of the solids in said liquid,
(2) a conduit connecting the outlet of said valve with said chamber for channeling liquid from the outlet of said valve into said chamber in substantially the same direction as the liquid leaves said valve,
(3) a chamber outlet for channeling said liquid in a direction other than that in which it entered said chamber, said chamber outlet being located at a point in said chamber which permits a sufficient amount of said liquid to accumulate in said chamber to absorb the momentum of the solids in said liquid,
(4) said conduit and the surface of said chamber which is in flow alignment with said conduit being coated with an abrasive resistant material.

4,128,110
CONTROL VALVES

Harry M. Haytayan, Lincoln, Mass., assignor to Pneutek, Inc., Billerica, Mass.

Filed Dec. 27, 1976, Ser. No. 754,424
Int. Cl.² F16K *11/04*
U.S. Cl. 137—454.2 **1 Claim**

1. In combination with a tool having a port with a shoulder in said port, a control valve comprising a hollow valve casing disposed in said port, said casing having (1) a bore for accommodating a slide valve unit with said bore having an enlarged section defining a valve chamber, (2) first, second and third openings for conducting flow of fluid into and out of said casing via said valve chamber, and (3) first and second axially aligned valve seats at opposite ends of said valve chamber, said first opening being at one end of said bore and said second and third openings intersecting said bore, said second valve seat having a sloping surface, said first valve seat being comprised of a resilient cylindrical ring located in a counterbore of said bore at said first opening and said second valve seat being located between said second and third openings, said cylindrical ring being captivated between (1) a first annular shoulder which is formed along the bore and engages one side of said ring and (2) a flat metal washer which engages a second opposite side of said ring and is captivated between an end surface of said valve casing and the shoulder in said port; and



a slide valve unit having a valve stem slidably disposed within said bore and a valve head attached to the inner end of said stem and movable by said stem into engagement alternatively with said first and second valve seats, said valve head being sized so that (1) it makes a close sliding fit at its periphery with a surrounding portion of said valve casing, (2) fluid pressure applied via said port and said first opening will force said valve head way from said first valve seat toward said second valve seat, (3) when it is engaged with either said first or second valve seat it will block flow of fluid through said first or second opening respectively, and (4) at all positions along its path of travel between the two valve seats it is incapable of blocking flow of fluid into or out of said valve casing via said third opening, and said valve head comprising a peripheral groove and a seal in the form of a resilient O-ring disposed within said groove for sealingly engaging said second valve seat when said valve head is forced toward said second valve seat.

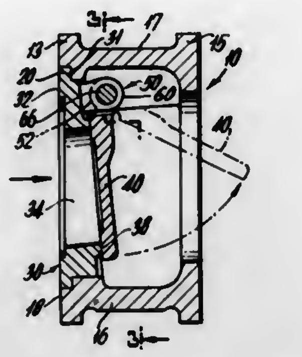
4,128,111
WAFER SWING CHECK VALVES

George E. Hansen, 2721 N. 77th Ave., Elmwood Park, Ill. 60635, and Richard T. Stvan, 2305 Sunnyside Ave., Westchester, Ill. 60153

Filed Jun. 18, 1976, Ser. No. 697,609
Int. Cl.² F16K *15/03*
U.S. Cl. 137—515.7 **9 Claims**

1. A check valve for installation in a fluid flow system comprising:
(a) a tubular body having inlet and outlet ends with a counterbore in one of said ends, said body having an outwardly extending protrusion on one side thereof defining a recess therein;
(b) a disc support positioned in the counterbore, said support having a pair of oppositely disposed faces and an opening therethrough;
(c) hinge means positioned on said disc support and extending into the recess; and,
(d) a disc pivotally supported by said hinge means, said disc

adapted to cover the opening in said disc support whereby fluid passing from said outlet raises said disc and reverse

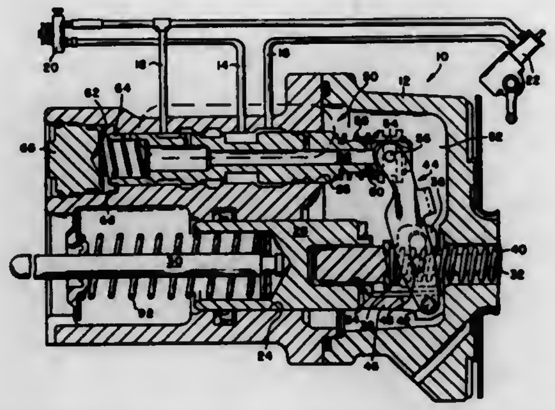


fluid flow is prevented by the closure of said disc against said disc support.

4,128,112
SPOOL VALVE FOR HYDRAULIC BRAKE BOOSTER

Arthur K. Brown, South Bend, and Dean E. Runkle, La Porte, both of Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 19, 1976, Ser. No. 715,801
Int. Cl.² F16K *1/32;* B60T *13/12*
U.S. Cl. 137—544 **1 Claim**

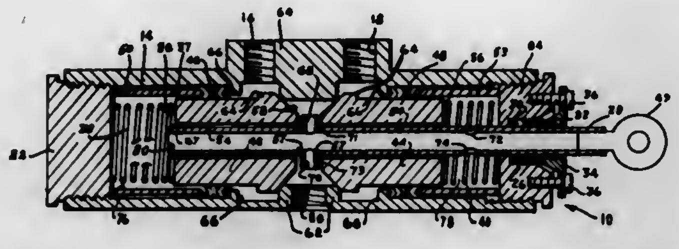


1. In a hydraulic brake booster having a housing defining a pressure chamber and a bore for axially receiving a spool valve, the spool valve including a regulating land which cooperates with a first land on the housing bore to restrict fluid communication between an inlet port and the pressure chamber when the spool valve is in a first position and to control fluid communication between the inlet port and the pressure chamber when the spool valve is moved to a second position, the regulating land having a contoured surface to accomodate fluid communication from the inlet port to the pressure chamber in the second position of the spool valve, the spool valve including a second land which cooperates with a second land on the housing bore to restrict fluid communication between the inlet port and an outlet port when the spool valve is moved to the second position, the second land on the housing bore also receiving the inlet port, the improvement in which the housing bore first and second lands are separated by a groove and the spool valve includes a third land, said third land being disposed axially between the spool valve regulating land and the spool valve second land and being separated from the spool valve regulating land and the spool valve second land by grooves, said spool valve third land cooperating with the housing bore second land when the spool valve is in the first position to form a clearance therebetween for restricting fluid communiction from the inlet port to the spool valve regulating land and for filtering out particles in the fluid communication, said spool valve third land cooperating with the groove between the housing bore first and second lands when the spool valve is in the second position to open communication from the inlet port to the spool valve regulating land, said spool valve regulating land being located downstream of said spool valve third land in both, said first and second positions of said spool valve.

4,128,113
DOUBLE PLUG SHUTTLE VALVE

William A. Hart, Saint Augustine, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 27, 1976, Ser. No. 718,270
Int. Cl.² F16K *11/16*
U.S. Cl. 137—627.5 **8 Claims**



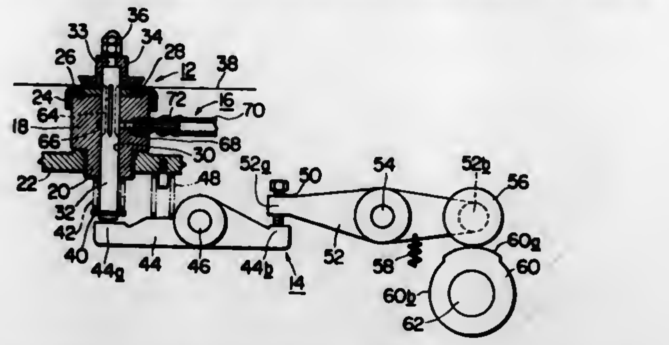
1. A double plug shuttle valve comprising a body, said body having a hollow interior and being closed at one end thereof and having a centrally located opening at the other end thereof, a pair of valve plugs being slidably mounted within said interior of said body, each of said valve plugs having a centrally located longitudinal opening therein, means for biasing one of said valve plugs located in a first chamber formed within said interior of said body between said one end of said body and one of said valve plugs and means for biasing the other of said valve plugs being located in a second chamber formed within said interior of said body between said other end of said body and the other of said valve plugs, each of said valve plugs having a tapered end, at least three apertures located with said body adjacent said tapered ends of said valve plugs, one said apertures being spaced circumferentially a predetermined distance from said other two apertures in said body and said other two apertures in said body being spaced a predetermined distance longitudinally from each other, outstanding portions formed on said body adjacent said apertures for engaging said tapered ends of said valve plugs and an actuator passing through said centrally located openings in said valve plugs and being slidably mounted within said central opening at the other end of said body, said actuator being hollow, having an opening at one end thereof and being closed at the other end thereof, a pair of extensions protrude from said actuator intermediate the ends thereof, each of said extensions having an outlet therein and another pair of outlets located within said actuator between said extensions and said closed end of said actuator whereby upon the movement of said actuator said valve plugs are displaced accordingly thereby allowing for the systematic flow of fluid between said apertures.

4,128,114
YARN WASTE REMOVING MEANS FOR AIR JET WEAVING LOOM

Shigenori Tanaka, Hachioji, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Sep. 27, 1977, Ser. No. 836,957
Claims priority, application Japan, Dec. 17, 1976, 51-50734
Int. Cl.² D03D *47/30*
U.S. Cl. 139—435 **7 Claims**

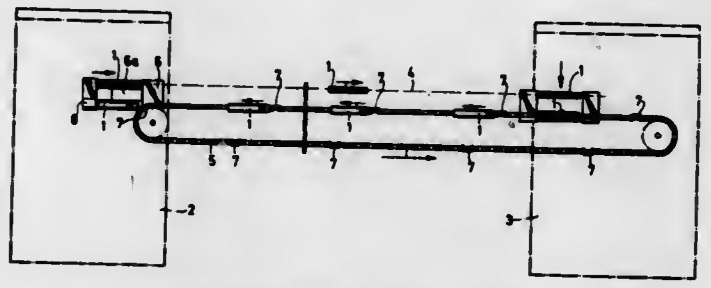
1. An air jet weaving loom, comprising:
weft yarn grasping means including stationary and movable members which are contactable with each other to grasp a weft yarn, and a rod member which slidably passes through a hole in said stationary member and connects at its head portion to said movable member;
actuating means for axially reciprocating said rod member to move said movable member reciprocatively relative to said stationary member for allowing said grasping means to alternately grasp and release said weft yarn; and
yarn waste removing means including at least one passage which is defined between said rod member and said stationary member so as to extend along the axis of said rod member, said passage having an end open to a clearance defined between said movable and stationary members adjacent said rod member and the other end connecting to an air pump, whereby when said movable member is separated from said stationary member to form said clearance in response to the operation of said actuating means, a stream of air flowing through said passage is formed to remove any yarn waste and miscellanea gathering in said clearance.



4,128,115
ENTRAINING ELEMENT FOR A GRIPPER SHUTTLE

Rudolf Braun, Winterthur, Switzerland, and Werner Kellmann, Allensbach, Germany, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jan. 31, 1978, Ser. No. 873,778
Claims priority, application Switzerland, Feb. 4, 1977, 1352/77
Int. Cl.² D03D *47/24*
U.S. Cl. 139—439 **13 Claims**



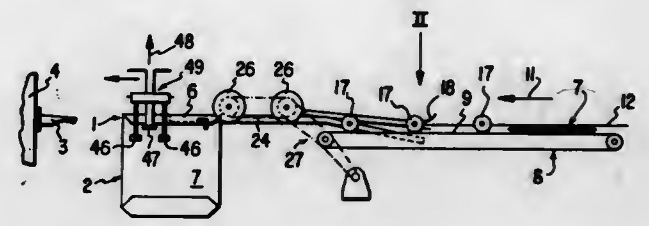
1. An entraining element for a gripper shuttle weaving machine, said element comprising
a carrier for mounting on a conveyor chain;
a striking member mounted on said carrier, said striking member including a resilient striking plate having a striking surface extending transversely to a gripper shuttle path; and
a support member mounted within said striking member in spaced relation behind said striking plate to define a gap therebetween.

4,128,116
METHOD AND APPARATUS FOR OPENING AND STACKING BAGS

Werner Uthoff, Beckum, and Olaf Kluepfel, Ahlen-Vorhelm, both of Fed. Rep. of Germany, assignors to Haver & Boecker Drahtweberei und Maschinenfabrik, Westfalen, Fed. Rep. of Germany

Filed Aug. 23, 1977, Ser. No. 827,016
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1976, 2638415; Aug. 4, 1977, 2735126
Int. Cl.² B65B *1/04*
U.S. Cl. 141—1 **36 Claims**

1. A process for opening the valves of valved bags each having a bag top and a bag body and for inserting the opened bags on spigots to fill the bags with bulk material, comprising the following steps:
(a) consecutively advancing the bags in a substantially horizontal plane towards the spigots, while the bag valve is oriented in the advancing direction of the bags; said advancing step includes guiding each bag by a free edge of the bag top;
(b) pivoting, during the advancing step, the top of each bag from a horizontal orientation, in which it is substantially coplanar with the bag body into a predetermined inclined position about a top fold line;

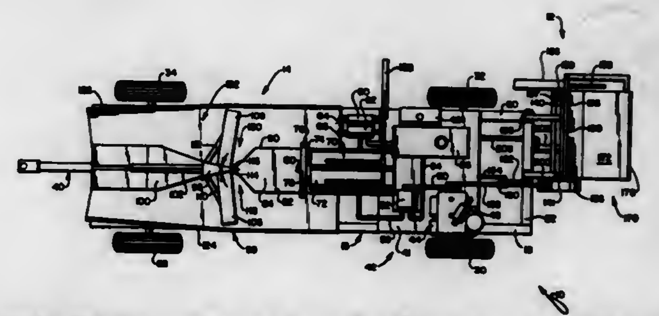


(c) pivoting, subsequent to step (b), that half of the bag top which is oriented towards the bag body, about said top fold line, back into a predetermined inclined position with respect to the bag body, whereby the bag top assumes configuration of an inverted V;
(d) pivoting, subsequent to step (c), the bag body downwardly into a vertical orientation;
(e) raising, subsequent to step (d), at least the valve-containing portion of the bag relative to the bag body for opening the valve while holding the bag body; and
(f) inserting the bag on the respective spigot.

4,128,117
LOG PREPARING APPARATUS

James A. Terry, deceased, late of Delaware County, Ohio; Barbara P. Russell, heir, 2354 Marion Bucyrus Rd., Marion, Ohio 43302; James F. Terry, heir, 50 Homestead Ln., Delaware, Ohio 43015, and Shirley A. Cain, heir, 260 Belvedere, Columbus, Ohio 43223

Filed Jul. 25, 1977, Ser. No. 818,566
Int. Cl.² B27L *7/00*
U.S. Cl. 144—3 K **9 Claims**



1. Apparatus for preparing logs for fireplace usage and the like comprising:
a frame;
means for supporting said frame a select distance above ground surface;
hydraulic ram means mounted upon said frame and having piston rod means extensible and retractable with respect thereto along a given axis;
log engaging means fixed to and moveable with an outwardly disposed end of said piston rod means;
an elongate platform fixed to said frame, having an upwardly disposed surface parallel to said given axis, positioned a predetermined distance below said axis, having a width of sufficient extent for temporarily supporting logs placed thereon with stability and in substantial alignment with said given axis, and having a predetermined length extending from the vicinity of said hydraulic ram means to a terminal portion adjacent a composite log splitting wedge

assembly, said terminal portion tapering to a point at said assembly

said assembly being fixedly mounted upon said frame and including a vertical wedge of predetermined internal angular extend having a splitting edge extending substantially from and normally to the plane of said elongate platform surface in substantial alignment with said given axis, and first and second transverse wedges of predetermined internal angular extent respectively fixed to and extending in symmetrically disposed fashion from oppositely disposed surfaces of said vertical wedge, each said first and second transverse wedges having a splitting edge extending a predetermined distance above and substantially parallel with said elongate platform surface from respective points spaced a predetermined distance from said vertical wedge splitting edge and at a predetermined acute angle with respect to said given axis, said acute angle being selected such that the outwardly disposed portions of said transverse wedge splitting edges contact a log urged into said wedge assembly prior to contact therewith by corresponding inwardly disposed portions of said transverse wedge splitting edges;

motor means mounted upon said frame for providing a drive output;

pump means mounted upon said frame and responsive to said motor means drive output for applying fluid under pressure to said hydraulic ram means; and

valve means actuable for controlling said application of fluid under pressure to said hydraulic ram means.

4,128,118

TOOLING JIG

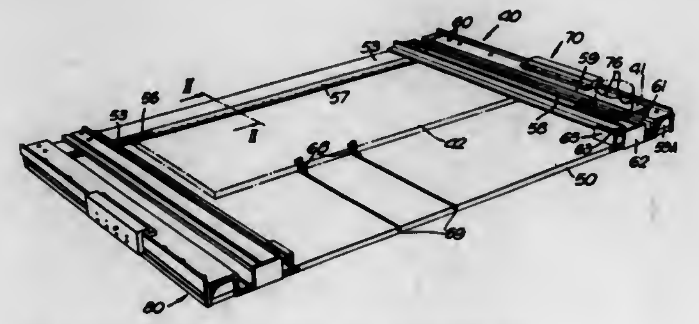
Douglas F. C. Ede, Tunbridge Wells, England, assignor to Bondgrade Limited, Slough, England

Filed Jan. 26, 1977, Ser. No. 762,712

Claims priority, application United Kingdom, Jan. 27, 1976, 3150/76; May 4, 1976, 18259/76

Int. Cl.² B27C *5/10*

U.S. Cl. 144—134 D 13 Claims



1. A tooling jig comprising, in combination:
- (a) a base for supporting a workpiece;
- (b) a longitudinally-extending guide fence provided on said base, said guide fence defining a straight edge;
- (c) a bridge directly secured to said guide fence and positioned effective to overlie a workpiece placed against said guide fence; and
- (d) a guideway on said bridge extending accurately perpendicular to and intersecting the line of said straight edge, said guideway being adapted to guide for movement therealong a router accurately perpendicular to said straight edge.

4,128,119

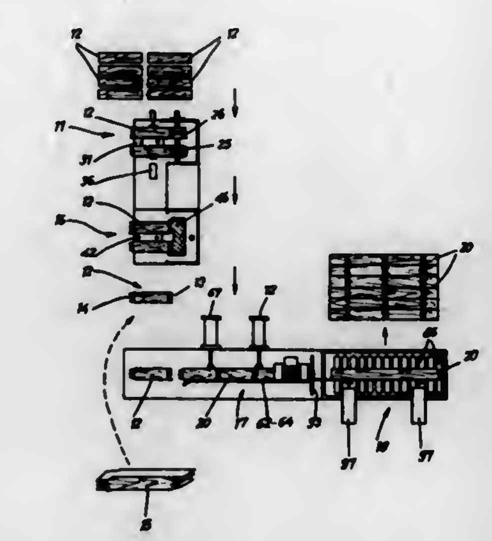
APPARATUS FOR PROCESSING WORKPIECES IN THE FORM OF SHORT-LENGTH ELONGATE TIMBER WASTE INTO USABLE TIMBER

Fred Maier, Port Washington, N.Y., assignor to Festo-Maschinenfabrik Gottlieb Stoll, Esslingen, Fed. Rep. of Germany

Filed Jun. 22, 1976, Ser. No. 698,685

Int. Cl.² B27F *1/08*

U.S. Cl. 144—317 20 Claims



20. A method for processing short lengthed, elongate waste timber workpieces into usable timber beams of relatively long length which comprises
- (a) placing waste timber workpieces in pairs on a movable table of a tenon-cutting machine;
- (b) clamping the workpieces in place on said movable table;
- (c) cutting tenons in one of the ends of each of the pair of timber workpieces;
- (d) rotating the pair of timber workpieces on the movable table;
- (e) cutting tenons in the other of the ends of each of the pair of timber workpieces;
- (f) placing the pair of cut timber workpieces on the fixed table of a gluing device such that one of the ends of each of the pair of workpieces is placed against a glue-coated comb;
- (g) moving the combs past said pair of workpieces to apply a thin coating of glue on said contacting tenon-cut ends;
- (h) rotating said pair of workpieces on said fixed table so that the other of the ends of each of the pair of timber workpieces is placed against a glue-coated comb;
- (i) moving the combs past said pair of workpieces to apply a thin coating of glue on said contacting tenon-cut ends;
- (j) pressing together the glue-coated tenon-cut ends of said pair of workpieces to form a timber beam;
- (k) sequentially pressing a further glue-coated tenon-cut end of additional waste timber workpiece to an exposed glue-coated tenon-cut end of the timber beam of (j) to produce a longer timber beam; and
- (l) cutting the longer timber beam of (k) to the desired length using a cutting device.

4,128,120

TAMBOUR DOOR AND HOUSING ASSEMBLY

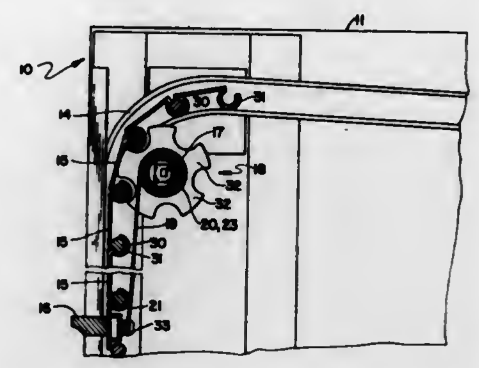
Frederick J. Frey, Conway, Ark., assignor to InterRoyal Corporation, New York, N.Y.

Filed Aug. 17, 1977, Ser. No. 825,365

Int. Cl.² E05F *11/54*

U.S. Cl. 160—191 10 Claims

1. In a tambour door and housing assembly, the housing including a pair of spaced apart tracks defining a path having a generally vertical first section with top and bottom parts, a generally horizontal second section near the top part of said first section, and a curved third section interconnecting said first and second sections, and a tambour door having top and bottom parts and side edges slidably disposed in said tracks so that the door is movable along said path, said door comprising a plurality of longitudinal segments, each having opposite ends which define said side edges of the door, said segments being situated side-by-side with their adjacent edges pivotally engaged in hinge couplings, with a pitch distance P between said couplings, the improvement in combination therewith of a counter-balancing system comprising: a shaft mounted in said housing and situated generally parallel to said door segments, gear means comprising a first gear mounted rotatably on said shaft, the gear having teeth with a circular pitch distance between teeth corresponding to said pitch P of said door, said gear situated such that the teeth thereof each engage one door coupling successively as the door moves in the path and said gear rotates, and a Negator spring having an upper end coiled and freely rotatable about said shaft and a lower end secured to said bottom part of said door, whereby the door is subject to an essentially constant upward force from said spring generally counter-balancing the downward force due to the weight of the door, regardless of the location of the door along said path.



4,128,121

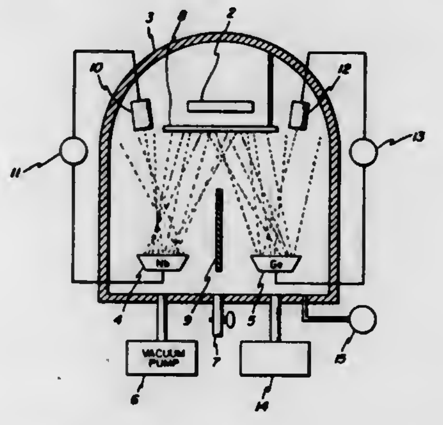
NB$_3$GE SUPERCONDUCTIVE FILMS

Raymond A. Sigsbee, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 18, 1977, Ser. No. 816,481

Int. Cl.² B23P *3/00;* C23C *27/02*

U.S. Cl. 164—46 3 Claims



1. A control method of preparing a superconducting film having a critical temperature T_c of at least about 20° K. which comprises providing a vacuum chamber with a substrate having at least one substantially smooth surface on which said film is to be deposited, said substrate being at least substantially inert under the conditions of deposition, providing said chamber with a source of niobium and germanium, means for monitoring of niobium flux and germanium flux individually, providing said chamber with a source of oxygen, protecting said substrate surface with a movable protective means which prevents niobium and germanium flux from contacting it, reducing the pressure in said chamber to produce an evacuated chamber with a residual pressure no greater than about 10^{-5} mm Hg, heating said substrate to a temperature ranging from 750° C. to 1100° C., introducing into said evacuated chamber a partial pressure of oxygen ranging from about 1×10^{-7} mm Hg to about 1×10^{-5} mm Hg, vaporizing said niobium and germanium to produce an impinging flux composition ranging from about 1 part to about 3 parts of niobium to about 1 part of germanium, removing said protective means from said structure, and impinging said substrate with said niobium and germanium composition forming an adherent superconductive Nb_3Ge film thereon ranging in composition up to about 2 atomic % from stoichiometric composition, for a constant rate of impingement of said niobium and said germanium on said substrate with increasing substrate temperature from 750° C. to 1100° C. said partial pressure of oxygen increasing up to about 1×10^{-5} mm Hg and said amount of niobium decreasing down to about 1 part being about 1.5 parts or less at said substrate temperature higher than 1000° C., said film having at least a thickness sufficient to form a continuous film.

4,128,122

CONTINUOUS CASTING ASSEMBLY

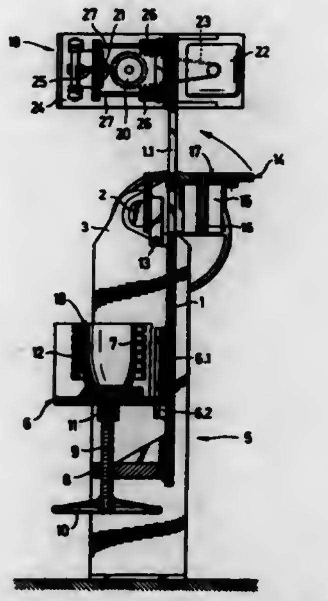
Heribert A. Krall, Würzburg, and Helmut Maag, Waldbüttelbrunn, both of Germany, assignors to Technica-Guss GmbH, Würzburg, Germany

Filed Jul. 8, 1977, Ser. No. 814,070

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710680

Int. Cl.² B22D *11/10*

U.S. Cl. 164—438 4 Claims



1. A continuous casting assembly for use in casting small quantities of precious metals, said casting assembly comprising:

a holding furnace slidably secured to a pivotable frame, said furnace including a heatable crucible;

a cooler and mould carried on a mounting plate assembly pivotally secured to said frame, a portion of said mounting plate assembly being provided with a sealing surface for engagement with a mouth portion of said crucible when said mounting plate assembly is pivoted into contact with said crucible;

means for raising and lowering said holding furnace on said frame, said means including a threaded spindle passing through a spindle guide secured to said frame, said spindle contacting said furnace through a disc-spring column to raise and lower said furnace on said frame, said furnace having a guide which slidably engages guide strips carried on said frame;

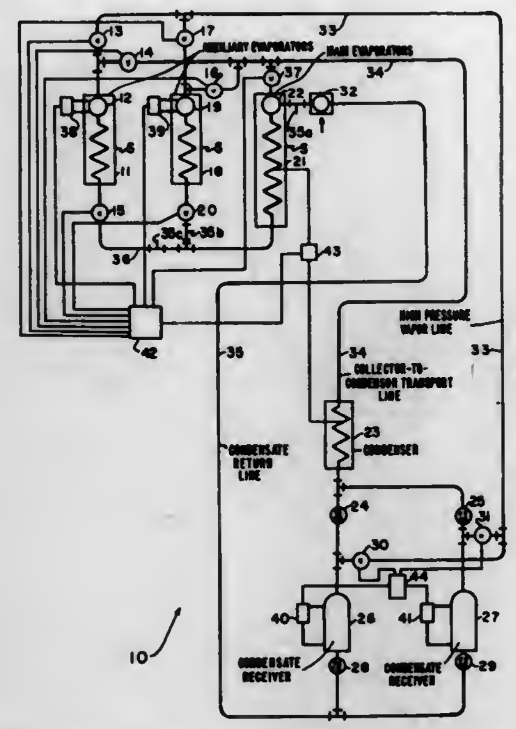
a withdrawal device for a strand cast by said continuous casting assembly, said withdrawal device being carried by said frame; and

means for pivoting said frame whereby said holding furnace and said mould and cooler carried by said mounting plate assembly, whose sealing surface has been brought into engagement with said mouth of said crucible, can be pivoted to cause flow of melted metal through said cooler and mould to said withdrawal device.

4,128,123
PASSIVE HEAT-TRANSPORT SYSTEM

John E. Garriss, 1325 E. Northern Pkwy., Baltimore, Md. 21239, and Daniel E. Garriss, 1905 Brookside Dr., Edgewood, Md. 21040

Filed Jan. 4, 1978, Ser. No. 866,861
Int. Cl.² F28D *15/00*
U.S. Cl. 165—1 **11 Claims**



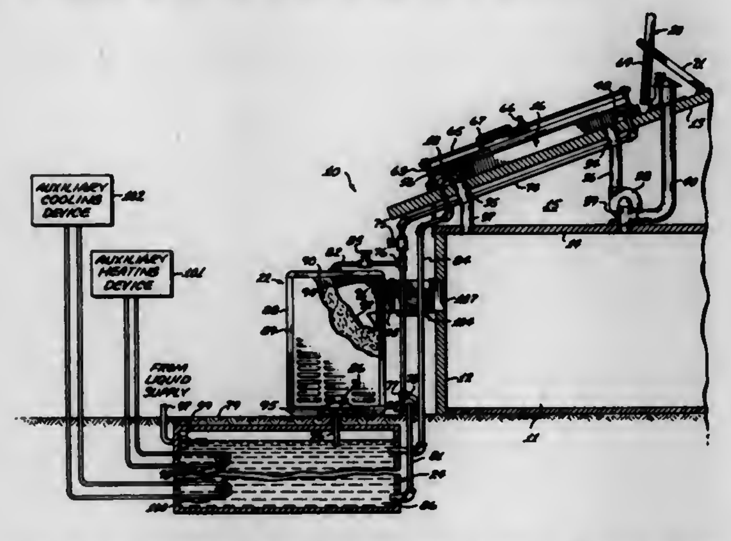
1. In passive heat transfer system having means for taking in heat through a volatile fluid in evaporator means at a heat source and discharging heat from vapor of the volatile fluid through condensing means at a heat sink, and means for receiving condensate, each said means having an input and an output, the improvement comprising: said evaporator means including first, second and third evaporators with respective inputs and outputs, means for selectively transferring said vapor from the first and second or alternatively from the first and third evaporator outputs to the condensing means, and means for returning the condensate from said receiving means selectively to the first and second evaporators or alternatively to the first and third evaporators, including: means for pressurizing the receiving means from the output of the third evaporator when the first and second evaporators are transferring vapor to the condensing means, or alternatively for pressurizing the receiving means from the output of the second evaporator when the first and third evaporators are transferring vapor to the condensing means.

4,128,124
MULTI-MODE SOLAR HEATING AND COOLING SYSTEM

Mark N. Worthington, 10227 White Mtn. Rd., Sun City, Ariz. 85351

Continuation-in-part of Ser. No. 658,475, Feb. 17, 1976, Pat. No. 4,068,652, and Ser. No. 658,476, Feb. 17, 1976, Pat. No. 4,049,046, each is a continuation-in-part of Ser. No. 519,521, Oct. 31, 1976, Pat. No. 3,957,109. This application Jul. 7, 1977, Ser. No. 813,440
Int. Cl.² F24J *3/02;* F25B *29/00*
U.S. Cl. 165—48 S **12 Claims**

1. A solar heating and cooling system comprising:
- (a) a solar collector/heat exchanger unit including,
  - I. an enclosure having a solar window heat trap therein and disposed with a vertical component to provide upper and lower ends,
  - II. an air compartment in said enclosure and having air inlet and outlet ducts extending therefrom,
  - III. duct means having a blower therein for connecting the air inlet and outlet ducts of said air compartment with a point of use for circulating air through said air compartment,
  - IV. a liquid compartment in said enclosure above said air compartment and having liquid inlet and outlet pipelines, said liquid compartment and said air compartment coextensive and in contiguous engagement with each other for transferring thermal energy therebetween;
- (b) a retractable cover panel assembly adjacent said solar collector/heat exchanger unit and movable between positions of covering and uncovering said solar collector/heat exchanger unit;
- (c) evaporator means having liquid inlet and outlet pipelines and having an air inlet and an air outlet, said evaporator means operable to chill air and liquid by evaporation;
- (d) air directing means coupled between the air outlet of said evaporator means and a point of use for selective directing of chilled air to the point of use or to ambient;



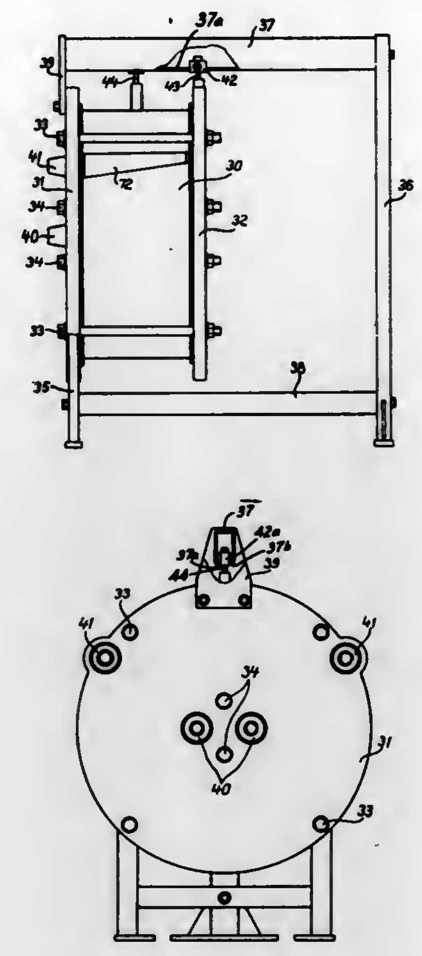
- (e) a liquid storage tank below said solar collector/heat exchanger unit and said evaporator means, said liquid storage tank having the liquid outlet pipeline of said evaporator means coupled thereto and having the liquid outlet pipeline from said liquid compartment of said solar collector/heat exchanger unit coupled thereto; and
- (f) a liquid supply line connected on one end thereof to said liquid storage tank with the other end connected to both the liquid inlet pipeline of said evaporator means and the liquid inlet pipeline of said liquid compartment of said solar collector/heat exchanger unit, said liquid supply line having a pump and shutoff valves therein by which the liquid in said storage tank is switchably supplied to said evaporator means or to said liquid compartment of said solar collector/heat exchanger unit.

4,128,125
SPIRAL HEAT EXCHANGER

Leif R. Borjesson, Vellinge, and Lars-Ake Johansson, Lund, both of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

Filed Aug. 26, 1976, Ser. No. 718,032
Claims priority, application Sweden, Aug. 28, 1975, 7509552
Int. Cl.² F28F *3/08*
U.S. Cl. 165—163 **6 Claims**

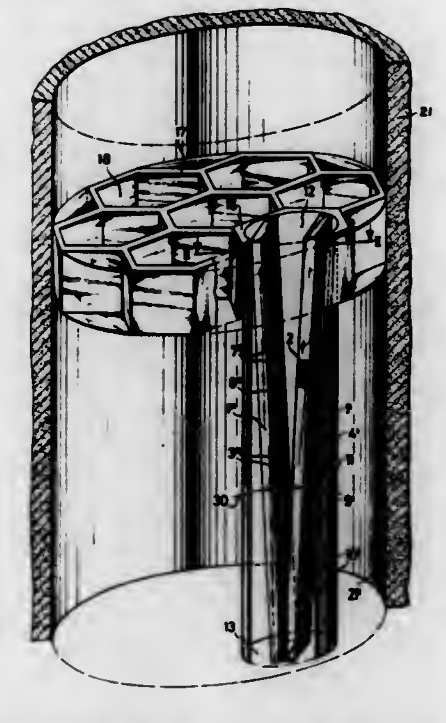
1. A spiral heat exchanger comprising at least one generally cylindrical spiral body forming parallel, spirally-shaped flow passages for heat exchanging media, said body including at least two sheets spirally wound around a common axis to define said flow passages between the sheets, each said sheet having opposite side edges, an end wall releasably connected to the spiral body at each end thereof, the end walls having inlet and outlet means communicating with said flow passages and being located adjacent said opposite side edges, respectively, of the sheets, a track, and means mounting the spiral body and one end wall on the track for movement therealong, said mounting means including elements supportined said spiral body and said one end wall for rotation independently of each other about respective vertical axes.



4,128,126
APPARATUS FOR SUPPORT OF SHEET-METAL-TYPE HEAT EXCHANGER MATRICES FOR RECUPERATIVE HEAT EXCHANGE

Siegfried Förster, Alsdorf, and Manfred Kleemann, Quadrath, both of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft m.beschränkter Haftung, Julich, Germany

Filed Oct. 26, 1976, Ser. No. 735,135
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1975, 2549052
Int. Cl.² F28D *9/02*
U.S. Cl. 165—165 **8 Claims**



1. In an apparatus supporting and including sheet-metal-type heat exchanger matrices that are constituted of uniformly repeated folds of reciprocally folded strips closed off at the ends of the folds formed by the strip edges and partially covered with first and second cover plates respectively touching the oppositely disposed apices of the folds that run across the strips, so as to define, by the portions of the matrices left uncovered, both inlets and outlets to the fold chambers for each of two flowing exchanging media that, in operation, are separated in heat-exchanging relation by said folded strips, said apparatus being capable of operation at high efficiency with substantial differences in the pressures of the respective media, the combination of:
- a tubular casing (11);
- at least one pair of said heat exchanger matrices (1′, 1″) of said type connected in parallel, inserted in said tubular casing (11), aligned on planes extending from one end (12) to the other (13) of said casing (11), positioned in said casing so as to converge towards each other longitudinally at an acute angle and disposed in mirror image relation to each other with regard to the flow of the respective media into and out of the matrices;
- first gas-tight duct-separating partitions (14) in said casing extending between back-to-back first cover plates (3′, 3″) of the respective matrices of said pair of matrices, for separating from each other the inlet and outlet ducts for a first one of said media, said ducts respectively communicating with the fold chambers of each of said matrices by inlet portions (7′, 7″) and outlet portions (8′, 8″) of said matrices left uncovered by said first cover plates (3′, 3″);
- second gas-tight duct-separating partitions (15) in said casing respectively between second cover plates (4′, 4″) of the matrices of said pair of matrices and said casing, for separating from each other the inlet and outlet ducts for the second of said media, said last-mentioned ducts respectively communicating with the fold chambers of each of said matrices by inlet portions (9′, 9″) and outlet portions (10′, 10″) of said matrices left uncovered by said second cover plates (4′, 4″);
- gas-tight thermal expansion compensation means (19′, 19″) sealing gaps respectively between opposite edges of said strips (2′, 2″) of said heat exchanger matrices (1′, 1″) and opposite portions of the inner wall surface of said tubular casing (11);
- an end plate (16) affixed to one end (12) of said casing (11) and providing an outwardly extending end flange for vertically suspending said casing on a carrier framework, said flange having a polygonal contour for anti-rotative locking with similar flanges of other similar tubular casings, and
- a carrier framework (17) mounted in fixed position in a massive hollow structure (21) and providing a plurality of honeycomb-like cells (18) each open at top and bottom on which a plurality of tubular casings, including said casing, are supportable in suspension by end plates like said end plate (16), said end plate being seated on said carrier and suspending said casing thereon in a position passing through one of said cells (18) and occupying and interfitting laterally snugly with end plates affixed to other tubular casings passing through other cells of said carrier.

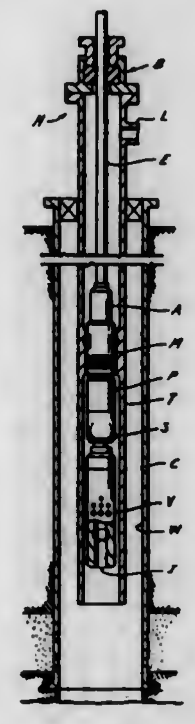
4,128,127
SWIVEL CONNECTOR

Donald F. Taylor, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Sep. 23, 1977, Ser. No. 835,872
Int. Cl.² E21B *43/00;* F16L *39/00*
U.S. Cl. 166—105 **9 Claims**

9. A well production apparatus, comprising:
- a production tubing string;
- a pump;
- a locking mandrel connected to said pump and supporting said pump within said string;

a swivel joint connected to said pump said swivel joint including;
a ball member having a tubular leg extending therefrom, an exterior generally spherical surface on one end, and a central bore extending through said tubular leg and said one end;
a port defined in said ball member at a point intermediate of said spherical surfaces so that spherical surfaces are above and below the port;
a swivel cap having a bore in communication with said central bore through said ball member and a mating seat engaging said ball member;
a tubular housing having an inner mating seat engaging said ball member and surrounding said swivel cap and said ball member, said tubular leg extending through said housing;
means for retaining the mating seats of said swivel cap and said tubular housing in firm engagement with said ball member's spherical surfaces and permitting pivotal and rotational movement of said cap and said housing relative to said ball member;

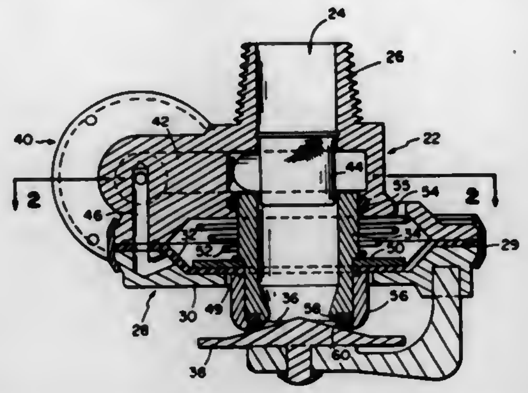


an annular chamber defined by said ball member, said swivel cap and said housing in communication with the exterior of said ball port during said pivotal and rotational movement;
means for sealing said annular chamber from said central bore during said pivotal and rotational movement;
means for communicating with said annular chamber, contained within said swivel cap and said housing, to provide fluid communication from beyond said cap and said housing to said chamber;
a passage in communication with said ball member port separate from said central bore, and extending through said tubular leg; and
means for limiting said pivotal movement of said swivel cap and said housing with respect to said ball member to maintain communication between said ball port and said communication beyond said cap and said housing; and
a pump intake connected to the other side of said swivel joint having its intake passage in communication with the central bore through said swivel joint.

4,128,128
DIAPHRAGM ACTUATED SPRINKLER HEAD

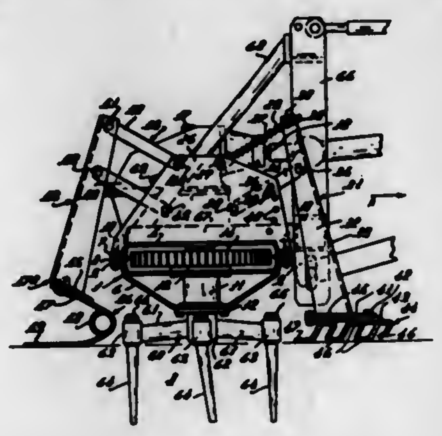
James W. Mears, Warwick, R.I., assignor to Grinnell Fire Protection Systems Company, Inc., Providence, R.I.
Filed Jun. 27, 1977, Ser. No. 810,068
Int. Cl.^{2} A62C *37/20*
U.S. Cl. 169—37 15 Claims

1. A fire protection sprinkler head, comprising a main valve member engaged upon a valve seat and a pilot valve assembly adapted to actuate said main valve member, characterized in that:
said main valve member comprises a hollow bore element;
an annular flexible diaphragm is positioned within the chamber formed by said sprinkler head, extending between and sealed to said main valve member and said chamber;
one side of said diaphragm is exposed to said pilot valve assembly and water pressure therefrom, said side being connected to atmosphere through a flow-restrictive drainage passage sized to insure actuating pressure on the diaphragm to displace the main valve member away from said valve seat when the pilot valve assembly is open; and
a vent in said chamber exposing the other side of said diaphragm to atmosphere;
whereby the position of the main valve member is controlled by the diaphragm action in response to the pilot valve.



4,128,129
SOIL CULTIVATING IMPLEMENTS

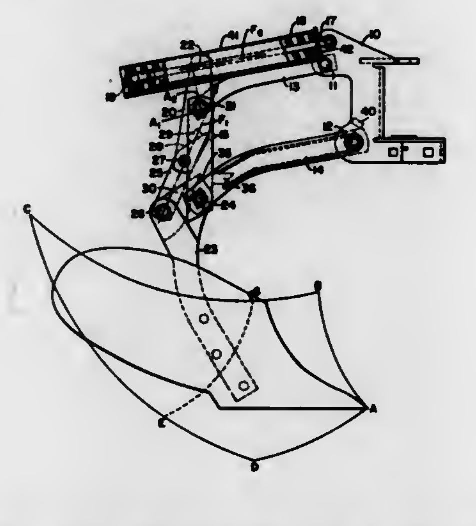
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland
Filed Nov. 30, 1976, Ser. No. 746,085
Claims priority, application Netherlands, Dec. 1, 1975, 7513961
Int. Cl.^{2} A01B *33/06*
U.S. Cl. 172—59 23 Claims



1. A soil cultivating machine comprising a frame and a plurality of tined rotors arranged in a transverse row and said rotors being journalled on a transverse elongated portion of said frame, driving means engaging upwardly extending shafts and said rotors being mounted for rotation about corresponding axes defined by said shafts, a non-rotatable leading soil crumbling member being linked to the frame portion and positioned in advance of the row of rotors with respect to the direction of travel, said crumbling member comprising an elongated ground engaging surface that extends transverse and substantially across the entire length of said row, said member being pivoted to the frame portion by parallelogram linkage means having linkage arms positioned one above the other and four spaced apart pivot connections that pivot about substantially horizontal axes, adjusting means interconnecting said linkage means to said machine and fixing said ground engaging surface in any one of a plurality of supporting positions at different horizontal levels during machine travel, said member being displaceable about the pivot connections and fixable in any one of said positions, a spring mechanism on said linkage means positioned to normally bias said surface to a selected one of said positions without substantially tilting said crumbling member.

4,128,130
TOOL SUPPORT

Robert V. Green; Jack C. Wiley, both of Davenport, Iowa, and Loren G. Arnold, Rock Island, Ill., assignors to Deere & Company, Moline, Ill.
Filed Oct. 1, 1976, Ser. No. 729,504
Int. Cl.^{2} A01B *61/04*
U.S. Cl. 172—266 42 Claims

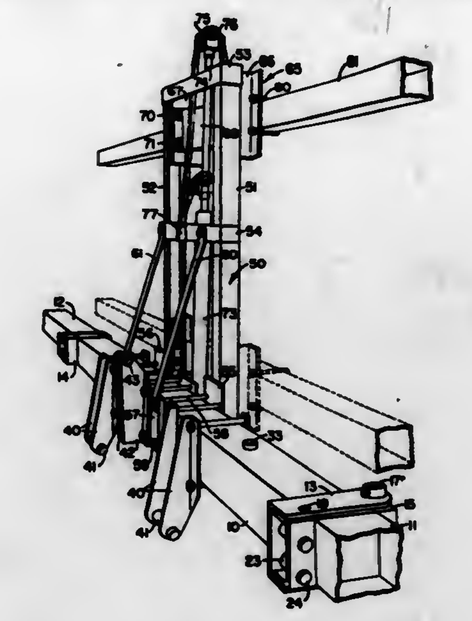


1. In an earthworking implement of the type having a supporting frame and an earthworking tool carried by the frame, the improvement comprising means for mounting the tool on the frame for reciprocable and rotational movement within a vertical plane including: a fore-and-aft extending vertically disposed four bar linkage having four rigid pivotally connected links, one of which is a forward vertically disposed link rigid with the frame, said linkage being reciprocable between a first lowered and second elevated position; a rigid tool support; means on the tool support for pivotally depending the tool support from said linkage for rotational movement between a forward and a rear position; biasing means pivotally carried by the four bar linkage for swinging movement in a vertical plane; lever means pivotally mounted on the four bar linkage for relative rotation thereto connecting the biasing means with said linkage for urging the latter towards its first position; first connecting means on the tool support offset from the means pivotally depending said tool support from the linkage; and second means connecting said lever means with the first connecting means interconnecting the biasing means to the first connecting means so as to yieldably resist rotation of the tool from its forward position and to return said tool to its forward position after movement therefrom.

4,128,131
MULTIPLE SECTION IMPLEMENT WITH BEAM RAISED AND LOWERED ON MAST THEREOF

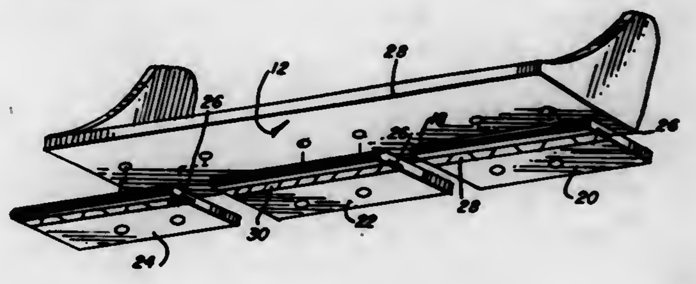
David H. Bucher, and Harry M. Meinert, both of Des Moines, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Aug. 8, 1977, Ser. No. 822,684
Int. Cl.^{2} A01B *73/00*
U.S. Cl. 172—311 8 Claims

7. A multiple section implement comprising: a central horizontal tool-supporting frame having opposite transversely spaced ends; a pair of transversely extending outer frames extending outwardly respectively of the opposite ends of the central frame and having inner ends pivotally mounted so that the outer frames swing laterally between fore-and-aft and transversely extending positions; means for holding the outer frames in their transversely extending positions; a vertical mast structure supporting the central frame thereon for travel up and down with respect to the mast structure; tools carried on the outer frames and the tool-supporting central frame in general predetermined attitudes; and means for raising the tool-supporting frame and its tools on and with respect to the vertical mast structure and above the level of the tools on the outer frames while maintaining the tools on the central frame substantially in the same attitude to thereby permit the outer frames to move to and from their fore-and-aft positions and the tools carried thereon to move under the tools of the central frame.



4,128,132
GROUND-ENGAGING TOOL INSERTS WITH ANGLED EDGES

Lowell J. Moen, Peoria, and Harris S. Olson, Morton, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Sep. 1, 1977, Ser. No. 829,684
Int. Cl.^{2} E02F *3/80*
U.S. Cl. 172—747 10 Claims

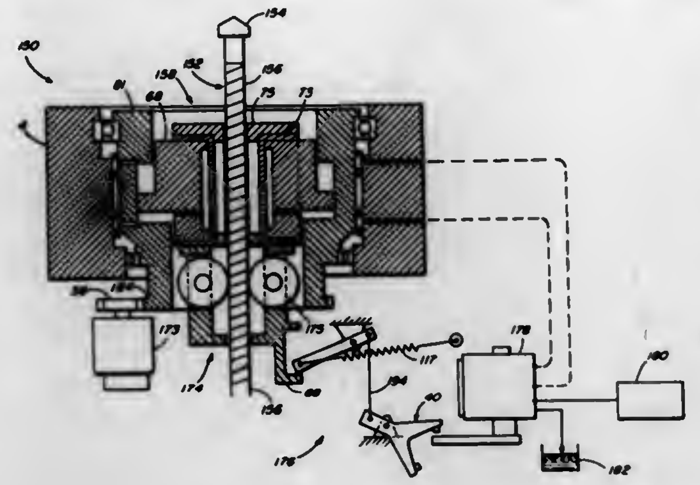


1. In a cutting edge assembly for an earth-working machine having a forward cutting edge, the improvement comprising:
a channel extending generally parallel to the front cutting edge; and
blocks of wear-resistant material inlaid within the front channel, the joints between contiguous blocks being nonparallel to the general direction of movement of the earthworking machine.

4,128,133
TORQUER/THRUSTER FOR FLEXIBLE ROOFDRILL

Hans A. Hug, Weston, Mass., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed May 7, 1976, Ser. No. 684,018
Int. Cl.² B23Q *5/033*
U.S. Cl. 173—149 10 Claims

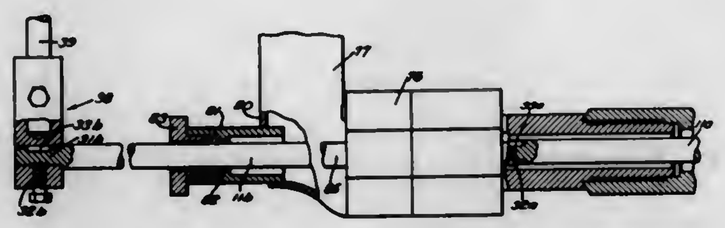


1. A device for applying rotational torque and longidutinal thrust to a flexible drill, said device comprising:
(a) a housing;
(b) a cylindrical barrel rotatably mounted within said housing;
(c) cylindrical piston means mounted within said barrel, said piston fixed against rotational movement with respect to said barrel, said piston constrained for limited longitudinal movement with respect to said barrel;
(d) collet means mounted within said piston, said collet means configured to engage and to disengage a flexible drill shaft;
(e) bladder means disposed between said piston means and said collet means, said piston means, said bladder means and said collet means fixed against movement with respect to one another;
(f) means for urging said bladder means against said collet and for longitudinally moving said piston means, said collet means engaging the flexible drill shaft when said bladder means is urged against said collet means; and
(g) friction means mounted for rotational movement with said barrel, said friction means engaging the flexible drill shaft for selectively controlling longitudinal movement of the flexible drill shaft.

4,128,134
METHOD AND APPARATUS FOR DETERMINING THE ORIENTATION OF A CORE CUT IN A BORE HOLE

Frank Gregory, 71 Summit Ave., Waldwick, N.J. 07463

Filed Jul. 19, 1977, Ser. No. 816,912
Int. Cl.² E21B *47/02*
U.S. Cl. 175—44 9 Claims

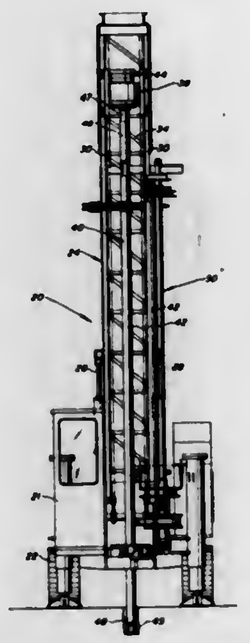


1. A device for orienting a core cut in a bore hole, an orienting rod, an inner core barrel fixed to the lower end of said rod, scribes projecting inwardly on the core barrel, a drill rod encircling said orienting rod, an outer barrel and coring bit at the lower end of said drill rod having a center opening communicating with said inner core barrel, said orienting rod extending upwardly beyond said drill rod and externally thereof, an arm extending radially from said orienting rod at the external upper end thereof in fixed relation to said rod and scribes on said barrel, means providing drilling fluid passageway between said drill rod and the parts encircled thereby and means for driving said drill rod, said orienting rod at the location of said arm extending above said core barrel and outer barrel leaving the arm visible to indicate the position of the scribes.

4,128,135
DRILL PIPE HANDLING MECHANISM

Ray M. Mitchhart, and Hans Zingl, both of Dallas, Tex., assignors to Gardner-Denver Company, Dallas, Tex.

Filed Jul. 13, 1977, Ser. No. 815,347
Int. Cl.² E21B *19/14*
U.S. Cl. 175—52 8 Claims



6. A drill pipe handling and storage mechanism for use in combination with a drilling rig having an elongated upstanding mast, and a rotary head operable to traverse said mast for advancing and rotatably driving a drill stem made up of a plurality of threadedly interconnected drill pipe sections, said handling and storage mechanism comprising:
a storage rack for storing at least one drill pipe section, said storage rack including a pair of spaced apart upper and lower arms interconnected by an elongated shaft adapted for pivotally moving said arms between a position substantially in alignment with the longitudinal central axis of said drill stem for receiving and dispensing a drill pipe section and a retracted position;
support means disposed on said mast for supporting said shaft for pivotal and limited axial movement with respect to said mast;
means on said lower arm for receiving and holding the lower end of a drill pipe section in said storage rack;
resilient means interposed between said support means and said shaft for yieldably supporting said storage rack for said limited axial movement; and
means for varying a bias force exerted by said resilient means on said storage rack to compensate for the weight of a drill pipe section held by said storage rack.

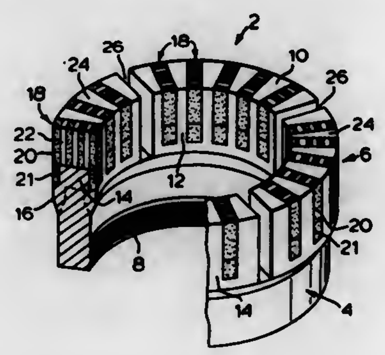
4,128,136
DRILL BIT

Robert E. Generoux, North Bay, Canada, assignor to Lamage Limited, North Bay, Canada

Filed Dec. 9, 1977, Ser. No. 859,072
Int. Cl.² E21B *9/36*
U.S. Cl. 175—330 6 Claims

1. A diamond drill core bit comprising:
a. an annular bit body having an end,

b. an annular crown integrally secured to said end and having a cutting face and inner and outer concentric side surfaces, said crown comprising:
1. a plurality of composite segments each extending generally radially between said inner and outer side surfaces, said composite segments being spaced circumferentially from each other and being elongated depthwise of the crown and extending to said cutting face to wear with said cutting face in use,
2. a circumferential spacer material integrally adhered to said composite segments and extending circumferentially between said composite segments to space the latter circumferentially apart, said circumferential spacer material also extending generally radially between said inner and outer surfaces and being elongated depthwise of the crown and extending to said cutting face to wear with cutting face in use,
c. each composite segment comprising a plurality of diamond impregnated segments separated radially from each other by a radial spacer material, a diamond impregnated segment being located at each of said inner and outer side surfaces, said diamond impregnated segments and said radial spacer material therebetween all extending to said cutting face,



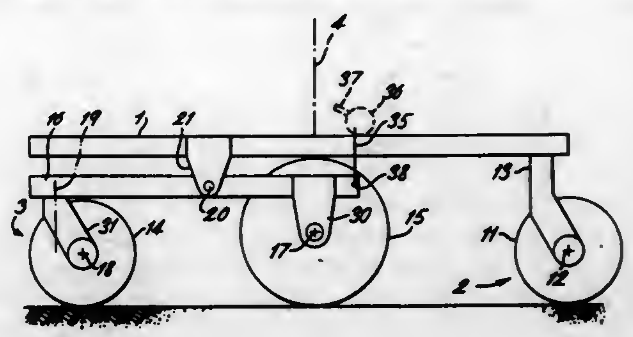
d. said diamond impregnated segments having greater abrasion resistance than that of said radial spacer material such that said radial spacer material will wear at a controlled rate which is greater than that of said diamond impregnated segments but not so great as to prematurely expose said diamond impregnated segments,
e. said radial spacer material having greater abrasion resistance than that of said circumferential spacer material such that said circumferential spacer material will wear at a controlled rate which is greater than that of said radial spacer material, but is not so great as to prematurely expose said composite segments,
f. said circumferential spacer material having substantial thermal conductivity and ductility.

4,128,137
PERIPATETIC VEHICLES

Eric Booth, Didcot, England, assignor to National Research Development Corporation, London, England

Filed Feb. 15, 1977, Ser. No. 768,718
Claims priority, application United Kingdom, Feb. 24, 1976, 07239/76
Int. Cl.² B60G *25/00*
U.S. Cl. 180—6.5 11 Claims

1. A peripatetic vehicle comprising:
a vehicle body structure;
a suspension including a bogie system;
means for pivotally connecting said bogie system and said vehicle body structure one to the other for relative movement about a transverse axis;
means mounted on said bogie system defining a fixed transverse axle;
two main wheel units mounted on said axle means and disposed at least substantially transversely opposite to each other with one unit adjacent each side of the vehicle;
at least one other wheel unit carried by said bogie system, said one other wheel unit being a caster, and

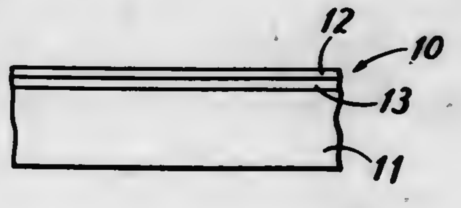


at least one further wheel unit carried by said vehicle body structure, said at least one further wheel unit being a caster.

4,128,138
DIAPHRAGM FOR SPEAKER

Yasuhiro Ishii; Shintaro Hirose, both of Gifu, and Ryoichi Kawasaki, Gunma, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi and Tokyo Sanyo Elctric Co., Ltd., Gunma, both of, Japan

Filed Dec. 20, 1976, Ser. No. 752,480
Claims priority, application Japan, Dec. 24, 1975, 50-155394
Int. Cl.² H04R *7/12;* G10K *13/00;* B32B *3/10*
U.S. Cl. 181—167 8 Claims

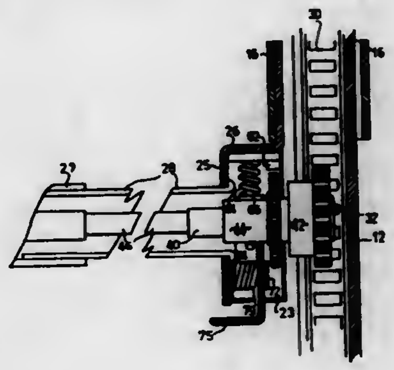


1. A diaphragm for a speaker comprising:
a sheet for porous metal material formed from sintered metal powder and shaped in the form of the diaphragm, the pores of the metal material being void of solid material, and
a sheet of material substantially impermeable to air attached to and covering the active surface area of at least one surface of the diaphragm.

4,128,139
AUTOMATIC LEVELLING AND LOCKING LADDER

Jack E. Cook, Sr., 217 Cassandra Bldg. Apt. 1111, Don Mills, Ontario, Canada

Filed Dec. 7, 1977, Ser. No. 858,297
Int. Cl.² E06C *7/44*
U.S. Cl. 182—202 10 Claims



1. In a self levelling base structure for use in combination with a ladder, said ladder comprising a pair of ladder rails, said base structure including a pair of parallel, spaced apart upstanding leg members, means for mounting said leg members

for vertical sliding movement relative to said rails, each said leg member being provided with a rack member, a pinion member engaging each said rack member, said pinions being coupled by shaft means, a housing for said shaft means, means for rotatably supporting said shaft means within said housing, the last said means permitting generally vertical relative movement between said shaft means and said housing, first bias means urging said housing upwardly relative to said shaft means, and blocking means engageable with said shaft means to restrict rotary movement thereof when said housing moves downwardly towards said shaft means in opposition to said first bias means, the improvement wherein automatic locking means is provided for restricting upward movement of said housing relative to said shaft means, said locking means comprising a locking member mounted within said housing for movement between a first position permitting relative vertical movement between said housing and said shaft means and a second position interposed between said housing and said shaft means to restrict said relative vertical movement, a second bias means urging said locking member to said second position, latching means associated with said shaft means and said housing permitting movement of said locking member to said second position as said housing moves downwardly relative to said shaft means, and means for returning said locking means to said first position.

4,128,140
APPARATUS FOR RECYCLING ENGINE LUBRICATING OIL

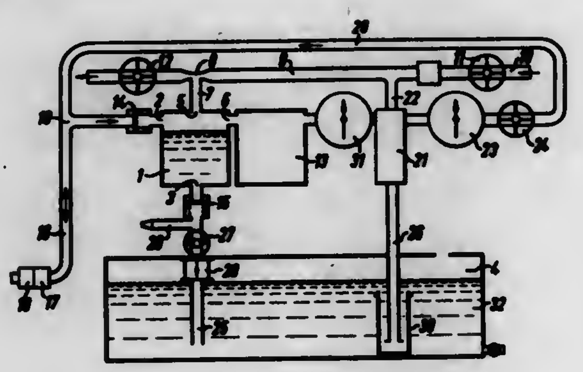
Stanley J. W. Riches, Uppingham, England, assignor to The Post Office, London, England

Filed Mar. 24, 1977, Ser. No. 781,052

Claims priority, application United Kingdom, Mar. 25, 1976, 12071/76

Int. Cl.^{2} F01M *11/04*

U.S. Cl. 184—1.5 **6 Claims**



1. Equipment for draining and refilling the lubricating oil sump of a motor vehicle, such equipment comprising a main oil reservoir with a capacity substantially greater than that of the sump, oil inlet means including a hose line and an inlet pipe for connecting the interior of the sump to the reservoir, and an oil collecting vessel having an inlet and an outlet and being of greater capacity then said sump but less then said reservoir interposed in said oil inlet means, valve means communicating with the inlet and the outlet of said oil collecting vessel, means for reducing and increasing air pressure in the oil collecting vessel, said last named means upon reducing air pressure causing said inlet valve to open causing oil to flow through said hose line and inlet pipe into said oil collecting vessel while preventing flow from said collecting vessel to said reservoir and upon increasing air pressure in said oil collecting vessel to cause oil to flow through said outlet pipe into said reservoir while closing the valve means communicating with the oil inlet of said vessel, oil outlet means communicating with said reservoir and connecting with said reservoir and connecting said reservoir to the vehicle sump and metered oil discharge means for causing metered doses of oil from the reservoir to flow through the oil outlet means.

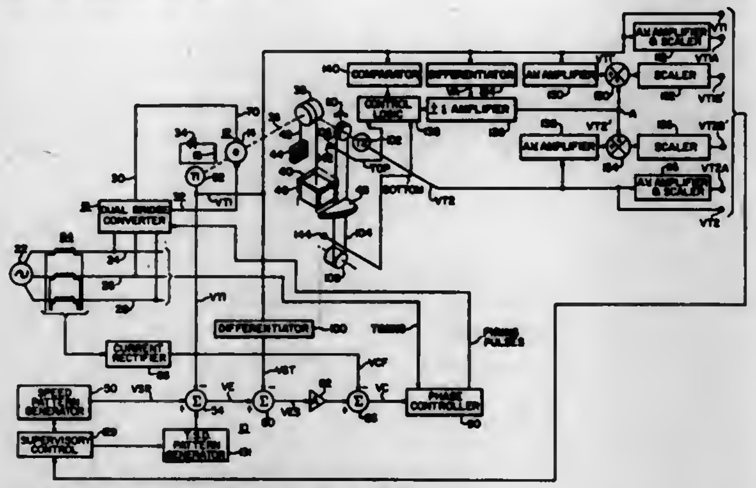
4,128,141
ELEVATOR SYSTEM

William R. Caputo, Wyckoff, and Alan L. Husson, Budd Lake, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 7, 1977, Ser. No. 813,560

Int. Cl.^{2} B66B *5/06*

U.S. Cl. 187—29 R **10 Claims**



1. An elevator system comprising:

an elevator car,

motive means for effecting movement of said elevator car in a predetermined travel path,

means providing a velocity signal related to the velocity of said elevator car,

means providing an acceleration signal related to the acceleration of said elevator car,

means modifying said velocity signal responsive to said acceleration signal,

and monitoring means responsive to the modified velocity signal for detecting a malfunction in the operation of said elevator car.

4,128,142
ELEVATOR SPEED CONTROL SYSTEM

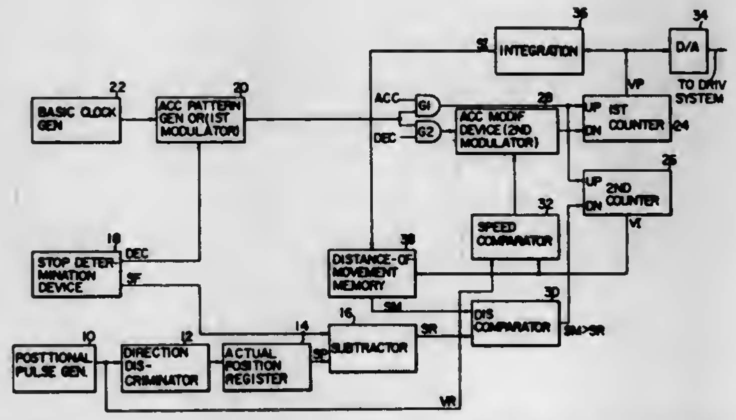
Tsuyoshi Satoh, and Kenzo Tachino, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1977, Ser. No. 766,508

Claims priority, application Japan, Feb. 16, 1976, 51-15596

Int. Cl.^{2} B66B *1/30*

U.S. Cl. 187—29 R **10 Claims**



1. An elevator speed control system comprising, in combination, an elevator car, an elevator driving system for moving said elevator car, a pulse generator means for generating positional pulses in response to the distance of movement of said elevator car, an actual position register means for accumulating said positional pulses therein and providing a signal indicating the actual position of said elevator car, a command acceleration pattern generator means for generating a command acceleration pattern having a predetermined shape and for generating a command maximum acceleration, a command speed pattern generator means for integrating said command acceleration pattern to deliver a command speed to said elevator driving system during the acceleration of said elevator car, a stop position determination means for sensing the floor at which it is desired to stop said elevator car for producing a signal indicating the position of the desired stop floor, a subtracter means for calculating the distance to the desired stop floor by calculating the difference between the signal from said actual position register means and the signal from said stop position determination means during the decleration of said elevator car, an ideal deceleration pattern generator means responsive to the distance to the desired stop floor calculated by said substractor means during the decleration of said elevator car to provide an ideal command speed for said elevator car, a speed sensor means for sensing the actual speed of said elevator car, a speed comparator means for comparing said ideal command speed from said ideal decleration pattern generator means with the actual speed sensed by said speed sensor means, and a rate-of-acceleration modifier means responsive to the output from said speed comparator means and connected to said command acceleration pattern generator means for modifying said command acceleration pattern, whereby the actual speed of the elevator car is caused to follow the ideal command speed from said ideal decleration pattern generator means.

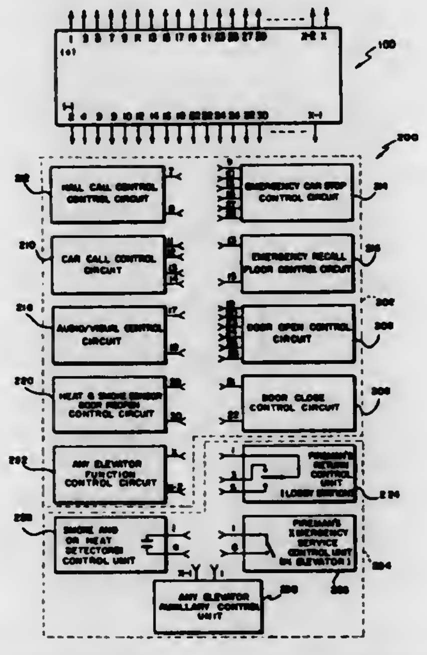
4,128,143
SUPERVISORY CONTROL MEANS FOR AUTOMATIC ELEVATOR SYSTEMS

Leif J. Petterson, 1164 Hartford Tpke., North Haven, Conn. 06473, and Leif E. Petterson, 89 Janeway Dr., Guilford, Conn. 06437

Filed Jun. 27, 1977, Ser. No. 810,521

Int. Cl.^{2} B66B *1/46*

U.S. Cl. 187—29 R **12 Claims**



100
200
HALL CALL CONTROL CONTROL CIRCUIT
CAR CALL CONTROL CIRCUIT
AUDIO/VISUAL CONTROL CIRCUIT
HEAT & SMOKE SENSOR DOOR REOPEN CONTROL CIRCUIT
ANY ELEVATOR FUNCTION CONTROL CIRCUIT
SMOKE AND OR HEAT DETECTOR(S) CONTROL UNIT
EMERGENCY CAR STOP CONTROL CIRCUIT
EMERGENCY RECALL FLOOR CONTROL CIRCUIT
DOOR OPEN CONTROL CIRCUIT
DOOR CLOSE CONTROL CIRCUIT
FIREMAN'S RETURN CONTROL UNIT (LOBBY SWITCH)
FIREMAN'S EMERGENCY SERVICE CONTROL UNIT (IN ELEVATOR)
ANY ELEVATOR AUXILLARY CONTROL UNIT
210
220
224

1. In combination with an automatic elevator system of the type which includes at least one car servicing a plurality of floors, said car having at least one door which opens and closes, and normal control circuit means for controlling various normal modes of operation of said elevator system, the improvement which comprises: a supervisory control means physically separated from said normal control circuit means for overriding at least one normal mode of operation of said elevator system in response to an electrical signal, said supervisory control means including a plurality of switching devices each having an electrical input and outputs, a first group of terminals electrically coupled to said inputs and outputs of said switching devices, a second group of terminals at least some terminals of which are electrically coupled to said normal control circuit means, and interconnecting means for electrically coupling at least some terminals of said first group of terminals to at least some terminals of said second group of terminals whereby said supervisory control means is readily adaptable to supervise as many normal modes of operation as desired of any elevator system.

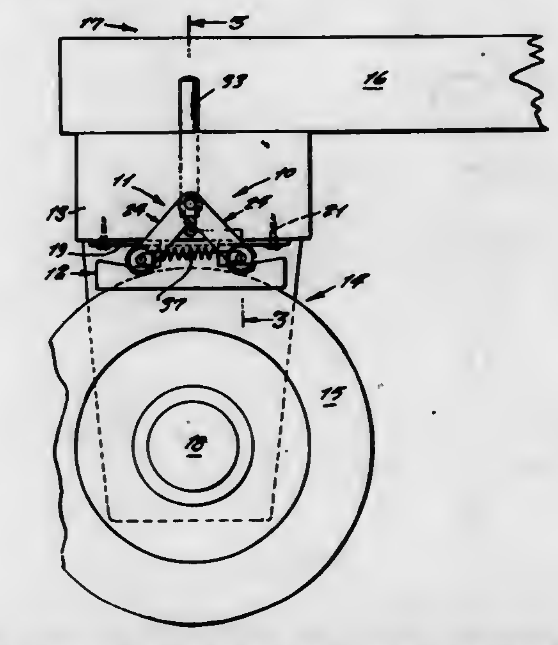
4,128,144
BRAKE AND WHEEL LOCK

Hervey P. Vassar, Nicol Terrace, Rumson, N.J. 07760

Filed Dec. 8, 1977, Ser. No. 858,850

Int. Cl.^{2} B60B *33/00*; B60T *1/04*

U.S. Cl. 188—1 D **1 Claim**

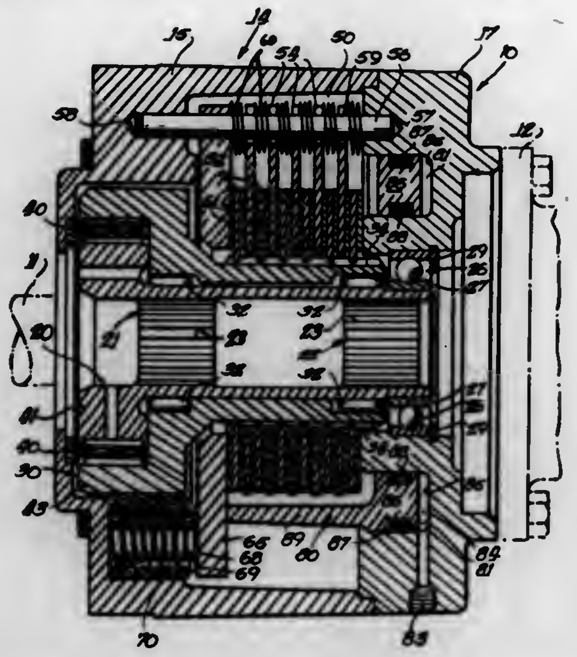


1. A brake and wheel lock for a caster assembly of a dolly, said caster assembly comprising an inverted, U-shaped yoke and a wheel rotatable on an axle supported at opposite ends thereof in said yoke beneath the center of said yoke; said brake and wheel lock including a movable mechanism and a stationary bracket; said stationary bracket comprising a flat jaw plate mounted on an underside of said yoke and a pair of integral downwardly extending tongues on opposite sides of said jaw plate, each of said tongues forming a rail means; said movable mechanism comprising a pair of parallel, spaced apart rollers, each having a pin extending therethrough, each said pin extending from said rail means on one side of said jaw plate to said rail means on the other side of said jaw plate and being slidable thereon, a pair of U-shaped frame means positioned angularly with respect to each other so as to converge together at their terminal ends, the terminal ends of each said frame means being pivotally mounted on a single slide pin and each said frame means including one of said rollers and said respective pin with opposite ends of said respective pin being pivoted in one end of a pair of parallel links, the opposite ends of said pair of links of each said frame means, forming said terminal ends, being pivoted on said slide pin, said slide pin being affixed to a lower end of a pushbutton pin slidable in a vertical hole in said yoke, said vertical hole communicating with a horizontal slot transversely through said yoke and in which said slide pin is vertically slidable, spring means secured at opposite ends thereof to the pin on each said respective roller for urging the rollers in a direction toward each other into a wedged position between the periphery of said wheel and the underside of said jaw plate for braking and locking said wheel against rotation, and a vertical downward movement of said pushbutton being transmitted through said slide pin and said links to said rollers to urge said rollers in a direction away from each other along said rail means and thereby away from the periphery of said wheel to allow rotation of said wheel.

4,128,145
COMBINATION FAILSAFE BRAKE AND ONE-WAY CLUTCH

John W. Euler, Benton Harbor, Mich., assignor to Lambert Brake Corporation, St. Joseph, Mich.

Filed Aug. 31, 1977, Ser. No. 829,471
Int. Cl.² F16D *67/02*
U.S. Cl. 188—71.2 **9 Claims**



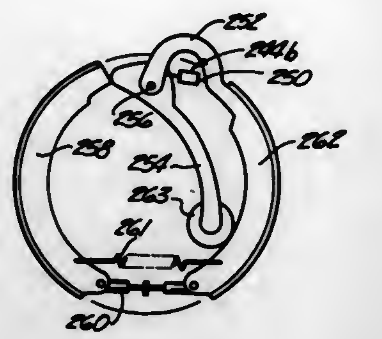
1. A fluid power brake and clutch unit comprising, in combination, a stationary housing, an inner shaft having a collared portion axially and radially extending from an uncollared portion, both positions being rotatable within said housing, an outer shaft having a collared portion axially and radially extending from an uncollared portion telescopically journalled upon and rotatable independently of the respective collared and uncollared portions of the inner shaft, the inner shaft collared portion having an outer diameter larger than the outer diameter of the outer shaft uncollared portion, disc brake means carried in the housing and connected to the outer shaft uncollared portion to retard rotation of the outer shaft, and one-way clutch means operatively interposed between the inner shaft collar and the outer shaft collar to cause the inner and outer shafts to rotate together as a unit when the inner shaft is rotated in one direction, but permitting the inner shaft to rotate independently of the outer shaft when the inner shaft is rotated in the opposite direction, the one-way clutch means thereby providing powerful braking and clutching action in a compact device.

4,128,146
REMOTE CONTROL CIRCUIT FOR ELECTRIC TRAILER BRAKES

Harold C. Hubbard, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Division of Ser. No. 787,548, Apr. 14, 1977, which is a division of Ser. No. 615,234, Sep. 22, 1975, Pat. No. 4,033,630. This application Oct. 17, 1977, Ser. No. 842,477
Int. Cl.² B60T *13/74, 17/22*
U.S. Cl. 188—138 **2 Claims**

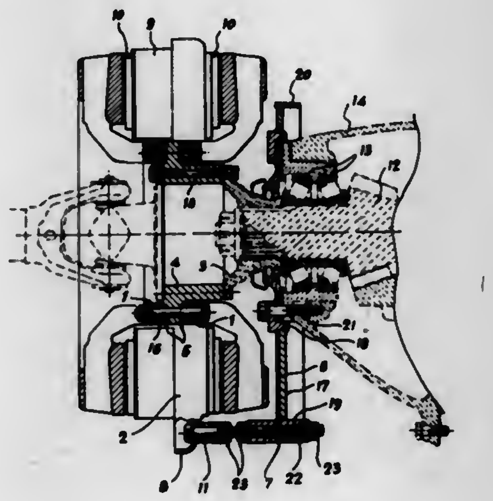
1. In a system for controlling brakes of the type having a brake drum, a brake shoe movable about a fixed point relative to said drum and means moving said shoe into said drum to apply braking forces thereto, the improvement wherein said shoe is connected to said fixed point by a resilient link in the form of a U-shaped spring member connected at its respective ends to said shoe and said fixed point, and wherein said system further comprises pressure responsive means connected between respective ends of said U-shaped member to provide an indication of braking forces applied to said drum by said shoe as a function of flexure of said member.



4,128,147
VEHICLE SPEED REDUCER OR EDDY CURRENT BRAKE

Antonio Lafuente Ruberte, Argualas St. s/n°, Zaragoza, Spain

Filed Jul. 6, 1977, Ser. No. 813,292
Claims priority, application Spain, Nov. 30, 1976, 453.792
Int. Cl.² F16D *65/34*
U.S. Cl. 188—164 **4 Claims**



1. An electromagnetic force speed reducer for a vehicle, comprising:

a vehicle differential unit; said differential unit including a differential housing;

a supporting frame which is rigidly affixed to said differential housing; said supporting frame including internal bearings located internally thereof; said supporting frame including an enlarged, generally ring-like, structure having a periphery at which are located a plurality of caps;

a rotor comprised of flywheel means attached to said drive shaft and rotatable therewith; a flywheel disc attached to said flywheel means;

a drive shaft disc coupled to said drive shaft to rotate therewith and said drive shaft disc extending generally toward said flywheel means;

said flywheel means disc and said drive shaft disc being coupled for causing said drive shaft to rotate said flywheel means; the coupling of said drive shaft disc and said flywheel means disc being by means of an annular array of male and female fittings around said flywheel means axis;

said flywheel means comprise a plurality of annular flywheels arranged coaxially and spaced apart axially; said flywheel means disc projecting between two said flywheels and those two said flywheels being normally urged toward said flywheel means disc between them;

at least one annular spacing leaf interposed between the portion of said flywheel means disc projecting between said flywheels and the adjacent said flywheel, for adjusting the separation of said flywheels;

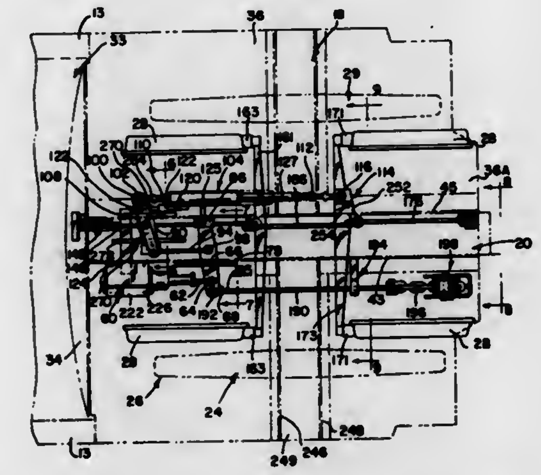
a stator comprised of a plurality of coils positioned at the vicinity of said flywheel means, such that electromagnetic lines of force will travel between said stator and said rotor;

a plurality of screws extending from said stator to said caps fixedly attaching said stator to said supporting frame; bushings in said caps into which said screws are threadedly received; said plurality of screws being adapted for micrometrically adjusting the position of said stator with respect to the position of said supporting frame.

4,128,148
BRAKE RIGGING FOR DROPPED BOTTOM GONDOLA CARS

Eugene W. Schmitt, Lockport, Ill., assignor to Harbil, Inc., Chicago, Ill.

Filed Dec. 5, 1977, Ser. No. 857,300
Int. Cl.² F16D *65/62*
U.S. Cl. 188—197 **7 Claims**



1. In a dropped bottom gondola car having a car body riding on wheeled trucks at either end of same in which the car body is of gondola container configuration defining a dropped bottom between the trucks, said body having at either end of its dropped bottom a horizontal shear plate fixed thereto and that is substantially coextensive with the car end, said plates each being mounted on top of a stub center sill operably connected to the truck at the respective ends of the car, with the stub sills being aligned along the longitudinal centerline of the car, a brake rigging arrangement therefor wherein the rigging at each car end applies wheel braking forces to the car end truck wheels through brake shoes, with the car end rigging comprising:

a brake cylinder mounted adjacent the dropped bottom at the level of and to one side of the car end center sill, with said brake cylinder having a thrust rod extending longitudinally of the car and directed away from its dropped bottom, with said thrust rod being reciprocably mounted in said cylinder for effecting a thrust stroke,

a cylinder lever disposed crosswise of the car and having one end of same pivotally connected to said thrust rod and the other end of same extending into the car end center sill and fulcrumed on the other side of same,

a floating lever extending generally crosswise of the car and positioned between the cylinder lever and the dropped bottom and lying in the horizontal plane of the car end sill,

said floating lever having a fulcrum adjacent one end of same and located externally of and on the other side of the car end sill,

a cylinder lever rod pivotally connected to said cylinder lever intermediate its ends and disposed within the car end center sill,

said cylinder lever rod being pivotally connected to said floating lever adjacent the other end of said floating lever and within the car end center sill,

a vertical live lever disposed between the floating lever and the dropped bottom and mounted for pivotal movement intermediate the ends thereof about a horizontal axis extending transversely of the car and for movement in a vertical plane that includes the car and center sill,

with the vertical lever upper end being disposed adjacent the level of said brake cylinder and within the car end center-sill,

and means for operably connecting the vertical lever lower end to the car end brake shoes for applying the braking forces to the car end truck wheels on actuation of said brake cylinder to effect said thrust rod stroke,

a center rod pivotally connected between said vertical lever upper end and said floating lever intermediate the ends of the latter,

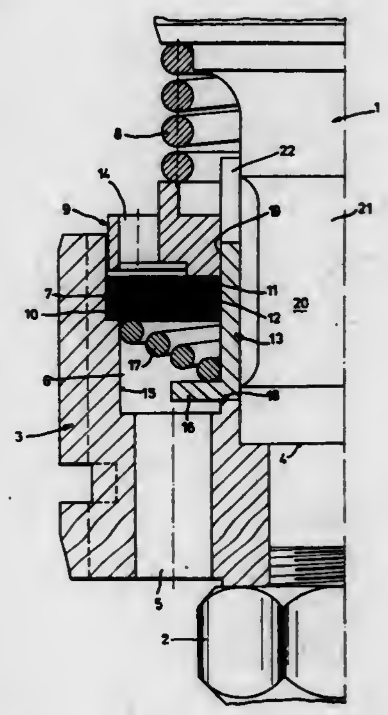
means for shifting said floating lever fulcrum longitudinally of the car in slack take up and let out directions for making the thrust stroke of the brake cylinder thrust rod of substantially uniform predetermined length,

and means for controlling said shifting means for effecting shifting of said floating lever fulcrum longitudinally of the car to compensate for wear, loss, and replacement of the car end brake shoes.

4,128,149
PISTON ARRANGEMENT FOR A SHOCK ABSORBER

Erhard Leppich, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Oct. 13, 1977, Ser. No. 841,995
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1976, 2646771
Int. Cl.² F16F *9/18*
U.S. Cl. 188—322 **12 Claims**



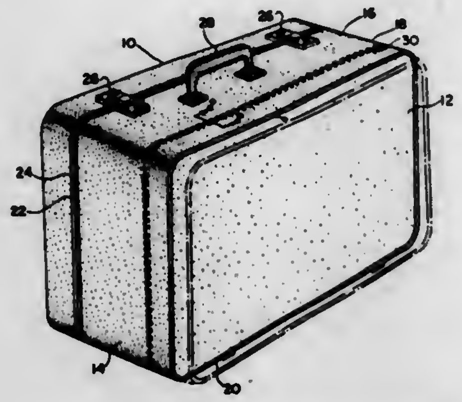
1. A piston arrangement for a shock absorber, comprising a piston rod; a piston arranged on said piston rod so as to be axially non-displaceable relative thereto and having flow channels through which a damping medium may flow when said piston is axially displaced in the shock absorber; two valves for controlling the flow of medium when said piston is moved in opposite axial directions, respectively, each valve having a valve element which opens against a spring force, depending on the direction of axial movement of said piston and therefore on the direction of flow of the medium; the closure element of one of said valves comprising at least one disc and the closure element of the other of said valves comprising a sleeve which surrounds said piston rod, said sleeve having a flange which is exposed to the pressure of the medium when the valve is opened; said piston rod having a region of reduced diameter, part of which region is in axial alignment with said disc; said

sleeve and said disc forming a space between themselves; said sleeve extending overlappingly through at least said region of said piston rod; said sleeve, when said other valve is closed, bearing with its flanged end against a first valve seat thereby to seal off said region of said piston rod and, when said other valve is open, allowing the flow of medium through both ends of said region of said piston rod; said one valve further comprising a valve element associated with said disc and a first spring acting on said valve element, said valve element being arranged on that side of said disc which is directed away from said flange of said sleeve; said valve element tightly surrounding said sleeve but permitting axial movement relative thereto; said valve element having a second valve seat near its inner circumference; said valve element, under the influence of said spring, pressing said disc near its outer circumference against a step of said piston.

4,128,150
EXPANSIBLE CARRYING CASE

Jerome L. Popkin, Trenton, and Edward F. Litwitz, Lambertville, both of N.J., assignors to York Luggage Corporation, Lambertville, N.J.

Filed Mar. 23, 1977, Ser. No. 780,444
Int. Cl.² A45C *7/00*
U.S. Cl. 190—44 **8 Claims**

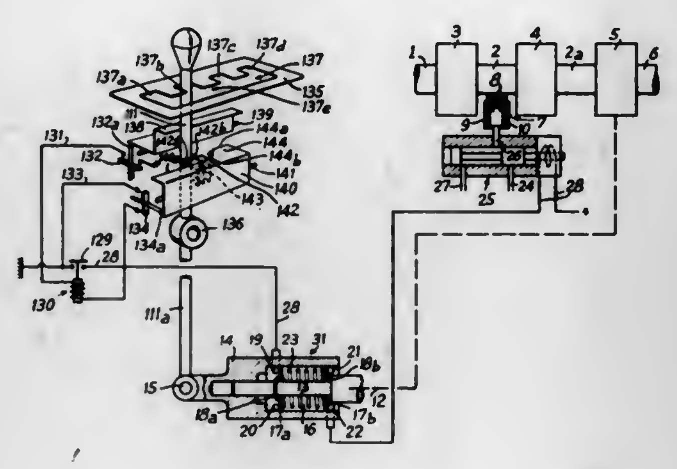


1. A carrying case comprising a pair of substantially parallel side walls, peripheral walls extending transversely between said side walls, and a gusset extending longitudinally along peripheral walls of said case in a plane substantially parallel to said side walls, said gusset having a cross-sectional configuration in a plane substantially perpendicular to said side walls that comprises a pair of outer reverse folds and a pair of inner reverse folds, each fold being defined by first and second legs extending from a junction region, the junction regions of the outer folds being closer together than the junction regions of the inner folds, the legs of each outer fold extending oppositely to the legs of the other, a first leg of each outer fold being connected to a peripheral wall, each of the inner folds having legs that extend toward the corresponding legs of the other, a first leg of each of the inner folds being connected to the second leg of an associated outer fold, and the second legs of the inner folds being connected to each other, the junction regions of the inner folds being free to move inwardly when the junction regions of the outer folds are moved apart, thereby expanding the gusset, each fold having holding means extending between the legs thereof at the leg junction region and extending along the length of the gusset for holding the legs together, the holding means in conjunction with the stiffness of the gusset material limiting the expansion of the gusset.

4,128,151
TRANSMISSION MECHANISMS FOR VEHICLES

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Apr. 6, 1977, Ser. No. 785,128
Claims priority, application France, Apr. 13, 1976, 76 10844
Int. Cl.² F16H *57/10*
U.S. Cl. 192—4 A **7 Claims**

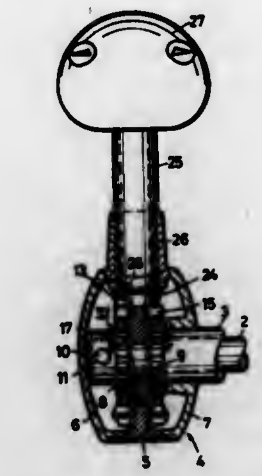


1. In a transmission mechanism for an automotive vehicle
a drive shaft,
a change-speed gear, including
  an input shaft,
coupling means between the drive shaft and the input shaft of the change-speed gear,
an output shaft coupled to road wheels of the vehicle,
a reversing gear connected between the change-speed gear and the said output shaft,
brake means operable to brake the input shaft of the change-speed gear,
means for actuating the brake means,
means for selecting operating positions "forward drive" and "reverse drive" and "neutral" and "parking brake" of the reversing gear, said selecting means comprising
a linkage for effecting engagement in the said positions, including
  a manually-operable control lever,
said actuating means comprising
  a circuit for supplying the brake with pressure fluid, said circuit incorporating,
  a solenoid valve normally interrupting the brake fluid circuit when the solenoid is de-energized,
a solenoid valve energizing circuit including
  a first, normally open, switch movable to its closed position by said control lever,
  a self-hold relay operable to close the first switch,
  an energizing circuit for energizing the self-holding relay comprising:
    a first, hold, branch interruptable by said first switch,
    a second, starting, branch connected in parallel with the first branch across said first switch, the first branch including
    a first contact pair co-operating with the lever so as to be open only when the lever is in one of the positions "forward drive", "reverse drive", "neutral" or "parking brake", the second branch including
    a second contact pair co-operating with the lever so as to close only when the lever is moved in direction to establish a connection between said input and output shafts.

4,128,152
RATCHET TRANSMISSION

Arnold Tschursch, Hinrichssegen, Fed. Rep. of Germany, assignor to Fritzmeier AG, Lenzburg, Fed. Rep. of Germany

Filed Apr. 6, 1977, Ser. No. 785,176
Int. Cl.² F16D *41/16, 21/06;* B60N *1/06*
U.S. Cl. 192—43.1 **13 Claims**

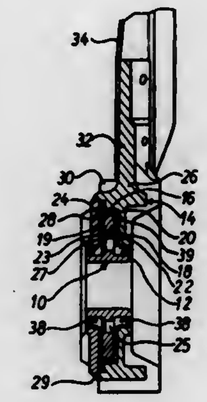


1. A ratchet transmission for height and weight adjustment of suspension seats of vehicles, comprising:
  two independent gear-shift-lever shafts rotatably disposed about a common axis within a gear casing;
  a pair of ratchet wheels being respectively rigidly fixed on said gear-shift-lever shafts;
  a cam disc abutted by the gear casing;
  a pair of counter-acting, pre-tensioned pawls for each of said ratchet wheels which are selectively latchable thereto by turning said cam disc; and
  a turning knob, protruding radially from the gear casing, and swivelable therewith around the axis of said gear-shift-lever shaft.

4,128,153
VISCOUS SHEAR FLUID COUPLINGS

Peter L. Main, Huddersfield, England, assignor to Holset Engineering Company Limited, Huddersfield, England

Filed May 6, 1977, Ser. No. 794,696
Claims priority, application United Kingdom, May 11, 1976, 19236/76
Int. Cl.² F16D *35/00*
U.S. Cl. 192—58 B **4 Claims**

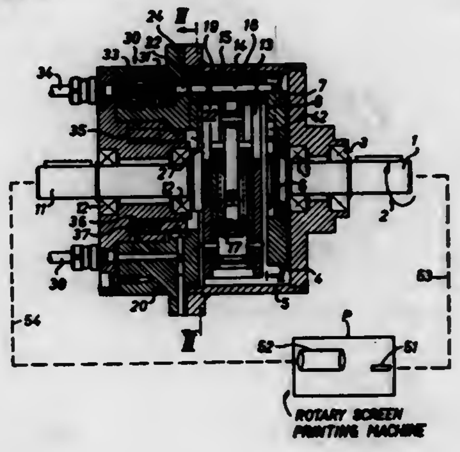


1. A viscous shear fluid coupling comprising a first annular rotatable member, a second rotatable member having an internal annular chamber receiving said first annular member, said first and second annular members having opposed radially extending surfaces in close-spaced relationship, viscous coupling fluid in said chamber for transmitting torque from one member to the other member upon rotation of the one member as a driving member to rotate the other member as a driven member and at least one groove across each said radially extending surface of the driving member, the radially inner end leading the radially outer end of each groove in the direction of operational rotation of the driving member whereby to cause said viscous coupling fluid to be pumped only towards the periphery of the driving member upon rotation of the said driving member in the latter direction thereby coupling and journaling said driven and driving members relative to one another, said coupling having at least one cavity formed in at least one of said radially extending surfaces of the chamber to provide fluid storage reservoirs for said viscous coupling fluid, said coupling further comprising a layer of non-metallic anti-friction material on at least those parts of said radially extending surfaces of said annular chamber which are in close-spaced relationship with said radially extending surfaces on the driving member.

4,128,154
POSITIVE ENGAGEMENT CLUTCH WITH SOFT ENGAGEMENT MOTION

Heinrich Voegelin, Wiler b. Utzenstorf, Switzerland, assignor to Fritz Buser AG Maschinenfabrik, Wiler b. Utzenstorf, Switzerland

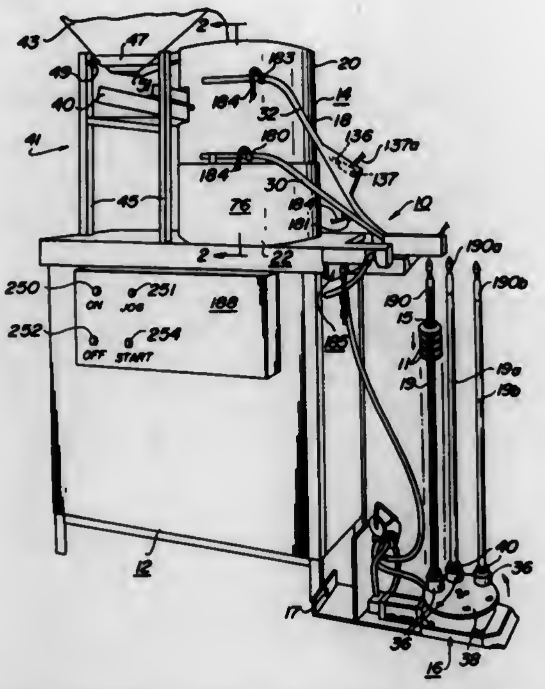
Filed Mar. 11, 1977, Ser. No. 776,736
Claims priority, application Switzerland, Mar. 12, 1976, 3116/76
Int. Cl.² B41F *13/24*
U.S. Cl. 192—67 P **18 Claims**



1. Positive engagement clutch having
a housing (5) forming a position reference;
a driving shaft (1) journalled in the housing;
a driven shaft (11) journalled in the housing;
a coupling unit (13) secured to and rotating with the driven shaft (11) and having engagement means (14) engageable with the driving shaft (1) to selectively couple the driving shaft and the driven shafts together, or to separate said shafts and to couple the driven shaft (11) to the housing (5) to lock the driven shaft with respect to the reference position of the housing,
wherein the engagement means (14) comprises
  a slidable engagement pin or rod (14);
  a rotating cam track element (7, 8) secured to the driving shaft (1) and carrying a rotating guide cam track (8);
  a fixed cam track element (20) secured to the housing (5) and carrying a fixed cam track (22) positioned in facing relation to the rotating cam track (8), the engagement pin (14) being selectively engageable with either, or both said cam tracks;
and operating means (30, 35) engageable with the engagement pin or rod (14) to move the pin, selectively, into engagement with the fixed and the moving cam track elements.

4,128,155
TRANSITION ATTACHMENT FOR A CORE-SPACER-CORE MANDREL LOADER

James P. Gerhart, 1506 Pheasant Dr., Warminster, Pa. 18974
Continuation of Ser. No. 629,416, Nov. 6, 1975, abandoned. This application Apr. 29, 1977, Ser. No. 792,235
Int. Cl.² B65G *57/16*
U.S. Cl. 193—46 **3 Claims**



1. A transition attachment for a core and spacer supporting mandrel wherein said transition attachment comprises

means at one end portion of said attachment for securing said attachment to said mandrel,

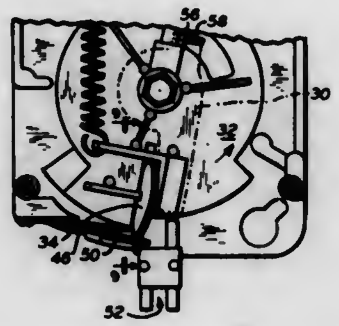
a body having symmetrical guide walls forming a flared entrance opening to receive a portion of said spacer and to axially align said spacer relative to said mandrel,

said symmetrical guide walls extending helix-like around said body, and

said body being elliptically shaped in cross-section to minimize cocking of said spacer as it enters and moves along said transition attachment.

4,128,156
ANTI-SLUG MECHANISM FOR A COIN OPERATED DEVICE

Harry Greenwald, Whitestone, and Dennis J. Larkin, West Hempstead, both of N.Y., assignors to Walter Kidde & Company, Inc., Clifton, N.J.
Filed Jul. 5, 1977, Ser. No. 812,638
Int. Cl.² G07F *5/00*
U.S. Cl. 194—61 **4 Claims**



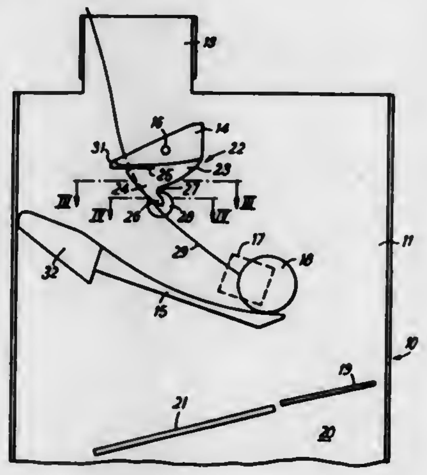
1. In a coin operated timing device of the type having a switch actuated timing motor; a star wheel; first transmission means associated with the timing motor and operable to rotatably drive the star wheel in a first angular direction when the timing motor is activated; a ratchet wheel mounted coaxially with the star wheel and being operable, in engagement with a switch, in a first rotary position, to activate the timing motor, and in a second rotary position, to deactivate the timing motor; the star wheel and the ratchet wheel, each bearing a projection at substantially the same distance from the coaxial mounting and which projections are operable to mutually abut, whereby rotation of the star wheel will rotatably drive the projection thereof into abutment with the projection on the ratchet wheel and thereafter cause the ratchet wheel to rotate conjointly with the star wheel in the first angular direction, driving the ratchet wheel into its second rotary position whereby the timing motor is deactivated; first driving means operable to rotatably drive the ratchet wheel in the first direction and into the first rotary position, thereby to increase the distance between the projections when measured in the first angular direction and to activate the timing motor; second driving means being rotatable; second transmission means comprising a coin carrying plate adapted to receive a predetermined sized coin and being operably connected between the first driving means and the second driving means; the second driving means being rotatable through a first predetermined angular distance and thereafter, when carrying the predetermined sized coin in the coin carrying plate, through a second predetermined angular distance; rotation of said second driving means in the first direction over its second predetermined angular distance being operable to drive the second transmission means and thereby to drive the first driving means in the first direction through an angular distance corresponding to the second angular distance; and an anti-coin return spring disposed for movement from a normal position in the path of travel of the coin to a displaced position out of the path of travel by the coin moving in the first angular direction and thereafter to return to its normal position upon passage of the coin beyond the spring to prevent the coin from moving in a second angular direction opposite to the first angular direction; wherein the improvement comprises:

an anti-slug mechanism including a stop carried on the anti-coin return spring and a projection carried on the second transmission means, said projection being driven into abutment with said stop as the second driving means is rotated through the first predetermined angular distance when the anti-coin return spring is in its normal position, thereby to restrict the maximum rotation of the second driving means; and

the anti-coin return spring carrying said stop out of the path of travel of said projection when the spring is moved to its displaced position thereby to allow the second driving means to rotate through the second predetermined angular distance.

4,128,157
COIN TESTING MECHANISMS

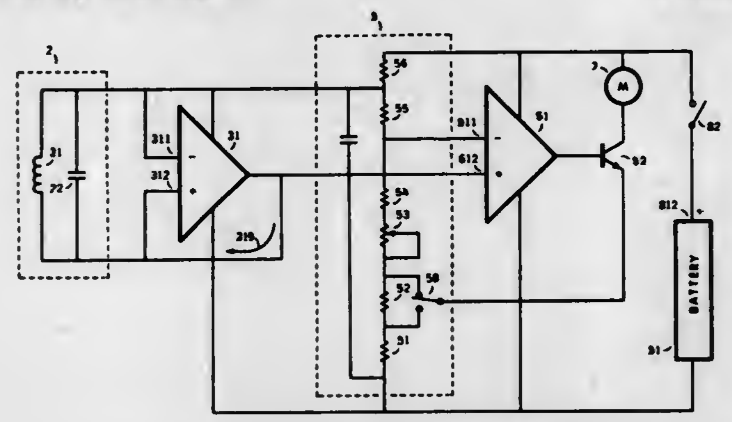
Michael I. Henville, Wembley, England, assignor to Mars, Inc., McLean, Va.
Filed Jul. 27, 1977, Ser. No. 819,596
Claims priority, application United Kingdom, Jul. 28, 1976, 31504/76; Sep. 27, 1976, 40065/76; Oct. 7, 1976, 41814/76
Int. Cl.² G07F *3/02*
U.S. Cl. 194—97 R **19 Claims**



1. A coin-testing apparatus including a passageway defining a path along which a coin inserted into the apparatus will travel; at least one wall defining one side of the passageway; means for examining the authenticity of a coin in the passageway and producing an acceptance signal if the coin is found to be acceptable; a resilient thread-catching device secured against the wall of the passageway to the inside of a bend in the coin path upstream of the position a coin reaches when the acceptance signal is first given, the thread-catching device comprising a thread-holding portion lying adjacent the wall surface but free to be flexed away from it, an entry portion adjoining the thread-holding portion and diverging from the wall towards its free outer end, the thread-holding portion having a protrusion extending toward the wall; and a member having a recess to receive the protrusion so that, when a thread attached to a coin which has moved along the coin path to a position downstream of the thread-catching device is tensioned and pulled upwardly, the tensioned thread will slip behind the entry portion and then into the recess and past the protrusion.

4,128,158
PRECISION COIN ANALYZER FOR NUMISMATIC APPLICATION

Joseph L. Dautremont, Jr., Northridge, Calif., assignor to Coin Cop Co., Glendale, Calif.
Filed Jul. 22, 1976, Ser. No. 707,891
Int. Cl.² G07F *3/02*
U.S. Cl. 194—100 A **6 Claims**



1. A method for the static testing of coins or other metallic objects whereby oscillating currents in the coil of an oscillator are coupled first to a standard or reference article and the amplitude of oscillations is compared to a direct current derived from the current measured by the indicator, for the purpose of setting the amplitude of oscillations to a reference level; the currents are then coupled to the article to be tested and any difference in losses causes a change in amplitude of said oscillations from the reference level which is compared to the changed direct current derived from the changed current measured by the indicator.

4,128,159
APPARATUS FOR FEEDING AND ORIENTING PARTS

William V. Pataki, 7399 Marywood Dr., Newburgh, Ind. 47630
Filed Dec. 22, 1977, Ser. No. 863,263
Int. Cl.² B65G *47/24*
U.S. Cl. 198—389 **12 Claims**

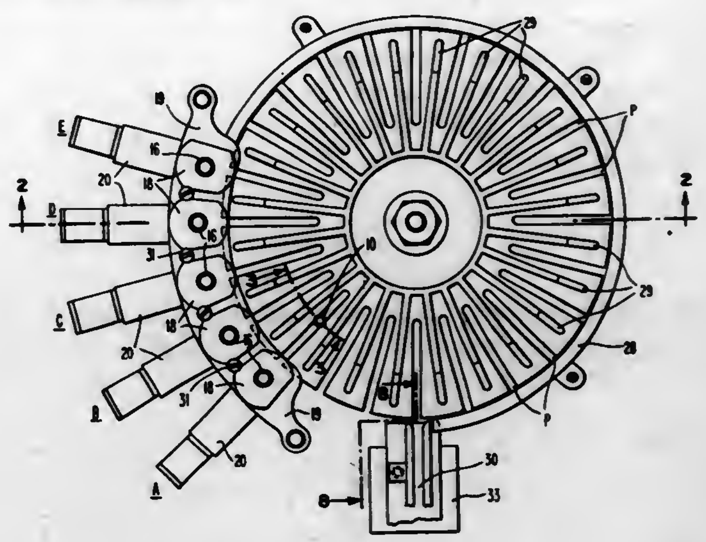
1. Apparatus for automatically orienting and feeding to a work machine elongated non-symmetrical parts having larger-diameter and smaller-diameter portions, said apparatus including:

a. an intermittenly rotatable indexing dial having a plurality of radial pockets;

b. a plurality of feed tubes, each tube adapted for carrying a plurality of randomly oriented non-symmetrical parts aligned end-to-end and for delivering said parts to the periphery of said indexing dial, the number of feed tubes being substantially smaller than the number of pockets in said indexing dial;

c. ejection means at the delivery end of each feed tube for selectively ejecting an individual part from a feed tube into a pocket of said indexing dial;

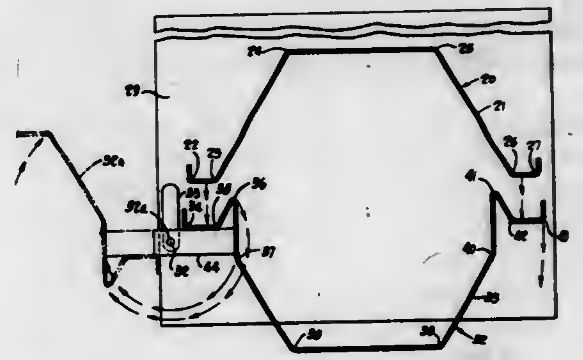
d. means in each pocket for effecting orientation of a part received therein; and



e. means for discharging said oriented parts from said pockets successively one at a time into a discharge track for feeding said oriented parts to a work machine.

4,128,160
LEAK FREE HOUSING FOR VERTICAL SCREW CONVEYOR

Douglas O. Deal, Bellevue, and Robert C. Morley, Sandusky, both of Ohio, assignors to Sam Stein Associates, Inc., Sandusky, Ohio
Filed Jul. 21, 1977, Ser. No. 817,714
Int. Cl.² B65G *65/46*
U.S. Cl. 198—657 **8 Claims**

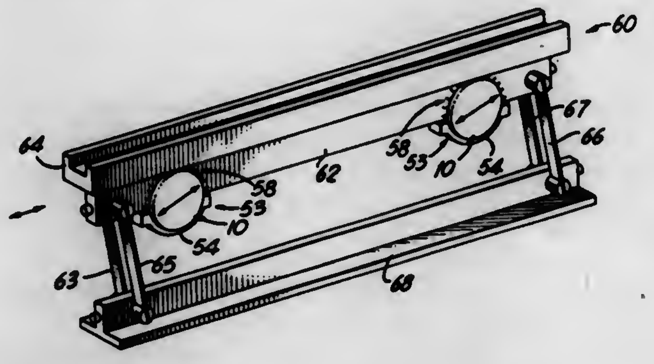


1. A generally vertical joint structure extending longitudinally of a housing enclosing a generally vertical screw conveyor having an axial driving shaft forming part of a larger machine; comprising a generally cylindrical housing composed of two hollow half portions, each generally C-shape in section; said half portions assembled with their open sides mutually meeting and joining along two longitudinal zones diametrically opposite in said housing and parallel to the axis of said conveyor shaft to form generally a cylinder whose axis coincides with said shaft axis; means closing the open top and bottom of said housing; said housing half portions consisting of formed sheet material; there being openings in said housing near the top and bottom thereof for inlet and outlet of material moved by said conveyor and said housing being otherwise imperforate; each of said longitudinal joints comprising, in a first of said half portions, a generally planar portion, at each terminal edge of said C-shape, parallel to said axis and extending a short predetermined distance beyond and essentially perpendicular to a diameter of said housing and there bent downwardly and outwardly at an acute angle extending linearly to approximately said diameter, thus forming a first linear sealing surface, and there bent radially outwardly at an obtuse angle for a short

distance; each of said longitudinal joints, in a second of said half portions, comprising at each terminal edge of said C-shape a linear portion extending at said above-mentioned acute angle to a zone approximately on said diameter outside of said first linear sealing surface, thus forming a second linear sealing surface, and there bent radially outwardly at an obtuse angle for a short distance; said bends in said housing half portion stiffening said terminal edges of said C-shapes; and means for clamping said housing half portions which said first and second sealing surfaces tight together.

4,128,161
VIBRATORY DEVICE

Edward H. Yonkers, 905 Westerfield Dr., Wilmette, Ill. 60091
Continuation-in-part of Ser. No. 549,963, Feb. 14, 1975, abandoned. This application Jun. 28, 1976, Ser. No. 700,462
Int. Cl.² B65G *27/32*
U.S. Cl. 198—761 **20 Claims**



4. In combination

guide means for defining the path of travel of objects positioned upon said guide means,

support means for resiliently supporting said guide means for movement of said guide means relative to said support means along a generally, planar reciprocative path,

a self-contained inertial drive system including a housing defining a hollow, cylindrical configuration having two ends,

an armature,

resilient means for mounting said armature within said housing, said armature supported for movement along a generally, linear reciprocative path, said armature being located on an axis of said cylindrical housing, said generally linear reciprocative path being directed along a diameter of an end of said cylindrical housing, and

means for moving said armature along said generally linear reciprocative path, and

means for rigidly mounting said self-contained inertial drive system to said guide means to thereby transmit the vibrations resulting from the reciprocative movement of said armature through said housing to said guide means, said inertial drive system mounting means further comprising means for angularly adjusting the mounted position of said cylindrical housing relative to said guide means thereby angularly adjusting said armature path relative to said guide means.

4,128,162
VIBRATORY OUTFEED

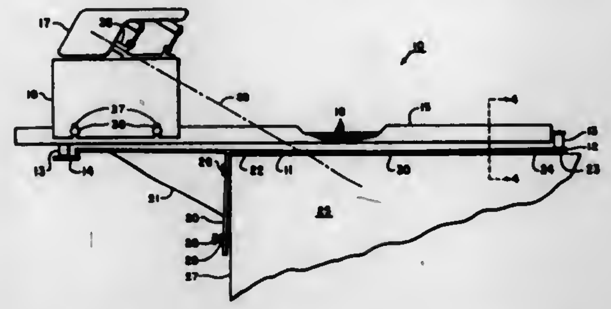
Paul N. Winberg, Fayetteville, N.Y., assignor to Lipe Rollway Corporation, Syracuse, N.Y.
Filed Jul. 29, 1977, Ser. No. 820,368
Int. Cl.² B65G *27/00*
U.S. Cl. 198—763 **12 Claims**

1. A vibratory outfeed conveyor having a base, resilient means for mounting a feedstrip on said base, and a vibrator connected to said feedstrip for vibrating said feedstrip to outfeed objects, said conveyor comprising:

a. a mounting bracket connected with and generally perpendicular to said base and extending downward from said base;

b. means for securing an upper region of said mounting bracket to a vertical surface of a support element so that said base extends horizontally over an upper surface of said support element;

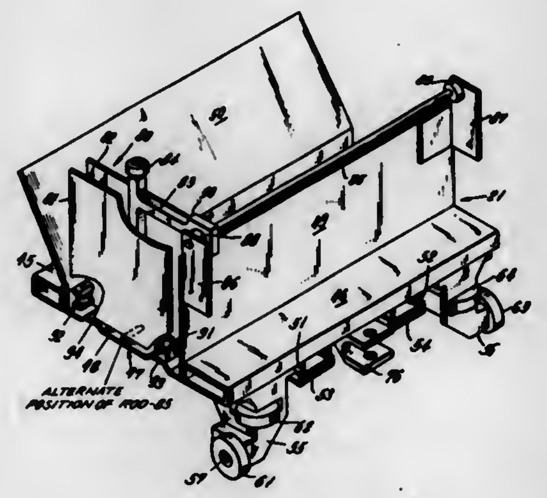
c. a free end of said base being supported above said upper surface of said support element by spacer means so that a midregion of said base between said mounting bracket and said free end is bendable downward toward said upper surface; and



d. screw means engaging said vertical surface and a lower region of said mounting bracket for moving said lower region of said mounting bracket away from said vertical surface while said upper region is secured to said vertical surface to apply leverage force to said base to bend said midregion of said base toward said upper surface and to press said free end of said base downward to hold said free end securely in place relative to said upper surface.

4,128,163
CART CONVEYOR SYSTEM

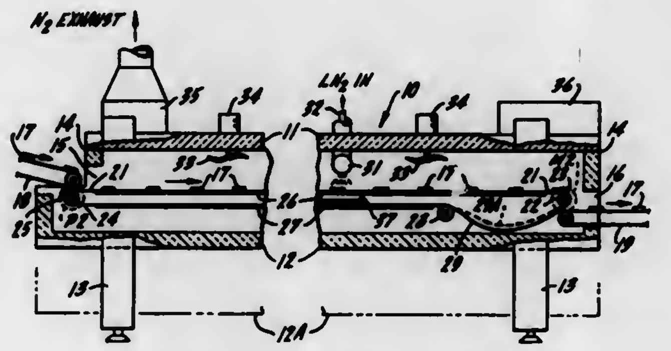
Victor F. Rana, Merrimack, and Paul D. Siniscal, Hollis, both of N.H., assignors to Rockwell International Corporation, Pittsburgh, Pa.
Filed Apr. 11, 1977, Ser. No. 786,645
Int. Cl.² B65G *17/00*
U.S. Cl. 198—796 **4 Claims**



1. A newspaper mailroom conveyor system having means supporting newspaper bundle carrying conveyor carts and means causing them to move in a closed path between bundle loading and discharge stations, conveyor carts, and means defining loading and discharge stations at selected locations around the closed path, the system being characterized by having an improved conveyor cart comprising a bottom platform, a rear wall extending substantially vertically upwardly from said bottom platform, a front wall extending initially vertically upwardly from said bottom wall and then forwardly in a direction forming an acute angle between it and the plane of the bottom platform, pusher plate means defining a side wall substantially closing the space between said front and rear walls, means mounting said pusher plate whereby it can be moved laterally from side to side of said bottom plate, said means for mounting said pusher plate for lateral movement comprises, rollers journaled on the lower end of said pusher plate means for rotation about axes that are oriented normal with respect to each other, the outer surface of one of said rollers riding in contact with the vertical portion of said front wall and the other of said rollers riding in contact against said bottom platform, and guide bar means extending across the transverse width of the conveyor cart and slidably engaged with said pusher plate means to insure smooth transverse movement of said pusher plate means from one side of the bottom platform to the other, means forming a part of said pusher plate means for engaging actuating cam surfaces located at the discharge stations of the conveyor system to move said pusher plate laterally and cause discharge of the newspapers carried in the conveyor cart, and selectively operable cam surfaces located at the discharge station to effect operation of said pusher plate means when desired.

4,128,164
CONSTANT-TENSION CONVEYOR DRIVE FOR THERMAL PROCESSING APPARATUS

Glenn A. Sandberg, Lockport, Ill., assignor to Formax, Inc., Mokena, Ill.
Filed Nov. 2, 1977, Ser. No. 847,719
Int. Cl.² B65G *23/44*
U.S. Cl. 198—813 **7 Claims**



1. A self-compensating, constant-tension conveyor drive system for a thermal processing apparatus of the kind comprising an elongated, insulated chamber which is normally maintained within a temperature range greatly different from ambient, a drive pulley at one end of the chamber, a tensioning pulley at the other end of the chamber, and an endless conveyor belt extending longitudinally of the chamber around both pulleys, the belt being appreciably longer than the spacing between the two pulleys to allow for substantial thermal expansion and contraction of the belt, the conveyor drive system comprising:

a main fluid pump, independently driven;

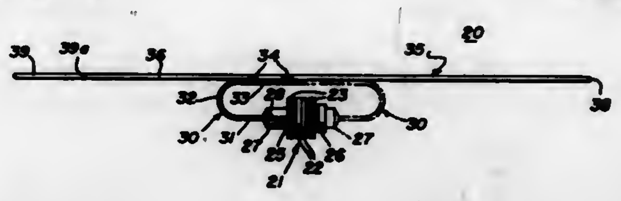
a fluid motor having an inlet port connected to the main pump, an outlet port, and a drive shaft connected in driving relation to the conveyor drive pulley;

a rotary tension control pump driven from the tensioning pulley;

and a pressure-actuated flow control device connected to the outlet of the tension control pump to inhibit rotation of the tension control pump and the tensioning pulley by inhibiting output flow from the tension control pump until a predetermined tension is established in one run of the conveyor belt.

4,128,165
CHAIN CONVEYOR ASSEMBLY

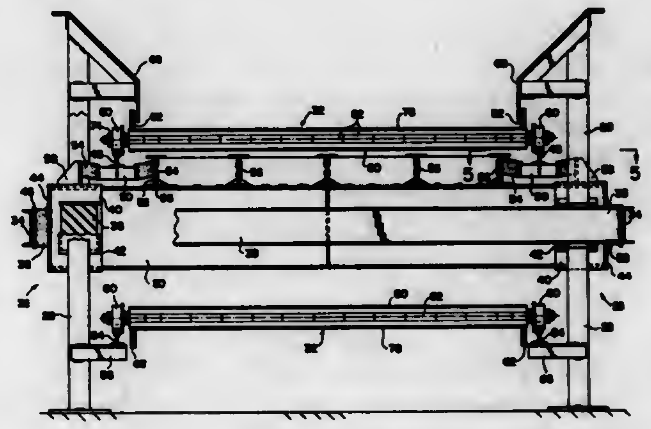
Maynard R. Euverard, Williamsburg, Va., assignor to Velten & Pulver, Inc., Chicago Ridge, Ill.
Filed Jun. 27, 1977, Ser. No. 810,437
Int. Cl.² B65G *17/14*
U.S. Cl. 198—844 **25 Claims**



1. Apparatus for providing a support surface for carrying goods and the like on an articulated chain conveyor having a plurality of links joined together by connecting pins extending laterally of the conveyor and each having a socket formed axially therein for receiving an end of an associated wire rod, said apparatus comprising a rod structure having two ends respectively received in the sockets of two adjacent ones of the associated pins, said rod structure having a support portion overlying the chain in use and extending laterally therebeyond substantially parallel to the axes of the associated pins to provide a support surface, a plurality of said rod structures mounted on the chain providing a conveying surface for transporting articles.

4,128,166
ENDLESS BELT CONVEYOR SYSTEM

Lawrence H. G. Kovats, Mentor, Ohio, assignor to Mayfran, Incorporated, Cleveland, Ohio
Continuation of Ser. No. 718,111, Aug. 27, 1976, abandoned. This application Oct. 31, 1977, Ser. No. 847,325
Int. Cl.² B65G *41/00*
U.S. Cl. 198—860 **15 Claims**

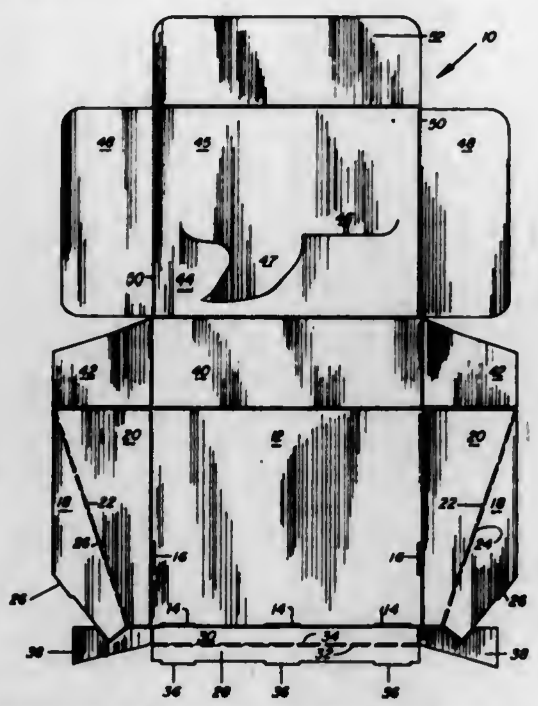


1. A conveyor comprising: an endless conveyor belt traveling along a conveyor track, a plurality of supports for said track and a plurality of sets of rubber shear blocks located between said track and each of said supports and acting in shear to resiliently support said track thereon, a first set of said rubber blocks acting in shear only in the lateral and vertical directions relative to the length of said conveyor and another set of said rubber blocks acting in shear only in the longitudinal and vertical directions relative to the length of said conveyor, the said plurality of rubber blocks, in combination, coacting to resiliently support the said track in the said lateral, longitudinal and vertical directions relative to the length of said conveyor.

4,128,167

SHIPPING AND DISPLAY CARTON FOR PLANTS AND THE LIKE

Rodney C. Hogshead, III, P.O. Box 366, Plymouth, Fla. 32768
Filed Jan. 16, 1978, Ser. No. 869,669
Int. Cl.² B65D *5/22, 5/52*
U.S. Cl. 206—44 R 15 Claims



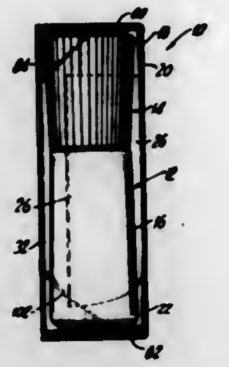
1. A shipping and display carton comprising:
a bottom wall;
a back wall joined to said bottom wall and substantially normal thereto;
opposing first and second side walls, each joined substantially normal to said bottom and back walls;
a top wall joined along one edge thereof to said back wall, said top wall having an inner face toward said bottom wall when said top wall is parallel thereto, and an outer face with a printed message thereon opposing said inner face, said top wall having first and second flaps along opposing edges thereof, which opposing edges are normal to said one edge of said top wall, said side flaps extending parallel to and in abutment with the corresponding one of said first and second side walls when said top wall is in a shipping position parallel with said bottom wall;
means permitting bending of the top wall along a line substantially parallel with said one edge thereof, whereby said outer face may be bent into two portions and folded into a display position substantially parallel to said end wall with said message facing outward therefrom;
means within the void designed by said walls for holding said bent top wall in said display position; and
means for facilitating removal of said flaps from said top wall, said removal means comprising a perforated tear line along each said opposing edge of said top wall.

4,128,168

DISPLAY CARTON WITH RETAINING PANELS

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Nov. 4, 1977, Ser. No. 848,502
Int. Cl.² B65D *5/50*
U.S. Cl. 206—45.14 11 Claims

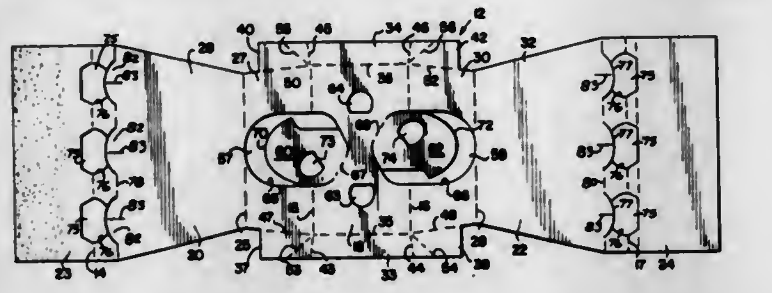
1. An improved display carton with retaining panels for an elongated bottle having at one end a cap, while the other end thereof is a closed based portion, the carton having front, back, and side panels arranged in a generally rectangular tubular configuration with end flaps closing the top and bottom ends thereof, and with the width of the carton being greater than the width of said cap, while the length of the carton substantially corresponds to the length of the elongated bottle, the improvement wherein said retaining panel structure is located at the top of said carton and inside the top closure flaps, said top retaining panel structure including a first flap hingedly connected to said back panel along the top edge thereof and lying on the inside of the top closure of the carton, a glue flap hingedly connected to said first flap and arranged horizontally on and secured to the inside of said first flap, with the glue flap being of smaller length than said first flap from front to back of said carton, and two spaced, projecting tabs disposed on opposite ends of said glue flap and hingedly connected thereto, said projecting tabs being of sufficient length to form a right triangle with said first flap and the back panel thereby providing a central opening corresponding to the configuration of the cap of the elongated bottle, and adapted to receive same.



4,128,169

BOTTLE PACKAGE

Edwin L. Arneson, Morris, Ill., assignor to Federal Paper Board Company, Inc., Montvale, N.J.
Filed Nov. 17, 1977, Ser. No. 852,287
Int. Cl.² B65D *75/14*
U.S. Cl. 206—141 10 Claims

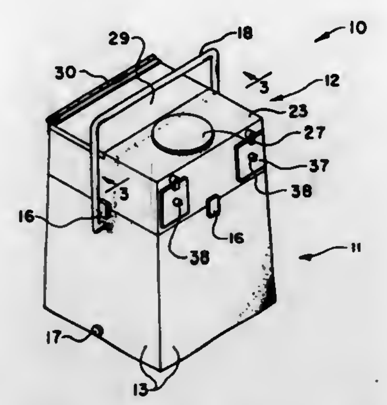


1. A package comprising an assembly of bottles arranged in double row transversely paired alignment and a tubular carton enclosing the bottle assembly which carton is formed from a single blank of foldable sheet material with a top wall forming panel, depending sidewall forming panels and connected bottom wall forming panels, which are wrapped about the top, sides and bottom of the bottle assembly, means formed, at least in part, in said bottom wall panels for restraining the bottom ends of the endmost bottles against outward movement, means associated with the top wall panel for restraining the top ends of the endmost bottles against outward movement, said top wall panel having a pair of openings which are in the central area in the direction lengthwise of said panel through which bottles may be removed without damaging the carton, said openings being spaced transversely of said top wall panel and extending on opposite sides of the carton, said top wall panel having finger accommodating openings spaced in the lengthwise direction of said top wall panel and finger hole reinforcing panels which are taken from the otherwise waste materials cut out to form the bottle removing openings in the top wall and which are hinged to the edges of the bottle removing openings and swung into position against the inside face of the top wall panel where they underlie at least portions of the panel area around the finger accommodating openings.

4,128,170

COMBINATION TACKLE BOX, BAIT HOLDER, COOLER AND SEAT MEANS

Charles Elliott, 6827 Radial Dr., Fayetteville, N.C. 28301
Filed Feb. 10, 1978, Ser. No. 876,675
Int. Cl.² A63D *55/00;* B65D *85/00*
U.S. Cl. 206—315 R 5 Claims

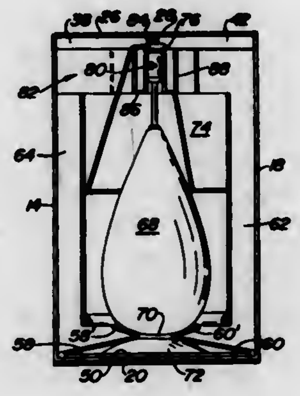


1. A combination fisherman's appliance comprising: a top loading type cooler means; a combination cooler closure means having a bottom portion adapted to meshingly engage and cover the open top of said cooler, side portions, a front portion, a rear portion, and a fixed partial top portion; a bait well wall extending between side portions and said top and bottom portions; an openable top portion hingedly disposed between said bait well wall and said rear portion whereby a bait well is formed with top access thereto being provided; drawer means slidingly disposed through said front portion and extending inwardly therefrom to a point adjacent the bait well wall whereby fishing tackle may be stored in said closure; and aperture means in said fixed top portion and said bottom portion providing access to the interior of said cooler without removing said cooler closure means.

4,128,171

PACKAGED LIGHT FIXTURE

Mark Evans, Thousand Oaks, Calif., assignor to Kidde Consumer Durables Corp., Bala Cynwyd, Pa.
Filed Oct. 27, 1977, Ser. No. 845,993
Int. Cl.² B65D *85/30, 81/06*
U.S. Cl. 206—320 10 Claims

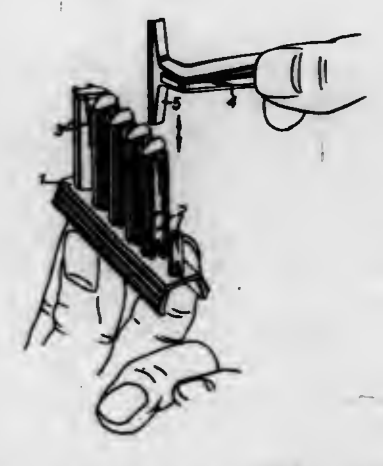


1. A packaged light fixture comprising:
(a) a container having a closable lid,
(b) a U-shaped liner which is channel-shaped in section, said liner being disposed within the container, a portion of said liner overlying a bottom of the container and a portion of oppositely disposed walls of the container,
(c) a lamp, a shade for said lamp, said shade surrounding said lamp and being spaced from the upright walls of the container by said liner,
(d) a shade support for supporting said shade from said lamp base, said shade support being separate from the shade and being disposed within said container,
(e) a removable brace overlying said shade and embracing the upper end of said lamp base to impede movement of said lamp base in a second transverse direction which is generally perpendicular to said first direction.

4,128,172

HOLDER FOR SHAVING UNITS

Michael F. Joyce, Reading, England, assignor to The Gillette Company, Boston, Mass.
Filed Sep. 26, 1977, Ser. No. 836,792
Claims priority, application United Kingdom, Sep. 28, 1976, 40093/76; Mar. 22, 1977, 12105/77
Int. Cl.² B65D *85/54*
U.S. Cl. 206—352 9 Claims

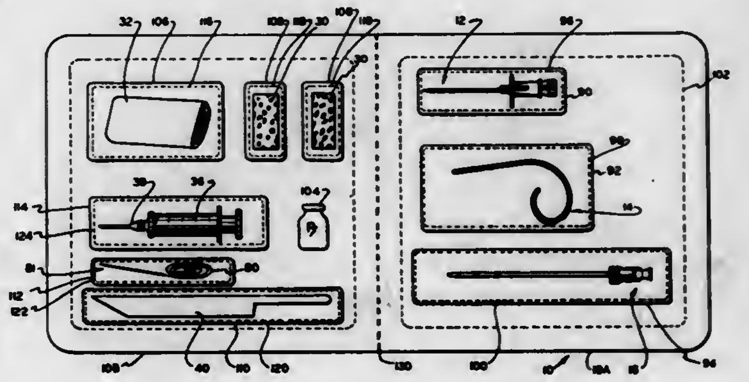


1. A dispenser and a shaving unit, said shaving unit having slide coupling means thereon for attachment to a razor handle, said slide coupling means comprising a pair of opposed grooves, said dispenser comprising a base portion, and elongated tongue means extending outwardly from a first surface of said base portion, said tongue means and said shaving unit being substantially normal to said base portion, said tongue means having a first end free and a second end fixed to said base portion and having parallel edges slidingly engaging said grooves, thereby releasably retaining said shaving unit thereon by frictional engagement of said tongue means edges with said grooves of said slide coupling means of said shaving unit.

4,128,173

PERITONEAL FLUID TREATMENT APPARATUS, PACKAGE AND METHOD

Harrison Lazarus, 1474 Pearose Dr., Salt Lake City, Utah 84103, and James A. Nelson, 1708 Forest Hills Dr., Salt Lake City, Utah 84106
Continuation of Ser. No. 626,323, Oct. 28, 1975, abandoned.
This application Sep. 13, 1976, Ser. No. 722,752
Int. Cl.² A61B *19/02;* B65D *1/34*
U.S. Cl. 206—570 6 Claims



1. A peritoneal fluid treatment kit comprised of:
a first openable package having a bottom and a top which are substantially of similar shape and dimension sealed to each other about their perimeters to form an interior having a volume sized to receive contents, said top being

made of transparent material to permit viewing of the contents which are for peritoneal fluid treatment and which are positioned within said interior of said package, said contents including:

an intravascular catheter apparatus which includes a first cannula and placement means for inserting a portion of said first cannula into the peritoneal cavity of a patient,

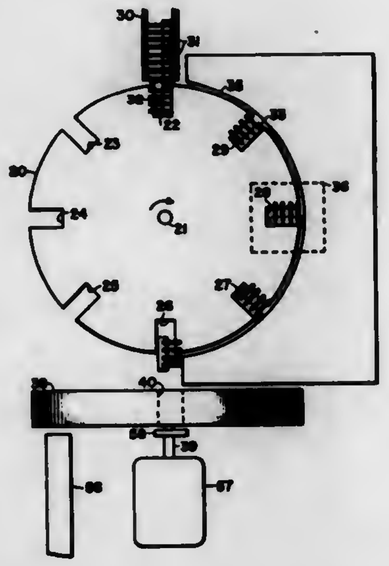
a flexible guide means for insertion into the peritoneal cavity through said first cannula after removal of said placement means, said guide means being sized in cross-section to fit within said first cannula and in length to be substantially longer than said first cannula,

a second cannula which is flexible for insertion into the peritoneal cavity over said guide means after removal of said first cannula, said second cannula being sized in length to be substantially longer than said first cannula and in cross-section sufficient to allow said guide means to pass there through and having a first end to pass into the peritoneal cavity and a second end to which connector means are adapted for connection to parenteral fluid operation means; and

wherein said intravascular catheter, said flexible guide means and said second cannula are objects each positioned within the interior of said first package and each contained within their own separate openable package each of which has a bottom and a top which are of similar shape and dimension and sealed to each other about their perimeters to form an interior having a volume sized to receive its respective object therewithin, said top being made of transparent material to permit viewing of the respective objects and which is oriented within said first openable package for viewing through the top of said first openable package.

4,128,174
HIGH-SPEED INTEGRATED CIRCUIT HANDLER

Milo W. Frisbie, and Mavin C. Swapp, both of Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 28, 1977, Ser. No. 772,696
Int. Cl.² B07C *5/344*
U.S. Cl. 209—573 **6 Claims**



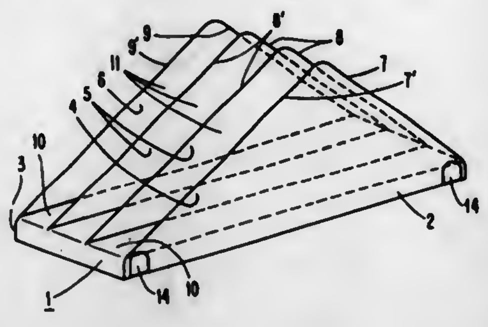
1. An apparatus for handling a series of individual parts for testing at a test fixture and sorting which comprises:

a first vertical wheel provided with slots disposed arounds its periphery for singulating said parts, presenting them for tests at said test fixture, and moving them away from said test fixture; and

a second horizontal wheel for sorting said parts into a plurality of selected categories, said second wheel being positioned below said first wheel and having holes provided about its periphery for accepting said parts dropped from said first wheel.

4,128,175
STAND FOR HOLDING GRAMOPHONE RECORDS AND MAGNETIC TAPE CASSETTE CASES

Eduard H. Schweizer, 5101 Boarshead Rd., Minnetonka, Minn. 55343
Filed Dec. 13, 1977, Ser. No. 860,733
Claims priority, application Switzerland, Dec. 21, 1976, 16069/76
Int. Cl.² A47F *7/00*
U.S. Cl. 211—40 **4 Claims**



1. A multi-purpose stand for alternative storage of gramophone records encased in rectangular envelopes and tape cassettes encased in rectangular storage boxes, said stand being adapted for standing in at least two different positions on a flat surface, comprising:

a generally rectangular base plate provided with a plurality of parallel members projecting perpendicularly from one side of said base plate parallel to opposite edges thereof and defining together with said base plate one side compartment for the storage of gramophone records encased in rectangular envelopes when said stand is supported in a first position with said base plate one side up,

at least a portion of the outer edges of two of said members being in a coplanar relation and arranged to rest on a flat surface for supporting said stand stabily in a second position with the other side of said base plate up,

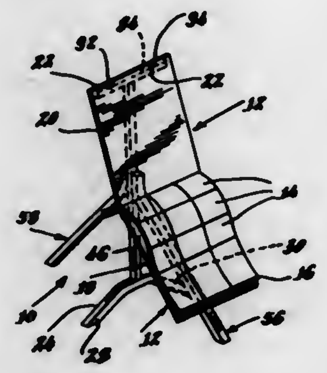
said base plate being provided with at least a pair of like rails extending perpendicularly from said base plate other side along at least a pair of opposite edges thereof,

the outer edges of said rails being in a coplanar relation and arranged to rest on a flat surface for supporting said stand stabily in said first position with said base plate one side up,

a plurality of rib means extending inwardly from said rails and defining therewith, together with said base plate other side, rack compartments for the storage of tape cassette boxes when said stand is supported in said second position with said base plate other side up.

4,128,176
DISPLAY RACK

Edward N. Green, 121 Leafmore Rd., Rome, Ga. 30161
Filed Jul. 22, 1977, Ser. No. 818,102
Int. Cl.² A47F *7/16*
U.S. Cl. 211—45 **8 Claims**



1. A display stand for displaying samples of carpet bound in a book means, said book means having an upper edge, comprising:

a. a generally U-shaped base member having its open end disposed in a downwardly direction for contact with a flat surface;

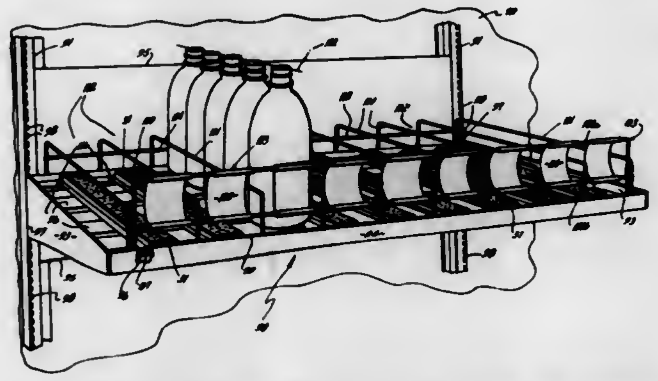
b. a vertical member having its lower end affixed to the central portion of said U-shaped base member;

c. a pair of leg members affixed to said vertical member and extending outwardly therefrom in a plane intersecting the plane formed by said vertical member and said base member at essentially a right angle and in contact with said flat surface for maintaining said vertical member upright, each of said leg members including a first portion affixed to said vertical member intermediate the ends of said vertical member, each of said leg members further including a second portion, disposed at an angle to said first portion, for supporting a portion of said book means, each of said second portions flaring away from said vertical member to said flat surface; and

d. a horizontal support member affixed to the upper end of said vertical member and disposed essentially in the same place as said base member, said horizontal support member having a length approximately equal to that of the upper edge of said book means, said support member being provided with upwardly extending spaced apart hook members disposed transversely to said support member and adapted to receive the upper edge portion of said book.

4,128,177
DISPLAY RACK WITH IMPROVED SHELF ASSEMBLY

Rafael T. Bustos, Clarkston, Ga., assignor to Leggett & Platt, Incorporated, Carthage, Mo.
Filed Oct. 21, 1977, Ser. No. 844,202
Int. Cl.² A47F *5/00*
U.S. Cl. 211—49 D **6 Claims**



1. A display rack with an improved shelf assembly that gravity feeds a column of containers one after another to the front edge of a shelf as that column's lead containers are successively removed by a customer, said display rack comprising

a conveyor belt disposed at an angle relative to the horizontal, said conveyor belt sloping generally upward from the front edge of said shelf, each container in said column being positioned in generally vertical fashion on said belt during use of said rack,

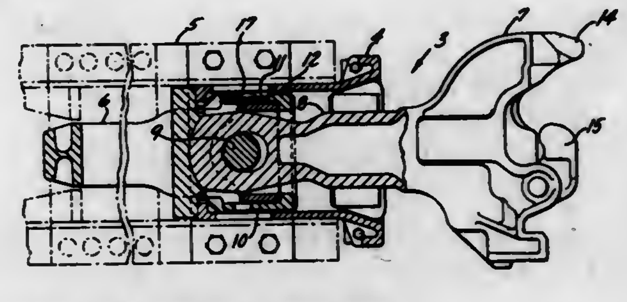
a support floor disposed beneath said conveyor belt, said conveyor belt and said support floor cooperating to support said containers in said column on the upper surface of said belt,

the upper surface of said conveyor belt having a high coefficient of friction that inhibits movement on said belt of said containers relative one to the other, and at least one of said support floor and the under surface of said conveyor belt having a low coefficient of friction that allows movement of said belt over said support floor when said belt is at least partially loaded with containers and when not restrained against movement, said friction coefficients being related so that said belt can slide over said support floor while said containers remain generally stationary relative one to the other on said conveyor belt after removal of the column's lead container during use of said rack, and

a bumper rail disposed adjacent the front edge of said shelf, said conveyor belt conveying all of said containers in said column forward together toward said bumper in response to gravity on the remaining containers in said column after removal of the lead container from said column, said conveyor belt and said container column being stopped by contact of the container in back of the lead container with said bumper rail, thereby positioning a new lead container adjacent the front edge of said shelf.

4,128,178
ROTARY TYPE RAILWAY CAR COUPLER

Kenneth L. DePenti, Mayfield Heights, and William J. Metzger, Willoughby, both of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio
Filed Sep. 22, 1977, Ser. No. 835,579
Int. Cl.² B61G *9/00*
U.S. Cl. 213—62 A **12 Claims**



1. A rotary-type coupler, comprising;

(a) a yoke with a longitudinal axis;

(b) a coupler head with a shank which is insertable longitudinally within the yoke;

(c) means for mounting the shank of the coupler head within the yoke for rotation about the longitudinal axis of the yoke, said means including a removable pin for holding the shank within the yoke;

(d) an opening disposed in the yoke and through which the pin is removed from the shank and yoke;

(e) a pair of opposing arcuately shaped grooves disposed in the yoke adjacent the opening;

(f) a pair of abutments disposed adjacent the pair of grooves;

(g) a retainer plate having opposing, arcuately configured sides which are insertable in the grooves by rotation of the plate;

(h) a stop carried by the retainer plate for engaging one of the pair of abutments to restrict rotation of the retainer plate in one direction; and

(i) means coacting with the retainer plate for engaging the other of the pair of abutments to restrict rotation of the retainer plate in a direction which is opposite said one direction, when the stop engages said one of the pair of abutments.

4,128,179
BALE LOADER

C. Keith Gilbert, Box 140, Rte. 1, Tonkawa, Okla. 74653
Filed Apr. 14, 1977, Ser. No. 787,469
Int. Cl.² E02F *3/72*
U.S. Cl. 214—1 HH **17 Claims**

1. An apparatus for use with a standard tractor three point bale fork for lifting a hay bale onto the bed of a motor truck comprising:

a frame;

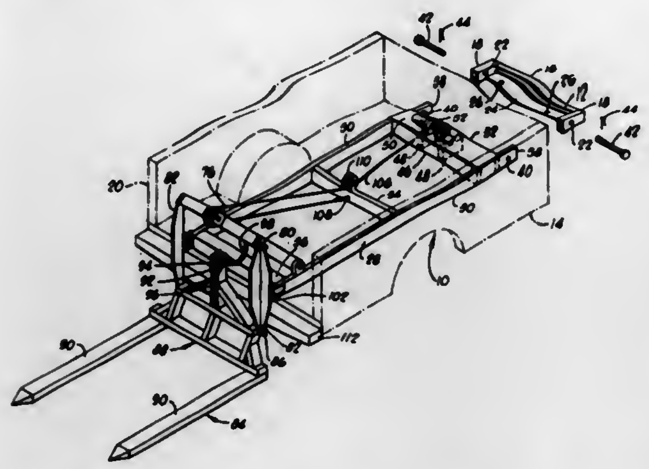
means for mounting said frame on said bed;

a boom pivotally attached to said frame;

a rigid connecting member having two ends, the first of which is pivotally attached to said boom and the second of which is pivotally attached to said bale fork;

means for controlling the angular position of said bale fork relative to said rigid connecting member about the point of said pivotal attachment therebetween;

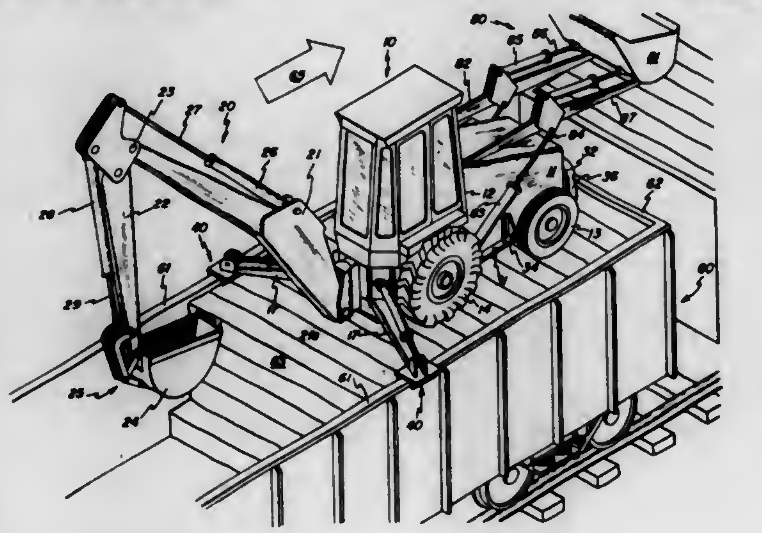
means for rotating said boom about said pivotal attachment to said frame to raise or lower said connecting member and said bale fork relative to said frame; and



a roller, attached to one of said frame and said truck, rollably engaged by said rigid connecting member, to partially support the weight of said rigid connecting member, said bale fork and said bale.

4,128,180
APPARATUS FOR ADAPTING MATERIAL HANDLING EQUIPMENT FOR CONTAINER UNLOADING AND METHOD OF USING

Donald Mellious, Box 266, Selkirk, N.Y. 12158
Filed Aug. 10, 1977, Ser. No. 823,280
Int. Cl.² B65G *67/24*
U.S. Cl. 214—44 A **15 Claims**



1. Apparatus for adapting a material handling equipment item for unloading open top containers,

said material handling equipment item having a tractor portion and at least a first material working portion;

said tractor portion having an undercarriage including frame, engine, axle, transmission, and rear housing members, means attached to said axle members for propelling said material handling equipment item across a surface, said tractor portion further having moveable stabilizer arms attached thereto;

said first material working portion having first and second pivotably connected arms connected to each other at a first end of each arm, a material grasping member pivotably connected to a second end of said second arm, a second end of said first arm being pivotably connected to said tractor portion, and means for causing relative motion between said arms, between said tractor portion and said first arm, and between said second arm and said material grasping member;

said open top container having end walls, and side walls; said apparatus for adapting comprising:

a substantially smooth continuous skidplate member attached to said undercarriage and underlying said engine, axle, transmission, and rear housing members; and

first and second clamp members respectively attached to ends of a first and second of said stabilizer arms for engaging said side walls when said stabilizer arms are lowered.

8. A method of unloading an open top container having end walls and side walls by means of an item of self propelled material handling equipment having a tractor portion, first and second material handling members, a skidplate member underlying said tractor portion, and clamp members adapted to releasably engage said side walls comprising the steps of:

mounting said item of material handling equipment upon said open top container by the operation of the self propelling means of said item of material handling equipment;

stabilizing said item of material handling equipment upon said open top container by resting said skidplate upon material within said open top container and engaging said sidewalls with said clamp members;

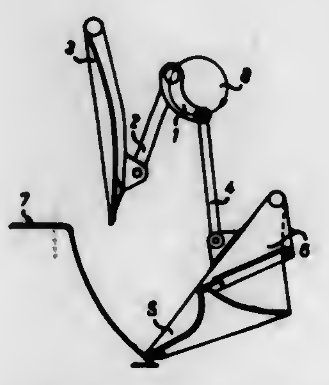
removing a portion of said material from said open top container by operation of said second material handling member;

driving said item of material handling equipment to another position upon said open top container; and

removing another portion of said material from said open top container by operation of said second material handling member.

4,128,181
APPARATUS FOR LOADING AND COMPRESSING SOLID WASTE IN A BOX-LIKE STRUCTURE

Mario Beronia, Rome, Italy, assignor to BAT Brevets et Applications Techniques S.A., Montreux, Switzerland
Filed May 19, 1977, Ser. No. 798,453
Claims priority, application Switzerland, May 28, 1976, 6691/76
Int. Cl.² B65F *3/00*
U.S. Cl. 214—83.3 **2 Claims**



1. Apparatus for loading and compressing solid waste in a box-like container mounted on a road vehicle for the collection and transportation of the waste, said container having spaced oppositely facing side walls and a rearward facing opening, said apparatus comprising:

a stationary inlet mounted in said opening in said container, said inlet having an inner end;

shaft means rotatably mounted on each side wall of said container;

means for rotating said shaft means;

supporting link means mounted to said shaft means for rotation therewith, said link extending between two peripheral points on said shaft means;

a lifting shovel disposed between and pivotably connected at one end to each side wall of said container, the bottom of said shovel comprising two concave sections meeting at a point approximately midway between said one end and the free end of said shovel, said first concave section being adjacent said one end of said shovel and said inner end of said stationary inlet being closely adjacent said first concave section during operation of said apparatus;

a compression shovel disposed between and pivotably connected at one end to said container side walls, the free end thereof extending toward said lifting shovel;

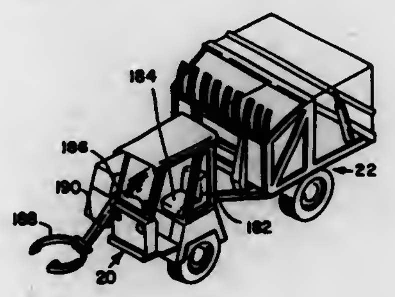
first rod means having one end pivotably connected to one end of said supporting link at one of said peripheral points, the other end of said first rod being pivotably connected to said compression shovel at a location spaced from said one end thereof; and

second rod means having one end pivotably connected to the other end of said supporting link at the other of said peripheral points, the other end of said second rod being pivotably connected to said lifting shovel at a point spaced from said one end thereof;

whereby when said shaft means is rotated, said first and second rods and said lifting and compression shovels are caused to move in an oscillatory manner, said first concave section of said lifting shovel being curved in such a manner as to slide beneath and closely adjacent said inner end of said stationary inlet, said second concave section moving alternatingly toward and away from said opening in said container, said first and second rods being dimensioned and connected to said compression and lifting shovels in such a manner that said free end of said compression shovel substantially sweeps along said second concave section of said lifting shovel when said free end of said lifting shovel moves to the vicinity of said opening in said container.

4,128,182
TRASH COLLECTING AND HANDLING VEHICLE

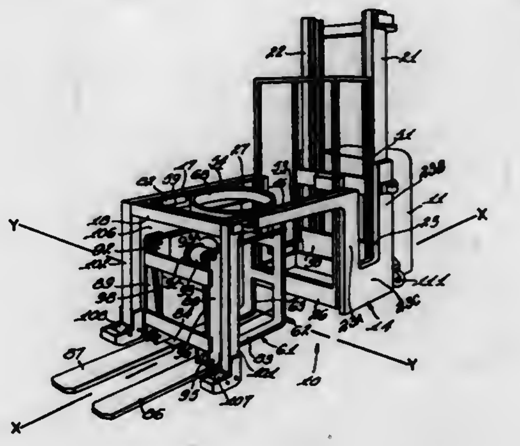
John W. Pickrell, 4206 N. 68th St., Scottsdale, Ariz. 85251
Continuation of Ser. No. 710,654, Aug. 2, 1976, abandoned. This application Dec. 5, 1977, Ser. No. 857,207
Int. Cl.² B65F *3/02*
U.S. Cl. 214—302 **15 Claims**



1. A four wheel drive trash collecting and handling vehicle having: forward and rearward portions; a frame for said vehicle; a pair of front wheels connected to said frame and supporting said forward portion of said vehicle; a pair of rear wheels connected to said frame and supporting said rearward portions of said vehicle; said front wheels and said rear wheels both being pivotally steerable relative to each other; said frame comprising a front axle housing provided with a differential mechanism connecting said front wheels for driving the same and a rear axle housing provided with a differential mechanism connecting said rear wheels for driving the same; a first hydraulic motor for driving said differential of said front axle housing; a second hydraulic motor for driving said differential of said rear axle housing; an engine carried on said frame; a hydraulic pump means coupled to said engine; and said first and second motors being hydraulic motors coupled to said pump means to receive hydraulic fluid under pressure from said pump means; a driver's support and controls disposed at one side of said forward portion of said vehicle; a cab housing said driver's support and controls and having inner and outer sides; a container grasping and pickup means moveably mounted on said forward portion of said vehicle; actuating means on the end of an arm pivoted to said front portion at the inner side of said cab and projecting forwardly of said front portion, said pickup means including said arm; said actuating means disposed to move said container grasping means upwardly and backwardly toward said rearward portion of said vehicle; said actuating means being provided with means for moving said container grasping means so as to transfer a container from an upright position to a substantially upside-down position over said rearward portion of said vehicle; said rearward portion of said vehicle having supporting frame means for removably supporting a removable trash receiver in position to receive trash emptied from a container when moved upward and backward and upside-down by said container grasping and actuating means and further whereby said removable trash receiver is easily removed from said supporting frame means by lifting therefrom when said removable trash receiver is full.

4,128,183
STRADDLE-TYPE LIFT TRUCK WITH A APPARATUS FOR HANDLING LOADS AT THE FRONT AND SIDES THEREOF

Thomas J. Finlayson, Palos Hills, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Dec. 16, 1976, Ser. No. 751,134
Int. Cl.² B66F *9/06*
U.S. Cl. 214—730 **2 Claims**



1. In a high-lift load-handling apparatus;

a mobile frame having spaced-apart side members with each side member having a forward vertical support leg, each leg being provided with mobile supports, said frame having a major axis and a minor axis;

support wheels operably connected to a respective one of said vertical support legs;

a mast structure having at least one extensible element carried by said frame;

a power actuator carried by said frame and operably connected to effect the controlled movement of said extensible element of said mast structure in an extending and retracting movement;

an operator carrier supported by said frame between said side members for vertical movement;

a vertically movable load elevator carrier by said extensible element of said mast structure to movement with it;

means on said load elevator engageable with said operator carrier to effect vertical movement of said operator carrier;

a load carrier supported by said load elevator for movement with said load elevator and for independent movement about a vertical axis and in a direction parallel to the major axis of said frame;

a load access opening defined by each of said frame side members and said forward vertical support legs also define between them a load access opening through which said load carrier can be moved in a load-engaging or load-depositing operation;

actuating means carried by said load elevator and operably connected to said load carrier for effecting the selective independent movement of said load carrier about a vertical axis and in a direction parallel to the major axis of said frame;

an elongated guide means secured to said load elevator and extending in a direction parallel to the major axis of the apparatus;

slide means slidably engaged on said guide means;

slide power actuating means carried by said load elevator and operably connected to effect selective movement of said slide means relative to said guide means in either direction along said major axis;

a circular bearing cage secured to said slide means for movement with said slide means;

a drive ring gear rotatably supported in said circular bearing cage for selective rotation in either direction about a vertical axis;

antifriction bearings operably captured between said bearing cage and the external surface of said drive ring gear and operable to support said drive ring gear;

a ring gear power drive motor carried by said slide means of said load elevator and operably connected to effect rotation of said drive ring gear relative to said slide means; and,

means securing said load carrier to said drive ring gear;

whereby said drive ring gear can be rotatably driven to effect the movement of said load carrier to any desired angular position with respect to the major and minor axis of the apparatus and said slide can be moved with respect to the major axis of the apparatus to effect a desired positioning of the angularly positioned load carrier with respect to the major axis of the apparatus.

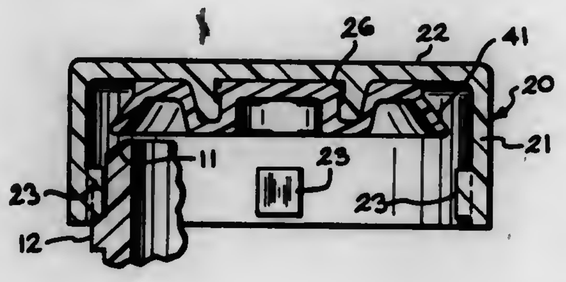
4,128,184
CHILD-PROOF CONTAINER AND CAP

John D. Northup, 2460 Underhill Rd., Toledo, Ohio 43615

Filed May 15, 1978, Ser. No. 905,750

Int. Cl.^{2} B65D *55/02, 85/56;* **A61J** *1/00*

U.S. Cl. 215—222 **2 Claims**



1. A child-proof container and closure combination comprising, a vial having an open end defined by an outwardly tapered surface having an angle of taper of 55° or less to the longitudinal axis of the container, a closure comprising a body having an upper panel spanning the vial opening and depending side walls for attachment to the vial, a peripheral series of retaining elements on the vial spaced axially from the tapered sealing surface thereof, said retaining elements having notches therein, a peripheral series of lugs on the interior side wall surfaces of the closure corresponding in spacing and number to said notches and cooperating therewith to form a closure which requires both an axial and rotational movement for release of the closure from the vial, a separate seal element retained within the closure and spanning at least the vial opening, said seal element having a resilient tapered sealing fin integral therewith and extending downwardly and outwardly at an angle from 10° to 20° less than the angle made by said vial sealing surface and being brought into sealing position by the seating of said lugs in said notches to form a seal that is "tight" or "well-closed" by industry standards and being held in said sealing position by the resiliency of said fin.

4,128,185
CONTAINER CLOSURE

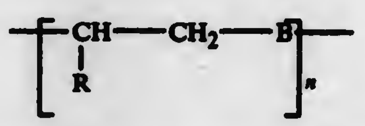
Walter R. Wszolek, Sykesville, Md., assignor to W. R. Grace & Co., New-York, N.Y.

Division of Ser. No. 756,934, Jan. 5, 1977, Pat. No. 4,077,935, which is a division of Ser. No. 563,018, Mar. 28, 1975, Pat. No. 4,020,966. This application Nov. 7, 1977, Ser. No. 849,384

Int. Cl.^{2} B65D *45/10;* **C08K** *5/04;* **B65D** *53/04, 59/06*

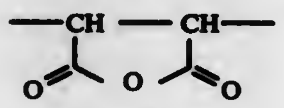
U.S. Cl. 215—349 **2 Claims**

1. A container closure comprising a cap having deposited therein a resinous mass functioning as a gasket to seal the container when the closure is in sealing relationship with the container, said resinous mass comprising a fluxed plastisol of a composition comprising (a) a copolymer resin of a normal α-olefin and maleic anhydride (1:1 mole ratio) having a particle size in the range of from about 0.1 to about 1500 microns and having the structure

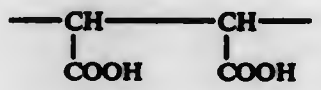


$$\left[-\underset{R}{\underset{|}{CH}}-CH_2-B-\right]_n$$

wherein B is a member of the group consisting of



and



$$-\underset{COOH}{\underset{|}{CH}}-\underset{COOH}{\underset{|}{CH}}-$$

R is H or C_xH_{2x+1}, x is 1 to 16 and n is 2–300, and (b) about 65 to 600 parts by weight of a polyester plasticizer per 100 parts by weight of the copolymer resin.

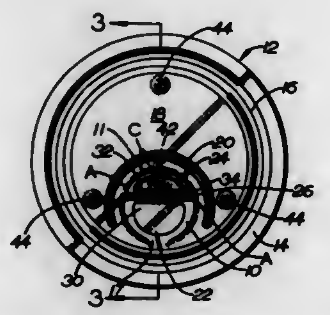
4,128,186
EASY OPEN END

Gordon R. Gane, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 838,184, Sep. 30, 1977, abandoned. This application Dec. 7, 1977, Ser. No. 858,317

Int. Cl.^{2} B65D *41/32*

U.S. Cl. 220—268 **29 Claims**



1. An easy open container component comprised of panel means and a depressible tab provided with a primary section and a primary hinge portion formed integrally with said primary tab section and the panel means, said tab further including a secondary section formed integrally with the primary tab section and a selectively weakened secondary hinge portion that runs substantially fully across and connects the secondary tab section to said primary tab section, said primary and secondary tab sections being fully severed from and selectively overlapped by said panel means except in the area of said primary hinge portion, sealant material covering the underside of said panel means at least in the area of severance of said primary and secondary tab sections for effecting a seal between said severed panel means and tab sections whereby the operator can apply a force either simultaneously to both tab sections or only to the secondary tab section in order to obtain an initial separation of the panel means and tab and a subsequent pivoting of the entire tab as a unit about the primary hinge portion to the extent desired.

4,128,187
SECONDARY BARRIER CONSTRUCTION FOR LOW TEMPERATURE LIQUIFIED GAS STORAGE TANK CARRYING VESSELS

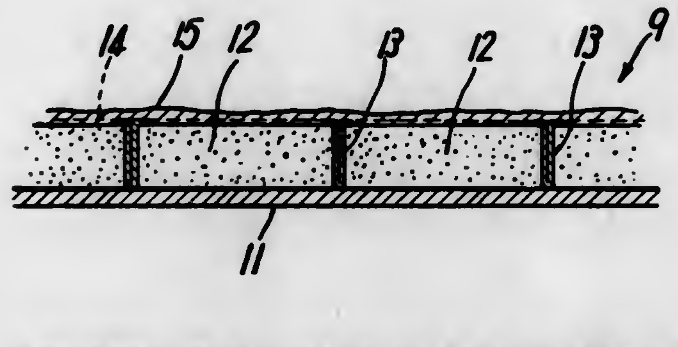
Tomiyasu Okamoto; Tsunanori Nishimoto; Kaoru Sawada; Koji Hayakawa, and Tomomichi Kurihara, all of Osaka, Japan, assignors to Hitachi Shipbuilding & Engineering Co., Ltd., Osaka, Japan

Filed Sep. 23, 1976, Ser. No. 725,979

Claims priority, application Japan, Oct. 2, 1975, 50-135606[U]

Int. Cl.^{2} B65D *25/18, 7/22, 25/00*

U.S. Cl. 220—464 **2 Claims**



1. A secondary barrier construction for a hold plate of a vessel having a hull including a tank supporting deck carrying a spherical low temperature liquified gas storage tank, said hold plate forming the inner shell of the hull and being of concave multi-surface construction and extending adjacent to the lower outer wall surface of the spherical storage tank up to the tank supporting deck;

heat insulating block plates of rigid urethane foam synthetic resin secured to said hold plate with joints between adjacent block plates;

heat insulating filling members placed in said joints and extending to said hold plate, said heat insulating filling members comprising single kraft paper-faced fiber glass folded to form a bent end and a pair of adjacent layers, said bent end extending to said hold plate and said adjacent layers being bonded to the opposed lateral surfaces of said block plates;

and a liquid tight, pressure resistant protective coating formed on the entire outer surface of said block plates and filling members, said protective coating consisting of an adhesive agent applied to the entire outer surface of said block plates and filling members, glass mesh applied to said adhesive agent, and an adhesive layer applied to the top of the glass mesh.

4,128,188
PILL DISPENSER

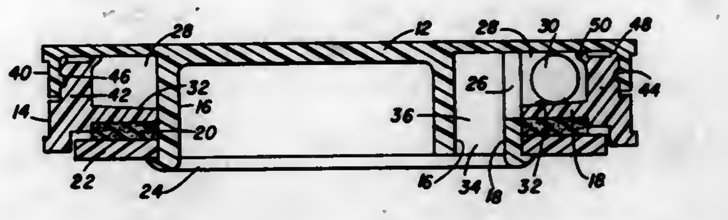
Leonard A. White, Gurnee, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 717,311, Aug. 24, 1976, abandoned. This application Nov. 30, 1977, Ser. No. 855,653

Int. Cl.^{2} B65D *83/04*

U.S. Cl. 221—91 **23 Claims**

1. A pill dispenser which comprises: a pair of relatively rotatable members for sequentially dispensing a different pill in response to the relative rotation of one member to each of a plurality of different angular positions relative to the other member; and means for normally preventing relative rotation between said members in both rotational directions and for enabling said relative rotational movement only in response to axial forces applied to said members in opposite axial directions, said means preventing rotation comprising a spring biasing said members toward each other, whereby axial forces applied to said members in opposite axial directions can overcome enough of said spring bias to enable relative rotational movement of said members.



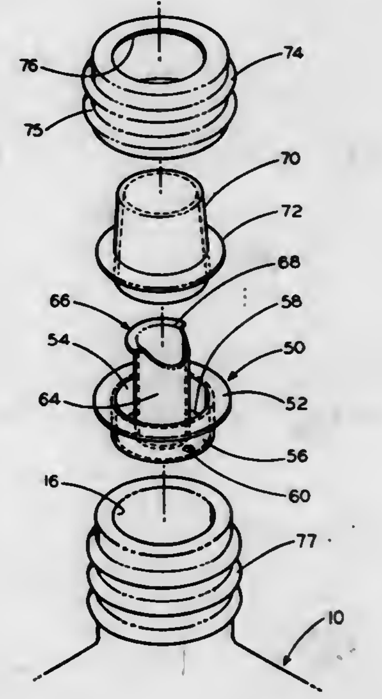
4,128,189
DEVICE FOR IMPROVING THE POURABILITY OF FLUIDS AND ALSO FORMING AN IMPROVED CLOSURE FOR A CONTAINER OF SUCH FLUIDS

Ernest W. Baxter, Van Wert, Ohio, assignor to National Plastics Corporation, Fort Wayne, Ind.

Filed Apr. 4, 1977, Ser. No. 784,287

Int. Cl.^{2} B65D *25/42*

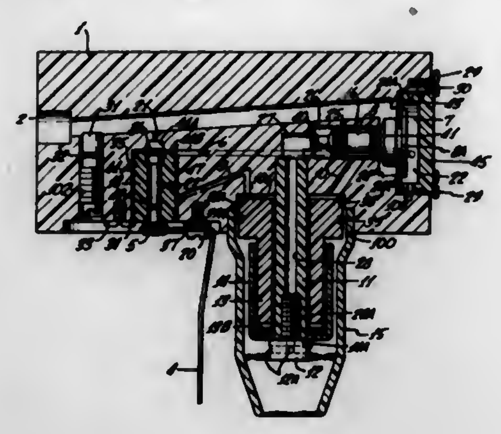
U.S. Cl. 222—109 **6 Claims**



1. In combination with a container having an externally threaded open end, an insert for such containers to promote the dripless dispensing of semi-viscous liquids such as oil, syrup, and the like, comprising a circular flange adapted to bear sealingly against the open end of the container, and an integrally related annular well proportioned to fit within the container and disposed below the open end of the container and including means forming a drainage opening within the base thereof, and a pouring spout formed from a reverse bend within said well integrally related to said insert, and extending substantially above the circular flange and having a pouring lip disposed diametrically from said drainage opening and with a sharp pouring edge which contributes to dripless pouring from the interior of the container through said spout and providing a run-back surface leading to said well where the fluid is returned to the interior of the container at the level of said well, and a screw-on cap threadedly received over the threaded exterior at the open end of said container and including a shoulder adapted to exert clamping effort against the pouring edge and which clamps the circular shoulder of said insert sealingly against the open end of the container and prevents pouring out of said spout until said cap is removed.

4,128,190
POST MIX SOFT DRINK DISPENSER

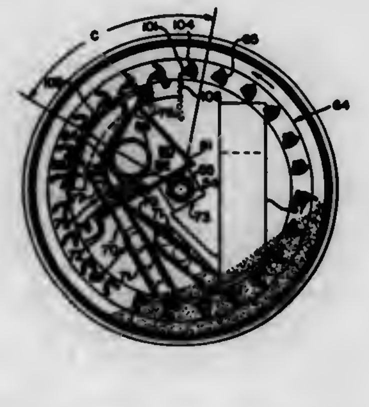
Vincent A. Gruber, 515 E. Washington St., Rochester, Pa. 15074
Filed May 13, 1977, Ser. No. 796,542
Int. Cl.² B67D *5/56*
U.S. Cl. 222—129.2 **15 Claims**



1. A dispenser comprising;
a body,
first and second valves in said body,
first bore means for applying a first fluid to each of said valves to established pressure thereat to maintain said first and second valves in a first position,
means for moving said first valve to a second position against the pressure established by said fluid,
second bore means communicating between said first and second valve only when said first valve is in said second position to relieve the pressure established at said second valve wherein said second valve moves to a second position,
nozzle means,
third bore means for applying a second fluid to said nozzle means only when said second valve is in said second position, and fourth bore means communicating between said second valve and said nozzle means only when said second valve is in said second position wherein said first and second fluids are mixed together in said nozzle means.

4,128,191
COLLECTOR FOR A PNEUMATIC DISPENSER

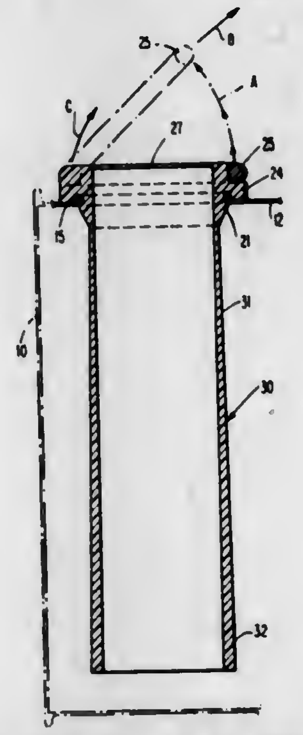
Roland J. Frase, Roselle; Harold G. Meitl, Darien, and Tom M. McNaull, La Grange, all of Ill., assignors to International Harvester Company, Chicago, Ill.
Continuation of Ser. No. 681,306, Apr. 29, 1976, Pat. No. 4,091,968. This application Oct. 19, 1977, Ser. No. 843,469
Int. Cl.² G01F *11/24*
U.S. Cl. 222—167 **12 Claims**



1. In a pneumatic material dispenser having a housing, a rotary member disposed within the housing for carrying material on its periphery, a collector within the periphery of said rotary member having a plurality of axially spaced discrete material collection passages having first openings near the periphery of the rotary element for gravitationally receiving material dropped from said rotary member, a plurality of discharge tubes in exclusive fluid communication respectively with each of the collection passages and having distal ends, and air supply means for delivery of air into the collection passage ends of said discharge tubes at a higher pressure than said distal ends to propel the material therethrough, the improvement wherein said collection passages have second openings downstream from said first material collection openings, said second openings opening transversely of said collector, said air supply means comprises a plenum chamber disposed within said housing adjacent said collector for receiving air from a source of pressurized air, and air passage means establishing communication between said plenum chamber and said collection passages at said second openings.

4,128,192
THROW-AWAY CAN WITH INTEGRAL CLOSURE AND PULL-UP SPOUT

Stanley W. Coryell, Arlington, Tex., assignor to Classic Chemical, Grand Prairie, Tex.
Filed Jun. 8, 1977, Ser. No. 804,571
Int. Cl.² B65D *47/28*
U.S. Cl. 222—525 **3 Claims**

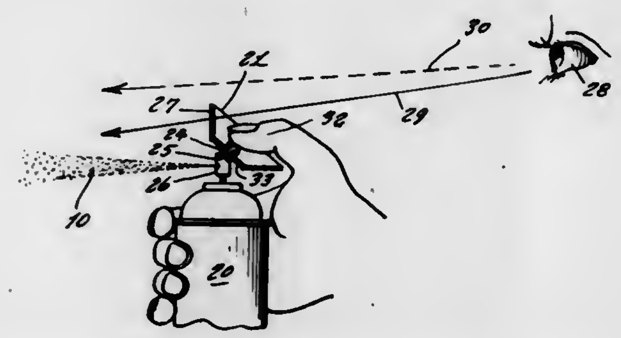


1. A throw-away one-time can for liquid additives for motor-vehicle fuel tanks and the like has a body having a top which includes a circular opening having an upstanding peripheral lip for receiving a circular cross-section closure element adapted to snap removably into said opening, said closure element including a depending integral spout which extends almost to the bottom of said can, said closure element and depending spout comprising:

a. an annular plug portion on the underside of said closure element, said plug portion having a lower annular downwardly-inwardly inclined surface and an upper annular upwardly-inwardly inclined surface, the maximum outside diameter of said plug portion being somewhat larger than the diameter of said opening in said can top;
b. an enlarged-diameter portion above and integral with said plug portion, the outer portions adapted to rest on said can top when said closure element is snapped into position, said enlarged-diameter portion having an annular recess which extends upwardly just above said upwardly-inwardly inclined surface for receiving and closely confining the upstanding peripheral lip of said top opening when said closure element is snapped into position with said spout extending downwardly through said top opening;
c. a pull-up ring above and concentric with said enlarged-diameter portion, said pull-up ring being integrally connected with one side only of said enlarged-diameter portion and adapted, in response to an upward pull applied to said ring, to lift initially said one side only of the enlarged-diameter portion, thereby to open said confining recess and allow said upwardly-inwardly inclined surface to cam said lip radially outwardly, whereby a continued or subsequent upward pull on said ring removes said closure element from its snapped-in position;
d. said spout being a hollow cylindrical body integral with and depending from said annular lower inclined surface of said plug portion.

4,128,193
PRESSURIZED COATING CONTAINER WITH DEPTH OF COLOR INDICATOR

James Nighswonger, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007
Filed Jun. 30, 1977, Ser. No. 811,693
Int. Cl.² B65D *83/14;* B05B *11/00*
U.S. Cl. 222—402.21 **1 Claim**

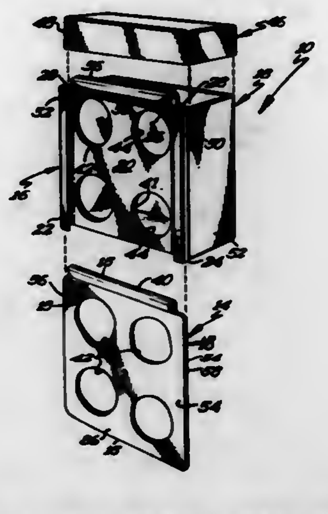


1. An applicator device comprising in combination:
a pressurized container of the hand held, sprayer type having a photochromic coating material therein;
said coating material being of a type wherein depth of color produced due to light thereon, when applied to a substrate, varies with the thickness of coating;
a movable indicator of a color matching said color produced and graduated in intensity between limits matching those applicable to the coated substrate; and
said indicator being mounted on said container and disposed in the line of operator vision when the container is in functional coating position;
whereby said operator simultaneously views both the selected indicator intensity and the depth of color produced on said substrate which is due to the effect of light the quantity of said coating material being applied.

4,128,194
CARRYING APPARATUS DETACHABLY MOUNTABLE ON CLOTHING AND OTHER FABRIC-LIKE MATERIALS

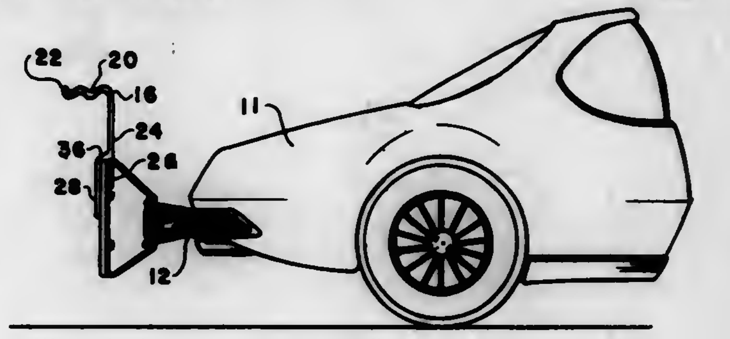
Gerhardt J. Hinz, McCord Apartments, #13, Denison, Iowa 51442
Filed Apr. 28, 1975, Ser. No. 572,416
Int. Cl.² A45C *1/04*
U.S. Cl. 224—5 R **4 Claims**

1. In combination with a flexible, fabric-like material having obverse and reverse sides, a carrying apparatus attachable to and detachable from said flexible, fabric-like material without damage to the integrity of said material, comprising:
a tongue member positionable wholly on the reverse side of said material and having a periphery engageable against the reverse side of said material;
a receiver member engagable against the obverse side of said fabric-like material opposite said tongue member and including means for encompassing at least part of the periphery of said tongue member to releasably retain said tongue member adjacent said receiver member in a retained position wherein said receiver member cooperates with said tongue member to define a narrow gap therebetween in which said fabric-like material is captured, permitting said members to be releasably attached to the fabric-like material so as to be firmly retained on the material without damage to the material;
a load device carried by one of said members;
said tongue member and said receiver member having generally rectangular peripheries and said encompassing means of said receiver member including a pair of spaced-apart, parallel tracks adjacent opposed edges of said receiving member for slidably receiving said tongue member in said tracks;
a keeper on said receiver member positioned between said parallel tracks to receive and releasably engage said tongue member; and
said tongue member including a rib confronting and releasably engaging said keeper to thereby releasably lock said tongue member within said keeper, with said fabric-like material being retained between said rib and said keeper.



4,128,195
EMERGENCY BUMPER AND BIKE RACK

Melvin Collins, 907 Meadbrook St., Carson, Calif. 90746
Filed Apr. 29, 1977, Ser. No. 792,420
Int. Cl.² B60R *9/10*
U.S. Cl. 224—42.03 B **2 Claims**



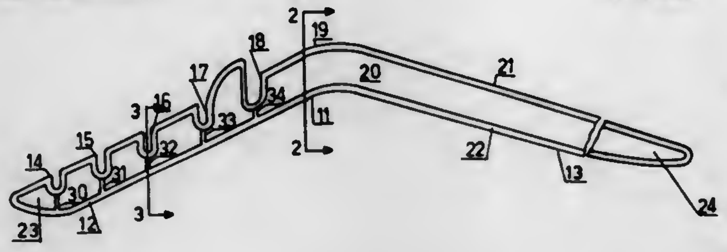
1. A rack mountable on the bumper of an automotive vehicle, said rack comprising
a first frame for clamping onto the bumper of a vehicle, said first frame including two vertical members interconnected by two horizontal members, part of the vertical members being formed to conform to the bumper and being provided with hook bolts and associated fasteners to secure said first frame to the bumper; and
a separate second frame slidably mounted on the first frame and extending upwardly therefrom, said second frame being adapted to carry a bicycle, said second frame comprising a pair of substantially parallel substantially U-shaped frames having adjacent open ends with one frame overlapping the other, said U-shaped frames being connected to each other with a distance therebetween, one of said U-shaped frames having a closed end provided with more than one member extending therefrom transversely

to the plane of said frame, said members having bumps formed therein for retaining a bicycle thereon.

4,128,196
DEVICE FOR CARRYING HANGING CLOTHES

Edward J. Hill, 1515 David Whitney Bldg., Detroit, Mich. 48226

Filed Sep. 8, 1977, Ser. No. 831,490
Int. Cl.^{2} A45C *13/26*
U.S. Cl. 224—45 T **7 Claims**



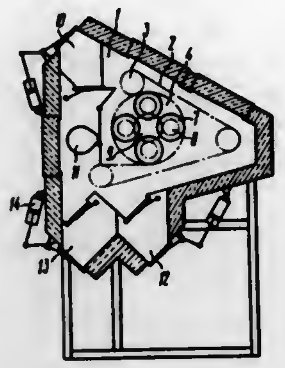
1. A device for carrying hanging clothes, comprising:
- a central web of plastic material including a curved portion integrally interconnecting first and second generally straight portions, the curved portion being adapted for placement over one's shoulder when using the clothes carrying device such that the first and second portions extend downwardly from the horizontal at acute angles, the first portion being adapted to extend rearwardly from one's shoulder and having a plurality of recesses along its top surface for receiving the hooks of clothes hangers, or the like, the second portion being adapted to extend forwardly from one's shoulder and to be hand-gripped;
- a first transverse web of plastic material integral with and generally perpendicular to said central web and extending along the top surface of said first, second, and curved portions and along the peripheriphy of said recesses for reinforcement;
- a second transverse web of plastic material generally perpendicular to and integral with said central web and extending along the bottom surface of said first, second and curved portions for reinforcement; said second transverse web extending to each side of the central web and being substantially wider than the thickness of the central web to provide rigidity and to provide a surface for distributing the load on one's shoulder when in use;
- said transverse webs extending along substantially the entire lengths of said first, second, and curved sections; and
- reinforcing ribs extending between the first and second transverse webs at the bottom of each said recess, said ribs being on each side of and generally perpendicular to said central web.

4,128,197
DEVICE FOR REMOVING FLASH FROM MOULDED RUBBER ARTICLES

Vitaly G. Ischenko, bulvar Profsojuzov, 26, kv. 193; Vladimir A. Shvetsov, ulitsa Gorkogo, 12, kv. 13; Evgeny N. Erygin, Prospekt Lenina, 93, kv. 53, all of Volzhsky Volgogradskoi oblasti, and Roman L. Girshik, Sokolnichesky val, 24, korpus 2, kv. 139, Moscow, all of U.S.S.R.

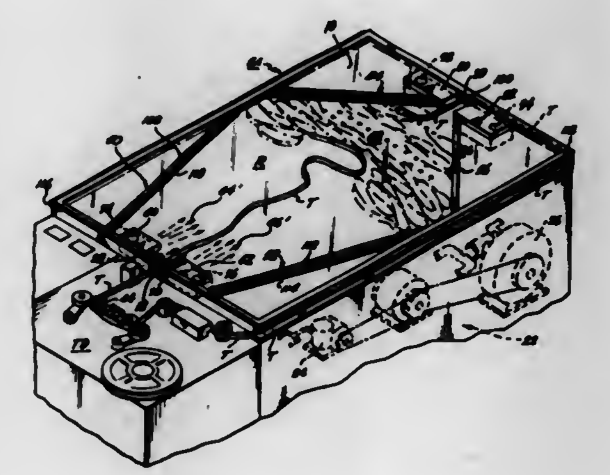
Filed Oct. 20, 1977, Ser. No. 843,820
Int. Cl.^{2} B26F *3/00;* B29H *3/06*
U.S. Cl. 225—97 **2 Claims**

1. A device for removing flash from molded rubber articles comprising: a pressuretight heat-insulated casing; an endless perforated belt accommodated in said casing; driving sprockets around which said endless belt is driven; a workpiece holding zone defined by said belt running around said driving sprockets; brushes for mechanical removal of flash arranged rotatably across the movement of said belt; shafts on which said brushes are supported; rotatable discs arranged on both sides of said workpiece holding zone and on which said shafts are supported.



4,128,198
ENDLESS TAPE LOOP STORAGE APPARATUS

George M. Woodley, 14200 NE. 21st., Bellevue, Wash. 98007
Continuation of Ser. No. 654,199, Feb. 2, 1976, abandoned. This application Jul. 5, 1977, Ser. No. 813,092
Int. Cl.^{2} B65H *17/32, 75/00*
U.S. Cl. 226—97 **15 Claims**



1. In an endless tape loop storage apparatus of the type having a generally horizontally disposed storage receptacle for tape being driven by and returned to a tape drive mechanism, such as for storing a loop of magnetic tape or the like when driven at high speed by the capstan drive means of a conventional audio tape recorder transport deck or the like, and wherein such storage receptacle is defined by a generally horizontal top plate, a generally horizontal bottom plate, a front wall defining an entrance slot through which the tape passes from the drive mechanism into the receptacle, a rear wall defining an exit slot through which the tape emerges from the receptacle for return thereof to the drive mechanism, and two side walls, with air jet delivery means being associated with said entrance and exit slots and directed to assist the flow of the tape into and out of the receptacle, the improvement comprising:

(a) two relatively high velocity, low volume air jet delivery means closely spaced at opposite sides of said entrance slot and directed into the receptacle in a direction generally away from the front wall and delivering air at a velocity substantially exceeding the velocity of the tape and thereby moving the tape through said entrance slot and into the receptacle at high speed without mechanical contact therewith;

(b) two relatively low velocity, high volume air jet delivery means situated adjacent said front wall and placed approximately equidistant between the entrance slot and the respective side walls, and directing air streams into the receptacle in a direction generally away from the front wall and thereby causing the tape entering the receptacle to become arranged in long serpentine folds on edge in the generally central region of the receptacle; and

(c) a plurality of air exhaust apertures in at least one of said top plate and said bottom plate in the region(s) thereof overlying and underlying the serpentine folds of the tape in the receptacle, and through which air can exhaust freely, thus influencing the direction and velocity of air flow inside the receptacle to maintain the bulk of the stored tape concentrated in said generally central region.

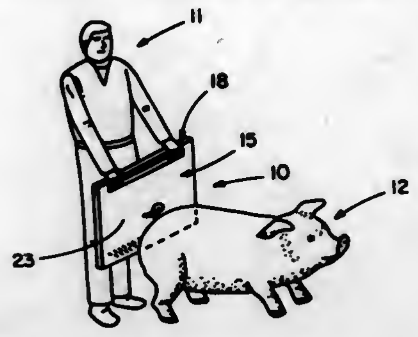
4,128,199
Patent Not Issued For This Number

4,128,200
LIVESTOCK GUIDE AND MANIPULATOR

Robert W. Jones, Mt. Pulaski, Ill., and Wesley E. Jones, R.R. 1, Chestnut, Ill. 62518, assignors to Wesley E. Jones, Chestnut, Ill.

Filed Nov. 24, 1976, Ser. No. 744,728
Int. Cl.^{2} B68B *11/00;* A22B *3/06;* A01K *29/00*
U.S. Cl. 231—2 E **1 Claim**

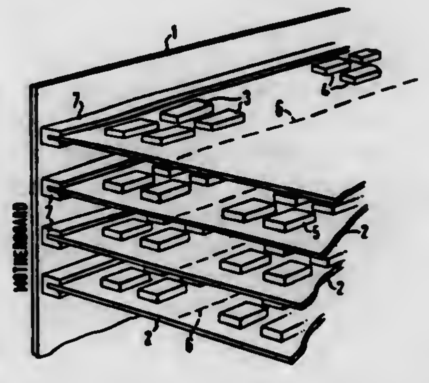
1. A livestock guide and manipulator comprising a hand carried and manipulated panel body having a lateral panel face to block the view and passage of livestock when positioned adjacent thereto for guiding said livestock, said lateral panel face comprising a large surface many times wider than the thickness of said body, a gripping handle means along one edge of said body to provide means whereby an operator can grasp said body for manipulation thereof, two or more electrodes on said face of said panel projecting from the panel face adjacent the edge thereof opposite said handle means, a high voltage producing means attached to said panel and electrically connected to said electrodes to provide a high voltage electrical potential between certain ones thereof when actuated, and means for selectively actuating said high voltage means whereby livestock will be electrically shocked by said electrodes engaged therewith to urge said livestock for the manipulation thereof.



4,128,201
SYNCHRONIZING MEANS

Iann M. Barron, Redbourne, and David J. Wheeler, Cambridge, both of England, assignors to Computer Technology Limited, London, England

Filed Sep. 21, 1976, Ser. No. 725,298
Claims priority, application United Kingdom, Nov. 5, 1975, 45908/75
Int. Cl.^{2} G06F *11/00*
U.S. Cl. 235—304 **4 Claims**



1. Synchronising means for synchronising with a periodically repeating reference signal the change of level of an input signal capable of assuming either one of a first and second level, comprising a source of said periodically repeating reference signal, a source of said input signal, a bistable device having first and second inputs and an output and capable of assuming a first stable state in response to the first level of input signal applied to said first input and of assuming a second stable state in response to the second level of input signal applied to said first input and enabled periodically by said reference signal applied to said second input to respond to the level of the input signal, said bistable device producing at said output an output signal having a first level representing said first stable state and a second level different from said first level and representing said second stable state, means responsive to a level of output signal intermediate said first and second levels representing an unstable condition of said bistable device, resulting from a level of input signal intermediate said first and second levels of input signal during the period the bistable device is enabled to respond, to generate a stop signal and means for applying said stop signal to said source of periodically repeating reference signal to interrupt the reference signal at a predetermined point in its periodicity and before the bistable device is next enabled, until the bistable device assumes a stable condition.

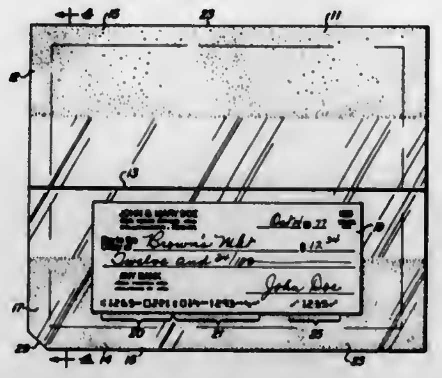
4,128,202
DOCUMENT CARRIER

Melvin S. Buros, Phoenix, Ariz., assignor to Micr-Shield Company, Phoenix, Ariz.

Continuation-in-part of Ser. No. 614,332, Sep. 17, 1975, Pat. No. 4,060,711. This application Oct. 21, 1977, Ser. No. 844,274

Int. Cl.² G06K *19/00*

U.S. Cl. 235—493 **9 Claims**



1. A document carrier for enclosing a document to be machine-processed, said document having a front and back surface, said carrier comprising:

a. a flat substantially rectangular sheet of foldable material having a layer of cohesive material on one surface thereof, said layer of cohesive material capable of adhering only to a similar layer of cohesive material;

b. said sheet being sufficiently translucent or transparent to permit optical recognition of the information on the front and back surface of said document when said document is placed on the cohesive side of said sheet and said sheet is folded over said document to enclose said document;

c. said sheet, when folded, having upper and lower cohesively coated portions facing one another to enclose said document therebetween by bonding said portions to each other through said cohesive layer on three sides of said document, the edge formed by folding said sheet enclosing said document on a fourth side, said upper and lower cohesively coated portions gripping said document therebetween by contacting the front and back surfaces of said document with said cohesive layer to prevent relative movement between said document and said sheet; and

d. a magnetic ink-receiving surface along one edge of said material on the surface thereof opposite said cohesive material.

4,128,203
FOUR-PORT THERMALLY RESPONSIVE VALVE

Edgar W. Maltby, Elgin, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 1, 1977, Ser. No. 830,001

Int. Cl.² G05D *23/275*

U.S. Cl. 236—100 **11 Claims**

1. A thermally responsive device for valving two pairs of fluid ports, comprising:

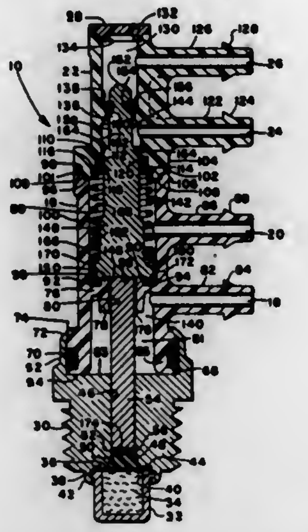
(a) a housing means defining a fluid chamber, said housing means further defining first, second, third and fourth fluid ports communicating with said fluid chamber;

(b) valve means disposed within said fluid chamber, said valve means including:

(i) means defining a first valve seat in said housing means and located intermediate said first and second fluid ports, said first valve seat is defined by an annular surface of said housing means and disposed within said fluid chamber;

(ii) means defining a second valve seat in said housing means and located intermediate said third and fourth fluid ports;

(iii) a valve member disposed within said fluid chamber, said valve member being movable between a first and second position and having first and second spaced seal means thereon, said first seal means comprising a resilient annular member mounted on said valve member and movable therewith, in which first position said first seal means seals against said first valve seat for isolating said first and second fluid ports from each other, and in which second position said first seal means is spaced from said first valve seat for communicating said first fluid port with said second fluid port wherein, upon movement of said valve member between said first and second positions, said second seal means is moved between a position sealing against and a position spaced from said second valve seat;



(c) means disposed within said fluid chamber and cooperating with said valve member for isolating said first and second fluid ports from said third and fourth fluid ports, irrespective of the position of said valve member;

(d) means biasing said valve member to said first position; and

(e) thermally responsive means associated with said housing means and including means operative to move said valve member between said first and said second positions in response to predetermined temperatures.

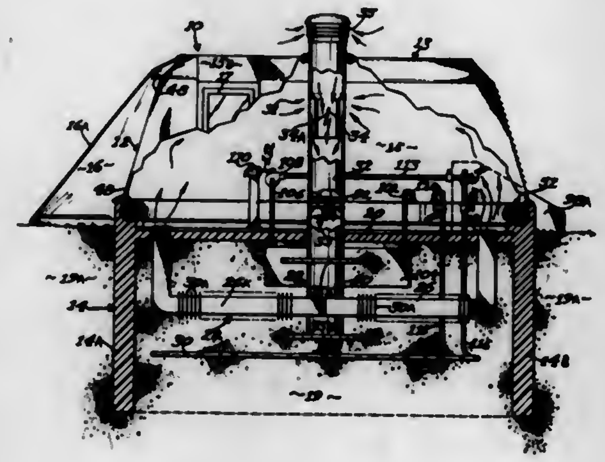
4,128,204
INHABITABLE ENCLOSURE AND METHODS RELATING THERETO

Glenn C. Wade, 313 Highland, Paragould, Ark. 72450

Filed Jun. 2, 1977, Ser. No. 766,983

Int. Cl.² F24J *3/02*

U.S. Cl. 237—1 A **32 Claims**



1. An enclosure suitable for human habitation, said enclosure comprising:

foundation means comprised of thermally insulative material for dividably defining an underground geothermal heat exchange region substantially separate from surrounding ground;

shelter means for enclosing an internal living space, said shelter means adapted to be disposed upon said foundation means;

geothermal heat exchanger means disposed within said separate heat exchange region for exchanging heat between said region and said shelter;

fan means for circulating air between said geothermal heat exchanger means and said shelter living space to thereby control internal shelter temperature;

blind means selectively deployable in sunlight admitting and sunlight reflecting positions to thereby facilitate selective internal solar energy use;

transulucent shield means disposed under said blinds for preventing foreign material from entering said shelter; and

liquid anchor means for securing said shelter to said foundation.

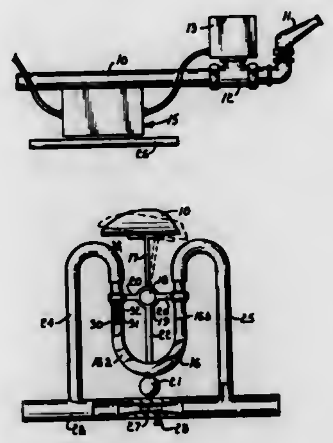
4,128,205
WIND CORRECTION METHOD AND APPARATUS FOR IRRIGATION SYSTEMS

Ronald J. Coash, Deshler, Nebr., assignor to Reinke Manufacturing Company, Deshler, Nebr.

Filed Apr. 7, 1977, Ser. No. 785,595

Int. Cl.² B05B *17/04*

U.S. Cl. 239—1 **10 Claims**



1. In a mobile irrigation system having an elevated pipe for receiving liquid, an outlet in the pipe for discharging liquid therefrom in a direction generally axially outwardly of the pipe, and valve means which is normally open at times to deliver liquid to said outlet and normally closed at other times to substantially interrupt flow of liquid to said outlet, the combination therewith of:

a wind sensing mechanism operable to detect the presence of wind in excess of a predetermined velocity;

means mounting said sensing mechanism in an orientation to detect the presence of wind generally parallel to the pipe axis both inwardly and outwardly thereof; and

means coupling said sensing mechanism with said valve means in a manner to close the latter in response to detection of wind in a direction generally outwardly of and parallel to said pipe during times when said valve means is normally open, and to open said valve means in response to detection of wind in a direction generally inwardly of and parallel to said pipe during times when said valve means is normally closed.

4,128,206
LOW DRIFT FLAT SPRAY NOZZLE AND METHOD

Dennis W. Bintner, Des Moines, Iowa, assignor to Delavan Corporation, West Des Moines, Iowa

Filed May 31, 1977, Ser. No. 801,836

Int. Cl.² B05B *1/04*

U.S. Cl. 239—11 **14 Claims**

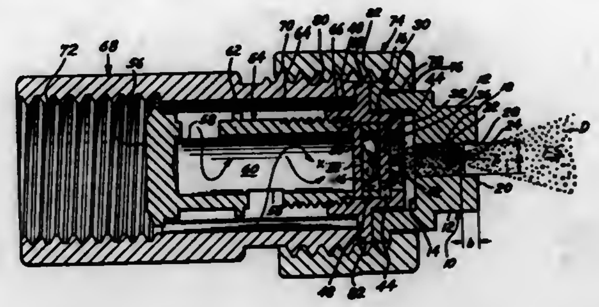
1. A nozzle for producing a flat spray discharge having substantially large droplets of liquid therein, said nozzle comprising

a substantially gas free turbulence chamber,

first orifice means for introducing a jet of liquid into said turbulence chamber,

a second chamber,

partition means between said turbulence chamber and said second chamber, said partition means having a surface positioned in the path of said jet upon which said jet of liquid impinges to cause substantial turbulence in the liquid in the turbulence chamber,



passage means for conducting the turbulent liquid past said partition means from said turbulence chamber to said second chamber, and

discharge orifice means at the end of said second chamber opposite said partition means, said discharge orifice means discharging said turbulent liquid from said second chamber in the form of a flat spray pattern having large droplets of liquid therein.

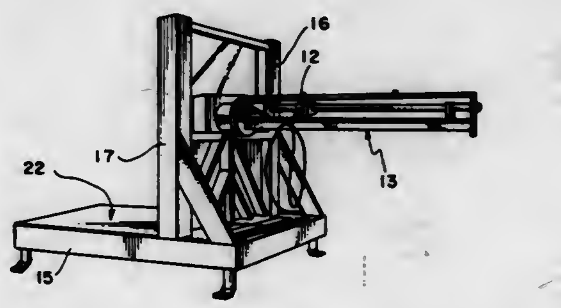
4,128,207
FLUID DELIVERY SYSTEM

Amos Pacht, 9218 Benning, Houston, Tex. 77071, and Herbert L. Johnson, 8210 Beechnut, Houston, Tex. 77036

Filed Sep. 29, 1976, Ser. No. 727,635

Int. Cl.² B05C *7/02*

U.S. Cl. 239—186 **39 Claims**



1. A fluid delivery system for removing material from the inside wall of a motor stator including a plurality of longitudinal grooves, comprising, in combination:

a base frame;

a vertical wall mounted on said frame whereby an operator's position is provided on said frame on one side of said wall;

a horizontally extending, longitudinal rotatable carriage frame mounted on said vertical wall and extending from the side of said vertical wall opposite the side on which said operator's position is located;

means located on the operator's side of said wall for selectively rotating said carriage frame;

a nozzle carriage mounted on said carriage frame for movement along a substantial part of the length of said carriage frame;

means for selectively causing said nozzle carriage to move along said carriage frame;

a high pressure outlet nozzle mounted on said nozzle carriage;

a source of high pressure fluid including a high pressure pump; and

dump valve means connected between said pump and said outlet nozzle for selectively providing a high pressure blast of fluid from said outlet nozzle.

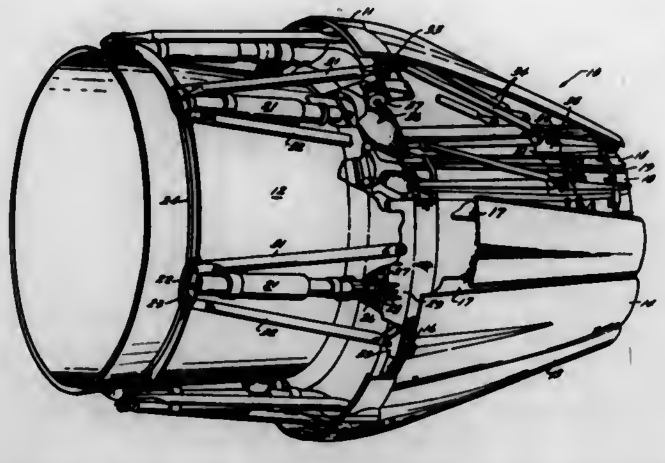
4,128,208
EXHAUST NOZZLE FLAP SEAL ARRANGEMENT

Edward W. Ryan, Mason, and George H. Israel, Jr., Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 11, 1977, Ser. No. 814,567

Int. Cl.² B64C *15/08*

U.S. Cl. 239—265.39 9 Claims



1. An improved linkage means for an aircraft engine variable exhaust nozzle of the type having a plurality of circumferentially spaced flaps with seals interposed therebetween and overlapping adjacent pairs, wherein the improvement comprises:

(a) an elongate center bar pivotably connected proximate its center to the proximate circumferential center of the seal; and

(b) a pair of end bars, each one pivotably connected at its opposite ends to one end of its center bar and to one of the flaps such that an opening of the flap causes a rotation of said center bar and said pair of end bars to maintain the seal in centered relationship between the adjacent flaps.

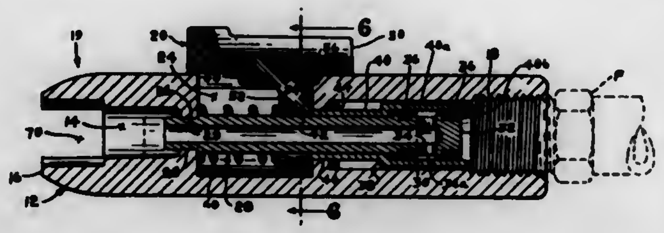
4,128,209
AIR GUN

John L. Johnson, Morrisville, N.C., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Sep. 12, 1977, Ser. No. 832,596

Int. Cl.² F16K *3/24*

U.S. Cl. 239—583 9 Claims



1. An air gun comprising an elongate body being formed with an axial bore and a lateral opening in from the side intercepting the bore, a tubular element having an axial opening and being coaxial with the body and secured in the body at one side of the lateral opening and extending in the lateral opening and therebeyond toward the upstream end of the body to terminate in the body in a spool portion including a closed outward end and radial opening means communicating with the axial opening of the tubular element, the upstream end of the body adapted to be connected to an air hose and the opposite end of the body being formed with nozzle means, tubular valve means on the tubular element and snugly engaging the spool portion and adapted to be slid back and forth to cover or uncover the radial opening means, the valve means being accessible through the lateral opening, sealing means circumposing the valve means and sealingly engaging the body and the valve means, and actuator means secured to the valve means in the lateral opening and extending out the lateral opening and adapted to be hand-shifted to move the valve means to cover or uncover the radial opening means.

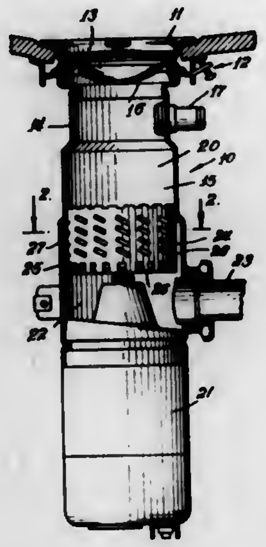
4,128,210
FOOD WASTE DISPOSAL APPARATUS

Robert A. Brenner, St. Joseph; Victor W. Cuthbert, Sodus, and Albert T. Braga, Stevensville, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 24, 1977, Ser. No. 781,009

Int. Cl.² B02C *18/40*

U.S. Cl. 241—46 R 14 Claims



1. In a waste disposer having a tubular housing wall partially defining a grinding chamber, a cutter wheel having a cutter-impeller, means for rotating the cutter wheel about a vertical axis at a lower portion of the grinding chamber at a high speed such as in the order of 11,000 rpm, a lower outlet from the housing, and a tubular wall member fixed in said grinding chamber substantially coaxially of said cutter wheel and having lower openings adjacent said cutter wheel for cooperating therewith in cutting waste delivered downwardly with mixing water into said grinding chamber onto said cutter wheel, said wall member having an outer diameter of approximately 3 inches and being smaller than the diameter of the housing wall to define a downwardly opening thin annular space therebetween, said wall member further defining a plurality of upper openings spaced less than approximately 2 inches above the bottom of the wall member, the improvement comprising

the construction of said openings, said wall member, said housing wall portion and the rotated cutter-impeller to cooperatively effectively define means for providing a sufficiently forceful flow of the cut waste and water effluent effectively outwardly through said lower openings and impingement against said outwardly adjacent portion of said housing wall to cause concurrently a first portion of the effluent to be diverted upwardly through said annular space and cause at least a portion of the upwardly diverted effluent to be effectively pumped inwardly through said upper openings for recirculation in said grinding chamber to cause dislodging of lodged waste on the inner surface of said wall member.

4,128,211
COLORANT COMMINUTING APPARATUS FOR PLASTIC ARTICLE FORMING MACHINE

William B. Bradbury, Brielle, N.J.; Robert H. Watts, Cincinnati, and E. Timm Scott, Norwalk, both of Ohio, assignors to PMS Consolidated, Somerset, N.J.

Continuation-in-part of Ser. No. 650,938, Jan. 21, 1976, Pat. No. 4,057,193. This application Apr. 28, 1977, Ser. No. 791,936

The portion of the term of this patent subsequent to Nov. 8, 1994, has been disclaimed.

Int. Cl.² B02C *19/00*

U.S. Cl. 241—101.6 5 Claims

1. An apparatus for comminuting pigment bar and mixing the comminuted pigment with an uncolored plastic material before said material passes into a plastic article forming machine, said apparatus comprising:

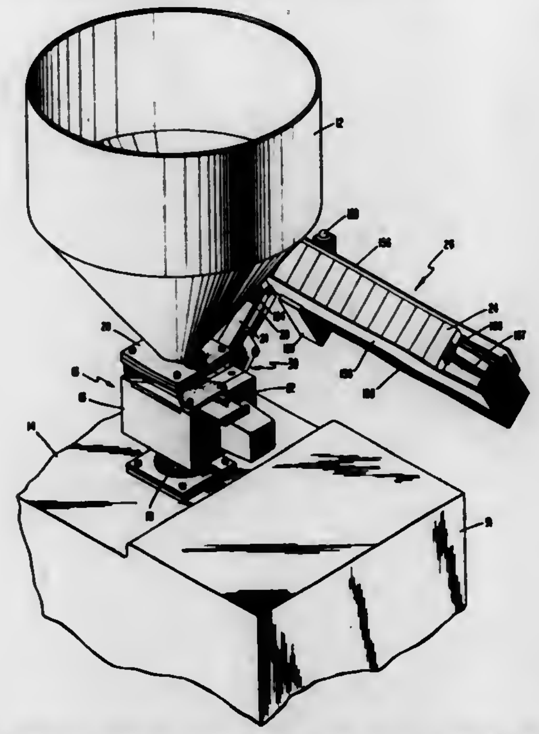
(a) a housing attached to said plastic article forming machine;

(b) cutter means rotatably mounted within said housing;

(c) magazine storage means to store a plurality of colored pigment bars laterally adjacent to each other;

(d) a feeding mechanism removably attached to said housing to feed said pigment bars into contact with said cutter from said magazine;

(e) first motor means attached to said housing and drivingly connected to said cutter so as to rotate same;



(f) second motor means movably attached to said housing and drivingly connected to said feeding mechanism by interengaging gears;

(g) means to move said second motor out of driving engagement with said feeding mechanism by disengaging said interengaging gears;

(h) means to operate said feeding mechanism manually when said gears are disengaged;

(i) a hopper for storing an uncolored plastic material attached to said housing such that said material flows from said hopper into said housing; and

(j) valve means interposed between said hopper and said housing to control the flow of plastic material into said housing.

4,128,212
SEAM RESPONSIVE SHEAR AND METHOD

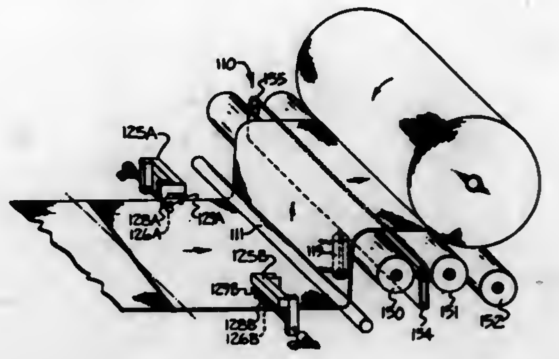
Steven W. Birch, Monroe, N.C., assignor to Birch Brothers Southern, Inc., Waxhaw, N.C.

Filed Jun. 23, 1977, Ser. No. 809,427

Int. Cl.² B65H *19/20, 17/08*

U.S. Cl. 242—56 R 28 Claims

1. In a web material handling apparatus having means for guiding lengths of web material joined by widthwise seams along a path of travel, and shear means for cutting web material at a predetermined position along the path of travel, an improvement which controls shear means actuation so as to minimize web material waste and comprising: a plurality of seam detector means mounted adjacent said path of travel, upstream of said shear means position, each for sensing widthwise seams in web material guided along said path of travel toward said shear means position; and control means operatively connected to said detector means and to said shear means for moving said shear means relative to web material in response to and in predetermined relation with seam sensing by all of said detector means.



4,128,213
METHOD FOR REGULATING A WINDING PROCESS

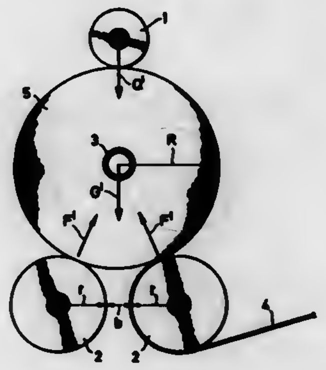
Pekka Komulainen, Kemi, Finland, assignor to Oy Wartsila AB, Helsinki, Finland

Filed Dec. 20, 1977, Ser. No. 862,759

Claims priority, application Finland, Dec. 28, 1976, 763709

Int. Cl.² B65H *17/08*

U.S. Cl. 242—66 9 Claims



1. A method for regulating the internal tension of a web roll being wound in a winder including two support rolls under said web roll and a rider roll above said web roll, the distance between the centers of said support rolls being kept, during the whole winding process, smaller than the sum of the distances from the center of said web roll to the centers of said support rolls, said method comprising the steps of increasing continuously the distance between said support rolls at the beginning of the winding process, and, at a later phase of the winding process, decreasing said distance.

4,128,214
DEVICE FOR WINDING A BOBBIN

Henricus J. Maas, 395, V. Montgomerylaan, Eindhoven, Netherlands

Filed Jul. 11, 1977, Ser. No. 814,422

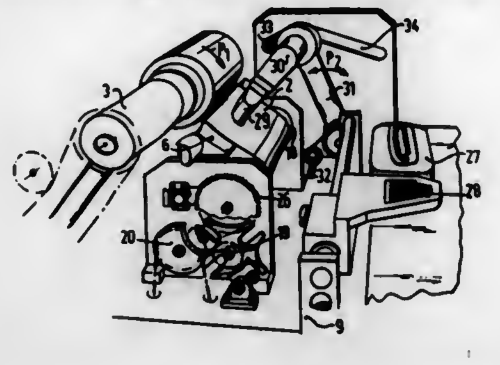
Claims priority, application Netherlands, Jul. 12, 1976, 07710

Int. Cl.² B65H *17/02*

U.S. Cl. 242—67.3 R 11 Claims

1. A device for winding a web of material into a bobbin for storing tobacco leaf or portions thereof between the layers, said device comprising a spindle for holding a stock reel, a second, driven spindle for the bobbin and a suction box, along the suction surface of which the portion of the web of material located between the stock reel and the bobbin is passed, and a mechanism for applying the tobacco portions to the web of

material above the suction surface, characterized in that the suction surface is at an angle to the plane tangential to the bobbin and going through the line of intersection of the prolongation of said suction surface with the bobbin.



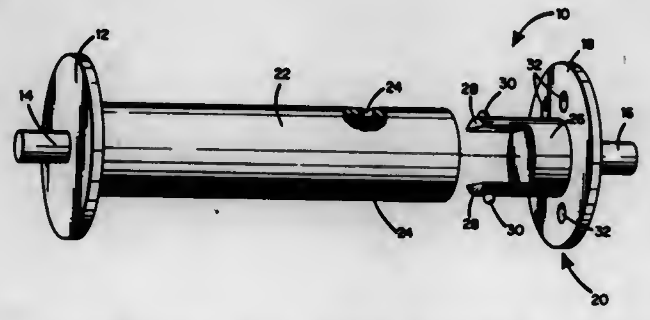
4,128,215
TEXTILE SPOOL

Robert H. Underwood, 19 Stacy St., Saco, Me. 04072, assignor to Robert H. Underwood, Saco, Me. and Richard P. Crowley, Wellesley Hills, Mass.

Continuation-in-part of Ser. No. 697,423, Jun. 18, 1976, Pat. No. 4,078,741. This application Apr. 13, 1977, Ser. No. 786,985

Int. Cl.² B65H *75/14, 75/22*

U.S. Cl. 242—118.61 **8 Claims**



1. An improved textile spool which comprises in combination:
- (a) a hollow tube having a one end and another end, the tube adapted to carry a filament material thereon;
- (b) a first flange at the one end and a second flange at the other end of the tube;
- (c) a first axial shaft extending from the one end of the tube and a second axial shaft extending from the other end of the tube;
- (d) at least one removable plug element which comprises
  - (i) a cylindrical body element having an inner and an outer face and the body adapted to fit in a snug slidable relationship within the inner diameter at the one end of the tube, the first shaft extending centrally and outwardly from the outer face of the body element, and
  - (ii) at least two elongated tongue elements extending generally axially from the inner face of the body element and the tongue elements generally in opposing positions, the tongue elements adapted to yield axially inwardly slightly on the application of a force and tension-biased to return to their original position;
- (e) discrete raised projection means positioned on the surface toward the extending yieldable end of each of the tongue elements or on the internal wall of the tube;
- (f) one or more discrete projection-receiving passageway means in the tongue elements or in the wall of the tube; and
- (g) the projection means and projection-receiving passageway so formed to permit insertion into and removal from the projection-receiving passageway by the respective use of an inward or outward axial force,

whereby, in the assembled condition when the body element has been slid into a snug relationship within one end of the hollow tube, the respective discrete projections are engaged in an interlocking relationship within the respective opposite passageway means so that the axial shaft of the plug element may be driven by spool-driving means, and, on the application of an outward axial force, the tension-biased tongue elements yield inwardly to permit the axial removal of the plug element and to place the textile spool in the disassembled condition.

4,128,216
SHIM FOR CASSETTE TAPES AND METHOD OF SHAPING THE SAME

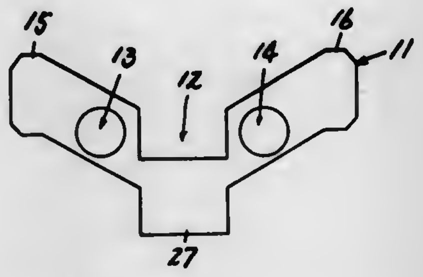
Issaku Hioki, Kuwana, Japan, assignor to NTN Toyo Bearing Company Limited, Osaka, Japan

Filed Jun. 23, 1975, Ser. No. 589,554

Claims priority, application Japan, Feb. 12, 1975, 50-18352

Int. Cl.² G11B *23/10, 15/60*

U.S. Cl. 242—199 **4 Claims**



1. A shim for cassette tapes in the form of a thin, one-piece sheet member, said sheet member comprising a downwardly extending central leg portion, a pair of substantially identical rectilinear wing portions, each being integrally secured adjacent its lower end to an upper side portion of said central leg portion, said rectilinear wing portions extending outwardly and upwardly from each side of the upper end of said central leg portion, the lateral spacing between the lower ends of said wing portions and the top edge of said central leg portion defining a rectilinear, central, cut-out portion which functions as a peep portion, said defined cut-out portion being in longitudinal alignment with and upwardly spaced from said central leg portion, and a shaft receiving aperture portion in each wing portion for receiving a shaft therein for winding and rewinding a tape carried by the cassette.

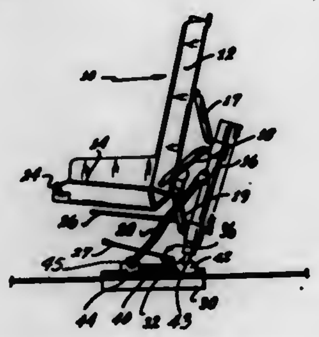
4,128,217
SYSTEM FOR ISOLATING FLOOR VIBRATION AND DISTORTIONS FROM AN OBJECT SUCH AS AN AIRCRAFT SEAT

Bernard Mazelsky, West Covina, Calif., assignor to ARA, Inc., West Covina, Calif.

Filed Jul. 22, 1977, Ser. No. 817,982

Int. Cl.² B64D *25/04*

U.S. Cl. 244—122 R **9 Claims**



1. An assembly having mounting means for an object in an air vehicle supported from the floor of the vehicle for isolating the object from floor vibrations and distortions, in combination, at least one unit which includes a member made of resilient material with a holder therefor, an insert embedded in the resilient material having an opening extending through said insert to receive support pin means, the resilient material being sufficiently resilient to allow limited movement of the mounting means relative to the pin means for isolating vibrations from the object, and the material of the insert being crushable so that said insert may be crushed by distortional movements of the mounting means with isolation of said movements from the object.

4,128,218
METHOD OF DIRECTION FINDING AND DIRECTION INDICATION OF RAILBOUND VEHICLES

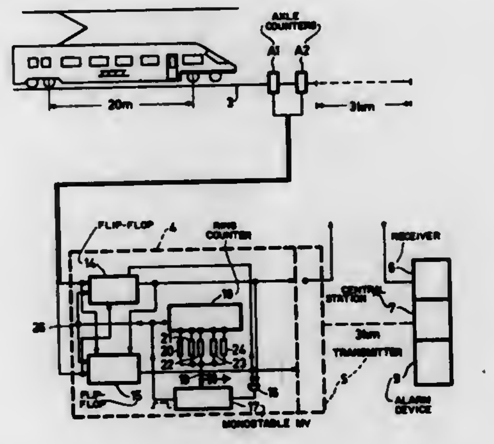
Winfried Pohlig, Stuhr, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 6, 1977, Ser. No. 830,630

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1976, 2640971

Int. Cl.² B61L *13/04*

U.S. Cl. 246—247 **8 Claims**



1. A method of determining and indicating the direction of travel of a rail-bound vehicle by means of a pair of axle counters each of which includes a seismic and a magnetic sensor which operate together to supply electric signals having a time sequence which indicates the direction of vehicle travel, said method comprising arranging said pair of axle counters along the railway track and spaced from each other in a direction parallel to the track rail, a seismic sensor being made operative to actuate its axle counter only when a railway vehicle is in its vicinity, making a first time sequence reading by means of said pair of axle counters and with the seismic sensors operative, inhibiting the making of a second time sequence reading for a first time period subsequent to the making of the first time sequence reading, making a second similar time-sequence reading for another vehicle axle after the first time period is terminated, inhibiting the making of a third time sequence reading for a second time period different from the first time period and subsequent to the making of the second time sequence reading, and summing the first and second time sequence readings to derive a direction of vehicle travel indication therefrome

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4,128,219
ABOVEGROUND SLIDING SUPPORT ASSEMBLY FOR A PIPELINE

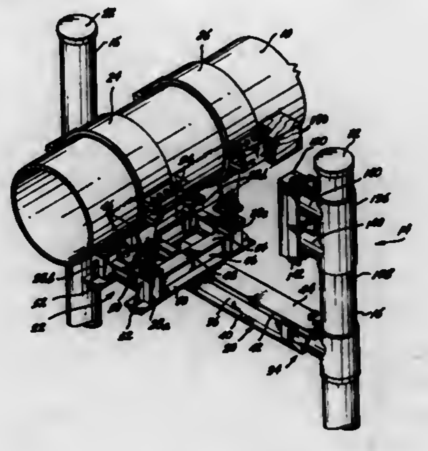
Noyle B. Kaigler, Jr., deceased, late of Baytown, Tex.; by Mary A. Kaigler, executrix, Gloster, Miss.; Spence L. Hochstein, and James A. Maple, both of Anchorage, Ak., assignors to Exxon Production Research Company

Filed May 17, 1976, Ser. No. 686,882

Int. Cl.² F16L *3/16*

U.S. Cl. 248—55 **7 Claims**

1. A sliding support for an aboveground pipelne, said pipeline traversing a relatively straight path at the location of said sliding support, comprising in combination:
- a supporting cross member and means for mounting said cross member above the ground and in stationary relationship thereto, said cross member having a generally horizontal upper surface and being positioned under the path of said pipeline,
- a sliding shoe including a base member having a bottom surface, the bottom surface of said base member being oriented in substantially parallel relationship to the upper surface of said cross member and being mounted on the upper surface of said cross member for sliding movement in a direction along the path of the pipeline and in a direction transversely to the path of the pipeline,
- at least one upright member affixed to said base member and extending upwardly therefrom,
- a bar associated with said upright member for movement in a generally upward and downward direction relative to the bottom surface of said base member, said bar having an upper end extending above the upper end of said upright member, and means for connecting the upper end of said bar to said pipeline,



- means associated with said bar and said upright member for preventing lateral movement of said bar relative to said upright member, and
- adjustable stop means associated with said bar and said upright member for fixing the vertical position of said bar relative to said upright member so that said bar cannot move downwardly, to thereby support the weight of said pipeline on said shoe, said stop means and said bar being so constructed and associated with said upright member as to be freely movable upwardly relative to said shoe, thereby allowing said shoe to freely fall from said bar if said shoe and said cross member become relatively displaced.

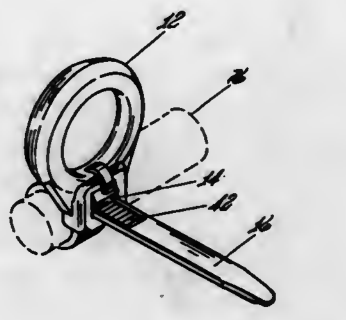
4,128,220
FLEXIBLE STRAP SUPPORT FASTENER

William O. McNeel, Houston, Tex., assignor to Geo Space Corporation, Houston, Tex.

Filed Mar. 31, 1977, Ser. No. 783,059

Int. Cl.² F16L *3/12*

U.S. Cl. 248—60 **6 Claims**



1. A flexible adjustable holding means for fastening an article to a support comprising
- a ring-shaped hanger adapted to be affixed to a support; said ring-shaped hanger including means located at the periphery thereof defining a cavity between a first and second opposed spaced parallel surface with the walls of said cavity forming a first opening in the first surface and a second opening having a smaller cross sectional area than

said first opening in the second surface; said cavity having a ramp surface formed on the cavity wall adjacent the ring-shaped hanger;

a wedge-shaped locking member having means defining a thin end, a thick end, a sloping surface extending on one side between the thin end and thick end and an opposed planar surface having a predetermined transverse width on the other side of the wedge-shaped locking member, said wedge-shaped locking member being adapted to be positioned in said cavity with the thin end thereof extending through said second opening and the thick end thereof extending through said first opening with the sloping surface of the wedge-shaped locking member being in engagement with the cavity wall ramp surface, said wedge-shaped locking member including a plurality of parallel sawtooth-shaped teeth located on the planar surface of the wedge-shaped locking member and extending across the predetermined transverse width of the planar surface and positioned with the angle of the sawtooth-shaped teeth pointed towards the thick end of the wedge-shaped locking member located in said first opening when the wedge-shaped locking member is inserted into said cavity;

an elongated strip member attached to and extending between and integral with the interior surface of said ring-shaped hanger and the edge of said wedge-shaped member for holding said wedge-shaped member when external to the cavity adjacent the ring-shaped hanger, said elongated strip member being of sufficient length to permit said wedge-shaped member to be inserted into said cavity;

an elongated flexible strip member having one end thereof affixed to the cavity defining means between said first and second opening and the other end thereof being free, said strip member having a width greater than the predetermined transverse width and the surface facing the first opening including means for defining an elongated recessed central area having a width of a sufficient dimension to receive and mate with the planar surface of the wedge-shaped locking member and extending lengthwise in said strip member and a plurality of parallel sawtooth-shaped teeth extending across the width of the surface of the recessed central area of said strip member surface and positioned with the angle of the sawtooth-shaped teeth pointed toward the first opening; and

a plurality of spaced elongated gripping protrusions positioned on the outer surface of the cavity defining means on said ring-shaped hanger and extending between the edge of the second opening to the edge of the cavity defining means adjacent the fixed end of the strip member, said free end of the strip member being adapted to be inserted into the second opening, through the cavity between the sawtooth-shaped teeth formed on the wedge-shaped locking member planar surface and the adjacent cavity wall, and out of said first opening, said strip member being adapted to have an article located in a loop formed by said strip member and gripped by said gripping protrusions as the strip member is pulled through said cavity and tightened around an article causing the sawtooth-shaped teeth on the surface of the recessed central area of the strip surface to unidirectionally engage, mate with and slide over the sawtooth-shaped teeth on the wedge-shaped locking member's planar surface positioned in said recessed central area in response to a force pulling the strip member through said first opening and to engage and lock against the sawtooth-shaped teeth on the wedge-shaped locking member's planar surface and to urge the sloped surface against the ramp surface in response to a force pulling in an opposite direction and the flat surfaces thereof lock together pushing the wedge-shaped sloping surface against the ramp surface in response to a force in the opposite direction preventing relative movement between the wedge-shaped locking member and strip member.

4,128,221

CONSTRUCTION OF A SUPPORTING GRID FOR PIPES

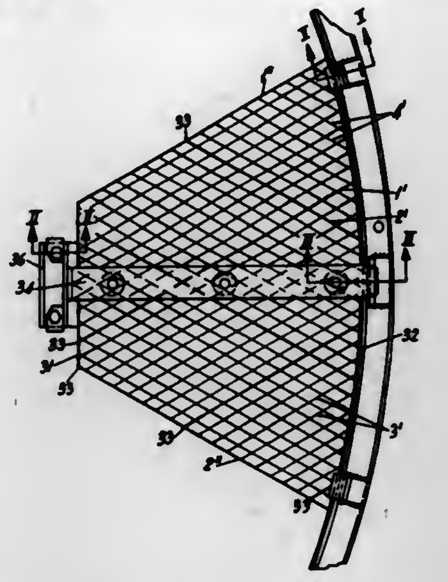
Franco Straffi, Milan, Italy, assignor to Breda Termomeccanica S.p.A., Milan, Italy

Filed Mar. 22, 1976, Ser. No. 668,963

Claims priority, application Italy, Oct. 17, 1975, 28382 A/75

Int. Cl.^{2} F28F *9/00*

U.S. Cl. 248—68 R **9 Claims**



1. A supporting grid for pipes, comprising a reticular structure formed of a grid frame and strips made of a material different from that of the frame and having a manhole and associated reticular cover, wherein said manhole is approximately of isosceles trapezoid shape, the major base of which comprises a segment of the grid frame, the minor base a strip nearly parallel to the former, and the two sides comprise two strips, means securing said cover to the grid, said securing means including connecting means between the grid and cover for preventing tengential movement of the cover relative to the grid frame, preventing perpendicular movement of the cover relative to the plane of the grid, and enabling free expansion of the cover in a radial direction relative to the grid frame, said cover including a stiffening member secured thereto and being rigidly and releasably secured to the reticular structure of the grid, said stiffening member including two plates arranged on opposite surfaces of the reticular cover, said plates being secured to said reticular cover by means of axially bored bushings extending between the plates, a pin in each bushing welded to said plates, securing the latter to each other and to the reticular cover.

4,128,222

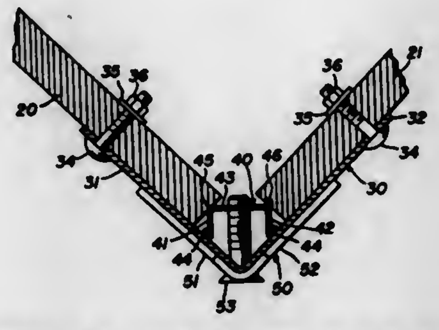
LEG ASSEMBLY FOR PINBALL GAME

Max Wiczer, Skokie, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Feb. 9, 1978, Ser. No. 876,359

Int. Cl.^{2} A47B *13/00*

U.S. Cl. 248—188 **13 Claims**



1. A leg assembly for a pinball game having two side walls intersecting to define a corner, said leg assembly comprising an angle member on the corner and having a pair of substantially perpendicular angle flanges respectively abutting the side walls, first fastening means attaching said angle member to the walls, a channel member having a bight and a pair of channel flanges respectively attached to said angle flanges, the intersections of said bight and said channel flanges respectively defining stops respectively in contact with the side walls, a leg having substantially perpendicular leg flanges respectively in juxtaposition with said angle flanges, and second fastening means securing said leg to said angle member.

4,128,223

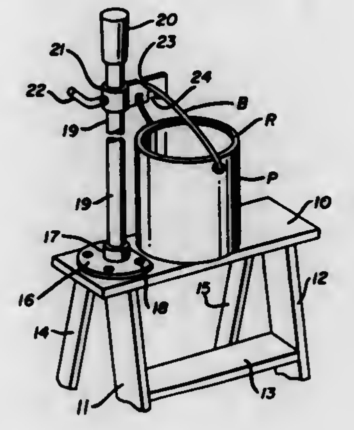
STEP LADDER BRACKET

Merrel F. Brownlee, 58 Euclid Ave., Struthers, Ohio 44471

Filed Mar. 23, 1977, Ser. No. 780,531

Int. Cl.^{2} E06C *7/14*

U.S. Cl. 248—211 **1 Claim**



1. A step ladder bracket and vertically extending safety handle for a step ladder and comprising a horizontally flanged fitting for engagement on a horizontal portion of said step ladder, a vertical post detachably engaged in said fitting so as to extend above said step ladder to form said safety handle, a resilient hand grip on the upper portion of said vertical past, a sliding clamp on said post, said clamp having an annular body movably engaging said post and a horizontally disposed extension on said annular body, at least one notch in each of the upper and lower portions of said horizontally disposed extension, said notch in the upper portion of said horizontally disposed extension being positioned at a 45° angle with respect thereto so as to incline downwardly and outwardly with respect to said annular body of said sliding clamp so that a bucket bale engaged in said 45° slot will hold a bucket positioned on said horizontal portion of said step ladder, a rotatable threaded clamping arm engaged in a threaded opening in said annular body so as to engage said post whereby said notch in the lower portion of said horizontally disposed extension may be engaged over the rim of said bucket on said step ladder and said clamping arm secured to said post to hold said bucket on said step ladder.

4,128,224

SUPPORT DEVICE FOR DISPLAYING SPECTACLES

Claude Guichard, Saint-Claude, France, assignor to Etablissements Rene Guichard, Saint-Claude, France

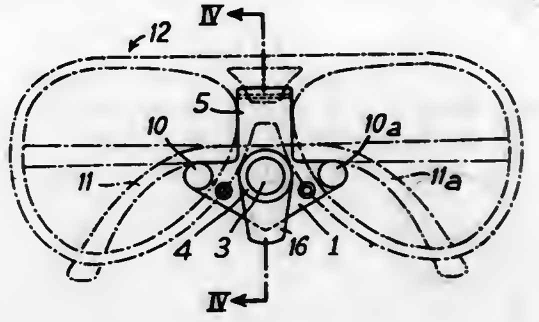
Filed May 13, 1977, Ser. No. 796,660

Claims priority, application France, May 20, 1976, 76 15269

Int. Cl.^{2} A47F *5/00*

U.S. Cl. 248—316 A **6 Claims**

1. A support device for displaying spectacles comprising: for attachment to a support wall, a base member, a rod forming part of the base member, a gripping member slidably mounted on the rod and able to retain the folded sides of a pair of spectacles to be displayed against said base member, spring means to urge said gripping member towards said base member to retain the spectacles thereby and two support lugs provided on the base member on either side of the rod on which the gripping member slides, which lugs support the sides of the pair of spectacles.



4,128,225

CONSTANT TORQUE ADJUSTABLE SEAT

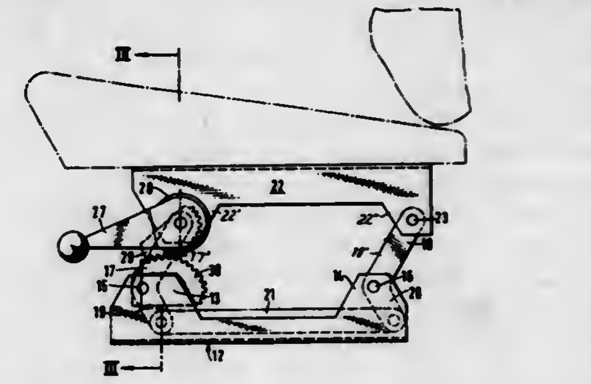
Bernd Klüting, Radevormwald, and Hans W. Voss, Wuppertal, both of Fed. Rep. of Germany, assignors to Firma Fritz Keiper KG, Remscheid, Fed. Rep. of Germany

Filed May 31, 1977, Ser. No. 801,740

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626442

Int. Cl.^{2} F16M *13/00*

U.S. Cl. 248—421 **8 Claims**



1. An arrangement for lifting a load, particularly an adjustable seat, comprising a base member having a curved bearing surface; a carrier member adapted to support a load; means for mounting said carrier member on said base member for movement between a lowered position and a raised position relative to said base member; actuating means including an actuator turnable about a pivot point which is movable in a curved path in a range between first and second end limiting positions and engaging said bearing surface at different engagement points throughout said range, said curved path being spaced from said bearing surface such that the distance from said pivot point to the respective engagement point has a predetermined length when said pivot point is at said first position and a length exceeding said predetermined length when said pivot point is at said second position said actuating means being operative for moving said carrier member relative to said base member between said lowered position in which the load has a weight component of predetermined magnitude tangentially of said curved path, and said raised position in which the load has a weight component tangentially of said curved path which has a magnitude less than said predetermined magnitude; and means for orbiting said pivot point along said path between said first and second positions as said carrier member is respectively moved from its lowered toward its raised position such that each successive distance between each instantaneous position of the pivot point and the respective engagement point has a length exceeding a preceding such distance in substantially inverse proportion to the change in magnitude of the tangential weight component of the load, so that the force necessary for

turning said actuator to thereby lift the load remains substantially constant during the movement of the carrier member.

4,128,226

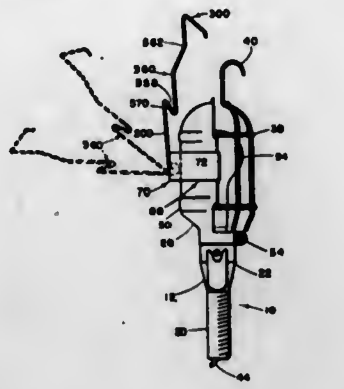
EXTENSION LIGHT ASSEMBLY

Mervin L. Ross, 502 E. Burlington, Fairfield, Iowa 52556, and Marvin W. Gittins, Rte. 1, Council Bluffs, Iowa 51501

Filed May 30, 1975, Ser. No. 582,182

Int. Cl.² F21V *15/00*

U.S. Cl. 362—378 **7 Claims**



1. An extension light assembly comprising an extension light unit having an upwardly extending socket for receiving a bulb, a handle extending downwardly from said socket, an extension cord electrically connected to said socket and extending out of the lower end of said handle, a protective shield on the rearward side of and mostly above said socket, an electric light bulb in said socket, an elongated substantially rigid stem having a hook at its upper end, mean attaching the lower end of said stem to that side of said shield which is opposite said bulb in an adjustable manner such that said stem can be placed in various positions extending respectively at various angles from said shield and so that when said hook is hooked onto an object the angle at which said stem is disposed with respect to said shield will cause said shield to face in various respective directions for focusing light from said bulb and to be held by said attachment mean firmly so as to maintain the selected angular position of said shield with respect to said stem, said means attaching said stem to said shield comprising a stem positioning assembly comprising a stem pressing means on the rearward side of said shield, means mounting said stem pressing means on said shield comprising spring means attached to said shield and to said pressing means and resiliently urging said pressing means towards said shield, said means attaching the lower end of said stem to said shield further comprising the lower end of said stem having a body portion disposed between said pressing means and said shield and said body portion being pressed against said shield by said stem pressing means, said stem pressing means having an opening therethrough through which said stem extends but through which said body portion of said stem cannot pass, the yielding of said spring means permitting said stem body portion to move with respect to said shield.

4,128,227

SERVO-CONTROLLED VALVE

Inge. S. Blomqvist, Sunne, Sweden, assignor to Sunnex Equipment AB, Sunne, Sweden

Filed Mar. 15, 1977, Ser. No. 777,788

Claims priority, application Sweden, Mar. 19, 1976, 7603418

Int. Cl.² F16K *7/12*

U.S. Cl. 251—42 **12 Claims**

1. A valve comprising

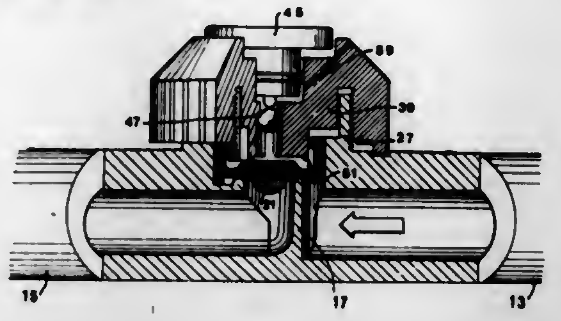
a valve housing,

a pressure controlled chamber in said housing having a cylindrical wall, and including a valve seat,

a circular flexible diaphragm in said pressure controlled chamber, and having an integral central portion thereof movable toward and away from said valve seat for controlling fluid flow through the valve,

means for mounting said diaphragm so that a peripheral rim thereof fits to and is loosely applied against said cylindrical wall of said chamber,

removable closure means having a greater diameter than said cylindrical wall and attached by screw threads thereto so that upon removal of said closure means unrestricted access is provided to said chamber so that said diaphragm can be readily inserted therein and removed therefrom, and



stop means formed on said closure member for abutting said central portion of said diaphragm and thus for stopping its motion away from said valve seat so that movement of said diaphragm away from said valve seat is adjustable from outside said housing by rotation of said closure means, said stop means comprising a central inward projection of said closure means.

4,128,228

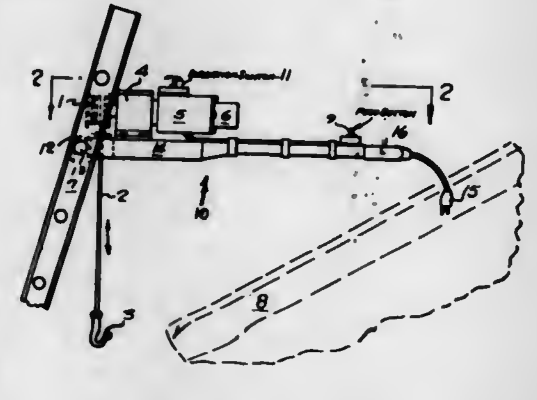
EXTENSION LADDER HOIST

Frank E. Ziegelmann, P.O. Box 99 Station A, Auburn, Calif. 95603

Filed Jun. 9, 1977, Ser. No. 805,236

Int. Cl.² B66C *23/60*

U.S. Cl. 254—139.1 **5 Claims**



1. A hoist for use with an extension ladder comprising a frame member interposed between said extension ladder and a roof at an upper extremity of said extension ladder so that said upper extremity of said extension ladder is removed from said roof and supported on said roof solely by said frame member through a U-shaped channel on said frame which overlies a rung on the ladder and further includes a locking pin extending through the channel and underlying said rung; a winch disposed on said frame, a cable disposed on said winch having a portion which extends vertically downward between said extension ladder and said roof; and means to wind said cable on said winch disposed on said frame so as to raise and lower a terminal portion of said cable from said upper extremity of said extension ladder to a lower extremity; said means to wind said cable includes a motor connected to said winch through a gear and a shaft, a brake connected to said motor to constrain said motor from motion when the brake is applied, a power source connected to said motor, control means to direct the action of the motor and brake.

4,128,229

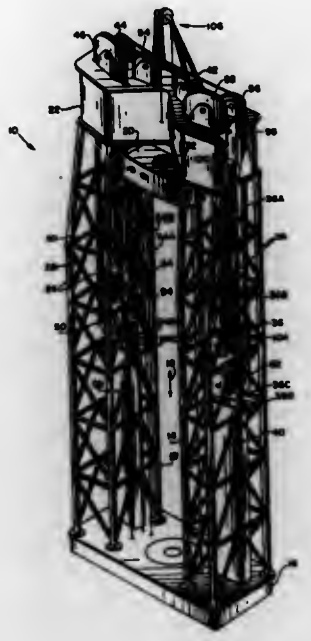
HOIST APPARATUS WITH DUAL MAST STRUCTURE AND COMPOUND POWER TRANSMISSION SYSTEM

Thomas L. Elliston, Fort Worth, Tex., assignor to Hydra-Rig, Inc., Fort Worth, Tex.

Filed Nov. 17, 1977, Ser. No. 852,554

Int. Cl.² B66C *23/60*

U.S. Cl. 254—139 **21 Claims**



1. A hoist rig for lifting a load comprising:

a first mast structure for bearing part of the weight of the load,

a second mast structure for bearing part of the weight of the load, the second mast structure being laterally spaced from the first mast structure thereby defining a load lifting zone;

load engaging means disposed intermediate the first and second mast structures for transporting the load through the load lifting zone;

a power transmission system for raising and lowering a load transported by the load engaging means, the system including first and second cable systems secured to the load engaging means, first and second traveling sheaves mounted for movement along the first and second mast structures, respectively, and engaging the first and second cable systems, respectively, whereby the load engaging means moves in response to movement of the traveling sheaves; and,

first and second extensible linear actuator means each having rod and housing elements, one of the elements of the first and second actuator means being secured to the upper end of the first and second mast structures, respectively, and the other one of the elements carrying the first and second traveling sheaves of the first and second mast structures, respectively, whereby the load engaging means is displaced through the load lifting zone in response to extension of the rod and housing elements relative to each other and whereby part of the load force imposed on the first and second mast structures is opposed by the reaction load forces produced by the first and second actuator means of the first and second mast structures in response to extension of the rod and housing elements relative to each other.

4,128,230

INSTALLATION FOR THE COLLECTION OF GASES EMITTED BY A TILTABLE CONVERTER

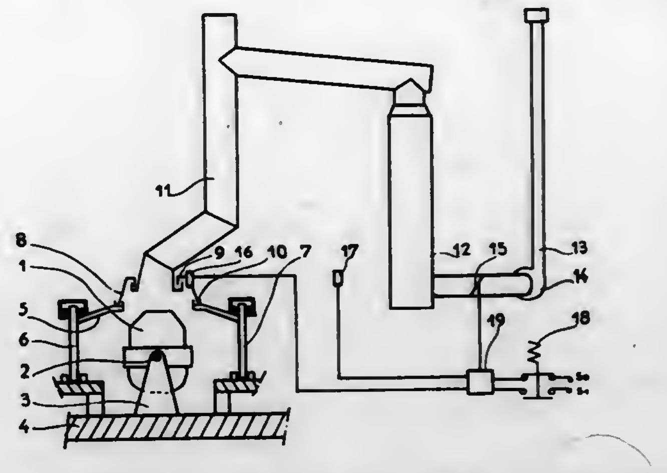
Andre Maubon, Saint-Etienne, France, assignor to Clesid S.A., Saint-Chamond, France

Filed Jun. 16, 1977, Ser. No. 807,342

Claims priority, application France, Jul. 28, 1976, 76 23006

Int. Cl.² C21C *5/40*

U.S. Cl. 266—89 **4 Claims**



1. An installation for the collection of gases and fumes emitted by a converter which is tiltable about a horizontal axis, the installation comprising:

an enclosure for receiving the converter and of sufficient dimensions to allow tilting of the converter and to surround the converter over at least the portion of the converter located above the plane containing the axis of tilt;

a door in said enclosure;

a suction duct secured to the enclosure near the top thereof;

said duct being secured to said enclosure so as to be located above the mouth of the converter when the converter is vertical, the mouth of the converter being uncovered in the enclosure at all times;

a first pressure detector for detecting the pressure of gases in said enclosure near the top thereof;

a second pressure detector for detecting the pressure of gases outside said enclosure;

means for adjusting the draught in said suction duct;

a regulator for controlling said draught adjusting means; and

means connecting said first and second pressure detectors to said regulator;

said regulator being operable to control said draught adjusting means to maintain the difference in the pressures detected by said pressure detectors at a first predetermined value when the converter is vertical and at a second predetermined value substantially greater than the first value when said converter is non-vertical such that the draught in the suction duct is then maximum to provide maximum suction in the enclosure.

4,128,231

INDIRECTLY FIRED VERTICAL SHAFT FURNACE

Denis H. Jackson, 850 W. Osborn Rd., Phoenix, Ariz. 85013

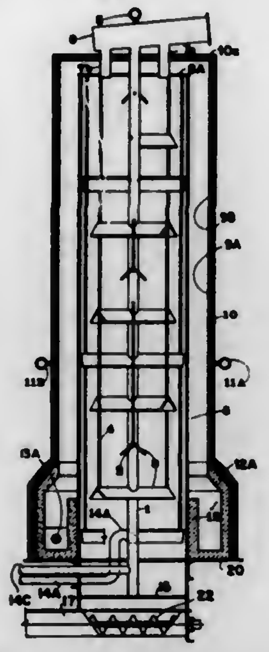
Filed Mar. 9, 1978, Ser. No. 884,928

Int. Cl.² C22B *43/00*; F27B *1/00*

U.S. Cl. 266—154 **4 Claims**

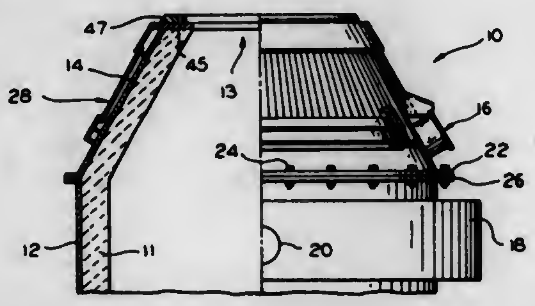
1. An indirectly fired vertical shaft furnace comprising an elongated upright cylindrical retort, annular combustion chamber means surrounding the lower end of said retort, at least one burner tangentially located in said annular combustion chamber for directing a flame substantially horizontally into said annular combustion chamber in a circumferential direction, cylindrical heat shield means disposed in spaced concentric relation outwardly of said retort and said combustion chamber, said retort and said heat shield each having cover means spaced from each other to define a heating chamber which substantially surrounds the entire length of the retort and the top of the retort to provide a uniform heating of

the retort, means for supplying material through the top walls of said heat shield and retort into said retort, means for withdrawing material from the bottom of said retort and vapor collector means comprising a stationary vertical vapor collector conduit disposed concentrically within said cylindrical retort and having a plurality of spirally arranged apertures therein, downwardly opening concave vapor collector channels rigidly connected to said collector conduit above each of said apertures and extending radially outwardly toward said retort for collecting rising vapors and directing said vapors through said apertures to the interior of said conduit, means for withdrawing said vapors from the upper end of said conduit and rod means secured to the top wall of said retort and the outer ends of said collector channels to support said channels against the weight of the downwardly moving material.



4,128,232
COOLING ASSEMBLY FOR METALLURGICAL VESSELS

Rashed N. Nagati, Mars, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.
Filed Jun. 30, 1977, Ser. No. 811,571
Int. Cl.^{2} C21C *5/42*
U.S. Cl. 266—241 **11 Claims**



1. A metallurgical vessel having a top opening and cooling means disposed on the surface of said vessel and adjacent said top opening,

a plurality of elongate members affixed to the surface of said vessel in a side-by-side relation and extending generally in the axial direction to define a plurality of adjacent flow passages,

most of said flow passages being in communication adjacent one of their ends with the flow passage on one side thereof and being in communication with the flow passage on the other side thereof at a point adjacent their other end so that cooling liquid in adjacent passages flows in opposite directions,

means defining an elongate flow passageway disposed adjacent one of the ends of said plurality of flow passages and being in communication with one end of first and second spaced apart ones of said plurality of flow passages, said flow passageway defining means at least partially surrounding said vessel top opening, the other end of one of said first and second flow passages being connected to a drain,

one end of a flow passage adjacent one of said first and second flow passages being connected to an inlet,

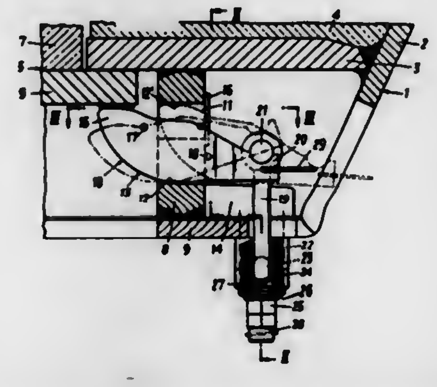
first and second closure means for closing the opposite ends of said members, said first closure means being disposed between said members and said elongate flow passageway,

first and second spaced apart apertures formed in said first closure means and adjacent the ends of the first and second spaced apart ones of the plurality of flow passages,

said second closure means having a third aperture therein for connecting the other end of said first flow passage to said inlet, a fourth aperture formed in one of said members disposed adjacent said first flow passage for connecting the passage defined by said one member to a cooling fluid outlet.

4,128,233
CONVERTER-BOTTOM-FASTENING MECHANISM

Manfred Eysn, Linz, and Hans Moser, Seewalchen, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke — Alpine Montan Aktiengesellschaft, Linz, Austria
Filed Sep. 1, 1977, Ser. No. 829,715
Claims priority, application Austria, Oct. 21, 1976, 7829/76
Int. Cl.^{2} C21C *5/46*
U.S. Cl. 266—243 **14 Claims**



1. In a converter-bottom-fastening mechanism to be used in a converter construction having a removable converter bottom, a converter jacket defining a bottom opening to be covered by the removable converter bottom, and a supporting construction connected to said converter jacket, said mechanism including a plurality of rocker-shaped clamping levers with rocker faces, said clamping levers being peripherally arranged about the removable converter bottom and captured on the converter construction, the improvement comprising:

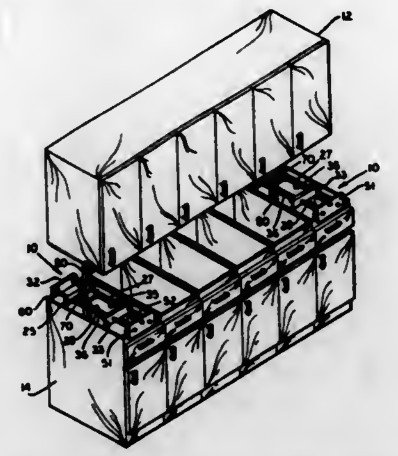
rocker-like clamping levers that are axially displaceable into and out of an engagement position with said converter bottom in which one of the ends of each of the clamping levers braces the bottom upwardly into the bottom opening;

bracing means located between said clamping levers and said converter construction for articulately supporting the other ends of the clamping levers, which other ends face the converter jacket, with respect to the converter construction, and

support members for supporting the center of the clamping levers so that the bracing means can pivot the clamping levers, when in the engagement position, upward against the converter bottom so as to fasten it within the opening in the converter jacket.

4,128,234
CABINET INSTALLATION TOOL

Harry A. McKee, 6851 Roswell Rd., Atlanta, Ga. 30328
Filed Oct. 13, 1977, Ser. No. 841,649
Int. Cl.^{2} B25B *11/02*
U.S. Cl. 269—97 **5 Claims**



1. A tool for mounting cabinets in spaced relationship over base cabinets comprising:

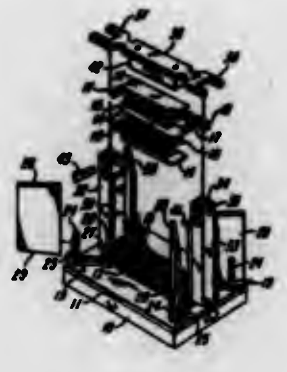
an adjustable frame for mounting across the top of a base cabinet;

said frame including first rail means for engaging the vertical rear wall of a base cabinet and second rail means for engaging the vertical front wall of a base cabinet, means for adjustably moving said first rail means and said second rail means toward and away from each other so that said adjustable frame fits onto base cabinets of varying thicknesses, and means for fixedly attaching said adjustable frame to the base cabinet,

vertical support means mounted on said frame for supporting an upper cabinet at a preselected height above the base cabinet, said vertical support means comprising socket means mounted on said adjustable frame, a support shaft received in said socket means and normally extending vertically above the base cabinet, and means for retaining said support shaft at various positions along its length with respect to said socket means whereby the tool is mounted on a base cabinet and an upper cabinet is supported above the base cabinet by the upper end portion of said support shaft.

4,128,235
BRAZE FIXTURE

Harry C. Gersbacher, Dayton, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio
Filed Sep. 1, 1977, Ser. No. 829,881
Int. Cl.^{2} B23K *37/04*
U.S. Cl. 269—234 **12 Claims**



1. A fixture useful in positioning and holding parts stacked therein to form an assembled heat exchanger or the like and in holding said parts in an assembled relation during brazing, including:

(a) a base plate providing a multi-sided area within which heat exchanger components corresponding in configuration to said area are stacked one upon another;

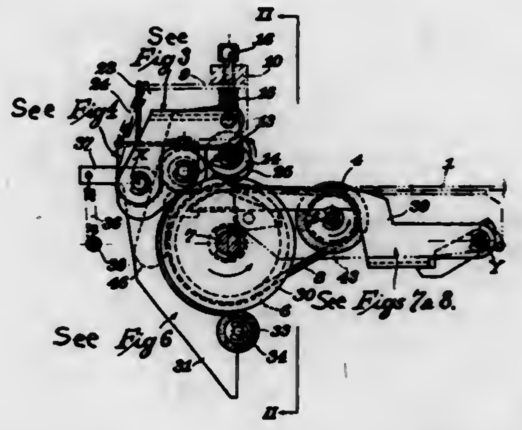
(b) part locators of plate-like form mounting on end to stand upright from said base plate;

(c) upright side edges of said locators being presented to corners of said area and having portions to engage with respective corners of parts stacked in said area; and

(d) means influencing a movement of said locators toward respective corners of said area, said means yielding to allow an expansion of said parts during brazing while maintaining an engaged relation of said locators with corners of an assembly of stacked parts.

4,128,236
SHEET FEEDING APPARATUS

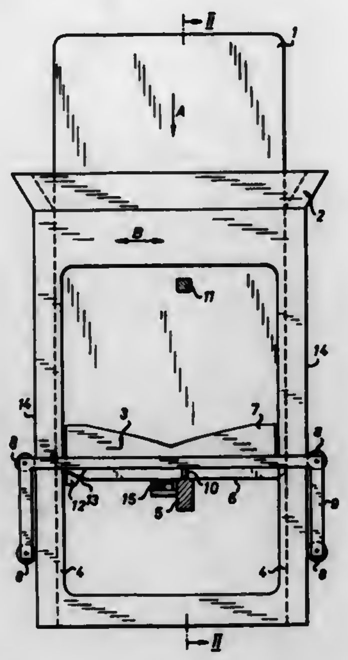
Leif Lundblad, Huddinge, Sweden, assignor to Inter Innovation AB, Stockholm, Sweden
Continuation of Ser. No. 673,347, Apr. 2, 1976, abandoned. This application Aug. 15, 1977, Ser. No. 824,601
Claims priority, application Sweden, Apr. 7, 1975, 7503941
Int. Cl.^{2} B65H *3/04, 3/06, 3/38*
U.S. Cl. 271—10 **9 Claims**



3. Apparatus for removing sheets one at a time from a face of a stack of sheets and feeding the sheets so removed sequentially along a flow-line, said apparatus comprising first feed means for engaging the face and moving a sheet from a stack in a direction substantially parallel to the face and into said flow-line, sheet seizing means downstream of said first feed means along said flow-line for receiving and conveying further along said flow-line a sheet removed from the stack, said sheet seizing means including a nip formed between a second feed means and a roller disposed on opposite sides of said flow-line, lever means operative by a sheet moving downstream of said nip for creating relative separation between said face and said first feed means, said lever means including first and second levers mounted for pivotal movement at respective fixed first and second pivot means, said first lever having a first portion disposed downstream of said nip and normally located to obstruct the flow-line but being movable from said flow-line by the passage of a sheet along said flow-line, said second lever having a first portion remote from said second pivot means for effecting said relative separation between said face and said first feed means, and said first lever having a second portion remote from said first lever first portion for directly contacting and pivoting said second lever in the absence of further movable linkage means about said second fixed pivot means in direct mechanical response to the movement of said first lever first portion by a sheet moving downstream of said nip whereby pivotal movement of said first lever at said first pivot means imparts pivotal movement of said second lever at said second pivot means and movement of said second lever first end portion effects said face and first feed means separation.

4,128,237
CARD INPUT DEVICE FOR PRECISION PUNCHING OF CARDS

Charles G. Bechtiger, Colombier, Switzerland, assignor to Relhor S.A., La Chaux-de-Fonds, Switzerland
Filed Jun. 23, 1977, Ser. No. 809,387
Claims priority, application Switzerland, Jul. 6, 1976, 8665/76
Int. Cl.² B65H *9/12*
U.S. Cl. 271—241 **4 Claims**



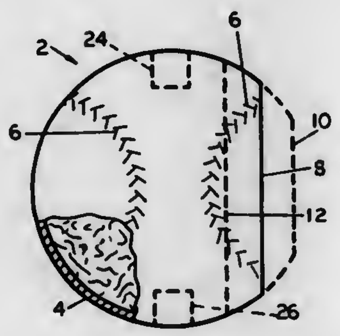
1. A card input device for a data card punch comprising a card guideway frame of variable card insertion depth, which frame is movable relative to a fixed card punch location in a direction transverse to the card insertion depth dimension, and comprising the improvement wherein, for controlling card insertion:

a carriage (3) movable vertically relative to the card guideway frame (2) is provided, which carries at least one pair of card guide members (7) for accepting and guiding an end portion of an inserted card, between which paired members (7) a card accepting and constraining slit (16) provides a vertical through-passage between said members for a card, and

means (5) for limiting vertical card position that are vertically movable for setting the card insertion depth and are not part of nor affixed to said carriage are disposed below said guide members of said carriage in such a manner as to cause the carriage to move together upwardly with said means.

4,128,238
PRACTICE BASEBALL

Nelson F. Newcomb, and Nelson F. Newcomb, Jr., both of P.O. Box Mirror Lake, Mirror Lake, N.H. 03853
Filed Nov. 1, 1976, Ser. No. 737,841
Int. Cl.² A63B *37/14, 43/04*
U.S. Cl. 273—26 R **3 Claims**



1. A practice baseball adapted to be thrown by baseball pitchers and so constructed that when thrown in the manner that a straight ball is thrown by baseball pitchers, it will curve to a controllable degree, said baseball having the following characteristics,

a. it has two distinct outer surfaces one of which comprises the major spherical portion of the surface of a sphere and the other surface has a shape other than that of said major spherical portion,

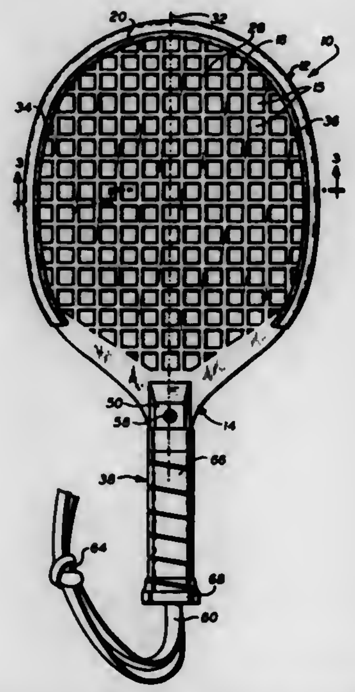
b. the area of said major spherical portion is between 70% and 93% of the area of a complete sphere of the same diameter,

c. the annular part of the major spherical portion lying between (1) the juncture of said major spherical portion and said other surface and (2) a great circle parallel to said juncture is large enough to accept at least one finger of the thrower's hand when the ball is held in the ball gripping position required for throwing a conventional baseball as a straight ball, and

d. the weight of the said practice baseball being the same as the weight of a conventional fully spherical baseball used in league play and the diameter of said major spherical portion of said practice baseball corresponds to the diameter of said conventional fully spherical baseball used in league play.

4,128,239
SOLID MOLDED PADDLE CONSTRUCTION

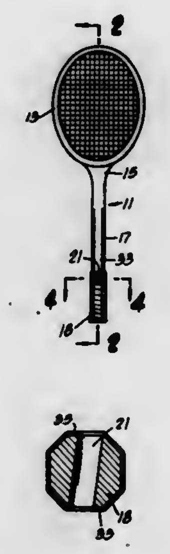
Lewis Grenadier, 19 Lancaster Ct., Cresskill, N.J. 07626
Filed Oct. 29, 1976, Ser. No. 737,002
Int. Cl.² A63B *59/00*
U.S. Cl. 273—67 R **6 Claims**



1. A solid molded metal paddle construction comprising a face portion for striking a ball and handle means for gripping said paddle, said face portion comprising a unitary face member having a recessed peripheral edge portion, a plastic sleeve gripping said peripheral edge portion and filling said recess to substantially blend in with the portion of said face immediately adjacent said sleeve so as to present a substantially continuous surface thereat, a plurality of openings extending through said face member, said handle means comprising a handle extension, a solid throat portion between said face portion and said handle extension, said throat portion, face portion and handle extension being of unitary construction, said plurality of openings being symmetrical about a vertical center line, the spacing between said openings being substantially smaller than the diameter of a ball adapted to be hit by said paddle, whereby the ball covers a preselected number of said plurality of openings when it is struck by said paddle, said handle extension comprising an elongated member, a through slot in said extension extending substantially the length of said extension and terminating above the bottom edge thereof, and a grip connected to said handle extension, said grip comprising a first section on one side of said extension and a second section on the other side of said extension, means for connecting together said extension and said sections, said first and second sections being multi-faceted to provide a multi-faceted grip, said first and second sections having a flat face in contact with said handle extension so as to leave said slot open, and tape means surrounding said first and second sections to increase the friction between said paddle construction and the hand of a player.

4,128,240
TENNIS RACKET

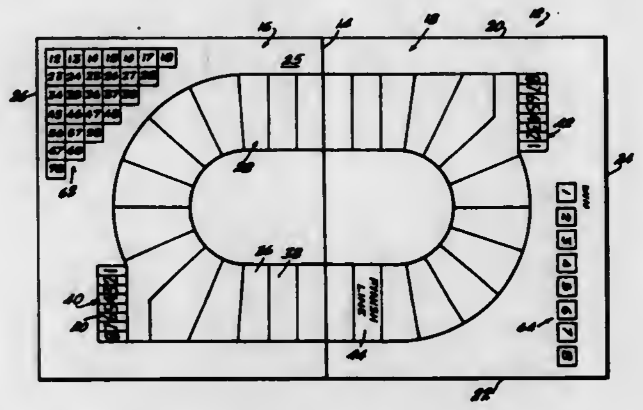
Andrew J. Berokoff, 508 Allis Dr., Montebello, Calif. 90640
Filed Oct. 26, 1976, Ser. No. 735,683
Int. Cl.² A63B *49/08*
U.S. Cl. 273—75 **5 Claims**



1. A tennis racket including:
(a) a head for striking a ball,
(b) an elongated shaft extending from said head, and
(c) a hand grip extending from said shaft and having front and rear surfaces and at least two side surfaces, said hand grip having at least one hole extending obliquely therethrough from said front surface to said rear surface, said hole being of sufficient size and configuration to permit a person holding said tennis racket to insert a finger therethrough.

4,128,241
RACING BOARD GAME DEVICE

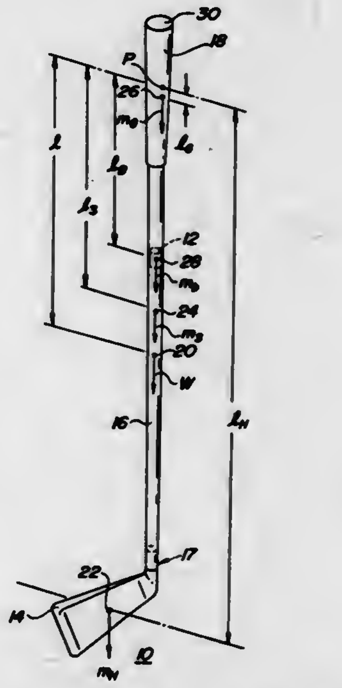
Gonzalo A. Morera, 903 Capri St., Coral Gables, Fla. 33125
Filed Jun. 27, 1977, Ser. No. 810,156
Int. Cl.² A63F *3/00*
U.S. Cl. 273—246 **4 Claims**



1. A game device comprising a plurality of play pieces and a gameboard, said gameboard having a playing surface with an elliptical track defined thereon by indicia and which elliptical track is divided by lateral indicia into adjacent zones longitudinally arranged along the entire track, said track having corner zones and one of said corner zones of said track being designated a first entrance zone and at a diagonally opposite corner zone with respect to said one of said corner zones there being indicia designating a second entrance zone, each of said entrance zones being separated into a plurality of adjacent entrance zone portions, each of said entrance zone portions being sized to support respectively one of said plurality of play pieces, said game including chance device means, comprising a first conventional die with numerals 1 through 6 and a second die comprising a six-sided cube having an indicia on each main surface designating, respectively, the word "Run", "Tired", "Bumped ", and "Jump", and there being two designated "Run", two designated "Tired", and one designated "Jump" and one designated "Bumped", whereby when the die of the chance devices are thrown simultaneously, the conventional die indicates a number and the other die indicates whether or not the move is to be exactly as shown on the dice, is to be doubled, is to be ignored, or the play piece is to be moved reversely, each of said play pieces comprising member representing a dog, and one of said adjacent zones along said elliptical track spaced from said corner zones being designated "Finish Line".

4,128,242
CORRELATED SET OF GOLF CLUBS

Vance V. Elkins, Jr., Freehold, N.J., assignor to Pratt-Read Corporation, Ivoryton, Conn.
Filed Nov. 11, 1975, Ser. No. 631,165
Int. Cl.² A63B *53/00*
U.S. Cl. 273—77 A **27 Claims**



1. A method of producing a correlated set of golf clubs, at least two of said golf clubs having differing lengths and each of said golf clubs having an extended shaft with a clubhead and a grip on opposing ends thereof, including the steps of

(a) establishing predetermined weight distributions over each of the clubs in the set,

(b) establishing predetermined weight moment values for said clubs in said set, and

(c) establishing predetermined physical pendulum (1) moment of inertia and (2) period of oscillation values for said clubs in said set and providing a ratio of the moment of inertia value to the weight moment value for each club which is substantially equal to that ratio for each of the other clubs in said set so that each of the clubs swings about a preselected swing point under the force of gravity with a substantially equal physical pendulum period of oscillation.

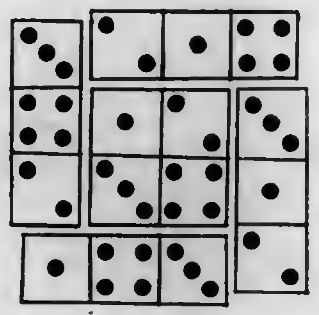
16. A correlated set of more than two golf clubs in which each of the golf clubs in the set have differing lengths and each

has a shaft with a grip at one end and a clubhead at the other end comprising
- each of the clubs in the set having predetermined physical parmaters of the shaft, grip and clubhead with each of the clubs having substantially the same weight moment about a predetermined pivot and each of the clubs having substantially the same physical pendulum (1) moment of inertia and (2) period of oscillation whereby each of the clubs swings about a preselected swing point under the force of gravity with a substantially equal physical pendulum period of oscillation.

4,128,243

MAGIC SQUARE PUZZLE

Salvatore Pulejo, 445 Marilu St., Richardson, Tex. 75080
Filed May 27, 1977, Ser. No. 801,258
Int. Cl.^{2} A63F *9/08*
U.S. Cl. 273—156 1 Claim

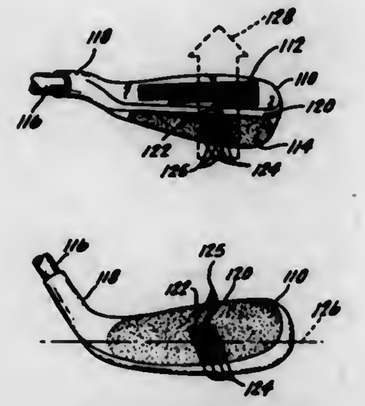


1. A magic square puzzle comprising a square shaped piece and four rectangular pieces each having a square cross section and a length one and one half times the length of a side of the square shaped piece; the top surface of said square shaped pieces being divided into four equal square shaped quadrants by a pair of perpendicular lines, a numerical indicium being disposed in each said quadrant; and each longitudinal surface of each rectangular piece being divided into three square shaped segments by a pair of lines circumscribing said pieces in planes perpendicular to the longitudinal axis of each rectangular piece, each segment on three surfaces of each rectangular piece having a numerical indicium therein and being of the same size as each quadrant; whereby the rectangular piece can be rotated about their longitudinal axes and placed in surrounding relation to said square shaped piece in an effort to make equal the sums of said numerical indicia taken horizontally, vertically and diagonally across said quadrants and segments.

4,128,244

ALIGNMENT DEVICE FOR GOLF CLUBS

Clovis R. Duclos, 6371 El Paseo Ct., Long Beach, Calif. 90815
Continuation-in-part of Ser. No. 625,940, Oct. 28, 1975, abandoned. This application Mar. 28, 1977, Ser. No. 781,158
Int. Cl.^{2} A63B *53/04*
U.S. Cl. 273—164 4 Claims

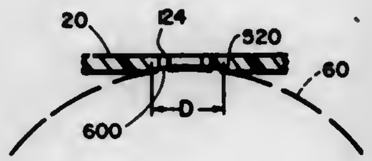


1. A golf club head for an iron including a ball striking surface having a center of percussion, an undersurface and means to enable alignment of the user's eyes with the line of desired motion of the golf ball and in a plane containing the line which is oriented at a predetermined angle from horizontal, said means include:
- a pair of spaced, facing wall surfaces oriented at right angles to and behind the ball striking surface and at the predetermined angle from horizontal, said wall surfaces being parallel to define a slot and they extend rearwardly behind the ball striking surface in alignment with the center of percussion;
- a back surface at an angle opposite from horizontal from said ball striking surface so that said head has a generally triangular cross-section;
- a top surface adjacent said back surface, said facing wall surfaces forming a notch which extends partially down said back surface from said top surface; and
- at least one indicia line extending along said back surface in a position to be visually aligned with said notch, said indicia line being at an angle from vertical when said club undersurface is resting properly on the ground.

4,128,245

GOLFER'S TRAINING AID

Anthony R. Vlach, 3205 S. 48th St., Omaha, Nebr. 68106
Filed Dec. 16, 1974, Ser. No. 532,942
Int. Cl.^{2} A63B *69/36*
U.S. Cl. 273—183 A 10 Claims

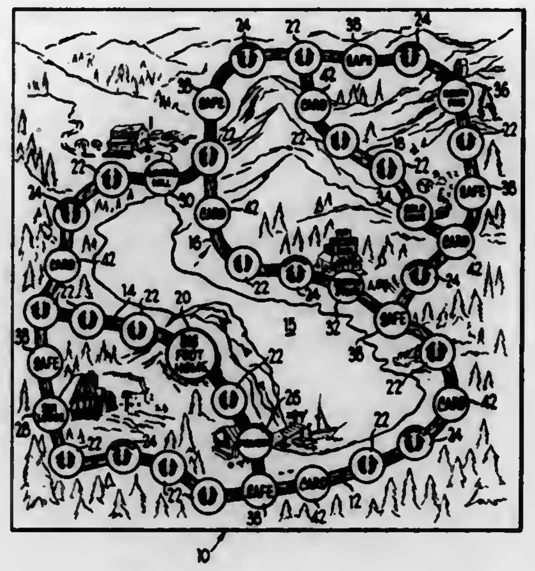


1. A golf-swing guide for use at a golf course tee, in the rough, on fairways, and on putting greens, said guide comprising an indicator support, said support being for resting on top of a ball, said guide being for the purpose of assisting a golfer to position himself for his golf-swing to hit said ball in an intended flight direction extending in an intended flight line to one side of said support, a first direction indicator means on said support and visible from the top of said support so as to be substantially alignable with said flight line as seen from above when said support is on top of a golf ball, said support having a ball-top receiving recess means on its underside, said support being balanced sufficiently so that it can rest with substantial stability on top of a golf ball with a top of said ball partially received in said recess means, said recess means having a recess wall, said recess wall having lowermost portions defining at least three points on a horizontal circular configuration, said circular configuration having a vertical axis through its center, said circular configuration having a diameter in a range between one-eighth of an inch and 1½ inches, said recess means having a sufficient depth upwardly of said circular configuration that all points on said recess wall which are disposed inwardly toward said axis are disposed upwardly of a certain spherical configuration, said certain spherical configuration having a diameter of approximately 1.7 inches and a center on said axis and disposed directly below the center of said circular configuration.

4,128,246

CHASE-TYPE BOARD GAME APPARATUS

Alan A. Hicks, Chicago; John O. Spinello, Glendale Heights, and Jeffrey D. Breslow, Highland Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Feb. 14, 1977, Ser. No. 767,431
Int. Cl.^{2} A63F *3/00*
U.S. Cl. 273—243 12 Claims



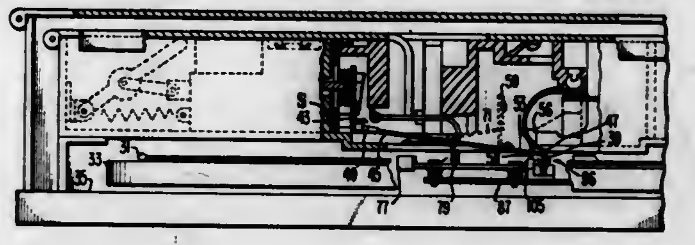
1. In a board-type game apparatus, in combination:
- a game board having a relatively large playing surface with a plurality of spaced apart stations thereon positioned at intervals along a travel path, and
- a plurality of relatively small playing pieces adapted for movement over said playing surface between said stations along said travel path,
- one of said playing pieces having an upper body having an opening in a lower end and a hollow base slidably disposed in said opening, said hollow base accommodating a plurality of disks adapted to be removably contained in vertically stacked relation therein, some of said disks having distinguishing indicia on at least one face thereof and manually loadable in said hollow base in a stack with said faces randomly ordered, said one playing piece including
- holding means releasable upon manual placement of said base in pressure contact against said playing surface for releasing a lowest one of said stacked disks from said hollow base to remain on said playing surface when said pressure contact is terminated and said upper body including means engageable with an upper disk in said stack for biasing a lower disk therein against said holding means for release thereof.

6. A playing piece for manipulation on the playing surface of a board game apparatus and adapted to dispense disks thereon comprising:
- a hollow body having an opening adjacent a lower end portion thereof and a hollow support base slidably disposed in said opening, said hollow body including means extending downwardly into said hollow base engageable with an upper disk in a stack of disks releasably contained in said hollow base for exerting downward force thereon to release said lower disk for deposit on said board of said apparatus,
- and holding means on said base for retaining a lower disk in said stack and releasable in response to pressure exerted on said lower disk permitting said disk to be released from said support base, said holding means comprising at least one deflectable finger on said hollow support base including pawl means normally engaging said lower disk to retain the same in said stack and deflectable outwardly by pressure exerted by said disk to release the same from the base.

4,128,247

STYLUS POSITION CONTROL SYSTEM

James A. Allen, Monrovia, and Clyde F. Coleman, Crawfordsville, both of Ind., assignors to RCA Corporation, New York, N.Y.
Filed Feb. 14, 1977, Ser. No. 768,591
Int. Cl.^{2} G11B *3/10*
U.S. Cl. 274—23 R 8 Claims

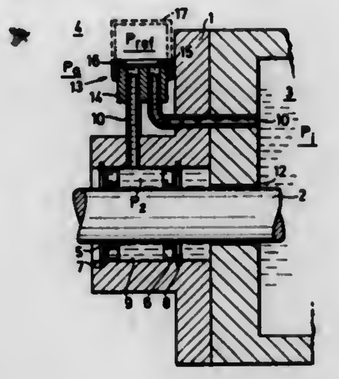


1. In a playback system for recovering prerecorded information from a spirally grooved record disposed on a turntable rotatably mounted with respect to a base of said system; said system including a stylus housing mounted for lateral travel with respect to said base between an off-turntable rest position and above-turntable playback positions; a groove riding stylus secured to one end of a stylus arm; the end of said stylus arm remote from said one end being secured to a support member mounted within said stylus housing via a compliant coupler; an apparatus comprising:
- a stylus arm rest mounted in said stylus housing for motion between an elevated position and a depressed position;
- a first permanent magnet mounted on said stylus arm rest;
- selectively energized first actuating means including a stationary element means for generating a first field of magnetic flux, mounted within said stylus housing and cooperating with said first permanent magnet when energized, said first permanent magnet being positioned in close proximity to said first field of magnetic flux when said stylus arm rest is in said elevated position, for moving said stylus arm rest from said elevated position to said depressed position;
- means for selectively energizing said selectively energized first actuating means when said housing is in said playback positions;
- said energizing means serving to provide a given polarity of energization of said magnetic flux generating means; the orientation of said first permanent magnet relative to said magnetic flux generating means being such that said first permanent magnet is repelled away from said magnetic flux generating means during said energization of said given polarity to cause motion of said stylus arm rest from said elevated position to said depressed position;
- second actuating means including a second permanent magnet secured on said base beneath the rest position of said stylus housing and cooperating with said first permanent magnet during housing occupancy of said rest position and during travel of said housing between said rest position and an intermediate position between said rest position and said playback positions for causing said stylus arm rest to assume said depressed position during said housing occupancy of said rest position and during said travel of said stylus housing between said intermediate position and said rest position;
- said second permanent magnet serving to provide a second field of magnetic flux; the orientation of said first permanent magnet relative to said second permanent magnet being such that said first permanent magnet is attracted towards said second permanent magnet during travel of said stylus housing between said intermediate and said off-record rest position, to cause motion of said stylus arm rest from said elevated position to said depressed position; and
- means for moving said stylus arm rest from said depressed position to said elevated position in the absence of said

energization during travel of said housing between said intermediate position and said playback positions.

4,128,248
SHAFT SEAL

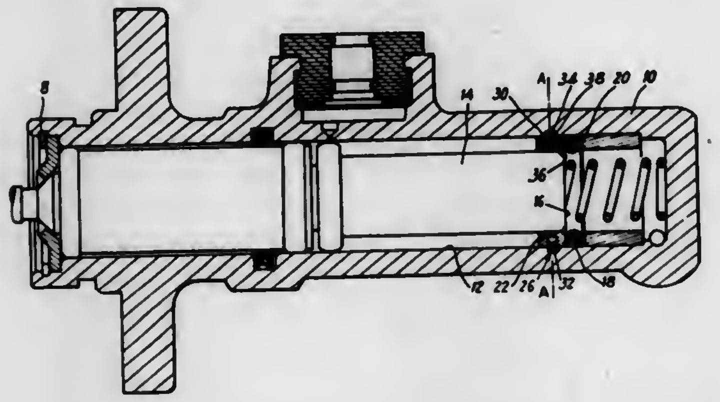
Hans-Peter Kabelitz, Cologne, and Nikolas Sideris, Cologne-Weidenpesch, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH & Co. KG, Cologne, Fed. Rep. of Germany
Filed Jun. 6, 1977, Ser. No. 804,017
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1976, 2625153
Int. Cl.² F16J *15/54*
U.S. Cl. 277—15 **4 Claims**



1. A dynamic packing for sealing a shaft which passes through a wall separating an oil-containing region from an oil-free region, comprising: means defining a cylindrical passage through which the shaft extends; two shaft sealing rings disposed in said passage for engagement with the shaft locations spaced along the shaft axis to define therebetween an annular oil-filled gap; means defining a duct composed of one portion communicating with the oil-containing region and another portion communicating with said gap, for placing said gap in communication with the oil-containing space; and closure means composed of a body into which both of said duct portions extend, and a diaphragm disposed with one of its faces in communication with both of said duct portions for selectively blocking passage of oil through said duct in order to selectively control fluid communication between said duct portions.

4,128,249
SEAL FOR A VARIABLE RATIO HYDRAULIC MASTER CYLINDER

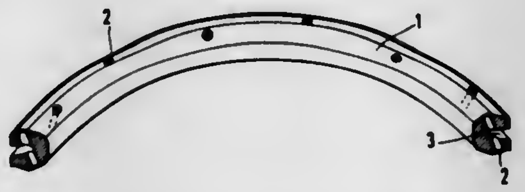
Ferruccio Manzini, deceased, late of Crema, Italy, and Laura C. Manzini, administratrix, Turin, Italy, assignors to Benditalia S.p.A., Crema, Italy
Filed Jan. 19, 1977, Ser. No. 760,602
Claims priority, application Italy, Jan. 21, 1976, 19426 A/76
Int. Cl.² B65D *53/02;* F16J *15/46*
U.S. Cl. 277—182 **7 Claims**



1. A fluid tight assembly comprising a casing provided with a bore and a piston which is adapted for movement inside the bore, said bore having a shoulder formed therein, and a fluid tight annular seal and an annular washer supported by the piston, said seal being disposed between the shoulder and washer, said washer having an outside diameter substantially equal to that of the bore and an inside diameter substantially equal to that of the piston, said bore having a first annular groove, said washer also having a second annular groove on its periphery with at least one radial bore at the bottom of said groove, said first and second grooves being aligned with each other, at least one retainer capable of being disposed in both said first and second annular grooves, said retainer having a curved portion with a radial width greater than the depth of the first groove in the bore and substantially equal to the depth of the second groove in the washer, said retaining element having a tongue inwardly projecting from said curved portion through said at least one radial bore of the washer, said curved portion of the retaining element being urged into said first annular groove due to radial outward movement of the tongue caused by engagement of the outer surface of the piston with the tongue upon movement of the piston through the washer for holding said washer stationary within said casing.

4,128,250
PISTONS AND PISTON RINGS

Hermann Barth, Stuttgart, Germany, assignor to Mahle GmbH, Stuttgart, Germany
Continuation of Ser. No. 640,866, Dec. 15, 1975, abandoned. This application Feb. 22, 1977, Ser. No. 770,498
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1974, 2460883
Int. Cl.² F16J *9/00*
U.S. Cl. 277—189.5 **1 Claim**

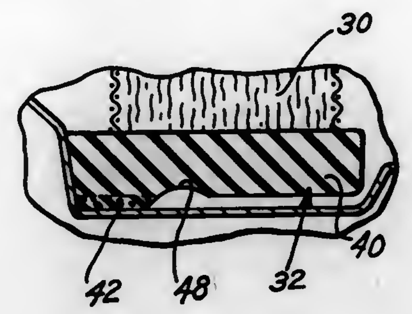


1. A one-piece annular reinforcement insert for a piston ring groove for a light metal piston, said insert having only a single annular groove formed radially inwards from the outermost periphery of the insert to form opposite flanks, and having cylindrical borings extending within the insert and which are filled with the piston material integral with the piston so as to form pins in the borings, said borings having its ends in the upper and lower annular surfaces of the insert and being disposed on axes inclined in relation to the longitudinal axis of the insert, wherein said borings extend entirely through the two flanks and communicate with the annular groove so as to provide two holes for two pins in each bore one in each of said flanks, said two holes being separated from each other by the annular groove.

4,128,251
SEALING GASKET FOR AIR FILTER

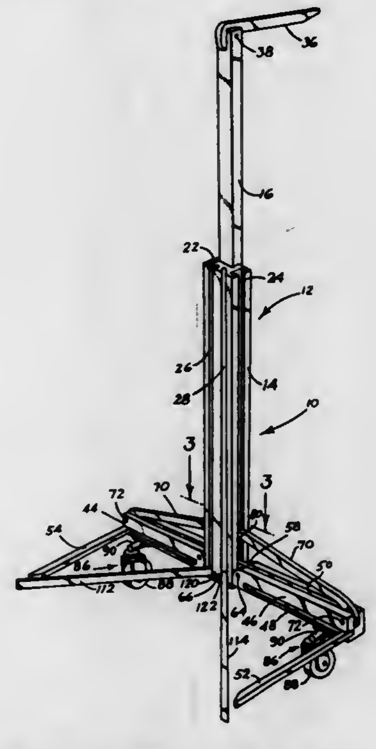
Howard H. Gaither, Albion, and Charles J. Casaleggi, Mt. Carmel, both of Ill., assignors to Champion Laboratories, Inc., West Salem, Ill.
Filed Sep. 21, 1977, Ser. No. 835,153
Int. Cl.² F16J *15/06*
U.S. Cl. 277—233 **9 Claims**

1. A sealing gasket for an air filter comprising an annular member having a base portion and a sealing portion, the base portion having a higher durometer than the sealing portion, whereby the sealing portion can more readily adapt to the contour of a contact surface which it may engage so as to provide a better seal between the sealing gasket and such contact surface, said base portion including a generally flat first surface and an opposite surface from which the sealing portion projects, and an annular recess in the said opposite surface in order to provide space for the sealing portion which may be deformed in use.



4,128,252
FOLDABLE SUITCASE DOLLY

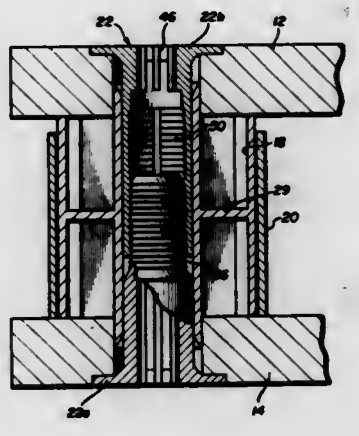
John J. Raniero, Box 204, Gearhart, Oreg. 97138
Filed Dec. 20, 1976, Ser. No. 752,204
Int. Cl.² B62B *3/02*
U.S. Cl. 280—40 **5 Claims**



1. A foldable hand truck comprising
an elongate telescopic central member,
load support means connected to said central member,
a pair of legs swingably connected adjacent an inner set of their ends to the lower end of said central member for swinging relative to said central member between collapsed positions extending upwardly along and adjacent said central member and extended positions extending outwardly from opposite sides of said central member, substantially normal thereto,
a wheel assembly connected to each of said legs, adjacent the outer end thereof, for supporting said truck above a ground surface when said legs are extended,
a pair of elongate locking arms, each of said locking arms being pivotally connected adjacent one of its ends to one of said legs in a region spaced a distance from the inner end of said leg, said locking arms being independently movable with respect to each other,
a pair of tracks defined in said central member and extending longitudinally thereof, and
means slidably mounting the end of each of said locking arms, opposite its said one end, within an associated track above the pivot connection between said legs and central member, said locking arm being mounted for movement therealong between a locked position adjacent said inner end of said leg, wherein said locking arm extends at a low angle relative to its associated leg, such that the tendency of said leg to swing from its extended to its collapsed position causes the locking arm to press against said central member to frictionally lock said leg in its extended position, and a position slid upwardly along said central member to permit swinging of said leg to its collapsed position wherein said locking arm and the associated elongate leg are disposed adjacent said central member.

4,128,253
PALLET AND ROLLER POST CONSTRUCTION THEREFOR

Richard J. Powers, 4340 N. Marmora, Chicago, Ill. 60610
Filed Oct. 14, 1977, Ser. No. 842,055
Int. Cl.² B62B *1/00;* B65D *19/26, 19/42*
U.S. Cl. 280—79.1 A **27 Claims**



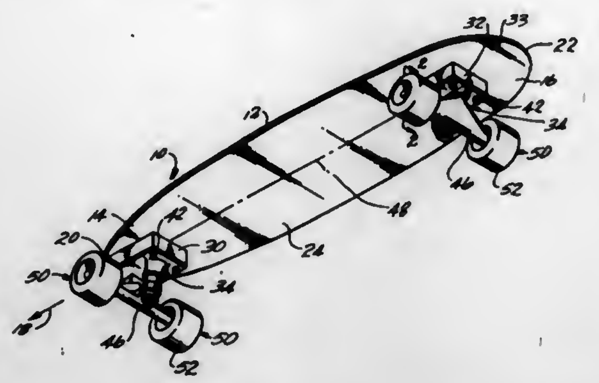
1. A pallet comprising at least an upper platform and a plurality of posts for supporting said upper platform in spaced relationship to a support surface, said upper platform having formed therein a number of holes corresponding in number to the posts secured thereto, said posts each comprising an outer body and a smaller inner body encompassed by said outer body and attached to said outer body by a plurality of spaced apart flanges, said inner body having a portion extending beyond said outer body at at least one end thereof and having an axially aligned bore extending through it, the extended portion of said inner body being disposed within the respective ones of said holes in said upper platform, and a plurality of rivets each having an enlarged diameter base portion and an axially aligned cylindrical shaft portion formed integrally therewith, said cylindrical shaft portion of each said rivet being extended through a respective one of said holes in said upper platform and into said bore in said inner body of a corresponding post to fixedly and replaceably secure each said post to said upper platform.

4,128,254
SKATEBOARD WHEELS

George A. Powell, 725 Union Ave., Santa Barbara, Calif. 93103
Filed Dec. 28, 1976, Ser. No. 754,945
Int. Cl.² A63C *17/22*
U.S. Cl. 280—87.04 A **16 Claims**

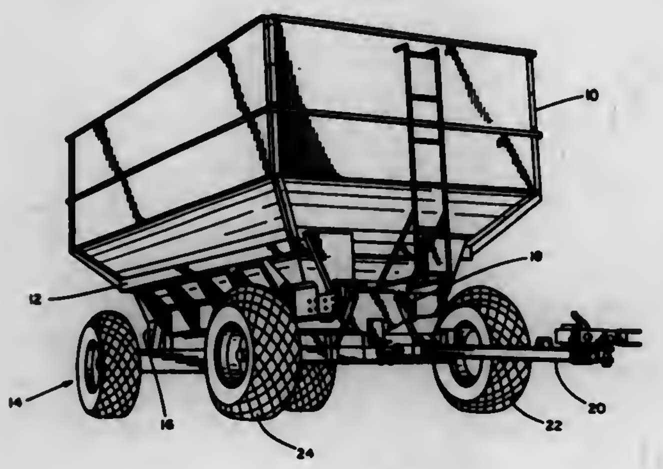
1. A skateboard comprising an elongated platform having a longitudinal centerline and at lease one pair of wheels secured to and positioned beneath the platform, the wheels being axially spaced apart from each other on opposite sides of the center line along a common axis transverse to the longitudinal centerline of the platform, each wheel defining a circular cylindrical tread surface having an axially inner edge and an axially outer edge, the axially inner edge being closer to the centerline than the axially outer edge, wherein both the axially inner edge and the axially outer edge of the cylindrical tread surface of each such wheel defines a convex surface having a

radius of curvature of from about ⅛ to about ¼ inch, wherein, the radius of the axially outer edge of the tread surface of such wheels is greater than the radius of the axially inner edge of the tread surface of such wheels.



4,128,255
ROCKING BOLSTER UTILIZING SHOCK ABSORBERS

Kenneth M. Coldren, Fort Wayne, Ind., assignor to M & W Gear Company, Gibson City, Ill.
Filed Feb. 7, 1977, Ser. No. 766,001
Int. Cl.² B62D *9/00, 37/00*
U.S. Cl. 280—143 **5 Claims**

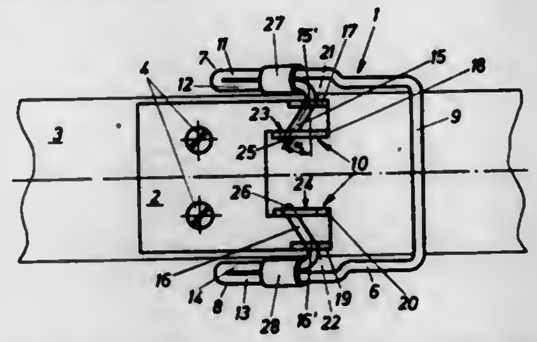


1. In a rocking bolster vehicle of the type including a bolster member having a curved rocking surface, a bolster support member having a planar top surface for support of said curved rocking surface, said curved rocking surface being adapted to rock on said top surface, and means for confining the bolster member against translational movement on the support member, said means for confining including the improvement of a pair of shock absorbing means having opposite ends attached respectively to the bolster member and the support member, the ends attached to the bolster member being attached on opposite sides of a center line axis through the bolster member and support member defined by the point of tangency of the bolster member and support member when said members are maintained in a horizontal level condition, the ends of said shock absorbing means attached to the support member likewise being positioned on opposite sides of the center line axis.

4,128,256
SKI BRAKE

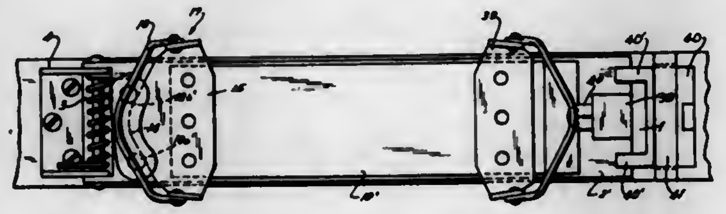
Erwin Weigl, Brunn am Gebirge, Austria, assignor to TMC Corporation, Zug, Switzerland
Filed Apr. 11, 1977, Ser. No. 786,377
Claims priority, application Austria, Apr. 23, 1976, 3004/76
Int. Cl.² A63C *7/10*
U.S. Cl. 280—605 **7 Claims**

1. In a ski brake having two blade members each pivotally mounted on a mounting plate attached to the upper surface of a ski for movement between a braking position wherein said blade members extend transversely of and below the bottom surface of said ski and a retracted position wherein said blade members extend above said upper surface of said ski, the improvement comprising wherein said two blade members are formed from a spring steel wire bent into a U-shape having a pair of legs and a bight portion, said legs of the U forming said two blade members, said spring steel wire being bent back upon itself in each of said two blade members 180° with the terminal end portions of said wire in each of said two blade members being bent inwardly toward each other to form axially aligned axles and end sections extending at an acute angle to the axis of said axles and to a plane defined by said U-shaped wire, wherein said mounting plate has means thereon operatively supporting said axles to render said two blade members pivotal with respect to said ski and control cam means having a contoured surface operatively engaging each of said end sections and flexing said end sections away from a normal relaxed position thereof, said contoured surface having a first segment engaging said end sections when said two blade members are in said braking position, said first segment being sufficiently spaced from said axis so that said wire is flexed the least when in said braking position, said contoured surface having a second segment which is spaced closer to said axis than said first segment to effect a maximum flexing and consequent torsioning of said wire when said two blade members are pivoted to said retracted position, said end sections sliding along said contoured surface between said first and second segments during a pivoting of said two blade members between said braking and retracted positions.



4,128,257
SAFETY SKI BINDING FOR CROSS-COUNTRY AND DOWNHILL SKIING

Reinhold Zoor, Dachau, Fed. Rep. of Germany, assignor to Heinrich Wunder KG, Dachau, Fed. Rep. of Germany
Filed Jul. 9, 1976, Ser. No. 703,938
Int. Cl.² A63C *9/086, 11/12*
U.S. Cl. 280—614 **2 Claims**



1. A safety ski binding for securing a skiboot to a ski, said binding comprising:

means on said ski defining a primary pivot axis extending generally perpendicular to the normal direction of displacement of said ski;

a support secured to said means and pivotal about said primary axis;

a release plate mounted on said support and displaceable relative thereto;

a toe holder carried on said plate generally at said primary pivot axis and adapted to engage over and around the toe of said boot;

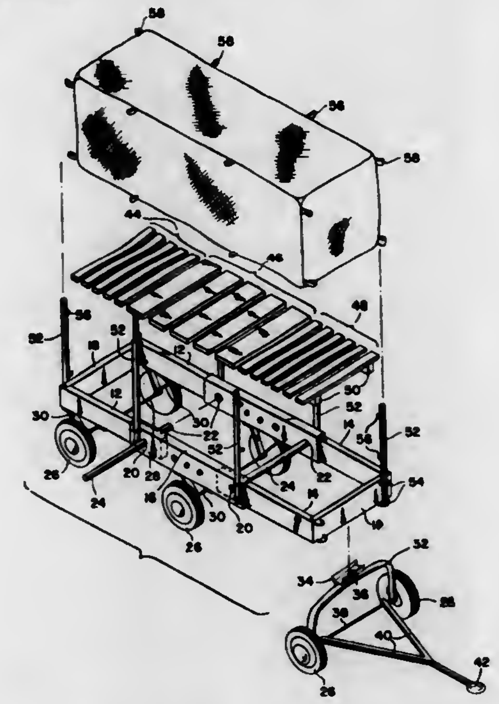
a heel holder aligned on said ski behind said toe holder relative to said direction and adapted to engage over and around the heel of said boot;

release means connected between one of said holders and said support for displacement of said plate on said support in any position thereof relative to said ski and freeing of said boot from between said holders on stressing of at least one of said holders in a predetermined direction with greater than a predetermined force; and

means for releasably securing said support to said ski generally at said heel holder, whereby when thus secured said binding is suitable for downhill skiing and when not secured said binding is suitable for cross-country skiing.

4,128,258
EXTENSIBLE UTILITY WAGON

Robert Johnson, 19419 Wickfield Ave., Cleveland, Ohio 44122
Filed Aug. 5, 1977, Ser. No. 822,067
Int. Cl.² B62D *21/14*
U.S. Cl. 280—656 **3 Claims**

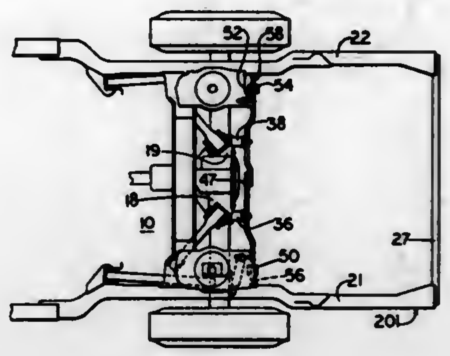


1. A utility wagon comprising, in combination, a front section supported on front wheels, towing means vertically movable and secured to said front wheels, an open rear section supported on rear wheels, an open central section supported on wheels and slidably receiving said front and rear sections so that said sections may be telescoped and extended relative to said central section, removable means for locking said front and rear sections on said central section at a selected extension; front, central and rear floor board units adapted to frictionally engage the boundary of the open area of said open sections and a plurality of upright posts removably mounted at spaced intervals on said sections to support a load said removable locking means consisting of a plurality of individual bars, each of which extends substantially for the full width of the wagon in the assembled position, through holes in the joined sections, oriented parallel to the transverse axis of the wagon.

4,128,259
SWAY LIMITING LINKAGE FOR A VEHICLE

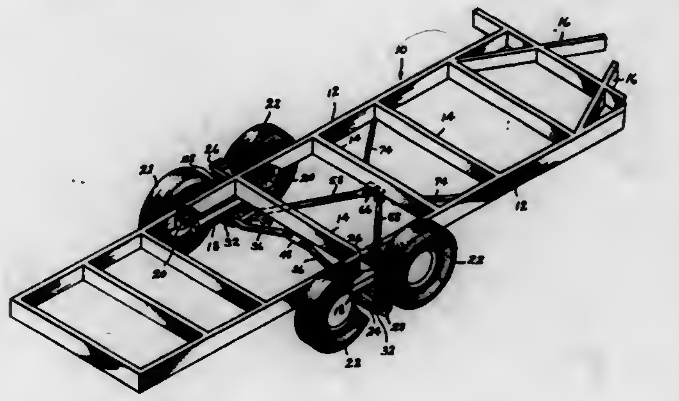
Donald Trent, 1050 Clepper La., Batavia, Ohio 45103
Filed May 31, 1977, Ser. No. 801,559
Int. Cl.² B60G *19/02*
U.S. Cl. 280—689 **2 Claims**

1. A sway limiting linkage for a vehicle which comprises a pair of lever members, pivot means for the lever members pivotally mounted on running gear of the vehicle on opposite sides of a center line thereof, means connecting inner arms of the lever members to swing up and down together, the means connecting inner arms of the lever members including a pin mounted on one of said inner arms and a lengthwise slot in the other of said inner arms receiving said pin, and means linking outer arms of the lever members to body frame members of the vehicle to cause the body frame members to move toward and away from the running gear in unison.



4,128,260
TANDEM WHEEL SUSPENSION FOR A VEHICLE FRAME

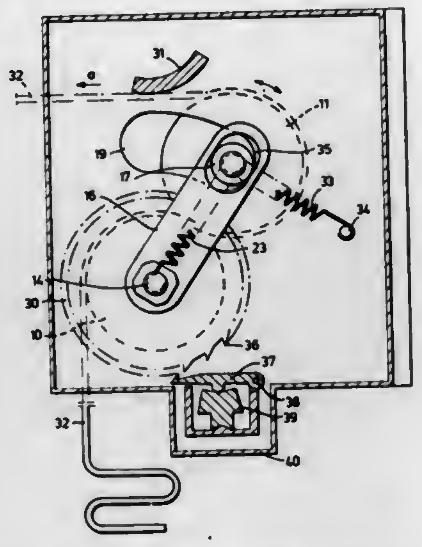
Arthur R. Moore, 58354 Hilly La., Elkhart, Ind. 46514
Filed Sep. 12, 1977, Ser. No. 832,173
Int. Cl.² B60G *9/00*
U.S. Cl. 280—676 **20 Claims**



1. A tandem wheel suspension used with a vehicle frame having spaced longitudinal members interconnected by spaced transverse members, said suspension comprising a walking beam located below and extending lengthwise of each longitudinal member, a wheel assembly journaled at each end of each walking beam, each wheel assembly including a wheel positioned outwardly from the vertical plane of the adjacent overhead longitudinal member and a spindle mounted at one end to the wheel and at the other end to a said walking beam, a lower support connected to each walking beam between the spindles of the wheel assemblies jounaled thereto, an upper support connected to each longitudinal member vertically oriented above a said lower support, each vertically oriented upper and lower supports positioned outwardly of the vertical plane of the respective connected longitudinal member and walking beam, resilient means for absorbing road induced shocks carried in contact between each vertically oriented upper and lower supports, pivot means anchored to said frame and journaled to each walking beam in lateral alignment with the lower support connected thereto to provide an axis of rotation for said beam, each walking beam being shiftable vertically between upper and lower operative positions relative to its overhead longitudinal member upon resilient means compression and expansion, said wheel assemblies and connected walking beams and supported resilient means excluding said pivot means constituting the supporting means for all vertical loads upon said frame.

4,128,261
LOCKING DEVICE FOR VEHICLE SAFETY SEAT BELTS

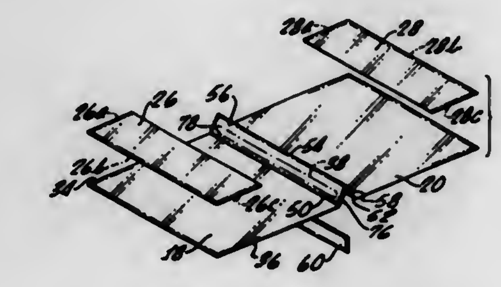
Hannu O. Paitula, Järna, Sweden, assignor to Gränges Essem Aktiebolag Fack, Vesteras, Sweden
Filed Jun. 30, 1977, Ser. No. 811,769
Claims priority, application Sweden, Jul. 1, 1976, 7607522
Int. Cl.^{2} B60R *21/10*
U.S. Cl. 280—744 **11 Claims**



1. A locking device for safety seat belts in vehicles of the type, in which a strap of a seat belt is automatically retracted, at least partly, into a housing, when the seat belt is not used, the locking device comprising a fixed first roller; a first spring means for biasing said first roller for rotation in a direction of retracting said strap; a second, movable roller positioned adjacent to and in parallel with said first roller; means for forcing said second roller against said first roller, so that said strap is passing between said rollers is squeezed therebetween; means for moving said second roller along a circular arcuate path concentric with said first roller between a free position in which said first and second rollers can rotate for extraction of said strap and a locking position, in which said first and second rollers cannot rotate; stop means for stopping said second roller in said locking position and preventing of said second roller as long as it is in said locking position, to which it may be moved by rapid extension of said strap; and second spring means for biasing said second roller towards said free position, so that said movable roller is returned to said free position, when tension in said strap ceases.

4,128,262
MAGAZINE COVER

Gerard M. Du Corday, 10871 Thorley Rd., Santa Ana, Calif. 92705
Filed Sep. 6, 1977, Ser. No. 830,839
Int. Cl.^{2} B42D *3/04*
U.S. Cl. 281—34 **12 Claims**



1. A readily attachable and detachable protector for magazines, flexible cover books and the like comprising,

(a) an integral sheet of flexible material having first and second integral end portions adapted to extend along the outside surfaces of the cover of a magazine, book or the like, and having a central portion connected to said integral sheet,

said central portion comprising a spine fixed to and projecting from the surface of said sheet, said spine including first and second spine sections having inner surfaces in face-to-face juxtaposition and securely connected to each other, and

an elongated slot formed in said spine sections extending for substantially the full length of said spine, whereby a magazine or book may be opened and one cover and several pages thereof may be inserted through said slot to position said spine between pages of said magazine or book with said sheet end portions extending about the magazine or book.

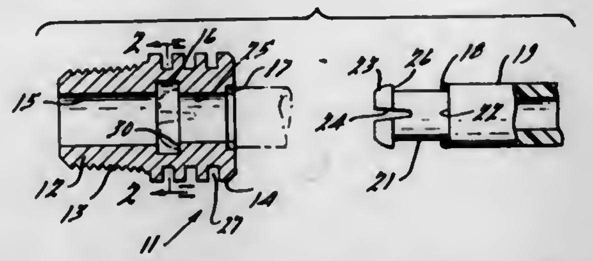
4,128,263
MODIFIED CLAY PAPER COATING

James T. Traxler, Evanston; Emil P. Lira, Des Plaines, and John F. Kraemer, Chicago, all of Ill., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.
Division of Ser. No. 558,491, Mar. 14, 1975, Pat. No. 4,038,097. This application May 26, 1977, Ser. No. 800,991
Int. Cl.^{2} B32B *9/04, 13/04*
U.S. Cl. 282—27.5 **3 Claims**

1. A modified clay coated sheet for use in pressure-sensitive duplication systems, said sheet comprising a paper substrate having coated thereon a montmorillonite clay layer, said montmorillonite clay having aluminum chloride bonded thereto, at least 30% of said aluminum chloride being hydrolyzed, whereby the image formed by contacting said coated sheet with a color-developing substance has increased fade resistance upon exposure to light.

4,128,264
TWO-PIECE FITTING ASSEMBLY

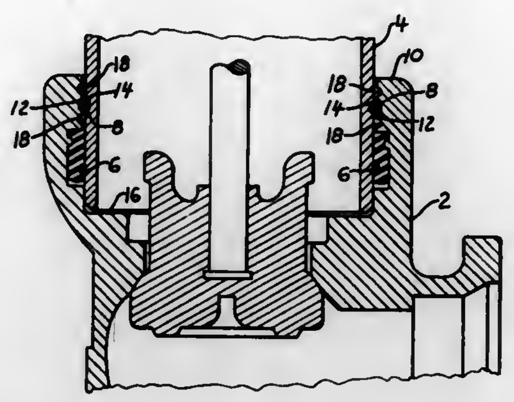
William G. Oldford, Lexington, Mich., assignor to Huron Tool & Manufacturing Division of U.S. Industries, Inc., Lexington, Mich.
Filed Jan. 21, 1977, Ser. No. 761,235
Int. Cl.^{2} F16L *27/08, 53/00*
U.S. Cl. 285—41 **1 Claim**



1. A two-piece fitting assembly embodying a first fitting made of metal in the nature of a union having an outer thread on one end, a driving means on the other end, a through aperture on the axis which is enlarged near the center forming a channel shaped annular recess and a counterbore in the other end forming a first shoulder on the interior of said through aperture, and a plurality of radial slots in the outer diameter of the first fitting for cooling thereof, the second fitting is a tube made of plastic material having a reduced end disposed within said aperture of the first fitting, said reduced end forming a second shoulder on the outer diameter of said second fitting and having a head extending into said annular recess to permanently secure the second fitting thereto for relative rotation therebetween, said head being divided into sections to permit the contraction of the sections when the head is inserted into one end of the through aperture and the expansion thereof into said annular recess, and an O-ring sealably disposed and compressed between said first shoulder and said second shoulder.

4,128,265
HYDRANT VALVE CONNECTION

Abraham S. Fenster, and Fred W. Salloga, both of Chattanooga, Tenn., assignors to United States Pipe and Foundry Company, Birmingham, Ala.
Filed Jul. 11, 1977, Ser. No. 814,769
Int. Cl.^{2} F16L *37/14*
U.S. Cl. 285—305 **3 Claims**

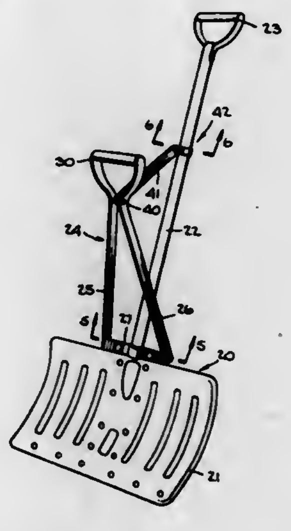


1. The connection of a hydrant valve body to a lower stand pipe having an annular gasket in radial compression between one end of the outer periphery of the lower stand pipe and the inner periphery of an opening in the hydrant valve body wherein the improvement comprises:

(a) a plurality of lugs around the opening in the hydrant valve body, and
(b) each lug having a peripherially extending groove on its inner periphery, and
(c) one end of the lower stand pipe inserted in the opening in the hydrant valve body and having a continuous groove of a certain radius around the outside periphery of said one end; and
(d) the groove of the lower stand pipe and the grooves of the hydrant valve body lugs forming a series of openings; and
(e) a resilient key, having a radius less than said certain radius of the continuous groove around the lower stand pipe, driven into each of said openings.

4,128,266
AUXILIARY HANDLE FOR LONG-HANDLED IMPLEMENTS

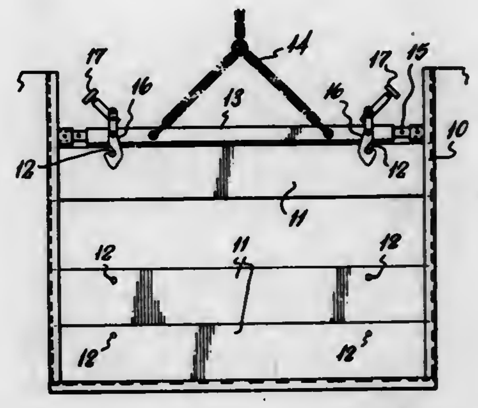
John W. Vaslas, 282 Park St., Staten Island, N.Y. 10306
Filed Oct. 14, 1977, Ser. No. 842,319
Int. Cl.^{2} A01B *1/22;* **B65G** *1/06*
U.S. Cl. 294—58 **6 Claims**



1. An auxiliary handle for use with a long-handled implement having a rod-shaped main handle; said auxiliary handle comprising a triangular frame including a pair of auxiliary handle rods constituting the leg members of the triangle and a transverse member constituting the base member of the triangle, said auxiliary handle rods having respective first and second ends and being closely juxtaposed to one another at said first ends thereof to define the apex of the triangle and being relatively widely spaced from one another at said second ends, said transverse member extending between and being pivotally connected to said auxiliary handle rods at said second ends thereof, a hand grip secured to said auxiliary handle rods at said first ends thereof, a rigid cross-brace bar having first and second ends and pivotally connected at said first end thereof to said frame adjacent the juncture of said auxiliary handle rods with said hand grip, first clamping means coupled with said transverse member for releasably locking the latter to the implement handle, and second clamping means pivotally connected to said cross-brace bar at said second end thereof and adapted to be placed in engagement with the implement handle and releasably locked thereto, whereby said first and second clamping means can be connected with the implement handle in respective selected adjusted positions along the latter for adjusting the angular orientations of said cross-brace bar and said frame relative to one another and the implement handle.

4,128,267
LIFTING BEAM

David C. Niblett, Redditch, and James T. Capewell, Newcastle, both of England, assignors to Simon-Hartley Limited, Staffordshire, England
Filed Aug. 29, 1977, Ser. No. 828,601
Claims priority, application United Kingdom, Sep. 10, 1976, 37540/76
Int. Cl.^{2} B66C *1/22*
U.S. Cl. 294—81 R **10 Claims**



1. A lifting beam comprising an elongate member, means for attaching a sling thereto for suspending same from a lifting device, and at least one hook pivotally attached to said member for releasably engaging a load to be elevated, characterized by a movable balance weight and means whereby said balance weight may be selectively connected to said hook in either of two opposed positions whereby the hook may be so biased as to be adapted to pivot either into or from engagement with said load automatically upon lowering of the beam towards the load.

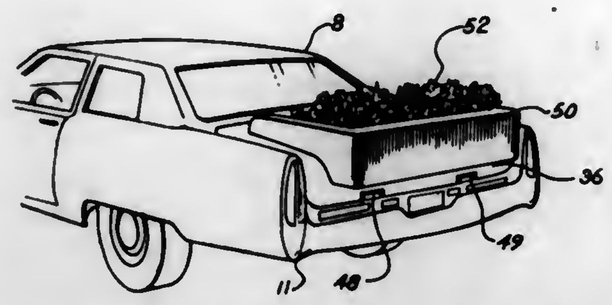
4,128,268
FLOWER CAR CONVERTING UNIT

Kenneth C. Sundlof, 2320 Wyckwood, Aurora, Ill. 60506
Filed Dec. 1, 1976, Ser. No. 746,401
Int. Cl.^{2} B60P *3/02*
U.S. Cl. 296—10 **6 Claims**

1. Apparatus for converting a passenger automobile including a trunk having a lid suspended on hinges into a vehicle suitable for carrying flowers in a funeral procession comprising:

reservoir means positioned inside the trunk for holding flowers and for catching water draining from the flowers, said reservoir means comprising drain means for draining water to the rear of the automobile;

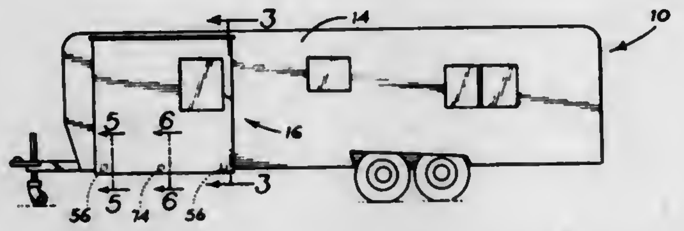
flower display means defining drain openings through which the drain means extend for partially covering the trunk and for defining a flower opening located over the reservoir means through which the flowers may protrude; and fastener means for attaching the display means to the hinges in place of the lid, whereby the vehicle can be used as a conventional automobile by replacing the display means with the lid.



4,128,269
TELESCOPING ROOM FOR TRAVEL TRAILERS

Bonner B. Stewart, Salem, Oreg., assignor to Hazel F. Stewart, Salem, Oreg.

Filed Jan. 21, 1977, Ser. No. 761,295
Int. Cl.² B60P *3/32*
U.S. Cl. 296—23 C **7 Claims**



1. In combination with a travel trailer or the like having a floor, upstanding side and end walls and a ceiling and an opening in one of said upstanding walls,

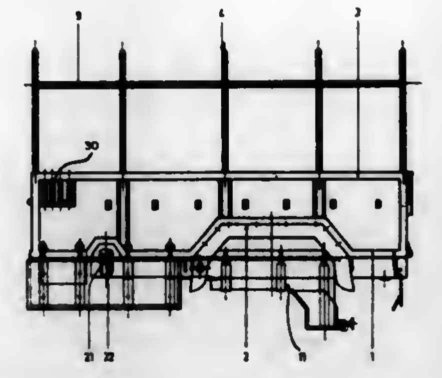
- (a) a room section having a ceiling, a floor, side walls, an outer end wall and an open inner end, the room section extending freely through said opening in the trailer wall,
- (b) first support means secured to the trailer under the floor thereof and including a tubular member rigidly attached to the travel trailer under the floor thereof and an elongated beam extending slidably through the tubular member and rigidly attached at its outer end to the end wall of the room section below the floor thereof for supporting the room section for reciprocation therewith between a position extending outwardly from the trailer wall and a position retracted into the trailer, and rollers rotatably mounted on the tubular member and engaging the upper and lower surfaces of said beam, and
- (c) second support means between the trailer floor and overlying room extension floor for supporting the latter above the trailer floor during reciprocation of the room section.

4,128,270
VEHICLE FLOORING CONSTRUCTION

Paul E. R. Leguen, 85, avenue de Mazy, 44380, Pornichet, France

Continuation of Ser. No. 529,509, Dec. 4, 1974, abandoned. This application Nov. 2, 1976, Ser. No. 737,503
Int. Cl.² B60P *3/22*
U.S. Cl. 296—28 R **9 Claims**

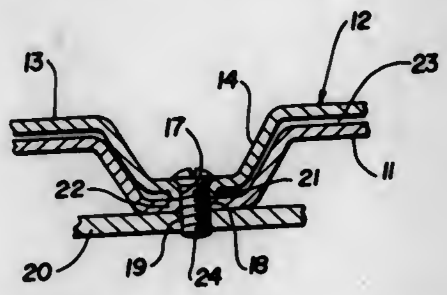
1. A floor construction for automotive vehicles having wide operating range, comprising two longitudinal rails affixed below the vehicle floor inboard of the lateral edges of the vehicle floor, a water reservoir mounted between the rails and extending nearly the whole length of the floor, and two fuel tanks, respectively suspended below the floor laterally outwardly of the different rails, the reservoir and each tank being mounted by straps and resilient pads inserted between the straps and the reservoir or tank to prevent noise when the vehicle is in motion.



4,128,271
RECONDITIONING PANEL FOR THE FLOORS OF PICK-UP TRUCK CARGO BOXES AND CARGO VANS

Rodger Gray, P.O. Box 1137, Hobbs, N. Mex. 88240

Filed Jul. 27, 1977, Ser. No. 819,459
Int. Cl.² B62D *32/00*
U.S. Cl. 296—39 R **2 Claims**



1. In a cargo carrying vehicle having a ribbed metallic cargo floor which is subject to denting and marring over a period of time, a reconditioning means for said cargo floor in the form of a metal panel which is sized and shaped to cover the existing cargo floor substantially completely, said panel being ribbed to mate with the ribbing of the existing floor when the panel is placed thereon, said panel being punched to form therethrough a plurality of spaced fastener receiving apertures adapted to register with like apertures of the existing floor, fastener elements engaging through the registering apertures in the panel and existing floor for anchoring both to an underlying vehicle frame part, plural spaced axially short depending annular spacer sleeves on the bottom face of said panel produced by the punching of the apertures and resting on the existing floor and maintaining the panel slightly spaced from the existing floor at least in the regions of the spacer sleeves while allowing the other areas of the panel to deflect under loading into supportive contact with the existing floor, and downturned flanges formed on the panel at least along the longitudinal edges thereof, said flanges sealingly engaging calked seams in the existing cargo floor structure of the vehicle to thereby render the reconditioning panel substantially weather-proof.

4,128,272
MULTI-SEGMENTAL CUSHION ASSEMBLY FOR ADAPTING CONTOUR DENTAL CHAIRS TO A CHILD'S PHYSIQUE

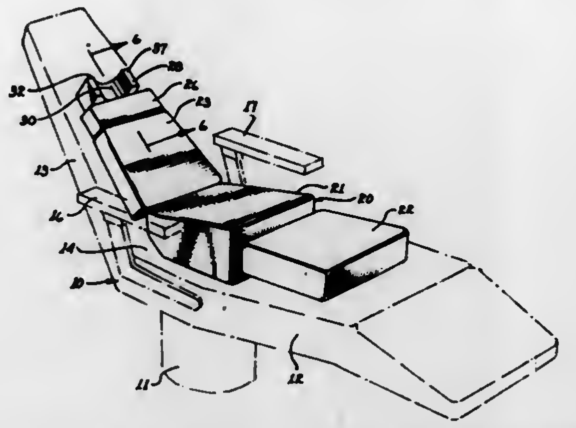
Danny P. Boyle, 855 E. Brown Rd., Mesa, Ariz. 85203

Filed Dec. 1, 1977, Ser. No. 856,399
Int. Cl.² A47C *7/02*
U.S. Cl. 297—231 **12 Claims**

1. A removable multi-segment cushion assembly for adapting a contour dental chair to a child's physique which contour dental chair has a seat and leg support section and a back and head support section, said cushion assembly comprising in combination:

- (a) a seat cushion supported by the seat and leg support section for elevating a child seated upon the contour dental chair;
- (b) a back cushion for supporting the child's back, said back cushion being supported by the back and head support section and resting upon the rear edge of said seat cushion; and
- (c) a head rest for cradling the child's head, said head rest being supported by the back and head support section, said head rest including:
  - (1) a depression for receiving the back of the child's head, said depression being of a depth sufficient to encourage backward tilting of the child's head with respect to the child's shoulders; and
  - (2) side members for precluding side-to-side rotation of the child's head about a pivot point at the rear of the child's head;

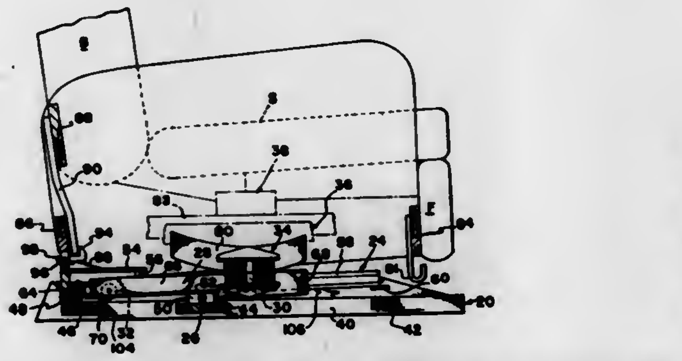
whereby, said cushion assembly elevates the child to a height comfortable for a dentist to perform his work and positions the child's head to encourage opening of the mouth at an orientation visually and physically accessible to the dentist.



4,128,273
ROCKABLE AGAINST-THE-WALL TYPE RECLINING CHAIR

W. Dale Jones, 7020 Aztec Dr. NE., Albuquerque, N. Mex. 87110

Continuation-in-part of Ser. No. 720,244, Sep. 13, 1976, Pat. No. 4,057,289. This application Oct. 11, 1977, Ser. No. 840,668
Int. Cl.² A47C *1/02*
U.S. Cl. 297—327 **9 Claims**

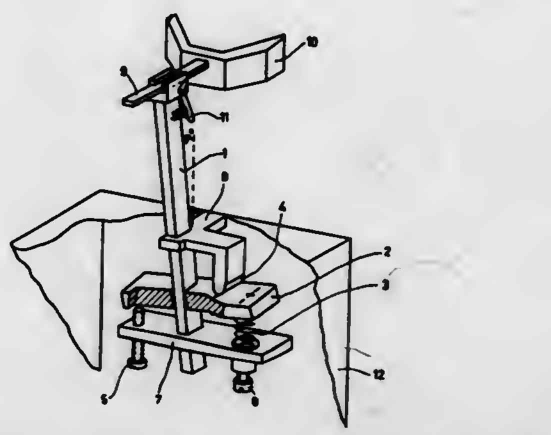


1. In an against-the-wall type reclining chair having a base, a chair frame, a chair seat and a chair back, and reclining linkage means mounting at least one of said seat and said back upon said frame for movement relative to said frame between an upright position and a reclined position; the improvement comprising a pair of elongate spaced opposed parallel track members rigidly interconnected to each other and extending in a front to rear direction adjacent each side of said base, pivot means mounting said track members for pivotal movement relative to said base about a horizontal axis normal to the longitudinal extent of said track members, stop means engageable between said track members and said base establishing end limits of pivotal movement of said track members about said axis at a first limit wherein said track members are inclined downwardly and rearwardly relative to said base and a second limit wherein said track members are inclined downwardly and forwardly relative to said base, a chair frame supporting carriage mounted upon said track means for gravitationally induced movement longitudinally of said track means between a forward and a rearward end limit of movement in accordance with the direction in which said track members are inclined; the weight of an occupant of said chair normally maintaining said carriage at either end limit at which it may be located and said carriage being movable to the opposite end limit in a movement induced by a shifting of the weight of the occupant, and restraining means for preventing reclining movement of said back from said upright position when said carriage is at said rearward end limit of movement while accommodating reclining movement of said back when said carriage is at said forward end limit of movement.

4,128,274
ADJUSTING DEVICE FOR A SECTION OF A MEDICAL TREATMENT APPARATUS OR EXAMINING APPARATUS

Walter Schmedemann, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 24, 1977, Ser. No. 771,466
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1976, 2609117
Int. Cl.² A47C *1/10*
U.S. Cl. 297—410 **10 Claims**



1. An adjusting device for medical apparatus, comprising an approximately vertical rail structure and a clamping structure, the rail and the clamping structure being movable, relative to each other, in the longitudinal direction of the rail, the apparatus being connected to one of said relatively movable structures the other of said relatively movable structures being stationary in space, comprising:

- a movable clamping member which is connected to the clamping structure and whose movement, in the vertical direction, relative to the clamping structure is limited; and
- spring means which function to bias the clamping member against the rail to produce a frictional force therebetween, the magnitude of said force being proportioned to prevent relative movement of said rail with respect to said clamping structure in response to the weight of said apparatus but to permit said relative movement when at least a predetermined downward force is exerted on said apparatus and to decrease the magnitude of said frictional force in response to upward motion of said apparatus.

4,128,275
TIPPING VEHICLE

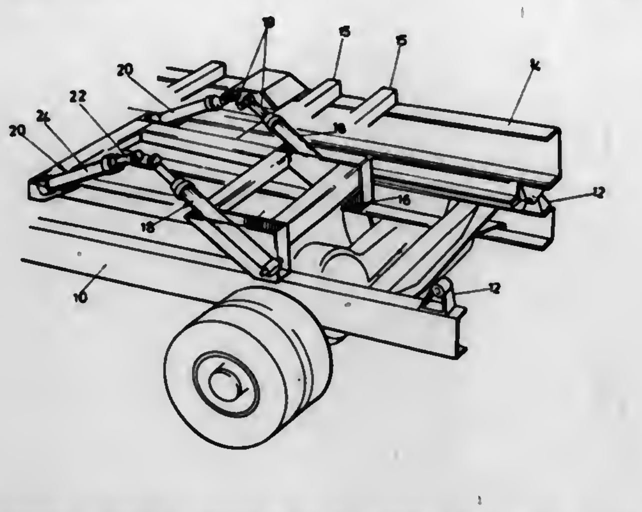
Otto A. H. Hansen, Germiston, South Africa, assignor to O.A.H. Homes (Proprietary) Ltd., South Africa

Continuation of Ser. No. 700,857, Jun. 29, 1976, abandoned. This application Sep. 1, 1977, Ser. No. 829,961

Claims priority, application South Africa, Aug. 8, 1975, 75/5124

Int. Cl.² B60P *1/16*

U.S. Cl. 298—19 B **8 Claims**



1. A tipping vehicle comprising a chassis; a body mounted on the chassis for tipping movement between a lowered position and a raised position about a tipping axis that is located towards the rear of the vehicle and is transverse to a longitudinal axis of the vehicle, and a main and an auxiliary extensible ram for tipping the body, the rams each being connected independently of the other between a point on the body and a point on the chassis with the connection point for the main ram to the chassis being closer to the tipping axis than is the connection point for the auxiliary ram to the chassis, and with the rams having opposite directions of slope with respect to the vertical when the body is in its lowered position, such directions being upwardly convergent and the included angle between such directions (viewed in side elevation of the vehicle) in such lowered position being greater than 90°, the points at which the rams exert force on the chassis during a first stage of tipping the body from its lowered position being spaced further apart than are the points at which the rams exert force on the body during the same stage, the body having an intermediate position between its lowered and raised positions and the main and auxiliary rams being arranged to apply force together during an initial stage to tilt the body between its lowered and intermediate positions and further arranged so that only the main ram tilts the body between its intermediate and raised positions, means being provided to accommodate lost motion between the auxiliary ram and the body as the body is tilted between its intermediate and raised positions, both the main and the auxiliary rams being conventional piston-and-cylinder combinations each having in its cylinder a single piston and rod.

4,128,276
HIGH-RELIABILITY AIR BRAKE SYSTEM PROVIDING A PLURALITY OF OPERATIONAL MODES

Henry E. Beck; Jimmie L. Hasten, both of Oswego, and Ernest C. Sindelar, Aurora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 695,879, Jun. 14, 1976, Pat. No. 4,063,624. This application Sep. 30, 1977, Ser. No. 838,284

Int. Cl.² B60T *13/38*

U.S. Cl. 303—13 **3 Claims**

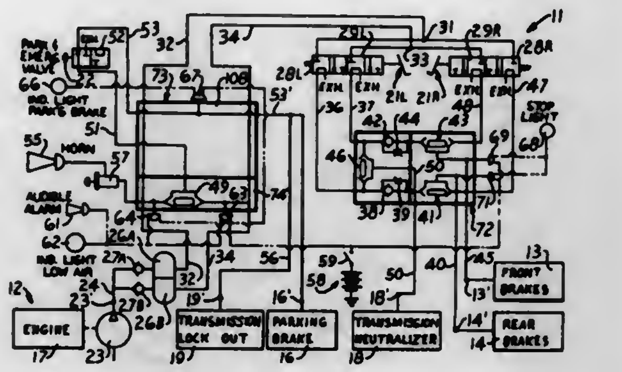
3. A modular circuit component assembly for an air brake system comprising:

first and second juxtaposed module bodies having adjacent surfaces and each having an opposite surface;

said first module body having a pair of parallel spaced apart first flow passages extending from said adjacent surfaces to said opposite surface thereof and each having a diametrically enlarged region, said first module body further having a second flow passage extending from a region of said adjacent surfaces situated between said first flow passages to a different surface of said first module body, and still further having a pair of outlet passages each communicating with the central portion of said enlarged region of a separate one of said first flow passages;

said second module body having a pair of parallel spaced apart third flow passages extending from said adjacent surfaces to said opposite surface thereof in alignment with said first flow passages, said second module body having a fourth flow passage extending between said pair of third flow passages and having a diametrically enlarged portion therebetween, said second module body having a fifth flow passage extending from the central portion of said enlarged region of said fourth flow passage to said adjacent surfaces in alignment with said second flow passage; and

first and second shuttle valve members each being disposed in said enlarged region of a separate one of said first flow passages for axial movement therein, and a third shuttle valve member disposed in said enlarged region of said fourth flow passage for axial movement therein.



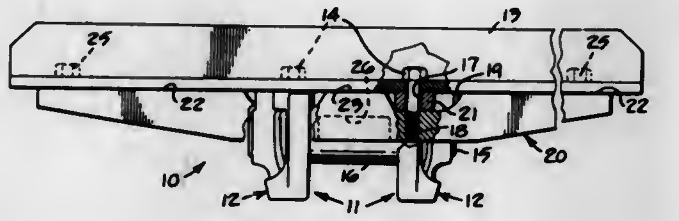
4,128,277
LATERAL STIFFENER FOR TRACK SHOES

Thomas C. Meisel, Jr., Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 2, 1977, Ser. No. 802,614

Int. Cl.² B62D *55/28*

U.S. Cl. 305—54 **13 Claims**



1. A track assembly comprising

a pair of laterally spaced and articulated link assemblies each comprising a plurality of pivotally interconnected links,

a track shoe disposed on a laterally spaced pair of links of said link assemblies,

at least one stiffening means extending across said track shoe,

releasable fastening means extending through said track shoe and through each of said pair of links and releasably secured to said stiffening means for releasably securing said track shoe, links and stiffening means together, and

means defining a pair of longitudinally spaced notches in said stiffening means, each of said notches having a bridging portion of a respective one of said pair of links accommodated therein and maintained in clamped relationship between said stiffening means and said track shoe by said fastening means.

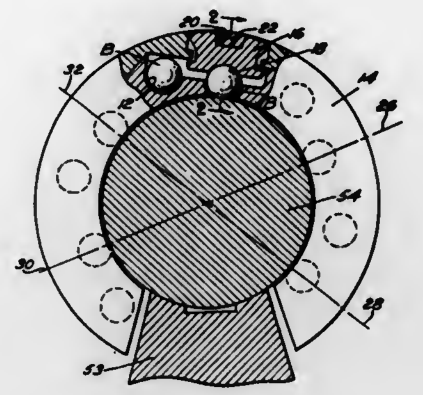
4,128,278
LINEAR MOTION BALL BEARING WITH DYNAMIC STIFFNESS

William E. Headen, East Greenwich, and George N. Levesque, Warwick, both of R.I., assignors to Brown & Sharpe Manufacturing Company, North Kingstown, R.I.

Filed Aug. 30, 1977, Ser. No. 829,131

Int. Cl.² F16C *17/00*

U.S. Cl. 308—3 A **3 Claims**



1. A linear motion ball bearing for axial movement along a shaft having a ball retainer member with a plurality of raceways therein, each raceway having recirculating ball bearing members therein comprising a load-bearing portion and a load-free portion, said member surrounding a shaft and being mounted in a housing having a cylindrical bore, a load bearing plate associated with the load bearing portion of each raceway, each load bearing plate having an intermediate thicker portion which contacts said housing, characterized in that a longitudinal strip of elastomeric material is mounted longitudinally in a recess of the outer peripheral surface of each load bearing plate, said strip and thicker portion of said load bearing plate contacting the bore of said housing, the balls being preloaded in the housing by contact of the thicker portion therewith with a diametrical squeeze factor of between 0.0017 and 0.0022 inch, the elastomeric material being squeezed on the order of 0.005 inch.

4,128,279
LINEAR MOTION BALL BEARINGS

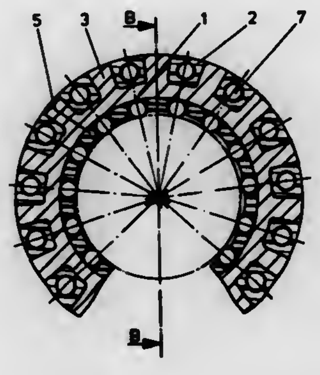
Horst M. Ernst, Eltingshausen; Armin Olschewski; Lothar Walter, both of Schweinfurt; Manfred Brandenstein, Aschfeld, and Toni Schulz, Dittelbrunn, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 845,227

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1976, 2649245

Int. Cl.² F16C *29/06*

U.S. Cl. 308—6 C **13 Claims**



1. In a linear-motion ball bearing formed generally as a cylinder having a plurality of circumferentially spaced endless ball races and included balls, each race having an axial load zone, an axial return zone radially outward of said load zone, these load and return zones having adjacent ends, and turn-around zones connecting the ends of said load and return zones, the improvement wherein the bearing comprises a cylindrical shell having a bore surface along which are defined said load zones, a pair of spaced guide walls extending axially along and adjacent each load zone and extending generally radially inward for guiding balls in said load zone, and wherein said return and turn-around zones are respectively axial and curved guide channels for the balls, and said axial guide walls and axial and curved guide channels comprise abrasion-resistant plastic injection-molded onto said bearing shell, the curved guide channels each having an open part facing axially outward, and said bearing further comprising means for covering said open parts and securable thereto.

4,128,280
SELF-PRESSURIZING FLOATING GAS BEARING HAVING A MAGNETIC BEARING THEREIN

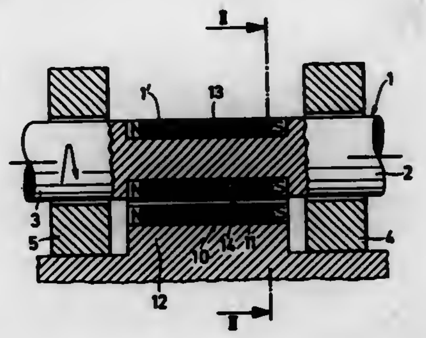
Werner Purtschert, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Feb. 18, 1977, Ser. No. 769,966

Claims priority, application Switzerland, Jan. 17, 1977, 515/77

Int. Cl.² F16C *39/04, 39/06*

U.S. Cl. 308—9 **15 Claims**



1. A self-pressurizing floating gas bearing comprising

a support body having a first bearing surface thereon;

a bearing body having a second bearing surface facing said first bearing surface, said bearing body being movably mounted with respect to said support body; and

an auxiliary permanent-magnet bearing forming a magnetic field to at least compensate the weight of said bearing body whereby, said bearing body exerts no pressure or only a negligible pressure on said first bearing surface.

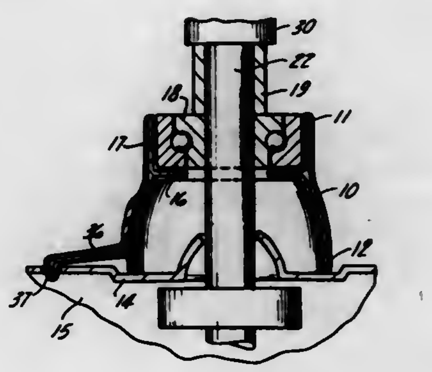
4,128,281
AUXILIARY AXIAL THRUST BEARING APPARATUS

Stephen A. Batkiewicz, 5742 Beechview Dr., Rochester, Mich. 48063

Filed Apr. 21, 1977, Ser. No. 789,573

Int. Cl.² F16C *35/04, 19/06*

U.S. Cl. 308—15 **9 Claims**



1. Easily mountable and removable auxiliary axial thrust bearing apparatus for assembly with a bearing housing having a shaft projecting therefrom at at least one end to attach a load

member thereon at one end of the shaft, comprising a case having opposite ends;

one said end of said case being abuttable on the housing associated with the shaft to be supported;

the other end of said case having walls forming a bearing socket;

an axial thrust bearing mounted in said walls of said socket; and

means for impinging axial thrust on said bearing from the load member secured to the shaft;

axial thrust on the shaft toward the housing being axially supported by said means, said bearing and said case.

4,128,282

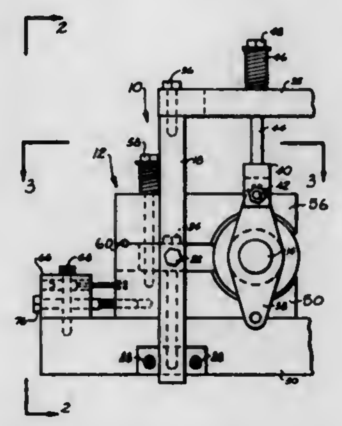
COUNTERBALANCE BEARING ASSEMBLY

John R. Bost, Laurens, S.C., assignor to Byars Machine Company, Laurens, S.C.

Filed Dec. 5, 1977, Ser. No. 857,269

Int. Cl.² F16C *13/00*

U.S. Cl. 308—20 **4 Claims**



1. A counterbalance bearing assembly for supporting and positively positioning an end of a cylinder which has a shaft extending axially therefrom comprising:

a first bearing having a bore extending therethrough through which an end of said shaft extends;

movable means for supporting said first bearing and in turn said cylinder with said shaft extending therethrough;

a guide bearing assembly directly engaging said cylinder and positively positioning said cylinder, said guide bearing assembly including:

(i) a lower block having an arcuate-shaped surface thereon;

(ii) a layer of material having a low coefficient of friction carried on said arcuate surface upon which said cylinder is carried;

(iii) an upper block having an arcuate-shaped surface thereon engaging said cylinder from a top side, and

(iv) means for adjustably moving said lower block for positively positioning said cylinder,;

whereby the majority of the weight of said cylinder is supported by said first bearing while said guide bearing assembly positively positions said cylinder.

4,128,283

BEARING RETAINING PLATE

Clifford A. Palmer, Huddersfield, England, assignor to Holset Engineering Company Limited, Huddersfield, England

Filed Nov. 23, 1976, Ser. No. 744,374

Claims priority, application United Kingdom, Nov. 25, 1975, 48323/75

Int. Cl.² F16C *33/10, 19/32;* F04B *39/02*

U.S. Cl. 308—237 R **4 Claims**

1. A rotatable assembly comprising:

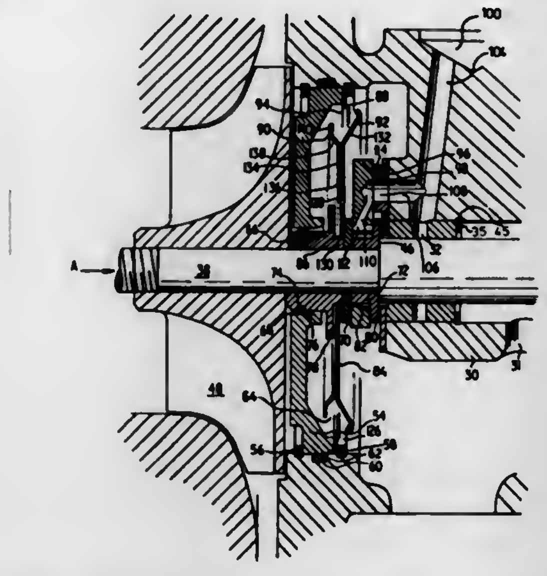
a rotatable shaft,

at least one rotatable fluid lubricated sleeve bearing supporting said shaft for rotation,

a bearing housing having an end face and a circular aperture receiving said bearing,

restraining means positioned within said housing circular aperture and adjacent a first end of said bearing for restraining axial movement of said bearing in one direction, said restraining means being in contact over a given area with the first end face of said sleeve bearing,

a retaining plate fixed on said housing end face adjacent a second end of said bearing for restraining axial movement of said bearing in the opposite direction, said plate having a single aperture comprising a first circular aperture through which said shaft extends and a plurality of apertures extending radially outward from said first aperture to permit passage of fluid from the second end of said bearing and to define a plurality of inwardly projecting fingers, said fingers restraining axial movement of the second end of said bearing, said fingers being in contact with the second end of the bearing over an area which is equal to the contact area of said restraining means with the first end of the bearing.



4,128,284

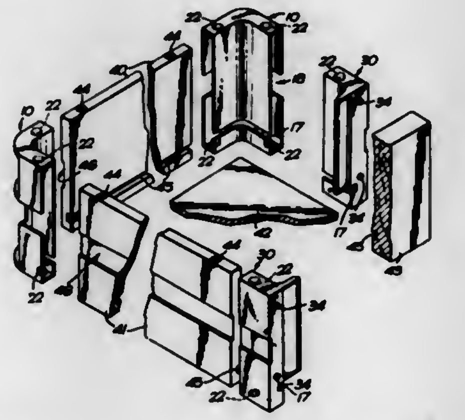
CONSTRUCTION OF ARTICLES OF FURNITURE

Peter G. King, Wirral, England, assignor to Mackenzie King Holdings Limited, Chester and Formica Limited, London, both of, England

Filed Mar. 31, 1977, Ser. No. 783,313

Int. Cl.² A47B *88/00, 47/00*

U.S. Cl. 312—330 R **8 Claims**



1. A set of parts for use in the construction of an article of furniture comprising: a first panel member of substantially constant external cross-section; a second panel member of substantially constant external cross-section; a first connecting device for attachment to said panel members respectively in a manner to secure said panel members together at an angle to one another; a first socket on the connecting device having an internal cross-section which substantially conforms with at least a major part of the cross-section of the first panel member whereby an end portion of said first panel member may be received in said first socket; retention means for retaining said end portion within said first socket and comprising resiliently inter-engageable locking elements on said end portion and within said first socket respectively; a second socket on the connecting device set at an angle to said first socket, the internal cross-section of the second socket substantially conforming with at least a major part of the cross-section of said second panel member so that an end portion of said second panel member may be received in said second socket, and resiliently inter-engageable locking elements on said end portion and within said second socket respectively, said elements being arranged in similar manner to the locking elements on said first socket and said end portion of the first panel member.

4,128,285

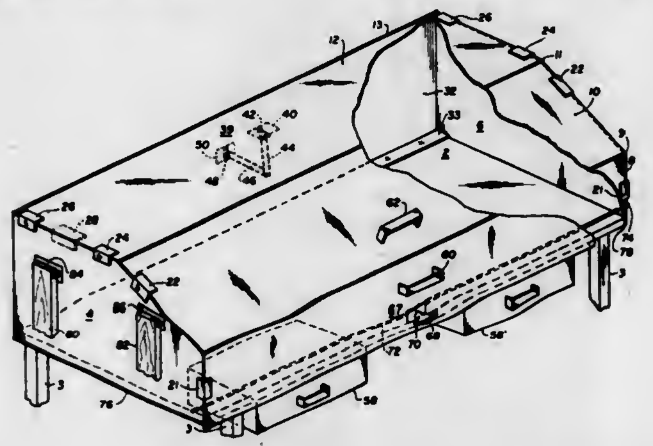
THEFT-PROOF TABLE-TOP ENCLOSURE

Nicola Lore, 35 Burkhardt Ave., Bethpage, N.Y. 11714, and Lino Di Meo, 6 Kings Ct., Plainview, N.Y. 11803

Filed Aug. 16, 1977, Ser. No. 825,086

Int. Cl.² A47B *19/10, 37/00*

U.S. Cl. 312—196 **8 Claims**



1. A theft-proof collapsible enclosure for a table-top working area comprising a plurality of panels disposed, in closed condition of the enclosure, in separate mutually intersecting planes in a position above the table-top working area, said plurality of panels forming a top wall, a front wall and two side walls of the enclosure in said closed condition thereof, the panels of at least said top wall and said front wall being pivotable about respective substantially horizontal axes at the mutual intersections thereof so as to collapse the enclosure, said panels forming said side walls being pivotable about respective substantially horizontal axes at the mutual intersections of said panels forming said side walls with said separate planes of the remainder of said plurality of panels.

4,128,286

PORTABLE DISPLAY WALL

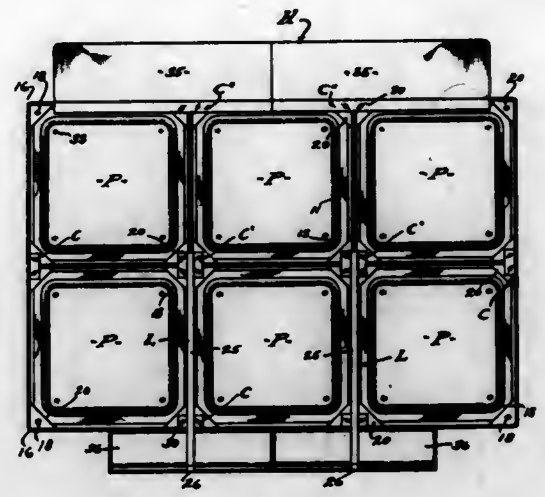
Robert E. Windisch, 28652 Acacia Glenn, Agoura, Calif. 91301, and George R. Hartz, 8131 McNulty Ave., Canoga Park, Calif. 91306

Filed Aug. 12, 1977, Ser. No. 823,974

Int. Cl.² A47B *81/00*

U.S. Cl. 312—234 **8 Claims**

1. A portable display wall including, a multiplicity of seperable and substantially identical modular panels having rectangular frames for rigidity, the modular panels having means carried within the frames thereof for the reception of graphics and articles for display, there being at least three of said modular panels in side by side relation with the frames thereof nested corner to corner in coplanar relation, at least a pair of leg members and each comprised of a fore and aft foot for support plane engagement and a column extending vertically therefrom to coextensively overlie a line of joinder between adjoining side frame members of adjacent modular panels, and a coupling plate overlying each line of joinder between the upper and lower nested corners respectively and fixed to said column to receive fastener means entered into adjoining side frame members.



4,128,287

HOUSEHOLD APPLIANCE WITH A BASE SETBACK ON THE FRONT SIDE THEREOF

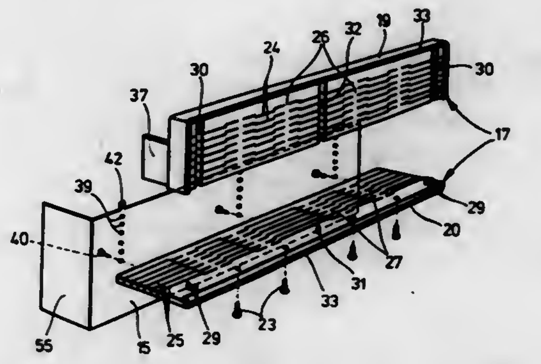
Friedhelm H. Loch, Munich; Hans Mallinder, Heidenheim; Heinz Riemath, Giengen; Richard Schmid, Giengen, and Ernst Stickel, Giengen, all of Germany, assignors to Bosch-Siemens Hausgerate GmbH, Stuttgart, Germany

Filed Jun. 1, 1977, Ser. No. 802,552

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1976, 2626202

Int. Cl.² A47B *91/02*

U.S. Cl. 312—253 **10 Claims**



1. In a housing appliance, such as a dishwasher, washing machine, stove and the like, with a base setback on the front thereof, the improvement comprising:

(a) a base setback having a vertically disposed base plate parallel to the front of the appliance, and facing means composed of two separate wall plates

(b) said two wall plates disposed at right angles to each other with one wall plate disposed in the plane of the front of the appliance and the other wall plate secured to the lower edge zone of the first wall plate

(c) the second wall plate extending parallel to the base of the appliance with the edge zone of the second wall plate facing away from the front, resting against said vertically disposed base plate, and

(d) said vertically disposed base plate being movable in planes parallel to the front side of the appliance to permit moving said base plate against said edge zone of the second wall plate.

4,128,288

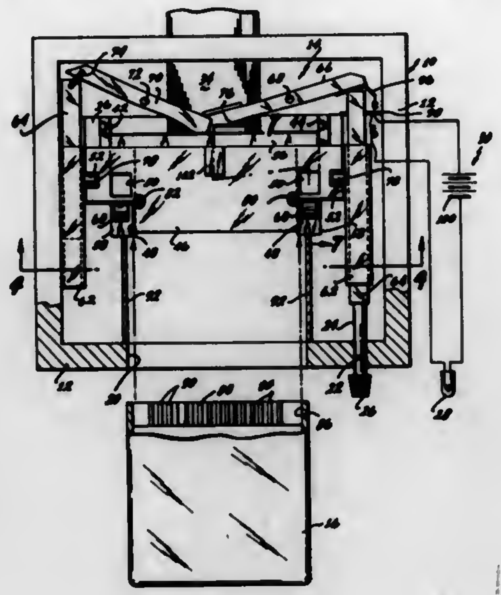
ZERO INSERTION/RETRACTION FORCE CONNECTOR

Clyde Zachry; Paul K. White, both of Poway, and Wilbur T. Layton, San Diego, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 27, 1977, Ser. No. 801,155

Int. Cl.² H01R *13/62*

U.S. Cl. 339—45 M **8 Claims**



1. A zero insertion/retraction connector for connecting terminal conductors of an electronic device to other electronic devices comprising,

means for receiving the device,

actuable means in said receiving means including:

means supporting a first set of electrical conductor terminals,

means supporting a second set of electrical conductor terminals,

resilient means for urging said second support means towards said first support means when said device is absent from said receiving means,

means for displacing said second support means against the urging of said resilient means as said device is being inserted in said receiving means to permit the terminals of said device to move between the terminals of said first and second support means but out of contact therewith, and

means enabling said resilient means to again urge said second support means toward said first support means to effect the mating of said terminals on said device with said terminals on said support means.

4,128,289

ELECTRICAL CONNECTOR HAVING A LOW INSERTION FORCE FOR FLAT CIRCUIT BEARING ELEMENTS

Carl Occhipinti, Melrose Park, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation-in-part of Ser. No. 415,147, Nov. 12, 1972, abandoned. This application May 23, 1975, Ser. No. 580,457

Int. Cl.² H01R *13/54*

U.S. Cl. 339—75 MP **5 Claims**

1. An electrical connector comprising:

an insulating housing including a base, a rotatable member including an elongate front portion and a rear portion rotatably mounted on said base enabling said rotatable member to be rotated in first and second directions about said base, and a contact-receiving cavity extending rearwardly through said base and forwardly through said rotatable member,

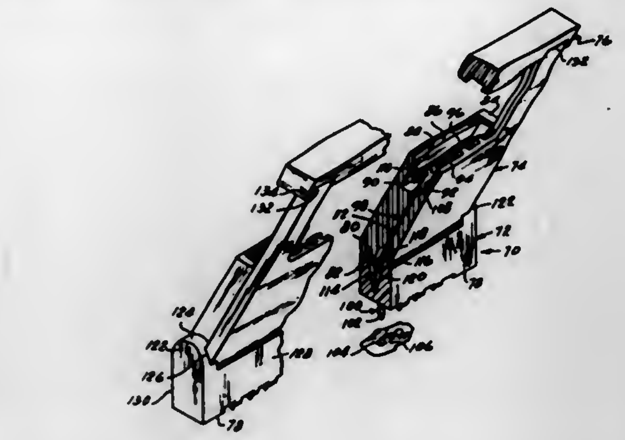
said cavity including a transversely enlarged portion extending longitudinally between said base and said rotatable member;

at least one metallic contact mounted in said cavity, said metallic contact including

a rear tail portion extending rearwardly through said base for connection to an external conductive element,

an active portion diposed frontwardly in said rotatable member for engagement with a mating contact, and

an intermediate portion including a one-piece flat ribbon-like portion disposed in said enlarged portion in transverse spaced relation to said base and said rotatable member,



said ribbon-like portion including an upper portion bendable in said first and second directions as said rotatable member is rotated; and

bending means on said rotatable member and arranged to extend into said enlarged portion in a direction opposite to the direction of rotation of said rotatable member during rotation thereof to transversely support said ribbon-like portions as said upper portion is bent.

4,128,290

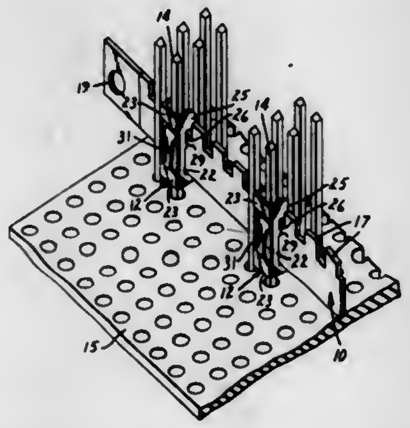
BUS BAR CONNECTION SYSTEM

Norman W. Mickelson, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 8, 1978, Ser. No. 875,989

Int. Cl.² H01R *9/08*

U.S. Cl. 339—97 R **4 Claims**



1. A system for electrical connection between an electrical terminal post and a common conductor comprising:

a bus bar comprising a conductive band coated with an electrically insulating material, and

a conductive contact clip for connection to said conductive band to permit conductive connection between said bus bar and a terminal post, said clip comprising a generally U-shaped body with parallel side walls joined by a base wall; said side walls being similarly formed, each side wall having an arm extending away from said base wall and then parallel to said base wall to define a slot parallel to said base wall, a pair of insulation piercing projections adjacent the entrance to said slot and spaced to scrape the insulation from said bus bar as it is moved into said slot, and a shoulder extending away from said base wall to a position spaced from and opposed to the entrance to said slot, said extension being spaced from the closed end of said slot a distance generally equal to the width of said bus bar; and said base wall being formed with a resilient lever arm extending into the space between said side walls for contacting a terminal post inserted between said side walls,

whereby said bus bar may be inserted into said slots in said side walls of said contact clip to a position generally parallel to said base wall of said clip, said insulation piercing projections scraping insulation from said bus bar to electrically connect said clip to said bus bar and the space encompassed by said bus bar and said U-shaped body of said clip forming a receptacle for a terminal post, said resilient lever arm extending into said receptacle to contact a terminal post therein and thereby make electrical connection from the terminal post to said bus bar through said clip.

4,128,291

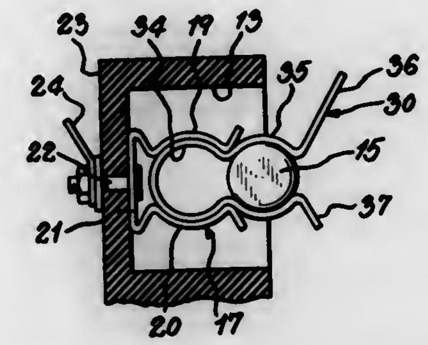
FUSE ADAPTER TERMINAL

Richard J. Peterson, Jr., 372 Burnet Pl., Paramus, N.J. 07652

Filed Nov. 16, 1977, Ser. No. 851,854

Int. Cl.² H01H *85/22*

U.S. Cl. 339—154 A **6 Claims**



1. A fuse adapter terminal for fuse holders of the type having a pair of spaced-apart spring clips which are adapted to receive the ends of a cylindrical fuse comprising

a substantially U-shaped member of electrically-conductive resilient material, said member having

a pair of oppositely-disposed leg portions,

an outwardly-extending arcuate central portion joining one end of each of said leg portions, and

an outwardly-extending male spade connector on the other end of one of said leg portions for receiving a female connector thereon,

each of said leg portions having first and second outwardly-extending lobes disposed along the length thereof, the first lobes of said leg portions being adjacent said arcuate central portion and cooperating therewith to form an arcuate surface which is adapted to be disposed in a spring clip of the fuse holder, the second lobes of said leg portions being adjacent the other end of the leg portions and cooperating with each other to receive the end of the fuse therebetween,

whereby the ends of the fuse are mechanically supported by and electrically connected to the spring clips of the fuse holder and said male spade connector functions as an auxiliary terminal to permit connection of an auxiliary circuit to the fuse holder.

4,128,292

RIGHT-ANGLE ELECTRIC CONTACT PLUG

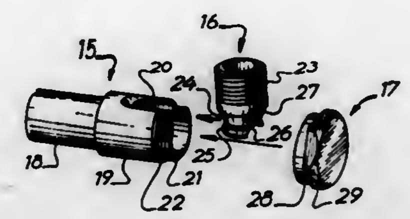
Leon Mouttet, Lonay, Switzerland, assignor to Interlemo Holding, S.A. c/o Curia Treuchand A.G., Coire, Switzerland

Filed Feb. 16, 1978, Ser. No. 878,282

Claims priority, application Switzerland, Jul. 6, 1977, 8318/77

Int. Cl.² H01R *13/00*

U.S. Cl. 339—176 R **3 Claims**



1. Right-angle electric contact plug whose right-angle body comprises a first tubular part comprising at least one removable electric contact element and a radial end notch, a second tubular part opening into the radial notch of the first part and having a clamping gripper intended to hold an electric connecting conductor, and a removable closure element fastened on at least one of the two parts of the right-angle body and intended to close the notched end of the first part of said right-angle body after connection of the electric conductor with the electric contact element, characterized by the fact that the two parts of the body are removable, by the fact that the two edges of the radial notch of the first part of the body are shaped as a slideway, by the fact that the base of the second portion of the body is shaped as a slide, by the fact that the notched end of the first part of the body is threaded, and by the fact that the closure element of the said notched end is a threaded plug, so that after connection of the electric conductor with the electric contact element, said contact element is introduced into the first part of the body at the same time as the slide of the second part of the body is engaged in the slideway of the notch of the first part, and by the fact that finally the threaded closure plug is screwed and clamped on the threaded end of said first part, thus rigidly assembling the two parts of the body by locking the slide of the second part against the bottom of the slideway of the notch of the first part.

4,128,293

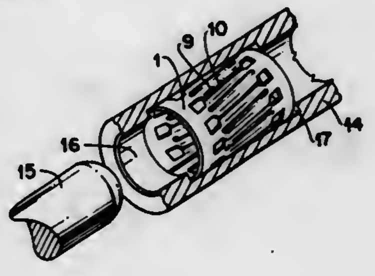
CONDUCTIVE STRIP

Alfred Paoli, Chicago, Ill., assignor to Akzona Incorporated, Asheville, N.C.

Filed Nov. 2, 1977, Ser. No. 847,992

Int. Cl.² H01R *13/12*

U.S. Cl. 339—258 R **9 Claims**



1. A conductive strip for providing electrical contact between a pin and socket in an electrical connector comprising: an elongated metallic strip, said strip having a plurality of substantially elongated parallel fingers projecting away from at least one surface of said strip; said fingers having two sides; one side of said fingers being attached to and integral with said

strip; the unattached side of said fingers forming an edge adapted to contact a pin or a socket; the longest dimension of said edge of said fingers being at an oblique angle with respect to the longest dimensional side of said strip.

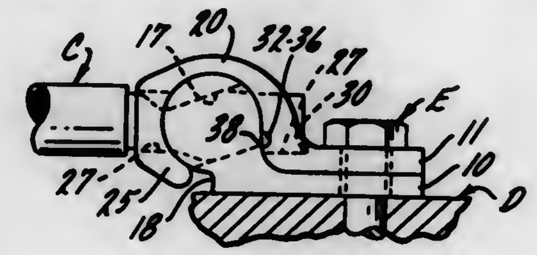
4,128,294
CABLE CLAMPS

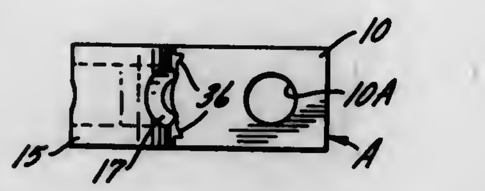
Daniel McCord, Geneva, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.

Filed Dec. 19, 1977, Ser. No. 861,875

Int. Cl.² H01R *9/10*

U.S. Cl. 339—266 R **3 Claims**





1. In a cable clamp including a male jaw member having a trunnion-like head formed with a cable-receiving bore, said clamp also including a female jaw member having a yoke presenting an internal socket shaped complemental to said head, and with a cable-receiving bore formed in the yoke, whereby the head and yoke may be interfitted for movement of the jaw members between an open position where the bores are aligned to enable the cable to pass therethrough and a closed position where the bores are misaligned to crimp the cable, the improvement comprising a raised rib on one of the members projecting toward the other member with an end portion of the rib swaged inward toward the bore of the related member to afford a protuberance thereon of greater height than the remainder of the rib, a notch in the other member opposed to said protuberance, the notch presenting a lip which rests on the protuberance to hold the members in open position, the protuberance yielding to movement of the lip therepast to allow the jaws to be closed by a closing force applied to the members.

4,128,295
ECCENTRIC BORE CONNECTING DEVICE

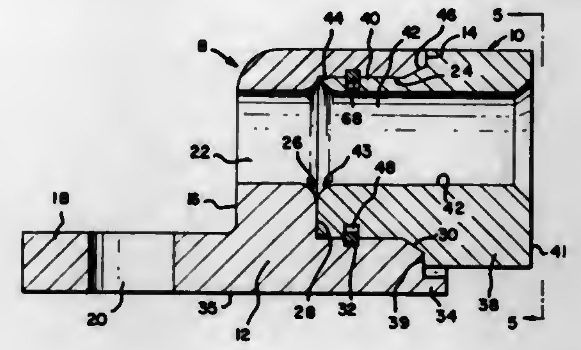
Edward D. Bunnell, Palm Harbor, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 683,994, May 6, 1976, abandoned. This application Aug. 10, 1977, Ser. No. 823,303

Int. Cl.² H01R *11/02*

U.S. Cl. 339—274 **10 Claims**

8. An electrical interconnection
comprising: an aluminum wire further comprising a plurality of strands,
and an aluminum terminal further comprising first and second body members, first and second adjacent portions of said aluminum wire being received respectively by said first and second body members, said plurality of strands being inelastically deformed to establish intimate contact among said strands,
and between said strands and said first and second body members at an interface between said first and second body members,
said first body member comprising a generally cylindrical plug member generated around a first axis with a first eccentric bore having a second axis offset from said first axis, for receiving said first portion of said aluminum wire,
said second body member having a generally cylindrical cavity generated about a third axis for receiving said cylindrical plug member with said first axis and said third axis in alignment, and a second eccentric bore having a fourth axis offset from said third axis for receiving said second portion of said aluminum wire when said first axis is aligned with said fourth axis, said first member being rotatable relative to said second member to offset said first and second eccentric bores and subject said aluminum wire to transverse and rotational shear stress exerted by the inner surfaces of said first and second eccentric bores to inelastically deform said aluminum wire and to establish intimate contact at said interface.



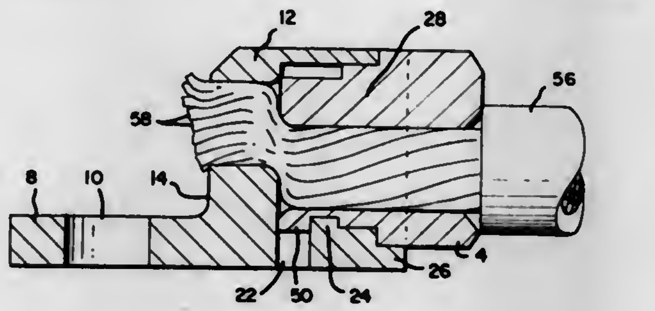
4,128,296
ECCENTRIC BORE ELECTRICAL CONNECTING DEVICE

John H. Lauterbach, Clearwater, and Frederick W. Rossler, Jr., New Port Richey, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 7, 1977, Ser. No. 831,328

Int. Cl.² H01R *11/02*

U.S. Cl. 339—274 **7 Claims**



1. An electrical connector assembly, for use with an electrical conductor, consisting of a male connector member and a female connector member mutually rotatable between a first and a second position:
(a) said male connector member comprising a male body cast from an electrically conductive material and further comprising:
(i) a plug member generated around a plug axis,
(ii) a bore extending through said male connector member, the axis of said bore being offset from said plug axis,
(iii) an annular ridge extending around at least a portion of the exterior of said plug member,
(b) said female connector member comprising a female body cast from an electrically conductive material and further comprising:
(i) a bore in said female body extending partially therethrough,
(ii) plug receiving means extending from a first side of said female body and merging with said bore, said plug receiving means having a cross-section generally larger than the cross-section of said bore,
(iii) a channel extending at least partially around said plug receiving means and extending inwardly from a second side of said female body, said channel extending transversely of said bore,
(c) said assembly having said plug member in said plug receiving means with the axis of said bore through said male connector member being in alignment with the axis of said bore through said female body when said assembly is in said first position and offset therefrom when said assembly is in said second position, said annular ridge on said plug member being received within said channel during rotation of said male and female members from said first to said second position, to prevent relative axial movement, whereby,
said electrical conductor may be positioned within said aligned bores when said assembly is in said first position and mechanical and electrical contact can be established with said conductor by rotation of said male and female connector members to said second position.

4,128,297
VARIABLE LEAD OPTICAL TRACING MACHINE WITH SCANNING AND VARI-FOCAL LENS

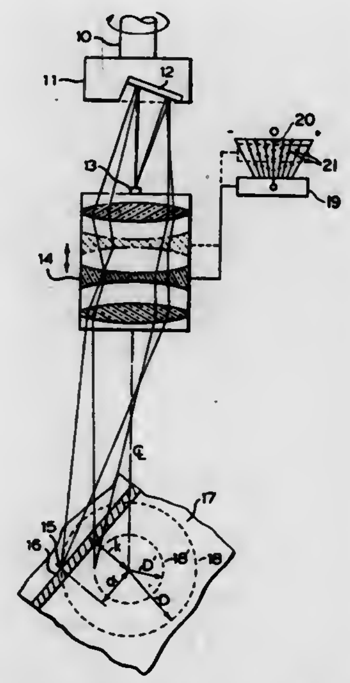
Arnold H. Bourne, Hamilton, Canada, assignor to Westinghouse Canada Limited, Hamilton, Canada

Filed Oct. 25, 1977, Ser. No. 844,873

Claims priority, application Canada, Feb. 23, 1977, 272442

Int. Cl.² G01B *27/17*

U.S. Cl. 350—6.1 **2 Claims**



1. A circular scanning optical pattern tracer including a vari-focal lens in the optical system, whereby the diameter of the scanning circle may be varied by adjustment of the vari-focal lens, including a kerf offset control and adjustable scale therefor, and a means of coupling the adjustable scale and the vari-focal lens adjustment whereby variations of the lead adjusts the kerf offset scale in such a manner that the kerf offset scale maintains calibration when the diameter of the scanning circle is varied.

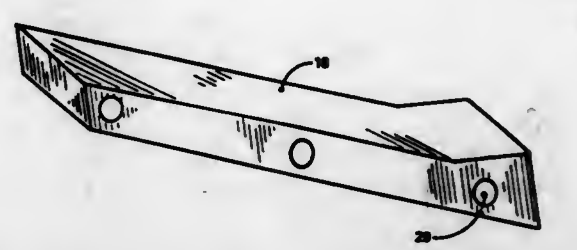
4,128,298
WAND NOSE WITH INTEGRAL LIGHT PIPE FOR WAND POWER TURN-ON

Robert M. McMillan, Dallas, Tex., assignor to Recognition Equipment Incorporated, Dallas, Tex.

Filed Dec. 27, 1976, Ser. No. 754,860

Int. Cl.² G02B *5/14;* G06K *7/10*

U.S. Cl. 350—96.10 **4 Claims**



1. A light conductor comprising an elongated homogeneous plastic material of generally rectangular cross section at one end and along the principal length of the conductor and an enlarged cross section at the end opposite said one end, a plurality of mounting members homogeneous with said conductor and extending from two opposite non-adjacent sides of the conductor and a mirror finish on the surface of said conductor which is equivalent to at least a 16 microinch finish.

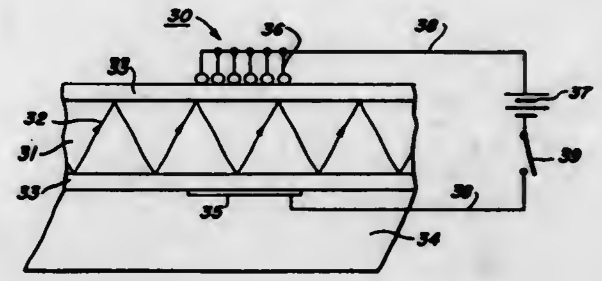
4,128,299
WAVEGUIDE OPTICAL MODULATOR

James Maher, Sodus, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 12, 1977, Ser. No. 796,262

Int. Cl.² G02B *5/14;* G02F *1/29*

U.S. Cl. 350—96.13 **16 Claims**



1. A method for modulating light propagating in a waveguide, the waveguide having on at least one surface a deformable cladding of a material having a lower index of refraction than the waveguide, the cladding having a thickness at least equal to the exponential depth of the evanescant field of the propagating light, the waveguide and cladding being positioned between a pair of electrode means, the method comprising impressing a field between the electrode means in order to attract the electrodes towards each other so that the cladding is deformed to a degree sufficient to interfere with the evanescant field of the propagating light, whereby propagation of the light is modulated.

4,128,300
OPTICAL LOGIC ELEMENTS

Larry B. Stotts, Chula Vista; William E. Martin, Pleasonton, and Paul S. Catano, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 26, 1977, Ser. No. 836,265

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96.14 **12 Claims**

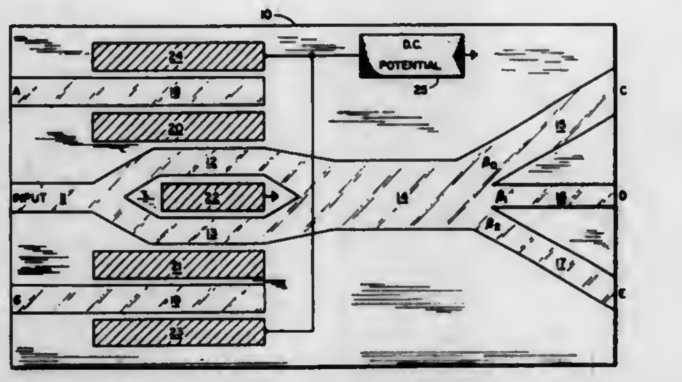
1. An optical logic element comprising:
an input optical waveguide for transmitting single mode optical energy, and diverging into first and second single

mode optical waveguide branches of equal optical length which reconverge at a multi-mode optical waveguide;

first, second, and third output optical waveguides connecting in common to said multi-mode optical waveguide for propagating lowest order, first order and second order modes of light energy, respectively;

first and second photoconductive paths disposed outside and spaced from said first and second single mode optical waveguide branches, respectively;

a grounded electrode positioned between said first and second single mode optical waveguide branches;



an electrode positioned between said first single mode optical waveguide branch and said first photoconductive path;

an electrode positioned between said second single mode optical waveguide branch and said second photoconductive path; and

means for impressing a dc electric field across said optical waveguide branches, photoconductive paths, and electrodes.

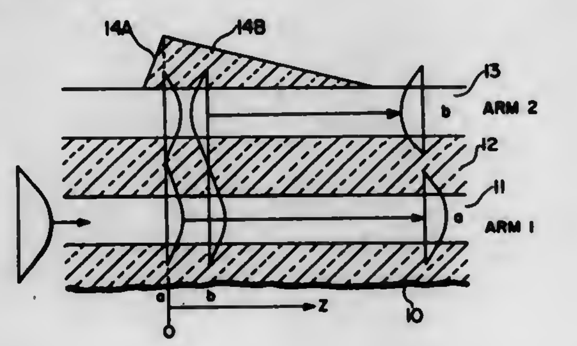
4,128,301
OPTICAL WAVEGUIDE POWER DIVIDER

William K. Burns, Alexandria, Va., and A. Fenner Milton, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 637,628, Dec. 4, 1975, abandoned. This application Mar. 29, 1977, Ser. No. 782,571

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96.15 **3 Claims**



1. An optical waveguide power divider which comprises:

a substrate formed of optical material;

a first optical waveguide located on said substrate and formed of an optical material having an index of refraction greater than said substrate;

a second optical waveguide with thickness and index of refraction substantially equal to those of said first optical waveguide;

a layer of optical material separating said first optical waveguide from said second optical waveguide with an index of refraction substantially equal to that of said substrate; and,

an overlay on said second waveguide with an index of refraction substantially equal to said substrate and with a fast taper, sufficiently steep to cause mode conversion, and a slow taper, sufficiently slow to allow adiabatic propagation, both tapers sloping in the direction of the length of said optical waveguides, said tapered overlay being sufficiently thick at its thickest part where said tapers meet to confine below its upper boundary the fields of the modes of said coupled waveguides.

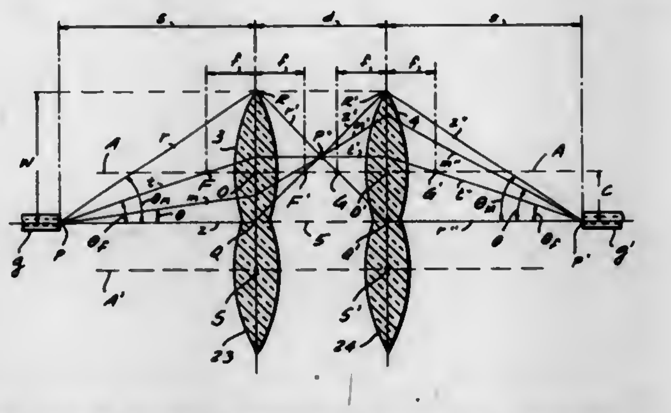
4,128,302
RAY-PATH EQUALIZER FOR SIGNAL TRANSMISSION VIA MULTIMODE OPTICAL WAVEGUIDES

Pietro Di Vita, Turin, Italy, assignor to SELT-Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Mar. 21, 1977, Ser. No. 779,821

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96.18 **7 Claims**



1. In an optical signal-transmitting system, in combination:

two aligned light guides with confronting ends respectively emitting and collecting bundles of light rays whose limiting rays include a critical angle with a common centerline of said light guides in at least one longitudinal plane of symmetry thereof; and

an equalizer between said light guides comprising two identical transparent bodies of positive refractivity spaced apart from each other and from said confronting ends along said centerline, each of said bodies having a cross-section in said plane of symmetry consisting of two symmetrical truncated lens profiles with a boundary lying on said common centerline and with optical axes lying on opposite sides of said boundary, each of said lens profiles extending from said boundary to at least a point of interception of a limiting ray of a ray bundle converging at the closer light-guide end, the path of a limiting ray extending from said point of interception at a lens profile of one of said bodies to the geometrical center of the other of said bodies and thence substantially along said centerline to the more distant light-guide end; the distance w of said point of interception from said centerline, the spacing c of said optical axes from said boundary, the focal length f of each lens profile and the separation d of the geometrical centers of said bodies substantially satisfying the relationship $w/c = d/f$.

4,128,303
ANTI REFLECTION COATING WITH A COMPOSITE MIDDLE LAYER

Fumio Onoki, Tokorozawa, and Hajime Kamiya, Kokubunji, both of Japan, assignors to Kabushiki Kaisha Hoya Lens, Tokyo, Japan

Continuation-in-part of Ser. No. 673,889, Apr. 5, 1976, abandoned. This application Apr. 22, 1977, Ser. No. 790,005

Int. Cl.² G02B *5/28*

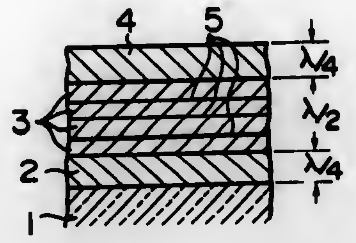
U.S. Cl. 350—164 **6 Claims**

1. An anti-reflection optical glass including glass having sequentially coated thereon a plurality of layers, each layer having a thickness expressed as a fraction of a predetermined wavelength (λ) consisting essentially of:

(a) a medium refractive index layer selected from the group

consisting of CeF_3 and Al_2O_3 having a thickness of about $\frac{1}{4}\lambda$;

(b) four sequential high refractive index layers, each of said layers selected from the group consisting of TiO_2, CeO_2 and ZrO_2;



(c) three thin layers of MgF_2 having a thickness of about 10 to about 100A, each of said thin layers interposed between said high refractive index layers (b) and spaced apart from each other at a distance of $\frac{1}{8}\lambda$, the plurality of layers (b) and (c) being about $\frac{1}{2}\lambda$ in overall thickness; and

(d) a low refractive index layer of MgF_2 having a thickness of $\frac{1}{4}\lambda$ on top of the plurality of layers (b) and (c).

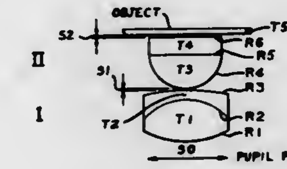
4,128,304
ABBE CONDENSER

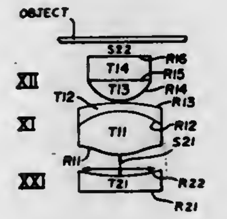
Milton H. Sussman, Amherst, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Dec. 24, 1975, Ser. No. 643,980

Int. Cl.² G02B *3/04, 9/12, 9/06*

U.S. Cl. 350—189 **12 Claims**





1. A two-component microscope condenser having a working distance effective for either an air space or oil filled space and having a front pupil plane external to the glass thereof, said condenser consisting of a biconvex positive doublet and a convex-plano positive doublet aligned along an optical axis.

4,128,305
CATADIOPTRIC OBJECTIVE

Wai-Min Liu, Rosemead, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 594,426, Jul. 9, 1975, abandoned. This application Apr. 14, 1977, Ser. No. 787,677

Int. Cl.² G02B *17/08*

U.S. Cl. 350—201 **2 Claims**

1. A catadioptric objective lens system having a front end, a rear end, and a principal optical axis, comprising:

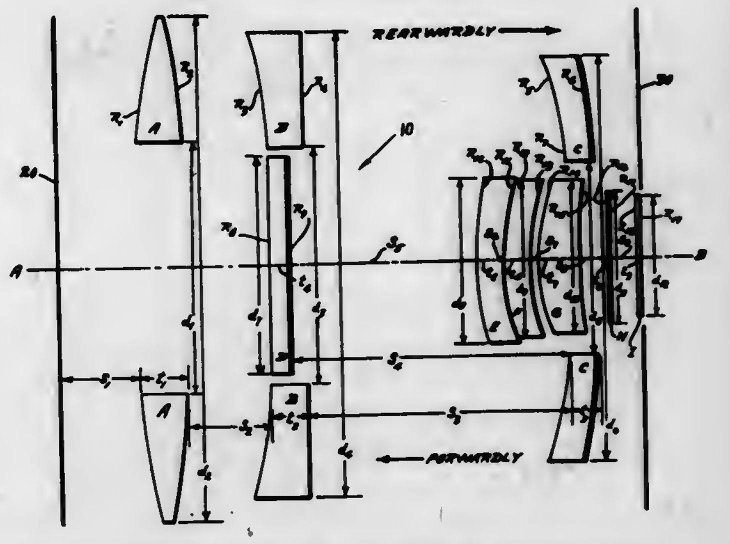
a. a double convex lens element, having a centrally located opening, which is axially aligned with said principal optical axis of said system;

b. a double concave lens element having a centrally located opening, with said double concave lens element disposed rearward of, and in axial alignment with, and also in spaced-apart relationship to, said double convex lens element;

c. a negative meniscus shaped lens element, concave and reflective to the front, having a centrally located opening, with said negative meniscus shaped lens element disposed rearward of, and in axial alignment with, and also in spaced-apart relationship to, said double concave lens element;

d. a plano-convex lens element, convex and reflective to the rear, with said plano-convex lens element disposed forward of, and in axial alignment with, and also in spaced-apart relationship to, said concave front negative meniscus shaped lens element;

e. a first positive meniscus shaped lens element, convex to the front, disposed rearward of, and in axial alignment with, and also in spaced-apart relationship to, said plano-convex lens element;



f. a second positive meniscus shaped lens element, convex to the front, disposed rearward of, and in axial alignment with, and also in abutting relationship to, said first positive meniscus shaped lens element;

g. a third positive meniscus shaped lens element, convex to the front, disposed rearward of, and in axial alignment with, and also in spaced-apart relationship to, said second positive meniscus shaped element, with this said third positive meniscus shaped lens element also simultaneously disposed partly within said centrally located opening of the said concave front negative meniscus shaped lens element and partly forward of this same said lens element;

h. a first parallel plate lens element disposed rearward of, and in axial alignment with, and also in spaced-apart relationship to said third positive meniscus shaped lens element and to said concave front negative meniscus shaped lens element having a centrally located opening

i. and, a second parallel plate lens element disposed rearward of, and in axial alignment with, and also in spaced-apart relationship to, said first parallel plate lens element.

4,128,306
OPTICAL MAGNIFYING DEVICE

Fred Kempler, 5, avenue Maurice Barres, La Varenne, Val de Marne, France

Filed Nov. 29, 1976, Ser. No. 745,604

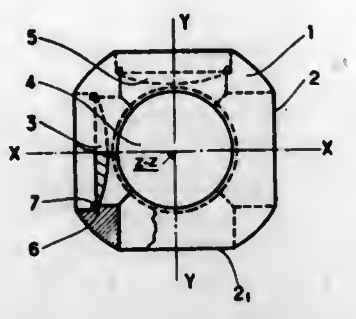
Claims priority, application France, Jan. 26, 1976, 76 02056

Int. Cl.² G02B *27/02*

U.S. Cl. 350—239 **4 Claims**

1. An optical magnifying device wherein there is an autonomous block carrying three perpendicular perforations extending completely through the block the axes of which intersect at

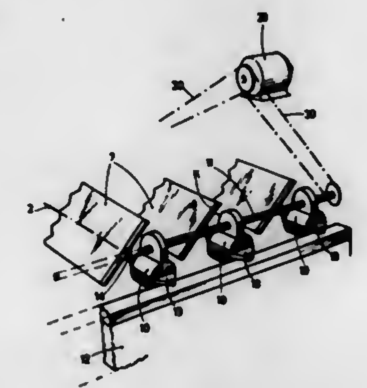
a point and carry magnifying lenses, enlarged recesses at one of the ends of each of said perforations and coaxial with the perforations, said recesses each being adapted to receive a transparent base wherein the object to be studied is located.



4,128,307

DEVICE FOR CONTROLLING THE INCIDENCE OF HEAT AND LIGHT RADIATION, PARTICULARLY FOR GREENHOUSES AND THE LIKE

Hans Badertscher, and Walter Schindler, both of Basel, Switzerland, assignors to Plascon AG., Munchenstein, Switzerland
Filed Jun. 20, 1977, Ser. No. 808,421
Claims priority, application Switzerland, Jun. 22, 1976, 7989/76
Int. Cl.² G02B *27/00*
U.S. Cl. 350—263 **8 Claims**



1. A device for controlling the incidence of heat and light radiation on a growing area within greenhouses and the like comprising a plurality of slats of a non-self-supporting material arranged in parallel but side-by-side spaced relationship as in a Venetian blind, opposing pairs of means for supporting opposite ends of said slats and for tilting said slats about their longitudinal axes to open or close the slats, and means for rotating the opposing tilting means in synchronism, said tilting means including clamping means for contacting the opposite ends of each slat so as to maintain said slat in a substantially planar configuration, and tension means associated with each pair of tilting means to maintain the slat in tension as it rotates during the synchronous rotation of said opposing tilting means.

4,128,308

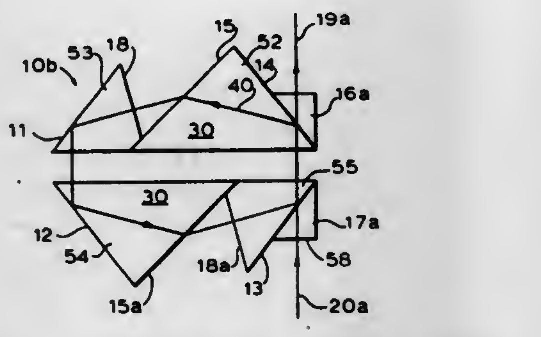
OPTICAL SYSTEM FOR CHANGING THE CROSS SECTIONAL DIMENSIONS OF A COLLIMATED BEAM OF LIGHT

Joseph T. McNaney, 8548 Boulder Dr., La Mesa, Calif. 92041
Filed Apr. 14, 1977, Ser. No. 787,619
Int. Cl.² G02B *5/04*
U.S. Cl. 350—286 **3 Claims**

1. An optical system for effecting changes in a cross sectional dimension of a beam of light along an optical path therein extending from a light input path to said system to a light output path from said system, comprising:

a. means for directing a substantially collimated monochromatic beam of light along said optical path within the system so as to establish an availability of said beam at a plurality of locations along said optical path for an effecting of a change in a cross sectional dimensions of said beam at each said location, light refracting means coincident with each said location and each said location representative of a beam dimension control position of said system;

b. said means for directing the beam along said optical path including a formation of light conducting material having a predetermined cross sectional configuration, length dimension, a first end and a second end, and presenting along said length dimension an array of outer surfaces of which a plurality are representative of individual light reflecting surface means and at least one of said outer surfaces is representative of a light refracting surface for providing a plurality of said light refracting means along the length dimension thereof between said first and second ends;



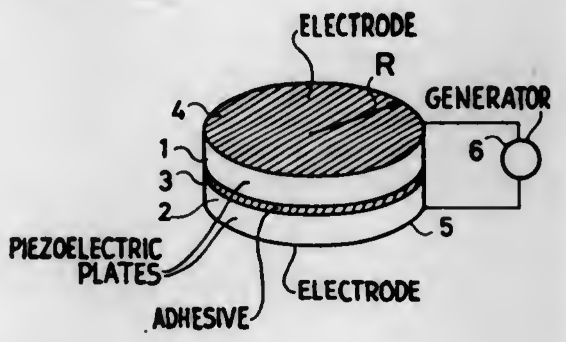
c. each surface of said array of surfaces angularly oriented one with respect to the other so as to provide an optical relationship between said input path and each said control position and between each said control position and said output path, said optical relationship allowing said beam to follow said optical path forming a helix of plural revolutions, each revolution of said helix extended along said length dimension in a side-by-side relationship from said input path to said output path;

d. each revolution of said helix including at least one of said beam dimension control positions and said light refracting means at each said control position effecting said change in the cross sectional dimension of said beam in the direction substantially perpendicular to said length dimension of said array of surfaces.

4,128,309

AUTOMATIC OPTICAL FOCUSING DEVICE

Jean-Claude Lehureau; Roland Malissin, and Gérald Roullet, all of Paris, France, assignors to Thomson-Brandt, Paris, France
Filed Aug. 16, 1976, Ser. No. 714,805
Claims priority, application France, Aug. 19, 1975, 75 25693
Int. Cl.² G02B *5/10*
U.S. Cl. 350—295 **7 Claims**

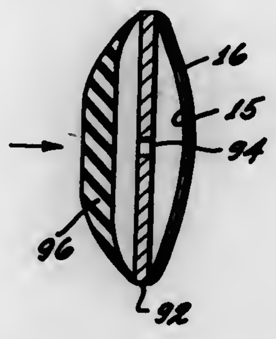


1. An automatic optical focusing device for moving the focusing spot of a radiation beam along the optical axis of said beam according to a control signal, said device comprising a reflecting element having two external faces, said reflecting element comprising two circular thin plates bonded together by a bonding material, at least one of said plates being formed with a piezoelectric preopolarized material, one of said external faces being reflective, a convergent element for focusing said radiation beam reflected by said reflecting element at said focusing spot, and polarizing means for applying said control signal to said element, said control signal inducing an electrical field throughout the thickness of said prepolarized plate producing a radial deformation of said plate which deforms said element as a whole in curving said reflective face.

4,128,310

ZOOM MIRROR

John Miller, 2361 Cove Ave., Los Angeles, Calif. 90039
Continuation of Ser. No. 622,249, Oct. 14, 1975, abandoned. This application Jun. 6, 1977, Ser. No. 803,626
Int. Cl.² G02B *5/10*
U.S. Cl. 350—295 **4 Claims**



1. A variable focal length mirror comprising:

a resilient, deformable member having a reflective surface and being deformable into curved configurations;

a second member, said second member being movable and having at least portions thereof being spaced from said first member;

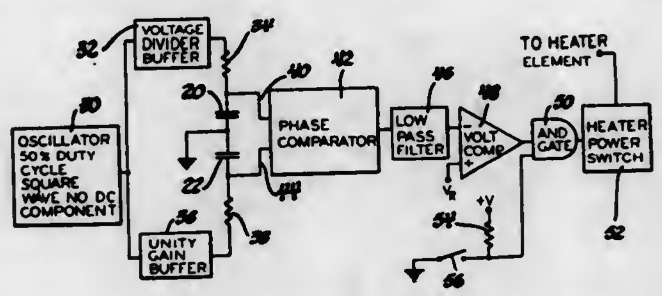
a medium between said first member and said second member providing a coupling therebetween, the second member being movable to deform the first member, through the coupling provided by the medium, to a selected curvature; and

means attached to the first member such that the first member is prevented from assuming a concave curvature relative to the ambient.

4,128,311

HEATER CONTROL METHOD FOR LIQUID CRYSTAL DEVICES

George W. Smith; Michael Kaplit, both of Birmingham, and Daniel B. Hayden, Port Huron, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 1, 1977, Ser. No. 820,640
Int. Cl.² G02F *1/13*
U.S. Cl. 350—331 **3 Claims**



1. The method of controlling a heater for a liquid crystal device containing a layer of liquid crystal material of the type having at a given operating temperature one dielectric constant when a weak electric field insufficient to alter the molecular orientation is applied thereacross and another dielectric constant when a strong electric field effective to alter the molecular orientation is applied, and below operating temperature having a dielectric constant substantially unchanging with changes in field strength; comprising the steps of

applying across the liquid crystal material layer the said weak electric field and sensing the dielectric constant to botain a first electrical signal having a parameter dependent on the dielectric constant,

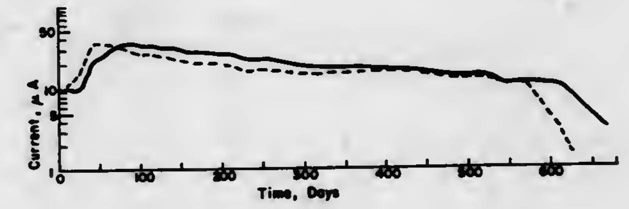
applying across the liquid crystal material layer the said strong electric field and sensing the dielectric constant to obtain a second electrical signal having a parameter dependent on the dielectric constant,

comparing the first and second electrical signals to produce a control signal effective to turn on the heater for the liquid crystal device, if it is off, when the said parameters of the said signals are substantially equal indicating that the dielectric constant is nonresponsive to the difference in applied fields, and to produce a control signal effective to turn off the heater for the liquid crystal device, if it is on, when the said parameters of the said signals differ by a predetermined value indicating that the dielectric constant is changeable in response to the difference in applied fields.

4,128,312

LONG LIFE REFLECTIVE LIQUID CRYSTAL DISPLAY FOR DC OPERATION

Hong S. Lim, Agoura, and Michael J. Little, Tarzana, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Oct. 4, 1977, Ser. No. 839,224
Int. Cl.² G02F *1/13;* C09K *3/34*
U.S. Cl. 350—336 **9 Claims**



1. A reflective mode dynamic scattering display device capable of sustained operation when subjected to a dc current excitation comprising an electrode consisting of a transparent substrate coated with a thin layer of transparent conductor film selected from the group consisting of indium oxide, tin oxide and indium-tin oxide which functions as an anode, and a rigid substrate containing a silver mirror surface which surface functions as a cathode, maintained in a predetermined spaced relationship to said anode by spacers, the intermediate space containing a phenylbenzoate ester liquid crystal mixture doped with a redox dopant formed from mixtures of metallocenes and conjugated cyano-organic compounds which functions as an active electro-optic element in response to a dc current excitation.

4,128,313

LIQUID CRYSTAL DISPLAY WITH DARK CHARACTERS ON LIGHT BACKGROUND

Herbert S. Cole, Jr., Scotia, and Charles R. Stein, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Aug. 18, 1977, Ser. No. 825,659
Int. Cl.² G02F *1/13*
U.S. Cl. 350—340 **21 Claims**

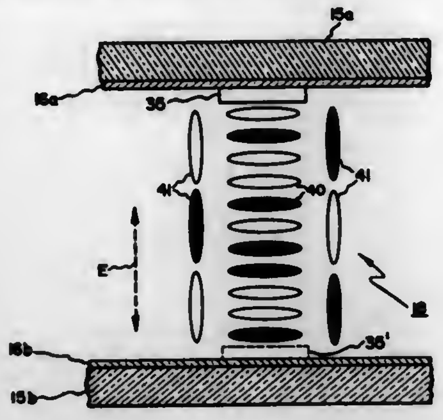
1. A method for fabricating a dichroic liquid crystal cell for a display having relatively dark indicia upon a relatively light background, comprising the steps of:

a. providing a pair of substantially transparent electrodes;

b. fabricating upon at least one of the electrodes a parallel-alignment film in each of at least one area defining the indicia;

c. treating the remainder of the surface area of each electrode to form a homeotropic-alignment boundary;

d. positioning the treated surfaces of the pair of electrodes in facing, spaced-apart relationship; and

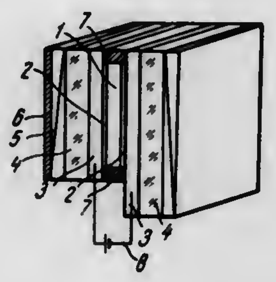


e. filling the volume between the spaced electrodes with a dichroic nematic liquid crytal material.

4,128,314
LIQUID-CRYSTAL INDICATOR

Vladimir P. Sevostiyanov, ulitsa B. Khmelnitskogo, 20/24, kv. 25; Valery V. Astakhov, ulitsa Borisova-Musatova, 8-a, kv. 5, and Vasily P. Usachev, ulitsa Ordzhonikidze, 11-a, kv. 5, all of Saratov, U.S.S.R.

Filed Jun. 10, 1977, Ser. No. 805,309
Int. Cl.² G02F *1/13*
U.S. Cl. 350—341 3 Claims



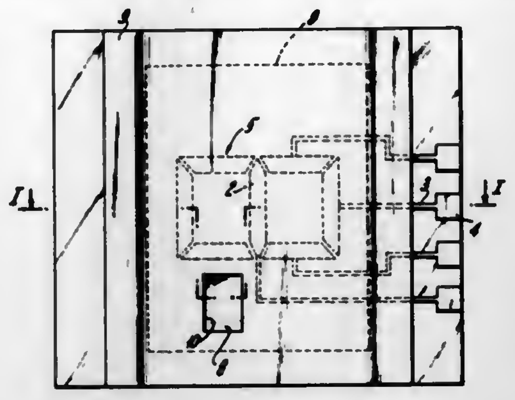
1. A liquid-crystal indicator comprising a layer of nematic liquid crystals; two transparent multi-layered blocks with said layer of said nematic liquid crystals being located thereinbetween; each of said multi-layered blocks containing successively disposed in a direction from said layer of said nematic crystals: a layer of germanium oxide ensuring orientation of molecules of said liquid crystals so that major axes of the molecules adjacent to one multilayered block are parallel thereto and to each other and form an angle of 90° with respect to major axes of the molecules adjacent to the second multilayered block; a current-conducting layer; a dielectric layer; a polarizing layer.

4,128,315
THIN ELECTROCHROMIC DISPLAY

Louis A. Zanoni, Trenton, N.J., assignor to Timex Corporation, Waterbury, Conn.

Filed Jun. 15, 1977, Ser. No. 806,892
Int. Cl.² G02F *1/00, 1/17, 1/23*
U.S. Cl. 350—357 4 Claims

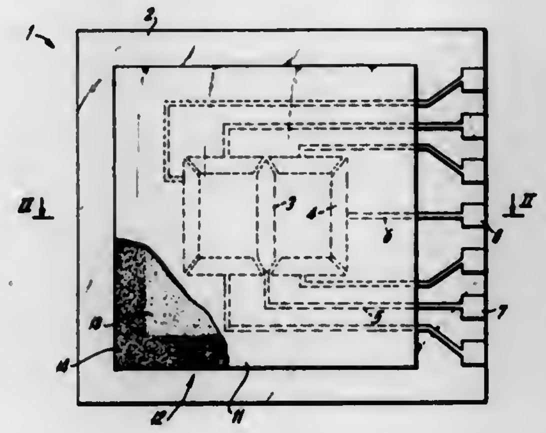
1. A thin electrochromic display cell comprising:
a transparent substrate having transparent electrodes thereon, said electrodes coated with electrochromic material,
a cationic ion exchange resin electrolyte disposed in contact with said electrochromic material,
a conductive foil member having a coating thereon disposed in contact with said electrolyte to facilitate cationic transport of cations in said electrolyte for actuating said electrochromic material, and
an insulating tape member covering and adhered to said foil member and also adhered to said substrate around the outside of said foil member, said tape member having an aperture therein for permitting electrical contact to be made with said foil member said tape member being impervious to moisture from said electrolyte and impervious to contaminates external to said cell.



4,128,316
THIN ELECTROCHROMIC DISPLAY

Louis A. Zanoni, Trenton, N.J., assignor to Timex Corporation, Waterbury, Conn.

Filed Jun. 15, 1977, Ser. No. 806,893
Int. Cl.² G02F *1/00, 1/17, 1/23*
U.S. Cl. 350—357 6 Claims



1. An electrochromic display device having a single substrate member, said device comprising:
a transparent substrate having transparent electrodes with electrochromic material thereon,
a fibrous spacer member impregnated in its central portion with an electrolyte disposed in contact with the electrochromic material on said electrodes, and impregnated in its peripheral portions surrounding the central portion with an adherent sealing resin, and
a sheet of conductive metal foil having a central portion with an active surface disposed in contact with said electrolyte to facilitate cationic transport, and having its peripheral portion surrounding the central portion sealed and bonded to said substrate by means of said adherent resin.

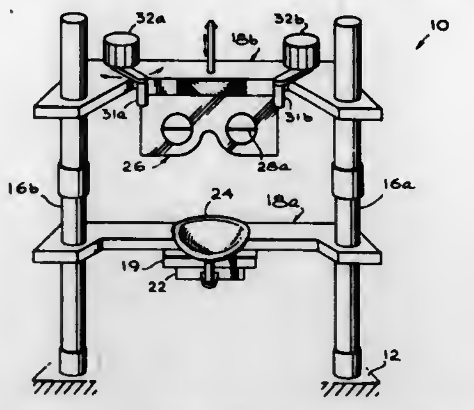
4,128,317
POSITIONING MEANS FOR OPHTHALMIC EXAMINATIONS

Maurice LeCover, 8700 Beverly Blvd., Room A310, Los Angeles, Calif. 90048

Filed Jun. 1, 1977, Ser. No. 802,451
Int. Cl.² A61B *3/00*
U.S. Cl. 351—38 10 Claims

1. Positioning means for use in conjunction with an ophthalmoscope of slit lamp stand, comprising:

(a) a lower ledge mounted on the stand;
(b) a support means for the chin, mounted bidirectionally movable adjacent the lower ledge.
(c) an upper ledge mounted on the stand;
(d) a face shield, mounted laterally slidable on the upper ledge, having spaced openings for the eyes;
(e) a guide stick essentially in the shape of an inverse "T" disposed adjacent the face shield vertically slidable in the upper ledge, so as to cause the horizontal part of the guide stick to appear within the shield openings;
(f) two arms mounted circularly turnable and spacedly from one another on the upper ledge, so as to provide supporting means for the temples, said support means, face shield, guide stick and arms being operable in coordination with one another to position the face of the patient to obtain an immaculate image of his eyes by way of the ophthalmoscope or slit lamp.



4,128,318
SURFACE-TREATED SOFT CONTACT LENSES

Charles L. Sieglaff, Mentor; Charles J. Hora, Painesville, and Joseph P. Tiefenbach, Mentor, all of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 674,448, Apr. 7, 1976. This application Mar. 22, 1978, Ser. No. 888,830
Int. Cl.² C08F *8/32*
U.S. Cl. 351—160 R 11 Claims

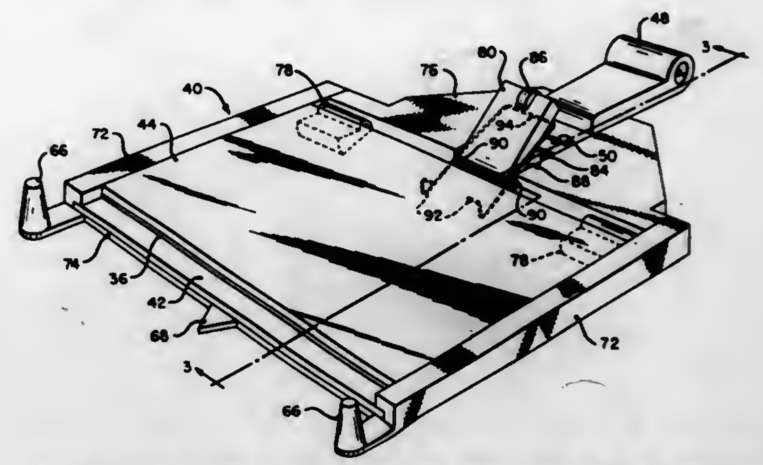
1. A process for producing a soft contact lens resistant to the diffusion and accumulation therein of substances which will promote its clouding and discoloration in use which comprises treating an acrylic ester hydrogel with an aliphatic aminoalcohol containing 2–6 carbon atoms/molecule, said aminoalcohol containing at least one functional group reactive with the polar functional groups in said hydrogel, the treatment being conducted for a sufficient period of time to structurally modify at least a major portion of polymer molecules on the outer surfaces of the hydrogel by chemcally incorporating therein the modifying compound through its functional groups, the aminoalcohol being incorporated in an amount of 0.0001 to 0.5 weight percent, by weight of the polymer.

4,128,319
COVER PLATE FOR A MICROFORM READER

Ernest J. Clarke, London, England, assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 8, 1977, Ser. No. 831,566
Claims priority, application United Kingdom, Mar. 9, 1977, 09865/77
Int. Cl.² G03B *23/08, 1/48*
U.S. Cl. 353—27 R 6 Claims

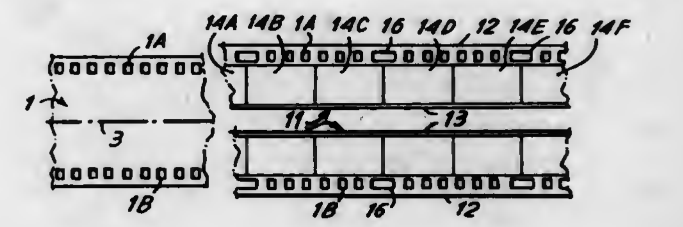
1. A viewing device comprising:
a carrier for holding a record member to be viewed;
an optical system;
means for indexing said carrier relative to said optical system for displaying a selected portion of a record member carried by said carrier in said optical system;
said carrier being moveable between first and second positions and having cover means thereon with means for pivotally mounting said cover means on said carrier for movement between open and closed positions;
a resilient means for interconnecting said cover means and said carrier to enable said resilient means to move said cover means to said open position when a predetermined amount of energy is added to said resilient means;
means for adding energy to said resilient means to progressively store energy therein as said carrier is moved towards said first position to enable said resilient means to move said cover means towards said open position as said carrier is moved towards said first position and
means for mounting said resilient means on said carrier, said resilient means having a first portion to engage said means for adding energy and a second portion to enage said cover means.



4,128,320
STEREOSCOPIC FILMS AND VIEWERS THEREFOR

Giuliano Cecchini, Via dell'Argin Grosso 105, Florence, Italy

Division of Ser. No. 611,877, Sep. 10, 1975. This application Jan. 21, 1977, Ser. No. 761,243
Int. Cl.² B26D *11/00*
U.S. Cl. 353—120 8 Claims



1. A method of producing a stereoscopic film from a length of film having sprocket holes along each longitudinal margin of the film comprising the steps of
longitudinally severing the film into two equal portions, and
enlarging selected ones of the sprocket holes to provide a series of regularly occurring locating holes, each locating hole enabling a corresponding pair of stereoscopic frames to be recorded side by side longitudinally of the film, said stereoscopic frames having their longest side along the length of said film, said locating holes being spaced apart a pitch equal to twice that of said longest side of said frames and thereafter enabling the stereoscopic frames to be correctly located in a viewer.
5. The film formed by the method of claim 1.

4,128,321

PENTAGONAL PRISM AND RELATED OPTICAL STRUCTURES FOR SINGLE LENS REFLEX CAMERAS

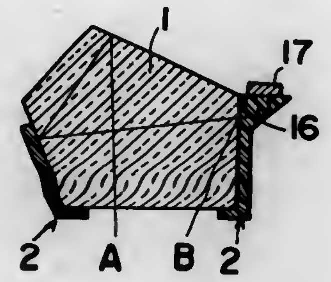
Toshio Kobori, Sakai, and Isamu Uchida, Kawachinagano, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 12, 1977, Ser. No. 763,680

Claims priority, application Japan, Jan. 22, 1976, 51-6412

Int. Cl.² G03B *7/08, 13/08*

U.S. Cl. 354—23 R **14 Claims**



1. In a single lens reflex camera having a pentagonal prism, an auxiliary optical system comprising:
- at least one light reflecting optical element coacting with and disposed adjacent to said pentagonal prism; and
- a holder made of a transparent plastic material and including as an integral part thereof said light reflecting optical element, said holder holding said pentagonal prism in the horizontal direction and in the vertical direction.

4,128,322

INSTANT-PICTURE CAMERA

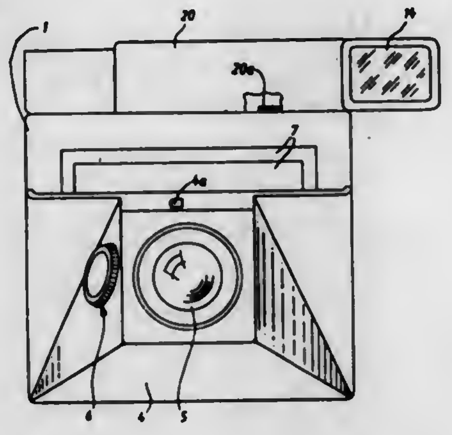
Otto Stemme, Munich, and Peter Lermann, Narring, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Apr. 28, 1977, Ser. No. 791,986

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1976, 2618989

Int. Cl.² G03B *17/50*

U.S. Cl. 354—83 **8 Claims**



1. An instant-picture camera of the type using a film pack which comprises rectangular film sheets each of which is provided with a supply of developer in a compartment extending along one of the narrow edges of the sheet and arranged to be squeezed upon exposure of the sheet, said camera comprising a camera body having an upper end provided with a slot for discharging of exposed sheets, and a film chamber dimensioned to receive a film pack with said compartments located beneath and adjacent to said slot; a cover for said film chamber to permit insertion and removal of the film pack; a lens on said camera body and having an optical axis; a cap straddling said upper end of said camera body and being slidable therein in direction transverse to said optical axis; and a viewfinder mounted in said cap.

4,128,323

CAMERA WITH IMPROVED FILM-TRANSPORT ACTUATION

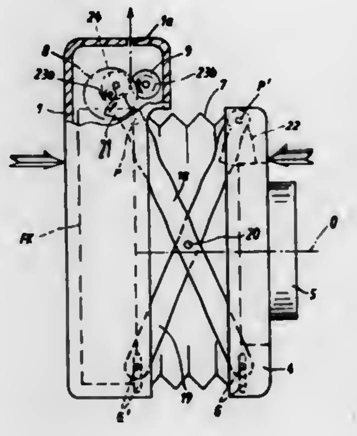
Richard Wick; Otto Stemme, both of Munich; Peter Lermann, Narring, and Günter Fauth, Unterhaching, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed May 13, 1977, Ser. No. 796,722

Claims priority, application Fed. Rep. of Germany, May 19, 1976, 2622372

Int. Cl.² G03B *17/50*

U.S. Cl. 354—86 **7 Claims**



1. In a camera provided with a housing and with a lens having an optical axis, a combination comprising transporting means actuatable for transporting a film with reference to the housing; operating means, including a member carrying said lens, a scissor-type linkage mounting said member on said housing for movement relative thereto lengthwise of the optical axis and for actuating said transporting means during such movement of said linkage, comprising two bars which cross and are pivoted to each other, one of said bars having one end pivoted to said member and the other of said bars having one end pivoted to said housing; and a pair of gear segments, each connected to one of said ends and pivotable with the respective bar for actuating said transporting means and cocking a shutter of the camera, respectively.

4,128,324

THREE-DIMENSIONAL PHOTOGRAPHY USING INCOHERENT LIGHT

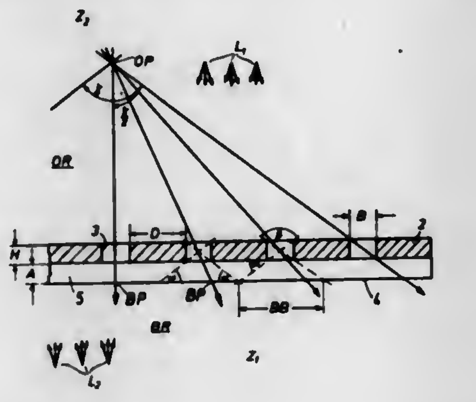
Alfred Seeger, Am Steinern Kreuz 45, 6100 Darmstadt, Fed. Rep. of Germany

Filed Dec. 8, 1976, Ser. No. 748,501

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1975, 2556034

Int. Cl.² G03B *35/00*

U.S. Cl. 354—112 **16 Claims**



1. A novel method of photographically recording and three-dimensionally reproducing an object so as to present to an observer of the reproduction a view of the object which changes in dependence upon the changing viewpoint of the observer, the method being of the type wherein the three-dimensional recording medium employed comprises a photographic plate and an aperture-raster plate which is parallel to but spaced a predetermined distance away from the photographic plate, the aperture-raster plate being provided with a multitude of regularly distributed apertures, the method furthermore being of the type comprising the steps of illuminating the object to be recorded and registering the light rays emanating from the illuminated object on the three-dimensional recording medium with respect to both intensity and direction of such rays, and thereafter three-dimensionally reproducing the object by illuminating the three-dimensional recording medium with light which is incident upon the recording medium in the direction opposite to that in which the observer views the recording medium,
- the improvement comprising
- using for the three-dimensional recording medium a recording medium of the type defined above, but with the thickness of the aperture-raster plate and the spacing between the aperture-raster plate and photographic plate having values such that, if the medium is exposed to omnidirectional light, the elementary images projected onto the photographic plate by the individual apertures substantially abut and are neither appreciably spaced apart nor overlapping,
- performing the recording of the light rays emanating from the illuminated object using omnidirectional light and without the use of a lens intermediate the object and the recording medium,
- and performing the three-dimensional reproduction using omnidirectional light.

4,128,325

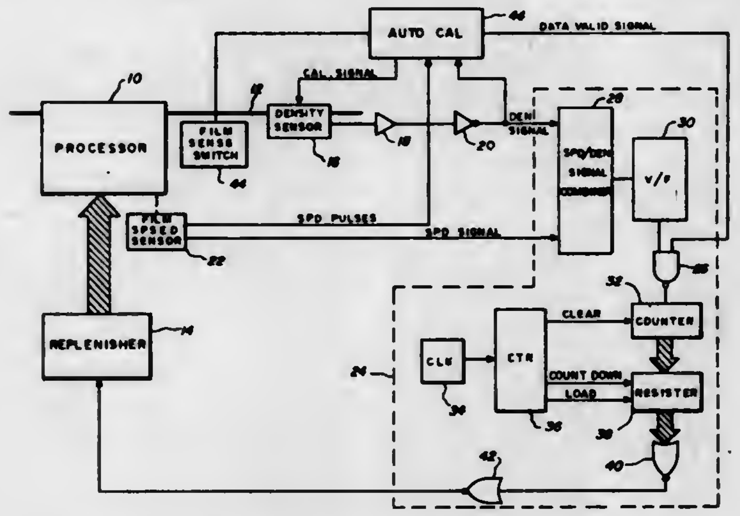
AUTOMATIC DENSITY MEASUREMENT CALIBRATION FOR PHOTOGRAPHIC REPLENISHMENT SYSTEM

Theodore A. Melander, and Ralph L. Charnley, both of Minneapolis, Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed May 31, 1977, Ser. No. 802,061

Int. Cl.² G03D *13/00*

U.S. Cl. 354—298 **16 Claims**



1. In a replenisher system for providing replenisher fluid to a processor of photosensitive material, the replenisher system including parameter sensing means for providing a parameter signal indicative of a measured parameter associated with the processing of the photosensitive material and including replenisher control means for controlling replenishment as a function of the parameter signal, the improvement comprising:
- photosensitive material sensing means for sensing the presence of photosensitive material approaching the parameter sensing means; and
- calibration means for calibrating the parameter sensing means in response to a signal from the photosensitive material sensing means prior to the photosensitive material reaching the parameter sensing means.

4,128,326

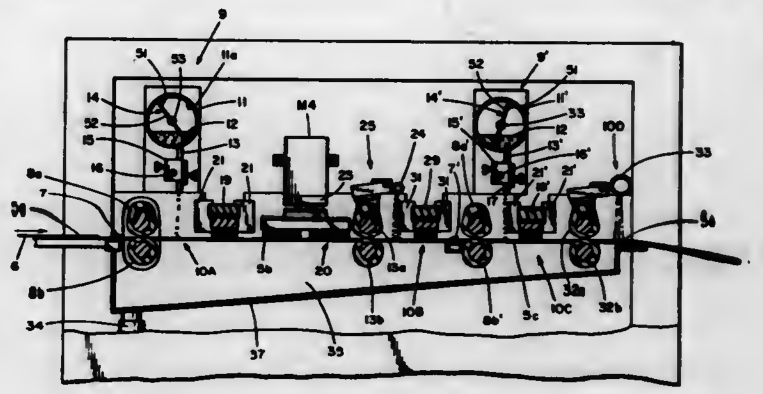
CHEMICAL DISPENSING SYSTEM

Martin M. Selak, Des Plaines, Ill., assignor to Astro Engineering Co., Skokie, Ill.

Filed Jun. 2, 1977, Ser. No. 802,812

Int. Cl.² G03D *3/04*

U.S. Cl. 354—317 **20 Claims**



1. A printing plate processing apparatus comprising, in combination: conveyer means having an inlet station for receiving exposed offset printing plates having photosensitive coatings thereon and which have been selectively exposed and for delivering said exposed printing plates to a developing station, a supply container having a storage space therein positioned immediately above and extending substantially the full width of said developing station for holding a supply of chemical having a liquid carrier in which is distributed particles therein which can settle-out therefrom, stirring means for continuously stirring the chemical in said supply container to keep said particles in dispersion within said liquid carrier, means for directing said chemical from said supply container to the printing plates on said conveyor means comprising only laterally spaced conduit means at the bottom portion of said container and extending substantially only vertically so that there are no horizontal runs in said conduit means and said chemical is delivered from said storage space by force of gravity, control valve means associated with each of said conduit means for opening and closing said conduit means, and printing plate position sensing means responsive to a printing plate being fed to said developing station for operating each control valve means to a position which opens the associated conduit means.

4,128,327

TRANSFER MATERIAL FEED APPARATUS FOR ELECTROPHOTOGRAPHIC COPYING MACHINES

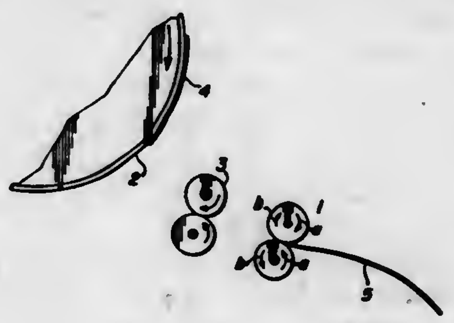
Mitsuhiko Sugiyama, and Michio Shinkai, both of Ebina, Japan, assignors to Rank Xerox Limited, London, England

Filed Oct. 25, 1977, Ser. No. 844,851

Claims priority, application Japan, Oct. 26, 1976, 51/127876

Int. Cl.² G03G *15/00*

U.S. Cl. 355—3 R **5 Claims**



4. A method of synchronizing the position of a copy sub-

strate with an image on a photosensitive member, comprising the steps of:

(a) providing a photosensitive member rotating at a set velocity with a transferrable image thereon;

(b) feeding a copy substrate with a first feeding means at a slower velocity than said set velocity toward said photoreceptor;

(c) receiving said substrate by a second feeding means; and

(d) feeding said substrate with said second feeding means at a velocity equal to said set velocity of said photosensitive member to said photosensitive member.

4,128,328

DEVELOPING ELECTRODE TYPE ELECTROSTATIC COPYING MACHINES

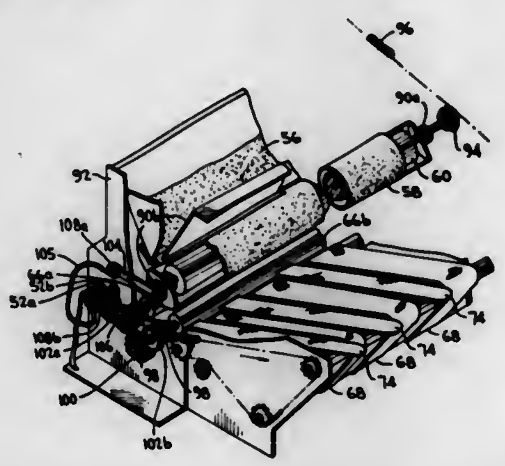
Toshio Matsui, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 25, 1976, Ser. No. 689,846

Claims priority, application Japan, May 28, 1975, 50-64536; Nov. 5, 1975, 50-133435

Int. Cl.² G03G *15/00;* B05B *5/02*

U.S. Cl. 355—3 DD **15 Claims**



1. In an electrostatic copying machine using a copy sheet having a dielectric layer or photoconductive layer formed on an electrically-conductive layer, means for forming an electrostatic latent image on said copy sheet, developing electrode means including a developing electrode and opposing electrode mounted in spaced relationship enabling passage of said copy sheet therebetween for developing said electrostatic latent image on said copy sheet into a toner image, means for fixing said toner image on said copy sheet, transporting means for conveying said copy sheet and positioned between said developing means and said fixing means,

a first transporting passage between said image forming means and said developing means and a second transporting passage between said developing means and said fixing means, said first and second transporting passages being respectively shorter than the length of said copy sheet; and

said electrically conductive layer of said copy sheet having a charge potential thereon;

wherein the improvement comprises:

means for electrically connecting said developing electrode and said opposing electrode directly to each other and means for separately electrically insulating said developing electrode and said opposing electrode from grounding means including the body proper of said copying machine.

4,128,329

APPARATUS FOR PRODUCING BIAS VOLTAGE FOR USE IN ELECTROPHOTOGRAPHIC COPYING MACHINES

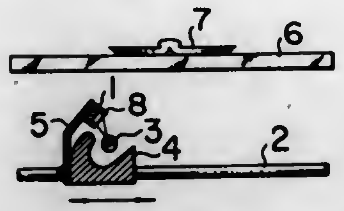
Haruyoshi Kawano, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 27, 1976, Ser. No. 727,129

Claims priority, application Japan, Oct. 3, 1975, 50-119476

Int. Cl.² G03G *15/06*

U.S. Cl. 355—14 **4 Claims**



1. An electrophotographic copying apparatus of the type comprising:

a photosensitive member having a surface on which electrostatic latent images of originals are formed;

a scanning-type exposure optical system comprising a light source means, relatively movable with respect to said originals, for producing electrostatic latent images of said originals on said surface;

developer means for developing electrostatic latent images on said surface; and

developing electrode means for creating a bias voltage adjacent said surface during development; wherein the improvement comprises:

transducer means, disposed at a fixed distance from and in the uninterrupted direct light from said light source means during the relative movement between said light source means and said originals, for converting the amount of light from said light source means into an electrical quantity;

amplifier means for amplifying the electrical quantity; and

means for applying the output of the amplifier means as a source of bias voltage to said developing electrode means.

4,128,330

EVALUATION AND COPYING OF ORIGINALS ARRANGED IN A STRIP

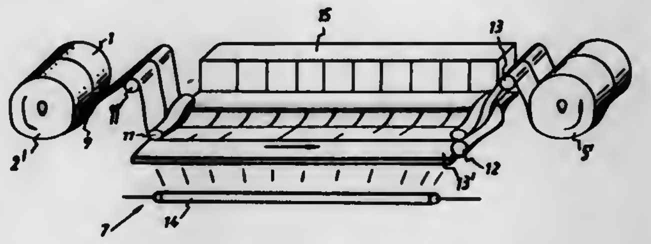
Berthold Fergg, Taufkirchen; Friedrich Hujer, Grünwald, and Wolfgang Zahn, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Dec. 17, 1976, Ser. No. 751,602

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1975, 2557755

Int. Cl.² G03B *27/32, 27/52*

U.S. Cl. 355—32 **11 Claims**



1. In a method of processing a strip of originals to be copied, in combination, the steps of transporting the strip of originals prior to copying thereof through an evaluation station at which the originals are displayed for visual evaluation by a human operator, at the evaluation station visually evaluating the originals with respect to density, color, copiability, or the like, attaching to the strip of originals a discrete strip-shaped information carrier running along the length of the strip of originals and effecting the attachment latest during the evaluation at the evaluation station, and at the evaluation station entering information derived from the human operator's visual evaluations upon the information carrier alongside the associated ones of the originals.

4,128,331

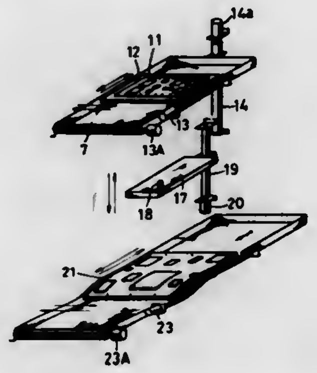
PROCESS PRINTING APPARATUS

Saburo Nakamura, 21, Tsutsui-cho 1-chome, Higashi-ku, Nagoya-shi, Aichi-ken, Japan

Filed Jul. 27, 1977, Ser. No. 819,247

Int. Cl.² G03B *27/32, 27/42, 27/58*

U.S. Cl. 355—32 **6 Claims**



1. An apparatus for making reproductions or negatives for use in plate making, comprising:

a base frame;

a vertical supporting post secured at its lower end to said base frame;

a master copy holding frame spaced above said base frame and vertically movable supported on said supporting post;

a computor means for controlling the vertical position of said copy holding frame in a programmable manner;

a light source carried on said master copy holding frame;

a lens system depending from the underside of said master copy holding frame;

a copy paper holding plate carried on said base frame;

a movable plate carried by said master copy holding frame, said plate being movable in a horizontal plane both longitudinally and transversely of said master copy holding frame, said movement being controlled by said computor means in a programmable manner;

said light source, said lens system and said copy paper holding plate being aligned with one another with respect to the axis of light emitted by said light source by means of said computor means in a programmable manner;

means connected to said master copy holding frame for effecting its vertical movement, said vertical movement being controlled by said computor means in a programmable manner;

a master film holding plate adapted to support a plurality of master films thereon and be removably secured to said movable plate, said movable plate being movable to position any selected one of said master films for exposure to said light, said movement being controlled by said computor means in a programmable manner;

a masking cover provided in said master copy holding frame for selective exposure of said master films to said light; said selection of exposure being controlled by said computor means in a programmable manner;

a focusing plate carried on said copy paper holding plate movably in a horizontal plane both longitudinally and transversely of said copy paper holding plate, said movement being controlled by said computor means in a programmable manner; and

a plurality of horizontally movable overlays provided above said focusing plate.

4,128,332

ILLUMINATOR

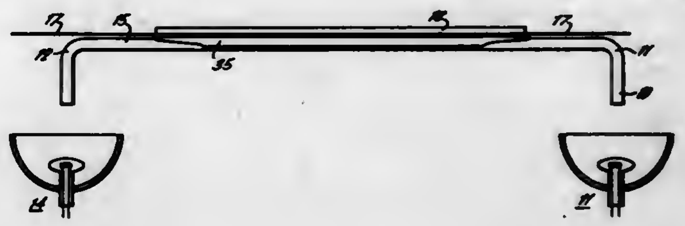
Stephen H. Rowe, Harpenden, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 9, 1976, Ser. No. 656,559

Claims priority, application United Kingdom, Mar. 24, 1975, 12173/75

Int. Cl.² G03B *27/54*

U.S. Cl. 355—67 **2 Claims**



1. In a copier machine having optical components for projecting the image of an object on a platen and an illuminator for providing a predetermined illumination of the object, the combination comprising

a light source;

a light conducting rod having a first portion with an end disposed adjacent the light source and effective to transmit light from the source along the rod by means of multiple internal reflections therealong and a second portion curved with respect to the first portion and disposed in relation to the platen for illumination of an object supported thereon;

a surface layer of transparent material supported on the second portion of the rod to effect transmission of light from the inside to the outside of the rod and being contoured to control the intensity of illumination along the second portion of the rod onto the object, the surface layer of transparent material having a refractive index greater than the refractive index of the light conducting rod.

4,128,333

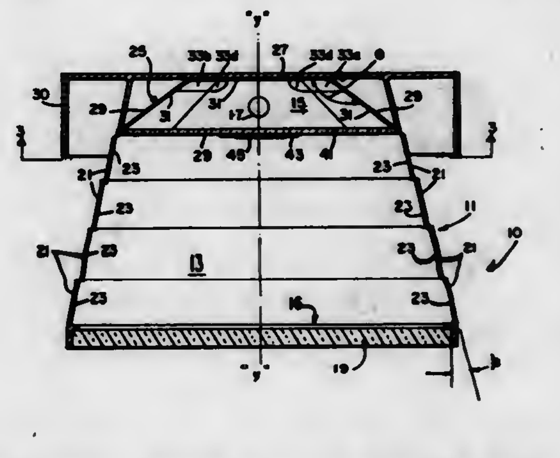
LIGHT EXPOSURE DEVICE INCLUDING LIGHT DIFFUSING AND ABSORBING REGIONS THEREIN

Robert E. Levin, S. Hamilton, and George J. English, Reading, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Jul. 5, 1977, Ser. No. 812,833

Int. Cl.² G03B *27/54*

U.S. Cl. 355—67 **17 Claims**



1. A light exposure device for exposing an original, said device comprising:

a housing including an open end adapted for having said original located thereat, said housing defining therein a light-absorbing region located adjacent said open end of said housing and a light-diffusing region located immediately adjacent said light-absorbing region; and

a light source positioned within said light-diffusing region of said housing, said light-diffusing region of said housing directing the light from said light source toward said light-absorbing region and said open end of said housing whereby a portion of said light from said light source will pass through said open end in a substantially uniform manner and strike said original, said light-absorbing region located between said light source and said original.

4,128,334
ANCHORAGE FOR A MOVING BODY

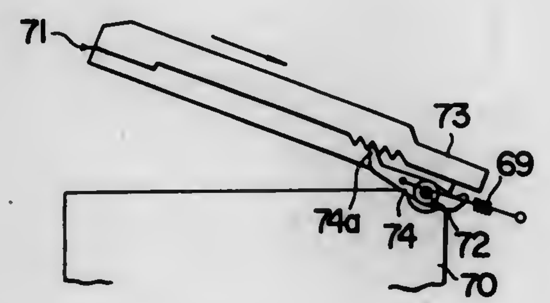
Nobuyuki Yanagawa, Chigasaki, and Kazuaki Tagawa, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 28, 1977, Ser. No. 772,682

Claims priority, application Japan, Mar. 5, 1976, 51-23776; Mar. 5, 1976, 51-23777

Int. Cl.² G03B *27/62, 15/00*

U.S. Cl. 355—75 **10 Claims**



7. In a copying machine of the type including:
a main body portion;
an original receptacle supporting means mounted on said main body portion for pivoting between a closed level position and an open position inclined with respect to said main body portion; and
original scanning means mounted on said supporting means for reciprocating movement thereon; the improvement comprising means for holding said scanning means against movement by its own weight on said supporting means when said supporting means is in the open inclined position comprising:
first means operatively connected to said scanning means for movement in conjunction with the reciprocating movement thereof; and
second means for automatically locking said first means against said conjunctive movement in response to the pivoting of said supporting means to the open position whereby said scanning means is held against movement by its own weight on said supporting means while in the open position.

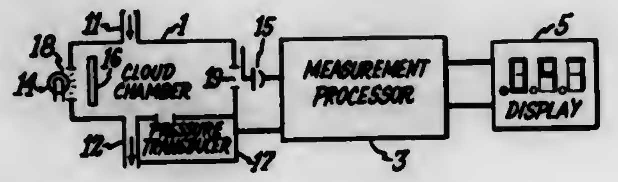
4,128,335
CONDENSATION NUCLEI COUNTER WITH AUTOMATIC RANGING

John B. Haberl, and Janis Ozolins, both of Dalton, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 25, 1977, Ser. No. 772,230

Int. Cl.² G01N *1/00*

U.S. Cl. 356—37 **12 Claims**



6. A condensation nuclei counter for measurement of concentrations of Aitken particles in gases comprises:
(a) a cloud chamber having means for repetitively charging and purging the chamber with humidified gas samples, means for adiabatically expanding said samples while the chamber, dark field illumination means, photosensitive means for observing and for generating a photoelectric signal proportional to light scattered by liquid droplets condensing on Aitken particles in said chamber and coordinating means for producing a zero time signal indicating the time of occurrence of the adiabatic expansion which starts droplet formation;
(b) quantitating means including clock means responsive to said zero time signal for producing a plurality of time signals for measuring time of droplet growth, amplifier means responsive to said photoelectric signal for producing amplifications of said photoelectric signal representing the extent of droplet growth, sampling means responsive to said amplifications and to said time signals for producing a plurality of measurements of rate of droplet growth, means for selecting one of said plurality of measurements as the measurement signal according to an established criteria, output signal means responsive to said selected measurement signal for producing a quantitating means output signal; and
(c) data processing means for converting said output signal to human readable form.

4,128,336
SPECTROSCOPIC APPARATUS AND METHOD

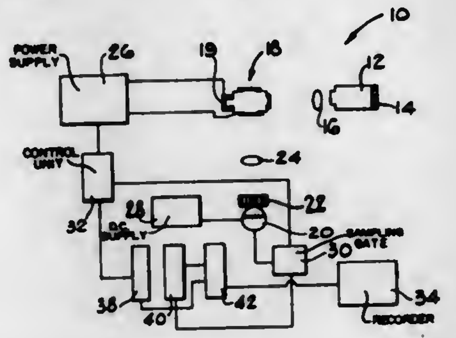
Louis R. P. Butler, Pretoria, South Africa, assignor to The South African Inventions Development Corporation, South Africa

Filed Aug. 16, 1976, Ser. No. 714,313

Claims priority, application South Africa, Aug. 21, 1975, 75/5358; Aug. 21, 1975, 75/5359

Int. Cl.² G01J *3/30*

U.S. Cl. 356—307 **15 Claims**



1. An apparatus for spectroscopically determining the presence of a particular element in a substance of unknown composition comprising
generating means for generating by cathodic sputtering an atomic cloud of the particular element,
means for controlling said generating means to cease atomic cloud generation to allow the inherent radiation emitted by the cloud to decay to substantially zero,
means for irradiating the atomic cloud with radiation emitted from a substance that is characteristic of its component elements such that selected components of the radiation are absorbed by the atoms of the atomic cloud and the atoms of the atomic cloud re-radiate characteristic radiation,
means for detecting the amount of re-radiated characteristic radiation emitted by the atomic cloud,
enabling means enabling the detection means for a first predetermined period of time after the generating means has ceased generating the cloud and the atomic cloud no longer emits inherent radiation to allow detecting of the amount of re-radiated radiation when the inherent radiation of the atomic cloud has decayed, said enabling means enabling said detection means for a further predetermined later time period when the concentration of the atomic cloud has decayed to substantially zero, and a processing means for subtracting the output of the detection means during the later time period from the output for the first time period.

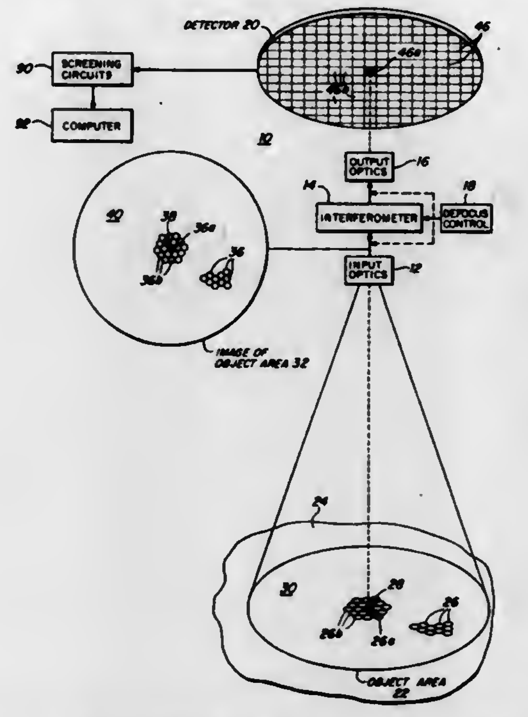
4,128,337
METHOD OF AND APPARATUS FOR INTERFEROMETRIC BACKGROUND SUPPRESSION

Theodore F. Zehnpfennig, Wayland, Mass., assignor to Visidyne, Inc., Burlington, Mass.

Filed Jun. 13, 1977, Ser. No. 806,199

Int. Cl.² G01B *9/02*

U.S. Cl. 356—346 **2 Claims**



1. A method of detecting a small elemental spectral source in a larger spectral background by interferometric suppression of the background comprising: producing first and second complementary interferograms of each element of that object area; projecting onto a detector images of said first and second interferograms; and, defocussing one of said first and second interferograms for providing a fluctuating elemental interferogram output from each element of said detector which receives an interferogram derived from an element of said object area that contains a source which spectrally distinguishes from the background, while reducing the output corresponding to each element containing no source to a constant and non-fluctuating level.

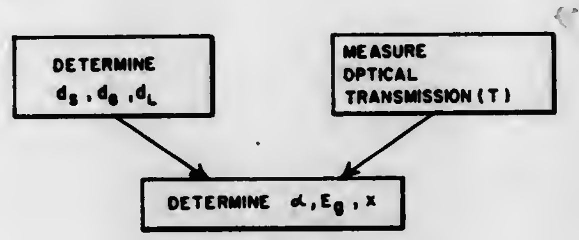
4,128,338
MODIFIED OPTICAL TRANSMISSION TECHNIQUE FOR CHARACTERIZING EPITAXIAL LAYERS

Theodore T. S. Wong, Maynard, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 17, 1977, Ser. No. 807,608

Int. Cl.² G01N *21/22*

U.S. Cl. 356—432 **3 Claims**


DETERMINE d_S, d_G, d_L
MEASURE OPTICAL TRANSMISSION (T)
DETERMINE α, E_g, x

1. A method of determining the energy bandgap of an epitaxial semiconductor layer on a substrate, wherein a graded bandgap region exists between the epitaxial semiconductor layer and the substrate, the method comprising:
determining the thickness d_S of the substrate, the thickness d_G of the graded bandgap region, and the thickness d_L of the epitaxial semiconductor layer;
measuring optical transmittance of the layer, graded bandgap region and substrate as a function of wavelength; and
determining the energy gap of the layer from the values of d_S, d_G, and d_L and the results of the measuring of optical transmittance.

4,128,339
AUTOMATICALLY-ADJUSTING PHOTOMETER

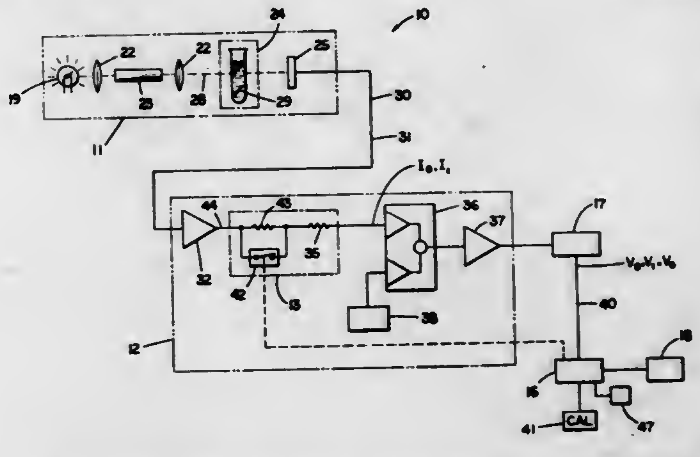
Yasuhiro Yamazaki, Laguna Niguel; Robert H. Johnson, El Toro, and Mark D. McNeil, Irvine, all of Calif., assignors to Bio-Dynamics Inc., Indianapolis, Ind.

Filed Jan. 6, 1977, Ser. No. 757,352

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1976, 2638333

Int. Cl.² G01N *21/22*

U.S. Cl. 356—434 **8 Claims**



1. An automatically-adjusting photometer for measuring light absorption of a sample which comprises:
an optical portion having in combination a light source providing a beam of light, a sample test location, and a photodetector, said light source being constructed to transmit the beam of light through the sample test location so as to strike the photodetector, said photodetector being constructed to transmit an electrical output signal proportional to the intensity of the beam of light;
converting network means for receiving at an input the electrical output signal and converting said output signal to a logarithmic value;
said converting network means including means for selectively reducing said output signal by a predetermined factor prior to conversion to a logarithmic value;
a computer having control and computational modes and a memory portion, said computer in the control mode being constructed to sequentially perform measurment of the logarithmic values of output signals placing these in memory, said computer in the computational mode being constructed to retrieve data stored in memory and calculate the actual absorbance value A of a sample placed in the test location in accordance with the equation $A = (V_s - V_o)/(V_1 - V_o)$ where V_o is the logarithmic value of th output signal occurring when the transmission degree of light through the test location is a known reference value between 0 and 1, V_1 is the logarithmic value of the output signal of V_o reduced by said predetermined factor, and V_s is the logarithmic value of the output signal occurring when a sample is placed in the test location;
an analog to digital converter connecting an output of said converting network means to a computer input; and
a display apparatus connected to an output of said computer.

4,128,340
PORTABLE TEST APPARATUS FOR LOW LIGHT LEVEL DEVICES

Ferdinand G. Fender, Glenview, and Jon E. Tegethoff, Schaumburg, both of Ill., assignors to Ni-Tec, Inc., Skokie, Ill.

Filed Jul. 23, 1976, Ser. No. 708,014

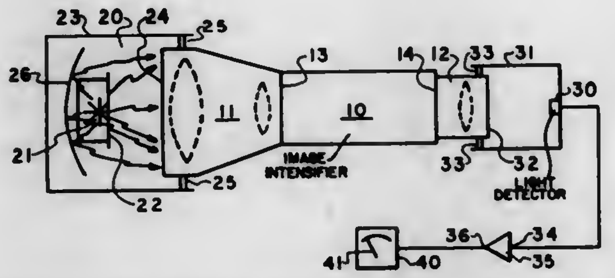
Int. Cl.² G01J *1/42;* G01D *18/00*

U.S. Cl. 356—218 **6 Claims**

1. An apparatus for measuring the light intensity gain performance of an image intensifier of the type having an input

surface for receiving input visible light and an output for providing output visible light which is an intensified image of said input visible light, said apparatus comprising:

a light source for illuminating the intensifier input surface with input light of predetermined and constant intensity, and light source comprising a light-tight enclosure having an opening dimensioned to receive said intensifier input and a seal about said opening to seal the gap between said opening and the intensifier input to ambient light to thereby assure that said input light is derived only from said light source,



means for distributing the input light from said light source over substantially all of the input surface of the intensifier;

a light sensitive detector arranged relative to the intensifier output for receiving a predetermined portion of the output light produced by the intensifier in response to said input light and for providing an electrical signal having an amplitude directly related to the intensity of said output light; and

an indicator coupled to said detector for providing an indication of the intensifier light intensity gain performance responsive to said electrical signal provided by said detector.

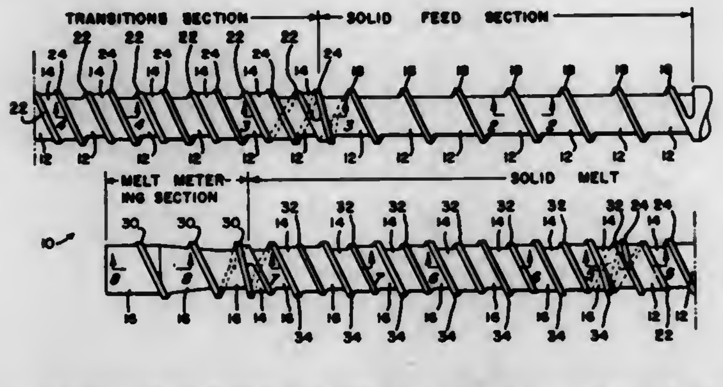
4,128,341
EXTRUDER SCREW

John S. Hsu, Nashua, N.H., assignor to Ingersoll-Rand Co., Woodcliff Lake, N.J.

Filed Apr. 29, 1977, Ser. No. 792,469

Int. Cl.^{2} B01F *7/08;* B29B *1/10*

U.S. Cl. 366—89 **3 Claims**



1. An extruder screw for use in a plastic extruder having a solid plastic feed hopper and a heated barrel; said extruder screw having a solid feed section followed by a solid-melt transition section followed by a melt metering section and having at least three spiral channels formed on its outer circumference, one of said spiral channels being a solid feed channel located to receive solid plastic from the feed hopper and longitudinally convey the solid plastic particles as the particles start to melt, said solid feed channel extending along the length of the extruder screw and ending within the solid-melt transition section the flight of said solid feed channel being a substantially constant outside diameter within the solid feed section, said outside diameter being substantially the same as the inside diameter of the heated extruder barrel the extruder screw fits so that substantially no solid plastic particles or melt flows over said flight; another of said spiral channels being a solid-melt channel, said solid-melt channel extending longitudinally from the beginning to the end of said solid-melt transition section, a barrier flight being formed on said extruder screw within said solid-melt transition section and having an outside diameter less than the inside diameter of the heated extruder barrel the extruder screw fits, said barrier flight being common to and forming one side of the solid feed channel and forming one side of the solid-melt channel and having an outside diameter sufficiently less than the extruder barrel inside diameter to permit a mixture of solid plastic particles and melt to flow from the solid feed channel to the solid-melt channel, the other side of the solid feed channel and the other side of the solid-melt channel being formed by a flight having substantially the same outside diameter as the inside diameter of the barrel; and the third spiral channel being a melt channel, said melt channel beginning within the solid-melt transition section just after the end of the solid feed channel and extending longitudinally to the end of the melt metering section; and a second barrier flight being formed on said extruder screw within the solid-melt transition section and having an outside diameter greater than the outside diameter of the other barrier flight, said second barrier flight being common to and forming one side of the melt channel and forming one side of the solid-melt channel and having an outside diameter less than the extruder barrel inside diameter but yet sufficiently great to permit only melt to flow over said second barrier flight from the solid-melt channel to the melt channel and the other side of the solid-melt channel and the other side of the melt channel being formed by a flight having substantially the same outside diameter as the inside diameter of the barrel the flight of said melt channel having a substantially constant outside diameter within the melt metering section, said outside diameter being substantially the same as the extruder barrel inside diameter so that substantially no melt flows over said flight.

4,128,342
MIXING APPARATUS

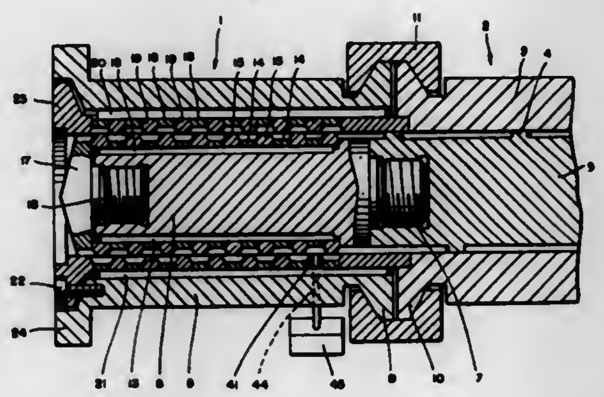
Paul Renk, Troisdorf, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik AG, Remscheid-Lennep, Fed. Rep. of Germany

Filed Oct. 8, 1975, Ser. No. 620,783

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1974, 7433808[U]

Int. Cl.^{2} B29B *1/06, 1/10*

U.S. Cl. 366—99 **6 Claims**



1. An apparatus for mixing materials such as synthetic polymers and their additives, said apparatus comprising:

a casing surrounding a cylindrical rotor,

a series of profile rings consisting of groove rings and spacer rings axially arranged in alternating sequence on said rotor and is said casing which are in snug axial engagement with one another,

said groove rings having grooves formed in their peripheral working surfaces which are circumferentially separated by shearing lands and which are limited in an axial direction by the end surfaces of said spacer rings abutting upon the end surfaces of said groove rings, said shearing lands and end surfaces defining said grooves as a series of individual closed chambers, and

said grooves formed on said rotor groove rings being arranged in a partially overlapping, axially displaced relationship with respect to the radially opposed grooves formed on said casing groove rings so that the material will flow between said overlapping rotor and casing closed groove chambers thereby causing repeated dispersal of the material as it moves through the mixing apparatus.

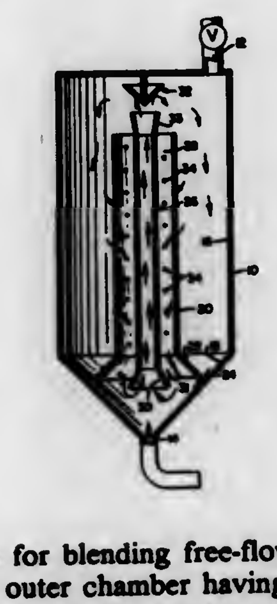
4,128,343
APPARATUS FOR BLENDING GRANULAR MATERIALS

Isaac Moked, New Brunswick; Kenneth C. Yi, Belle Mead; John O. McDonald, Englishtown, and Jannan G. Lee, Piscataway, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 645,361, Dec. 30, 1975, abandoned. This application Dec. 5, 1977, Ser. No. 857,815

Int. Cl.^{2} B01F *13/02*

U.S. Cl. 366—101 **10 Claims**



1. Apparatus for blending free-flowing granular materials comprising: an outer chamber having walls which converge toward and terminate in outlet means at the base thereof; substantially vertically-positioned fenestrated blending tube means spaced above said outlet means having a plurality of entrance means therein; solid, conveying tube means extending substantially vertically through and coaxial within said blending tube means and defining an annular space therebetween; an entrainment zone positioned between said base of said conveying tube means and the base portion of said chamber; and gas inlet means positioned in said chamber to discharge gas upwardly into and through said entrainment zone toward the base inlet of said conveying tube means; the distance of the point of gas inlet discharge into said entrainment zone from said base of said chamber is defined by the equation:

$$X \leqq L - r \tan \alpha,$$

wherein X is the distance between the base of said chamber and said point of discharge, L is the overall distance between said base of said chamber and said base of said conveying tube, r is the outer radius of said conveying tube and α is the angle of repose of the granular material being blended.

4,128,344
CENTRIFUGAL MIXER

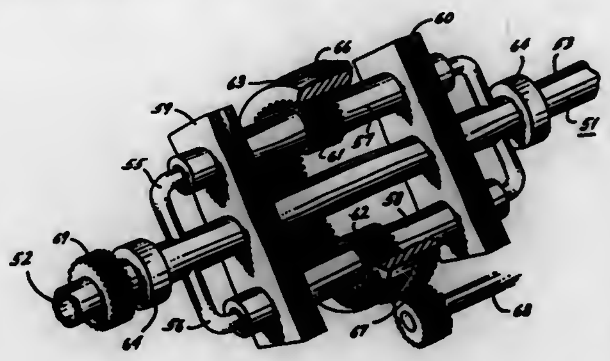
David H. Blasetti, 7019 Guilford Rd., Upper Darby, Pa. 19082

Continuation-in-part of Ser. No. 667,450, Mar. 16, 1976, Pat. No. 4,061,019. This application Oct. 25, 1977, Ser. No. 844,740

Int. Cl.^{2} B01F *9/02*

U.S. Cl. 366—348 **8 Claims**

1. Apparatus for generating cyclically-reversing forces in a body of liquid comprising an elongated tubular chamber for carrying the liquid, means to revolve the chamber in a circular path about a first axis at a given angular speed, whereby a primary centrifugal force radial to said first axis is generated by each part of the liquid, a central hollow shaft coaxial with said first axis, support bearing means rotatably supporting said shaft, said revolving means operable to rotate said shaft, means mounting said chamber on said shaft for rotation about a second axis perpendicular to the direction of the primary centrifugal force whereby upon rotation of said hollow shaft said chamber moves in said circular path, drive means for effecting said rotation of said chamber on said second axis at an angular speed to produce a secondary centrifugal force in said part less than said primary centrifugal force, the direction of the net force being determined by the orientation of the part relative to said secondary axis, to thereby cyclically reverse the orientation of the net centrifugal force generated by each part in the body, relative to said second axis, a branch conduit communicating with said hollow shaft at one end and connected to said chamber at its other end, said chamber having an imperforate circumferential wall retaining said liquid in said carrier against said centrifugal forces.



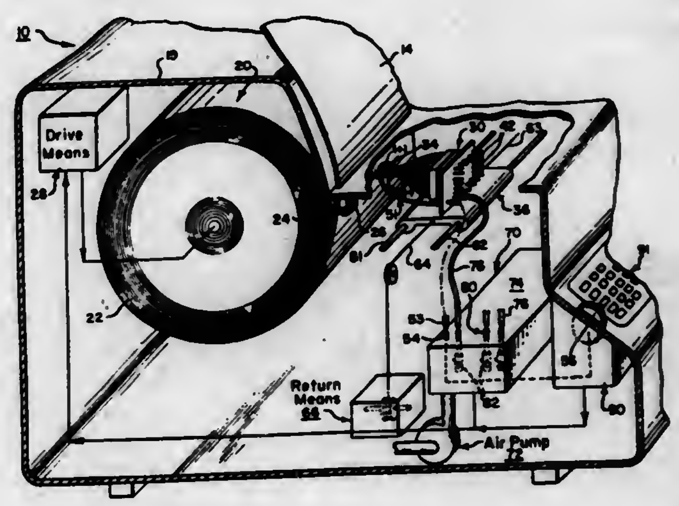
4,128,345
FLUID IMPULSE MATRIX PRINTER

John F. Brady, Clifton, N.J., assignor to Universal Technology, Inc., Clifton, N.J.

Continuation-in-part of Ser. No. 563,058, Mar. 28, 1975, abandoned. This application Mar. 11, 1976, Ser. No. 665,794

Int. Cl.^{2} B41J *3/04, 3/20*

U.S. Cl. 400—120 **25 Claims**



1. A printer comprising:

means for printing information on a recording medium using a dot matrix comprising an array of closely-spaced tubes open at one end,

means adjacent said open end of said tubes for heating a fluid carried within the tubes of said array enough that the heat of the fluid upon emerging from said open end of said tubes produces detectable indicia on said recording medium,

a plurality of conduits connecting said tubes in said printing means to a stationary housing,

valves mounted in said stationary housing for selectively controlling the flow of fluid through said conduits and out the open end of said tubes, and means for operating said valves in accordance with input information to control the flow of fluid through said conduits, whereby detectable indicia are produced on said recording medium that record said input information.

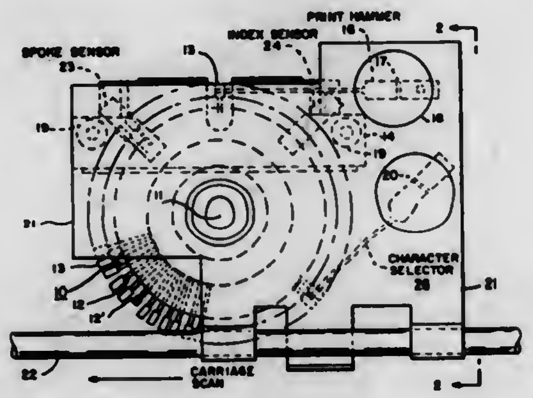
4,128,346
DAISY TYPE PRINT WHEEL APPARATUS

Evan L. Ragland, III, Atherton, Calif., assignor to Periphonics Corporation, San Carlos, Calif.

Filed May 11, 1977, Ser. No. 795,799

Int. Cl.^{2} B41J *1/30*

U.S. Cl. 400—144.2 **15 Claims**



1. Printing apparatus comprising: a daisy type print wheel including a plurality of print elements carried on spokes radiating out from the wheel axis such print elements being oriented to lie in a plane perpendicular to said axis and including a fixed portion of magnetic material; means for rotating said wheel around its axis including drive shaft means; print hammer means adapted to impact a selected print element while such element is stopped; magnet means producing a magnetic field mounted for rotation with said drive shaft means and said wheel; brake means separate from said print hammer means and having only a single movable component which interfaces with said print wheel, for acting on said wheel for stopping its rotation and selecting one of said print elements for positioning such element to be hit by said hammer means; magnetic material means connected to said drive shaft means and juxtaposed with said magnet means and rotatable with said fixed wheel portion in a physical relationship to provide a substantial magnetic coupling force between said wheel and said drive shaft means and for allowing said wheel and shaft means to have relative rotary motion therebetween when said brake means is actuated.

4,128,347
CHARACTERS-CARRYING DISC FOR PRINTING MACHINE, METHOD OF MANUFACTURING THIS DISC AND MOULD FOR CARRYING OUT THIS METHOD

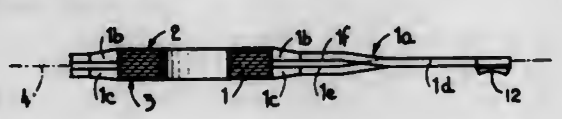
Alfred Bauer, Rue Maujobia 95, 2000 Neuchatel Canton of Neuchatel, Switzerland

Filed May 13, 1977, Ser. No. 796,517

Claims priority, application Switzerland, May 24, 1976, 6514/76

Int. Cl.^{2} B41J *1/32*

U.S. Cl. 400—144.2 **4 Claims**



1. A unitary character-bearing disc for use with a printing machine, the disc comprising:

a central hub portion having opposite faces;

at least first and second sets of radially extending flexible and resilient radial arms formed integrally with the central hub portion about the outer periphery thereof, each arm having a root at the inner end thereof integrally formed with said hub portion, each arm further having a terminal end at the end thereof opposite said root, said hub portion being thicker than the combined thickness of one each of said flexible arms from each of the sets taken at the roots of said arms, the roots of one set of arms lying in a different plane than the roots of the other set of arms so that the roots of alternate arms extending from the central hub portion lie in different planes, the terminal ends of all arms of all sets lying in the same plane, the plane of one set of roots being located near one face of said hub portion and the plane of the other set of roots being located near the opposite face of said hub portion, the root of each arm being thicker in a direction substantially parallel to the longitudinal axis of the hub portion than is the terminal end of said arm, the root of each arm further being more narrow in a plane substantially perpendicular to the longitudinal axis of the hub portion than is the terminal end of said arm, the alternatingly out-of-plane roots being thereby integrally formed with the central hub portion yet being positioned thereon to enable the arms to be freely moveable along their length independently of the others and capable of being flexed without friction therebetween; and,

means for defining characters at the terminal ends of said arms.

2. A mould for forming a unitary character-bearing disc for use with a printing machine, said disc being of the type having a hub and a plurality of integral radially outwardly extending flexible resilient arms arranged in a pair of sets with each of the arms having a root and a terminal end, the roots being thicker in planes substantially parallel to the longitudinal axis of the hub than the terminal ends, the roots further being more narrow in a plane substantially perpendicular to the longitudinal axis of the hub than the terminal ends, one of said sets having the roots of the individual arms thereof lying in one plane and the other of said sets having the roots of the individual arms thereof lying in a second different plane, the radial arms of one set alternating with the radial arms of the other set, the terminal ends of all arms lying in a common plane, said mould comprising a pair of matable mould elements having a common center point, a first set of radial grooves formed in one of said mould elements disposed about said central point and a second set of radial grooves formed in said one mould element also disposed about said central point, said second set of grooves having a greater depth and a more narrow width than the first set of grooves and said second set of grooves being an inwardly directed extension of alternate ones of said first set of grooves, a third set of radial grooves and a set of radial ribs formed in said other of said mould elements, said third set of grooves having a greater depth and a more narrow width than the first set of grooves, each of the ribs alternating with each one of said third set of radial grooves, the length and location of said ribs and third radial grooves relative to the center point of said other mould element corresponding substantially to the length and location of the respective ones of said second set of grooves formed in said one mould element, said pair of mould elements being matable with their center points coincident and with the set of radial ribs engaged in the respective ones of the grooves of the second set of grooves and the third set of grooves disposed coincident with the portions of the first element adjacent those grooves of the first set of grooves which are not extended by the respective grooves of the second set of grooves, whereby the terminal ends of the flexible and resilient arms of the disc are formed in the first set of grooves while the roots of one of said sets of arms are formed in the second set of grooves and the other of said sets of arms are formed in the third set of grooves.

4,128,348
METHOD AND APPARATUS FOR APPLYING INK TO RIBBONS

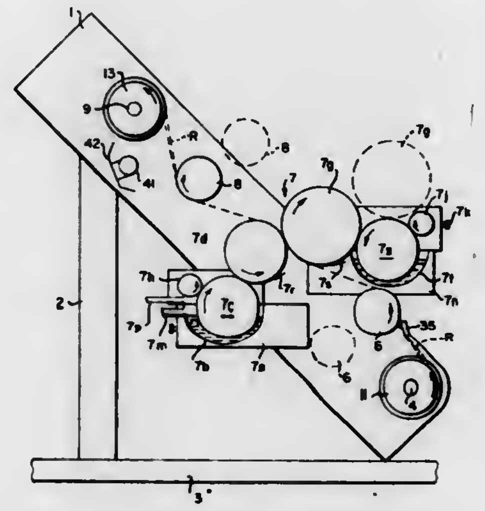
Bazil E. Steele, Rockville, and Paul O. Micheel, Ellicott City, both of Md., assignors to Steele Associates, Inc., Rockville, Md.

Filed Jul. 12, 1976, Ser. No. 704,320

Claims priority, application United Kingdom, Jul. 14, 1975, 29469/75

Int. Cl.^{2} B41F *31/14*

U.S. Cl. 400—198 **20 Claims**



1. A method of applying ink to a ribbon comprising the steps of:

(a) supplying said ribbon to be inked from a supply core;

(b) heating said ribbon on a first rotating heated roller;

(c) passing the heated ribbon between the nip of a pair of inking rollers while applying ink to said ribbon under pressure exerted on both sides of said ribbon by said inking rollers with at least one of said inking rollers being driven to advance said ribbon;

(d) heating the inked ribbon on a second rotating heated roller; and

(e) collecting said inked ribbon on a driven take-up core.

4,128,349
FOUNTAIN BRUSH

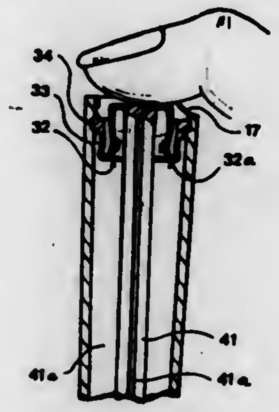
Luigi Del Bon, 141, Feldstrasse, Aarburg, Switzerland (CH-4663)

Continuation-in-part of Ser. No. 717,359, Aug. 24, 1976, Pat. No. 4,088,412. This application Jan. 31, 1977, Ser. No. 764,014

Claims priority, application Switzerland, Dec. 4, 1976, 15249/76; Jul. 19, 1976, 9311/76

Int. Cl.^{2} A46B *11/08*

U.S. Cl. 401—151 **22 Claims**



1. A fountain brush having:

(a) a bristle carrier and, at one end of the latter, a set of bristles thereon;

(b) a handle attached to the other end of the bristle carrier and having a reservoir for a liquid or pasty medium in its interior, the end of said handle away from said bristles being open;

(c) a channel extending axially through the bristle carrier from the reservoir into the end of said carrier bearing the bristles and having at least one radial outlet orifice in the sidewall of said carrier, and ending blind in the bristles-bearing carrier end at a distance from said orifice;

(d) a slide valve member guided sealingly in the interior of said channel;

(e) an actuating device, attached to the end of the handle, remote from the bristles and comprising a closure member adapted for hermetically closing said reservoir having medium therein;

(f) a connecting rod, extending substantially axially through the interior of the reservoir, which connecting rod connects the actuating device and the slide valve member to one another and is of such length that when the actuating device is actuated, said connecting rod being rigidly resistant to pressure thereon in axial direction, said closing member being at such distance from said slide valve member that, in a filling position in which medium can be filled into said reservoir, said closing member leaves the open end of said handle free while said slide valve member seals off said reservoir in a position in said channel more remote from the blind end of the channel than said orifice;

(g) an elastically deformable bellows being connected hermetically sealingly with said closing member and the inner wall of said handle, in actuated as well as in unactuated position of said actuating device, thereby closing said reservoir, whereby said slide valve member obturates said orifice when in the said unactuated position and whereby, upon actuation by pressure on said closing-member, said slide valve member is moved into said blind end of said channel past said orifice clearing the latter; and

(h) said bellows is integral with said closing member and has an outwardly crimped annular fold, the apex of which is turned toward the interior of the reservoir, the outer wall of said fold being sealingly fastened, along its periphery, to the inner wall of said handle.

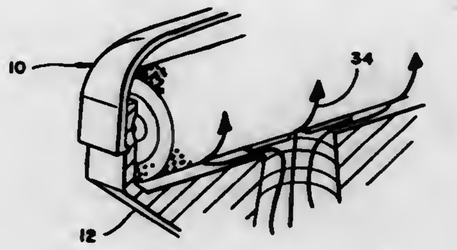
4,128,350
APPLICATOR ATTACHMENT

Robert J. Gamache, 33185 W. Warren, Westland, Mich. 48135

Filed Jan. 23, 1975, Ser. No. 543,428

Int. Cl.^{2} B05C *17/00;* **B43M** *11/02;* **B44D** *3/28*

U.S. Cl. 401—208 **9 Claims**



1. An applicator for dispensing cosmetics such as suntan lotion and the like comprising a body member, an elongated slot in one side of the body member having a width and a length, and resilient roller means rotatably mounted on the body member in the slot and extending radially from the slot having a diameter and length at the width and length of the slot slightly larger than the width and length respectively of the slot whereby the roller means is under compression across the width and length of the slot, and means for directing the cosmetic through the body member onto the roller over the greater portion of the surface thereof with the applicator inverted to place the roller lower than the cosmetic container on rotating the roller in frictional engagement with a body portion.

4,128,351

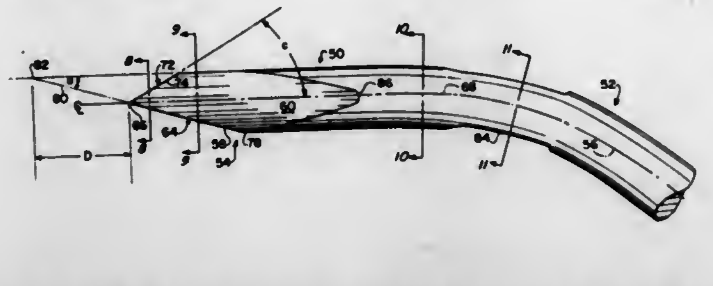
STERNOTOMY SURGICAL NEEDLE

Leonard D. Kurtz, Woodmere, and Philip Ludwig, Merrick, both of N.Y., assignors to Deknatel Inc., Queens Village, N.Y.

Filed Apr. 15, 1977, Ser. No. 787,984

Int. Cl.^{2} A61B *17/32*

U.S. Cl. 128—305 **8 Claims**



1. A surgical instrument comprising a body portion and a cutting portion, a pair of intersecting first and second planar surfaces forming a single main cutting edge extending from one side of the cutting portion of the instrument to a point at the end of the instrument, a third planar surface having an acute angle of convergence with the longitudinal axis of the instrument and extending from the opposite side of the cutting portion of the instrument to the point thereof, secondary cutting edges formed by the intersection of the third planar surface with said pair of first and second planar surfaces, the point at the end of the instrument being on the single main cutting edge so that the end portions of both the main and secondary cutting edges extend to the end point of the instrument.

4,128,352

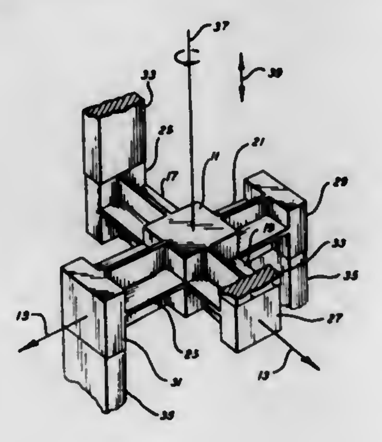
TWO AXIS FLEXURE

William H. Newell, Mount Vernon, N.Y., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Dec. 12, 1977, Ser. No. 859,715

Int. Cl.^{2} F16D *3/00*

U.S. Cl. 403—57 **8 Claims**



1. An improved flexure assembly comprising:
(a) a first member having a cross-shaped cross-section extending along a first axis;
(b) a second member having a cross-shaped cross-section extending along a second axis perpendicular to said first axis intersecting said first member and rigidly coupled thereto; and
(c) means on the two ends of each of said first and second members for attachment, whereby two operatively connected members between which there must be provisions for universal joint action can be coupled respectively to the means at the ends of said first member and the means at the ends of said second member, said flexure thereby providing for a stiffness to permit transmission of forces between said two members both along a third axis mutually perpendicular to said first and second axes and in a direction along said first, and second axes while permitting bending through small angles about said first and second axis.

4,128,353

ALLOCHIRALLY DIVIDED CONNECTOR FOR TUBULAR FRAME MEMBERS

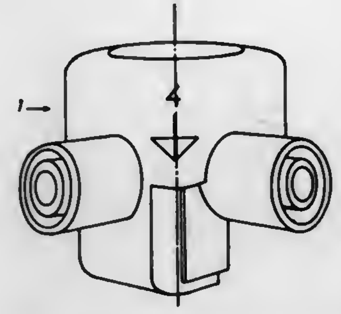
Jacques V. Lauterbach, Saint Apollinaire, DiJon, France (21000)

Filed Dec. 19, 1977, Ser. No. 862,283

Claims priority, application France, Dec. 22, 1976, 76 39210

Int. Cl.^{2} F16D *1/00*

U.S. Cl. 403—175 **6 Claims**



1. In a member for assembling tubular elements two half-shells which can be nested one on the other and each having an internal channel in the form of a semi-cylinder of revolution, and two parallel flat flanges, the internal spacing of which is equal to the internal diameter of said channel, and of which the length is equal to half the length of the latter, said two half-shells having the same axis when they are nested on one another.

4,128,354

KNOCK-DOWN CONTAINER SIDE PANEL CONNECTIONS

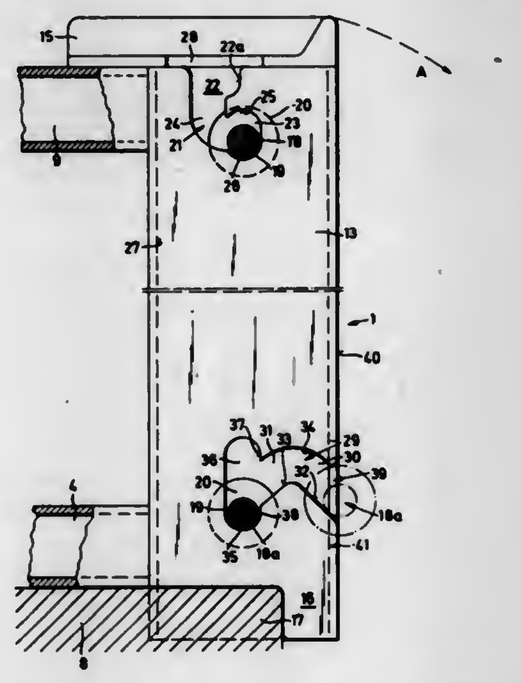
Erich Amrogowicz, am Bassberg 8, 8776 Heigenbrucken, Spessart, Fed. Rep. of Germany

Filed Jan. 12, 1978, Ser. No. 868,833

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1977, 2701158

Int. Cl.^{2} F16B *9/02*

U.S. Cl. 403—186 **18 Claims**



1. An arrangement for interconnecting components at adjacent upright marginal portions thereof, particularly wall components to form unitary box-shaped support structures therefrom, comprising, in combination, an upper and a lower connecting projection rigid with one of the respective adjacent marginal portions at the upper and lower regions thereof; and means at the upper and lower regions of the other respective adjacent marginal portion for defining an upper and a lower connecting slot for respectively receiving said connecting projections of said one marginal portion, said upper connecting slot having a substantially L-shaped configuration and including a longer leg which opens onto and extends downwardly from the upper end face of said other marginal portion and a shorter leg which extends from said longer leg toward the side face of said other marginal portion, said lower connecting slot having a substantially inverted V-shaped configuration and including a first leg which opens onto and extends inwardly and upwardly from said side face of said other marginal portion and a second leg which extends inwardly and downwardly from said first leg.

4,128,355

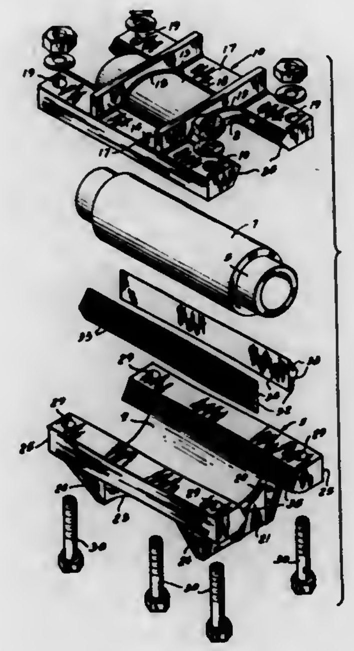
FLEXIBLE JOINT FOR SUSPENSION SYSTEMS AND THE LIKE

Ronn J. Leaf, Lexington, Ky., assignor to Dura Corporation, Southfield, Mich.

Filed Jul. 11, 1977, Ser. No. 814,555

Int. Cl.^{2} F16C *35/00;* F16F *1/38*

U.S. Cl. 403—222 **11 Claims**



1. A flexible joint for use in suspension systems and the like, comprising:
a rigid cylindrical inner member;
a resilient bushing encompassing said inner member;
a rigid casing comprising sections having opposed complementary semi-cylindrical compression surfaces holding said bushing under compression toward said inner member;
means securing said casing sections together in bushing compressing relation;
said casing sections being substantially joined together at partings located intermediate said surfaces;
rigid combination compression applying and barrier elements engaged by and between said bushing and said sections and extending across said partings and preventing extrusion of the compressed bushing into said partings;
said elements having compression surfaces for engaging and squeezing and displacing material of the resilient bushing, so that a predetermined spring rate prestressing of the bushing is effected whereby to improve the fatigue resistance and endurance of the bushing;
and means on said elements and on said casing sections cooperating for effecting thrusting of said elements into the bushing squeezing and bushing material displacing relation against the areas of the bushing engaged by said elements.

4,128,356

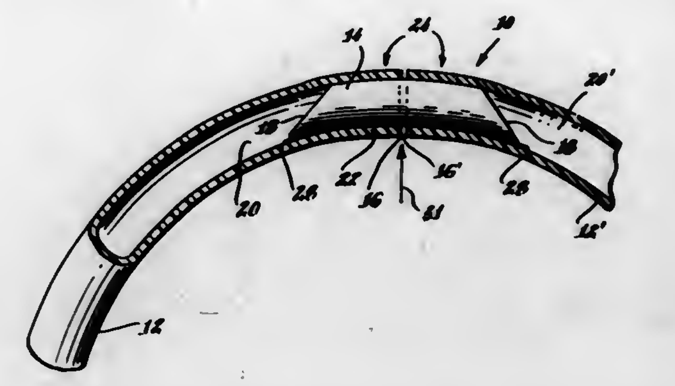
FRICTIONAL COUPLING DEVICE

Richard S. Carlisle, P.O. Box 307, Rye, N.Y. 10580

Filed Nov. 26, 1976, Ser. No. 745,067

Int. Cl.^{2} F16B *7/00*

U.S. Cl. 403—292 **25 Claims**



1. A coupling device comprising
an elongated outer element formed of a flexible, resilient, stretchable material having a hardness of at least 50 durometers, said outer element having a bore along at least one end portion thereof, said bore being bounded by a wall whose thickness is selected to exhibit sufficient resilience to obtain a self-reversible, cross-sectional area contraction of said end portion in response to a longitudinally applied tension force while exhibiting a self-reversible cross-sectional area increase of said end portion in response to a longitudinally applied compressional force; and
an elongated insert including at least a first portion sized to have an interference fit with said bore, said insert being free of protruberances along its outer surface and being formed of a material substantially harder than that of said outer element for developing enhanced frictional surface engagement with the inner surface of said wall when the latter tends to contract in response to tensional force applied to separate the insert from the outer element;
said outer element and said insert being made of materials having notably high surface friction when engaged with each other in the assembled state of the coupling device for resisting said applied tensional force and having considerably lower surface friction resisting entry of the insert into the bore of the outer element when the coupling device is being assembled, one of said elements being formed of vinyl.

4,128,357

SLAB-ELEMENTS FOR COVERING THE GROUND

Günter Barth, 41 Grötzingen, 7500 Karlsruhe, and Fritz Von Langsdorff, Blumenstrasse 12, 7551 Förch, über Rastatt, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 672,727, Apr. 1, 1976, abandoned. This application Feb. 28, 1978, Ser. No. 882,250

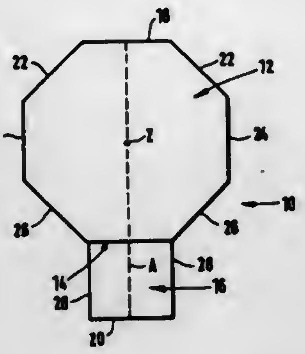
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713354; Belgium, Mar. 29, 1976, 165663

Int. Cl.^{2} E01C *5/00*

U.S. Cl. 404—41 **28 Claims**

1. Slab elements for paving ground areas, each of said elements being a single piece of concrete consisting of a head portion and a stem portion meeting at a dummy groove allowing, but not necessitating, breakage of said slab elements into heads and stems along said dummy grooves and being delimited by two opposite end faces of equal length joined by opposite sides that form angled traces about a longitudinal axis common to said head and said stem, each said angled trace being formed by a succession of sides comprising at said head an inclined side face inclined at 45° in one direction relatively to said axis, a lateral side face extending lengthwise with respect to said axis, and another inclined side face inclined at 45° in the opposite direction with respect to the said axis, and

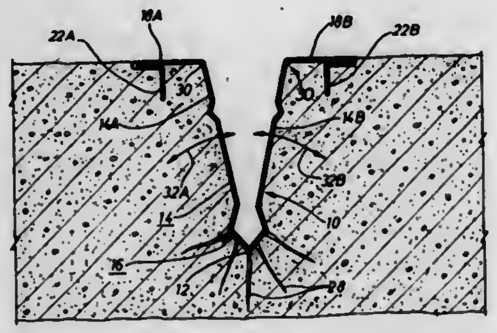
comprising at said stem a lateral side face extending lengthwise with respect to said axis, each said lateral face of said stem being complementary to a lateral face of said head, said end face of said head together with said inclined sides of said head and said lateral faces of said head and said dummy groove



describing a centrally symmetrically octagon, said dummy groove together with said end face of said stem and said lateral faces of said stem being symmetrical about the center of said stem, and said head and said stem being mirror symmetrical about said longitudinal axis.

4,128,358
CONCRETE CONTROL JOINT

Marshall F. Compton, 114 Brandon, Conroe, Tex. 77301
Filed Sep. 19, 1977, Ser. No. 834,298
Int. Cl.^{2} E04B *15/14*
U.S. Cl. 404—47 3 Claims

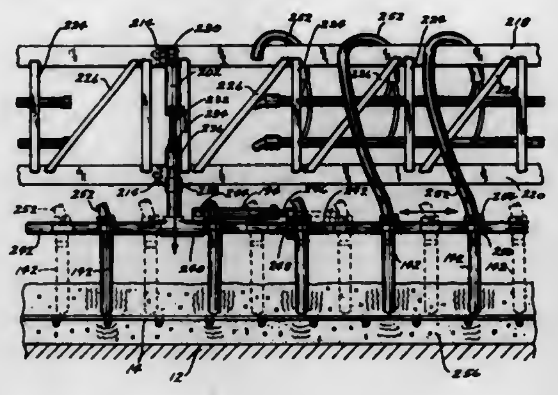


1. A concrete control joint fabricated of integral metallic stock comprising a substantially T-shaped member wherein the upright leg of the T is split substantially entirely along a plane extending vertically therethrough to thereby define first and second leg portions hingedly connected at the lower ends thereof, each of the leg portions having an arm connected thereto, a portion of each arm being folded beneath itself toward the leg portion with which it is associated to define a flap disposed adjacent to the undersurface of each arm, each flap having a finger extending substantially perpendicularly to the underside surface of the arm toward the lower hinged termini of the leg portions, each finger being spaced inwardly from the end of each arm toward the leg portion with which the arm is associated.

4,128,359
SELF-PROPELLED CONCRETE VIBRATOR APPARATUS

Charles R. Cooper, Jr., 1315 S. 3rd; Charles K. Ellis, 1608 N. 17th St., both of Beatrice, Nebr. 68301, and David Starcher, 517 Shepherd Dr., Mansfield, Ohio 44907
Filed Nov. 14, 1977, Ser. No. 851,361
Int. Cl.^{2} E61C *19/38*
U.S. Cl. 404—72 34 Claims

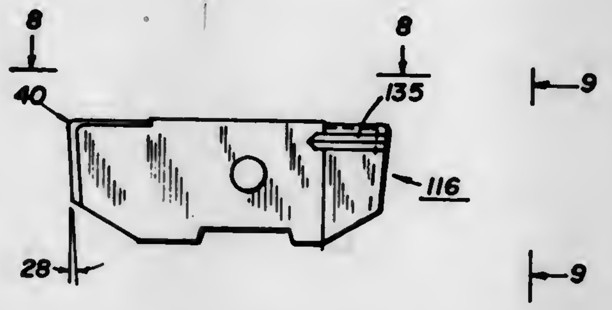
32. The method of creating a bridge deck upon a bridge, comprising the steps of:
(a) positioning a pair of spaced-apart guide rails on opposite sides of the area upon which concrete is to be poured;
(b) pouring concrete on said area across the width thereof;
(c) positioning a self-propelled concrete vibrator machine on said guide rails whereby said vibrator machine extends between said guide rails;
(d) lowering a plurality of vertically disposed and horizontally spaced vibrator devices from said vibrator machine into said concrete;
(e) raising said vibrator devices from said concrete;



(f) moving said vibrator machine longitudinally along said guide rails; and
(g) finishing said concrete with a concrete finishing machine which is movably positoned on said guide rails closely adjacent said vibrator devices.

4,128,360
CUTTING TOOL BIT AND GRINDING FIXTURE FOR SHARPENING SAID BIT FOR USE IN AN AXIALLY ACTUATED BACK SPOT FACING TOOL

Henry F. Swenson, 22 Holmehill Ln., Roseland, N.J. 07068
Continuation-in-part of Ser. No. 748,715, Dec. 8, 1976, abandoned. This application Jun. 28, 1977, Ser. No. 810,902
Int. Cl.^{2} B26D *1/00, 1/12;* B23B *51/16*
U.S. Cl. 407—114 8 Claims

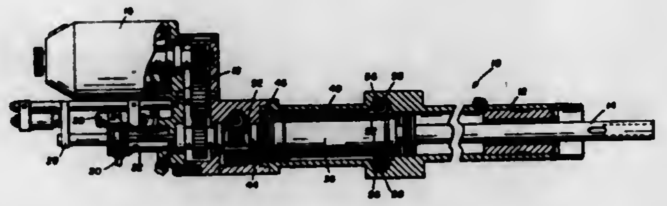


1. A cutting tool bit for use in an axially actuated back spot facing tool, said tool bit of hardened material and having cutting edges along one side of the tool bit and diametrically oppositely disposed around a theoretical center and including: (a) a pivot hole of a precise diameter and establishing a theoretical center line of the tool bit, this pivot hole placed a selected distance from the rear edge of the tool bit; (b) a precise recess formed in one edge of the tool bit and on the side opposite the cutting edge, this recess sized to slidably engage an end of a cam rod mounted in and carried by the axially actuated back spot facing tool, the precise recess at a determined depth to establish the positioning of the tool bit on the entered end of the cam rod; (c) a guide chamfer formed at the entering end of this recess, said chamfer providing a guide path for the entrance and seating of the cam rod of the spot facing tool in said recess; (d) a cutting edge formed in one extension of the tool bit and as it is rotated with and by the tool this cutting edge generates a full sweep of the spot face, said cutting edge formed on that portion of the tool bit that extends beyond a supporting shank portion of the back spot facing tool, this cutting edge having a top relief, a front face relief, a backward slope and a compensation of these slopes with the front edge formed at a relief so that the cutting edge is at a true right angle to the theoretical axis of the tool bit, the cutting extension further

having an end relief to the cutting edge and a chamfer formed on the cutter tool bit corners opposite the cutting edge, and (e) a cutting edge formed on the opposite tool bit extension, this extension having a length of about three-quarters the length of the effective cutting extension end, this shorter extension having a cutting edge of like front, top, backward slope, end and back corner chamfer and compensation for the front edge as is provided on the cutting edge formed on the full tool bit extension.

4,128,361
LOCKING MEANS FOR POSITIVE FEED DRILL

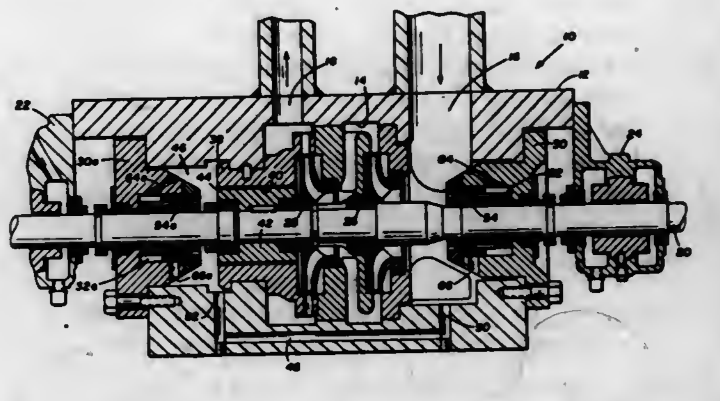
Robert F. Golwas, La Habra, and Herman G. Feuerstein, Hacienda Hts. both of Calif., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed May 23, 1977, Ser. No. 799,427
Int. Cl.^{2} B23C *1/16;* B23B *29/32*
U.S. Cl. 408—137 3 Claims



1. In a positive feed drill including a housing, an externally threaded hollow feed screw rotatably and telescopically carried by the housing, and drill tool holder means rotatable with respect to the housing and feed screw arranged to be extended by the feed screw, improved locking means for causing axial movement of the feed screw and tool holder relative to the housing, comprising:
a shaft journaled in the housing and oriented therein generally perpendicularly with respect to the feed screw;
thread engaging means in engagement with the external thread on the feed screw, said thread engaging means being mounted on said shaft and rotatable therewith;
a toothed gear mounted on said shaft and rotatable therewith;
non-rotatable gear means having teeth thereon for mating with said toothed gear, said non-rotatable gear means being movable in the housing between a first position wherein said teeth are not in mating engagement and a second position wherein said teeth are in mating engagement thereby preventing rotation of said shaft and causing said feed screw and tool holder to move axially relative to the housing; and
means in the housing for moving said non-rotatable gear means between said positions, said means including:
  a pressure-responsive piston having one end in engagement with said non-rotatable gear for moving said non-rotatable gear into said second position,
  a fluid supply tube located in the housing and said piston is annular and slidingly and sealingly encircles a portion of said supply tube,
  said non-rotatable gear means is slidingly located on said supply tube,
  a spring having one end engaging the housing and the other end engaging said non-rotatable gear for moving said non-rotatable gear into said first position, and
  said spring encircles a portion of said supply tube on the opposite side of said non-rotatable gear means relative to said piston.

4,128,362
FLUSHING AND COOLING SYSTEM FOR PUMPS

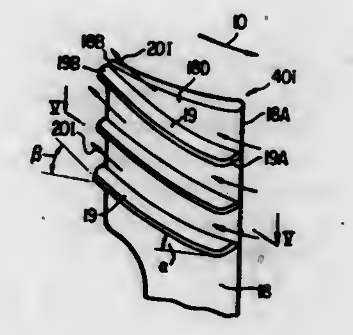
Wilburn O. Shepherd, Whittier, and Jonathon C. Gaslow, La Palma, both of Calif., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Apr. 22, 1977, Ser. No. 790,159
Int. Cl.^{2} F01D *11/10*
U.S. Cl. 415—112 5 Claims



1. An improved flushing and cooling system for shaft seals in pumps that include a shaft carrying an impeller for moving liquid through the pump, a hollow housing journaling the shaft, the housing having inlet and discharge openings therein, the improvement comprising:
an enclosed seal cavity formed in the housing encircling a portion of the shaft;
inlet and outlet ports in the housing providing fluid communication between the interior of the housing and said cavity; and,
seal means located in said cavity for forming a seal between the housing and shaft, said seal means including pumping means rotatable with said shaft for moving fluid from the interior of the housing through said inlet port, past said seal means for flushing and cooling said seal means, and outwardly through said outlet port to the interior of the housing whereby the fluid being pumped is utilized to cool and lubricate said seal means.

4,128,363
AXIAL FLOW FAN

Kenji Fujikake; Haruo Katagiri, and Katsuhito Yamada, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan
Filed Apr. 30, 1976, Ser. No. 681,775
Claims priority, application Japan, Apr. 30, 1975, 50-58988[U]; Apr. 30, 1975, 50-58989[U]; Apr. 30, 1975, 50-58990[U]; Nov. 7, 1975, 50-152509[U]; Feb. 27, 1976, 51-23737[U]
Int. Cl.^{2} F04D *29/38*
U.S. Cl. 416—236 A 18 Claims



1. An axial flow fan comprising:
a hub member rotatably supported and driven by a drive source;
a plurality of blades having a predetermined angle with respect to the rotational direction thereof and a predeter-

mined width and height, said blades being radially provided on said hub member; and

a plurality of auxiliary blades disposed upon and projecting from each of at least two of said blades, the leading edges of said auxiliary blades, as viewed in the direction of the rotational axis thereof, being spaced closer to the rotational center of said hub member than the trailing edges of said auxiliary blades, a distance between two adjacent auxiliary blades at said leading edges thereof in said radial direction of said blades being longer than that at said trailing edges thereof, wherein the surfaces of the auxiliary blades are radially inwardly offset with respect to lines joining the leading edges of said auxiliary blades and the trailing edges of said auxiliary blades,

whereby an axial flow is produced by said blades and a strong radial flow is produced by said auxiliary blades.

4,128,364

RADIAL FLOW FAN WITH MOTOR COOLING AND RESILIENT SUPPORT OF ROTOR SHAFT

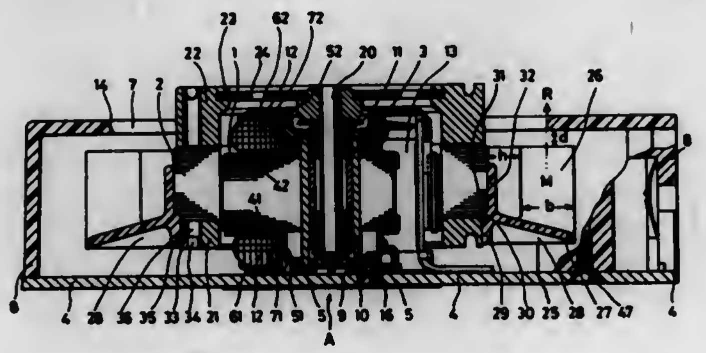
Georg Papst, St. Georgen, and Guenter Wrobel, Villingen, both of Germany, assignors to Papst-Motoren KG, Germany

Division of Ser. No. 418,213, Nov. 23, 1973, Pat. No. 3,961,864. This application Mar. 31, 1976, Ser. No. 672,143

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1972, 2257509

Int. Cl.² F04B *35/04, 39/06;* **F04D** *29/42;* **H02K** *5/24*

U.S. Cl. 417—354 11 Claims



1. A radial flow fan comprising:

fan wheel means which includes a plurality of fan blades and is rotatable about a fan wheel axis,

drive motor means arranged coaxially with respect to the fan wheel means for imparting rotational movement to said fan wheel means, at least part of said drive motor means being arranged within the fan wheel means intermediate the outer periphery of the fan wheel means and the fan wheel axis, said drive motor means including a stator and a rotor,

fan casing means including circumferentially extending casing wall means which extend circumferentially around said fan wheel means at a spacing therefrom, and casing end wall means at each of the respective opposite axial end faces of said circumferentially extending wall means,

outlet port means provided in said circumferentially extending wall means for accommodating discharge of gas out of said casing means in a radial direction with respect to the axis of rotation of the fan wheel means,

and inlet port means in a first of said end wall means for accommodating flow of gas into said casing means in communication with said fan blades,

wherein said drive motor includes a centrally disposed rotor shaft which rotates about said fan wheel axis, and wherein a contact disc is provided at one end of said rotor shaft for axially supporting said rotor shaft,

wherein said one end of said rotor shaft is rounded and smoothly polished for contacting a correspondingly smoothly polished contact surface of said contact disc,

wherein said contact disc is supported directly at the second end wall means,

wherein said contact disc includes a central portion engageable with said rotor shaft and peripheral leg portions for maintaining the side of said central portion facing away from said rotor shaft at a spacing from said second end wall means, whereby shock forces from said rotor shaft are resiliently absorbed by resilient deformation of said central portion in a direction toward said second end wall means and

wherein said contact disc further includes a projection for limiting the resilient deformation of said central portion which extends from said central portion toward said second end wall means.

4,128,365

FUEL SUPPLY UNIT

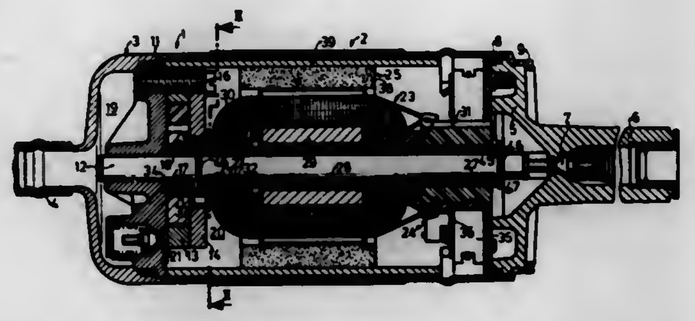
Ulrich Kemmner, Sachsenheim, and Karl Ruhl, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 792,625

Claims priority, application Fed. Rep. of Germany, May 3, 1976, 2619094

Int. Cl.² F04B *17/00*

U.S. Cl. 417—423 R 10 Claims



1. A fuel supply unit comprising a pump having a rotor and an electromotor having an armature, a rigid mounting shaft common to said pump rotor and said electromotor armature, first bearing means for rotatably mounting said pump motor on said shaft, second bearing means for rotatably mounting said armature on said shaft, independently of said pump rotor, axially extending tenons connected with said motor armature, means for supporting said tenons on said armature in rotation-locking connection with said pump rotor and thereby serve as the only means for coupling said armature and said rotor together.

4,128,366

ROTOR HOUSING FOR A ROTARY ENGINE

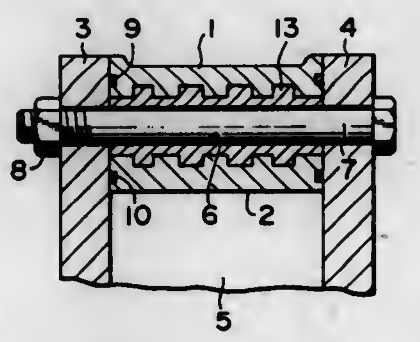
Shigeru Sone, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 29, 1977, Ser. No. 792,206

Claims priority, application Japan, Dec. 24, 1976, 51-156736

Int. Cl.² F01C *21/06, 21/10*

U.S. Cl. 418—83 4 Claims



1. A rotor housing for a rotary engine, comprising an annular body member having a plurality of axial through bores arranged therealong and being adapted to receive through bolts which clamp said rotor housing together with a side or intermediate housing, some of said bores being lined with a collar member made of a material having a lower thermal expansion coefficient than said annular body, said collar member having a serrated external shape when viewed in longitudinal cross section and being anchoringly embedded in said annular body so as to restrain axial thermal expansion of said annular body while it defines said through bore therein-through.

4,128,367

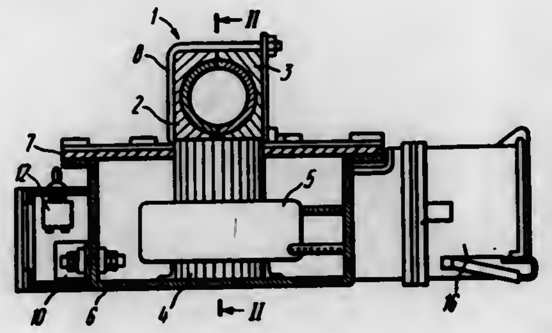
CABLE REPAIR VULCANIZING PRESS

Nikolai M. Shakula, ulitsa Moskovskaya, 3a, kv. 31, Kommunarsk Voroshilovgradskoi oblasti; Nikolai I. Voloschenko, Selskokhozyaistvennaya ulitsa 19, kv. 108, Moscow; Nikolai F. Shishkin, poselok VUGI 9, kv. 22, Ljubertsy Moskovskoi oblasti; Anatoly S. Muratov, ulitsa Jubileinaya 16, kv. 15, Podolsk Moskovskoi oblasti; Alexandr P. Guzchenko, ulitsa 13 Linia, 5, kv. 26, Voroshilovgrad; Vladimir M. Anokhin, ulitsa Belinskogo, 1, kv. 9, Kommunarsk Voroshilovgradskoi oblasti, and Vladimir F. Nikitchenko, Karierny tupik 8, Voroshilovgrad, all of U.S.S.R.

Filed Nov. 2, 1977, Ser. No. 847,751

Int. Cl.² B29H *9/11;* **B29C** *3/00*

U.S. Cl. 425—11 9 Claims



1. A cable repair vulcanizing press comprising a split mould adapted to receive a cable being repaired, and an inductor having a multi-leg core and intended to generate and transmit an alternating magnetic flux to the split mould, said core and said split mould being mutually arranged so that the separating line of the split mould lies in the plane of the magnetic flux flowing in the legs of said multi-leg laminated core.

4,128,368

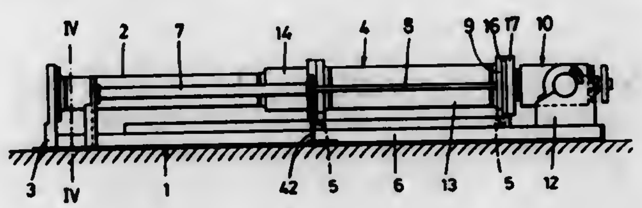
APPARATUS FOR INSULATING AND TREATING ELECTRICAL CONDUCTORS

Gilbert Magnollay, Romanel, Switzerland, assignor to Maillefer S.A., Ecublens, Switzerland

Continuation of Ser. No. 667,343, Mar. 16, 1976, abandoned. This application Oct. 12, 1977, Ser. No. 841,464

Int. Cl.² B29F *3/10;* **B29D** *23/05*

U.S. Cl. 425—113 5 Claims



1. In a plant arranged for continuously applying and treating an insulating jacket on an electrical conductor advancing from an upstream end toward a downstream end through said plant, an extruder, an extruder head fed from said extruder and surrounding said conductor, an elongated stationary chamber, a tube having a common axis with said chamber, said tube being mounted for telescoping movement with respect to said chamber, an annular plate secured at an upstream end of said tube, said extruder head having a flat front face, means mounting said head for free rotation about an axis perpendicular to said common axis, means for displacing said tube to press said annular plate against said flat front face, thereby causing said face to pivot to permit parallel alignment to said flat front face with said annular plate thus to seal said head to said tube.

4,128,369

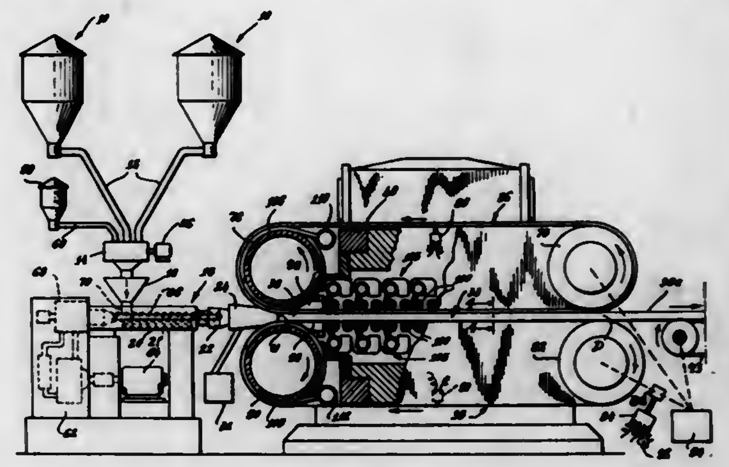
CONTINUOUS APPARATUS FOR FORMING PRODUCTS FROM THERMOPLASTIC POLYMERIC MATERIAL HAVING THREE-DIMENSIONAL PATTERNS AND SURFACE TEXTURES

William J. Kemerer, Pittsburgh, Pa., and Clyde W. Vassar, Cholchester, Vt., assignors to Hazelett Strip-Casting Corporation, Colchester, Vt.

Division of Ser. No. 639,328, Dec. 10, 1975, which is a continuation-in-part of Ser. No. 538,645, Jan. 6, 1975, abandoned. This application Sep. 27, 1976, Ser. No. 726,928

Int. Cl.² B29D *7/22*

U.S. Cl. 425—113 32 Claims



1. Apparatus for continuously impression molding products of thermoplastic polymeric material having a three-dimensional pattern thereon comprising:

means for feeding a heated ribbon containing heated thermoplastic polymeric material in a plastic state,

said heated thermoplastic material being at an elevated temperature above its glass transition temperature,

a pair of flexible endless belt molds,

each of said belt molds being revolvable under tension,

a plurality of rolls operatively associated with said flexible belt molds for revolving said flexible belt molds under tension in opposed face-to-face relationship travelling along together forming a travelling mold channel extending from an upstream position to a downstream position for advancing said material along between said belt molds,

said rolls including a pair of nip rolls directly opposite each other near said upstream position engaging the respective revolving belt molds with each of the revolving belt molds curving partially around its nip roll and converging toward the other curving belt mold at said upstream position for squeezing said heated ribbon between said revolving belt molds at said upstream position in a localized rolling squeezing action against opposite sides of said heated ribbon as the heated ribbon is entering the travelling mold channel,

at least one of said flexible belt molds including a flexible three-dimensional mold pattern including abrupt changes in contour both longitudinally and laterally of the mold pattern for impressing a three-dimensional pattern into the heated thermoplastic material being squeezed between said belt molds at said upstream position for forming products having a three-dimensional pattern thereon defining abrupt changes in contour both longitudinally and laterally of the products,

cooling means operatively associated with said revolving belt molds for cooling the revolving belt molds for cooling the impressed thermoplastic material in said travelling mold channel being advanced along between said belt molds into its memory retention state after said pattern has been impressed thereon,

supporting means located between said upstream position and said downstream position engaging the revolving belt molds for pressing the revolving belt molds toward each other along said travelling mold channel for retaining said impressed pattern in the thermoplastic material as it is being cooled into its memory retention state, and

means downstream from said mold channel for removing the cooled impressed products from between said belt molds at said downstream position.

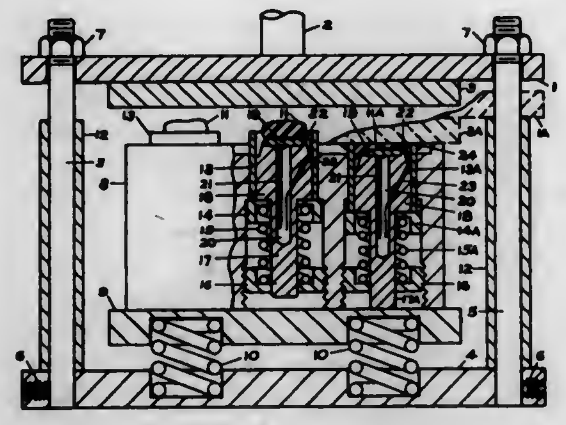
4,128,370
MANUFACTURE OF ELECTROACOUSTIC TRANSDUCERS WHICH REQUIRE MOLDING AN ELASTOMER TO THE SURFACE OF THE TRANSDUCER MATERIAL

Frank Massa, Cohasset, Mass., assignor to Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees, The Stoneleigh Trust, Cohasset, Mass.

Filed May 12, 1977, Ser. No. 796,350

Int. Cl.^{2} B29C *6/00*

U.S. Cl. 425—128 3 Claims



1. In combination in a system for molding a layer of sound conducting material of precise dimensions to the surface of an electroacoustic transducer element whose electroacoustic characteristics are permanently changed if the element is subjected to a pressure in excess of a specified magnitude, a mold comprising a lower base portion and a heated upper plate portion, said lower base portion including a cavity portion with a mechanical insert support means for precisely locating a transducer element within said cavity, a press comprising a rigid base member and a movable plate member, compliant support means for floatingly supporting said mold between said rigid base member and said movable plate member, said compliant support means includes a spring member interposed between either of said press members and said mold, force means supplied by said press for moving said movable plate member towards said rigid base member to force said heated upper plate portion of said mold toward said lower base portion to close said mold, whereby a precisely dimensioned closed cavity results within said mold, said force supplied by said press for closing said mold is applied to said mold through said spring member, means for limiting the maximum displacement of said spring member upon closing said mold whereby said maximum spring displacement fixes the maximum magnitude of force which is being applied through said spring member to hold said mold closed during the molding operation.

4,128,371
DEVICE FOR PRESSING OUT MATERIAL IN THE FORM OF A STRAND

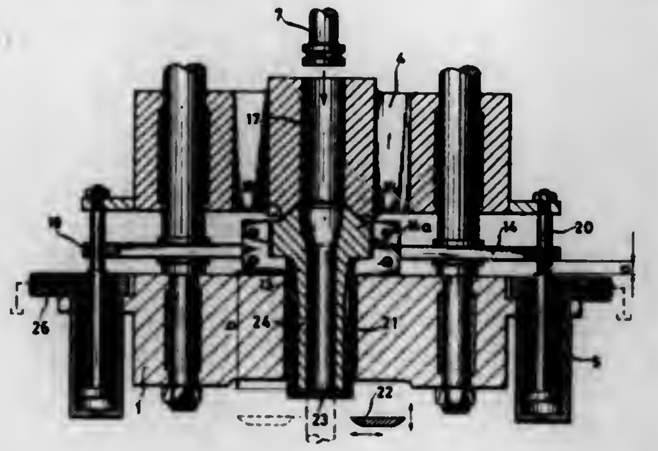
Eugen Kopp, Stuttgart, Fed. Rep. of Germany, assignor to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Jun. 9, 1977, Ser. No. 804,870

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1977, 2704832

Int. Cl.^{2} B29F *3/00*

U.S. Cl. 425—192 R 8 Claims



1. A pressing device for pressing out pliable and pulverized material in the form of a strand, said device comprising:

a container for the material to be pressed out; parallel spaced apart guide posts, said container being supported by said posts for axial movement relative thereto; a pressure table having a passage extending through the thickness of said table, an elongate matrix having a discharge end, said matrix being axially movable and extending through said passage in said container into confronting relation with said container for pressing material from the container out of the matrix; a piston coacting with the container and matrix for pressing material through the matrix; a matrix pan including two parts, means detachably connecting said two parts of the matrix pan, said pan removably supporting said matrix, means supporting said pan for axial displacement relative to the pressure table, said guide posts engaging and guiding one part of the matrix pan when said one part is axially displaced; and drive means operatively associated with the container for axially displacing said container away from said matrix and means coupling said drive means and said pan for displacing said pan and the matrix therewith together with said container after the container has been displaced away from said matrix by a predetermined lift distance.

4,128,372
EXTRUSION SHAPING APPARATUS

Larry E. Rose, and Norman F. Lawrence, both of Battle Creek, Mich., assignors to General Foods Corporation, White Plains, N.Y.

Division of Ser. No. 591,575, Jun. 30, 1975, Pat. No. 4,051,162, and a continuation-in-part of Ser. No. 429,305, Dec. 28, 1973, abandoned. This application Jul. 15, 1977, Ser. No. 816,106

Int. Cl.^{2} A21C *3/04*

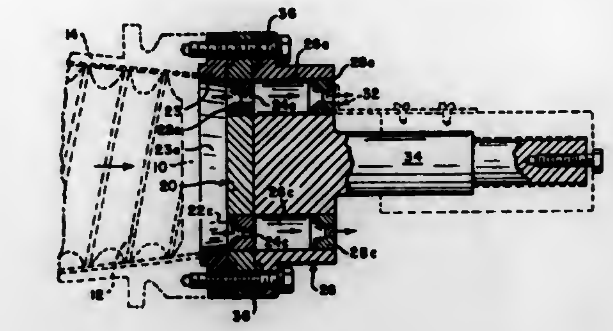
U.S. Cl. 425—311 5 Claims

1. An improved extrusion shaping apparatus for continuously producing an assortment of extrusion puffed dough shapes, all at substantially the same linear extrusion velocity, comprising:

(a) a rotatable extrusion screw for feeding a gelatinized cereal mixture from a confined zone of high pressure to a die means for exit to an unconfined zone of lower pressure;

(b) a die means having a plurality of restricted die orifices of varying cross-section and shape, for shaping the cereal mixture as it passes from the confined zone to the unconfined zone where it expands; and

(c) modulating backup means, positioned between the extrusion screw and the die means and having a plurality of flow adjusting chambers, each of the chambers being in communication with one of the restricted orifices, and each of the flow adjusting chambers being of suitable size and configuration to modulate the flow of cereal mixture through its respective restricted die orifice, such that the dough is expressed from all of the restricted die orifices at substantially the same linear extrusion velocity.



4,128,373
CONTINUOUSLY OPERATING ROUGH OR FINISHING PRESS

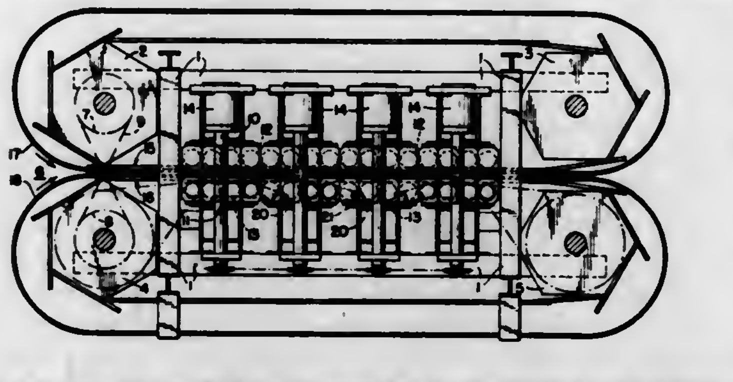
Ernst Greten, Springe, Fed. Rep. of Germany, assignor to Bisonwerke Bähre & Greten GmbH & Co. KG, Fed. Rep. of Germany

Filed Sep. 28, 1977, Ser. No. 837,573

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2657040

Int. Cl.^{2} B29C *15/00;* B30B *5/06;* B24J *5/10*

U.S. Cl. 425—371 36 Claims



1. An endless band arrangement for a continuously operating rough or finishing press, the arrangement comprising: a plurality of individual plate elements, means for pivotally connecting the plate elements to each other to form an endless plate band, and means provided in at least one surface of each of said plate elements for minimizing deformation of the plate elements during an operation of the press.

4,128,374
INJECTION BLOW MOLDING APPARATUS

Robert W. Saumsiegle, Needham, and Ieuan L. Harry, Billerica, both of Mass., assignors to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 312,257, Dec. 5, 1972, Pat. No. 3,941,539. This application Sep. 23, 1975, Ser. No. 616,006

Int. Cl.^{2} B29D *23/03*

U.S. Cl. 425—403 9 Claims

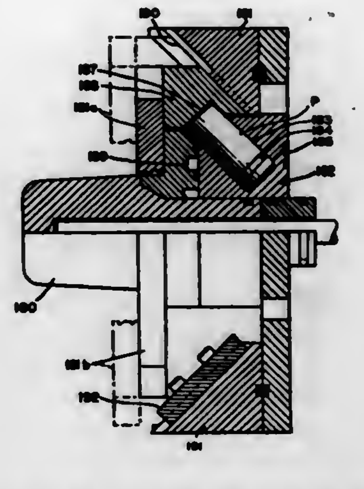
1. A core assembly for blow molding apparatus comprising

a core element having an axis,

a core mounting base,

a plurality of neck mold sections disposed about the core element,

means for causing the neck mold sections to move simultaneously longitudinally and transversely with respect to the core element axis, said means including a plurality of hollow pins angularly fixedly mounted on the core mounting base and neck mold section mounting means slideably mounted on the pins, means forming a fluid seal between the pins and the neck mold section mounting means, and means for supplying fluid under pressure through the hollow pins to react on said neck mold section mounting means to thereby effect said simultaneous longitudinal and transverse movement of said neck mold sections with respect to said core element axis.



4,128,375
APPARATUS FOR PRODUCING PLATES AND SIMILAR ARTICLES

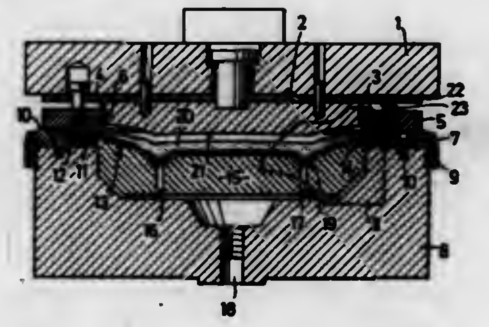
Rolf E. R. Schubart, Kochel am See, Germany, assignor to Dorst-Keramikmaschinen-Bau Otto Dorst u. Dipl.-Ing. Walter Schlegel, Kochel am See, Germany

Filed Jun. 6, 1977, Ser. No. 803,610

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1976, 2627160

Int. Cl.^{2} B30B *5/02, 5/04, 11/04;* B28B *7/26, 3/02*

U.S. Cl. 425—405 H 13 Claims



1. A press for the production of articles of low silhouette such as plates including:

a mold having a cavity;

a rigid upper pressing punch having a lower profile shaped in accordance with the interior shape of the article to be pressed and adapted for downward travel toward said cavity;

an elastic membrane having a peripheral rim, said elastic membrane sealing the top of said cavity of said mold and secured at said rim, said membrane having a recess therein corresponding to the shape and dimensions of the article to be pressed for receiving a pulverulent porcelain composition, said membrane including an annular groove for shaping the foot of the plate, said elastic membrane having a relaxed position with a shape corresponding to the shape of the lower surface of the article, and being of substantially uniform thickness, which thickness is sufficient that it can be deformed for filling with the pulverulent material and return to its relaxed position;

means providing a source of vacuum connected to said cavity for drawing said membrane downwardly into said cavity to position it for receipt of said pulverulent material;

means providing a source of fluid pressure connected to said cavity for applying pressure to said membrane and the pulverulent porcelain composition on said membrane when said pressing punch is lowered on the pulverulent porcelain composition for deflecting the membrane to press the pulverulent material against said punch;

a resiliently mounted ring surrounding said upper pressing punch, said ring seating on the membrane rim when the punch moves to closed position, said ring and said upper pressing punch having opposing contact surfaces, each of said contact surfaces having opposing grooves which together form a hollow annular cavity, a said means providing source of vacuum communicating with said annular cavity;

an insert for the mold having means at its inner edge interfitting with the rim of said membrane;

a securing ring for securing said insert rim in said lip, said securing ring surrounding said membrane and including a step for fitting over the peripheral portion of the upper surface of the rim of the membrane;

fluid passage channels through said insert;

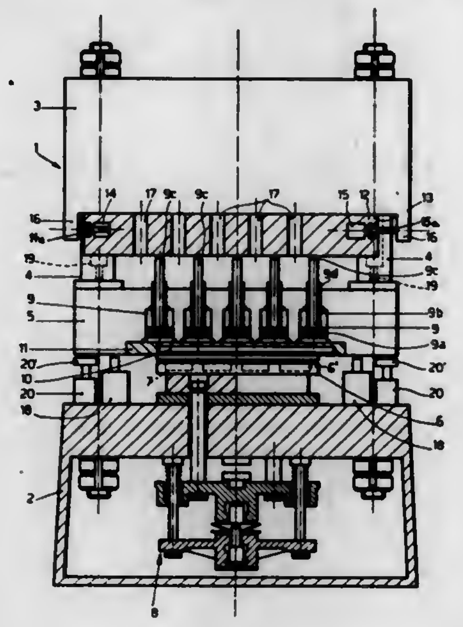
a residual space in the top profile of the insert in the vicinity of the channels for exposing the membrane to the vacuum when the same is applied to said insert channels to draw the membrane snugly against the top profile of the insert; and

said insert having outer and inner parts, said inner part being adjustable vertically and including a platen which rests against the central lower part of said membrane, thereby facilitating molding of angled sides of the article spring urging said inner part into raised position.

4,128,376

PRESSING ARRANGEMENT FOR COMPRESSING CERAMIC AND REFRACTORY MATERIALS INTO TILE PREFORMS

Sergio Albertazzi, via Lambruschini 4, Imola-Bologna, Italy
Filed Oct. 12, 1977, Ser. No. 841,727
Claims priority, application Italy, Oct. 28, 1976, 28787 A/76
Int. Cl.² B28B *3/06*
U.S. Cl. 425—415 **11 Claims**

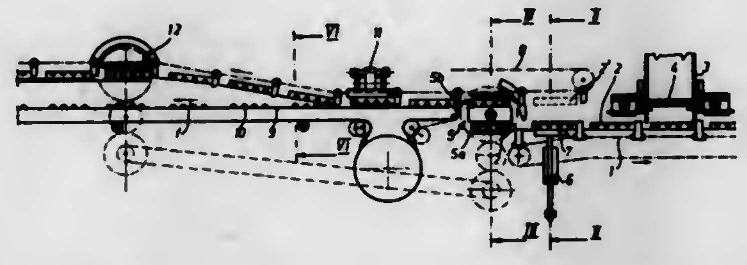


1. A pressing arrangement, particularly for compressing ceramic and refractory materials into tile preforms, comprising a frame including a stationary platen, a stationary support and a plurality of elongated beams extending between said stationary platen and said support; a movable platen mounted on said beams for displacement longitudinally of the latter between a retracted position and a final pressing position; means for displacing said movable platen between said positions thereof; a mold having two mold sections one mounted on said stationary platen and the other on said movable platen for joint displacement therewith in registry with said one mold section, said mold being open in said retracted position of said movable platen to permit at least the withdrawal of the preforms from said mold, and said mold sections compressing the materials in said mold as said movable platen approaches said final pressing position; and means for subjecting said mold to pressing forces, including a plurality of cylinder-and-piston units separate from said displacing means and distributed over said movable platen to exert distributed pressing forces thereon and to uniformly press the same toward said final pressing position each of said units including a bore in said movable platen, a piston accommodated in said bore, and a piston rod emerging from said bore toward said support; and further comprising reaction means juxtaposed with said support, and wherein said piston rods of said units abuts against predetermined areas of said reaction means when said movable platen approaches said final pressing position and said units are energized.

4,128,377

UNMOULDING MACHINE FOR CONFECTIONARY PRODUCTS

Carlo Bramati, Milan, Italy, assignor to Carle & Montanari S.p.A., Milan, Italy
Filed May 5, 1977, Ser. No. 794,260
Claims priority, application Italy, Aug. 6, 1976, 26108 A/76
Int. Cl.² A23G *1/26;* B65G *65/02*
U.S. Cl. 425—439 **4 Claims**



1. A dual mode machine for unmoulding confectionery products and, in particular, chocolate products, from moulds said machine comprising:

(A) a plurality of molds and a first conveyor having a horizontal reach at a first level for receiving filled moulds,

(B) a multiplicity of plates,

(C) means above the first conveyor for applying plates on the tops of the moulds on the first conveyor,

(D) a second conveyor downstream of the plate applying means,

  (i) said second conveyor having a horizontal reach at a second level which is higher than said first level of said horizontal reach of the first conveyor;

  (ii) said horizontal reach of the second conveyor having a portion overlying a portion of the horizontal reach of the first conveyor;

(E) a vertically translatory lifting device downstream of the plate applying means for raising moulds from the horizontal reach of the first conveyor to the horizontal reach of the second conveyor,

(F) a rotating device downstream of the lifting device for accepting moulds from the first conveyor, inverting said accepted mould moulds and raising said inverted and accepted moulds to a horizontal position immediately below a position of said reach of the second conveyor,

(G) a third conveyor having a horizontal reach starting downstream of the rotating device,

  (i) said horizontal reach of the third conveyor being at a level that is the same as the level of an inverted mould lifted by the rotating device,

  (ii) said horizontal reach of the third conveyor being below the horizontal reach of the second conveyor and partially coextensive therewith downstream of the rotating device,

(H) said reach of the second conveyor including a portion sloping upwardly from the horizontal portion thereof and located above a downstream portion of the third conveyor,

  (i) said upwardly extending reach of the second conveyor engaging inverted moulds on the third conveyor and raising said moulds off moulded product left on the third conveyor;

(I) whereby filled moulds may be processed either by,

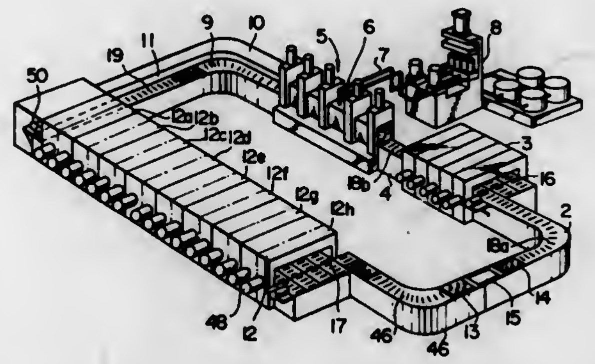
  (i) transferring filled moulds from the first conveyor to the second conveyor by the lifting means and bypassing the rotating device, or

  (ii) by transferring filled moulds from the first conveyor to the rotating device and then to the third conveyor and bypassing the lifting device.

4,128,378

EQUIPMENT FOR PRODUCING HIGH VOLTAGE RECTIFYING UNITS

Shinpei Otsu, Yokohama; Akira Sekiguchi; Nobuyoshi Tobita, both of Kamakura; Shigeru Chikamatsu, Fujisawa; Yoshihisa Hosoe; Motoaki Matsui, both of Yokohama; Noboru Sugimoto, Yokosuka, and Noriyoshi Totsuka, Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan
Filed Sep. 26, 1977, Ser. No. 836,594
Claims priority, application Japan, Sep. 29, 1976, 51-115913
Int. Cl.² B29C *25/00*
U.S. Cl. 425—445 **5 Claims**



1. An equipment for producing a high voltage rectifying unit, which equipment is provided with:

(a) a defoaming means for storing and vacuum-defoaming a resin ingredient and a curing agent, respectively, alone;

(b) a mixing means for mixing said resin ingredient and said curing agent at a prescribed mixing ratio which is connected with said defoaming means by a closed piping;

(c) a vacuum injecting chamber for injecting an appointed amount of the mixed and defoamed thermosetting resin composition into an assembled high voltage rectifying unit in a vacuum state through injecting nozzles connected with said mixing means by a closed piping, which vacuum injecting chamber is equipped with the first carrier apparatus which may load and intermittently carry said high voltage rectifying unit;

(d) a defoaming chamber for defoaming the resin composition injected into the high voltage rectifying unit by evacuating to an appointed degree of vacuum which is provided adjacent to said vacuum injecting chamber and is equipped with the second carrier apparatus which may load and carry the inserted high voltage rectifying unit;

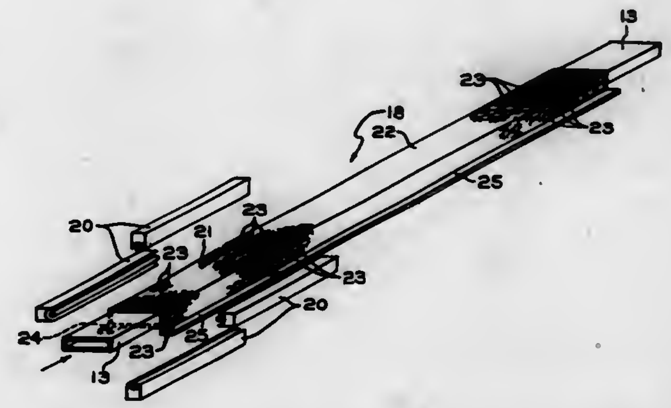
(e) a curing furnace for heating and curing continuously the resin composition-injected high voltage rectifying unit so that an appointed temperature profile may be formed along the carrying route of the third carrier apparatus, which is equipped with said third carrier apparatus for carrying the resin composition-injected high voltage rectifying unit through the curing furnace; and

(f) the fourth carrier apparatus for carrying said high voltage rectifying unit from said defoaming chamber to said curing furnace, which fourth carrier apparatus is covered to isolate the external atmosphere, and in which equipment the procedures from the vacuum injection of the thermosetting resin composition into the high voltage rectifying unit to the curing of the resin composition can thereby be carried out continuously and automatically.

4,128,379

APPARATUS FOR PROCESSING EXTRUDED THERMOPLASTIC POLYMER

Joachim E. Hartitz, Avon Lake; Sam D. Nehemy, Lorain, and Erwin R. Wahl, Avon Lake, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio
Filed Jun. 23, 1977, Ser. No. 809,230
Int. Cl.² B29C *25/00*
U.S. Cl. 425—446 **9 Claims**

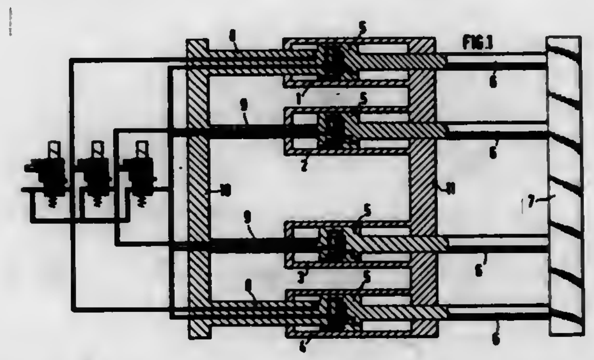


1. An apparatus for annealing hollow plastic articles comprising a housing having an inner wall surface for supporting and guiding continuously therethrough a contoured plastic article, said housing having an inlet opening at one end and an outlet opening at the other end for guiding the plastic article thereinto and therefrom, said housing having a plurality of perforations throughout the length thereof, and a plurality of heater means spaced peripherally around the length of said housing for heating a portion of the contoured article passing through said housing.

4,128,380

FLUID PRESSURE ACTUATED DRIVE FOR THE CLOSING UNIT OF AN INJECTION MOULDING MACHINE

Helmut Jamann, Neustadt, Fed. Rep. of Germany, assignor to Dr. Boy KG, Fed. Rep. of Germany
Filed Oct. 1, 1976, Ser. No. 728,727
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1975, 2544105
Int. Cl.² A01J *21/00;* F15B *11/00*
U.S. Cl. 425—450.1 **14 Claims**



1. In a hydraulic mold closing unit of an injection molding machine, an improved fluid pressure actuated drive for providing a to and fro transverse motion of a movable part of said unit, said drive including a piston rod defining an axis, a double acting piston mounted on one axial end of said rod, a cylinder passing said rod through one axial end and receiving said piston to form two expansible chambers on opposite axial sides

of said piston, one of said piston rod and cylinder being stationary and the other being drivingly attached to the movable part, a plurality of flow channels extending through said piston from one expansible chamber to the other expansible chamber, a disc mounted on said piston for limited rotation with respect to said piston about the axis between closed and opened positions, said disc having a plurality of flow channels extending through it in axial alignment respectively with the flow channels of said piston in said open position to freely provide the flow of fluid from one expansible chamber to the other expansible chamber and being completely out of alignment in said closed position to prevent the flow of fluid from one chamber to the other, said piston and disc together forming at least two expansible disc chambers for pressurization of one disc chamber with a fluid to move said disc into said open position and for pressurization of the other disc chamber with a fluid to move said disc into its closed position, one of said disc and piston being provided with at least one recess and the other of said disc and piston being provided with a shoulder dividing said recess into said disc chambers, means provided for selectively supplying fluid to one or the other of said disc chambers for rotating said disc between said open and closed positions, a first fluid duct extending from outside of said cylinder to said one cylinder expansible chamber for pressurizing said one cylinder expansible chamber, and said means for supplying providing said one disc chamber open to said one cylinder expansible chamber and including a second fluid duct isolated from said one cylinder chamber and axially passing through said piston rod to said other disc chamber for supplying pressurized fluid to said other disc chamber to rotate said disc to its closed position to isolate the cylinder expansible chambers on opposite sides of said piston and passage means connecting said other disc chamber to said other cylinder expansible chamber when said other disc chamber is subjected to fluid pressure.

4,128,381

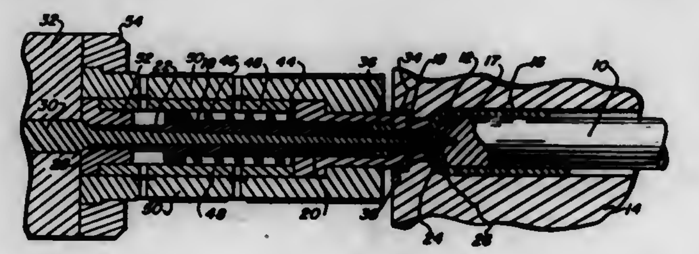
SYSTEM FOR PREVENTING MANDREL DEFLECTION IN MOLDING OF THERMOPLASTIC MATERIALS

Laszlo J. Bonis, Framingham, Mass., assignor to Composite Container Corporation, Natick, Mass.

Continuation of Ser. No. 713,791, Aug. 12, 1976, abandoned. This application Jan. 30, 1978, Ser. No. 873,655

Int. Cl.² B29F *1/03;* B29D *23/02;* B29C *1/06*

U.S. Cl. 425—468 **2 Claims**



1. Apparatus for injection molding with improved freedom from mandrel deflection which comprises

a mold element for forming outer molding surfaces,

said mold element including therein a first opening extending from a first end to a second end and a second opening extending from said second end of said first opening in a direction away from said first end of said first opening,

said first opening in use shaping a portion of said outer molded surfaces,

a mandrel mounted in said first opening to extend longitudinally therin therealong from a first mandrel end to a second mandrel end, first and second ends of said mold element and said mandrel being each in the same direction relative to the other,

said mandrel being cantilevered from a mounting at said first end of said mandrel and having an outside surface defining in use inner molded surfaces,

a sleeve,

said sleeve being mounted in said second opening, and having a tip in use shaping therearound a further portion of said outer molded surfaces,

thermoplastic material supply means,

a mandrel second end centering member,

said member being mounted for reciprocal movement toward and away from said mandrel second end,

said member having therethrough a passage for moving thermoplastic material from said supply means into a cavity between said mold element and said mandrel,

said member including a first surface interfering with flow of said thermoplastic material therethrough and urged thereby toward said mandrel second end,

said member including a second surface positioned around said passage and in parallel flow relation to said cavity to receive thermoplastic material as said cavity fills and thereby exert on said member a force urging said member away from said mandrel second end, and

said member including a third surface for coacting with further biasing means biasing said member away from said mandrel second end, and

said further biasing means,

forces on said first surface overriding the sum of the forces on said second surface and said third surface to hold said centering member in centering engagement with said mandrel second end until a portion of said cavity is filled, whereupon said forces on said second surface and said third surface override said forces on said first surface whereby said member is moved away from said mandrel second end,

said mandrel second end and said member each including centering means cooperating to support said mandrel centrally in said cavity until said sum is no longer overriden.

4,128,382

KEYBOARD RECOCKING MECHANISM

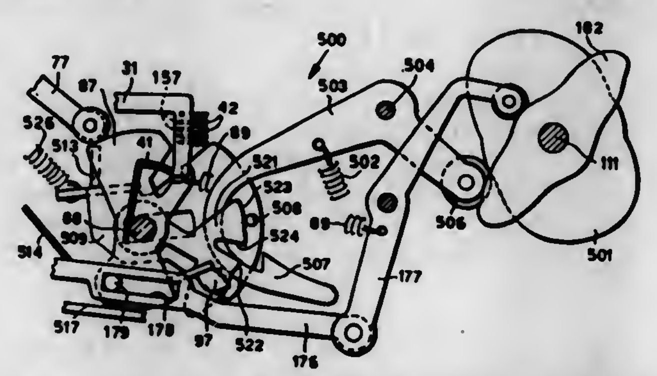
Gillio Claudio, Brosso Canavese (Turin), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Sep. 19, 1977, Ser. No. 834,785

Claims priority, application Italy, Sep. 22, 1976, 69273 A/76

Int. Cl.² B41J *23/08, 5/24*

U.S. Cl. 400—478 **13 Claims**



1. A keyboard for a printing machine comprising a series of depressable keys; a series of intermediate members associated with said keys and each selectable by depression of one of said keys; a common actuator actuatable from an inoperative position to an operative position; spring means moving said common actuator to said operative position in response to moving of each of said keys, said common actuator engaging the selected intermediate member and moving said selected intermediate member to a predetermined speed; operative means associated to said intermediate members for performing a selected operation upon movement of said intermediate members; reloading means operative for returning said common actuator to said inoperative position for reloading said spring means upon performing of the selected operation; locking means for stopping the operation of said operative means and causing the return of said common actuator whereby blocking further operations of said operative means in the case when two keys are simultaneously depressed, said common actuator engaging said two selected intermediate members but being moved by said spring means at a speed substantially reduced with respect to said predetermined speed and unblocking means responsive to the reduced speed of said common actuator for returning said common actuator to said inoperative position, in the place of said reloading means whereby enabling the further performing of operations by said operating means.

4,128,383

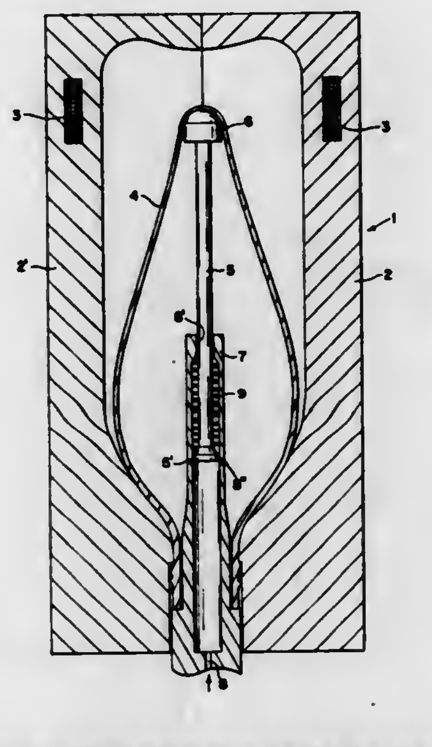
APPARATUS FOR CONTROLLING PLASTIC MATERIAL DISTRIBUTION IN MANUFACTURE OF BIAXIALLY ORIENTED PLASTIC CONTAINERS

Thomas J. Bond, Chardon; William J. Kelly, Brunswick, and Richard C. Adams, Chardon, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 689,166, May 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 612,015, Sep. 10, 1975, abandoned. This application Oct. 21, 1977, Ser. No. 844,255

Int. Cl.² B29D *23/03*

U.S. Cl. 425—529 **3 Claims**



1. In a blow molding apparatus useful for the production of biaxially oriented hollow thermoplastic containers from thermoplastic preforms, said apparatus being composed of a hollow mold and means for positioning said thermoplastic preform within the cavity of said mold and means for preheating said preform to the orientation temperature and means for stretching and expanding said preform against the walls of the mold cavity, the improvements comprising a stretch-blow mandrel which has an axis and movable blow pin with tip, said blow pin having means responsive to fluid pressure to cause it to move axially to stretch the parison and spring means for controlling the rate of axial movement of the blow pin and for limiting the axial movement of the blow pin so that the blow pin tip cannot force the walls of said preform against the wall of the cavity of the mold, means for controlling the rate of fluid flow through the orifices, said blow pin tip being of an insulating material which reduces the heat loss from the thermoplastic preform to the blow pin tip, mold heating means for preventing the thermoplastic preform material from dropping below orientation temperatures in the last areas to expand into the mold cavity.

4,128,384

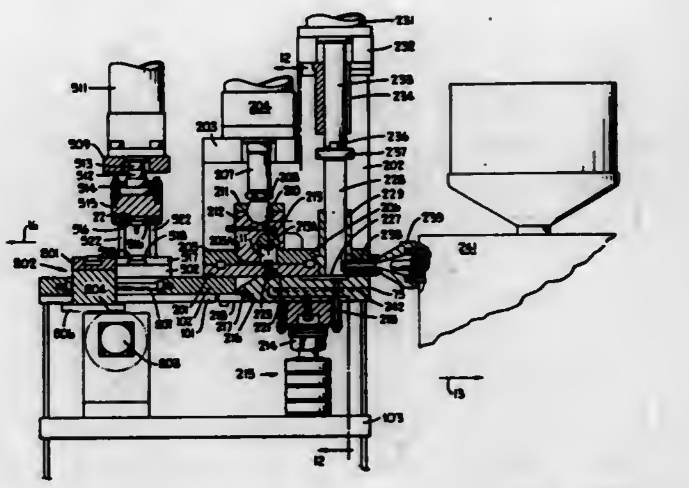
MOLDING APPARATUS EMPLOYING STICK MOLDS

Pierce E. Albright, Muncie, Ind., assignor to Automated Machinery Corporation, Muncie, Ind.

Division of Ser. No. 470,039, May 15, 1974, Pat. No. 3,986,804, which is a continuation of Ser. No. 279,490, Aug. 10, 1972, abandoned. This application Jul. 1, 1976, Ser. No. 701,557

Int. Cl.² B29F *1/08*

U.S. Cl. 425—548 **27 Claims**



1. Product molding apparatus for sequentially moving a plurality of molds along a predetermined path, through a plurality of stations, said product molding apparatus comprising:

mold holding means positioned at one of said plurality of stations for locating a mold during introduction to the mold of a material to be molded;

transfer means positioned along said path and cooperating with said holding means for moving molds arranged along said path serially into and away from said holding means;

mold support means disposed along said path, said transfer means cooperating with said support means for movement, in a loop, of molds arranged along said path;

mold closing means, pre-heating means, curing means, and mold opening means disposed along said loop;

said pre-heating means being disposed between said closing means and said holding means, and said curing means being disposed between said holding means and said opening means; and

said mold closing means, and said mold opening means including retainer means for retaining one section of a mold therein, and separating means for engaging another section of said mold therein, said separating means being movable transverse to the direction of said loop to separate said another section from said one section and to return said another section to said one section.

4,128,385

INJECTION MOLDING APPARATUS

David O. Allen, Wilmington, Ohio, assignor to Buckeye Molding Company, New Vienna, Ohio

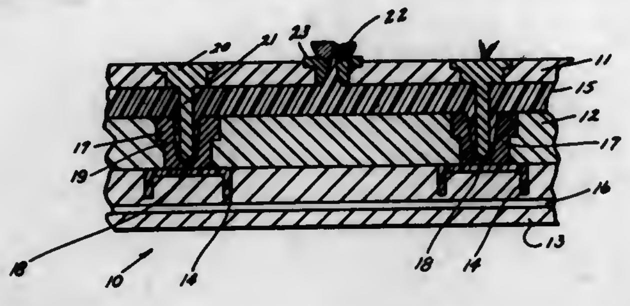
Division of Ser. No. 644,832, Dec. 29, 1975, abandoned, which is a continuation of Ser. No. 483,086, Jun. 26, 1974, abandoned. This application Jan. 28, 1976, Ser. No. 653,105

Int. Cl.² B29F *1/03*

U.S. Cl. 425—549 **2 Claims**

1. In a molding apparatus of the type wherein resin in a molten state is injected from a sprue passageway and through a gate to fill a mold chamber, said gate having interior wall means defining a gate opening, said apparatus including means for maintaining molten the plastic remaining in said sprue passageway immediately adjacent said gate, the improvements wherein said interior wall means define a gate opening having

a periphery exceeding the periphery of a circular opening of the same area, and including cooling means for extracting heat



from said gate to cool resin remaining in said gate after filling said mold chamber.

4,128,386

APPARATUS FOR THE EXTRUSION OF PATTERNED SHEETS OR PANELS OF THERMOPLASTIC SYNTHETIC RESIN COMPOSITIONS

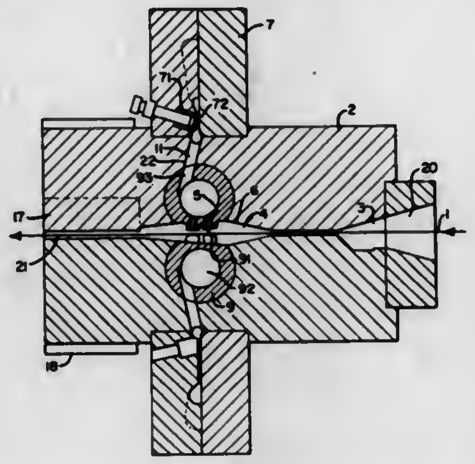
Waldemar Wissinger, Siegburg, and Kurt Webermeier, Bonn, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

Filed Aug. 4, 1976, Ser. No. 711,564

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1975, 2534724

Int. Cl.² B29F *3/12*

U.S. Cl. 425—462 **15 Claims**



1. An apparatus for the extrusion of patterned sheets or panels of a basic color thermoplastic resin composition having at least one additional colored thermoplastic resin composition therein, comprising:

(a) a long-slot extruder head for extruding the patterned sheets or panels, said extruder head having inlet means for introducing said basic color thermoplastic resin composition to the extruder head, said extruder head having an initial flow zone therein, said initial flow zone being downstream, in the direction of flow of the basic color thermoplastic resin composition through the extruder head, from said inlet means for introducing said basic color composition to the extruder head,

(b) means for adding at least one additional color thermoplastic resin composition to said basic color composition, said means being positioned to feed directly into said initial flow zone and comprising at least one feed channel, said at least one feed channel being constructed on a support that is insertable in the walls of the long-slot extruder head and is exchangeable, and

(c) a long-slot extrusion die in flow communication with said at least one feed channel for feeding said at least one additional colored thermoplastic resin composition to said at least one feed channel.

4,128,387

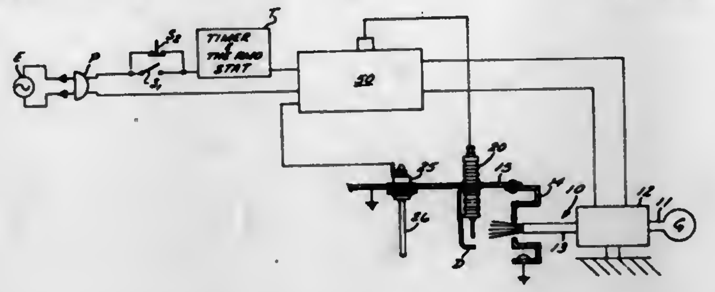
IGNITION DEVICE

Billy R. Rayburn, Rossmore, and Alfred F. Hayes, Anaheim, both of Calif., assignors to Paul T. Mu, Monterey Park, Calif., a part interest

Filed Oct. 22, 1976, Ser. No. 735,027

Int. Cl.² F23N *5/20*

U.S. Cl. 431—78 **8 Claims**



1. An ignition assembly connected for excitation by a source of A.C. electrical signal and adapted to ignite the fuel emitted by a burner, comprising:

a high voltage spark circuit disposed to extend into said burner for igniting said fuel upon receipt of a logical combination of a first and second enabling signal;

a flame sensor disposed in said burner for producing said first enabling signal in response to the absence of a flame thereat;

valve means connected to said burner for controlling the supply of said fuel thereto;

control means connected to said valve means, said source of A.C. electrical excitation and said flame sensor for energizing said valve means to an open state in response to the first application of said electrical signal and producing said second enabling signal indicative thereof, said control means including timing means initiated by said first application of said A.C. electrical signal or said first enabling signal interposed between said valve means and said A.C. electrical signal said timing means being reset on each successive application of said A.C. electrical signal; and

breaker means in circuit with said valve means and connected to said control means, said breaker means including a two position breaker switch latched open at the completion of said timing signal by the receipt of said enabling signal for as long as said ignition assembly is connected to said A.C. signal.

4,128,388

GEYSERIC BURNER ASSEMBLY AND METHOD FOR COMBUSTING FUELS

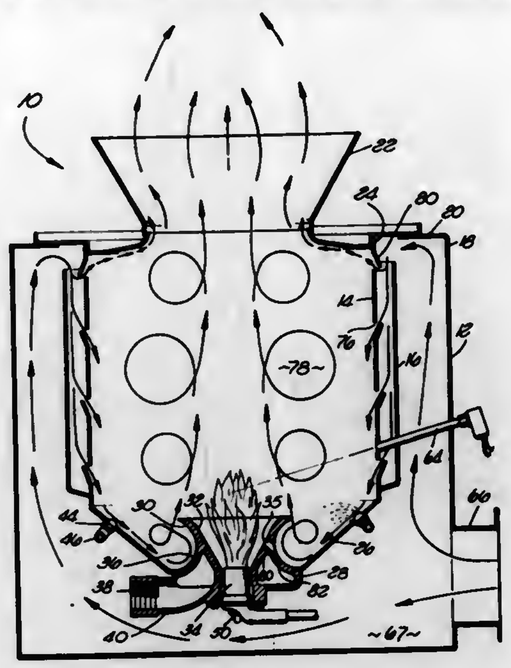
Benjamin H. Freze, Garden Grove, Calif., assignor to Challenge-Cook Bros., Inc., Industry, Calif.

Filed May 12, 1977, Ser. No. 796,163

Int. Cl.² F23D *15/00*

U.S. Cl. 431—116 **14 Claims**

1. A burner assembly comprising a housing having a discharge opening in the upper end thereof and a sloped lower surface therein, a pilot nozzle disposed in said housing, a mixing ring disposed about said pilot nozzle and having an annular concave outer mixing surface extending upwardly from said sloped lower surface, means disposed within said housing for directing air to said outer mixing surface of said mixing ring and means disposed within said housing for directing fuel to said outer mixing surface of said mixing ring, said air and fuel being caused to mix and roll upwardly within said housing by said mixing surface and upon ignition, to flow from said housing through said discharge opening therein.



4,128,389

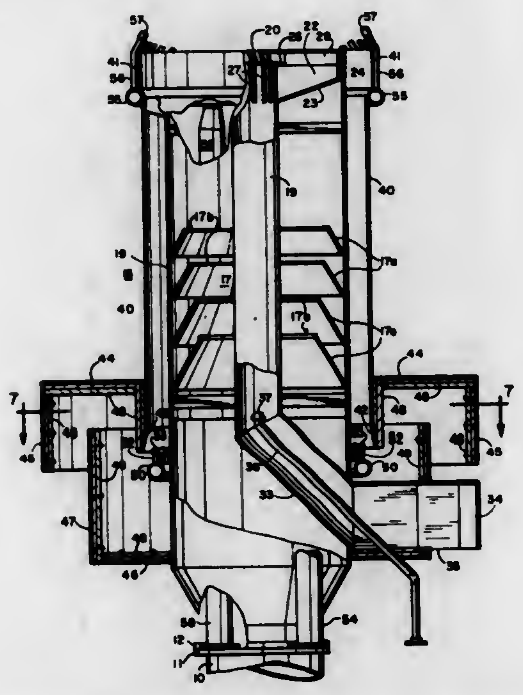
FLARE STACK GAS BURNER

John F. Straitz, III, Meadowbrook, Pa., assignor to Combustion Unlimited Incorporated, Elkins Park, Pa.

Filed Aug. 22, 1977, Ser. No. 826,932

Int. Cl.² F23D *13/20*

U.S. Cl. 431—202 **11 Claims**



1. A flare stack gas burner for waste combustible gas comprising

a tubular stack pipe communicating with a source of combustible gas and to which combustible gas is supplied for combustion at its delivery end,

an air supply pipe in communication with a source of air in said stack pipe and closed at its end,

a plurality of hollow fixed vanes extending outwardly from said air-supply pipe and to the interiors of which air from said air supply pipe is delivered,

a plurality of elongated flat nozzles for air delivery, at least one for each vane, through which said air from said vanes is delivered,

each of said nozzles being inclined with respect to its vane and contacting combustible gas from the stack pipe between said vanes and on each side of the air streams discharged from said nozzles, and

means surrounding the end of said stack for supplying additional air to the end of the tubular stack pipe and a steam pipe within said air supply pipe discharging steam for inducing air flow for combustion.

4,128,390

FUEL VAPORIZER AND BURNER UNIT FOR SPACE HEATER

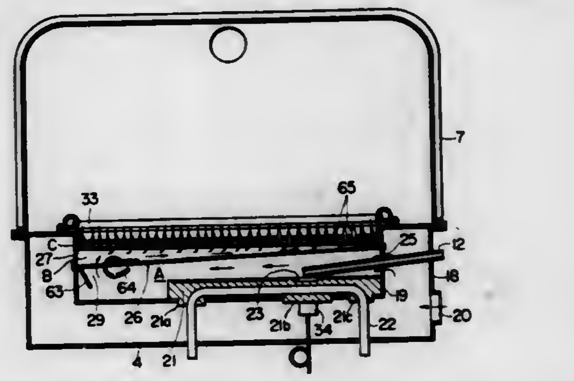
Masataka Yoshino; Nobuyoshi Matsuno; Hiroyasu Kuwazawa, all of Nakatsugawa, and Tomatsu Nomaguchi, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1977, Ser. No. 803,913

Claims priority, application Japan, Jun. 9, 1976, 51-67435

Int. Cl.² F23D *11/44*

U.S. Cl. 431—242 **8 Claims**



1. A vaporizer and burner unit for a liquid fuel space heater, comprising:

(a) lower, intermediate, and upper elongated fuel mixture flow chambers vertically disposed one above the other, said chambers being of substantially equal lengths,

(b) a preheated vaporizing block mounted at one end of the lower chamber,

(c) fuel delivery means disposed proximate the upper surface of the block,

(d) primary combustion air inlet means disposed proximate the upper surface of the block,

(e) an opening at the other end of the lower chamber communicating same with the intermediate chamber thereabove, whereby the fuel mixture flow direction is substantially reversed between the lower and intermediate chambers,

(f) a perforated plate defining the entire upper surface of the intermediate chamber for delivering a fuel mixture therefrom into the upper chamber thereabove at a uniform pressure,

(g) a burner plate defining the entire upper surface of the upper chamber and having a plurality of spaced flame apertures therein for delivering the fuel mixture therefrom into a combustion chamber thereabove, and

(h) a plurality of blow holes defined above and along both sides of the burner plate for supplying secondary combustion air to the combustion chamber.

4,128,391

GAS REGULATOR AND GAS-FIRED TORCH ASSEMBLIES

Lee G. Braunstein, 318 Clwyd Rd., Bala Cynwyd, Pa. 19004

Filed Feb. 14, 1977, Ser. No. 768,464

Int. Cl.² F23D *13/40*

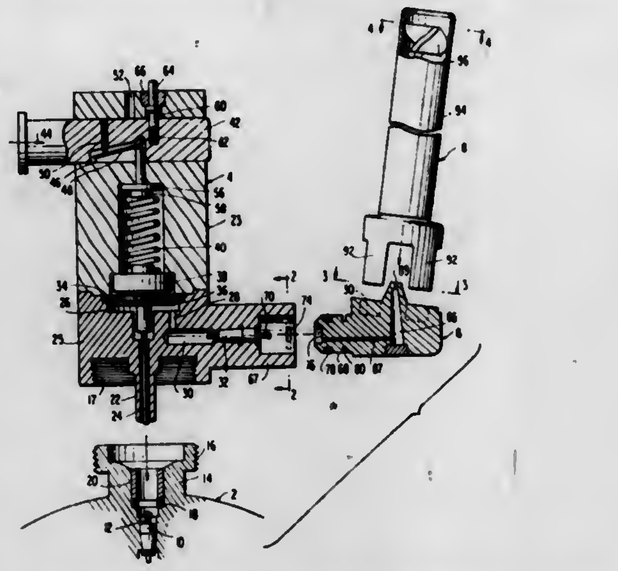
U.S. Cl. 431—354 **16 Claims**

1. A gas-fired torch assembly for welding, brazing and the like, comprising a burner tip for receiving and burning a combustible gas, and a flow path for carrying combustible pressurized gas to said burner tip,

a manually adjustable control device located in the flow path and comprising:

a control valve biased toward a closed position and being movable through intermediate positions to an open position to vary the flow of fluid moving in said flow path,

valve operating means for moving the control valve through said intermediate positions and to said open position, said valve operating means including a manually operable slide member, means for supporting said slide member for linear movement along an axis which is transverse to the direction of control valve movement, said slide member having a cam surface which is inclined with respect to said axis, and a follower means engaged with said cam surface, means supporting said follower means for movement substantially parallel to the direction of control valve movement, said follower means being in sliding contact with said cam surface, and regulator means for operatively connecting said control valve to said follower means to change the position of the control valve in response to movement of said slide member, said regulator means being constructed as follows:



a chamber in communication with the flow path, a diaphragm having one face exposed to the chamber, a pressure spring means applying mechanical force to the other face of the diaphragm, said mechanical force being directed toward said chamber to oppose forces imposed on the diaphragm by fluid pressure in said chamber, said pressure spring having its end remote from said diaphragm connected to said follower means, and actuating rod means supported on said diaphragm and operable on said control valve, said control valve being located between said source and said chamber.

4,128,392
CALCINER FOR FINE LIMESTONE

Wilfred H. Tock, Emmaus, Pa., assignor to Fuller Company, Catasauqua, Pa.

Division of Ser. No. 603,638, Aug. 11, 1975. This application Feb. 28, 1977, Ser. No. 772,413

Int. Cl.² F27B *15/00*

U.S. Cl. 432—58 **5 Claims**

1. Apparatus for heat treating solid particulate material for producing a treated product comprising:

a first heat treatment vessel;

means for supplying raw material to be treated to said first heat treatment vessel;

means for supplying air to said first heat treatment vessel;

means for supplying fuel to said first heat treatment vessel for combustion therein for heat treating solid particulate material in the first heat treatment vessel;

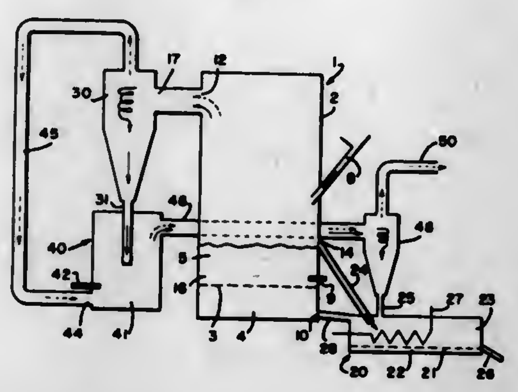
said means for supplying raw material to said first heat treatment vessel defining means for retaining coarse particles in said first heat treatment vessel for a period of time sufficient to heat treat the coarse particles;

means for discharging treated coarse particulate material from said first heat treatment vessel;

means for exhausting air and elutriated fines from said first heat treatment vessel;

means flow connected to said means for exhausting air and elutriated fines for separating the elutriated fines from the air exhausted from the first heat treatment vessel;

a second heat treatment vessel;



means for supplying air to said second heat treatment vessel;

means flow connecting the means for separating and the second heat treatment vessel for supplying the separated elutriated fines from said means for separating to said second heat treatment vessel;

means for supplying fuel to said second heat treatment vessel for combustion therein for heat treating the elutriated fines therein; and

means for discharging treated elutriated fines from said second heat treatment vessel.

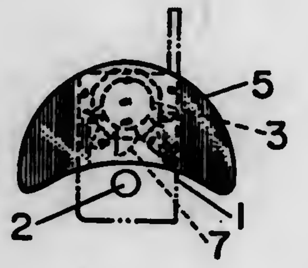
4,128,393
FLAME SHIELDING DEVICE

Jackson B. Sneed, Hixson, Tenn., assignor to Humphreys, Hutcheson & Moseley, Chattanooga, Tenn.

Filed Feb. 7, 1977, Ser. No. 766,191

Int. Cl.² F23D *15/00*

U.S. Cl. 431—351 **2 Claims**



1. A device adapted to be attached to a fuel burning instrument for shielding the flame generated by said instrument from air gusts, said device comprising:

shielding means mountable on said instrument for shielding said flame from air gusts and including means forming a concave wall adapted to enclose the space surrounding said flame at the back, to the sides, and above the flame; and

means associated with said shielding means for permitting controlled passage of air there through comprising a plurality of apertures in said shielding means the longitudinal axes of which are in various orientations with respect to one another, whereby the flow of air through said shielding means is diffused to substantially avoid direct impingement of air upon said flame.

4,128,394
TUNNEL KILN FOR USE IN REBAKING CARBONACEOUS MOLDINGS IMPREGNATED WITH TAR, PITCH OR THE LIKE

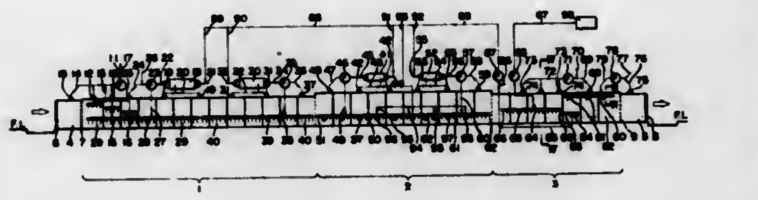
Kiyoshi Naito, Urawa, and Akio Sukuya, Kawagoe, both of Japan, assignors to Shinagawa Refractories Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1977, Ser. No. 773,654

Claims priority, application Japan, Feb. 8, 1977, 52-12118

Int. Cl.² F27B *9/26*

U.S. Cl. 432—137 **5 Claims**



1. A tunnel kiln for use in rebaking carbonaceous moldings impregnated with tar, pitch or the like, said tunnel kiln including a preheating zone, a baking zone and a cooling zone; arch shafts provided in the kiln ceiling, heating gas blow-in holes at the lower portion of the kiln side wall, a plurality of gas recirculating devices for feeding gas from the arch shafts in said preheating zone and baking zone to said blow-in holes, a plurality of connected cars movably mounted in said kiln, each car including passage means serving both as heating gas passages and combustion chambers; a muffle mounted on each car for accommodating said moldings to be rebaked, said muffle being disposed above said passage means, said muffle comprising a bottom plate, a tar-receiving plate mounted in said bottom plate, a holder mounted in said tar-receiving plate for supporting the moldings to be rebaked, a cover supported on said bottom plate to thereby enclose said moldings, holder and tar-receiving plate, a seal disposed between said cover and said bottom plate, and a plurality of tar gas discharge openings provided in the upper surface of said cover.

4,128,395

TRANSFER PRINTING WITH CARBOXYLIC DYES

Harry R. Hadfield; Harry H. Sumner, and Gerald Williams, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 10, 1973, Ser. No. 423,402

Claims priority, application United Kingdom, Dec. 15, 1972, 57969/72

Int. Cl.^{2} D06P *5/00*

U.S. Cl. 8—2.5 A 2 Claims

1. A process for the transfer colour printing of synthetic polyamide textile materials, which comprises placing a transfer material which carries a coloured pattern derived from one or more disperse dyestuffs each of which contains one carboxylic acid group in contact with the synthetic textile material and heating the transfer material and the synthetic textile material in a zone which is maintained at a pressure less than atmospheric pressure whilst they are in contact so as to transfer the dyestuff from the transfer material to the synthetic textile material.

4,128,396

PROCESS FOR THE IMPROVEMENT OF DYEING PROPERTIES OF PIGMENTS OF THE ANILINO AND ARYLMERCAPTO ANTHRAQUINONE SERIES

Arnold Wick, Therwil, and Max Jost, Oberwill, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 698,624, Jun. 21, 1976, abandoned, which is a continuation-in-part of Ser. No. 509,877, Sep. 27, 1974, Pat. No. 3,975,410. This application Sep. 28, 1977, Ser. No. 837,497

Claims priority, application Switzerland, Oct. 10, 1973, 14393/73

Int. Cl.^{2} C09B *1/00;* C07C *49/68*

U.S. Cl. 8—39 C 3 Claims

1. In the process of bulk dyeing linear polyesters with a pigment of the anthraquinone series, the improvement comprising using as a pigment, an arylmercapto anthraquinone obtained by halogenation, using chlorinating or brominating agents, of 1,8-diphenylmercapto anthraquinone.

4,128,397

SULFUR DIOXIDE LIBERATION COMPOSITIONS AND METHODS OF USING SAME

David J. Lynch, Copthorne Bank, England, assignor to Rentokil Limited, East Grinstead, England

Filed Oct. 31, 1975, Ser. No. 627,666

Claims priority, application United Kingdom, Oct. 31, 1974, 47242/74

Int. Cl.^{2} A61L *13/00;* A01N *11/00*

U.S. Cl. 422—29 21 Claims

1. A sterilizing composition capable fof giving extended release of sulphur dioxide in the presence of moisture, consisting essentially of:

(a) a compound that will liberate sulphur dioxide in contact with water; and

a water-soluble thiosulphate which acts as a moderator for the release of said sulphur dioxide said components a and b being present in amounts such that it is possible to produce sulphur dioxide from the composition sufficiently slowly that the composition is not rapidly exhausted but continues to liberate sulphur dioxide for a prolonged period of time.

4,128,398

PROCESSING AID FOR USE IN WORSTED AND WOOLEN PROCESSES

Mel Alpert, Morristown, N.J., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation of Ser. No. 451,909, Mar. 18, 1974, abandoned. This application Feb. 9, 1976, Ser. No. 656,289

Int. Cl.^{2} D06M *13/20, 13/34;* D06C *7/04*

U.S. Cl. 8—127.6 32 Claims

1. In a process for producing worsted from wool stock including the steps of rinsing the stock and dyeing tops, the improvement comprising pretreating the tops in a bath having a pH of about 6 prior to dyeing with a processing aid in an amount sufficient to preserve fiber strength and softness selected from the group consisting of

(1) polyamide
(2) epoxidized polyamide
(3) chain extended polyamide
(4) epoxidized chain extended polyamide
(5) epoxidized polyamine
(6) epoxidized polyalkylenimine
(7) polyacrylamide
(8) polyacrylic acid
(9) aminoplast resin
(10) oligomer of urea, polyamine and alkylene dihalide, and
(11) reaction product of acrylamide, diallyldimethyl ammonium chloride and glyoxal

wherein the polyamide is chain extended with a chain extender selected from the group consisting of alkyldihalide, alkyletherdihalide, phenyl bis-(alkylhalide), and phenylalkyldihalide having from one to twelve carbon atoms.

4,128,399

DEVICE AND METHOD FOR DETECTING PHENOTHIAZINE-TYPE DRUGS IN URINE

Lance A. Liotta, 6186 Wilson Mills Rd., Mayfield Village, Ohio 44143, and Robert S. Weiss, 18316 Newell, Shaker Heights, Ohio 44122

Filed Mar. 15, 1976, Ser. No. 667,838

Int. Cl.^{2} G01N *31/06*

U.S. Cl. 23—230 B 28 Claims

1. A device for determining the presence of a phenothiazine-type drug in urine comprising a substrate supporting a mass of cation exchange resin impregnated with a color forming reagent, said ion-exchange resin being present in an amount sufficient to liberate adequate hydrogen ions to cause the solution being tested in the area in immediate contact with said ion-exchange resin to have a pH sufficient to cause said color forming reagent to react with said phenothiazine-type drug, and said color forming reagent being present in an amount sufficient to cause a color change to occur in said device when brought into contact with a urine specimen containing a phenothiazine-type drug.

4,128,400

READ-OFF DEVICE FOR MEDICAL SAMPLES

Franz Mühlböck, Munich; Akos Kárpáty, Otterfing, Obby, and Wilhelm Pross, Munich, all of Germany, assignors to Compur-Electronic Gesellschaft mit beschränkter Haftung, Munich, Germany

Filed Dec. 15, 1976, Ser. No. 750,769

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1975, 2556915

Int. Cl.^{2} G01N *33/16*

U.S. Cl. 422—101 8 Claims

1. A centrifuge device for centrifuging medical samples to separate the samples into visually distinct components and for measuring the proportions of such components without removing the centrifuged samples from the centrifuge, said centrifuge device comprising

(a) a centrifuge rotor rotatable about an axis,

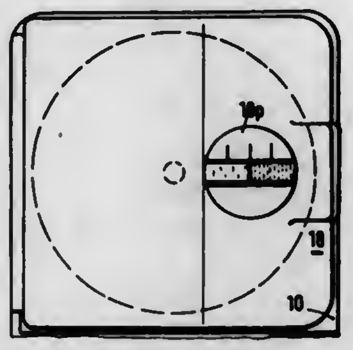
(b) means for clamping on said rotor a plurality of tubular containers each open at both ends and each adapted to be completely filled with a sample to be tested, and each arranged radially with respect to said axis,

(c) each of said containers being of the same length and each being clamped, during rotation of said rotor, in a definite predetermined location on said rotor,

(d) a reading scale marked on said rotor alongside the clamped location of each of said containers,

(e) each reading scale being graduated in percentage graduations from 0 to 100,

(f) the zero graduation of each scale being precisely at one end of its associated container and the 100 graduation of the scale being precisely at the opposite end of its associated container when the container is in clamped position on the rotor,



(g) a housing surrounding said rotor and said containers thereon, and

(h) optical magnifying means connected to said housing to facilitate reading the point along said scale associated with one of said containers at which a junction line between two components of the contents of said one of said containers is observed.

4,128,401
CELLULAR SOLVENT REFINED COAL AND METHODS FOR MAKING SAME

Justin C. Powell, and Matthew A. McMahon, both of Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed May 4, 1977, Ser. No. 793,703

Int. Cl.^{2} C10L *9/08*

U.S. Cl. 44—1 R 10 Claims

1. A cellular form of solvent refined coal having a plurality of cells, an apparent density less than 1g/cc and a void volume of 5 to 99%, said form consisting of a continuous, syntactic foamed carbonaceous mass produced by heating and foaming said solvent refined coal.

4. A method for making cellular solvent refined coal of apparent density less than 1 and a void volume of 5 to 99% comprising providing a solvent refined coal having a melting point in the range of 100° to 250° C.; heating said coal above said melting point to form a plastic mass and further reacting said mass under cell-forming conditions to form a plurality of cells therein.

4,128,402
APPARATUS FOR COMPACTING COAL

Kurt Leibrock; Adolf Bier, both of Volklingen, and Friedrich Büch, Walpershofen, all of Fed. Rep. of Germany, assignors to Saarbergwerke Aktiengesellschaft, Saarbruecken, Fed. Rep. of Germany

Filed Apr. 25, 1977, Ser. No. 790,617

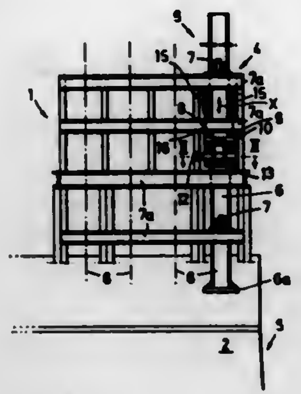
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1976, 2618327

The portion of the term of this patent subsequent to Aug. 22, 1995, has been disclaimed.

Int. Cl.^{2} B30B *11/00;* C10L *5/22*

U.S. Cl. 44—11 20 Claims

1. In an apparatus for compacting coal in a pounding box to convert the coal into a cake usable in coke ovens by repeatedly lifting and dropping onto the coal at least one vertically displaceable punner composed of an upright and a foot at a lower end of the same, a combination comprising engaging means for frictionally engaging said upright; mounting means mounting said engaging means for displacement in a path between a lower position in which it engages and entrains said upright and an upper position in which it releases said upright and permits the punner to gravitationally descend onto the coal; and drive means for moving said engaging means between said positions thereof.



4,128,403
FUEL ADDITIVE FOR DISTILLATE FUELS

Lewis R. Honnen, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 503,984, Sep. 6, 1974, abandoned. This application Jun. 29, 1976, Ser. No. 700,936

Int. Cl.^{2} C10L *1/22*

U.S. Cl. 44—71 16 Claims

1. A fuel additive comprising from 40 to 90 weight percent of an inert hydrocarbon solvent, from 5 to 50 weight percent of a hydrocarbyl amine having at least one hydrocarbyl group having a molecular weight between 300 and 5000, and 0.1 to 10 weight percent of a hydrocarbyl succinic acid or anhydride having from 12 to 30 carbons, and from 0.1 to 10 weight percent of a demulsifier.

9. A gasoline composition containing (1) a major portion of a gasoline fuel fraction, (2) from 50 to 800 ppm of a hydrocarbyl amine having at least 1 hydrocarbyl group with a molecular weight between 300 and 5000, (3) 0.5 to 20 ppm of a hydrocarbyl succinic acid or anhydride having from 12 to 30 carbons, and (4) from 2 to 10 ppm of a demulsifier.

4,128,404
METHOD FOR SEPARATING LIGHT-WEIGHT COMPRESSIBLE MATERIAL

Dimitri S. Stamatiou, and Lila D. Stamatiou, both of Kansas City, Mo., assignors to Pneumatic Force Feeder, Inc., Kansas City, Mo.

Division of Ser. No. 677,504, Apr. 15, 1976, abandoned. This application Dec. 8, 1977, Ser. No. 858,480

Int. Cl.^{2} B01D *45/12*

U.S. Cl. 55—1 2 Claims

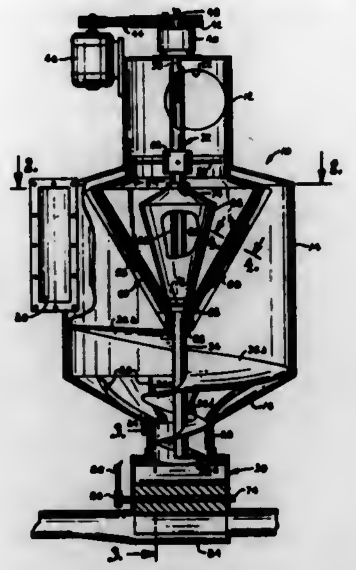
1. A method of recovering fiberglass trimmings from a fiberglass bats manufacturing process, said method comprising the steps of:

(a) Collecting said trimmings,

(b) Fracturing said trimmings to provide glass fibers of a substantially uniform size,

(c) Air blowing said fibers over a minor distance to a separation device comprising a compaction means,

(d) Removing air from said fibers and compacting said fibers in said device sufficient to form agglomerated particles,



(e) Air conveying said agglomerated particles over a major distance to said process for reuse therein.

4,128,405
INCOMPLETE DRYING OF ACTIVATED CARBON IN A PROCESS FOR VCM REDUCTION IN VAPORS

Richard A. Frohreich, Norman, and John F. Scamehorn, Ponca City, both of Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Feb. 16, 1977, Ser. No. 769,361

Int. Cl.^{2} B01D *53/04*

U.S. Cl. 55—59 7 Claims

1. In a process for removing ethylenically unsaturated monomer halides from an effluent stream containing the same bypassing the stream through particulate activated carbon to adsorb the monomeric halides on the activated carbon under essentially adiabatic conditions, the improvement therein of increasing the adsorption capability of the activated carbon which comprises, prior to passing the stream through the activated carbon, rendering the activated carbon to a state of incomplete dryness wherein the average water content is from about 0.03 to about 0.16 pounds of water per pound of carbon across the carbon, such that the carbon nearest the incoming stream contains a high concentration of water and the carbon adjacent the outlet is nearly dry, said effluent stream containing sufficient unsaturated monomer halide to desorb water from the carbon at the inlet of the carbon, whereby during passage of the stream through the activated carbon the heat of adsorption of the monomeric halide desorbs water from the activated carbon, thus controlling the temperature of the activated carbon at a level favorable to increased monomeric halide adsorption without the necessity for any external cooling.

4,128,406
CONTACT APPARATUS FOR MULTIPHASE PROCESSING

Jerome S. Spevack, New Rochelle, N.Y., assignor to Deuterium Corporation, White Plains, N.Y.

Division of Ser. No. 655,239, Feb. 4, 1976, Pat. No. 4,062,663. This application Sep. 28, 1977, Ser. No. 837,200

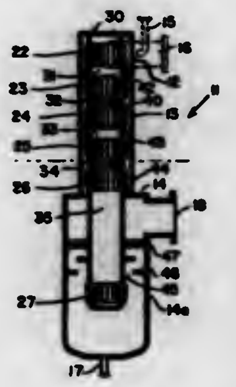
Int. Cl.^{2} B01D *47/10*

U.S. Cl. 55—237 11 Claims

1. An apparatus for processing cocurrent flows of separable phases, comprising in combination:

(a) a housing having an input section, an output section and an intermediate section therebetween for passing said flows from said input section to said output section, having separate input means connected to said input section for feeding each of said phases thereinto, and having output means connected to said output section for discharging the processed phases therefrom,

(b) said intermediate section comprising at least one pair of first and second mixing elements in axial alignment and disposed coaxially in said housing, each of said elements having a cylindrical chamber closed at one end and open at the other end, each pair of said elements being joined together at their open ends, the walls of each of said chambers having wall openings therein for the passage of said flows therethrough, said wall openings being provided with flow guide deflectors extending from said walls for directing the said flows in the same circumferential direction into the chamber of the first mixing element and out of the chamber of the second mixing element, said deflectors extending from said walls inside of one and outside of the other of a pair of elements, and



(c) a partition extending between said housing and each said pair of mixing elements intermediate the first and second mixing elements thereof for passing at least a principal part of said flows through the first and second mixing elements of each said pair in sequence.

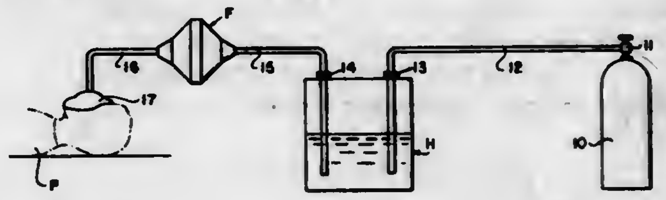
4,128,407
STERILE OXYGEN SYSTEM AND REPLACEABLE FILTER THEREFORE

James F. Chapel, 1019 Ridgecrest Cir., Denton, Tex. 76201, assignor to James Frederick Chapel, Denton; Homer C. Harper, III, Dallas, both of, Tex. and Michael F. Coyne, San Francisco, Calif.

Filed Nov. 3, 1975, Ser. No. 627,931

Int. Cl.^{2} B01D *53/00*

U.S. Cl. 55—259 21 Claims



1. A system for providing substantially bacteria free humidified oxygen to a respiratory system, comprising in combination:

a source of pressurized oxygen;

a humidifier including a gas inlet connected in fluid communication to said source, a reservoir of liquid, a gas-liquid outlet and means for humidifying said oxygen while passing oxygen from said inlet through said liquid and out of a gas-liquid outlet;

means connected in fluid communication to said outlet and adapted to provide oxygen to said respiratory system; and

sterile, disposable filter means connected between said last mentioned means and said means for humidifying said oxygen, said filter means being capable of removing a substantial amount of bacteria from humidified oxygen while providing a relatively small increase in back pressure to the flow of humidified oxygen due to wetting, whereby humidified, substantially bacteria free oxygen can be supplied for life support even though the oxygen, oxygen regulating equipment, or the humidifying apparatus is not sterile; and

said filter means includes housing having an inlet and an outlet to which tubing can be detachably connected and a filter pad, located in said housing between said inlet and said outlet, containing multiple layers each of a hydrophobic support material and a hydrophobic bacteria filtering material.

4,128,408

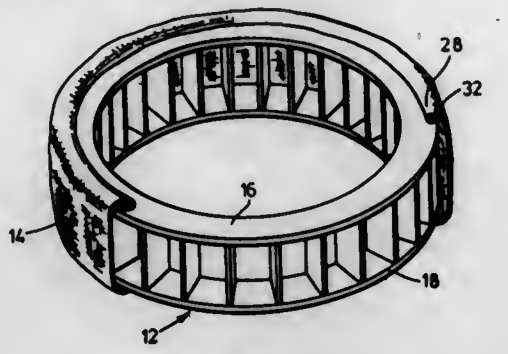
AIR FILTER FOR MOTOR VEHICLE CARBURETOR

Walter D. Poole, 10922-117 St., Edmonton, Alberta, Canada

Filed May 9, 1977, Ser. No. 794,856

Int. Cl.² B01D *46/00*

U.S. Cl. 55—498 **4 Claims**



1. An air filter for a motor vehicle carburetor including a filter body comprising a pair of rings spaced apart in an axial direction by spacing means between said rings and occupying a relatively small proportion of the space between the rings, said rings having flat axially opposed surfaces, and an annular filter cloth surrounding the space between the rings and having edges overlapping the radially outer edges of the rings in a radially inward direction to engage the outer flat surfaces of the rings and retain the filter cloth in assembly with the filter body, the edges of the filter cloth being resilient to enable the filter cloth to be readily assembled with and removed from the filter body, and the filter cloth having a weave which prevents passage of undesirable solid matter therethrough without unduly restricting air flow.

4,128,409

CHLORINE RECOVERY PROCESS

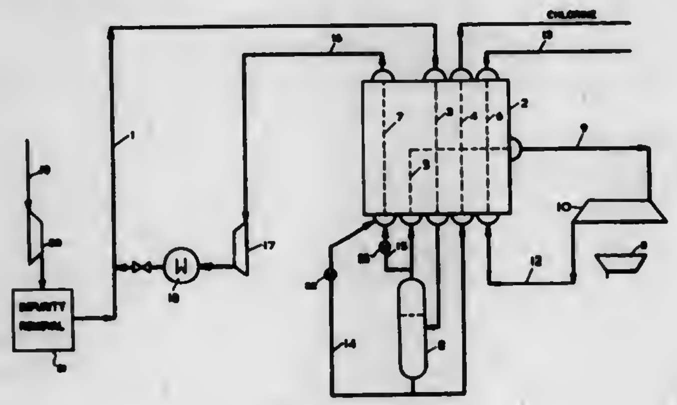
Anthony E. Bennett, Stockton-on-Tees, England, assignor to Tioxide Group Limited, Billingham, England

Filed Feb. 8, 1977, Ser. No. 766,810

Claims priority, application United Kingdom, Feb. 25, 1976, 07327/76

Int. Cl.² F25J *3/02*

U.S. Cl. 62—26 **14 Claims**



1. Process for the recovery of chlorine from chlorine-containing gases comprising the following steps:

(a) removing from the chlorine-containing gas mixture, either before or after step (b) below gases which, if present in the gas mixture in substantial quantity, would form solids or would liquify with chlorine in the subsequent process steps;

(b) compressing the chlorine-containing gas mixture;

(c) cooling the compressed gas mixture in a multi-stream heat exchanger to a temperature below the dew-point of chlorine in the gas mixture but not below −101° C. to form a cooled mixture of gas and liquid chlorine;

(d) withdrawing said cooled mixture from the heat exchanger and separating said mixture into a liquid chlorine fraction and a gas fraction;

(e) recirculating a portion of said liquid chlorine fraction from (d) separately through the heat exchanger and recovering therefrom chlorine;

(f) circulating a portion of said separated gas fraction from step (d) through the heat exchanger, withdrawing the resulting heated gas, externally cooling the gas to a temperature below that obtained in step (c) above but not below −101° C. and thereafter recirculating the cooled gas through the heat exchanger;

(g) passing through the heat exchanger a mixture of predetermined composition of said gas and liquid chlorine fractions from step (d) above, withdrawing the resulting heated gas mixture from the heat exchanger, compressing the heated mixture and returning the compressed mixture to the gas/liquid phase separator of step (d) via the multistream heat exchanger.

4,128,410

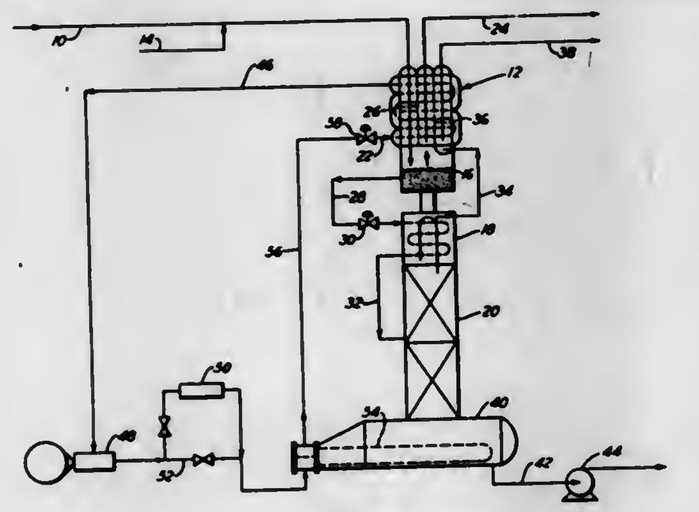
NATURAL GAS TREATMENT

Kenneth H. Bacon, Tulsa, Okla., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 612,158, Sep. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 445,451, Feb. 25, 1974, abandoned. This application Mar. 16, 1977, Ser. No. 778,015

Int. Cl.² F25J *1/02*

U.S. Cl. 62—40 **13 Claims**



1. Apparatus for treating a stream of natural gas at a high pressure exceeding about 100 psi to remove ethane and higher boiling point hydrocarbons to produce a pipeline gas at a pressure substantially equal to the pressure of the natural gas stream without compressing the pipeline gas comprising a heat exchanger having at the upper end thereof an inlet for the natural gas and an outlet for the pipeline gas, a separator below said heat exchanger adapted to separate pipeline gas from ethane and higher boiling point hydrocarbons condensed in the heat exchanger from the natural gas, an open passageway for the natural gas from the inlet vertically through the heat exchanger and from the lower end of the heat exchanger into the separator, partition means positioned in the heat exchanger between the inlet for the natural gas and the outlet for the pipeline gas to divide the open passageway in the heat exchanger into a natural gas and condensed liquid section from

the inlet of the heat exchanger downwardly to the separator and a pipeline gas section from the separator upwardly through the heat exchanger to the outlet for the pipeline gas, a closed cycle external refrigeration system adapted to produce a single cold refrigerant at a temperature suitable for condensing ethane and higher boiling point hydrocarbons from the natural gas, and means to circulate the cold refrigerant in the closed cycle external refrigeration system into and through the heat exchanger in a series of horizontal passes proceeding from the lower end to the upper end of the heat exchanger in countercurrent transverse indirect heat exchange with the natural gas and in concurrent transverse indirect heat exchange with the pipeline gas, the refrigerant flow being subdivided in each of the passes and terminating in a header after each pass with mixing in the header of the subdivided refrigerant after each pass and delivering the refrigerant from the header to the next pass to transfer heat from the natural gas to the refrigerant and from the refrigerant to the pipeline gas and thereby condense ethane and higher boiling hydrocarbons in the natural gas and heat the pipeline gas to discharge said pipeline gas at the outlet at substantially the temperature of the natural gas.

4,128,411

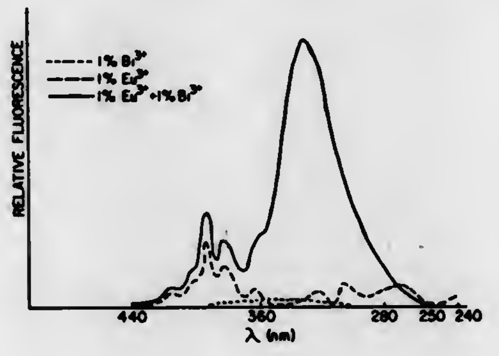
GLASS COMPOSITIONS HAVING FLUORESCENCE PROPERTIES

Renata Reisfeld, Jerusalem, Israel; Yona Eckstein, Reno, Nev., and Leah Boehm, Jerusalem, Israel, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 650,658, Jan. 20, 1976, abandoned. This application Jun. 15, 1977, Ser. No. 806,642

Int. Cl.² C03B *23/20, 9/00;* **B01F** *3/00;* **C03C** *3/00*

U.S. Cl. 65—18 **18 Claims**



1. A method for producing glass, capable of emitting monochromatic radiation in predetermined regions of the spectrum wherein the emitted radiation has an unexpectedly high intensity compared with radiation emitted by singly doped glass, comprising:

- a. mixing an oxide glass in pellet form with:
  - (1) a reducing agent, and
  - (2) a combination of compounds selected so as to provide a dopant, donor-acceptor ion pair in predetermined relative concentrations selected from the group consisting of trivalent thulium plus trivalent cerium, trivalent bismuth plus trivalent europium, or trivalent bismuth plus trivalent samarium;
- b. homogenizing the resulting mixture;
- c. heating said homogenized mixture;
- d. dropping a quantity of the homogenized mixture in hot melt form upon a first glazed ceramic surface of predetermined configuration supporting an element for confining said hot melt mixture;
- e. pressing a second glazed ceramic disk in contact with said element and said hot melt glass matrix; and
- f. cooling said glass matrix and removing said glass matrix from said ceramic disks and said confining element.

4,128,412

HERBICIDAL COMPOSITION AND METHOD USING N-(2-ETHYLSULFONYL-1,3,4-THIADIAZOL-5-YL)-N-METHYL-N'-METHYL UREA

Carl Metzger, Wuppertal-Elberfeld; Ludwig Eue, and Helmuth Hack, both of Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 579,124, May 19, 1975, Pat. No. 4,049,670, which is a division of Ser. No. 247,176, Apr. 24, 1972, which is a continuation of Ser. No. 887,368, Dec. 22, 1969, abandoned. This application Aug. 1, 1977, Ser. No. 821,031

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1968, 1816568

Int. Cl.² A01N *9/14, 21/02*

U.S. Cl. 71—90 **2 Claims**

1. Method of combating undesired vegetation which method comprises applying to common weeds and crops and their habitat herbicidally effective amounts of N-(2-ethylsulfonyl-1,3,4-thiadiazol-5-yl)-N-methyl-N'-methyl urea.

2. A composition for combatting undesired vegetation which comprises an herbicidally acceptable carrier and in amount effective to kill common weeds and/or crops, N-(2-ethylsulfonyl-1,3,4-thiadiazol-5-yl)-N-methyl-N'-methyl urea.

4,128,413

CARBANILIC ACID ESTERS AND HERBICIDAL COMPOSITION CONTAINING SAME

Friedrich Arndt, and Gerhard Boroschewski, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

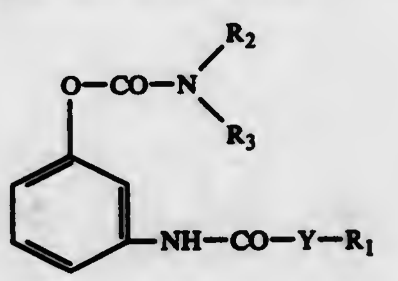
Filed Jun. 24, 1977, Ser. No. 809,935

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1976, 2630418

Int. Cl.² A01N *9/12, 9/20;* **C07C** *121/78, 154/155*

U.S. Cl. 71—100 **55 Claims**

1. Carbanilic acid ester of the formula



in which

R_1 is alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms or alkinyl of 2 to 6 carbon atoms,

R_2 is cyanoalkyl of 1 to 4 carbon atoms in the alkyl group,

R_3 is phenyl which may also be substituted in one or two places by the same or different groups selected from the group of alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 5 carbon atoms, alkylthio of 1 to 3 carbon atoms, halogen and trifluoromethyl, and

Y is oxygen or sulfur.

52. A herbicidal composition comprising about 10 to 80% by weight of at least one active agent according to claim 1, and about 90 to 20% by weight of a liquid or solid carrier material.

4,128,414

METHOD OF INTRODUCING ALUMINUM WIRE INTO STEEL MELTS AND APPARATUS FOR PRACTICING SAID METHOD

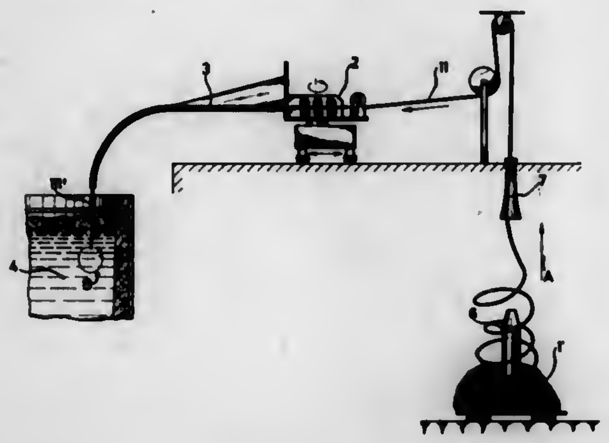
Martin Hater; Wolfgang Pluschkell, and Heinrich Wisnewski, all of Dortmund, Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Dec. 6, 1976, Ser. No. 747,438

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1975, 2554860

Int. Cl.² C21C *7/00*

U.S. Cl. 75—58 **1 Claim**



1. A method of introducing aluminium wire into a steel melt in a fully continuous operation, which includes in combination the steps of:

withdrawing the wire overhead from a stationary wire bundle at rest, and feeding the withdrawn wire into the melt while guiding the withdrawn wire with rollers engaging wire free from play prior to its introduction with synchronous movement to assure constant feeding quality for optimum treatment effect into the melt over the entire feeding period.

4,128,415

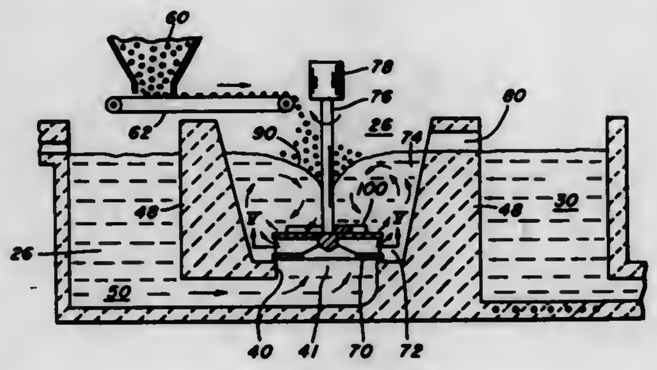
ALUMINUM SCRAP RECLAMATION

Jan H. L. van Linden, Allison Park, Pa.; Raymond J. Claxton, Dallas, Tex.; Joseph R. Herrick, Verona, and Robert J. Ormesher, Allegheny Township, Westmoreland County, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 9, 1977, Ser. No. 859,060

Int. Cl.² C22B *21/06*

U.S. Cl. 75—65 R **8 Claims**



1. An improved method of melting metal scrap in a molten melting media comprising:

(a) providing a body of molten melting media in a housing for purposes of melting metal scrap therein, the housing being generally circular in cross section and having upper and lower portions;

(b) introducing a supply of scrap metal to the melting media contained in the upper portion of said housing;

(c) adding a supply of molten melting media to said body through a volute located in the lower portion of said housing, said adding being accomplished by action of an impeller mounted on a drive shaft extending through the upper portion of the housing, and rotating in the lower portion of the housing, the impeller having a substantially circular disc having blades extending substantially downwardly therefrom to a flat ring member having a circular shaped opening in the center thereof, the opening adapted to permit molten melting media to enter the impeller axially, the disc, blades and ring member cooperating to discharge the molten melting media therefrom radially at a relatively high velocity;

(d) controlling the motion of the body of molten melting media and the metal scrap in the upper portion of the housing by action of vanes mounted on said shaft to create a vortex in said body for mixing said scrap in said melting media; and

(e) removing melted scrap and molten melting media at a rate substantially commensurate with their rate of introduction to the housing, the melted scrap and molten melting media removed through an opening located in the upper portion of the housing.

4,128,416

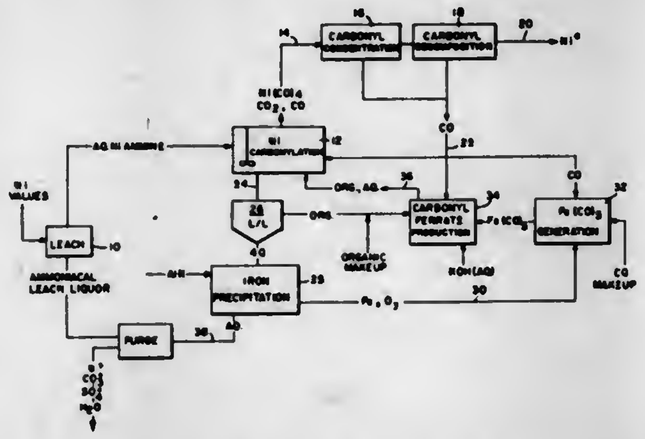
NICKEL RECOVERY EMPLOYING CARBONYL FERRATES

Alkis S. Rappas, Bedford, and J. Paul Pemsler, Lexington, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Jan. 9, 1978, Ser. No. 868,054

Int. Cl.² C22B *23/04*

U.S. Cl. 75—119 **12 Claims**



1. A process for recovering nickel from an ammoniacal nickel solution comprising the steps of:

contacting the nickel solution with carbonyl ferrate ions in a carbon monoxide rich environment to produce a nickel carbonyl;

collecting the nickel carbonyl by separating a gas phase from said solution; and

decomposing the nickel carbonyl to produce nickel metal and carbon monoxide.

4,128,417

PROCEDURE FOR THE PREPARATION OF REFINED MATERIALS CONTAINING SiC AND/OR FeSi

Bernhard Lang, Wortelstrasse 2, D-7554 Kuppenheim, Fed. Rep. of Germany

Filed Aug. 19, 1977, Ser. No. 826,269

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1976, 2638117

Int. Cl.² C22C *1/00;* C22B *1/08*

U.S. Cl. 75—129 **11 Claims**

1. A method for the preparation of fine grain metallurgically adjustable silicon bearers containing a material selected from the group consisting of SiC, FeSi, and mixtures thereof having a grain size under 0.2mm, said method comprising the steps of compressing, under a pressure greater than 300 bp/cm², a thin, moist mix, a fraction of said mix comprising 30–80% SiC or FeSi-containing materials or mixtures thereof, with 10–15% hudraulic binding agent, the remaining silicon-containing fractions having a grain size larger than 0.2mm and hardening the compressed mix in a saturated steam atmosphere above 10 bp/cm² at a temperature above 100° C.

4,128,418

ENHANCED GRAIN GROWTH IN ARSENIC MODIFIED COPPER-ZINC BRASSES

John M. Vitek, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Jul. 11, 1977, Ser. No. 814,195

Int. Cl.² C22C *9/04*

U.S. Cl. 75—157.5 **3 Claims**

1. A brass alloy having deep drawing properties and exhibiting enhanced grain growth consisting of from about 8.0 to about 34.0 weight percent zinc, from about 0.4 to about 0.8 weight percent arsenic and the remainder copper, said alloy exhibiting a grain size of at least about 50 microns after cold rolling at least 57% and annealing at a temperature of 525° C. for 1 hour.

4,128,419

NICKEL-BASE ALLOY

Kuzma I. Terekhov, Maly Pionersky pereulok, 5 kv. 44; Alexei T. Tumanov, Gruzinskaya ulitsa, 36, kv. 58; Alexandra P. Ozerova, Yartsevskaya ulitsa, 32/30, kv. 22, all of Moscow; Valentin V. Topilin, ulitsa Mira, 6, kv. 29, Elektrostal; Mikhail Y. Dzugutov, ulitsa Mira, 4, kv. 37, Elektrostal; Mara A. Ljubinskaya, ulitsa Mira, 4, kv. 60, Elektrostal; Gennady A. Pashchnik, ulitsa Sovetskaya, 9, kv. 22, Elektrostal; Alexandr S. Nikishov, ploschad Vosstaniya, 1, kv. 410, Moscow, and Terenty I. Ustinov, ulitsa S. Lazo, 15, kv. 21, Kuibyshev, all of U.S.S.R.

Continuation of Ser. No. 341,176, Mar. 14, 1973, abandoned.

This application Jun. 14, 1977, Ser. No. 806,505

Int. Cl.² C22C *19/05*

U.S. Cl. 75—171 **2 Claims**

1. A nickel-base alloy consisting essentially of in wt.%: 13–15 of chromium, 2.8–3.5 of molybdenum, 1.4–1.9 of aluminum, 2.3–3.0 of titanium. 1.8–2.4 niobium, 0.001–0.05 of boron, 0.001–0.005 of cerium, 0.001–0.01 of lanthanum, 0.001–0.1 of magnesium, no more than 0.08 of carbon, 0.5–2.0 of iron, the rest being nickel.

4,128,420

HIGH-STRENGTH IRON-MOLYBDENUM-NICKEL-PHOSPHORUS CONTAINING SINTERED ALLOY

Friedrich J. Esper, Leonberg, and Robert Zeller, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 17, 1977, Ser. No. 778,679

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1976, 2613255

Int. Cl.² C22C *33/02, 38/08, 38/12*

U.S. Cl. 75—230 **4 Claims**

1. A high strength sintered alloy consisting essentially of between about (i) 2% and 4.5% by weight molybdenum, (ii) more than 2.5% and less than 3.5% nickel, (iii) more than 0.3% and less than 0.6% phosphorus, and the balance iron, and having a tensile strength $\sigma_B \geqq 600$ N/mm²; ratio of yield to tensile strength $\sigma_S/\sigma_B \geqq 0.65$; elongation at rupture $\delta \geqq 7\%$; and toughness $a_b \geqq 50$ Joule/cm².

4,128,421

TANTALUM POWDER FOR PRODUCING AN EMBRITTLEMENT-RESISTANT WIRE

Harold G. Marsh, 1417 Bull Creek Dr., Libertyville, Ill., 60048 and James A. Pierret, 4408 Girard Ave., Muskogee, Okla. 74401

Division of Ser. No. 345,956, Mar. 29, 1973, Pat. No. 4,062,679.

This application Oct. 17, 1977, Ser. No. 842,587

Int. Cl.² B22F *1/00*

U.S. Cl. 75—251 **2 Claims**

1. A powder composition suitable for the preparation of an embrittlement-resistant tantalum wrought product composed of substantially pure tantalum containing less than 300 parts per million of columbium, less than 50 parts per million of tungsten, less than 10 parts per million of molybdenum, less than 30 parts per million of chromium, less than 20 parts per million of calcium, and less than 200 parts per million of iron, chromium and nickel combined, said powder composition containing from about 100 to about 2000 parts per million of silicon on an overall basis and comprising individual particles substantially free of silicon and other individual particles containing from about 1% to about 5% of silicon by weight.

4,128,422

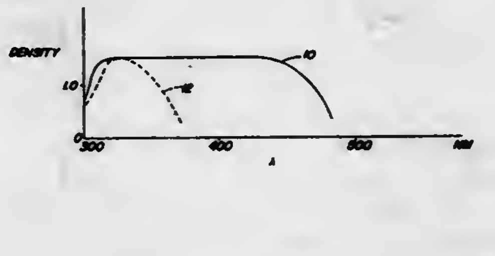
CYCLOPROPENONE VESICULAR IMAGING COMPOSITION, ELEMENT AND PROCESS

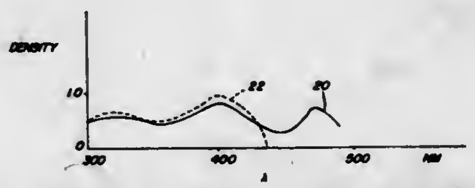
George L. Fletcher, Pittsford; Donald H. Wadsworth, and Jean E. Jones, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 8, 1976, Ser. No. 739,774

Int. Cl.² G03C *5/24, 1/68, 1/00*

U.S. Cl. 96—48 HD **15 Claims**





1. In a vesicular imaging composition comprising: (I) a polymeric binder having sufficient gas impermeability as to provide a latent image stability period for CO that is substantially greater than about one minute when ascertained for an element having a dried binder thickness of between about 10 and about 15 microns; and (II) admixed with said binder, a radiation-decomposable vesiculating agent capable of generating a gas upon imagewise exposure;

the improvement wherein the vesiculating agent is a cyclopropenone having a λ_{max} in ethanol no greater than about 400 nm in the spectral range of about 250 to about 650 nm.

4,128,423

DIAZOTYPE MATERIAL THAT CAN BE DEVELOPED BY APPLYING A SMALL AMOUNT OF DEVELOPING LIQUID, AND DEVELOPMENT THEREOF

Gerardus J. Vosbeek, Velden, Netherlands, assignor to Océ-Nederland B.V., Venlo, Netherlands

Continuation of Ser. No. 575,785, May 8, 1975, abandoned. This application Apr. 14, 1977, Ser. No. 787,615

Claims priority, application Netherlands, May 29, 1974, 7407161

Int. Cl.² G03C *5/34, 1/60*

U.S. Cl. 96—49 **14 Claims**

1. Diazotype material consisting essentially of a paper support each side of which is coated with a substantially water-impermeable sealing layer containing a hydrophobic polymeric, film-forming substance and one side of which has a light-sensitive layer coated onto its sealing layer, characterized in that the sealing layer on at least said one side is a substantially water-impermeable layer having a dry weight of 2 to 10 g/m^2 and consisting essentially of film-forming binder selected from the group consisting of polyvinyl acetate and a copolymer of styrene with butadiene, with or without finely divided filler in an amount not exceeding 1 part by weight of filler per part of binder, and said light-sensitive layer has a dry weight of at most 8 g per square meter and consists essentially of, in admixture, a light-sensitive diazonium compound, a polyvinyl alcohol having a degree of hydrolysis over 75% and starch particles, the weight ratio of polyvinyl alcohol to starch particles being 1:5–20, said light-sensitive layer after imagewise exposure to light being capable of absorbing substantially completely and being developable into a strong image by between 1:5 and $4.5 cm^3/m^2$ of an aqueous solution of an azo coupling component reactive to said diazonium compound, said light-sensitive layer being adherent to the underlying sealing layer, and said material being substantially non-curling, in either dry or moist condition.

12. Process for making photocopies, in which a diazotype material is imagewise exposed and then developed by spreading over its light-sensitive side 1.5 to 4.5 cm^3 per square meter of an aqueous solution of an azo coupling component, characterized in that the diazotype material consists essentially of a paper support each side of which is coated with a substantially water-impermeable sealing layer having a dry weight of 2 to 10 g/m^2 and consisting essentially of a film-forming binder selected from the group consisting of polyvinyl acetate and a copolymer of styrene with butadiene, with or without finely divided filler in an amount not exceeding 1 part by weight of filler per part of film-forming binder, and coated upon the sealing layer at one side of said support a light-sensitive layer having a dry weight of at most 8 g per square meter and consists essentially of, in admixture, a light-sensitive diazonium compound, polyvinyl alcohol having a degree of hydrolysis of at least 75% and starch particles, the weight ratio polyvinyl alcohol to starch particles being 1:5–20, and as said solution is being spread absorbing it substantially completely in said light-sensitive layer and thus forming the latter into a strong image, said light-sensitive layer being firmly adherent to the underlying sealing layer, and said material being substantially non-curling, in either dry or moist condition.

4,128,424

METHOD FOR TREATING PHOTOGRAPHIC PROCESSING FLUIDS PRIOR TO SEWERING THEREOF

Erwin Geyken, and Peter Dawidowitsch, both of Munich, Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Division of Ser. No. 530,049, Dec. 5, 1974, Pat. No. 4,081,816. This application Sep. 22, 1977, Ser. No. 835,526

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1973, 2361151

Int. Cl.² G03D *3/02;* **G03C** *5/24;* **C02B** *1/18*

U.S. Cl. 96—63 **9 Claims**

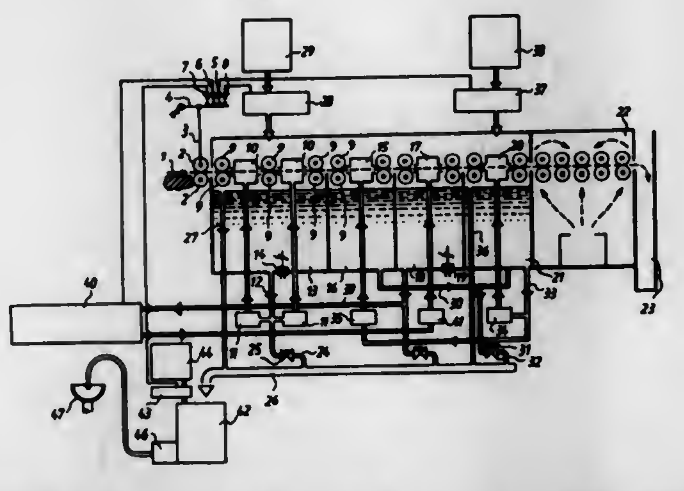
1. A method of sewering the waste fluids produced by a photographic developing apparatus, the apparatus being of the type in which film to be developed is transported through a developing station where it is contacted by developer fluid and then through a fixing station where it is contacted by fixer fluid, the method comprising the steps of

continually withdrawing spent fixer fluid from the fixing station along a predetermined path and passing the continually withdrawn fixer fluid through a fixer-fluid treating means;

continually withdrawing spent developer fluid from the developing station along a predetermined path and sewering the continually withdrawn spent developer fluid;

chemically neutralizing the continually withdrawn spent developer fluid subsequent to its withdrawal from the developing station and prior to its sewering, the chemical neutralizing comprising keeping the continually withdrawn spent developer fluid separate from and unmixed with the continually withdrawn fixer fluid and, with the continually withdrawn spent developer fluid separate from the continually withdrawn fixer fluid, continually adding to the withdrawn spent developer fluid a chemical oxidizing agent; and

subjecting the film transported from the developing station to the fixing station to an intermediate washing to thoroughly remove from the film any developer fluid clinging thereto, whereby to prevent developer fluid from reaching the fixing station and from there finding its way into the fixer-fluid treating means.



4,128,425

PHOTOGRAPHIC DEVELOPERS

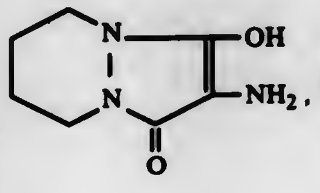
Richard B. Greenwald, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

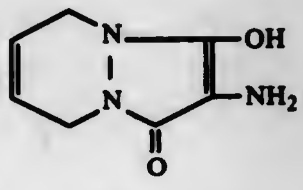
Filed May 6, 1977, Ser. No. 794,480

Int. Cl.² G03C *5/30, 1/06, 5/54*

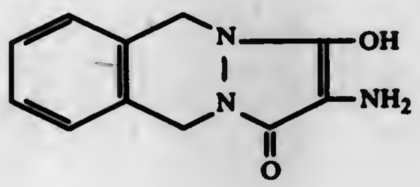
U.S. Cl. 96—66 HD **12 Claims**

1. A photographic developer composition comprising an aqueous alkaline solution containing at least one silver halide developing agent selected from the group consisting of





and



and salts thereof.

4,128,426

PROCESS FOR SUBBING PHOTOGRAPHIC HYDROPHOBIC FILMS

Hideyasu Ohta; Takahiro Uozumi; Masaru Kanbe; Naoto Abe; Jun Shirasaki, and Masayoshi Mayama, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1977, Ser. No. 772,082

Claims priority, application Japan, Mar. 1, 1976, 51-21986

Int. Cl.² B05D *3/06*

U.S. Cl. 96—87 R **12 Claims**

1. A process for subbing a photographic hydrophobic film which comprises subjecting at least one surface of the film to pretreatment to make the surface hydrophilic, coating the pretreated surface with an aqueous disperson containing a copolymer comprising, as main comonomers and in a combined amount of more than 76% by weight, (1) 20 to 90 weight % of glycidyl methacrylate and/or glycidyl acrylate and (2) 10 to 60 weight % of at least one comonomer represented by the formula:

wherein R_1 is hydrogen or lower alkyl and R_2 is an aliphatic hydrocarbon residue of 1 to 9 carbon atoms, provided that a polymer comprising 20 to 60 weight % of glycidyl methacrylate and 25 to 60 weight % of ethyl acrylate in a combined amount of more than 76 weight % is excluded to form a coated surface and coating said coated surface with a colloidal silica to form a second sub layer

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4,128,427

SILVER HALIDE EMULSIONS CONTAINING POLYMERIC COLOR COUPLERS

Marcel J. Monbaliu, Mortsel, and Raphaël K. Van Poucke, Berchem, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Jun. 6, 1977, Ser. No. 803,600

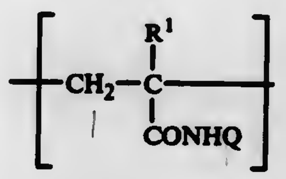
Claims priority, application United Kingdom, Jun. 15, 1976, 24779/76

Int. Cl.² G03C *1/40*

U.S. Cl. 96—100 R **7 Claims**

1. A photographic material comprising at least one silver halide emulsion layer and a latex of polymeric colour coupler wherein the polymeric colour coupler comprises:

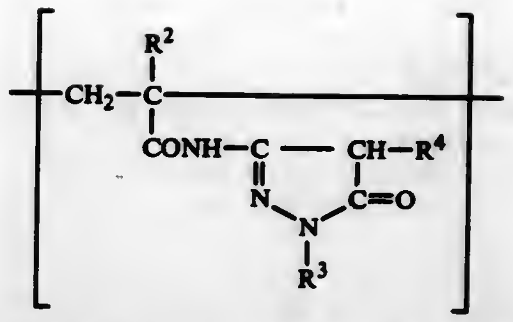
(a) from 10 to 60% by weight of colour coupler recurring units corresponding to the following structural formula I



$$\left[-CH_2-\overset{R^1}{\underset{CONHQ}{\overset{|}{\underset{|}{C}}}}- \right] \qquad I$$

wherein R^1 is hydrogen, an alkyl group or chlorine and Q is a colour coupler residue capable of coupling with an oxidized aromatic primary amine colour developing agent to form a dye, and

(b) from 5 to 50% by weight of competing coupler recurring units forming upon oxidative coupling with an oxidized aromatic primary amine colour developing agent a colourless compound and corresponding to the following structural formula II



II

wherein R^2 is hydrogen, an alkyl group or chlorine, R^3 represents a well known substituent in the 1-position of a 2-pyrazolin-5-one competing coupler and R^4 represents a C_1–C_5 alkyl group, and

(c) at least 5% by weight of one or more copolymerised ethylenically unsaturated monomer units that are not capable of oxidative coupling with the aromatic primary amino developing compounds,

the weight ratio of the colour coupler recurring units I to the competing coupler units II being between 10:1 and 1:2.

4,128,428

HEAT DEVELOPABLE LIGHT-SENSITIVE MATERIAL

Shinpei Ikenoue; Takao Masuda; Nobuo Suzuki; Toshiharu Tanaka, and Kenji Sashihara, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 567,026, Apr. 10, 1975, abandoned. This application Jan. 19, 1977, Ser. No. 760,792

Claims priority, application Japan, Apr. 10, 1974, 49-40700

Int. Cl.² G03C *1/02, 1/52, 1/66*

U.S. Cl. 96—114.1 **23 Claims**

1. A heat developable light-sensitive material comprising a support having thereon at least one layer and containing as essential components (a) an organic silver salt, (b) 0.001 mol to 0.5 mol per mol of organic silver salt of at least one N-halo compound capable of forming a light-sensitive silver halide by reaction with said organic silver salt and (c) a reducing agent, and with at least one layer containing (d) an iron family compound which prevents thermal fog selected from the group consisting of iron (II) nitrate, iron (III) nitrate, iron (II) acetate, iron (III) acetate, iron (II) formate, iron (III) formate, iron (II) sulfate, iron (III) sulfate, iron (II) perchlorate, iron (III) perchlorate, cobalt (II) nitrate, cobalt (III) nitrate, cobalt (II) acetate, cobalt (III) acetate, cobalt (II) formate, cobalt (III) formate, cobalt (II) sulfate, cobalt (III) sulfate, cobalt (II) perchlorate, cobalt (III) perchlorate, nickel (II) nitrate, nickel (II) acetate, nickel (II) formate, nickel (II) perchlorate and mixtures thereof or a complex compound of iron, cobalt or nickel said iron family compound being present in an amount of about 10^{-5} mole to 10^{-1} mole per mole of the organic silver salt (a).

21. In a process of producing the heat-developable light-sensitive material which comprises (1) reacting (a) an organic silver salt and (b) 0.001 mol to 0.5 mol per mol of organic silver salt of at least one N-halo compound (2) adding (c) a reducing agent to the reaction product of step (1), and (3) coating said mixture on a support, the improvement comprising adding (d) an iron family compound to said organic silver salt before or during said reaction (1), wherein said iron family compound prevents thermal fog and is selected from the group consisting of iron (II) nitrate, iron (III) nitrate, iron (II) acetate, iron (III) acetate, iron (II) formate, iron (III) formate, iron (II) sulfate, iron (III) sulfate, iron (II) perchlorate, iron (III) perchlorate, cobalt (II) nitrate, cobalt (III) nitrate, cobalt (II) acetate, cobalt (III) acetate, cobalt (II) formate, cobalt (III) formate, cobalt (II) sulfate, cobalt (III) sulfate, cobalt (II) perchlorate, cobalt (III) perchlorate, nickel (II) nitrate, nickel (II) acetate, nickel (II) formate, nickel (II) perchlorate and mixtures thereof or a complex compound of iron, cobalt or nickel said iron family compound being present in an amount of about 10^{-5} mole to 10^{-1} mole per mole of the organic silver salt (a).

4,128,429

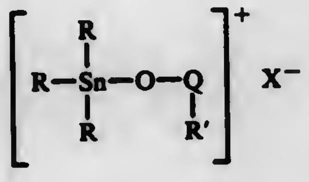
ANTIFOULING QUATERNARY HALIDE SALTS CONTAINING A TRIORGANOTIN ETHER MOIETY

Robert E. Wyant, and Henry M. Grotta, both of Delaware, Ohio, assignors to Sankyo Organic Chemicals Company Limited, Kawasaki, Japan

Filed Jan. 6, 1977, Ser. No. 757,240
Int. Cl.² C09D *5/14*

U.S. Cl. 106—15 R **8 Claims**

1. A quaternary salt of an aryl halide or a C_8–C_{24} aliphatic hydrocarbon halide and a tertiary amine containing a triorganostannyl ether moiety whose etheral oxygen atom links a triorganotin radical to a carbon atom at least two carbon atoms removed from a tertiary amino nitrogen atom of the tertiary amine, and which quaternary salt is of the formula



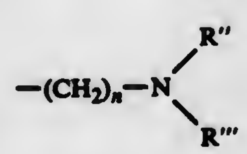
$$\left[\begin{array}{c} \quad R \\ R-\overset{|}{\underset{|}{Sn}}-O-\underset{\underset{R'}{|}}{Q} \\ \quad R \end{array}\right]^{+} X^{-}$$

wherein

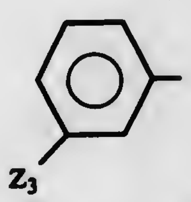
X is Cl, Br, or I, each R is an alkyl radical of up to 12 carbon atoms with the sum total of the carbon atoms in the three not exceeding 24, with no more than one of the three containing more than 4 carbon atoms, and with each of the three not necessarily the same R,

R′ is an aryl hydrocarbon radical, or a C_8–C_{24} alkyl radical, and

Q is a quaternized moiety of a tertiary amine moiety selected from the group consisting of an aliphatic tertiary amine moiety of the structure



wherein n is a whole integer of from 2 to 5, and a methyl radical may replace a -H for up to and including two of the -H in the $-(CH_2)_n-$ chain, and R″ and R‴ are C_1–C_{10} alkyl radicals which are not necessarily the same, and a tertiary amine structural moiety including an aromatic ring of the structure



wherein Z is the same or different and at least one Z is $-NR_2$ or $-(CH_2)_nNR_2$ and any remaining Z is H, with R an alkyl radical having from 1 to 4 carbon atoms, and n is a whole number integer of from 1 to 5.

7. A coating composition for an article to be used in water to inhibit marine fouling thereof which comprises a resinous polymer and an amount effective to prevent fouling of a quaternary salt of an aryl halide or a C_8 to C_{24} aliphatic hydrocarbon halide and a tertiary amine containing a triorganostannyl ether moiety whose ethereal oxygen atoms links a triorganotin radical to a carbon atom at least two carbon atoms removed from a tertiary amino nitrogen atom of the tertiary amine, said quaternary salt having the formula recited in claim 1.

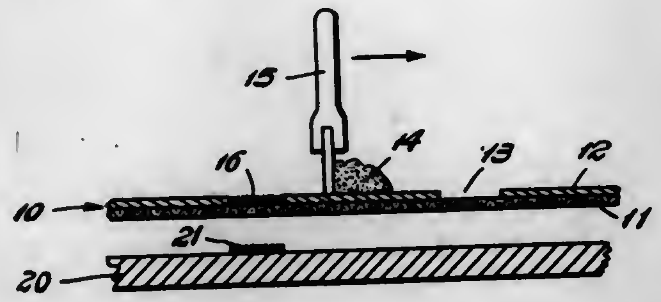
4,128,430

MASTER SHEETS AND PROCESS FOR PRINTING SAME

Douglas A. Newman, Glen Cove, and Robert T. Emerson, Manhasset, both of N.Y., assignors to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Filed Nov. 13, 1975, Ser. No. 631,512
Int. Cl.² C09D *11/06, 11/12*

U.S. Cl. 106—31 **3 Claims**



1. A semi-solid printing ink composition comprising a solidifiable, oil-resistant binder material from the group consisting of wax, resin and mixtures thereof, at least one non-volatile liquid material which is substantially incompatible with said binder material and which comprises at least one acrylic resin-forming material which is stable at ordinary room temperatures but which is capable of undergoing polymerization when exposed to activating conditions, a quantity of coloring matter which is soluble in said liquid material, and a sufficient amount of a volatile liquid having a boiling point within the range of from about 200° F. to about 460° F. to render said composition substantially non-flowable at ordinary room temperatures in the absence of applied force said ink composition being printable in image form onto a master sheet and solidifiable by evaporation of said volatile liquid, without causing said resin-forming material to polymerize, to form images having a skeletal microporous structure of said binder material bonded to said master sheet and containing within the pores thereof said non-volatile liquid comprising said resin-forming material and dissolved coloring matter as a flowable ink which is pressure-exudable from said images to form a multiplicity of duplicate images which can be exposed to activating conditions to polymerize said resin-forming material and render said duplicate images resistant to removal.

4,128,431

COMPOSITION FOR MAKING AN INVESTMENT MOLD FOR CASTING AND SOLIDIFICATION OF SUPERALLOYS THEREIN

Paul S. Svec, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 590,970, Jun. 27, 1975, Pat. No. 4,024,300. This application Sep. 8, 1976, Ser. No. 721,536
Int. Cl.² B28B *7/34*

U.S. Cl. 106—38.35 **4 Claims**

1. In a primary slurry mixture having a specific gravity of from about 2.36 to about 2.42 and a viscosity of from about 7 to about 10 as measured with a No. 5 Zahn cup for making an investment mold comprising

water, a wetting agent, a refractory material in amounts of from about 65% to about 73% and;

a binder material comprising an aqueous based colloidal silica solution having a silica content of from 15 percent to 36 percent;

the improvement comprising, as said refractory material, a mixture of three different grain sizes of fused alumina having grain sizes within the range of about 240 to about 400 mesh, U.S. Sieve Series; said mixture comprising 70 to 75% by weight of largest grain size, 10 to 20% by weight of medium grain size and the balance of smallest grain size.

4,128,432

OPTICAL GLASS

Fujio Komorita, Hachioji, and Muneo Nakahara, Sagamihara, both of Japan, assignors to Kabushiki Kaisha Ohara Kogaku Garasu Seizosho, Sagamihara, Japan

Filed May 8, 1978, Ser. No. 903,412
Claims priority, application Japan, May 19, 1977, 52-57047
Int. Cl.² C03C *3/10, 3/00*

U.S. Cl. 106—53 **1 Claim**

1. An optical glass consisting of a composition in weight percent of 3 to 30% B_2O_3, 0 to 19.5% SiO_2, the sum of said B_2O_3 and SiO_2 being 18 to 30%, 9 to 32% La_2O_3, 1 to 8% ZrO_2, 4 to 25% Nb_2O_5, 2 to 50% PbO, 0 to 30% BaO, 0 to 9.5% ZnO, the sum of said BaO and ZnO being 1 to 33%, 0 to 3% Li_2O, 0 to 3% Na_2O, 0 to 3% K_2O, 0 to 8% MgO, 0 to 10% CaO, 0 to 20% SrO, 0 to 5% Al_2O_3, 0 to 0.5% As_2O_3, 0 to 0.5% Sb_2O_3, 0 to 5% Bi_2O_3, 0 to 13% TiO_2, 0 to 5% GeO_2 and 0 to 10% Ta_2O_5.

4,128,433

DENSE AND IMPERVIOUS STABILIZED HAFNIUM OXIDE CERAMIC

William R. Manning, Richmond, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio

Continuation-in-part of Ser. No. 782,010, Mar. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 698,414, Jun. 21, 1976, abandoned. This application May 15, 1978, Ser. No. 906,063
Int. Cl.² C04B *35/00, 35/50*

U.S. Cl. 106—55 **1 Claim**

1. A method for producing a gas impervious ceramic article, said method consisting essentially of producing an intimate dry mixture consisting essentially, on an oxide basis, of hafnia, yttria and at least one oxide selected from the group consisting of silica, alumina, calcia, magnesia, baria and strontia, yttria constituting substantially 8 to 12 mole percent of said article based upon the total number of moles of hafnia and yttria, and silica, alumina, calcia, magnesia, baria and strontia constituting from ½ percent to 4 percent, based upon the weight of hafnia and yttria, with the proviso that calcia, magnesia, baria and strontia constitute not more than 70 percent by weight of the total of silica, alumina, calcia, magnesia, baria and strontia, pressing the dry mixture into a predetermined shape, and sintering the shape to a gas impervious condition at a temperature from 2700° F. to 3000° F.

4,128,434

HIGH DENSITY ASBESTOS-FREE TOBERMORITE THERMAL INSULATION CONTAINING WOLLASTONITE

Walter G. Pusch, Westford, Mass., assignor to Johns-Manville Corporation, Denver, Colo.

Division of Ser. No. 717,807, Sep. 17, 1976, abandoned. This application Jun. 23, 1977, Ser. No. 809,505
Int. Cl.² C04B *1/00*

U.S. Cl. 106—120 **10 Claims**

1. A high density asbestos-free thermal insulation body formed by slurrying a mixture consisting essentially of, in parts by weight: 15 to 40 parts lime, 20 to 40 parts by weight of a siliceous component, and 15 to 40 parts by weight wollastonite, said mixture containing no asbestos fiber, in at least one part by weight water per part by weight of dry solids in said mixture; molding the slurry to a shape-retaining body having a density of at least 20 pcf; and thereafter curing said molded body in an atmosphere of steam at elevated pressure for a sufficient time to cause the lime, siliceous component, and water to form a calcium silicate hydrate matrix consisting essentially of tobermorite crystalline phase and reinforced by said wollastonite.

4,128,435

LUSTROUS PIGMENTS FOR PIGMENTING CASEIN PLASTICS

Wilhelm Bäumer; Horst Bernhard; Reiner Esselborn; Jörg Ohngemach; Otto Stahlecker, and Fritz Zareda, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Germany

Filed Jun. 24, 1977, Ser. No. 809,811
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1976, 2628353
Int. Cl.² C09J *3/24*

U.S. Cl. 106—148 **7 Claims**

1. A pigmented casein plastic molding composition for molding by compression and heating into articles of manufacture substantially free from cracks and pores visible at 1 : 100 magnification, wherein the pigment is a minor luster-imparting quantity of lustrous pigments of coated mica platelets, wherein at least 75% of the pigment particles possess an average main diameter of below 10 μm. and not lower than about 2μm., a thickness of about 0.1 to 0.7μm. and a ratio of diameter to thickness of about 10 to 1 to 200 to 1.

4,128,436

RHEOLOGICAL AGENTS

Kevin J. O'Hara, Maidstone, England, and Howard J. Kilvington, Rhiwbina, Wales, assignors to Coats Brothers & Company Ltd., London, England

Continuation of Ser. No. 572,865, Apr. 29, 1975, abandoned. This application Dec. 30, 1976, Ser. No. 755,743
Claims priority, application United Kingdom, May 29, 1974, 23700/74
Int. Cl.² C08L *91/00*; C09D *11/06*

U.S. Cl. 106—243 **18 Claims**

1. A rheological control agent comprising a particulate blend of hydrogenated castor oil and an oligomeric polyamide derived from hdroxystearic acid, at least one saturated aliphatic α -omega diprimary diamine containing 2, 4, 6, 8 or 10 carbon atoms and at least one saturated aliphatic α -omega dicarboxylic acid containing from 2 to 12 carbon atoms and/or hydrogenated dimer acid, said oligomeric polyamide being derived from the reaction of said hydroxystearic acid, dicarboxylic acid and a diamine in such proportions that for each mole of hydroxystearic acid there are present 0.05 - 0.5 moles of dicarboxylic acid and a quantity of diamine sufficient to provide of from 0.8 to 1.15 amine groups for each carboxyl group in the acid mixture where in the weight ratio of hydrogenated castor oil to oligomeric amide is from 9:1 to 1:9.

4,128,437

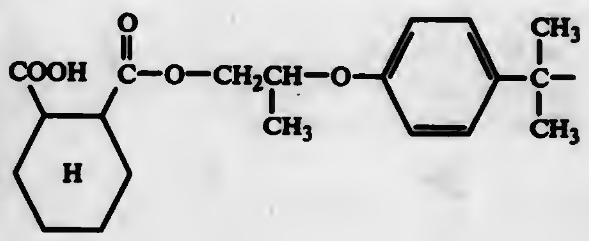
TRANSPARENTIZING AGENT FOR PAPER

Shigeru Ura, Toyonaka; Norio Kondo, Minoo; Yoshiya Fukuyama, Hirakata, and Makoto Nakahara, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 527,382, Nov. 26, 1974, abandoned. This application May 28, 1976, Ser. No. 691,065
Claims priority, application Japan, Nov. 26, 1973, 48/133177; Aug. 1, 1974, 49/88713
Int. Cl.² C09K *3/00*

U.S. Cl. 106—287.24 **3 Claims**

1. A transparentizing composition for paper comprising at least member selected from the group consisting of a compound of the formula:



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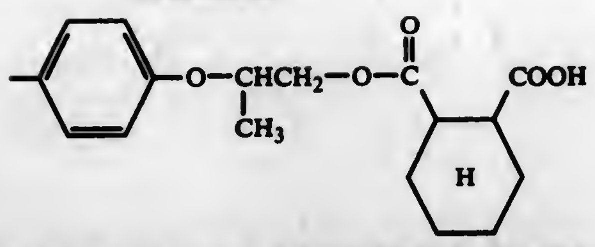


and the alkali metal, ammonium and lower alkyl amine salts thereof; and a solvent selected from the group consisting of water and organic solvents.

4,128,438

GRANULATE FORM ORGANOSILANE PREPARATION

Siegfried Wolff, Bornheim-Merten, and Lothar Rothbuhr, Hurth-Hermulheim, both of Germany, assignors to Deutsche Gold- und Silber- Scheideanstalt vormals Roessler, Frankfurt, Germany

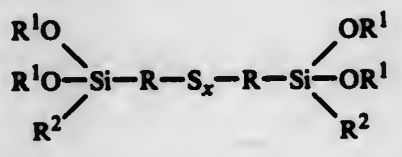
Filed Jan. 31, 1978, Ser. No. 873,967

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1977, 2747277

Int. Cl.² C08J *3/12;* **C08K** *3/04, 3/34;* **C09C** *1/58*

U.S. Cl. 106—307 **11 Claims**

1. A granulate organosilane composition consisting of (a) 30 to 60 weight percent of an organosilane of the formula



$$(R^1O)_2R^2Si-R-S_x-R-SiR^2(OR^1)_2$$

where R^1 is an alkyl group with 1 to 3 carbon atoms, R^2 is an alkyl or alkoxy group with 1 to 3 carbon atoms, R is an alkylene group with 1 to 5 carbon atoms and x has a value from 2.0 to 6.0, and (b) 70 to 40 weight percent of carbon black.

4,128,439

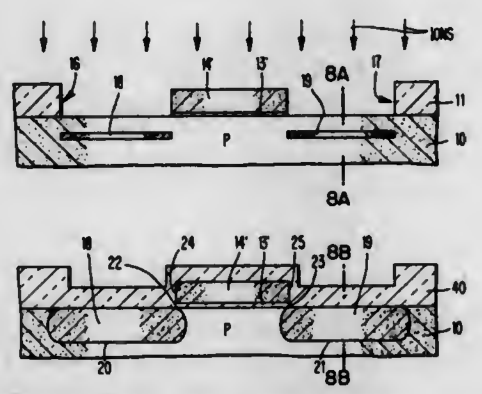
METHOD FOR FORMING SELF-ALIGNED FIELD EFFECT DEVICE BY ION IMPLANTATION AND OUTDIFFUSION

Chakrapani G. Jambotkar, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 1, 1977, Ser. No. 820,991

Int. Cl.² H01L *21/265*

U.S. Cl. 148—1.5 **12 Claims**



4. A method for making a field effect transistor comprising:

forming a layer of an ion beam masking material on the surface of a semiconductor body of one-type conductivity having at least two adjacent apertures with at least the portion of said masking layer between said apertures and in contact with said surface being an electrically insulative material,

directing a beam of ions of opposite-type conductivity at said masked body at energy and dosage levels sufficient to form two buried regions of opposite-type conductivity fully enclosed within said one-type conductivity body respectively beneath said two apertures, and

heating to diffuse said two buried regions upward until the upward diffusion of said buried regions respectively extend to said surface beneath said two apertures while the downward diffusion front remains spaced from the lower surface of the said semiconductor body,

said masking material having a melting point above the temperature of said diffusion step.

4,128,440

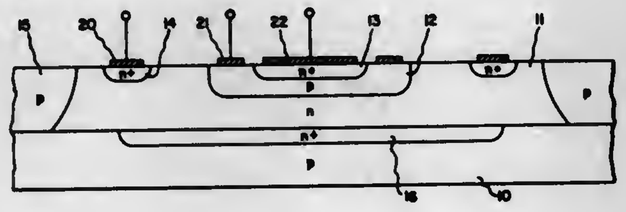
LIQUID PHASE EPITAXIAL METHOD OF COVERING BURIED REGIONS FOR DEVICES

Bantval J. Baliga, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 24, 1978, Ser. No. 899,118

Int. Cl.² H01L *21/208*

U.S. Cl. 148—171 **17 Claims**



1. The method of forming a buried region in a monocrystalline silicon wafer, said buried region being of predetermined conductivity type, comprising the steps of:

forming a region of said predetermined conductivity type within said monocrystalline silicon wafer; and

depositing silicon from a melt of conductivity type determining impurities supersaturated with silicon, epitaxially atop said wafer and said region of predetermined conductivity type to form a silicon layer thereon of conductivity type determined by said impurities in said melt.

4,128,441

SOLUBILITY OF NPGA IN A POLYURETHANE BINDER

Marjorie T. Cucksee, Huntsville, and Henry C. Allen, Decatur, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 1, 1977, Ser. No. 856,437

Int. Cl.² C06B *45/10*

U.S. Cl. 149—19.92 **1 Claim**

1. In a mixing process for a polyurethane propellant composition that is curable to a solid propellant grain wherein the binder ingredients consisting of poly(neopentylglycol)azelate, poly(1,2 butyleneoxide)glycol, polymeric 1,2 propylene oxide adduct of trimethylolpropane, isodecylpelargonate, and N,N bis(2 cyanoethyl)2,3 dihydroxypropylamine are combined in a propellant submix and wherein the solids ingredients comprising oxidizer, fuel, curing catalysts, and additives are added to and mixed thoroughly with said propellant submix and with subsequent addition and mixing of a curing agent hexamethylene-diisocyanate which cures said polyurethane propellant to a solid grain, the improvement in said mixing process which enhances the solubility of said poly(neopentylglycol)azelate in said polyurethane propellant composition comprising:

(i) combining and mixing together in a propellant submix said binder ingredients consisting of poly(1,2 butyleneoxide)glycol, polymeric 1,2 propylene oxide adduct of trimethylolpropane, isodecylpelargonate, and N,N bis(2 cyanoethyl)2,3 dihydroxylpropylamine;

(ii) adding and mixing said solid ingredients with said propellant submix;

(iii) adding and mixing said curing agent hexamethylenediisocyanate with said propellant submix and said solids and allowing said hexamethylenediisocyanate to partially react with said binder ingredients;

(iv) continue said mixing of said propellant submix, said solid ingredients, and said curing agent, which comprises the propellant mix, for a predetermined period of time until a break in viscosity occurs, said break in viscosity being evident when said propellant mix changes in appearance from a dry to a fluid condition; and

(v) adding and mixing said poly(neopentylglycol)azelate with said propellant mix in which said poly(neopentylglycol)azelate exhibits enhanced solubility in said binder ingredients as evidenced by a lower end-of-mix viscosity and superior flow characteristics of the uncured polyurethane propellant composition, and as further evidenced by the improved physical properties of the cured polyurethane propellant composition, said improved physical properties including a higher stress to modulus ratio as compared with a like propellant composition in which said poly(neopentylglycol)azelate was added and mixed in said propellant submix during mixing process for polyurethane propellant composition.

4,128,442

EMULSIFIED METHANOL CONTAINING EXPLOSIVE COMPOSITION

Kenneth N. Barlow, Kempton Park, South Africa, assignor to AECI Limited, Johannesburg, South Africa

Filed Feb. 21, 1978, Ser. No. 879,493

Claims priority, application South Africa, Feb. 23, 1977, 77/1069

Int. Cl.² C06B *31/28*

U.S. Cl. 149—46 **7 Claims**

1. A non-aqueous slurry explosive composition comprising an oxidising salt component, a fuel component, methanol and a metal nitrate or perchlorate soluble in the methanol.

4,128,443

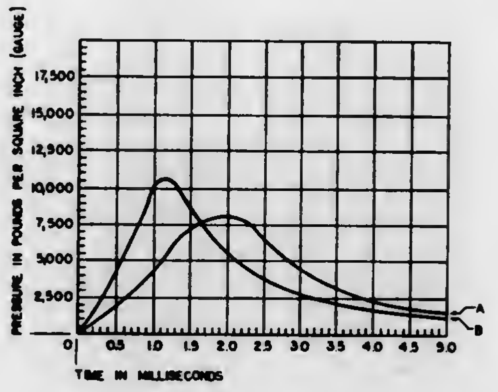
DEFLAGRATING PROPELLANT COMPOSITIONS

Daniel E. Pawlak, 5902 212th SE., Issaquah, Wash. 98027, and Michael Levenson, 2591 Queenston Rd., Cleveland Heights, Ohio 44118

Filed Jul. 24, 1975, Ser. No. 598,850

Int. Cl.² C06B *31/10, 31/06, 29/12, 29/06*

U.S. Cl. 149—71 **8 Claims**



1. In a deflagrating gas generating composition for producing controlled gas pressure which imparts high velocity to projectiles at relatively low peak pressure, the improvement which comprises employing, as the essential gas-producing elements, approximately 82.5–30 parts by weight of an oxidizing agent selected from the group consisting of ammonium, alkali metal, and alkaline earth nitrates, chlorates and perchlorates; approximately 14.5–45 parts by weight of an oxidizable derivative of an organic carboxylic acid selected from the group consisting of ammonium and alkali metal salts of aromatic carboxylic acids; and approximately 25–1.0 parts by weight of water.

4,128,444

MANUFACTURE OF PHARMACEUTICAL UNIT DOSAGE FORMS

Arthur R. Mlodozeniec, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 641,068, Dec. 15, 1975, abandoned. This application Aug. 10, 1977, Ser. No. 823,363

Int. Cl.² A61K *9/10*

U.S. Cl. 156—64 **3 Claims**

1. A method of preparing solid pharmaceutical unit dosage forms comprising loading one or more medicaments to a therapeutically inert, edible web, fabricating said web into a solid geometric form of predetermined dimensions having said medicament substantially internalized, said form being divisible into a plurality of unit dosage forms, unitizing said geometric form into said plurality of unit dosage forms and sealing said unit dosage forms to completely internalize said medicament wherein said procedures include at least one non-destructive testing operation to assure quality of said unit dosage forms, said method further including printing of appropriate indicia on said unit dosage forms, wherein said printing is carried out during said fabrication, unitizing or sealing procedures.

4,128,445

MANUFACTURE OF PHARMACEUTICAL UNIT DOSAGE FORMS

August Sturzenegger, Essex Fells; Arthur R. Mlodozeniec, Montclair, both of N.J., and Edward S. Lipinsky, Columbus, Ohio, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 640,654, Dec. 15, 1975, abandoned. This application Aug. 18, 1977, Ser. No. 825,746

Int. Cl.² A61K *9/70*

U.S. Cl. 156—64 **11 Claims**

1. A method of preparing solid pharmaceutical unit dosage forms comprising loading one or more medicaments to a therapeutically inert, edible web, fabricating a single sheet of said loaded web into a solid geometric form of predetermined shape having said medicament substantially internalized, said form being divisible into a plurality of unit dosage forms, unitizing said geometric form into said plurality of unit dosage forms and sealing said unit dosage forms to completely internalize said medicament said procedures including at least one non-destructive testing operation to assure uniform quality of said unit dosage forms.

4,128,446

METHOD FOR EMBEDDING TIRE CHAINS IN THE TREAD PORTION OF A TIRE

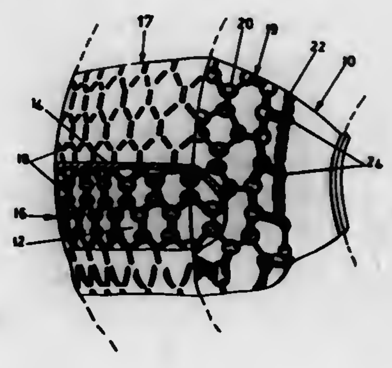
Hans O. Dohmeier, Johannesburg, South Africa, assignor to Dome Inventions (Proprietary) Limited, Johannesburg, South Africa

Filed Jan. 21, 1977, Ser. No. 761,540

Claims priority, application South Africa, Feb. 16, 1976, 76/0914

Int. Cl.² B29H *17/38*

U.S. Cl. 156—114 **6 Claims**



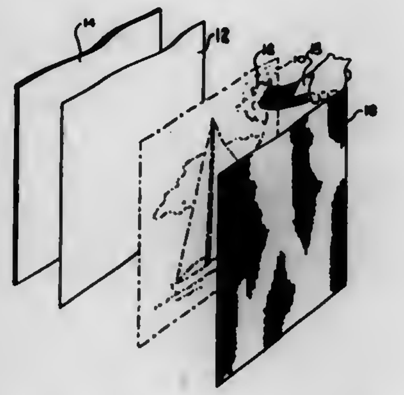
1. In a method of embedding an open network protective chain having wearing members and connectors interconnect-

ing the wearing members at least partially into the tread portion of a tire having a casing and a tread portion, including the steps of fitting the protective chain over a layer of uncured rubber forming part of the thread portion of the tire and forcing the protective chain into the uncured rubber; the improvement of mounting the tire on a hub; fitting the protective chain to the tire, the tire being uninflated and the protective chain being annular; inflating the tire until it is firm; connecting a plurality of flexible, substantially inextensible, elongate elements on each side of the tire to the protective chain at regularly spaced locations to project radially inwardly towards the axis of the tire and outwardly from the adjacent side of the tire; tensioning the elongate elements to apply a radially inwardly directed force to the protective chain thereby uniformly and simultaneously at all circumferential locations of the tire to urge the protective chain into the layer of uncured rubber; and applying radiant heat to the protective chain and the uncured rubber to soften the rubber to permit embedding of the protective chain while the elongate elements are being tensioned.

4,128,447

METHOD AND ARTICLE TREATING PICTURES

Marjorie A. Rork, 2033 Sherman Ave., Evanston, Ill. 60201
Continuation-in-part of Ser. No. 632,466, Nov. 17, 1975, abandoned. This application Jun. 24, 1977, Ser. No. 809,867
Int. Cl.² B32B *31/12, 31/22*
U.S. Cl. 156—155 **6 Claims**



1. The method of making a picture viewable in reverse from opposite sides and having picture-portraying elements directly contacting and carried on an opaque water absorbent paper base for direct viewing comprising;

(A) applying to the exposed face of the picture elements a layer of liquid sizing material that is transparent and non-water soluble when dry, drying said sizing material and adhering the picture portraying elements permanently thereto,

(B) reinforcing the sized face with a flexible fabric reinforcing material covering including applying a varnish adhesive finishing fluid coating that is non-soluble in water for adhering said fabric to said sized face and rendering the reinforcing material transparent,

(C) saturating the flexible fabric material with a permanent protective coating of varnish to provide maximum reflective transparency,

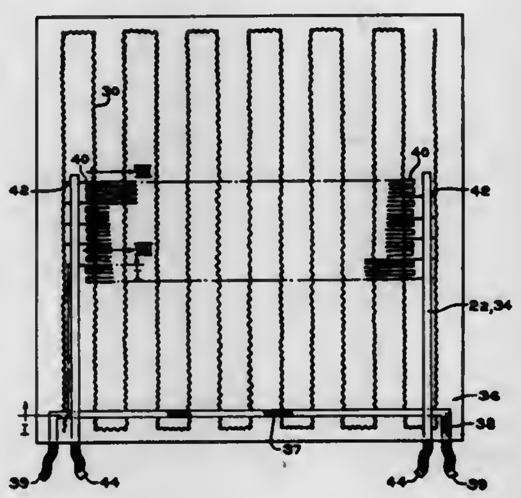
(D) soaking with water and peeling away the paper base after performing steps (A), (B) and (C) to render the picture elements transparently viewable from the other side in reverse relation, and

(E) directly coating the back of the viewable picture elements with a permanent non-water soluble transparent adhesive.

4,128,448

METHOD OF PREPARING LIGHTWEIGHT WINDOW ANTI-STATIC CIRCUIT AND OPTIONAL HEATING CIRCUIT

Michael G. Bitterice, New Kensington, and Leroy D. Keslar, Natrona Heights, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 700,239, Jun. 28, 1976, Pat. No. 4,078,107. This application Dec. 16, 1977, Ser. No. 861,466
Int. Cl.² B29D *3/00*
U.S. Cl. 156—166 **13 Claims**



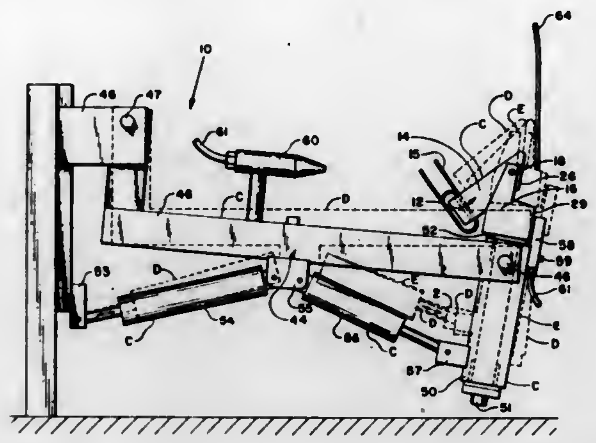
1. A method of making a composite transparency comprising applying a pattern of wire to an opposite pair of major surfaces of a first layer of rigid transparent plastic selected from the class consisting of acrylic plastic and polycarbonates, one of said patterns comprising relatively widely spaced runs of continuous wire and the other of said patterns comprising relatively closely spaced runs of continuous wire, press polishing said layer of rigid transparent plastic at sufficient heat and pressure to smooth the opposite major surfaces thereof so that the wire is embedded just below each of the opposite major surfaces, attaching suitable terminal means to the wire embedded adjacent each of the opposite surfaces, and fusing a second layer of rigid transparent plastic selected from the class consisting of acrylic plastic and polycarbonates at elevated pressure and temperature against the first layer of plastic having the wires embedded therein to form a composite transparency having wire with widely spaced runs embedded adjacent a major surface thereof and wire with closely spaced runs embedded within the thickness in relatively spaced relation from the opposite major surfaces of side composite transparency.

4,128,449

INDUCTION HEATING FIXTURE FOR APPLYING ADHESIVE-BACKED ARTICLES

Robert G. Kobetsky, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Sep. 28, 1977, Ser. No. 837,059
Int. Cl.² B32B *19/02;* B23K *13/02*
U.S. Cl. 156—380 **17 Claims**

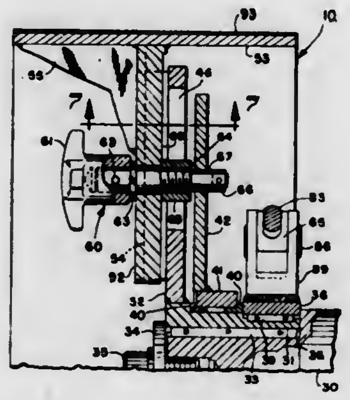
1. In a fixture for adhesively securing discrete, substantially flat based adhesive carrying metal articles to a support surface, including a carrier structure with an aritcle applying head structure mounted thereon, the head structure comprising a U-shaped inductor core with exciter coil means wrapped about a section thereof serving to generate a magnetic flux circuit through said core and a portion of the metal article bridging the end surfaces of the legs of the core, the head structure further comprising an article receiving and positioning element fixedly mounted to the core to retain, predetermined, laterally spaced upper surface regions of the metal article in substantially fixed abutting contact with the end surfaces of the core during the positionment of the article on the support surface, the head structure and mounting means therefore including means to permit free compound movement of the core in a direction transverse an axis of the carrier structure which extends so as to intersect the support surface with the metal article fixedly positioned relative to the core as the head and carrier apply the metal article to the support surface so as to accurately and firmly position the article into conforming surface contact with a predetermined area of said support surface during the generation of heat in said article to activate the adhesive.



4,128,450

TIRE COMPONENT BUILDING DRUM

Armindo Cantarutti, Akron, Ohio, assignor to NRM Corporation, Akron, Ohio
Filed Mar. 30, 1977, Ser. No. 782,994
Int. Cl.² B29H *17/16*
U.S. Cl. 156—417 **4 Claims**



1. A tire component building drum comprising a set of circular segments each having the same radius of curvature, each segment including a radially inwardly extending stem, support means mounting said stems for movement radially to expand and contract said segments, cam means rotatably mounted on said support means, and stud means connecting each said stem to said cam means on the same side of said stem, with said stud means projecting from the opposite side of each stem, whereby said stud means may readily be removed and said segments replaced by another set of segments each having another same radius of curvature.

4,128,451

ROLLER MEMBERS FOR USE IN HEAT SEALING APPARATUS

Peter S. Sorce, Tonawanda, and Earl W. Clifford, Getzville, both of N.Y., assignors to The Aro Corporation, Bryan, Ohio
Filed Apr. 4, 1977, Ser. No. 784,283
Int. Cl.² B31F *5/00;* B32B *31/00;* B30B *15/34*
U.S. Cl. 156—555 **9 Claims**

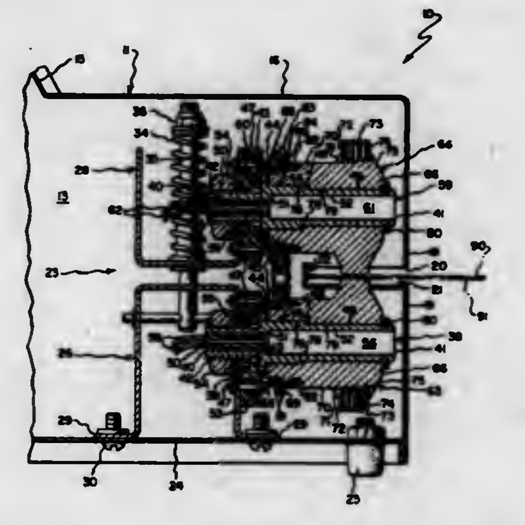
1. In apparatus for heat sealing a thermally-sensitive material to a substrate material, said apparatus having a frame, having a tubular first shaft mounted fast to said frame and arranged to be heated by a first heating element arranged within said first shaft, and having a second shaft mounted fast to said frame, the improvement comprising:

a first roller member rotatably mounted on said first shaft and having a first outer peripheral surface, said first roller member being adapted to conduct heat from said first shaft to said first peripheral surface, a portion of said first peripheral surface defining at least one annular groove extending radially into said first roller member;

a second roller member rotatably mounted on said second shaft and having a second outer peripheral surface arranged to face said first peripheral surface, a portion of said second peripheral surface forming an annular peak aligned with said groove; and

biasing means mounted on said frame for urging said first and second peripheral surfaces to move toward one another with such force that said thermally-sensitive and substrate materials will contact said roller members in the vicinity of said first and second peripheral surfaces but will not contact said first roller member in the vicinity of the depth of said annular groove, and wherein the portion of said second surface forming said peak is spaced from the portion of said first surface defining said groove in the absence of said materials therebetween;

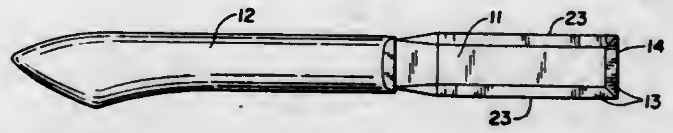
whereby, when said materials are translated between said roller members, less heat may be supplied in the vicinity of said groove than in the vicinity of said peak.



4,128,452

APPARATUS FOR SEPARATING ADHESIVELY CONNECTED MATERIAL

Herbert E. Johnson, 1023 Phelps Ave., San Jose, Calif. 95117, and William W. Richards, 984 Corbett Ave., San Francisco, Calif. 94131
Filed Aug. 1, 1977, Ser. No. 820,513
Int. Cl.² B32B *31/00;* B25F *3/00;* B26B *3/06*
U.S. Cl. 156—584 **4 Claims**



1. An apparatus for separating adhesively connected material which comprises:

(a) a blade having a generally rectangular frontal portion with an upper surface, a planar lower surface and a surface angularly inclined from said upper surface to said lower surface, the intersection of said lower surface and said angularly inclined surface defining a straight leading cutting edge and side cutting edges, said blade having a rear portion upwardly inclined;

(b) a handle means for gripping connected to said rear portion of said, blade;
(c) a sheath for retaining said blade, said sheath having inner walls of absorbent material; and
(d) a lubricant generally equally distributed throughout the inner absorbent walls of said sheath, whereby said lubricant is applied to all of said surfaces of said blade when said blade is inserted into and withdrawn from said sheath.

4,128,453
PROCESS AND APPARATUS FOR REMOVING EVAPORABLE COMPONENTS FROM POLYAMIDE MELTS

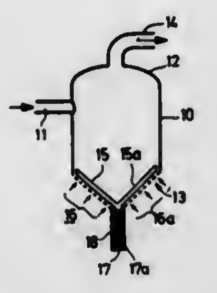
Dieter Angerer, Grosskrotzenburg; Peter Freund, Bad Vilbel; Werner Hansel, Karben, and Fritz Wilhelm, Offenbach am Main, all of Fed. Rep. of Germany, assignors to Zimmer Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 22, 1975, Ser. No. 643,385

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1974, 2461901

Int. Cl.² B01D *1/14*

U.S. Cl. 159—16 S **3 Claims**



1. Apparatus for removing evaporable components from polyamide melts at subatmospheric pressure and under constant agitation while simultaneously conducting a gaseous medium through the melt, comprising an evacuable container having a perforated surface disposed in the lower part thereof, means for feeding the polyamide melt into said container and over said surface, a feed line for conducting the gaseous medium through said perforated surface into the melt, a discharge conduit connecting to said container for removing the gaseous medium enriched with the evaporable components, an agitating device for the polyamide melt, wherein the active parts of the agitating device comprise agitating blades arranged to move over the surface parallel to it at a slightly spaced distance from said perforated surface to enhance formation of gas bubbles in the melt and simultaneously enhance intermixing of gas in the melt, and a discharge worm for the polyamide melt which is structurally united with the agitating device.

4,128,454
SYSTEM AND METHOD FOR GAS PHASE PULP BLEACHING

Rudi W. Schleinkofer, Nashua, N.H., assignor to Ingersoll-Rand Co., Woodcliff Lake, N.J.

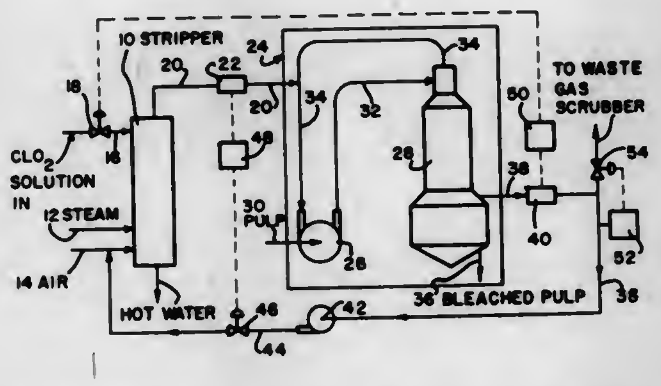
Filed Dec. 7, 1977, Ser. No. 858,265

Int. Cl.² D21C *9/14, 11/06*

U.S. Cl. 162—49 **2 Claims**

1. A method of bleaching wood pulp with chlorine dioxide gas comprising the steps of: feeding a chlorine dioxide solution to a stripper and converting in said stripper the chlorine dioxide solution into gases including chlorine dioxide gas; conducting the resulting gases to a reaction area and reacting said chlorine dioxide gas with pulp to bleach said pulp; recycling unreacted gases leaving the reaction area back to the stripper; continuously monitoring the concentration of unused chlorine dioxide gas in the gases leaving the reaction area; automatically adjusting the amount of chlorine dioxide solution fed to the stripper in response to changes in the unused chlorine dioxide gas leaving the reaction area; continuously monitoring the concentration of chlorine dioxide gas in the gases conducted from the stripper to the reaction area; and automatically adjusting the amount of recycled unused gases conducted back to the stripper in response to changes in the concentration of chlorine dioxide gas conducted from the stripper to the reaction area.

2. A system for bleaching wood pulp with chlorine dioxide gas comprisng: a stripper for converting a chlorine dioxide solution into gases including chlorine dioxide gas; a pulp shredder for shredding pulp fed to the pulp shredder; a reactor in which the shredded pulp is bleached; means for feeding the chlorine dioxide solution into the stripper; valve means for controlling the amount of chlorine dioxide solution fed to the stripper; means for feeding the chlorine dioxide gas from the stripper to the shredder; means for feeding the shredded pulp and chlorine dioxide gas from the shredder to the reactor; a gas analyzer for monitoring the amount of unreacted chlorine dioxide gas leaving the reactor; means responsive to signals from the gas analyzer to automatically adjust said valve means to automatically adjust the amount of chlorine dioxide solution fed to the stripper in response to changes in unreacted chlorine dioxide gas leaving the reactor; means for recycling unreacted chlorine dioxide gas leaving the reaction area back to the stripper; recirculating valve means for controlling the flow of the unreacted chlorine dioxide gas back to the stripper; means for continuously measuring the amount of chlorine dioxide gas fed from the stripper to the shredder; and control means interconnecting the recirculating valve control means and the means for measuring the chlorine dioxide gas fed from the stripper to the shredder; said control means being automatically responsive to changes in concentration of chlorine dioxide gas fed from the stripper to the reactor to change the amount of unreacted chlorine dioxide gas recirculated back to the stripper.



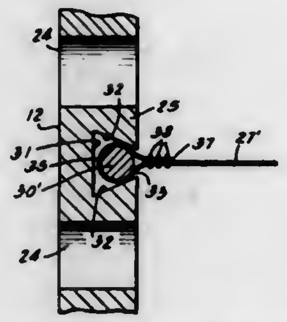
4,128,455
HEADBOX TRAILING ELEMENT MOUNTING AND METHOD

Edgar J. Justus, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed May 20, 1977, Ser. No. 798,800

Int. Cl.² D21F *1/02, 1/06*

U.S. Cl. 162—216 **21 Claims**



18. A method of maintaining trailing element sheets substantially free from wrinkling in the presence of heated papermaking stock in the slice chamber of a papermaking machine headbox having a flow divider plate between a slice chamber and a preslice chamber, said sheets extending downstream in said slice chamber, comprising:
providing anchor rods of greater coefficient of thermal expansion than the thermal coefficient of expansion of the sheets
attaching the trailing element sheets to the rods in a manner to hold the sheets substantially taut laterally;
and mounting said rods and thereby the upstream ends of said sheets on said plate in a manner permitting the rods freedom for thermal expansion;
whereby greater rate of expansion of more directly heated downstream areas of the sheets in the slice chamber than the rate of expansion of upstream areas of the sheets will be compensated for by heat of the heated papermaking stock thermally expanding and lengthening the rods and thereby stretching and maintaining the upstream areas of the sheets stretched taut and free from wrinkling.

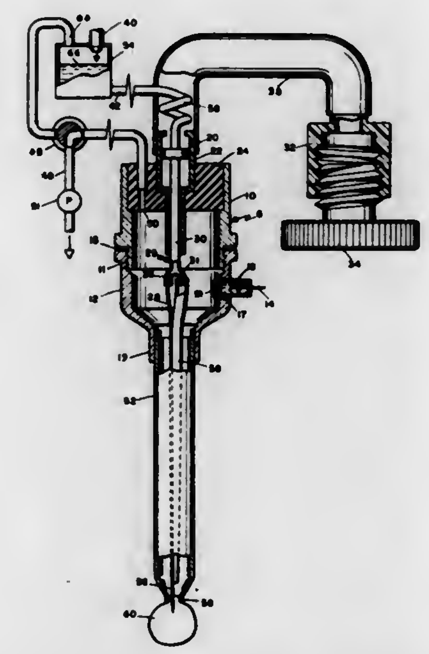
4,128,456
SUCTION ELECTRODE FOR INTRACELLULAR POTENTIAL MEASUREMENT

Kai S. Lee, 5800 Seawall Blvd.; Norio Akaike, 300 N. Ferry Rd., Apt. 1104, and Arthur M. Brown, 0915 Seewall Blvd., #216, all of Galveston, Tex. 77550

Filed Oct. 11, 1977, Ser. No. 840,826

Int. Cl.² C12K *1/10*

U.S. Cl. 195—127 **8 Claims**



1. A suction electrode for intracellular measurement comprising:
a perfusion chamber means terminating in an aperture at one end;
means for evacuating said perfusion chamber to capture and hold a living cell at said perfusion chamber aperture;
a perfusion tube means mounted and supported in said perfusion chamber;
means for controlled movement of said perfusion tube means toward and away from the captured cell;
cell sensing means movable with said perfusion tube for passage through said perfusion chamber aperture, penetration of the captured cell and sensing cell internal electrical activity;
means for delivering an electrically conductive cell life support fluid to the captured cell through said perfusion tube;
means for conduction of sensed intracellular electrical signals from the interior of said perfusion chamber to external equipment.

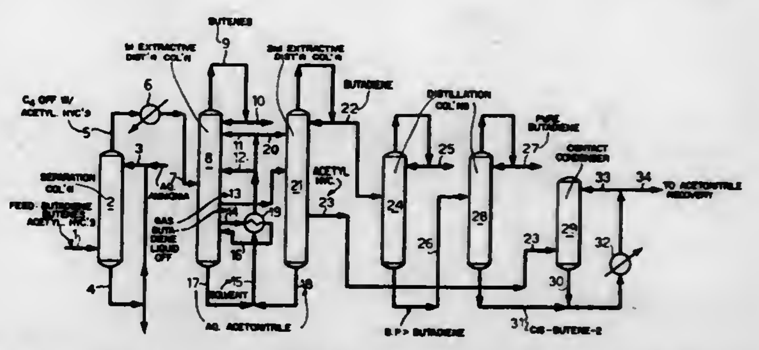
4,128,457
PROCESS FOR THE SEPARATION OF BUTADIENE BY PLURAL STAGE EXTRACTIVE DISTILLATION

Diego Barba; Candido D'Agostini, and Aldo Pasquinelli, all of Rome, Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Mar. 9, 1977, Ser. No. 776,042

Int. Cl.² B01D *3/40; C07C 7/08*

U.S. Cl. 203—29 **13 Claims**



1. A process for the separation and recovery of 1,3-butadiene from a hydrocarbon mixture containing it, which comprises:
introducing into an extractive distillation column having at least 150 plates, operating at a pressure of 3.5–5.5 atmospheres and at a bottom temperature of 110°–140° C. and head temperature of 30°–50° C., a stream of vaporized hydrocarbon fraction containing butadiene together with butenes and acetylene hydrocarbons at a point intermediate between the head and the bottom and feeding aqueous acetonitrile at one or more points of the columm between the head and the point of introduction of the hydrocarbon fraction; recovering at the head of the column a stream consisting essentially of butenes, recovering at the bottom aqueous acetonitrile and removing at an intermediate point, situated lower than that of the introduction of the hydrocarbon fraction, a vapor stream containing butadiene;
feeding into a second extractive distillation column, having at least 80 plates and operated at temperatures and pressures in the range of those of the first column, the vapor stream containing butadiene extracted from the said first extractive distillation column, at a point intermediate between the head and the bottom, feeding aqueous acetonitrile at one or more points situated between the head of the second extractivedistillation column and the point of introduction of the vapor stream containing butadiene; recovering at the head of the second extractive distillation column a stream consisting essentially of butadiene, at the bottom aqueous acetonitrile, while removing a vapor stream consisting essentially of acetylene hydrocarbons at a point of the second extractive distillation column located between the bottom and the feed point of the vapor stream containing butadiene;
subjecting the head product of the second extractive distillation column to rectification in a third distillation column to remove the last traces of products with a lower boiling point than butadiene at the head of said third distillation column and of those with a higher boiling point than butadiene as a bottoms product of said third distillation column.

4,128,458
COMBUSTIBLE ELEMENT AND OXYGEN CONCENTRATION SENSOR

Joseph O. Obiaya, 4773 Walford, #13, Warrensville Heights, Ohio 44128

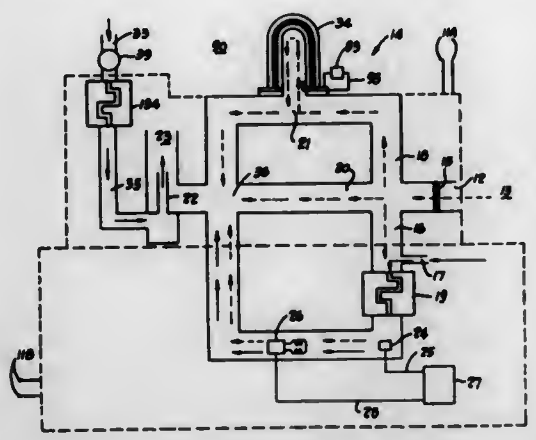
Filed Oct. 25, 1977, Ser. No. 845,049

Int. Cl.² G01N *27/46*

U.S. Cl. 204—1 T **11 Claims**

9. A method for determining the oxygen concentration and combustible element concentration of a sample gaseous fluid comprising the steps of;

a. obtaining a sample of gas to be analyzed;
b. causing said sample to flow through a conduit block heated to a constant ambient level;
c. dividing said sample into first and secpond portions;
d. routing the second portion past an air inlet port in said block and obtaining excess air to be mixed with said second portion;



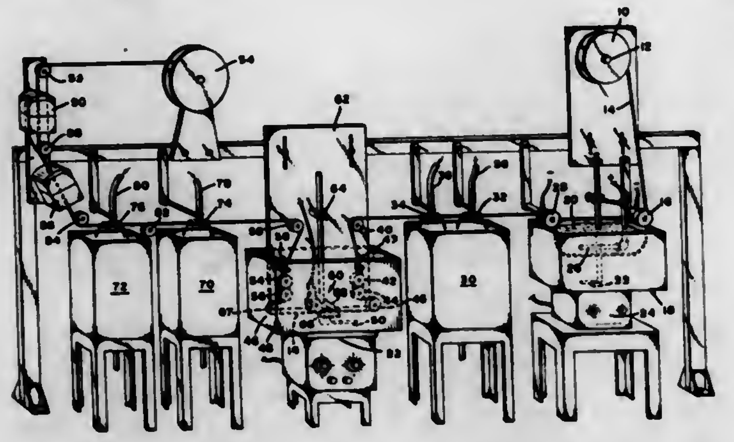
e. routing said second portion and excess air past a combustible analyzer for determining the combustible elememt concentration of said second portion;
f. routing the first portion past an oxygen concentration analyzer for determining the oxygen concentration of said first portion; and
g. recombining said first and second portions downstream from said analyzer and causing them to be ejected from said conduit block from an exhaust port.

4,128,459
CONTINUOUS ELECTROPLATING OF ALLOY ONTO METALLIC STRIP

Gerald R. Bretts, Livingston, and Dirk A. Timan, Morristown both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 25, 1977, Ser. No. 854,557
Int. Cl.^{2} C25D *7/06, 17/00*

U.S. Cl. 204—28 **9 Claims**



1. A method for continuously electroplating an alloy on to electrically conductive strip comprising:
(a) placing an anode into a plating bath adjacent to said strip, said bath adapted to electrochemically deposit an alloy therefrom and applying a positive potential to the anode;
(b) transporting the strip submerged through the bath along a mirror symmetrical path having a mirror plane lying normal to the surface of the bath and to the direction of movement of said strip and having the anode generally bisected by said mirror plane, while applying a negative potential through a cathode contacts to the strip at at least two points about equidistant from and on opposite sides of the anode, wherein the anode extends in the direction of movement of the strip not more than about 15% of the length of the strip submerged in the bath so that submerged points of the strip distant from the cathode contact are relatively near to the anode and that the submerged points of the strip near to the cathode contact are correspondingly distant from the anode resulting in an essential uniform potential drop and current density around and along the strip.

4,128,460
COLORING BY ELECTROLYSIS OF ALUMINUM OR ALUMINUM ALLOYS

Hideo Nishimura; Seishi Masaki; Takao Miyauchi, and Nariyoshi Kobayashi, all of Kobe, Japan, assignors to Daiwa Kasei Kenkyujo Kabushiki Kaisha, Kobe, Japan

Filed Sep. 6, 1977, Ser. No. 830,547
Claims priority, application Japan, Sep. 13, 1976, 51-108844; Aug. 2, 1977, 52-92186
Int. Cl.^{2} C25D *11/22*

U.S. Cl. 204—35 N **11 Claims**

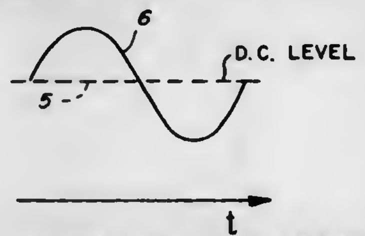
1. A method of coloring aluminum or aluminum alloys by electrolysis which comprises anodizing aluminum or aluminum alloys and electrolyzing the anodized aluminum or alloys without sealing the anodized surface thereof in a bath containing an aliphatic sulfonic acid and a metal salt of said sulfonic acid.

4,128,461
ALUMINUM HARD ANODIZING PROCESS

Moisey Lerner, Brookline; James H. Morse, Holliston, and Mikhael Bessendorf, Brookline, all of Mass., assignors to Sanford Process Corporation, Natick, Mass.

Filed Mar. 27, 1978, Ser. No. 889,933
Int. Cl.^{2} C25D *11/08*

U.S. Cl. 204—58 **4 Claims**



1. In an anodizing process for producing a hard coating on aluminum and on alloys of aluminum wherein in the process
(a) the aluminum or aluminum alloy article is immersed in an electrolyte containing an electrooxidating acid and an acidic aqueous extract obtained from the boiling of low grade coal, lignite, or peat, and
(b) a DC voltage is applied between the article and a counter electrode in contact with the electrolyte whereby the article is caused to be at a positive electric potential relative to the counter electrode,

the improvement comprising the steps of
(1) causing the DC voltage to be sinusoidally modulated
(2) raising the DC voltage level during an initial short period to about 10 volts
(3) raising the DC voltage level of the modulated DC voltage at a rate of about ½ volt per minute to a level within the range of 14 to 19 volts,
(4) holding the DC level of the modulated DC voltage substantially constant for a dwell period of about 5 minutes, and
(5) after the dwell period, again gradually raising the DC level of the modulated DC voltage.

4,128,462
ELECTROCHEMICAL PROCESS FOR RECOVERING PRECIOUS METALS FROM THEIR ORES

Hugh A. Ghiringhelli, 436 Danbury Rd., Wilton, Conn. 06897, and Kenneth S. Deffeyes, 40 Western Way, Princeton, N.J. 08540

Filed Aug. 16, 1976, Ser. No. 714,828
Int. Cl.^{2} C25C *1/20*

U.S. Cl. 204—109 **5 Claims**

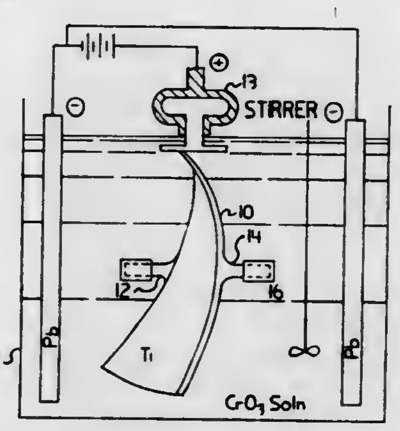
1. In an electrochemical process for recovery of precious metals from their ores by supplying a slurry of the ore with a cyanide complexing agent for the precious metal and electrolytically processing the slurry to dissolve the precious metal from the slurry and recover the metal by electrodeposition at a cathode, the improvement which comprises adding to the slurry the water soluble electroconductive cationic resin polybenzyltrimethylammoniumchloride, whereby the recovery of precious metals is improved.

4,128,463
METHOD FOR STRIPPING TUNGSTEN CARBIDE FROM TITANIUM OR TITANIUM ALLOY SUBSTRATES

Bert J. Formanik, Willowick, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Mar. 2, 1978, Ser. No. 882,636
Int. Cl.^{2} C25F *5/00, 3/02*

U.S. Cl. 204—146 **9 Claims**



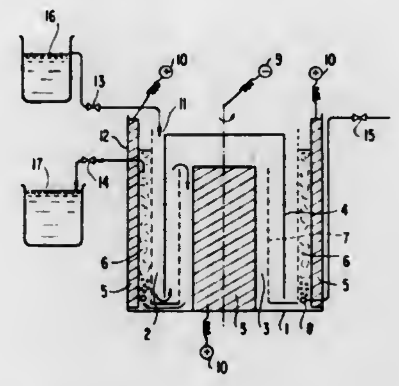
1. A method for electrochemically stripping tungsten carbide from a titanium or titanium alloy substrate in an electrolytic cell which comprises immersing a titanium workpiece having a tungsten carbide coating thereon as an anode in an aqueous solution of chromic acid together with a metallic cathode inert to said aqueous chromic acid solution, imposing a direct current voltage across the anode and cathode in the range of from about 6 to about 50 volts at a current density of from about 4 to about 40 amperes per square foot for a period of at least about 30 minutes at a temperature of at least about 100° F., the concentration of the chromic acid solution being from 4% to 40% by weight.

4,128,464
PROCESS FOR REGENERATING BLEACHING-FIXING SOLUTION

Yoshio Idota, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 25, 1977, Ser. No. 772,032
Claims priority, application Japan, Feb. 25, 1976, 51-19785
Int. Cl.^{2} C25C *1/20*

U.S. Cl. 204—151 **10 Claims**



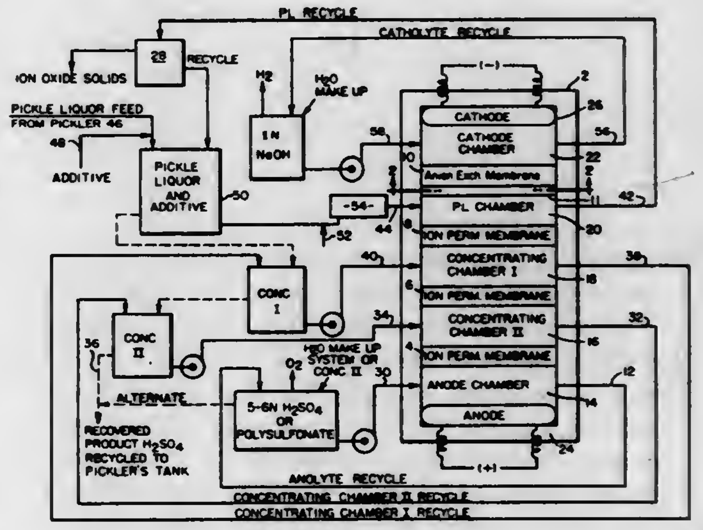
1. A process for electrolytically regenerating a used bleaching-fixing solution resulting from the processing of a color developed color photographic material with a bleaching-fixing solution containing an iron (III) chelate compound and a silver halide solvent in an electrolytic cell comprising anode and cathode compartments separated by a diaphragm wherein the anode is carbon and/or carbon fibers, the cathode potential is −0.40V to −0.55V, the anode potential is 0 to about 0.20V, said potentials being with reference to a standard calomel electrode, and the inter potential is 0.4 to 0.8V; which comprises bubbling an oxygen-containing gas into the anode compartment containing said used bleaching-fixing solution while electrolyzing said used bleaching-fixing solution and; recycling the regenerated solution to a bleach-fixing bath in an electrolytic cell.

4,128,465
ELECTRODIALYSIS OF PICKLE LIQUOR

Richard N. Smith, Monmouth Junction, N.J., assignor to Sybron Corporation, Rochester, N.Y.

Filed Feb. 13, 1978, Ser. No. 877,113
Int. Cl.^{2} B01D *13/02*

U.S. Cl. 204—180 P **5 Claims**



1. In an electrodialytic process for converting a soluble metal sulfate into an insoluble metal oxide or hydroxides and recovering such from a fluid medium comprising the following steps:
(a) circulating said mixture with an additive between spaced ion permeable membrane;
(b) circulating caustic soda as first electrolyte in the catholyte chamber;
(c) circulating sulfuric acid as second electrolyte in the anode chamber;
(d) passing a direct current through said electrolyte and said mixtures whereby metal sulfate is precipitated as an oxide.

4,128,466
METHOD AND APPARATUS FOR REACTIVE SPUTTERING

Geoffrey L. Harding; David R. McKenzie, and Brian Window, all of Sydney, Australia, assignors to The University of Sydney, Sydney, Australia

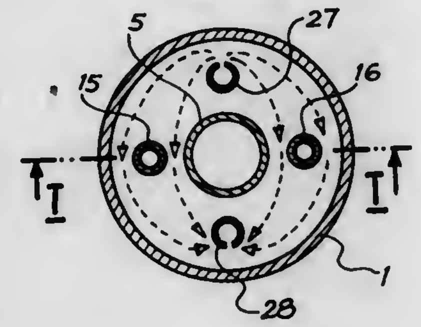
Filed Jun. 3, 1977, Ser. No. 803,334
Claims priority, application Australia, Jun. 10, 1976, PC6228
Int. Cl.^{2} C23C *15/00*

U.S. Cl. 204—192 C **12 Claims**

1. A process for applying a solar selective surface coating of substantially uniform composition and thickness to a substrate in the form of an elongate tube for use in a solar collector system; the process comprising reactively sputtering atoms from a gaseous impurity and from an elongate metal electrode simultaneously onto the surface of the substrate in a direct current induced plasma, and wherein:
(a) the electrode is disposed parallel to the longitudinal axis of the substrate,
(b) relative rotation about the axis of the substrate is effected between the substrate and the electrode,

(c) the impurity gas is directed towards the substrate surface at an angle approximately normal to the longitudinal axis of the substrate and from delivery points spaced from the substrate surface but uniformly distributed along the length of the substrate, and
(d) flow of the impurity gas is controlled to minimize migration thereof in a direction parallel to the longitudinal axis of the substrate.

10. A direct current reactive sputtering apparatus for use in applying a solar selective surface coating of a substantially uniform composition and thickness to a substrate in the form of an elongate tube for use in a solar collector system, the apparatus including:
(a) an envelope defining a chamber,



(b) an elongate target electrode,
(c) means for mounting the substrate within the chamber in spaced parallel relationship to the target electrode,
(d) means for effecting relative rotation about the axis of the substrate between the target electrode and the substrate,
(e) means for admitting a gaseous impurity into the chamber and directing the gaseous impurity toward the substrate at an angle approximately normal to the longitudinal axis of the substrate, said means including delivery point apertures spaced from the substrate surface but uniformly distributed along the length of the substrate, and
(f) means for controlling the flow of the impurity gas to minimize migration thereof in a direction parallel to the longitudinal axis of the substrate.

4,128,467
METHOD OF ION ETCHING Cd-Hg-Te SEMICONDUCTORS

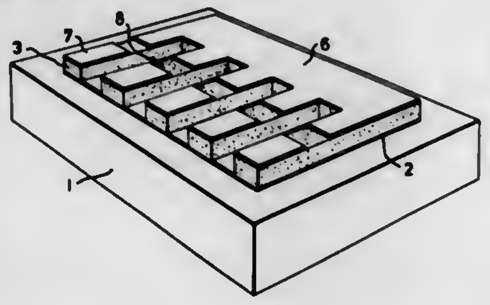
Konrad Fischer, Bad Rappenau, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 24, 1978, Ser. No. 881,007

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1977, 2708792

Int. Cl.² C23C *15/00*

U.S. Cl. 204—192 E **8 Claims**



1. A method of ion beam etching in order to structure semiconductor layers, characterized by its use on a semiconductor material comprising cadmium-mercury-telluride.

3. A method as defined in claim 1 and comprising covering the parts of the semiconductor surface which are not to be etched by a material of lower etching rate than said cadmium-mercury-telluride material.

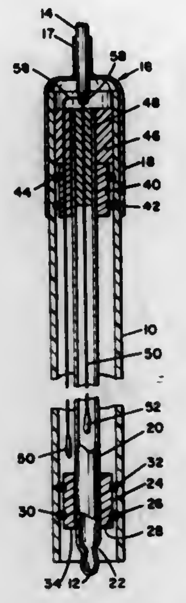
4,128,468
ELECTRODE STRUCTURES

Gary L. Bukamier, 4341 Eureka, Yorba Linda, Calif. 92686

Filed Jan. 3, 1978, Ser. No. 866,283

Int. Cl.² G01N *27/30*

U.S. Cl. 204—195 F **9 Claims**



1. An ion sensitive electrode comprising, in combination:
an outer tubular member having a given inner diameter at a region near one end;
an inner tubular member assembled concentrically within said one end of outer member and having an outer diameter less than said inner diameter such that an annular space remains between said members;
bridging and sealing means for sealing said annular space in the region of one end of the assembled members while permitting ionic transfer across the seal;
the bridging and sealing means comprising an annular plug embracing said inner member and formed of a porous material, said plug having an outer diameter less than the inner diameter of said outer member such that an annular sealing space remains between the plug and said outer member and
said bridging and sealing means further comprising means in the form of a sealing annulus embracing said plug and bearing against the inner wall of said outer member for sealing said space against the passage of liquid.

4,128,469
ELECTROCHEMICAL SENSOR

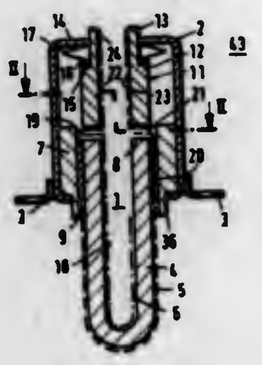
Franz-Josef Rohr, Abtsteinach, and Rudolf Krapf, Leimen, both of Germany, assignors to Brown, Boveri & Cie AG, Mannheim-Kafertal, Germany

Filed Jul. 15, 1977, Ser. No. 816,174

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1976, 26322496

Int. Cl.² G01N *27/46*

U.S. Cl. 204—195 S **21 Claims**



1. In an electrochemical sensor for determining the oxygen content in gases, particularly in exhaust gases from burners or internal-combustion engines, having an ion-conducting solid-electrolyte tube supported by a housing with the tube closed on one end and open at the other end for the entry of reference gas to the interior of the tube, an electrode on the inner surface of the tube and an electrode on the outer surface of the tube connected to external leads via contact areas, the combination therewith of
(a) an insulating hollow body surrounding the open end of the solid-electrolyte tube,
(b) a housing around the hollow body and extending above the top of the tube and hollow body,
(c) contact areas disposed on at least one shoulder facing the top of the housing,
(d) conductor strips from the electrodes extending to the shoulder with the upper ends of the conductor strips on the shoulder forming the contact areas,
(e) an insulating structural unit in which the leads are combined, disposed in the housing above the tube and standing on the shoulder,
(f) said structural unit having electric conductor, the lower ends of which extend area-wise over the face of the structural unit and touch the contact areas, and
(g) a spring element urging the structural unit against the contact areas.

4,128,470
SUPPORTS FOR ELECTROPHORESIS AND PROCESS FOR THE PRODUCTION OF THE SAME

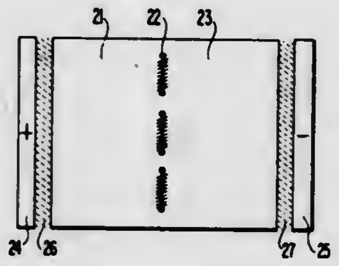
Nobuo Hiratsuka, and Nakatsugu Yaginuma, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 718,505, Aug. 30, 1976, abandoned. This application Feb. 21, 1978, Ser. No. 879,421

Claims priority, application Japan, Aug. 29, 1975, 50-104725

Int. Cl.² G01N *27/26, 27/28*

U.S. Cl. 204—299 R **9 Claims**



1. A support for electrophoresis comprising a porous polymer film having an electroendosmosis factor of 0 to plus about 10 mm, pore diameter of about 0.1 to 10 microns and voids of not less than 50%.

4,128,471
COAL LIQUEFACTION PROCESS EMPLOYING CARBON MONOXIDE

Huey P. Malone; John A. Paraskos, and Herman Taylor, Jr., all of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 30, 1976, Ser. No. 746,183

Int. Cl.² C10G *1/04*

U.S. Cl. 208—8 **16 Claims**

1. A process for liquefying coal at a hydrogen pressure above 3,100 psi comprising passing a water-containing feed coal-solvent slurry and a gaseous stream containing carbon monoxide through a tubular preheater zone to increase the temperature of the slurry to a maximum temperature in the range from 710° to below 800° F. and to react carbon monoxide with water to produce hydrogen, passing an effluent stream from said preheater zone to a dissolver zone maintained at a temperature which is at least 10° F. higher than the maximum temperature in the preheater zone and which is between about 750° and 900° F., the residence time in the dissolver zone being longer than in the preheater zone, separating a dissolver zone effluent gaseous stream containing carbon oxides and hydrogen from a dissolver zone effluent liquid stream, fractionating said gaseous stream into a carbon monoxide-rich stream and a hydrogen-rich stream, recycling at least a portion of said carbon monoxide-rich stream to said preheater zone, and passing at least a portion of said hydrogen-rich stream and said dissolver zone effluent liquid stream to a catalytic hydrogenation zone maintained at a temperature in the range 700° to 825° F.

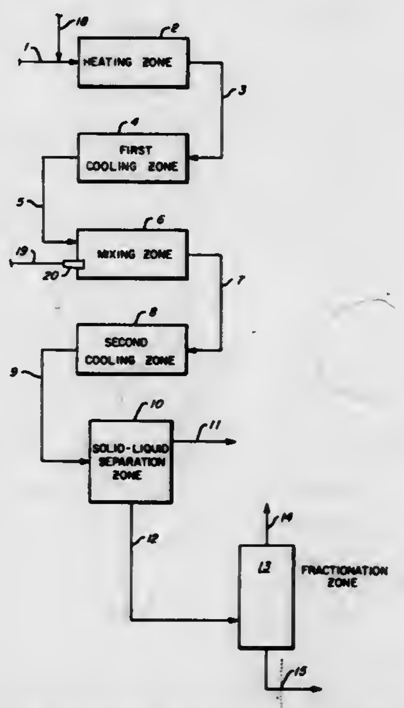
4,128,472
SOLVENT DEWAXING PROCESS

Charles W. Harrison, Nederland, Tex., and Paul P. Bozeman, Jr., deceased, late of Groves, Tex. (by Arlene Bozeman, executrix), assignors to Texaco Inc., New York, N.Y.

Filed Jul. 5, 1977, Ser. No. 813,141

Int. Cl.² C10G *43/08*

U.S. Cl. 208—33 **8 Claims**



1. In a continuous solvent dewaxing process wherein an intermediate waxy petroleum distillate oil charge stock is diluted with dewaxing solvent to depress its cloud point and to form an oil/solvent mixture having all wax dissolved therein, wherein the oil-solvent mixture is cooled, in a cooling zone, to a selected separation temperature for precipitating wax crystals and forming a wax/oil/solvent mixture, wherein the precipitated wax is separated from said wax/oil/solvent mixture in a solid-liquid separation zone, forming a solid wax cake and a wax-free oil/solvent mixture, and wherein the wax-free oil/-solvent mixture is fractionated, in a fractionation zone to yield a solvent fraction and a dewaxed oil product fraction; the improvement comprising:
(a) cooling, in a first cooling zone, an intermediate waxy petroleum distillate oil stock, having all wax dissolved therein, to a temperature about 5° F. above the cloud point;
(b) mixing, in a mixing zone, under conditions of plug flow radial mixing the waxy oil stock at a temperature about 5° F. above the cloud point with dewaxing solvent at a temperature between about 70° to 100° F. and about 25° to 40° F. below the depressed cloud point in a volume ratio of solvent to waxy oil stock in the range of from about 1:1 to about 5:1 for forming a waxy oil stock/solvent mixture having a temperature about 5°–15° F. below its depressed cloud point such that wax is precipitated therefrom;
(c) cooling, in a second cooling zone, said cooled mixture from step (b) at a uniform cooling rate in the range of from about 1°–8° F./min to a selected temperature in the range of about 0° to 40° F. for precipitating additional wax; and

(d) flowing the cooled mixture from step (c) to said solid-liquid separation zone.

4,128,473
CATALYTIC HYDROTREATING PROCESS

Clarence Karr, Jr., and Kenneth B. McCaskill, both of Morgantown, W. Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 5, 1977, Ser. No. 857,718

Int. Cl.^{2} C07C *5/10;* C10G *23/04;* B01J *35/10*

U.S. Cl. 208—108 **9 Claims**

1. A method for hydrotreating a carbonaceous liquid comprising the steps of:

a. In a reaction zone at a temperature in the range of 300° to 450° C. and at a pressure in the range of 300 to 4000 psig effecting contact of the carbonaceous liquid with a catalytic transition metal sulfide layer disposed on a surface of a hydrogen permeable substrate comprising said transition metal with said transition metal being selected from the group consisting of Fe, Ni, Co, Mo, W, V, Cr, Mn, Cu, Zn, Cd, and combinations thereof.

b. Introducing hydrogen into said reaction zone by creating a sufficient hydrogen pressure differential through the permeable substrate from the substrate opposite the surface bearing the sulfide layer to cause diffusion of hydrogen or reactive hydrogen containing species through said metal substrate to effect hydrogenation of said carbonaceous liquid.

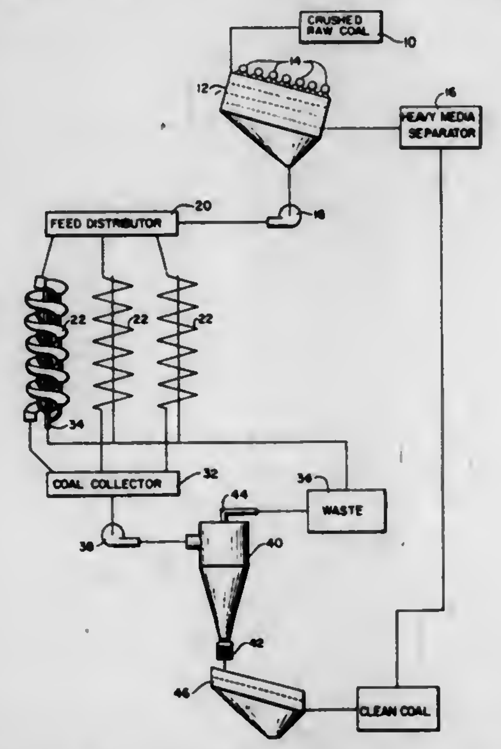
4,128,474
PROCESS FOR CLEANING AND DEWATERING FINE COAL

Robert E. Ennis, West Simsbury, Conn., assignor to Linatex Corporation of America, Stafford Springs, Conn.

Filed Mar. 24, 1977, Ser. No. 780,978

Int. Cl.^{2} B03B *5/48*

U.S. Cl. 209—2 **12 Claims**



1. A process for the wet concentration of fine coal comprising the steps of providing an aqueous feed slurry of coal and associated contaminate particles, the solids in said feed slurry having a particle size of less than about 10 mm.; feeding at least the portion of said slurry having contaminate particles greater than 0.1 mm. through a spiral gravity concentrator so that as the slurry flows along the spiral under gravity the heavier contaminates having a particle size greater than about 0.1 mm. concentrate in a band separate from at least the portion of the coal slurry having contaminate particles greater than 0.1 mm., and (c); feeding to a hydrocyclone separator at least the portion of the coal slurry containing the coal and the associated contaminate particles of less than 0.1 mm., said hydrocyclone having ascending vortex finder and an underflow discharge port; regulating the discharge from the discharge port to provide controlled accumulation at said port of a coal particle fraction having a particle size greater than about 0.1 mm. while discarding substantially all contaminate particles of less than 0.1 mm. reporting to the ascending vortex finder, discharging the coal fraction accumulated at the discharge port at a substantially higher solids concentration than the slurry entering said hydrocyclone separator and dewatering the coal fraction slurry treated in both said spiral and hydrocyclone separators sufficiently to permit stockpiling of the cleaned coal fraction.

4,128,475
PROCESS FOR BENEFICIATION OF MINERAL VALUES

Samuel S. Wang, Chesire, and Eugene L. Smith, Jr., Milford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 20, 1977, Ser. No. 817,411

Int. Cl.^{2} B03D *1/02*

U.S. Cl. 209—166 **8 Claims**

1. In a process of beneficiation of mineral ore by froth flotation in the presence of a collector, the improvement which comprises using as the frothing agent a composition comprising from about 1 to about 99 weight percent of a frothing agent selected from the group consisting of pine oil, creosote, cresylic acid, alcohols, polypropylene glycols and ethers and, correspondingly, from about 99 to about 1 weight percent of an amino-aldehyde resin comprising the alkylated reaction product of an aldehyde and a material selected form the group consisting of urea, melamine, guanamines, ethylene urea, aceylen diureas, pyrimidines, tetrahydropyrimidines, thiourea, carbamates and urethanes.

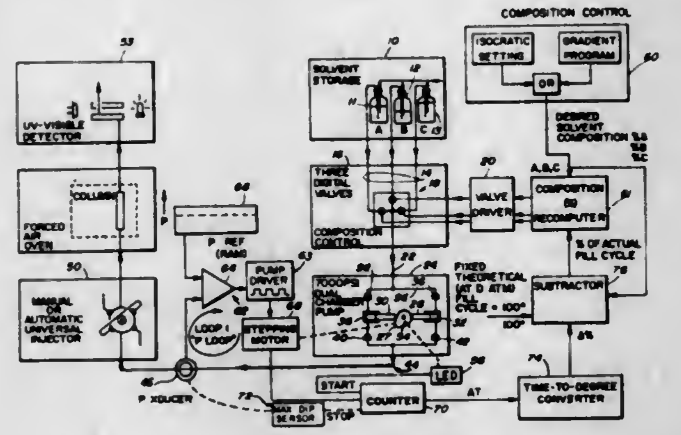
4,128,476
CARRIER COMPOSITION CONTROL FOR LIQUID CHROMATOGRAPHIC SYSTEMS

John V. Rock, Los Altos, Calif., assignor to Spectra-Physics, Inc., Mountain View, Calif.

Filed Jun. 14, 1977, Ser. No. 806,456

Int. Cl.^{2} B01D *15/08*

U.S. Cl. 210—31 C **3 Claims**



1. In liquid chromatographic systems, a method for controlling carrier component proportions delivered from a multi-selecting proportioning valve from a plurality of solvent components A, B . . . sequentially delivered to a pump through an inlet valve, said pump having a fill stroke and an output stroke and capable of causing the composition taken in during the fill stroke to be elevated in pressure and delivered through an outlet valve to an LC column for flow therethrough, the steps of

providing a signal indicative of the time of the beginning of the pump fill stroke,

providing a signal indicative of the time of pressure dip at the outlet of the pump at the head of the column during the beginning of the pump stroke,

computing the time lag between the two signals,

computing a proportioning factor based on said time lag to derive a correction factor signal representing the percentage of lost time during the pump fill stroke,

applying said correction factor signal to recompute the valve timing required to achieve demand composition based on the correction, and controlling the valve timing of the proportioning valve by said recomputed valve timing.

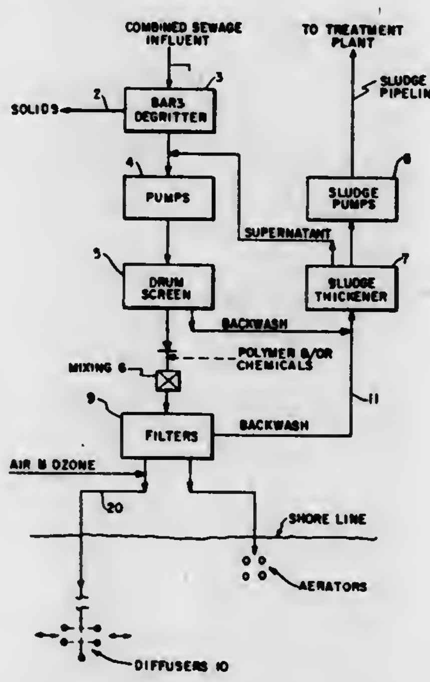
4,128,477
METHOD FOR THE TREATMENT OF SEA DISCHARGED SEWAGE

Rostislav Nebolsine, New York, N.Y., assignor to Hydrotechnic Corporation, New York, N.Y.

Filed May 5, 1977, Ser. No. 793,846

Int. Cl.^{2} C02B *1/34*

U.S. Cl. 210—50 **12 Claims**



1. A method of treating sewage fluid for discharge through an outfall to a body of sea water which comprises:

removing dense suspended particulate materials from said fluid;

passing said fluid through a fine mesh screen, which is between 20 and 60 mesh;

introducing a coagulant composition to said fluid to promote coagulation of colloidal size particles in said fluid, said coagulant composition comprising a member selected from the group consisting of an alum composition, a polyelectrolyte, or mixtures thereof;

filtering said fluid containing said coagulated particles through a deep bed multi-media filter to produce a filtrate essentially free of particles between about 1 micron and about 70 microns;

detecting the presence of a lower quantity of oxygen in said filtrate than in the sea-water into which said filtrate is to be discharged by comparing the quantity of dissolved oxygen in said filtrate with the quantity of dissolved oxygen in the sea water;

raising the quantity of dissolved oxygen in said filtrate to at least the level present in said sea-water in response to the detection of said lower quantity of oxygen by blowing an atomized oxygen containing gas under pressure into said filtrate; and

discharging said oxygen treated filtrate to the sea-water through said outfall.

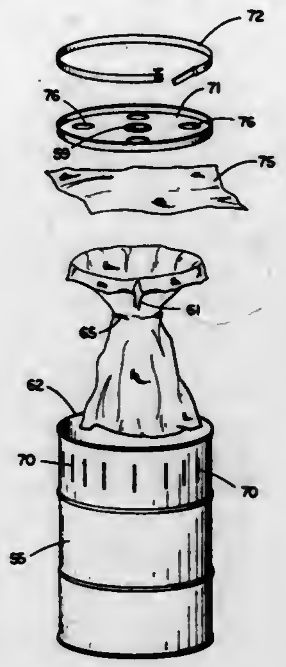
4,128,478
PARTS WASHER

Herman U. Metzger, R.R. 4, Box 18, Goshen, Ind. 46526

Filed Jun. 29, 1976, Ser. No. 700,879

Int. Cl.^{2} B01D *33/18, 29/12*

U.S. Cl. 210—167 **9 Claims**



1. Parts washer apparatus comprising:

a sink with drain;

a first receptacle for washing fluid having an inlet end in fluid communication with the sink drain;

a bag in said first receptacle said bag having an upwardly opening mouth also in fluid communication with the sink drain, the mouth of said bag being sealingly connected to the inlet end of said first receptacle;

a plurality of openings located in the upper portion of said first receptacle adjacent said inlet end and spaced apart from an opposite end of said first receptacle;

a second receptacle around said first receptacle and spaced apart therefrom defining a reservoir for filtered fluid flowing from said first receptacle through said openings;

and means for pumping filtered washing fluid from said second receptacle to said sink for washing parts.

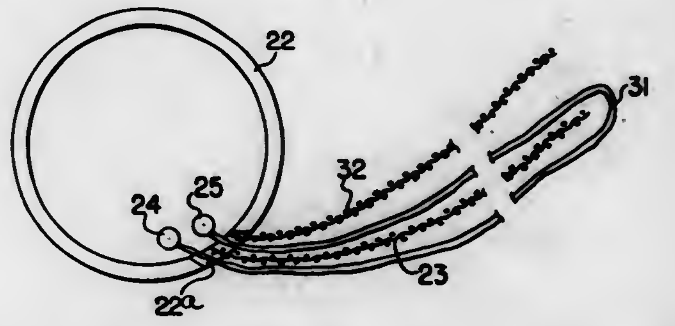
4,128,479
BLOOD-GAS EXCHANGER

Paul S. Malchesky, Painesville Township, Lake County, and Yukihiko Nose, Cleveland Heights, both of Ohio, assignors to Japan Foundation For Artificial Organs, Cleveland, Ohio

Continuation of Ser. No. 728,071, Sep. 30, 1976, abandoned. This application Jan. 20, 1978, Ser. No. 871,019

Int. Cl.^{2} B01D *31/00*

U.S. Cl. 210—321 B **21 Claims**



1. A blood-gas exchanger unit comprising a central rigid cylindrical core, there being a slot means through said core extending parallel to its axis and along a major portion of the length of said core; a gas inlet and a gas outlet tube each extending longitudinally inside of said core near said slot means

for a major portion of its length and each extending out beyond one end of said core; an elongated lamination consisting serially of (a) a length of inner blood net; (b) a first portion of a length of membrane assembly; (c) a length of sandwiched blood net; and (d) a second portion of said length of membrane assembly; said membrane assembly comprising a continuous length of a flattened membrane tube chosen from diffusion type and microporous type having a continuous opening extending longitudinally thereof and a continuous gas net extending substantially throughout said membrane tube; said membrane being between about 0.0005 inches and about 0.020 inches in thickness and having adequate blood and gas rates of transfer and having biocompatibility; said membrane assembly being folded upon itself midway between its ends and said folded assembly being wrapped firmly around said core with said fold in the outside wrap and sealed in that position with both ends of said membrane in the inside wrap, thus forming a generally spiral coil; opposite ends of said membrane assembly being in communication solely with said gas inlet and gas outlet tubes respectively and sealed thereto; said blood nets and said flattened membrane tube being of the same dimension longitudinally of said unit and said gas net having a slightly smaller dimension conforming to the inside of said flattened membrane tube; a blood inlet cap at one end enclosing said coil except for a blood inlet opening; a blood outlet cap at the opposite end closing said coil except for a blood outlet opening; said caps having peripheral rims snugly fitted to said coil and sealed thereto thus enclosing a spiral blood compartment; said caps spaced from the ends of said spiral coil and there providing blood manifolds; the inside of said inlet cap providing means for dispersing blood evenly and regularly from said blood inlet opening to the adjacent end of said spiral coil; means surrounding said unit and closely limiting its expansion radially; and means rigidly limiting the expansion of said unit longitudinally.

4,128,480
FILTRATION OF LIQUORS

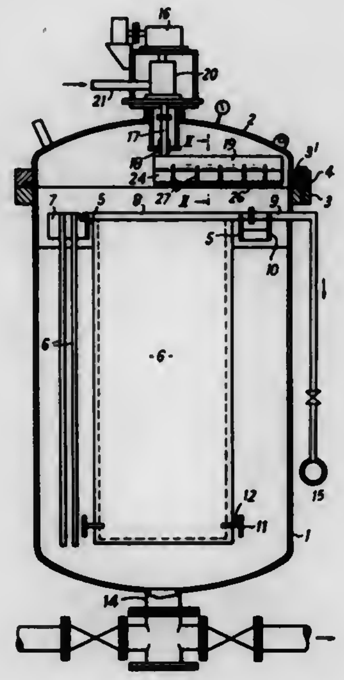
John R. Lumsden, Roxboro, Canada, assignor to Alcan Research and Development Limited, Montreal, Canada

Continuation of Ser. No. 602,190, Aug. 6, 1975, abandoned. This application Aug. 4, 1977, Ser. No. 821,947

Claims priority, application United Kingdom, Aug. 23, 1974, 37285/74

Int. Cl.^{2} B01D *35/16*

U.S. Cl. 210—332 **5 Claims**



1. Filtration apparatus comprising a vertically arranged cylindrical body shell for receiving a supply of liquid under pressure, a liquid inlet in said shell, an array of generally rectangular, stationary planar filter elements, each including two spaced layers of filter material and means for leading off filtrate from an enclosed space defined between said layers, said filter elements being arranged upright and substantially parallel to the axis of the body shell, a spray bar arranged above the array of filter elements and mounted for rotation about the axis of the body shell, said spray bar having a continuous, longitudinally extending, downwardly facing, outlet slit dimensioned to pass over the entire array of filter elements during each complete rotation of the spray bar, means for rotating said spray bar about said axis and means for supplying wash liquor under pressure to said spray bar such as to generate a downward curtain of wash liquor descending from said slit substantially radially of said shell in a direction substantially parallel to the axis of the body shell and moving around said array so as to establish downward streams of wash liquor between said filter elements, such that substantially all portions of the surfaces of said filter elements are sprayed by the rotating slit notwithstanding localized clogging of portions of said slit, said filter elements and said spray bar being mutually disposed for intersection of the curtain of wash liquor with the planes of the surfaces of said filter elements with progressive change in location and angle of intersection as the spray bar rotates such that said streams move progressively along said filter elements, said body shell being provided with means for removing wash liquor from the lower end thereof.

4,128,481
CURVE FOLLOWING DEVICE

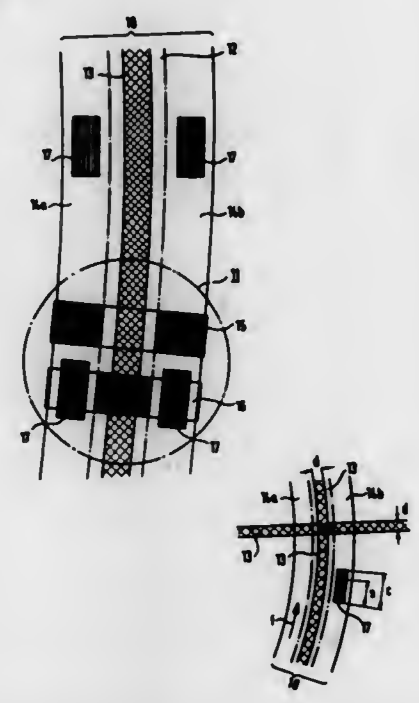
Heinz B. Schreyer, Puchheim, Fed. Rep. of Germany, assignor to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 650,612, Jan. 20, 1976, abandoned. This application Nov. 24, 1976, Ser. No. 744,810

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1975, 2505296

Int. Cl.^{2} G05B *1/00*

U.S. Cl. 250—202 **11 Claims**



1. A curve-following device having an optical sensing head capable of sensing a guide zone containing a guide line having a substantial component transverse to its longitudinal direction and of sensing at least one separate code zone provided adjacent at least one side of said guide line and marks within said code zone, said curve-following device comprising optical scanning means within said head for periodically scanning said guide zone with a certain frequency and for generating signals, means for moving said head along said guide zone at a speed relatively slow in relation to said frequency of the scanning period of said scanning means, a control instrument connectable to said device and having means for receiving said signals generated by said optical scanning means and for distinguishing between marks arranged within said at least one code zone and said guide line, and means for generating first control signals for controlling said means for moving the sensing head along said guide line, means for tripping second control signals for controlling means other than said moving means, and including means for comparing the length of said marks with said transverse component of the guide line and means for preventing tripping said second control signals unless a mark detected in said code zone exceeds a predetermined length.

4,128,482
MOBILITY CONTROL OF AQUEOUS FLUIDS IN POROUS MEDIA

Robert K. Knight, Fullerton, Calif., assignor to Union Oil Company of California, Brea, Calif.

Division of Ser. No. 628,534, Nov. 3, 1975, Pat. No. 4,039,028. This application May 20, 1977, Ser. No. 798,920

Int. Cl.^{2} E21B *43/22*

U.S. Cl. 252—8.55 D **5 Claims**

1. A waterflooding composition exhibiting a high viscosity and resistance to shear degradation and which retains these properties upon admixture with water-soluble salts comprising an aqueous liquid containing from 0.005 to 5 weight percent of a polymer mixture comprising 25 to 75 weight percent of a heteropolysaccharide produced by genus Xanthomonas and 75 to 25 weight percent of a polyacrylamide or a partially hydrolyzed polyacrylamide having a molecular weight of from 0.5×10^6 to 40×10^6.

4,128,483
SULFUR-CONTAINING COMPLEX ESTERS AND SPIN FINISHING COMPOSITIONS USING SAID ESTERS

Shiro Ishida, Takarazuka; Gennemon Funatsuki, Amagasaki; Hiromi Izaiku, Nishinomiya, and Jiro Hirano, Takatsuki, all of Japan, assignors to Nippon Oil and Fats Co. Ltd., Tokyo, Japan

Filed Mar. 9, 1978, Ser. No. 884,905

Claims priority, application Japan, Mar. 16, 1977, 52-28085

Int. Cl.^{2} D06M *13/26*

U.S. Cl. 252—8.6 **5 Claims**

1. Sulfur-containing complex esters composed of thiodipropionic acid, polyhydric alcohols having at least three valencies and monobasic acids having 5–24 carbon atoms.

4,128,484
FABRIC SOFTENING COMPOSITIONS

Brian D. Barford, Fairfield, and Lawrence Benjamin, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 14, 1975, Ser. No. 595,632

Int. Cl.^{2} C09K *3/16;* D06M *13/36*

U.S. Cl. 252—8.8 **16 Claims**

1. A fabric softening composition in the form of an aqueous dispersion, comprising:

- (i) from about 3% to about 20% by weight of a disperse phase comprising
  - (a) at least about 30% by weight of a fatty acid partial ester of a polyhydric alcohol or anhydride thereof containing from 3 to about 8 carbon atoms; and
  - (b) at least about 5% by weight of a cationic surfactant selected from non-cyclic quaternary ammonium salts having at least one C_{12}–C_{30} alkyl chain, C_8–C_{25} alkyl imidazolinium salts, and C_{12}–C_{20} alkyl pyridinium salts;

  the particles of the disperse phase being characterized by an average particle size of less than about 4 microns, said dispersed particles having a positive charge distribution on the surface thereof; and
- (ii) the balance of the composition comprising a liquid carrier selected from the group consisting of water and mixtures of water and C_1–C_4 monohydric alcohols.

4,128,485
FABRIC SOFTENING COMPOUNDS

Robert A. Bauman, New Brunswick, and James A. Kaeser, Somerset, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 714,871, Aug. 16, 1976, abandoned. This application Dec. 12, 1977, Ser. No. 860,034

Int. Cl.^{2} D06M *11/04*

U.S. Cl. 252—8.8 **11 Claims**

1. A compound having the formula $[C_nH_{2n}\ {}_1CO_R(CH_2)_mN^+(CH_3)_2C_pH_{2p+1}]X^-$ wherein R is a moiety selected from the group consisting of O and NH and n is an integer of about 11–22 and m is an integer of about 2–6, and p is an integer of 10–20 and X is an anion.

4,128,486
LUBRICANT FOR HIGH TEMPERATURE NUCLEAR SERVICE

David N. Palmer, Tolland, and John E. Davison, Windsor, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 27, 1977, Ser. No. 762,915

Int. Cl.^{2} C10M *1/10, 3/02, 5/02, 7/02*

U.S. Cl. 252—25 **6 Claims**

1. An anti-gall, anti-seize lubricant composition adapted for high temperature service in the presence of neutron radiation comprising finely divide $B^{11}N$ particles dispersed in a carrier.

4,128,487
STABILIZATION OF SODIUM/POTASSIUM SILICATE-CONTAINING COATING BATH

William L. Karpen, Reading, Pa., assignor to Carpenter Technology Corporation, Reading, Pa.

Filed Jan. 9, 1978, Ser. No. 868,113

Int. Cl.^{2} C10M *1/10, 3/02, 5/02;* B21B *45/02*

U.S. Cl. 252—28 **7 Claims**

1. The method of stabilizing a coating composition containing an aqueous solution of at least one of sodium and potassium silicate which includes the steps of determining the amount of reactive species introduced into the coating composition during use which are reactive with MOH, M being at least one of sodium and potassium, and then adding to the coating composition an amount of MOH at least substantially equal to the amount thereof required to react stoichiometrically with said amount of reactive species.

4,128,488
OVERBASED PHENOXIDE-HALO CARBOXYLIC ACID CONDENSATE ADDITIVES FOR LUBRICANTS

Thoams F. Steckel, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 608,291, Aug. 27, 1975, Pat. No. 4,061,474. This application Dec. 5, 1977, Ser. No. 857,152

Int. Cl.^{2} C10M *1/54, 3/48, 5/28, 7/52*

U.S. Cl. 252—33.6 **23 Claims**

1. An overbased metal carboxylate made by reacting at least one basically reacting metal compound in the presence of a promoter and an acidic reagent with at least one composition made by reacting at least one (I) metal phenoxide substituted with at least one hydrocarbon-based group of at least about 30 carbon atoms with (II) a carboxylic acid reagent containing from 1 to 3 carboxyl-based groups and a halogen-substituted hydrocarbon-based aliphatic or alicyclic group containing a halogen atom.

11. A lubricant composition comprising a major amount of at least one oil of lubricating oil viscosity and a minor amount of the composition claimed in claim 1.

4,128,489

PIEZO-ELECTRIC MATERIAL

Iwao Seo, Inashiki, Japan, assignor to Mitsubishi Petrochemical Company Limited, Marunouchi, Chiyoda, Japan

Filed Dec. 20, 1976, Ser. No. 752,536

Claims priority, application Japan, Dec. 29, 1975, 50-159185

Int. Cl.^{2} C04B *35/00;* **H01L** *41/18*

U.S. Cl. 252—62.9 **9 Claims**

1. Piezo-electric material which comprises a composite of blend polymer resin and piezo-electric ceramic powder, the blend polymer resin consisting of 99 to 20 percent by weight acetal resin and 1 to 80 percent by weight polar polymer said polymer having a relative permittivity above 4.0 and a modulus of elesticity under 8.0×10^9 dyne/cm^2, the blend polymer resin comprising 10 to 90 percent by volume of the composite, the composite being molded and electretized.

4,128,490

PHENYL SULFONATE ESTERS AS PEROXYGEN ACTIVATORS

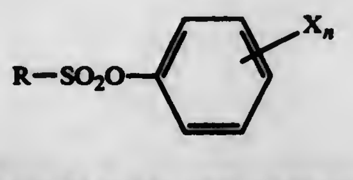
Joseph H. Finley, Metuchen, and John H. Blumbergs, Highland Park, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 3, 1977, Ser. No. 838,979

Int. Cl.^{2} C11D *3/395, 7/54*

U.S. Cl. 252—95 **14 Claims**

1. A process for the low temperature bleaching of stained and/or soiled fabrics which comprises treating them with an aqueous peroxygen bleaching solution having a pH of about 6 to about 12 and containing as a peroxygen activator therefor, an effective amount of a phenyl sulfonate ester having the formula:



wherein R is selected from the class consisting of a hydrocarbon radical of 1 to 16 carbon atoms and a heterocyclic radical having 1 ring or 2 fused rings, said ring or rings containing 5 to 6 members of which 1 to 2 are heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur; X is hydrogen or at least one electron-withdrawing substituent and n is an integer of from 1 to 5.

4,128,491

SLOW-DISSOLVING PERBORATE

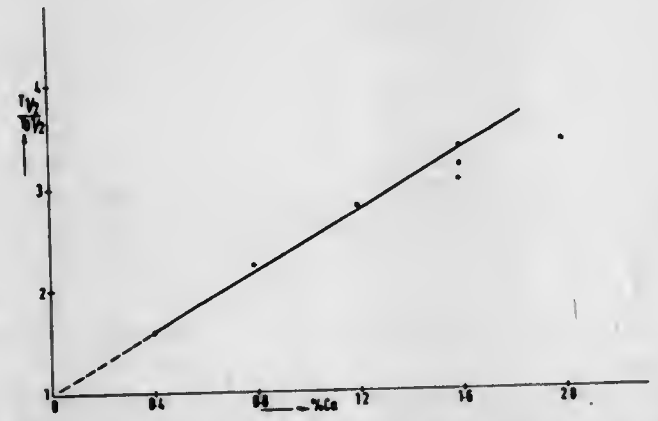
Leo W. A. Melles, Vlaardingen, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Oct. 27, 1977, Ser. No. 846,085

Claims priority, application United Kingdom, Nov. 1, 1976, 45343/76

Int. Cl.^{2} C11D *7/54, 7/56*

U.S. Cl. 252—95 **6 Claims**



1. Particulate alkali metal perborate having a reduced rate of dissolution, especially designed for mixing with detergent granules, the particles of which have an outer layer comprising calcium perborate and calcium metaborate wherein the amount of calcium present is from 0.4% to 2.0% by weight of the total particle.

4,128,492

PROCESS OF PRODUCING A CYCLOHEXANE-1,2,3,4-TETRACARBOXYLIC ACID-CONTAINING SCALE INHIBITOR

Friedrich Krueger, Edingen, and Dieter Palleduhn, Mannheim, both of Fed. Rep. of Germany, assignors to Joh. A. Benckiser GmbH, Ludwigshafen am Rhein, Fed. Rep. of Germany

Filed Dec. 20, 1977, Ser. No. 862,538

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1976, 2657775

Int. Cl.^{2} C02B *5/06*

U.S. Cl. 252—180 **13 Claims**

1. In a process of producing a highly effective agent for inhibiting scale formation is aqueous media, said agent containing cyclohexane-1,2,3,4-tetracarboxylic acid, the steps which comprise

- (a) condensing 2 moles of a mixture of acetic acid anhydride and an acetylhalide in the proportion of 0.2:1.8 to 1.8:0.2 with 0.6 moles to 1 mole of crotonaldehyde in the presence of a polymerization inhibiting agent and a condensation catalyst, while stirring and slightly heating the condensation mixture,
- (b) adding thereto 0.6 moles to 1 mole of acrylic acid, heating the mixture under reflux to a temperature exceeding 100° C.;
- (c) adding to the resulting condensation mixture 0.6 moles to 1 mole of maleic acid anhydride, again heating the mixture to a temperature exceeding 100° C., and
- (d) finally adding nitric acid thereto to cause oxidation thereof, said reaction steps being carried out without isolating any of the resulting intermediate products.

4,128,493

COMPOSITIONS USEFUL IN PROCESS FOR EXTRACTION OF METAL VALUES FROM ACIDIC SOLUTIONS

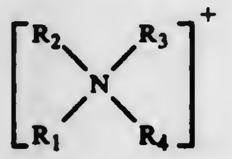
Kenneth D. MacKay, Circle Pines, and Edgar R. Rogier, Minnetonka, both of Minn., assignors to General Mills Chemicals, Inc., Minneapolis, Minn.

Division of Ser. No. 630,600, Nov. 10, 1975, Pat. No. 4,058,585. This application Aug. 8, 1977, Ser. No. 822,765

Int. Cl.^{2} C09K *3/00*

U.S. Cl. 252—184 **4 Claims**

1. A composition consisting essentially of an essentially water-immiscible organic solvent containing dissolved therein at least about 2% by weight of a quaternary ammonium salt of a hydrogen ion exchange agent wherein the salt has the formula QL where Q is the quaternary ammonium cation of the formula



where R_1 is a hydrocarbon radical of 6 to 24 carbon atoms and R_2, R_3 and R_4 are hydrocarbon radicals of 1 to 24 carbon atoms and L is the deprotonated moiety of anion of the hydrogen ion exchange reagent, L being derived from reagents selected from the group consisting of

- (a) an α-hydroxy oxime
- (b) a 2-hydroxybenzophenoxime
- (c) a βdiketone
- (d) a hydroxy containing benzoxazole and
- (e) a substituted 8-hydroxyquinoline.

4,128,494

ACTIVATORS FOR PERCOMPOUNDS

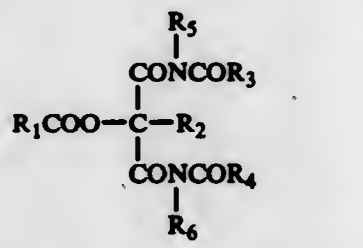
Jean-Pierre Schirmann, Oullins; Bernard Dubreux, Francheville le Bas; Michel Bakes, La Celle Saint Cloud; Serge-Yvon Delavarenne, Francheville le Haut, and Marie-Christine Daude-Lagrave, Paris, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Aug. 5, 1977, Ser. No. 822,145

Int. Cl.^{2} C11D *3/395, 7/54;* **D06L** *3/02*

U.S. Cl. 252—186 **7 Claims**

1. An activated percompound composition comprising an organic or inorganic percompound and at least one α-acyloxy-N,N′-polyacylmalonamide activator having the formula



$$\begin{array}{c} R_5 \\ | \\ CONCOR_3 \\ | \\ R_1COO-C-R_2 \\ | \\ CONCOR_4 \\ | \\ R_6 \end{array}$$

wherein R_1, R_2, R_3, R_4, R_5, and R_6 are the same or different and are hydrogen, straight-chain alkyl radicals having from one to eleven carbon atoms, branched chain alkyl or cycloalkyl radicals having from three to twelve carbon atoms, or hydrocarbon radicals with from six to twelve carbon atoms comprising at least one aromatic ring, or where one or both of R_5 and R_6 are COR_7 and R_7 is hydrogen, a straight chain or branched chain alkyl radical with from one to twelve carbon atoms or a hydrocarbon radical with from six to twelve carbon atoms comprising at least one aromatic ring, the activator being in an amount sufficient to increase the activity of the percompound.

4,128,495

BLEACHING COMPOSITION

Joseph E. McCrudden, Warrington, England, assignor to Interox Chemicals Limited, London, England

Filed May 6, 1976, Ser. No. 683,818

Claims priority, application United Kingdom, Nov. 18, 1975, 47371/75

Int. Cl.^{2} C11D *3/395, 7/54;* **D06L** *3/02*

U.S. Cl. 252—186 **17 Claims**

1. A solid bleaching or detergent composition comprising a surfactant, a builder salt and a bleaching agent, said bleaching agent comprising phthaloyl peroxide.

12. A process for bleaching which comprises contacting a material to be bleached with an aqueous bleaching composition containing phthaloyl peroxide and a persalt whereby diperoxyphthalic acid is generated in solution.

4,128,496

DICHROIC LIQUID CRYSTAL COMPOSITIONS

Herbert S. Cole, Jr., Scotia, and Siegfried Aftergut, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

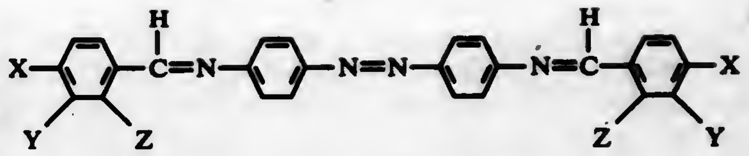
Continuation-in-part of Ser. No. 721,670, Sep. 9, 1976, abandoned. This application Sep. 21, 1977, Ser. No. 835,044

Int. Cl.^{2} C09K *3/34;* **G02F** *1/13*

U.S. Cl. 252—299 **6 Claims**

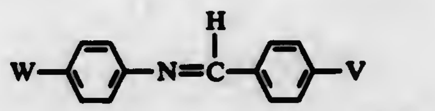
1. A dichroic liquid crystal composition for use in a liquid crystal display comprising:

- a host liquid crystal material having positive dielectric anisotropy; and
- a guest dichroic dye dissolved in said liquid crystal material, said dichroic dye being selected from the group consisting of



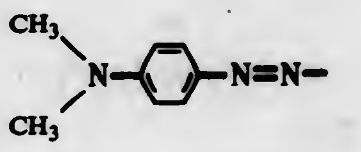
(a)

wherein X is one of a hydrogen atom, a nitro (NO_2) radical and a dimethylamino ($N(CH_3)_2$) radical, and the Y and Z bonds couple to the one of (1) a pair of hydrogen atoms, if X is other than a hydrogen atom, and (2) a fused benzene ring; and

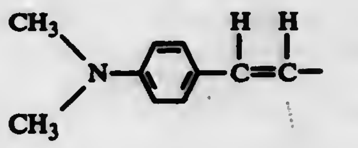


(b)

wherein V is one of a nitro (NO_2) radical and a dimethylamino ($N(CH_3)_2$) radical, and W is one of a dimethylaminophenylazo



radical and a dimethylaminophenylvinyl



radical;

said dichroic liquid crystal composition having an order parameter S of at least 0.70 and a peak absorption wavelength between about 410 nanometers and about 450 nanometers, wherein said host liquid crystal material consists essentially of about 70%, by weight, of p-pentylphenyl-2-chloro-4-(p-pentylbenzoyloxy)benzoate and about 30%, by weight, of an ester mixture composed approximately of 50–60% by weight of 4′-n-pentylphenyl ester of anisic acid, 25–35% by weight of 4′-n-pentylphenyl ester of 4-hexyloxy-benzoic acid, and 10–15% by weight of (2-cyano-4′-butylphenyl) ester of 4-(hexanoyloxybenzoyloxy)-benzoic acid.

4,128,497

DICHROIC LIQUID CRYSTAL COMPOSITIONS

Herbert S. Cole, Jr., Scotia, and Siegfried Aftergut, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

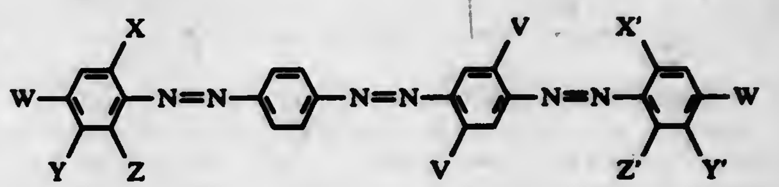
Continuation-in-part of Ser. No. 721,668, Sep. 9, 1976, abandoned. This application Jun. 2, 1977, Ser. No. 802,358

Int. Cl.^{2} C09K *3/34;* **G02F** *1/13*

U.S. Cl. 252—299 **2 Claims**

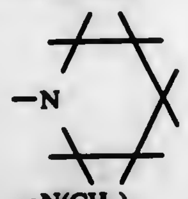
1. A dichroic liquid crystal composition for use in a liquid crystal display, comprising:

- a host nematic liquid crystal material; and
- a guest tris-azo dichroic dye dissolved in said nematic liquid crystal material, said dichroic dye having a general chemical formula



wherein the substituents of bonds V, W, X, Y, Z, X′, Y′, and Z′ are coordinately selected from table I

TABLE I

DYE	V	W	X
A	$-CH_3$	$-N(CH_3)_2$	$-H$
B	$-CH_3$	$-N(CH_3)_2$	$-H$
C	$-H$		$-H$
D	$-H$	$-N(CH_3)_2$	$-H$
E	$-H$	$-H$	$-OH$
F	$-H$	$(CH_3)_2N-$	$-CH_3$
G	$-H$	$(CH_3)_2N-$	$-CH_3$
H	$-H$	$(C_2H_5)_2N-$	$-CH_3$

DYE	Y	Z	Y'	Z'	X'
A	$-H$	$-H$	$-H$	$-H$	$-H$
B	$-H$	$-H$	$-\overset{H}{C}=\overset{H}{C}-\overset{H}{C}=\overset{H}{C}-$		$-OH$
C	$-H$	$-H$	$-H$	$-H$	$-H$
D	$-H$	$-H$	$-H$	$-H$	$-H$
E	$-\overset{H}{C}=\overset{H}{C}=\overset{H}{C}=\overset{H}{C}$		$-\overset{H}{C}=\overset{H}{C}-\overset{H}{C}=\overset{H}{C}-$		$-OH$
F	$-H$	$-CH_3$	$-H$	$-CH_3$	$-CH_3$
G	$-H$	$-H$	$-H$	$-H$	$-CH_3$
H	$-H$	$-H$	$-H$	$-H$	$-CH_3$

for a desired set of an approximate order parameter (S) and an approximate wavelength ($\lambda_{Max.}$) of maximum absorption in accordance with Table II,

TABLE II

DYE	S (approx.)	γ Max.$^{(nm)}$ (approx.)
A	0.7	510
B	0.7	555
C	0.74	505
D	0.72	510
E	0.7	575
F	0.78	550
G	0.78	555
H	0.78	570

the approximate order parameter and approximate absorption wavelength being measured with said dye dissolved in the host material, said host nematic liquid crystal material consisting of a mixture of 70% by weight of p-pentylphenyl-2-chloro-4-(p-pentyl-benzoyloxy)benzoate, and 30% by weight of an ester mixture composed approximately of 50–60% by weight of 4'-n-pentylphenyl ester of anisic acid, 25–35% by weight of 4'-n-pentylphenyl ester of 4-hexyloxybenzoic acid, and 10–15% by weight of (2'-cyano-4'-butylphenyl) ester of 4-(hexanoyloxybenzoyloxy)-benzoic acid.

4,128,498
CHLOROSILICATE PHOSPHOR

Takashi Hase, Ebina; Masatake Yoshikawa, Hiratsuka, and Haruyuki Takanashi, Hatano; all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Filed Mar. 28, 1978, Ser. No. 890,940
Claims priority, application Japan, Mar. 28, 1977, 52-34305
Int. Cl.² C09K *11/46*
U.S. Cl. 252—301.4 F **2 Claims**

1. A divalent europium activated strontium beryllium chlorosilicate phosphor represented by the formula

$$Sr_{4-x-y}Be_xEu^{2+}{}_ySi_3O_8Cl_4$$

wherein x is a number within the range of $0<x\leqq 1.5$ and y is a number within the range of $0.001\leqq y\leqq 0.50$ and exhibiting an emission peak that is at a shorter wave length than the emission peak of said phosphor without Be.

4,128,499
LEWIS ACID-FLUORINE COMPOUNDS OF CARBON

A. David Cohen, Sarnia, Canada, assignor to Imperial Oil Limited, Toronto, Canada

Continuation-in-part of Ser. No. 523,026, Nov. 12, 1974, abandoned. This application Sep. 22, 1976, Ser. No. 725,417
Int. Cl.² B01J *27/12*
U.S. Cl. 252—378 R **17 Claims**

1. A composition of matter consisting essentially of carbon containing in combination therewith fluorine and a Lewis acid selected from the group consisting of BF_3, PF_5, AsF_5, SbF_5, TaF_5, SiF_4, SO_3, PtF_4, NbF_5, VF_5, UF_6 and TiF_4, said composition being in the form of the solid.

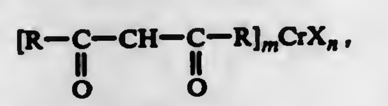
13. A process for forming exfoliated graphite comprising contacting graphite with fluorine and a Lewis acid selected from the group consisting of BF_3, PF_5, AsF_5, SbF_5, TaF_5, SiF_4, SO_3, PtF_4, NbF_5, VF_5, UF_6 and TiF_4 for a time sufficient to form a solid composition of matter comprising carbon containing in combination therewith said fluorine and said Lewis acid and thereafter heating the so treated graphite at elevated temperatures so as to decompose the treated graphite thereby exfoliating it.

4,128,500
POLYMERIZATION CATALYST AND METHOD

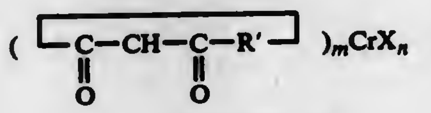
Yu-Tang Hwang, 1520 Ninth St., NW., Clinton, Iowa 52732, and Howard L. Grimmett, 4 Robin Hood Ct., Lincolnshire, Ill. 60015

Filed Apr. 7, 1976, Ser. No. 674,450
Int. Cl.² B01J *31/02, 31/12*
U.S. Cl. 252—430 **30 Claims**

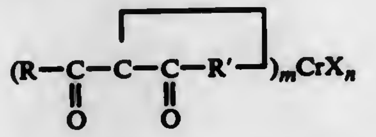
1. A catalyst prepared by (1) dispersing on a finely divided, difficultly reducible, inorganic support of the class consisting of silica, alumina, thoria, titania, magnesia and mixtures and composites thereof a non-oxide zirconium compound capable of intimately associating with said support and convertible to the oxide form on calcination, in a stabilizing and promoting proportion, followed by calcining at a temperature within the range of about 400°–2000° F. to provide a zirconium modified support, (2) dispersing on the thusly modified support of (1) a chromium chelate of a beta-dicarbonyl compound essentially of the formula of the class consisting of



$$[R-\underset{\underset{O}{\|}}{C}-CH-\underset{\underset{O}{\|}}{C}-R]_mCrX_n,$$



and



wherein each R is individually selected from hydrogen, alkyl, alkenyl, aryl, cycloalkyl and cycloalkenyl radicals and combinations of these radicals with each R containing 0–20 carbon atoms and a corresponding valence-satisfying number of hydrogen atoms, R' is selected from alkylene, alkenylene, arylene, cycloalkylene and cycloalkenylene radicals and combinations of these bivalent radicals with R' containing 1–20 carbon atoms and a corresponding valence-satisfying number of hydrogen atoms, m is a whole number from 1 to 3, n is a whole number from 0 to 2 with m plus n being a whole number of 2 to 3 and X is a halide, alkyl or alkoxy, and (3) activating the resulting mixture by heating to and at an elevated temperature of from about 800°–2000° F. in a non-oxidizing atmosphere.

4,128,501
PROCESS FOR THE PREPARATION OF ORGANO-MAGNESIUM COMPLEXES

William N. Smith, Quaker Town, Pa.; Dennis B. Malpass, La-Porte, and Joseph H. Merkley, Dayton, both of Tex., assignors to Texas Alkyls, Inc., Deer Park, Tex.

Filed Jun. 24, 1977, Ser. No. 809,750
Int. Cl.² C08F *4/50*
U.S. Cl. 252—431 R **4 Claims**

1. A process for the preparation of hydrocarbon soluble organo-magnesium complex of the formula

$$(RR'Mg)_m \cdot (R_3Al)_n$$

wherein R is a primary, secondary, or tertiary alkyl group having from 1 to 25 carbon atoms, R' is a primary alkyl group having 1 to 25 carbon atoms, or phenyl group, or mixture thereof, and m and n are numbers such that the ratio of m/n is about one or greater comprising:

(a) reacting magnesium metal with primary alkyl halide or phenyl halide of the formula R'X wherein R' is as defined and X is chlorine, bromine or iodine at a temperature between about 20° C. and about 200° C., said magnesium being present in an amount from 1 to 2 moles of magnesium per mole of halide; and

(b) adding thereto a metal organo-aluminate compound of the formula R_4AlM wherein R is as defined and M is sodium, potassium or lithium in less than a 1:1 mole ratio with the magnesium reaction compounds of step a).

4,128,502
ETHYLENE POLYMERIZATION CATALYST

Nicholas K. Kildahl, Worcester, Mass., and Peter Fotis, Highland, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 755,862, Dec. 30, 1976, abandoned. This application Dec. 2, 1977, Ser. No. 856,862
Int. Cl.² C08F *4/10, 4/64*
U.S. Cl. 252—431 R **10 Claims**

1. A catalyst for polymerizing ethylene or ethylene containing a small amount of polymerizable C_3 to C_8 olefin comprising:

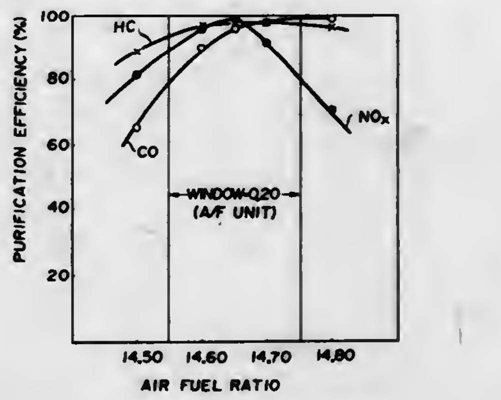
(a) a solid catalyst component made from (1) a lower alkyl magnesium alkoxide or magnesium hydroxide, (2) a liquid titanium-aluminum compound which is the reaction product of aluminum chloride and a lower alkyl titanium (IV) alkoxide reacted at a temperature ranging from about 0° to about 150° C. in a mol ratio, said aluminum chloride to said alkoxide, between one-third to one and about two to one, and (3) a lower alkyl alkylaluminum dichloride, wherein (1) and (2) are reacted at a temperature ranging from about 0° to about 150° C. in amounts such that the molar ratio of elemental magnesium to elemental titanium ranges from about 0.5 to about 5, and wherein the product of the reaction of (1) and (2) is reacted with (3) at a temperature ranging from about −20° to about 150° C., the concentration of (3) ranging from about 1 to about 10 mols per mol of (1) employed; and

(b) a lower alkyl trialkylaluminum promoter in an amount which is effective to increase the activity of (a).

4,128,503
CATALYST FOR PURIFYING EXHAUST AND WASTE GASES AND METHOD FOR PREPARATION THEREOF

Shin Yamauchi, Ikeda; Kiyoshi Yonehara, Takatsuki; Koshi Horie, Suita; Tetsuji Ono, Amagasaki, and Takashi Ohara, Nishinomiya, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

Filed Mar. 30, 1977, Ser. No. 782,759
Claims priority, application Japan, Mar. 31, 1976, 51/34342; May 19, 1976, 51/56657
Int. Cl.² B01J *27/14, 31/02;* C01B *25/00*
U.S. Cl. 252—435 **16 Claims**



1. A catalyst for purifying exhaust and waste gases which is capable of simultaneously removing nitrogen oxides, carbon monoxide and hydrocarbons from the exhaust gases at high efficiencies consisting essentially of 2 to 50 g of phosphorus, 2 to 50 g of barium, 0 to 30 g of nickel, as oxide 0.05 to 3 g of at least one member selected from the group consisting of palladium and platinum and 0.005 to 0.3 g of rhodium in elemental form, calculated as atom, supported on an inert carrier per liter of a final catalyst.

4,128,504
STABILIZED ZINC-CONTAINING ZEOLITES

Charles J. Plank, Woodbury; Edward J. Rosinski, Pedricktown, and Edwin N. Givens, Pitman, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 329,800, Feb. 5, 1973, abandoned. This application Feb. 21, 1975, Ser. No. 551,949
Int. Cl.² B01J *29/06*
U.S. Cl. 252—455 Z **24 Claims**

1. A method for preventing elution of zinc from a zinc-containing zeolite catalyst by incorporating therein an elution preventing amount of another metal selected from the group consisting of metals of Group IB or VIII of the Periodic Table, germanium, rhenium and rare earth metals, the zeolite used having a silica to alumina ratio of at least about 12 and a constraint index of from about 1 to about 12.

15. A zeolite catalyst comprising of a zeolite characterized by having a silica to alumina mole ratio of at least 12 and a constraint index of from about 1 to about 12 and containing from about 0.1% to about 5% by weight of zinc and from about 0.1% to about 2% by weight of another metal selected from a group of metals of Groups IB and VIII of the Periodic Table, germanium, rhenium and rare earth metals.

4,128,505
CATALYST FOR HYDROTREATING

Richard J. Mikovsky, Trenton, N.J., and Anthony J. Silvestri, Morrisville, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 642,957, Dec. 22, 1975, abandoned. This application Dec. 15, 1976, Ser. No. 750,754
Int. Cl.² B01J *21/04, 21/06, 23/84, 27/04*
U.S. Cl. 252—465 **14 Claims**

1. A catalyst composition, the catalyst support of which consists essentially of co-precipitated titania and zirconia, the

co-precipitate having associated therewith a mixture of (1) cobalt metal, cobalt oxide or cobalt sulfide and (2) molybdenum oxide or molybdenum sulfide.

4,128,506

PLATINUM-RHODIUM CATALYST FOR AUTOMOTIVE EMISSION CONTROL

Louis Hegedus, Grosse Pointe Woods, and Jack C. Summers, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 23, 1978, Ser. No. 871,706

Int. Cl.^{2} B01J *21/04, 23/42, 23/46*

U.S. Cl. 252—466 PT 3 Claims

1. A three-way platinum/rhodium catalyst adapted for use in a system operating at about the stoichiometric air/fuel ratio of an automotive engine, the catalyst having an alumina support on which there is provided a first layer of platinum which is resistant to poisoning by lead and phosphorous, said platinum being positioned on the surface of said support and penetrating into the body thereof in decreasing concentration with the maximum concentration of platinum being at the surface of the support, a second layer positioned adjacent to said first layer and penetrating into said support with the greater portion of rhodium positioned in said second layer beneath said first layer, rhodium being also present in said first layer with its minimum concentration in said first layer being at or close to said surface and increasing in concentration to a maximum, the depth at said maximum rhodium concentration defining the boundary between said first and second layers, the concentrations of platinum and rhodium decreasing inwardly from said boundary, said first layer of platinum serving to protect the rhodium in said second layer from poisoning and the total amount of rhodium on said catalyst being as low as about 0.002% by weight.

4,128,507

PERFUMED GELS OF HYDROXYPROPYL CELLULOSE

Bernard M. Mitzner, New Hampton, N.Y., assignor to Polak's Frutal Works, Inc., Middletown, N.Y.

Filed Feb. 28, 1977, Ser. No. 773,098

Int. Cl.^{2} C11B *900*

U.S. Cl. 252—522 4 Claims

1. A perfumed gel suitable for use as a room freshener consisting essentially of about 3 to 10% by weight of hydroxypropyl cellulose dissolved in about 90 to 97% of a solution consisting essentially of about 35 to 90% of a linear polyol plasticizer for hydroxypropyl cellulose, 10 to 55% perfume oil and 0 to 10% of a hydroxypropyl cellulose solvent selected from the class consisting of water and 1 to 3 carbon aliphatic ahcohols.

4,128,508

COLOR CHANGE PERFUME SYSTEMS

David R. Munden, Hythe, England, assignor to International Octrooimaatschappij "Octropa" BV, Rotterdam, Netherlands

Filed Jun. 22, 1977, Ser. No. 808,737

Claims priority, application United Kingdom, Jul. 2, 1976, 27683/76

Int. Cl.^{2} C11B *9/00*

U.S. Cl. 252—522 16 Claims

1. A colour change perfume system comprising (1) a volatile acid or base, (2) a perfume adapted to pass into the atmosphere at a selected rate, and (3) a pH indicator, the volatile acid or base being selected and being present in such amount as to volatize at about the same rate as the perfume, thereby causing the pH indicator to change colour when the perfume is effectively exhausted.

4,128,509

1-(NORBORN-5'-EN-2'-YL) OR 1-(NORBORN-2'-YL) SUBSTITUTED 1-ALKEN-3-OLS AND ALKAN-3-OLS

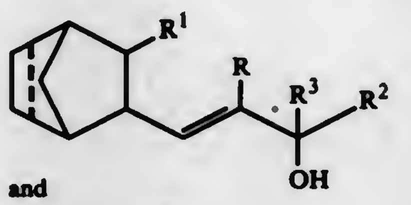
Alfred A. Schleppnik, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 211,788, Dec. 23, 1971, abandoned. This application Nov. 29, 1974, Ser. No. 528,124

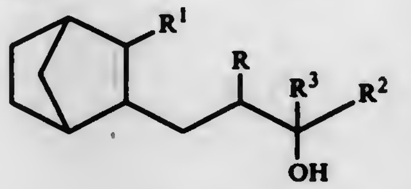
Int. Cl.^{2} C07C *35/22;* A61K *7/46*

U.S. Cl. 252—522 18 Claims

1. A compound characterized by the formulae



and



wherein R^1 represents hydrogen or methyl, R represents an alkyl with from 1 to 8 carbon atoms, and R^2 and R^3 represent hydrogen or an alkyl with from 1 to 8 carbon atoms, provided that R and R^2 can be $\text{+}CH_2\text{+}_n$ wherein n represents the integer 2, 3 or 4.

4,128,510

VULCANIZING HALOGEN-CONTAINING POLYMERS

John R. Richwine, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

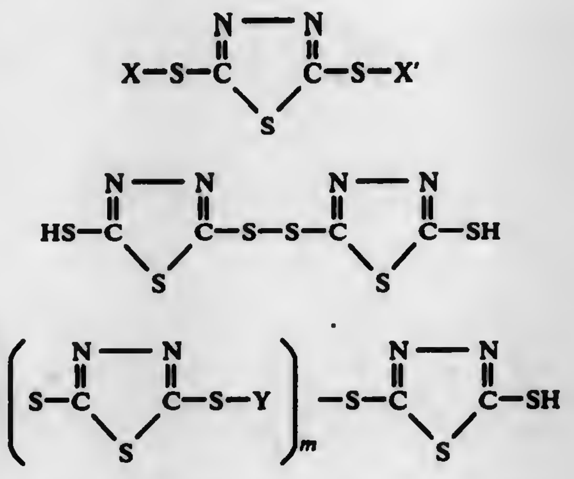
Filed Apr. 18, 1977, Ser. No. 788,395

Claims priority, application United Kingdom, Jun. 28, 1976, 26832/76

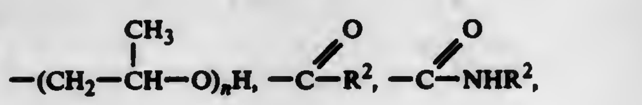
Int. Cl.^{2} C08F *28/00;* C08G *59/00, 59/14;* C08K *5/47*

U.S. Cl. 528—36 19 Claims

1. The process of crosslinking a halogen-containing polymer which consists essentially of heating said polymer in the presence of a basic material and a derivative of 2,5-dimercapto-1,3,4-thiadiazole selected from those derivatives having one of the following formulas:

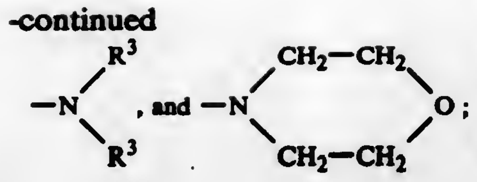


wherein X is a substituent selected from hydrogen, —CR-R'OH, —(CH$_2$—CH$_2$—O)$_n$H,

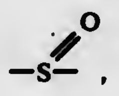


$$-(CH_2-\overset{CH_3}{\overset{|}{C}H}-O)_nH,\ -\overset{O}{\overset{\|}{C}}-R^2,\ -\overset{O}{\overset{\|}{C}}-NHR^2,$$

-continued

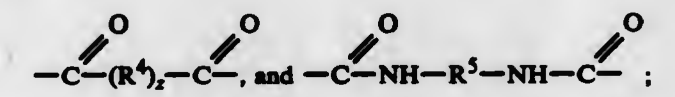


where n is an integer from 1 to 5, R and R' are selected from hydrogen, alkyl groups containing 1-8 carbon atoms, and aryl, alkaryl and aralkyl groups containing 6 to 8 carbon atoms; R^2 is selected from alkyl groups containing 1-17 carbon atoms, aryl groups containing one to two rings, alkaryl groups containing 7-14 carbon atoms, aralkyl groups containing 7-8 carbon atoms and cyclohexyl groups; R^3 is an alkyl group containing 1-8 carbon atoms; X' is the same as X with the exception of hydrogen; m is an integer from 1 to 10; and Y is selected from zinc, lead, —CRR'—, —CO—, —S—,



$$-\overset{O}{\overset{\|}{S}}-\ ,$$

—SO$_2$—, —SS—,



$$-\overset{O}{\overset{\|}{C}}-(R^4)_z-\overset{O}{\overset{\|}{C}}-,\ \text{and}\ -\overset{O}{\overset{\|}{C}}-NH-R^5-NH-\overset{O}{\overset{\|}{C}}-\ ;$$

where R^4 is selected from alkylene and alkenylene groups containing 1-8 carbon atoms and cycloalkylene, arylene and alkarylene groups containing 6-8 carbon atoms; z is 0 or 1; and R^5 is selected from alkylene groups containing 2-8 carbon atoms, phenylene, methylphenylene and methylenediphenylene.

4,128,511

WATER-SOLUBLE, CROSSLINKED NITROGENOUS CONDENSATION PRODUCTS PRODUCED BY REACTION OF CHLOROHYDRIN-ETHERS WITH ETHYLENEIMINE

Werner Streit, Bobenheim; Rolf Fikentscher; Karl Gans, both of Ludwigshafen, and Gerhard Welzel, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen a. Rhein, Fed. Rep. of Germany

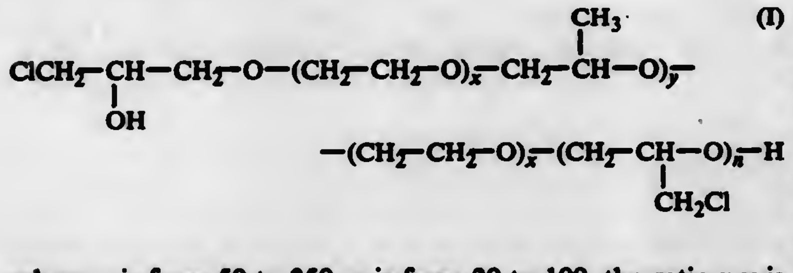
Filed Aug. 3, 1977, Ser. No. 821,549

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1976, 2638955

Int. Cl.^{2} C08L *63/00*

U.S. Cl. 528—424 3 Claims

1. A water-soluble, crosslinked nitrogen-containing condensation product, the viscosity of which, in aqueous solution, increases with increasing temperature, obtained by reacting a chlorohydrin-ether of the formula



(I)

$$ClCH_2-\underset{OH}{\underset{|}{C}H}-CH_2-O-(CH_2-CH_2-O)_x-CH_2-\overset{CH_3}{\overset{|}{C}H}-O)_y-(CH_2-CH_2-O)_x-(CH_2-\underset{CH_2Cl}{\underset{|}{C}H}-O)_n-H$$

where x is from 50 to 250, y is from 20 to 100, the ratio x:y is from 6.1:1 to 1:15 and n is from 0.5 to 5, with ethyleneimine in the weight ratio of from 1:0.1 to 1:0.8.

4,128,512

POST TREATMENT OF FLEXIBLE POLYURETHANE FOAM WITH ORGANIC SILOXANES FOR INCREASING THE WATER ABSORBENCY AND PENETRATION

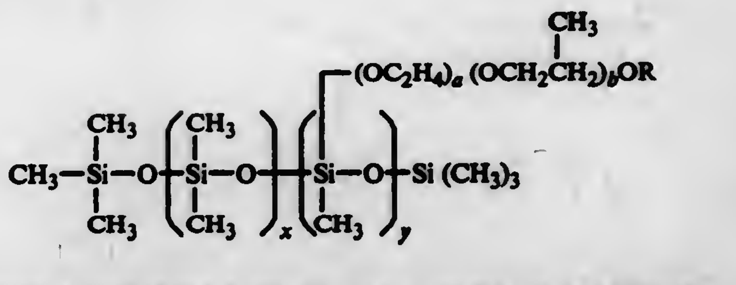
Keith G. Spitler, Bethel Park, and David A. Radovich, Coraopolis, all of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1977, Ser. No. 845,690

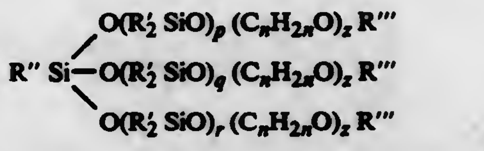
Int. Cl.^{2} C08J *9/00;* C08G *18/44*

U.S. Cl. 521—55 4 Claims

1. A method of increasing the water absorbency and penetration of a flexible polyurethane foam comprising washing and/or impregnating said foam with an aqueous solution of siloxane wherein said siloxane is selected from the group consisting of (A)



wherein R represents a methyl, ethyl, propyl or butyl group, wherein the silicone chain has an average molecular weight of from about 140 to about 5000, wherein the polyether chain has an average molecular weight of from about 60 to about 3000, wherein x and y are each integers of 1 or more, and wherein a and b can be 0 or whole numbers, but one of them must be at least 1; and (B) compounds of the formula



wherein R', R'', and R''' are alkyl radicals having from 1 to 4 carbon atoms, p, q or r each have a value of from 4 to 8, and $(C_nH_{2n}O)_z$ is a mixed polyoxyethylene oxypropylene group containing from 15 to 19 oxyethylene units and from 11 to 15 oxypropylene units with z equal to from about 26 to about 34.

4,128,513

SORBENT FOAM MATERIAL

Louis A. Errede, North Oaks, and Robert A. Sinclair, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 13, 1974, Ser. No. 469,102

Claims priority, application United Kingdom, May 25, 1973, 25181/73

Int. Cl.^{2} C08J *9/16;* C08G *73/00*

U.S. Cl. 521—50 10 Claims

1. A black sorbent thermoset foam which has been prepared by the pyrolysis of a composition liquid at the pyrolysis temperature comprising sulfuric acid and at least one aromatic nitrogen-containing compound having the general formula:

X — Ar — Y

in which Ar represents an aromatic nucleus, X represents a substituent having a negative Hammett sigma constant and attached by a nitrogen, oxygen or sulphur atom, and Y represents a substituent having a positive Hammett sigma constant and attached by a nitrogen atom, the substituents X and/or Y forming part of a ring fused onto the aromatic nucleus or attached directly to the aromatic nucleus, the thermoset foam having a specific surface area of at least 50 m^2/g, and said pyrolysis comprising heating said composition to a temperature below 300° C. to initiate reaction of the said composition.

4,128,514

STABLE POLYCHLOROPRENE LATEX

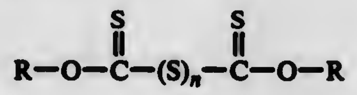
Kenneth D. Fitzgerald, Sugarland, Tex., assignor to Denka Chemical Corporation, Houston, Tex.

Filed Jan. 9, 1978, Ser. No. 868,192

Int. Cl.² C08L *11/02*

U.S. Cl. 260—17 A **22 Claims**

1. A process for preparing latex compositions comprising polymerizing a carboxylic acid soap-free aqueous suspension of chloroprene monomer containing about 0.5 to 5.0 parts by weight of an alpha, beta unsaturated carboxylic acid monomer based on the total weight of monomer, in the presence of (a) 2 to 6 parts by weight of a protective colloid containing 0.1 to 6 parts by weight hydroxyalkyl cellulose and from 0 to 2.9 parts by weight of polyvinyl alcohol and (b) 0.5 to 2 parts by weight of an organic sulfur containing chain transfer agent selected from the group consisting of alkyl mercaptans and compounds having the general structure:



$$\mathrm{R-O-\overset{\overset{S}{\|}}{C}-(S)_{n}-\overset{\overset{S}{\|}}{C}-O-R}$$

wherein R is a hydrocarbon radical having 1 to 8 carbon atoms and *n* is 2 to 6, (a) and (b) being in parts by weight based on 100 parts of monomer.

4,128,515

WATER REDUCIBLE EPOXY ESTERS AND COATING COMPOSITIONS CONTAINING THEM

Michael A. Tobias, Bridgewater, and Carlos J. Martinez, Edison, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 14, 1977, Ser. No. 833,195

Int. Cl.² C08G *59/14*

U.S. Cl. 260—18 EP **27 Claims**

1. An epoxy ester comprising an ester adduct of at least one polyfunctional epoxy resin containing more than one 1,2-epoxy group with a dicarboxylic acid, in a ratio of dicarboxylic acid equivalents to epoxide equivalents of from 1.20 to 1.50, wherein said ester adduct has an acid number of between about 20 and about 40.

4,128,516

PROCESS FOR THE GENTLE DEGASIFICATION OF COAGULATION-SENSITIVE PVC LATICES

Hans Geschonke, Pulheim; Rainer Rompeltien, and Wolfgang Rummel, both of Cologne, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

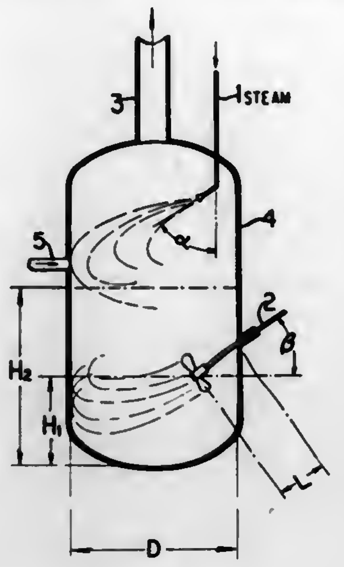
Filed Jul. 7, 1977, Ser. No. 813,663

Claims priority, application Fed. Rep. of Germany, May 20, 1977, *2722952*

Int. Cl.² C08L *27/06*

U.S. Cl. 260—29.6 R **11 Claims**

1. In the process for the gentle degasification of coagulation-sensitive PVC latices in a confined space under reduced pressure and stirring at elevated temperatures with steam injection onto the latex surface, the improvement consisting essentially of conducting said degasification at a selected temperature from 50° C. to 80° C. at a pressure corresponding to the boiling pressure of water at the selected temperature, stirring said latex by an inclined stirrer mounted in a perpendicular plane to the vessel wall and inclined from the vertical by an angle β of 20° to 45° in a clockwise direction, said inclined stirrer extending beyond the wall of said vessel by the length L said latex surface being between a minimum height H_1, and a maximum height H_2 in said vessel having a diameter D, where the ratio of L to D is from 0.3 to 0.1, the ratio of the lower limit of H_1 is $0.3 > H_1$ to $D > 0.1$, the ratio of the upper limit H_2 is $1 > H_2$ to $D > 0.2$, said stirrer being situated so that effective stirring occurs at H_1 and H_2 is at about 50% of the total liquid capacity of said vessel, whereby a rolling action of said latex in said confined space is effected and introducing said steam into the gas space above said latex but directed along the surface of the confined space.



4,128,517

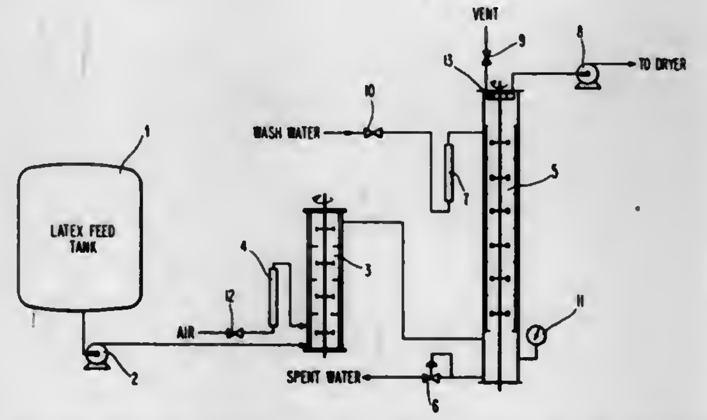
METHOD OF WASHING POLYMER LATICES BY AERATING

Nicholas Kydonieus, Delaware, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Nov. 1, 1977, Ser. No. 847,627

Int. Cl.² C08L *27/16*

U.S. Cl. 260—29.6 F **10 Claims**



1. In the method of reducing contaminants in an aqueous polymer suspension wherein said suspension is washed with water to remove contaminants the improvement which comprises aerating said suspension prior to washing to produce a foam wherein the suspended polymer particles have a reduced apparaent density, and then washing the foamed suspension product by passing it in counter-current relationships with wash water.

4,128,518

PRESSURE-SENSITIVE ADHESIVE AND VINYL ACETATE-ETHYLENE COPOLYMER EMULSION USEFUL AS BASE MATERIAL THEREFOR

Takeo Oyamada; Choji Tomizawa, both of Ichihara; Masahiro Domoto, Toyonaka, and Shizuo Narisawa, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 20, 1977, Ser. No. 789,293

Claims priority, application Japan, Apr. 28, 1976, 51-48734

Int. Cl.² C08L *23/04*

U.S. Cl. 260—29.6 WB **6 Claims**

1. A pressure-sensitive adhesive containing a base material therefor comprising an aqueous emulsion of vinyl acetate-ethylene copolymer having an ethylene content of 20 to 35% by weight, the benzene-insoluble part of less than 20% by weight and an intrinsic viscosity of the benzene-soluble part of 0.6 to 1.0 dl/g (at 30° C.) which is prepared by the emulsion copolymerization of vinyl acetate monomer and ethylene monomer in the presence of 0.1 to 1% by weight of a protective colloid and 1 to 8% by weight of a polyoxyethylenic nonionic surfactant, based on the total weight of the monomers, at a temperature of 30–60° C. and under a pressure of 30 to 100 kg/cm², wherein at least 50% by weight of the vinyl acetate monomer is added uniformly and continuously to the emulsion polymerization system during the emulsion polymerization.

4,128,519

AQUEOUS VINYLIDENE FLUORIDE POLYMER COATING COMPOSITION

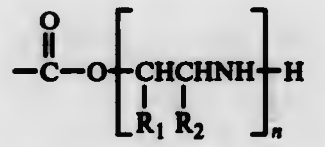
Edward J. Bartoszek, Norristown, and Alkis Christofas, Levittown, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 21, 1977, Ser. No. 761,191

Int. Cl.² C08L *27/16*

U.S. Cl. 260—29.6 NR **6 Claims**

1. An aqueous coating composition comprising, for each 100 parts by weight of aqueous liquid medium, from about 25 to about 125 parts of dispersed polymer particles of vinylidene fluoride homopolymer or copolymer of at least 50 mol percent vinylidene fluoride copolymerized with at least one other copolymerizable monomer and from about 3 to about 50 parts of emulsified liquid epoxy resin, and, for each part by weight of liquid epoxy resin, from about 0.25 to about 2.5 parts of an emulsifying agent comprising an acidified aminoalkylated polymer having pendant aminoalkylate groups of the formula



$$-\overset{\overset{O}{\|}}{C}-O-\left[\underset{R_1}{\underset{|}{CH}}\underset{R_2}{\underset{|}{CH}}NH\right]_n-H$$

wherein R_1 and R_2 are independantly selected from the group consisting of hydrogen and lower alkyl radicals having 1 to 4 carbon atoms and the average value of n ranges from about 1.0 to 2.5, and wherein said aminoalkylated polymer before aminoalkylation contains at least 3% by weight pendant-COOH groups.

4,128,520

THICKENING BUTADIENE-STYRENE LATICES WITH TERPOLYMER EMULSIONS

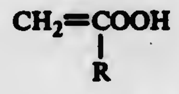
Eugene S. Barabas, Watchung; Andrew Klein, Somerville, and Dru W. Alwani, Wayne, all of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Feb. 18, 1977, Ser. No. 770,197

Int. Cl.² C08L *9/08*

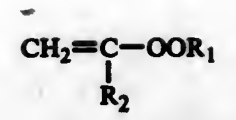
U.S. Cl. 260—29.7 W **9 Claims**

1. A method for thickening butadiene-styrene latices which comprises adding thereto a terpolymer emulsion prepared by inducing in a reactor, at a temperature of from about 5° C. to about 80° C., a redox-initiated polymerization in an aqueous dispersion of, as monomers (1) from about 30 to about 85 wt.% of an α,β-unsaturated carboxylic acid of the formula



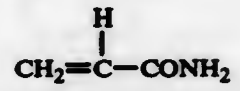
$$CH_2{=}\underset{\underset{R}{|}}{C}OOH$$

(2) from about 5 to about 50 wt.% of an ester of an α,β-unsaturated carboxylic acid of the formula



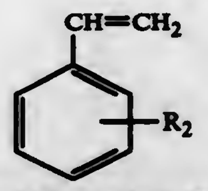
$$CH_2{=}\underset{\underset{R_2}{|}}{C}-OOR_1$$

and (3) from about 0.5 to about 20 wt.% of an amide of an α,β-unsaturated acid of the formula



$$CH_2{=}\overset{\overset{H}{|}}{C}-CONH_2$$

or an unsaturated aromatic hydrocarbon of the formula



in which each R is methyl or ethyl, R_1 is an alkyl of 1 to 8 carbon atoms, and R_2 is independently selected from the group consisting of hydrogen, methyl or ethyl; wherein all the ingredients necessary for polymerization are present in the reactor upon initiation of polymerization.

4,128,521

BAKING FINISHES OF LOW SOLVENT CONTENT

Ruprecht Kroker, Bobenheim, Roxheim, and Hans Sander, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 1, 1977, Ser. No. 820,715

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1976, 2635117

Int. Cl.² C09D *3/58, 3/81*

U.S. Cl. 260—31.4 R **7 Claims**

1. A baking finish of low solvent content consisting essentially of (A) an acrylate resin, (B) an epoxy resin, and (C) a mixture of organic solvents, wherein the acrylate resin (A) is a copolymer containing from 10 to 35% by weight of α,β-olefinically unsaturated carboxylic acid as copolymerized units and having a K value (measured by the Fikentscher method) of less than 15 and an acid number of from 70 to 250 mg of KOH/g; the epoxy resin (B) contains at least 2 oxirane groups per molecule, and the organic solvent mixture (C) is a mixture of from 30 to 70% by weight of an aromatic hydrocarbon mixture having a boiling range of from 150° to 270° C., a dielectric constant of from 2 to 4.99 and containing more than 80% by weight of aromatics with from 70 to 30% by weight of one or more alcohols having a boiling point range of from 80° to 200° C. and a dielectric constant of from 5 to 27, or a mixture of said alcohol or alcohols with at least one compound boiling at from 80° to 200° C. and selected from the group consisting of glycol monoalkyl ether and glycol monoalkyl acetate, the weight of the components (A):(B) being from 9:1 to 6:4 and the weight ratio of the components (A+B):(C) being from 7:3 to 5:5.

4,128,522

METHOD AND MASKANT COMPOSITION FOR PREVENTING THE DEPOSITION OF A COATING ON A SUBSTRATE

Richard C. Elam, Manchester, Conn., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed Jul. 30, 1976, Ser. No. 710,060

Int. Cl.² C08K *3/08*

U.S. Cl. 260—32.8 R **16 Claims**

1. A maskant composition for use in preventing the deposition of a coating on a predetermined portion of a substrate, said composition comprising:

a solids portion including a reduceable material capable of reacting with and being reduced by said coating, said reduceable material comprising in excess of at least about 8% by weight of said solids portion; and an inhibitor in an amount sufficient to control the reaction between the reduceable material and the coating wherein said amount sufficient comprises an amount up to about 92% by weight of said solids portion; and

a binder vehicle including a resinous material and a solvent in which the solids portion is suspended.

4,128,523
POLYETHYLENE-EDPM COMPOSITIONS

James E. Britton, Akron; Fredric D. Metcalf, Rootstown; John G. Sommer, Hudson; Tiong H. Kuan; Victor R. Rilling, both of Akron, and John A. Welch, Cuyahoga Falls, all of Ohio, assignors to The General Tire & Rubber Co., Akron, Ohio

Filed Aug. 18, 1977, Ser. No. 825,615
Int. Cl.² C08L *23/16*
U.S. Cl. 260—33.6 AQ **28 Claims**

1. A curable processable composition comprising a blend of an ethylene-propylene-diene rubbery polymer (EPDM) having a raw Mooney viscosity ML (1+4) at 250° F. of from about 25 to 100, a crystallinity at room temperature without stretching of from about 1.5 to 16%, and an ethylene content of at least about 65 mole %, and crystalline solid polyethylene (PE) having an average weight of from about 6,000 to 15,000, said crystalline polyethylene being used in an amount of from about 5 to 110 parts by weight per 100 parts by weight of said ethylene-propylene-diene polymer.

4,128,524
COMPOSITES OF METAL-MODIFIED UREA-MELAMINE-FORMALDEHYDE RESINS AND FILLERS

David L. Barnett, Washington Boro; Peter A. Christie, and Lewis W. Eckert, both of Lancaster, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Aug. 6, 1976, Ser. No. 712,293
Int. Cl.² C08K *3/22, 3/36*
U.S. Cl. 260—39 R **22 Claims**

1. A composite molded product comprising the pressure molded and cured product produced by the process comprising:

(a) uniformly blending about 80 to about 60% by weight of expanded perlite particles with an aqueous solution of about 20 to 40% by weight of a thermosetting Group IVB metal-modified urea-melamine-formaldehyde resin to produce a composite mixture, whereafter said composite mixture is directly charged into a mold;

(b) molding the composite mixture in said mold under a pressure of about 9 to 14 kg/cm² to produce a molding; and

(c) curing the molding at a temperature of about 65° to 95° C. to produce the composite molded product to thereby thermoset the same.

4,128,525
THERMOPLASTIC ADHESIVES

Ernest L. Yeakey, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco Development Corp., New York, N.Y.

Continuation-in-part of Ser. No. 528,458, Nov. 29, 1974, abandoned. This application Feb. 20, 1976, Ser. No. 659,873
Int. Cl.² C08L *77/00, 63/00;* C08K *5/36*
U.S. Cl. 260—29.1 R **8 Claims**

1. An improved thermoplastic adhesive formulation comprising a plasticizer, compatible with a polyamide polymer, said polyamide polymer comprising:

a resinous polyamide reaction product having a molecular weight less than about 10,000 and being prepared from a polyoxypropylene polyamine selected from the group consisting of diamines, triamines and mixtures thereof, and having an average molecular weight of about 200 to about 3,000, piperazine and an aliphatic or aromatic dicarboxylic acid, ester or anhydride having about 4 to about 20 carbon atoms per molecule.

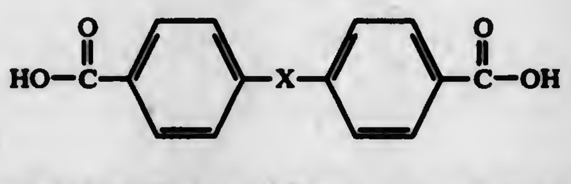
4,128,526
COPOLYESTERS OF POLY(ALKYLENE GLYCOL AROMATIC ACID ESTERS) AND DIESTERS COMPRISING AROMATIC DIOLS

Willem F. H. Borman, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 23, 1976, Ser. No. 753,862
Int. Cl.² C08G *63/18*
U.S. Cl. 260—40 R **10 Claims**

1. A thermoplastic copolyester prepared by heating at from 150° C. to 280° C. and a pressure of from 0.1 to 20 mm Hg. and reacting:

(a) (i) a dicarboxylic acid selected from one or more of the group consisting of terephthalic acid, isophthalic acid, naphthalene dicarboxylic acids, phenyl indane dicarboxylic acid and compounds of the formula:



in which X is alkylene of from 1 to 4 carbon atoms, carbonyl, sulfonyl, oxygen or a bond between the benzene rings and

(ii) one or more straight chain, branched chain or cyclic aliphatic diols of from 2 to 10 carbon atoms or

(iii) a polyester prepared by heating (i) and (ii); and

(b) a di-ester of an aromatic diol of from 6 to 30 carbon atoms.

4,128,527
DYNAMOELECTRIC MACHINE HAVING COIL WINDINGS AND CORE ENCAPSULATED WITH RESIN-FILLER COMPOSITION

Noriyuki Kinjo; Akio Nishikawa; Junichi Katagiri, all of Hitachi; Hitoshi Yokono, Katsuta; Tamotsu Ikeda, Hitachi, and Tsuguo Kobayashi, Mito, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 13, 1977, Ser. No. 787,098
Claims priority, application Japan, May 12, 1976, 51-53194
Int. Cl.² C08K *7/14*
U.S. Cl. 260—42.18 **17 Claims**

1. A dynamoelectric machine comprising a stator assembly including coil windings and a core encapsulated with a heat-dissipating, electro-insulative housing, a rotor assembly including a shaft centrally disposed thereto, and a bearing assembly disposed to the stator assembly, for rotatably supporting the shaft, wherein the housing is made of a cured resin-filler composition comprising:

(I) a liquid unsaturated polyester resin containing an ethylenically unsaturated compound monomer and a curing catalyst, which has a viscosity of from 50 to 50,000 centipoises at 25° C.; and

(II) an inorganic, electro-insulative filler consisting essentially of

(a) a calcium carbonate powder having a particle size corresponding to that of particles which can pass a 325 mesh sieve,

(b) an inorganic mineral particulate having a particle size corresponding to that of particles which can pass a 12 mesh sieve and is retained on a 200 mesh sieve, and

(c) a chopped glass fiber having a length larger than 200 μm and a diameter less than 150 μm after the composition has been kneaded, wherein the ratios by weight of the respective ingredients are as follows:

(a)/(b) = 0.3 to 4, (c)/total weight of the composition = 0.05 to 0.25,

(I)/total weight of the composition = 0.1 to 0.4, and
(II)/total weight of the composition = 0.6 to 0.9.

4,128,528
CLAY-POLYMER CONCENTRATES FOR BENEFICIATING CLAYS

Alvin J. Frisque, La Grange, Ill., and Arthur R. McDermott, Houston, Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation of Ser. No. 577,588, May 15, 1975, abandoned, which is a continuation-in-part of Ser. No. 486,553, Jul. 8, 1974, abandoned. This application Aug. 1, 1977, Ser. No. 820,676
Int. Cl.² C09K *7/02*
U.S. Cl. 260—42.55 **3 Claims**

1. A homogeneous clay-acrylamide polymer composition which comprises:

A. a dry clay powder; and

B. from 0.1 to 40% by weight based on the weight of (A) of a water-in-oil emulsion of a finely divided water soluble acrylamide polymer, said water-in-oil emulsion of a water soluble acrylamide polymer comprising:

a. 30–95% of an aqueous phase consisting of water and water soluble acrylamide polymer having a particle size ranging between 2 millimicrons up to about 5 microns,

b. 10–50% of the water soluble acrylamide polymer, said water soluble acrylamide polymer containing at least 5% by weight acrylamide and having a molecular weight in excess of one million,

c. 5–70% of an organic hydrophobic liquid,

d. 0.1–21% by weight of a water-in-oil emulsifying agent;

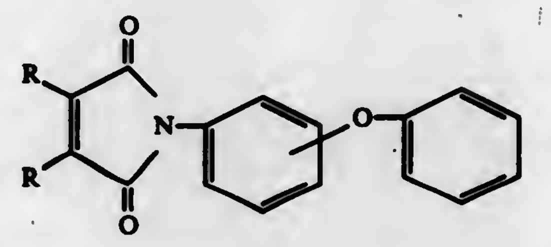
said clay acrylamide polymer composition being characterized as being in the form of a homogeneous free-flowing powder to a damp powder and is prepared by adding (B) to (A).

4,128,529
INDUSTRIAL BIOCIDE

Frank C. Becker, Gurnee; Jorge P. Li, Libertyville, and John W. Williams, Waukegan, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 8, 1977, Ser. No. 785,905
Int. Cl.² C08K *5/34;* C09D *5/14;* D06M *13/40*
U.S. Cl. 260—45.8 NB **6 Claims**

4. The method of protecting a film-forming polymeric composition or a synthetic or cellulosic fabric against bacterial or fungal attack upon extended storage or exposure environments including common bacteria or fungi, comprising adding to said composition or fabric between 0.005 and 5.0% by weight of a maleimide of the formula



I

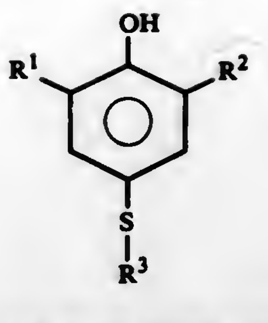
wherein both substituents R and H or Cl.

4,128,530
MERCAPTO PHENOLIC AND ALKYLTHIO PHENOLIC ANTIOXIDANTS

Kirkwood S. Cottman, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 25, 1974, Ser. No. 436,751
Int. Cl.² C08K *5/36*
U.S. Cl. 260—45.95 C **2 Claims**

1. An oxidizable polymer susceptible to oxidation degradation having incorporated therein a phenolic compound having the following structural formula:



wherein R^1 is selected from the group consisting of hydrogen and α-phenyl ethyl, R^2 is α-phenyl ethyl and R^3 is selected from the group consisting of α-phenyl ethyl and β-phenyl ethyl.

4,128,531
THERMOSETTING RESIN COMPOSITION

Shinichi Toyoda, Katsuta; Masahiko Sakai; Kazuo Goto, both of Hitachi; Toshikazu Narahara, Tokaimura, and Yoshiharu Karasawa, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Japan

Filed Oct. 18, 1977, Ser. No. 843,205
Claims priority, application Japan, Oct. 30, 1976, 51-131417
Int. Cl.² C08L *63/00*
U.S. Cl. 528—53 **8 Claims**

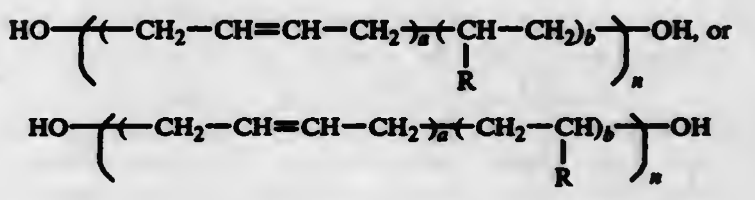
1. A thermosetting resin composition comprising

(a) one or more polyfunctional epoxy compounds,

(b) one or more polyfunctional isocyanates,

(c) one or more curing agents, and

(d) at least one polymer of butadiene having terminal hydroxyl groups represented by the formula:



$$HO-\left(\left(CH_2-CH=CH-CH_2\right)_a\left(\underset{\displaystyle R}{CH}-CH_2\right)_b\right)_n-OH, \text{ or}$$

$$HO-\left(\left(CH_2-CH=CH-CH_2\right)_a\left(CH_2-\underset{\displaystyle R}{CH}\right)_b\right)_n-OH$$

wherein R is hydrogen, alkyl, alkenyl, nitrilo, or phenyl; a ≧ 0.7, b ≦ 0.3, and $a + b = 1$; and n is an integer which determines the molecular weight of the polymer of butadiene in the range of from 500 to 5,000.

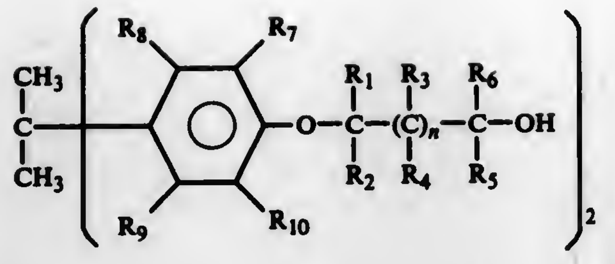
4,128,532
POLYETHERESTERS WHICH CONTAIN HYDROXYL GROUPS AND THE USE THEREOF IN THE PRODUCTION OF FLAME RESISTANT SYNTHETIC RESINS

Erich Eimers; Rolf Dhein, both of Krefeld-Bockum, and Rolf Wiedermann, Bergisch-Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

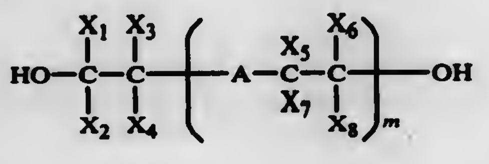
Continuation of Ser. No. 620,724, Oct. 8, 1975, abandoned. This application Nov. 21, 1977, Ser. No. 853,616
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1974, 2450539
Int. Cl.² C08G *63/66, 63/68*
U.S. Cl. 528—79 **9 Claims**

1. A liquid polyetherester which contains hydroxyl groups and has an acid number of from 0 to 5, a hydroxyl number of from 100 to 300 and a viscosity of from 10 to 200 poises at 25° C. obtained by the esterification of:

(a) a bis-hydroxyalkyl ether of halogenated 2,2-diphenylolpropane corresponding to the general formula:



wherein
- $n = 0$ or 1;
- R_1 through R_6 may be the same or different and represent H, or C_1–C_4 alkyl; and
- R_7 through R_{10} may be the same or different and represent H, C_1–C_4 alkyl or halogen, at least one of the groups R_7–R_{10} being a halogen atom; and
  - (b) a polycarboxylic acid selected from the group consisting of saturated, unsaturated, aromatic polycarboxylic acids and mixtures thereof;
  - (c) in the presence of an excess of a dihydric alcohol corresponding to the following formula:



wherein
- X_1 through X_8 are the same or different and represent H, or C_1–C_4 alkyl;
- m = 1-10, and
- A represents O or S, and the reaction temperature is from 120° C. to 200° C.

4,128,533

PROCESS FOR THE PRODUCTION OF HIGH MOLECULAR WEIGHT POLYESTERS

Armin Köhler; Herbert Pelousek, both of Dormagen; Helmut Ohse, Zons; Hans Westermann, and Karl-Heinz Magosch, both of Marl, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Faserwerke Huls Gesellschaft mit beschrankter Haftung, Marl, both of, Germany

Filed Aug. 17, 1977, Ser. No. 825,421

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1976, 2637813

Int. Cl.² C08G *63/14*

U.S. Cl. 528—279 **8 Claims**

1. A process for the production of a high molecular weight polyester, which comprises reacting a dicarboxylic acid or derivative thereof with a diol in the presence of a combination consisting essentially of compounds of manganese, magnesium, titanium and antimony as a catalyst.

4,128,534

PROCESS FOR THE PRODUCTION OF HIGH MOLECULAR WEIGHT POLYESTERS

Armin Köhler; Herbert Pelousek, both of Dormagen; Helmut Ohse, Zons; Hans Westermann, and Karl-Heinz Magosch, both of Marl, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Faserwerke Huls Gesellschaft mit beschrankter Haftung, Marl, both of, Germany

Filed Aug. 17, 1977, Ser. No. 825,422

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1976, 2637814

Int. Cl.² C08G *63/14*

U.S. Cl. 528—279 **8 Claims**

1. A process for the production of a high molecular weight polyester by reacting a dicarboxylic acid or a derivative thereof with a diol in the presence of a catalyst comprising a combination of compounds of manganese, magnesium and titanium.

4,128,535

METHOD FOR REDUCING COLOR FORMATION IN POLYESTERS

Melvin C. Baker, Youngstown, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 19, 1977, Ser. No. 834,829

Int. Cl.² C08G *63/16*

U.S. Cl. 528—272 **3 Claims**

1. In the preparation of a polyester wherein adipic acid, glutaric acid or succinic acid or mixtures thereof; ethylene glycol, propylene glycol or mixtures thereof; and 1,4-butanediol are brought together under conditions suitable for condensation polymerization, a method for reducing undesirable color formation in the polyester product, the method consisting essentially of first forming a reaction mass of the acid and the glycol and then adding the butanediol to the reaction mass after the reaction between the acid and the glycol is practically complete.

4,128,536

CYANO-OLIGOMER COMPOSITIONS AND PROCESSES THEREOF

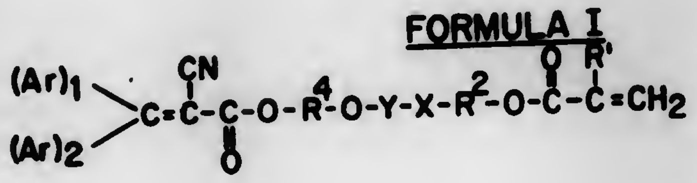
Lee Brodsky, Parsippany; Donald H. Lorenz, Basking Ridge; Suzanne B. Nelsen, Bergenfield, and Shu T. Tu, E. Brunswick, all of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 29, 1977, Ser. No. 865,666

Int. Cl.² C08G *18/00*

U.S. Cl. 427—54 **32 Claims**

FORMULA I



1. A cyano-oligomer of Formula I wherein
- $(Ar)_1$ and $(Ar)_2$ are aromatic carbocyclic nuclei of the benzene series and are independently selected from the group consisting of phenyl, alkyl phenyl, halo phenyl, carboxamido phenyl, sulfonamido phenyl, carbalkoxy phenyl, cyano phenyl, acetyl phenyl, benzoyl phenyl, phenyl substituted phenyl and alkyl phenyl substituted phenyl;
- R^1 is hydrogen or methyl;
- R^2 is lower alkylene;
- R^4 is lower alkylene;
- X is oxygen or nitrogen; and
- Y is a urethane radical.

4,128,537

PROCESS FOR PREPARING ETHYLENICALLY UNSATURATED ISOCYANURATES

Kenneth H. Markiewitz, Wilmington, Del., assignor ICI Americas Inc. Wilmington, Del.

Filed Jul. 27, 1977, Ser. No. 819,352

Int. Cl.² C08G *18/00*

U.S. Cl. 528—49 **31 Claims**

1. A process for preparing an ethylenically unsaturated isocyanurate which comprises reacting a polyisocyanate with a monohydric alcohol which contains a vinylidene group and which does not contain an allyl group, in the presence of a copper salt to form an isocyanate-containing urethane, wherein the amounts of monohydric alcohol and polyisocyanate are selected to furnish after said reaction from 0.75 to 1.6 moles of unreacted isocyanate groups per mole of polyisocyanate used, then adding a catalytic amount of an isocyanate trimerization catalyst which will initiate trimerization of the isocyanate-containing urethane without causing gellation, and trimerizing the isocyanate-containing urethane to form an ethylenically unsaturated isocyanurate.

4,128,538

CROSSLINKING POLYMERIC DYE MORDANT COMPOSITION REACTION PRODUCT OF BISALKANE OR BISARENE SULFONATE AND VINYL POLYMER

Arnold M. Burness; Hans G. Ling, both of Rochester, and Glen M. Doppen, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 412,992, Nov. 5, 1973, Pat. No. 3,859,096. This application Sep. 24, 1974, Ser. No. 508,771

Int. Cl.² C08G *69/48*

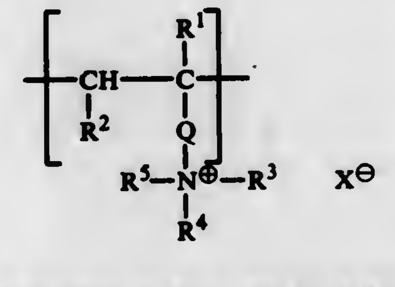
U.S. Cl. 260—884 **13 Claims**

1. A dye mordant composition comprising the reaction product of from 0.1 to 20 weight percent based on the total weight of (a) and (b) of:
- (a) a bisalkane or bisarene sulfonate, vinyl polymer crosslinking agent having the formula:

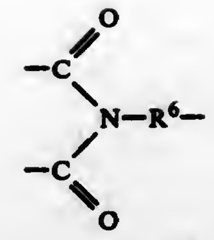
$$R—SO_3—CH_2—Y—CH_2—O—SO_2—R$$

wherein R is alkyl or aryl and Y is selected from the group consisting of unsaturated alkylene, arylene, pyridine diyl and furan diyl;

and from about 80 to 99.9 weight percent based on the total weight of (a) and (b) of
- (b) a cross-linkable resinous vinyl polymer comprised of first repeating units and second repeating units, said first repeating units comprising at least one-third of said vinyl polymer and said second repeating units being from ethylenically unsaturated monomers and comprising from 0 to 66.67 weight percent of said polymer and said first repeating units being represented by the formula:



wherein R^1 is hydrogen or alkyl and Q is selected from the group consisting of the atoms which when taken together with R^2 form a



group, wherein R^2 is an alkylene radical, R^3, R^4 and R^5 are alkyl, aryl or aralkyl groups and those atoms which when taken together with R^3 and R^4 are the nitrogen atom to which they are attached form a quaternized nitrogen-containing heterocyclic ring, R^6 is alkylene, and X— is an anion, said polymer being substantially free of carboxyl groups.

4,128,539

CURABLE VINYL CHLORIDE RESIN COMPOSITION

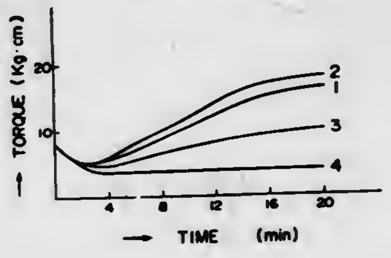
Masao Onizawa, Ohmiya, Japan, assignor to Sanyo Trading Co., Ltd., Tokyo, Japan

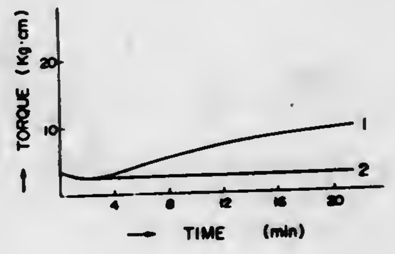
Filed Dec. 27, 1977, Ser. No. 864,444

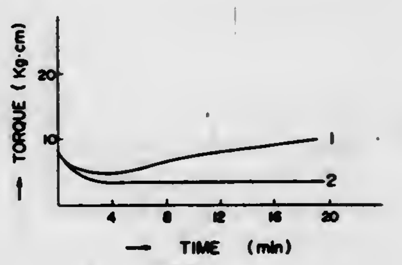
Claims priority, application Japan, Dec. 25, 1976, 51/155654; Mar. 14, 1977, 52/26957

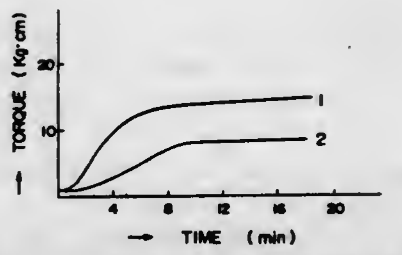
Int. Cl.² C08F *8/32, 8/34*

U.S. Cl. 260—4 R **9 Claims**









1. A curable composition comprising a vinyl chloride resin and lysine as a sole curing agent.

4. A curable composition comprising a vinyl chloride resin, at least one amino acid selected from the group consisting of lysine, ornithine, arginine and proline, and at least one sulfur compound selected from the group consisting of sulfur and sulfur donors.

4,128,540

PYROGLUTAMYL-HISTIDYL-TRYPTOPHANYL-SERYL-TYROSYL HYDRAZIDES

Mildred C. Rebstock; Ernest D. Nicolaides; Thomas F. Mick; Francis J. Tinney, and Eugene L. Wittle, all of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Filed May 25, 1972, Ser. No. 257,000

Int. Cl.² C07C *103/52*

U.S. Cl. 260—112.5 R **4 Claims**

1. A peptide hydrazide compound represented by the formula

pGlu-His-Trp-Ser-R_1($NHNH_2$)

where R_1 represents a member of the class consisting of Tyr, Tyr-Gly, and Tyr-Gly-Leu.

4,128,541

PENTAPEPTIDE WITH MORPHINE- LIKE ACTIVITY

Dimitrios Sarantakis, West Chester, and Norman H. Grant, Wynnewood, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,794

Int. Cl.² C07C *103/52;* **H61K** *37/00*

U.S. Cl. 260—112.5 R **1 Claim**

1. A pentapeptide of the fomula: H—Tyr—Gly—Gly—Phe—Ser—OH or a non-toxic salt thereof.

4,128,542

PEPTIDE DERIVATIVES

Frank R. Atherton, Welwyn Garden City; Michael J. Hall, Welwyn; Cedric H. Hassall, Welwyn; Robert W. Lambert, Welwyn, and Peter S. Ringrose, Harston, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jul. 5, 1977, Ser. No. 813,066

Claims priority, application United Kingdom, Jul. 13, 1976, 29102/76

Int. Cl.² C07C *103/52;* **C07G** *7/00*

U.S. Cl. 260—112.5 R **4 Claims**

2. (1R)-1-(L-Pyroglutamyl-L-alanyl-L-alanylamino)-ethylphosphonic acid.

4,128,543

PROCESS FOR PREPARING ALCOHOL SOLUBLE CONDENSATES OF ABIETIC ACID AND A PROTEIN HYDROLYSATE

Vernon L. Johnsen, La Grange, and Elaine S. Stern, Evanston, both of Ill., assignors to Inolex Corporation, Chicago, Ill.

Filed Jan. 24, 1977, Ser. No. 761,668

Int. Cl.² A23J *1/10;* **C07G** *7/00*

U.S. Cl. 260—123.7 **13 Claims**

1. A process for separating from an abietic acid condensate of a protein hydrolysate a portion having complete solubility in absolute alcohol at a concentration of about 2 percent comprising:

acidifying an aqueous solution of about 5 to about 25 percent by weight of a water soluble salt of a condensate with abietic acid of a protein hydrolysate having an average molecular weight in the range of about 300 to about 600 from a pH above about 6 to a pH in the range of about 3.5 to about 5 to precipitate a portion of the condensate while leaving another portion thereof in solution; and

separating and drying the precipitated portion of the condensate from the acidified aqueous solution as a product of the process.

4,128,544

COPPER COMPLEXES OF SUBSTITUTED SULFOPHENYL-AZO-PHENYL-AZO-NAPHTHALENE SULFONIC ACIDS CONTAINING A HETEROCYCLIC FIBER-REACTIVE GROUP

Lukas Schneider, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

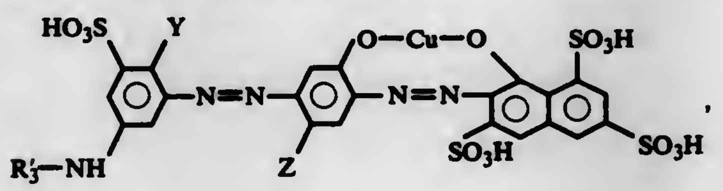
Continuation of Ser. No. 582,072, May 30, 1975, abandoned, which is a continuation-in-part of Ser. No. 279,356, Aug. 10, 1972, abandoned. This application Oct. 20, 1976, Ser. No. 734,277

Claims priority, application Switzerland, Aug. 16, 1971, 11998/71

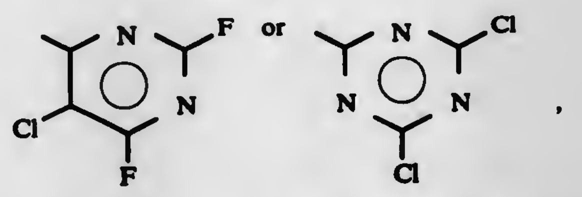
Int. Cl.² C09B *45/28, 62/08, 62/24;* **D06P** *1/382*

U.S. Cl. 260—146 T **9 Claims**

1. A compound of the formula



wherein R_3' is



Y is methyl, methoxy or methoxyethoxy, and Z is hydrogen, methyl or methoxy.

4,128,545

AZO DYES WITH 2,6-DIAMINO-PYRIDINE COUPLING COMPONENT

Johannes Dehnert, and Gunther Lamm, both of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Dec. 19, 1973, Ser. No. 426,370

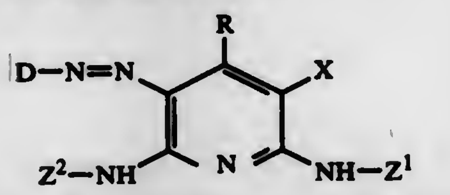
The portion of the term of this patent subsequent to Dec. 21, 1993, has been disclaimed.

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1972, 2263458

Int. Cl.² C09B *29/36;* **D06P** *1/18, 3/26, 3/72*

U.S. Cl. 260—156 **10 Claims**

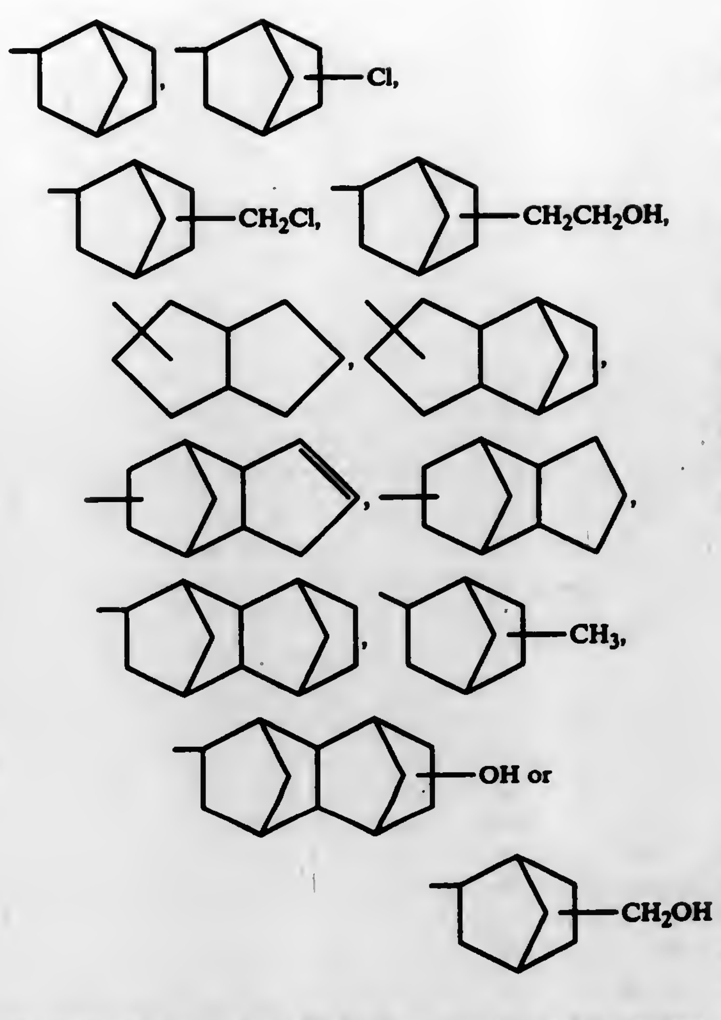
1. A dye of the formula



where D is phenyl substituted by chlorine, bromine, trifluoromethyl, methyl, methoxy, nitro, cyano, methylsulfonyl, ethylsulfonyl, phenylsulfonyl, carbalkoxy of a total 2 to 5 carbon atoms, carbo-β-alkoxyethoxy, said alkoxy having 1 to 4 carbon atoms, or N,N-dialkyl-substituted sulfamoyl, said alkyl having 1 to 3 carbon atoms; phenylazophenyl; phenylazophenyl substituted by chlorine, bromine or nitro; benzthiazolyl; benzthiazolyl substituted by nitro, cyano, methylsulfonyl or ethylsulfonyl; benzisothiazolyl substituted by chlorine, bromine, cyano or nitro; thiazolyl substituted by cyano or nitro; thienyl substituted by methyl, cyano, nitro or carbalkoxy of a total of 2 to 5 carbon atoms; or thiadiazolyl substituted by phenyl, methyl, chlorine, bromine, methylmercapto, ethylmercapto or alkoxycarbonylethylmercapto, said alkoxy having 1 to 4 carbon atoms;

R is alkyl of 1 to 3 carbon atoms;

X is carbamoyl or cyano; one of the radicals Z^1 and Z^2 is



and the other is hydrogen; alkyl of one to six carbon atoms, alkyl of two to six carbon atoms substituted by hydroxy, OCHO, $OCOCH_3$, cyano, methoxy, ethoxy, phenoxy, phenoxy, phenoxyethoxy, benzyloxy or phenyl; cyclohexyl; phenyl; β-hydroxy-β-phenylethyl, or $(CH_2)_3(OC_2H_4)_nOT$; and

T is alkyl of one to four carbon atoms, phenyl or benzyl; and n is 1 or 2.

4,128,546

PROCESS FOR THE PURIFICATION OF FR-1923 SUBSTANCE

Masaru Kurita, Takatsuki; Kazuyoshi Jomon, Kawanishi; Tadaaki Komori, Takatsuki; Isami Nakatani, Hata, and Masahiro Tsuji, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 562,928, Mar. 28, 1975, abandoned. This application Jun. 10, 1976, Ser. No. 694,906

Int. Cl.² C07D *205/08*

U.S. Cl. 260—239 A **7 Claims**

1. A process for treating impure FR-1923 substance to remove undesired components which comprises the steps of contacting an aqueous solution thereof at a pH of 4 – 8 with a macroporous nonionic adsorption resin selected from styrene-divinylbenzene copolymer and acrylic ester polymer, said resin having an average pore diameter of 4 to 100 nm and a surface from 100 to 1000 m^2 per gram, until said resin is saturated by FR-1923 substance, and thereafter contacting further aqueous solution of FR-1923 substance containing impurities at a pH of about 4 – 8 with said saturated resin to adsorb at least some of said second impurities, and recovering said further FR-1923 substance from the passed through solution.

4,128,547

6-(D-α-AMINO-P-HYDROXYPHENYLACETAMIDO)-PENICILLANIC ACID PREPARATION

Johannes K. van der Drift, Delft; Peter W. Henniger, Leiden, and Gerard J. van Veen, Pijnacker, all of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

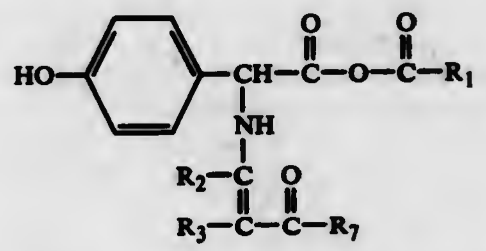
Filed Nov. 25, 1977, Ser. No. 854,821

Claims priority, application Japan, Oct. 31, 1977, 52-130694; Netherlands, Sep. 6, 1977, 7709812

Int. Cl.² C07D *499/12, 499/04*

U.S. Cl. 260—239.1 **8 Claims**

1. A process for the preparation of amoxicillin comprising reacting 6-aminopenicillanic acid with at least two equivalents of a silylating agent producing trimethylsilyl groups in an anhydrous, inert, water-insoluble organic solvent and reacting the resulting product at a temperature below −25° C. with an at least equimolar amount of a compound of the formula



wherein R_1 and R_7 are lower alkoxy, R_2 is lower alkyl and R_3 is selected from the group consisting of lower alkyl and hydrogen previously prepared from the corresponding Dane salt and an acid chloride under anhydrous conditions in the presence of a tertiary amine in an inert, water-insoluble organic solvent.

4,128,548

PROCESS FOR PREPARING 6,7-BENZOMORPHANS

Antony M. Akkerman, and Geertruida C. van Leeuwen, both of Amsterdam, Netherlands, assignors to ACF Chemiefarma N.V., Maarssen, Netherlands

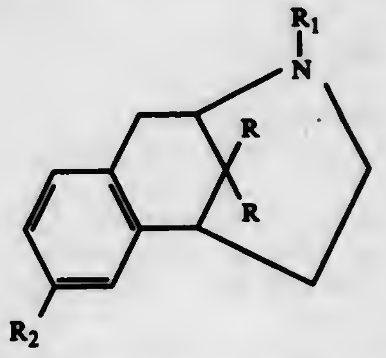
Filed Feb. 17, 1976, Ser. No. 658,739

Claims priority, application United Kingdom, Feb. 25, 1975, 7891/75

Int. Cl.² C07D *221/26*

U.S. Cl. 542—429 **6 Claims**

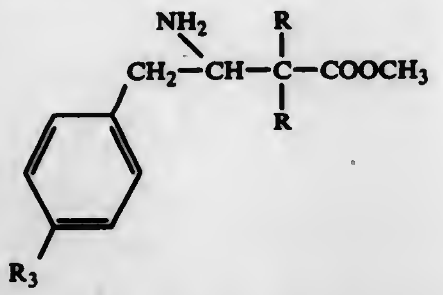
1. A process for the preparation of a benzomorphan compound of the formula



I

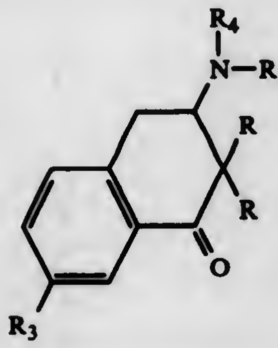
in which R is selected from the class consisting of methyl or ethyl; R_1 is selected from the class consisting of hydrogen atom, alkyl, haloalkyl and alkenyl groups containing up to seven carbon atoms, haloalkenyl and alkinyl groups containing up to four carbon atoms, cycloalkyl and cycloalkenyl groups containing up to seven carbon atoms, cycloalkylalkyl, cycloalkenylalkyl, cycloalkylidenealkyl and aralkyl groups containing up to nine carbon atoms, heteroarylalkyl compounds containing one oxygen atom and up to seven carbon atoms or heterocycloalkylalkyl groups containing one or two oxygen atoms and up to seven carbon atoms; and R_2 is selected from the class consisting of hydrogen atom, hydroxy groups, alkoxy groups containing up to three carbon atoms, alkoxyalkoxy groups containing up to four carbon atoms, nicotinoyloxy groups, lower alkanoyloxy groups, phenylalkanoyloxy groups containing up to nine carbon atoms or alkylaroyloxy groups containing up to nine carbon atoms; and pharmaceutically acceptable salts thereof; which comprises:

A. Reacting an aminoacid ester compound of the formula


V

wherein R is as defined above, and R_3 is hydrogen or lower alkoxy,

(1) with an acylating agent to form the corresponding acylamino ester compound VI;
(2) alkylating the ester of compound VI to obtain the alkylamido ester compound VII;
(3) saponifying the ester of compound VI or VII to obtain the corresponding acylamino or alkylamido acid compound VIII;
(4) converting the acylamino or alkylamido acid compound VIII to an amidoacyl chloride compound IX;
(5) converting the amidoacyl chloride compound IX by a Friedel-Crafts ring closure reaction to form a naphthalenone compund of the formula

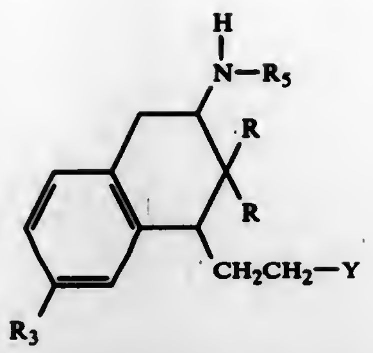

IV

wherein R and R_3 are as defined above; R_4 is an acyl group; and R_5 is hydrogen alkyl, cycloalkyl or cycloalkylalkyl;

(a) in the event that R_5 is hydrogen in the naphthalenone compound IV, alkylating the latter to convert R_5 to the more restricted meaning of alkyl, cycloalkyl or cycloalkylalkyl;

B. Reacting the naphthalenone compound IV

(1) with an alkali metal acetylide to obtain an alcohol, ethinyl compound X;
(2) partially reducing the ethinyl group of compound X to obtain an alcohol, ethylene compound XI;
(3) isomerizing compound XI to obtain an hydroxy ethylidene compound XII;
(4) (a) converting the hydroxy ethylidene compound XII by reduction to an hydroxy ethyl compound XIII and deacylating compound XIII to form an aminoalcohol compound XVI; or
  (b) (1) converting the hydroxy ethylidene compound XII to a tetrahydropyranyl ether compound XIV, reducing the compound XIV to compound XV and deacylating compound XV, followed by hydrolysis to form an aminoalcohol compound XVI; or
  (2) converting the compound XV by acid hydrolysis to compound XIII and deacylating compound XIII to an aminoalcohol compound XVI; or
  (c) deacylating and reducing compound XII to form an aminoalcohol compound XVI; and
(5) converting the aminoalcohol compound XVI to a tetrahydronaphthalene compound having the formula


XVII

wherein R and R_3 are as defined above, R_5 has the more restricted meaning defined above, and Y is a halogen; and

C. Subjecting the tetrahydronaphthalene to a ring closure in reaction in alkaline medium and treating the resulting closed ring compound to form the desired R_1 and/or R_2 substituents and/or salt derivatives of compound I, as above defined.

4,128,549
PRECURSORS OF 4-(1-ALKYL-4-PIPERIDYLIDENE-4H-BENZO[4,5]CYCLOHEPTA-[1,2-B]THIOPHEN-10(9H)-ONES

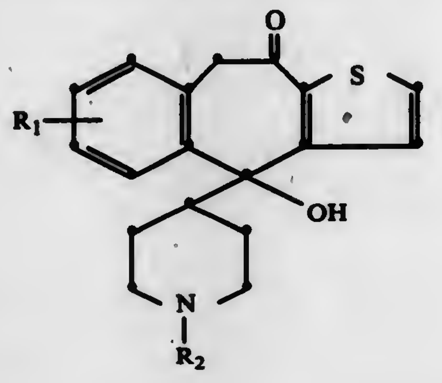
Jean-Pierre Bourquin, Magden; Gustav Schwarb, Allschwil, and Erwin Waldvogel, Aesch; all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 662,124, Feb. 27, 1976, abandoned, which is a division of Ser. No. 492,008, Jul. 26, 1974, Pat. No. 3,960,894, which is a continuation of Ser. No. 324,999, Jan. 19, 1973, abandoned. This application Feb. 3, 1977, Ser. No. 765,231

Int. Cl.^{2} C07D *409/02, 333/80*

U.S. Cl. 546—202 **11 Claims**

1. A compound of the formula:

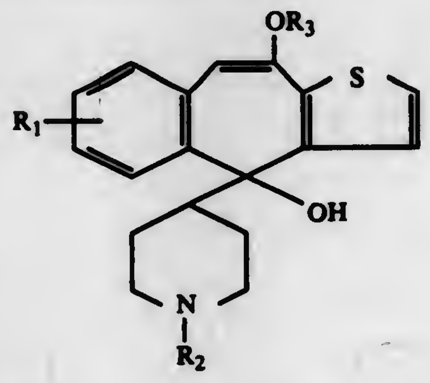


wherein

R_1 is in the 6 or 7 position of the benzocycloheptathiophene nucleus and is hydrogen, chlorine, bromine or alkoxy of 1 to 4 carbon atoms, and

R_2 is alkyl of 1 to 4 carbon atoms.

2. A compound of the formula:



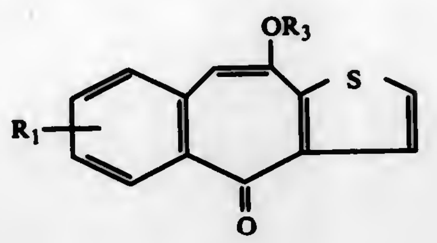
wherein

R_1 is in the 6 or 7 position of the cycloheptathiophene nucleus and is hydrogen, chlorine, bromine or alkoxy of 1 to 4 carbon atoms,

R_2 is alkyl of 1 to 4 carbon atoms, and

R_3 is alkyl of 1 to 4 carbon atoms.

4. A compound of the formula:



wherein

R_1 is in the 6 or 7 position of the cycloheptathiophene nucleus and is hydrogen, chlorine, bromine or alkoxy of 1 to 4 carbon atoms, and

R_3 is alkyl of 1 to 4 carbon atoms.

4,128,550
1-METHYL-4-PIPERIDYL 5-PHENYL-2-FUROATES

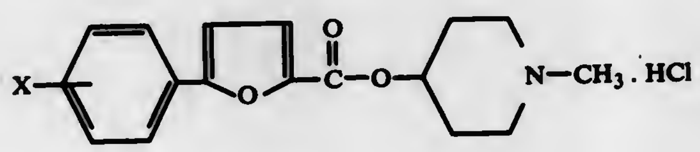
Stanford S. Pelosi, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Feb. 21, 1978, Ser. No. 879,077

Int. Cl.^{2} C07D *405/12*

U.S. Cl. 546—214 **3 Claims**

1. A compound of the formula:



wherein X is nitro or chloro.

4,128,551
SUBSTITUTED PYRIDINE CARBOXYL HALIDES AND DERIVATIVES

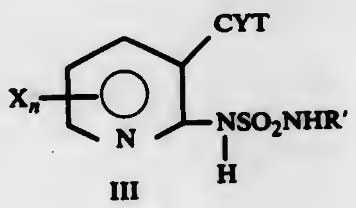
Lennon H. McKendry, Midland, Mich., assignor to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 74/,672, Dec. 6, 1976, Pat. No. 4,082,759, which is a division of Ser. No. 676,591, Apr. 13, 1976, Pat. No. 4,014,888, which is a continuation-in-part of Ser. No. 572,024, Apr. 28, 1975, abandoned, which is a division of Ser. No. 412,944, Nov. 5, 1973, Pat. No. 3,920,641. This application Jan. 20, 1978, Ser. No. 870,979

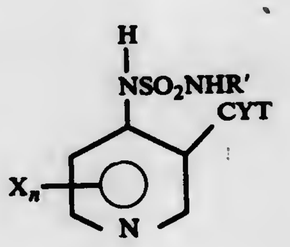
Int. Cl.^{2} C07D *213/54*

U.S. Cl. 546—293 **1 Claim**

1. A compound of the formulae:


III

and


IV

wherein:

each X independently represents loweralkyl of 1 to 6 carbon atoms, haloloweralkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, SR^5, OR^5, aryl wherein aryl is phenyl, halophenyl or tolyl, $—NR^3R^4$, halo or nitro;

n represents an integer of 0 to 3, inclusive;

Y represents sulfur;

T represents halo;

R′ represents aryl wherein aryl is phenyl, halophenyl, tolyl or benzyl;

each of R^3 and R^4 independently represents hydrogen or loweralkyl of 1 to 6 carbon atoms;

R^5 represents loweralkyl of 1 to 6 carbon atoms.

4,128,552
1-[4,4-BIS(4-FLUOROPHENYL)BUTYL]-4-PHENYLTHIO-1,2,3,6-TETRAHYDROPYRIDINES AND RELATED SULFOXIDES AND SULFONES

Lawrence D. Wise, Ann Arbor, Mich.; Patrick F. Flynn, Wilmington, Del., and Glenn C. Morrison, Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

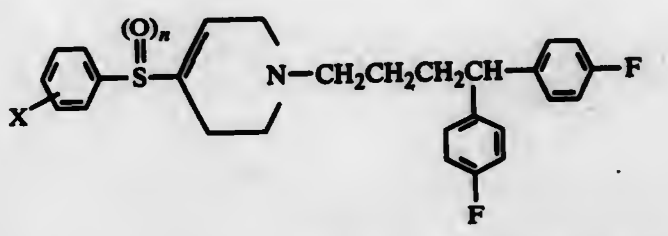
Filed Sep. 26, 1977, Ser. No. 836,866

Int. Cl.^{2} C07D *213/04*

U.S. Cl. 546—294 **26 Claims**

1. A compound of the formula:

VI



in which X is hydrogen, halogen, trifluoromethyl, lower alkoxy, aryl of 6 to 10 carbon atoms, lower alkyl, nitro or amino n is 0, 1 or 2 and the corresponding pharmaceutically acceptable acid addition salts thereof.

4,128,553
SUBSTITUTED PYRIDINE THIOCARBONYL HALIDES AND DERIVATIVES

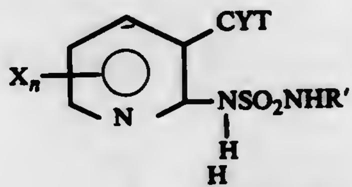
Lennon H. McKendry, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 747,266, Dec. 3, 1976, Pat. No. 4,082,758, which is a division of Ser. No. 676,591, Apr. 13, 1976, Pat. No. 4,014,888, which is a continuation-in-part of Ser. No. 572,024, Apr. 28, 1975, abandoned, which is a division of Ser. No. 412,944, Nov. 5, 1973, Pat. No. 3,920,641. This application Jan. 20, 1978, Ser. No. 870,980

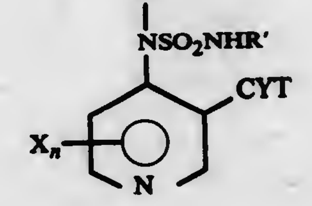
Int. Cl.^{2} G07D *213/54*

U.S. Cl. 546—293 **1 Claim**

1. A compound of the formulae:


III

and


IV

wherein:

each X independently represents loweralkyl of 1 to 6 carbon atoms, haloloweralkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, SR^5, OR^5, aryl wherein aryl is phenyl, halophenyl or tolyl, $—NR^3R^4$, halo or nitro;

n represents an integer of 0 to 3, inclusive;

Y represents sulfur;

T represents halo;

R′ represents hydrogen, loweralkyl of 1 to 6 carbon atoms, haloloweralkyl of 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, haloalkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, haloalkynyl of 3 to 5 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, loweralkoxyalkyl wherein each of alkoxy and alkyl are of from 1 to 6 carbon atoms, dialkylaminoalkyl wherein each alkyl is of from 1 to 6 carbon atoms or $—C(CH_3)_2\,C{\equiv}N$;

each of R^3 and R^4 independently represents hydrogen or loweralkyl of 1 to 6 carbon atoms;

R^5 represents loweralkyl of 1 to 6 carbon atoms.

4,128,554

PROCESS FOR THE PREPARATION OF CARBOXYLIC ACID AMIDES FROM ORGANIC HALIDES

Richard F. Heck, Wilmington, Del., assignor to University of Delaware, Newark, Del.

Continuation-in-part of Ser. No. 649,487, Jan. 15, 1976, abandoned, which is a division of Ser. No. 468,762, May 10, 1974, Pat. No. 3,988,358. This application Mar. 10, 1977, Ser. No. 776,289

Int. Cl.^{2} C07D *213/56;* **C07C** *103/75*

U.S. Cl. 546—317 **4 Claims**

1. The catalytic process of producing amides from aryl, and heterocyclic halides, with up to about 30 carbon atoms, which comprises reacting said halide with a primary or secondary amine and carbon monoxide in the presence of a palladium-triarylphosphine catalyst at a temperature with the range of from 20° C. to 175° C. and at a pressure of at least about a half an atmosphere and in the presence of a basic tertiary amine if a strongly basic primary or secondary amine is not present in the equivalent or excess of the amount required for the reaction.

4,128,555

3-PHENOXYPYRIDINE MONOSULFATE AND A METHOD FOR ITS PRODUCTION

Donald E. Butler, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 751,933, Dec. 17, 1976, abandoned. This application May 27, 1977, Ser. No. 801,113

Int. Cl.^{2} C07D *213/16*

U.S. Cl. 546—290 **1 Claim**

1. 3-Phenoxypyridine monosulfate.

4,128,556

CERTAIN MULTIOXYMACROCYCLE COMPOUNDS CONTAINING PYRIDYL AS PART OF THE MACROCYCLE

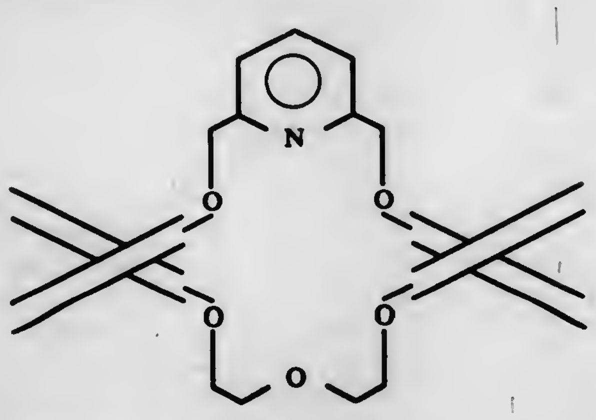
Donald J. Cram, Los Angeles, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 662,564, Mar. 1, 1976, Pat. No. 4,080,337, which is a division of Ser. No. 505,576, Sep. 12, 1974, Pat. No. 3,965,116. This application Nov. 21, 1977, Ser. No. 853,445

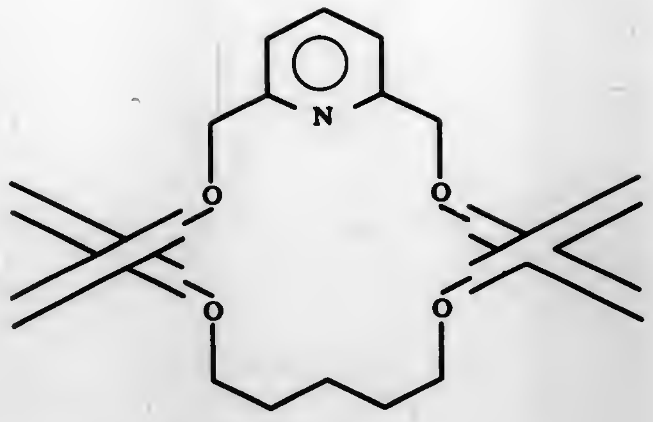
Int. Cl.^{2} C07D *491/02, 491/12*

U.S. Cl. 546—26 **3 Claims**

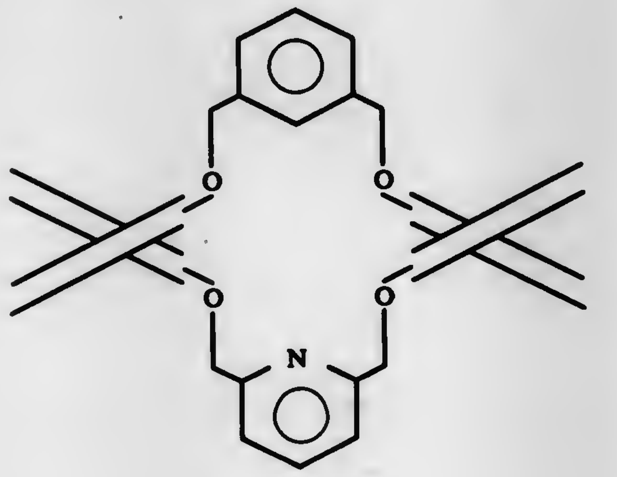
1. A compound of the formula:



2. A compound of the formula:



3. A compound of the formula:



4,128,557

SILVER SALTS OF 1,2,4-MERCAPTOTRIAZOLE DERIVATIVES

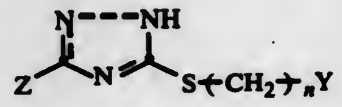
Phillip D. Knight, Fairport; Richard A. deMauriac, Webster, and Patricia A. Graham, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 778,183, Mar. 16, 1977. This application Nov. 3, 1977, Ser. No. 848,254

Int. Cl.^{2} C07F *1/10;* **G03C** *1/02*

U.S. Cl. 260—299 **9 Claims**

1. The silver salt of a 1,2,4-mercaptotriazole derivative represented by the formula:



wherein Y is unsubstituted aryl having 6 to 12 carbon atoms or aryl having 6 to 12 carbon atoms and substituted with methoxy, cyano, nitro or chloro; n is 0 to 2; and Z is hydrogen, hydroxyl or —NH_2.

4,128,558

N(O,O DIALKYLPHOSPHONYL ALKYLENE) ESTERS OF OXAZOLIDONE, BENZOXAZOLINONE AND DIHYDROOXAZINONE

Udo W. Hendricks, Cologne, and Klaus Walz, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

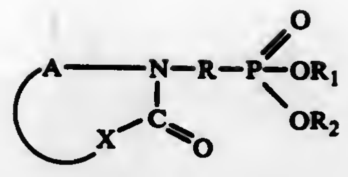
Filed Jul. 11, 1975, Ser. No. 595,284

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1974, 2434312

Int. Cl.^{2} C07D *263/04, 265/04, 273/02*

U.S. Cl. 260—307 C **6 Claims**

1. Compound of the formula



in which

R_1 and R_2 independently of one another are alkyl with 1–4 C-atoms or alkyl of 1–4 C-atoms substituted by chlorine or bromine;

A and X conjointly with the nitrogen atom and the carbonyl group form an oxazolidone, benzoxazolinone or dihydro oxazinone ring which is unsubstituted; and

R is alkylene with 2–4 carbon atoms.

4,128,559

BENZOTRIAZOLE ORTHO-ESTER COMPOUNDS USEFUL AS ULTRAVIOLET STABILIZERS

David M. Pond, and Richard H. Wang, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 626,520, Oct. 28, 1975, Pat. No. 4,041,011, which is a division of Ser. No. 511,565, Oct. 2, 1974, Pat. No. 3,936,418. This application Apr. 1, 1977, Ser. No. 783,578

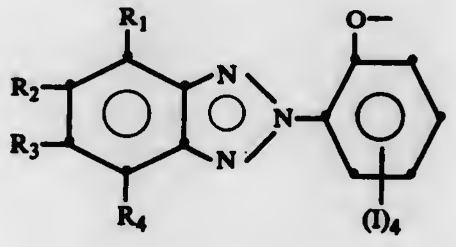
Int. Cl.^{2} C07D *249/20*

U.S. Cl. 260—308 B **32 Claims**

1. A composition of matter comprising compounds having the formula:

$(A)_x$—C

wherein A is a group having the structure



wherein

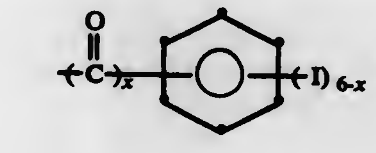
R_1, R_2, R_3 and R_4 are hydrogen, chloro, bromo, lower alkyl, cycloalkyl, phenyl, lower alkyl phenyl, phenyl-substituted-phenyl, lower alkoxy, amino, lower alkyl substituted amino, cyano, and carboxy and the substituents R_1 and R_2, R_2 and R_3, and R_3 and R_4, combined with the carbon atoms to which they are attached, are joined alkylene groups completing a carbocyclic ring, which ring can also be substituted with one or more of the substituents listed above for R_1, R_2, R_3 and R_4;

I is the same as R_1, R_2, R_3 and R_4 and is present on all positions of the benzenoid ring, except the carbon atom attached to the heterocyclic ring and the carbon atom attached to the carbonyl group connecting the heterocyclic aromatic A group with the aromatic C group,

x is an integer of 1 to 6; and

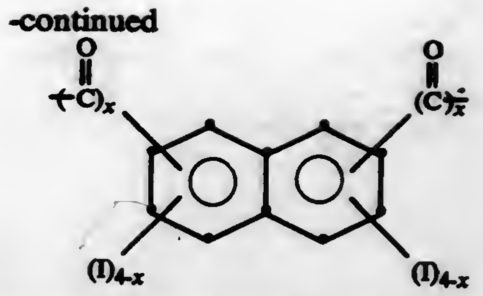
C is one of the following:

An aromatic group having the formula:



or

-continued



wherein I is the same substituent as listed above and is present in all positions of the benzenoid ring except the carbon atom attached to the carbonyl group connecting the A and C moieties, and said I substituents can all be one of the substituents listed above or different listed substituents.

4,128,560

TRICYCLIC ALKYLAMINE DERIVATIVES

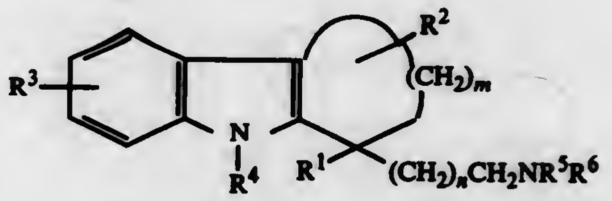
Andre A. Asselin, Lemoyne; Leslie G. Humber, and Thomas A. Dobson, both of Dollard des Ormeaux, all of Canada, assignors to Ayerst McKenna & Harrison Ltd., Montreal, Canada

Continuation of Ser. No. 480,460, Jun. 18, 1974, abandoned. This application Apr. 12, 1976, Ser. No. 676,173

Int. Cl.^{2} C07D *209/86*

U.S. Cl. 260—315 **22 Claims**

1. A compound of the formula 1



1.

in which R^1 is lower alkyl, R^2 is hydrogen or lower alkyl, R^3 is hydrogen, lower alkyl, halo, hydroxy, lower alkoxy, lower alkanoyloxy or trihalomethyl, R^4 is hydrogen or lower alkyl, R^5 and R^6 are the same or different and are selected from the group consisting of hydrogen and lower alkyl, m is an integer from two to four and n is an integer from zero to two; or an acid addition salt with a pharmaceutically acceptable acid.

4,128,561

PROCESS FOR THE PREPARATION OF 2-(2-THIENYL)-ETHYLAMINE AND DERIVATIVES THEREOF

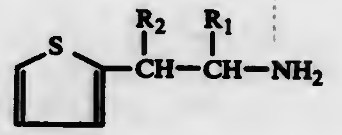
Emile Braye, Auterive, France, assignor to Parcor, Paris, France

Division of Ser. No. 640,142, Dec. 12, 1975, abandoned. This application Dec. 8, 1976, Ser. No. 749,033

Int. Cl.^{2} C07D *333/00, 209/48, 333/20*

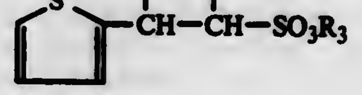
U.S. Cl. 260—329 AM **3 Claims**

1. Process for the preparation of compounds having the formula:



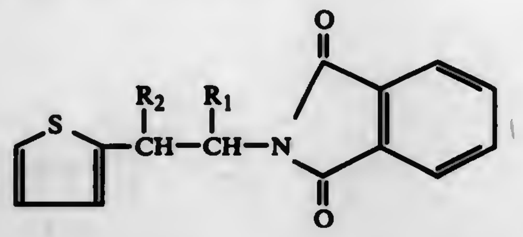
(I)

in which R_1 and R_2 are each selected from the group consisting of hydrogen, the lower alkyl groups, the phenyl radical and the substituted phenyl radicals, comprising reacting in the presence of a base a derivative of the formula:



(II)

in which R_1 and R_2 have the above-defined meanings and R_3 is selected from the alkyl, substituted alkyl, aryl, substituted aryl, aralkyl and substituted aralkyl groups with phthalimide, to give a compound having the formula:



(III)

which is subsequently transaminated by reacting with an amine at elevated temperature.

4,128,562
NOVEL 3-(PHOSPHORYLOXY) AND (PHOSPHONYLOXY)-THIOPHENES

Jacques Perronnet, Paris, and Laurent Taliani, Les Pavillons-sous-Bois, both of France, assignors to Roussel Uclaf, Paris, France

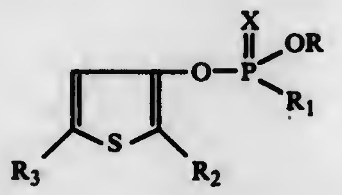
Continuation of Ser. No. 652,718, Jan. 27, 1976, abandoned. This application Nov. 14, 1977, Ser. No. 850,922

Claims priority, application France, Feb. 14, 1975, 75 04628

Int. Cl.² C07D *333/16, 333/00;* A01N *9/36*

U.S. Cl. 260—332.3 R **8 Claims**

1. A compound of the formula



wherein R is alkyl of 1 to 4 carbon atoms, R_1 is alkoxy of 1 to 4 carbon atoms, R_2 is cyano, R_3 is selected from the group consisting of alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms and alkylthio of 1 to 6 carbon atoms and phenyl and X is selected from the group consisting of oxygen and sulfur.

4,128,563
ALLYLIC METHYL-HYDROXYLATED NOVOBIOCINS

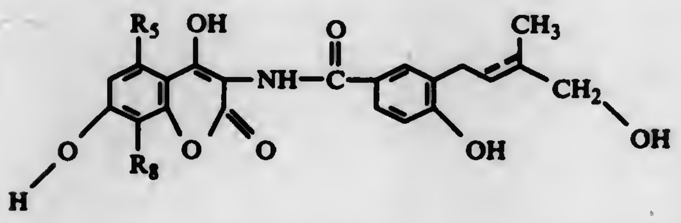
Oldrich K. Sebek, and Lester A. Dolak, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 793,784, May 5, 1977. This application Feb. 15, 1978, Ser. No. 878,114

Int. Cl.² C07D *311/56*

U.S. Cl. 260—343.45 **5 Claims**

1. A hydroxynovobiocin-type compound of the formula:



II

or pharmaceutically acceptable salt thereof, where R_5 and R_8 may be the same or different and are hydrogen, alkyl of 1 thru 5 carbon atoms, alkenyl of from 1 through 5, carbon atoms, halogen, nitro, cyano, carboxyl or $-NR_\alpha R_\beta$ where R_α and R_β may be the same or different and are hydrogen or alkyl of 1 thru 5 carbon atoms; $\overline{}\!\!\overline{}$ is a single or double bond.

4,128,564
9-THIA- AND OXOTHIA- AND 9-DIOXOTHIA-11,12-SECO-PROSTAGLANDINS

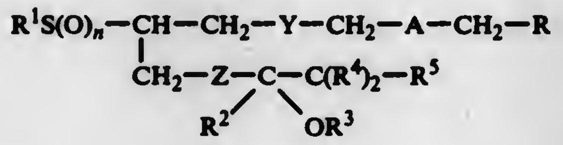
Edward J. Cragoe, Jr.; John B. Bicking, and Robert L. Smith, all of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 743,821, Nov. 22, 1976, Pat. No. 4,066,675, which is a division of Ser. No. 669,006, Mar. 22, 1976, Pat. No. 4,018,802, which is a continuation-in-part of Ser. No. 566,566, Apr. 9, 1974, abandoned, which is a continuation-in-part of Ser. No. 483,178, Jun. 25, 1974, abandoned. This application Oct. 25, 1977, Ser. No. 844,687

Int. Cl.² C07C *143/90;* C11D *1/28*

U.S. Cl. 260—401 **8 Claims**

1. The compound of the formula



$$R^1S(O)_n-\underset{\displaystyle CH_2-Z-\underset{\displaystyle R^2\quad OR^3}{C}-C(R^4)_2-R^5}{CH}-CH_2-Y-CH_2-A-CH_2-R$$

wherein

R is derivatized carboxy in which R is selected from alkoxycarbonyl (—$COOR^6$ wherein R^6 is alkyl having 1–10 carbon atoms), carbamoyl (—$CONH_2$), and substituted carbamoyl (—$CONR^7R^8$) wherein R^7 and R^8 are selected from the group consisting of hydrogen, lower alkyl having 1–4 carbon atoms, and diloweralkylaminoalkyl having 4–7 carbon atoms;

A is methylene;

Y is selected from the group consisting of ethylene, vinylene, and ethynylene;

R^1 is selected from the group consisting of methyl, ethyl, 2-hydroxyethyl, 2-(loweralkoxy)ethyl, and vinyl;

n is 0, 1, or 2;

Z is selected from the group consisting of ethylene, vinylene, and ethynylene;

R^2 is hydrogen or methyl;

R^3 is hydrogen or loweralkanoyl of from 1–5 carbon atoms;

R^4 is hydrogen or methyl; and

R^5 is alkyl, branched chain alkyl of 3–6 carbon atoms, vinyl, or OR^{5a} wherein R^{5a} is alkyl, branched alkyl of from 2–5 carbon atoms.

3. The compound of claim 1 wherein n is 2.

6. The compound of claim 3 wherein

Y is ethylene;

A is methylene;

Z is ethylene;

R^1 is methyl; and

R^2, R^3, and R^4 are hydrogen.

8. The compound of claim 6 wherein

R is N-(2-dimethylaminoethyl)carbamoyl and

R^5 is butyl, which is N-(2-dimethylaminoethyl)-8-methylsulfonyl-12-hydroxyheptadecanamide.

4,128,565
PROCESS FOR PREPARING METHYLTIN CHLORIDES

Kunihiko Yajima, Yokohama, and Shuji Sayama, Fuchu, both of Japan, assignors to Sankyo Organic Chemicals Company Limited, Kawasaki, Japan

Filed Sep. 22, 1976, Ser. No. 725,519

Claims priority, application Japan, Sep. 29, 1975, 50-117560

Int. Cl.² C07F *7/22*

U.S. Cl. 260—429.7 **12 Claims**

1. In a process for preparing a methyltin chloride through direct reaction of methyl chloride with metallic tin, the improvement wherein the reaction is effected in a high-boiling hydrocarbon having a boiling point of from about 120° C. to 400° C. at a reaction temperature of from 120° C. to 300° C. and substantially atmospheric pressure in the presence of a reaction accelerator consisting essentially of

(A) at least one glycol having the formulae

$C_mH_{2m}(OH)_2$

wherein m is an integer of from 2 to 10,

$HO(C_2H_4O)_nC_2H_4OH$

wherein n is an integer of from 1 to 10,

$HO(C_3H_6O)_pC_3H_6OH$

wherein p is an integer of from 1 to 8 and

$HO(C_2H_4S)_qC_2H_4OH$

wherein q is an integer of from 1 to 3; and

(B) iodine or an iodine compound having the formula

MI

wherein M is an alkali metal.

4,128,566
PROCESS FOR THE PREPARATION OF ALUMINUM POLYMERIC COMPOUNDS OF POLYIMINE NATURE

Margherita Corbellini, Milan, and Agostino Balducci, San Donato Milanese, both of Italy, assignors to Snamprogetti, S.p.A., San Donato Milanese, Italy

Division of Ser. No. 592,222, Jul. 1, 1975, abandoned. This application Jan. 24, 1977, Ser. No. 762,117

Claims priority, application Italy, Jul. 1, 1974, 24661 A/74

Int. Cl.² C07F *5/06*

U.S. Cl. 260—448 R **4 Claims**

1. Process for the preparation of aluminum compounds of the formula $Al_h(NR)_kH_iY_j$ wherein R is a aliphatic, aromatic or cycloaliphatic hydrocarbon radical, H is hydride hydrogen, Y is halogen, k ranges from 2 to 50 $h/k>1$, $(i+j)/h>1$, $i\neq 0$ and $j\geqq 0$, said process consisting in reacting aluminum compounds of polyimine nature have the chemical compositions

(a) $(Al\,X - NR)_n$ and

(b) $(X\text{-}Al\,NR)_x\,(XYAl)_y\,(NHR)_y$

in which X and Y are the same or different, and mean hydride hydrogen and/or halogen atoms directly bound to aluminum, n is an integer lower than or equal to 10, y is an integer higher than zero and R is an aliphatic, aromatic or cycloaliphatic hydrocarbon radical, with alkali or alkaline-earth metal alanates or with aluminum hydride complexes.

4,128,567
ALUMINIUM POLYMERIC COMPOUNDS OF POLYIMINE NATURE

Margherita Corbellini, Milan, and Agostino Balducci, San Donato Milanese, both of Italy, assignors to Snamprogetti, S.p.A., Milanese, Italy

Continuation of Ser. No. 592,222, Jul. 1, 1975, abandoned. This application Dec. 14, 1976, Ser. No. 750,542

Claims priority, application Italy, Jul. 1, 1974, 24661 A/74

Int. Cl.² C07F *5/06*

U.S. Cl. 260—448 R **6 Claims**

1. An aluminum polymeric compound of polyimine nature having the general formula

$Al_h(NR)_kH_iY_j\,I$

wherein R is an aliphatic, aromatic or cycloaliphatic hydrocarbon radical, H is hydride hydrogen, Y is halogen, K ranges from 2 to 50, $h/k > 1$, $(i + j)/h > 1$, $1 \neq 0$ and $j \geqq 0$, compound I being prepared by reacting an aluminum compound of polyimine nature selected from the group having the chemical compositions

$[\;XAl - NR -_n - XAl - NR)_n$ (a) (a)

and

$(X\text{-}Al\text{-}NR)_x\,(XYAl)_y\,(NHR)_y$ (b)

wherein X and Y, the same or different, mean hydride hydrogen and/or halogen atoms directly bound to aluminum, n is an integer lower than or equal to 10, the $(x+y)$ sum is an integer lower than or equal to 10, y is an integer higher than zero and R is an aliphatic, aromatic or cycloaliphatic hydrocarbon radical, characertized by a tridimensional structure and atomic ratios $X/Al=1$ and $N/Al=1$ as to (a) and $(X+Y)/Al=1$ and $N/Al=1$ as to (b) with alkali or alkaline-earth metal alanates or with aluminum hydride complexes.

4,128,568
PROCESS FOR THE CONTINUOUS PREPARATION OF POLYDIORGANOSILOXANES

Werner Büchner, Leverkusen; Bruno Degen, Bergisch-Gladbach; Ludwig Fries, Leverkusen; Judat Helmut, Langenfeld; Rudolf Mundil, Leverkusen, and Karl-Heinz Rudolph, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 2, 1978, Ser. No. 875,025

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1977, 2705563

Int. Cl.² C07F *7/08*

U.S. Cl. 260—448.2 E **5 Claims**

1. In a process for the continuous production of high polymer viscous organosiloxanes comprising reacting diorganosiloxanes with substances regulating the chain length in the presence of alkaline or acid catalysts and wherein the reactants are mixed mechanically and wherein the reaction takes place in a reactor which consists of several zones and which is provided with stirring or conveying elements the improvement which comprises that the arrangement of the stirring or conveying elements being such that the flow of material produced by the stirring or conveying element in each zone is the opposite of that in the adjacent zone.

4,128,569
CONTINUOUS MANUFACTURE OF ORGANIC ISOCYANATES

Peter Horn, Hirschberg; Waldemar Koehler, Frankenthal, and Rolf Bittler, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 17, 1977, Ser. No. 797,814

Claims priority, application Fed. Rep. of Germany, May 31, 1976, 2624285

Int. Cl.² C07C *118/02*

U.S. Cl. 260—453 PH **9 Claims**

1. In a process for the continuous manufacture of an organic isocyanate from an organic amine and phosgene in the presence of an organic solvent, wherein the organic isocyanate, organic amine, phosgene and organic solvent are conducted into a reaction chamber to form a reaction solution and a portion of the reaction solution is recycled, the improvement comprising:

mixing phosgene with the recycled portion of the reaction solution,

feeding the phosgene-containing recycled portion of the reaction solution to a nozzle, the exit of said nozzle extending below the surface of the reaction solution contained in the reaction chamber,

accelerating the phosgene-containing recycled portion of the reaction solution through the nozzle such that the recycled reaction solution issues from the nozzle as a drive jet having a velocity of from 1 to 40 m/sec thereby forming a mixing and reaction zone within the reaction chamber,

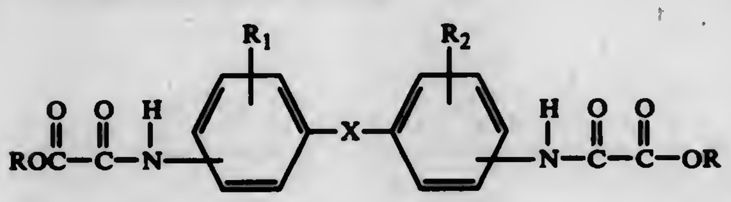
while simultaneously feeding organic amine or amine solution at a velocity of from 0.3 to 30 m/sec to the drive jet of the recycled phosgene-containing reaction solution in the mixing and reaction zone, so that the volume ratio of the total amount of phosgene-containing recycled reaction solution to the amount of organic amine or amine solution is from 300:1 to 1:1,

whereby an energy dissipation density of from 5 to 1000 kJoule per m^3 of phosgene-containing reaction solution plus amine feed is generated in the mixing and reaction zone.

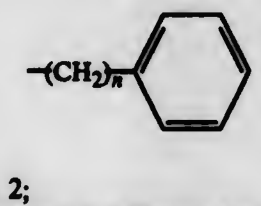
4,128,570
ANTI-ALLERGIC OXANIL COMPOUNDS

Charles M. Hall, and John B. Wright, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 645,024, Dec. 29, 1975, Pat. No. 4,061,791. This application Oct. 6, 1977, Ser. No. 839,863
Int. Cl.^{2} C07C ***101/100, 121/78***
U.S. Cl. 260—465 D **13 Claims**

1. A compound of the formula

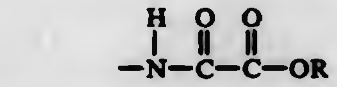


wherein R is selected from the group consisting of hydrogen, a physiologically acceptable metal or amine cation, alkyl of one to six carbon atoms, inclusive, and



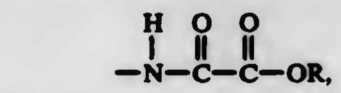
wherein n is 0, 1 or 2;

R$_1$ and R$_2$ are the same or different and are selected from the group consisting of cyano, nitro, and



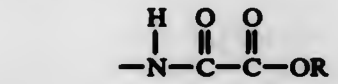
$-\overset{H}{\overset{|}{N}}-\overset{O}{\overset{\|}{C}}-\overset{O}{\overset{\|}{C}}-OR$

with the proviso that when R$_1$ and/or R$_2$ is



$-\overset{H}{\overset{|}{N}}-\overset{O}{\overset{\|}{C}}-\overset{O}{\overset{\|}{C}}-OR,$

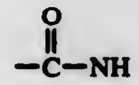
neither R$_1$ nor R$_2$ is ortho to the other



$-\overset{H}{\overset{|}{N}}-\overset{O}{\overset{\|}{C}}-\overset{O}{\overset{\|}{C}}-OR$

moiety;

X is



$-\overset{O}{\overset{\|}{C}}-NH$

4,128,571
THERMAL CONVERSION OF 4-CYANO-SUBERONITRILE TO ACRYLONITRILE

Charles R. Campbell; William A. Heckle, and Marion J. Mathews, all of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.
Filed Oct. 27, 1977, Ser. No. 846,100
Int. Cl.^{2} C07C ***121/32, 121/16***
U.S. Cl. 260—465.9 **7 Claims**

1. A continuous process for producing acrylonitrile from 4-cyano-suberonitrile comprising passing 4-cyano-suberonitrile in atomized form through an essentially oxygen and catalyst-free reaction zone at a temperature of about 700°–800° C., an hourly space velocity of 2400–9300 and a linear velocity of 5–20 ft/sec.

4,128,572
PROCESS FOR PREPARING PHENYLACETIC ACID

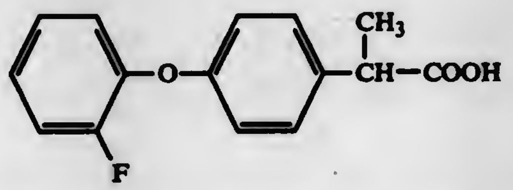
Luigi Cassar, and Marco Foá, both of Novara, Italy, assignors to Montedison S.p.A., Milan, Italy
Filed Jan. 18, 1978, Ser. No. 870,324
Claims priority, application Italy, Jan. 18, 1977, 19389 A/77
Int. Cl.^{2} C07C ***51/00, 63/54***
U.S. Cl. 562—406 **10 Claims**

1. A process for preparing alkaline salts of phenylacetic acid by reacting a benzyl halide selected from chloride and bromide with carbon monoxide in the presence of a catalyst consisting in a salt of cobalt hydrocarbonyl, characterized in that the reaction is conducted in an aqueous/organic diphase system consisting of (a) an aqueous solution of an inorganic alkaline base and (b) the benzyl halide in an organic solvent, in the presence of a catalyst system composed by a quaternary alkylammonium salt and by a cobalt hydrocarbonyl salt, at atmospheric pressure and at a temperature ranging from about 20° to 70° C.

4,128,573
2-(SUBSTITUTED PHENYL)PROPIONIC ACIDS

Stewart S. Adams; Bernard J. Armitage; John S. Nicholson, and James G. Tantum, all of Nottingham, England, assignors to Boots Pure Drug Company Limited, Nottingham, England
Continuation of Ser. No. 488,739, Jul. 15, 1974, abandoned, which is a continuation of Ser. No. 123,034, Mar. 10, 1971, abandoned. This application Sep. 22, 1976, Ser. No. 725,645
Claims priority, application United Kingdom, Mar. 16, 1970, 12570/70
Int. Cl.^{2} C07C ***69/76***
U.S. Cl. 562—465 **2 Claims**

1. A compound of the formula



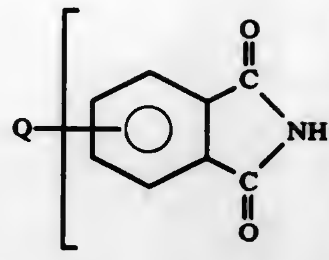
together with the pharmaceutically acceptable lower alkyl esters, inorganic salts and organic salts thereof.

4,128,574
METHOD FOR MAKING ORGANIC POLYCARBOXYLIC ACIDS

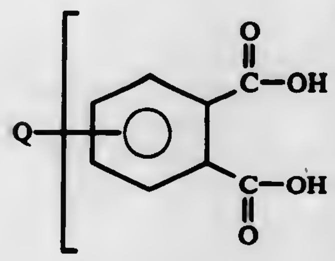
Ronald L. Markezich, and Tohru Takekoshi, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Oct. 4, 1976, Ser. No. 729,126
Int. Cl.^{2} C07C ***65/14***
U.S. Cl. 562—473 **11 Claims**

5. A method which comprises

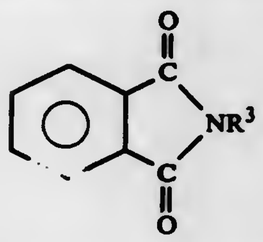
(1) heating at a temperature of at least 100° C. in the presence of water, a mixture comprising a bisimide of the formula,



and phthalic anhydride or phthalic acid to produce a mixture comprising

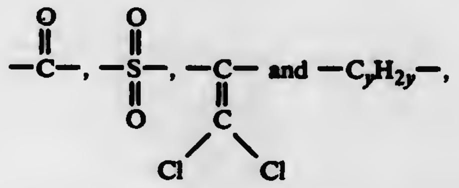


and an N-organo phthalimide of the formula,



(2) effecting the separation of the N-organo phthalimide from the mixture of (1),

where Q is a divalent radical selected from —O—, —S—, —R^2—, —O—R^2—O—, —S—R^2—S— and —OR^{2}XR^{2}O—, X is selected from —O—, —S—,



and y is equal to 0 to 5 inclusive, R^2 is selected from $C_{(6\text{-}13)}$ divalent aromatic organic radicals and $C_{(1\text{-}8)}$ alkylene radicals, and R^3 is selected from H and $C_{(1\text{-}20)}$ monovalent organic radicals.

4,128,575
PROCESS FOR THE MANUFACTURE OF GLYCOLIC ACID OR ITS ESTERS

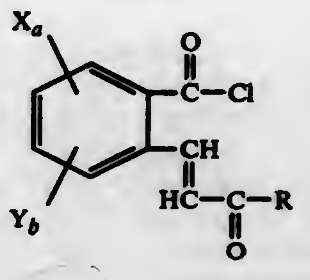
Ernst I. Leupold, Westerfeld, and Hans-Jurgen Arpe, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Nov. 14, 1977, Ser. No. 853,210
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1976, 265207; Nov. 15, 1976, 2652003; Sep. 15, 1977, 2741505
Int. Cl.^{2} C07C ***59/06***
U.S. Cl. 562—579 **6 Claims**

1. Process for the manufacture of glycolic acid or an ester thereof which comprises reacting paraformaldehyde or trioxane or a mixture thereof with formic acid or a formic acid ester in the liquid phase at a temperature of from 70° to 200° C. in the presence of a strongly acidic catalyst.

4,128,576
O-AROYLVINYL BENZOYL CHLORIDES

John A. Houbion, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Jan. 3, 1978, Ser. No. 867,722
Int. Cl.^{2} C07C ***63/10***
U.S. Cl. 260—544 D **14 Claims**

1. A compound of the formula



wherein X is halogen, Y is lower alkoxy or alkyl, nitro or trifluoromethyl, a is zero to 4, b is zero to 2, the sum of a + b is zero to 4, and R is phenyl, naphthyl or substituted phenyl, there being from 1 to 3 substituents selected from lower alkyl, lower alkoxy, halogen, CF$_3$ and nitro.

4,128,577
15-METHYL- AND 16-PHENOXY-PGF$_2$*α*, AMIDES

Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Continuation-in-part of Ser. No. 719,055, Aug. 30, 1976, Pat. No. 4,073,808, which is a continuation-in-part of Ser. No. 645,276, Dec. 29, 1975, abandoned. This application Dec. 12, 1977, Ser. No. 859,639
Int. Cl.^{2} C07C ***177/00***
U.S. Cl. 260—559 B **2 Claims**

2. 16-Phenoxy-17,18,19,20-tetranor-PGF$_2$*α*, amide.

4,128,578
PROCESS FOR THE MANUFACTURE OF 3-HYDROXYBUTYRIC ACID ARYLAMIDES WITH TRIALKYL PHOSPHATE AND SUBSTITUTED PHOSPHINE PROMOTOR

Kurt Kümmerle, Kelkheim; Hartmut Heise, Bad Soden am Taunus, and Ernst Hille, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Mar. 8, 1977, Ser. No. 775,461
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1976, 2609835
Int. Cl.^{2} C07B ***1/00;*** **C07C** ***102/00***
U.S. Cl. 260—562 R **17 Claims**

1. In a process for the liquid-phase catalytic hydrogenation of N-acetoacetyl arylamides to yield 3-hydroxybutyric acid arylamides at elevated temperatures the improvement comprising adding to the reaction mixture an effective amount of a promoter selected from phosphines, trialkyl phosphates and mixtures thereof to promote said catalytic hydrogenation.

4,128,579
PROCESS FOR THE MANUFACTURE OF *α*,*β*-UNSATURATED CYCLOALIPHATIC KETOXIMES

Rüdiger Berthold, Bad Soden am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Dec. 1, 1977, Ser. No. 856,738
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1976, 2654851
Int. Cl.^{2} C07C ***131/08***
U.S. Cl. 260—566 A **9 Claims**

1. In a process for preparing *α*,*β*-unsaturated cycloaliphatic ketoximes and their hydrochlorides, sulfates or hydrogensulfates by reaching *α*,*β*-unsaturated cycloaliphatic ketones with

hydroxyl amine hydrochloride or sulfate or hydrogensulfate the improvement comprising conducting the reaction in water in a pH range of 0 to 4.5.

4,128,580

PROCESS FOR THE PRODUCTION OF 1,3-DICHLOROACETONE OXIME AND ITS ACETATE DERIVATIVE

Kent E. Matsumoto, Kensington; Jimmy H. Chan, Martinez, and Don R. Baker, Orinda, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 653,797, Jan. 30, 1976, abandoned. This application Dec. 21, 1976, Ser. No. 751,491

Int. Cl.^{2} C07C *131/00*

U.S. Cl. 260—566 A **23 Claims**

1. A process for the production of 1,3-dichloroacetone oxime comprising reacting 1,3-dichloropropanone with a hydroxylamine salt in the presence of a base selected from the group consisting of tertiary amines, lower alkyl amides, alkali metal bicarbonates, alkali metal carbonates, and alkaline earth metal carbonates, establishing the pH of the reaction system at a value of 2 or less and thereafter maintaining the pH of the reaction system at a value of 2 or less throughout the remainder of the reaction.

4,128,581

KETOXIME CARBAMATES

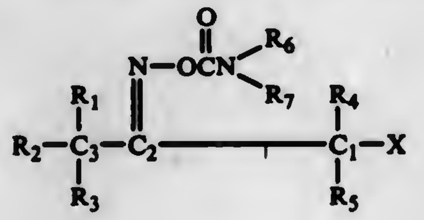
Thomas A. Magee, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 553,648, Feb. 27, 1975, Pat. No. 4,028,413, which is a continuation-in-part of Ser. No. 229,207, Feb. 24, 1972, Pat. No. 3,875,232, which is a continuation-in-part of Ser. No. 132,584, Apr. 8, 1971, abandoned. This application Apr. 13, 1977, Ser. No. 786,974

Int. Cl.^{2} C07C *131/00*

U.S. Cl. 260—566 AC **6 Claims**

1. A composition of matter having the formula:



where:

$R_2 = R_3$ or hydrogen;

$-R_3$ = lower alkyl, lower alkenyl, lower alkynyl, with the proviso that R_2 and R_3 may be connected to form a cycloaliphatic ring;

R_4-R_5 = hydrogen;

R_6-R_7 = hydrogen, lower alkyl, lower alkenyl, or lower alkynyl;

R_1 and X may be the same or different and each is

$-S(O)_nR_8$

wherein $n = 0$, 1 or 2 and R_8 is selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, aryl or haloalkyl.

4,128,582

CHEMICAL PROCESS

Luke J. Governale, Baton Rouge, La., and John C. Wollensak, Bloomfield Hills, Mich., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 365,996, Jun. 4, 1973, abandoned. This application Mar. 11, 1974, Ser. No. 449,837 Disclosure was also published under second Trial Voluntary Protest Program on Mar. 2, 1976.

Int. Cl.^{2} C07C *87/28*

U.S. Cl. 260—578 **66 Claims**

1. In a process for alkylating an aromatic amine selectively in an ortho nuclear position, said aromatic amine having an unsubstituted ortho nuclear position and at least one hydrogen atom bonded to said amine nitrogen atom, said process comprising reacting said aromatic amine with an olefin at a temperature of about 200°-500°C. in the presence of an aluminum anilide catalyst, the improvement comprising adding a hydrogen halide selected from the group consisting of hydrogen chloride and hydrogen bromide to the alkylation mixture in an amount to provide up to two halogen atoms per aluminum atom in said mixture thereby increasing the rate of alkylation.

4,128,583

DIFLUORAMINO COMPOUNDS

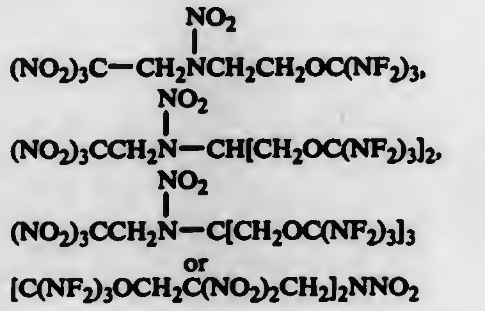
Charles Wiener, Middletown, N.Y., and William E. Tyler, III, New Providence, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 29, 1966, Ser. No. 540,142

Int. Cl.^{2} C07C *93/00*

U.S. Cl. 260—584 C **1 Claim**

1. A compound comprising



$$(NO_2)_3C-CH_2\overset{\overset{\displaystyle NO_2}{|}}{N}CH_2CH_2OC(NF_2)_3,$$

$$(NO_2)_3CCH_2\overset{\overset{\displaystyle NO_2}{|}}{N}-CH[CH_2OC(NF_2)_3]_2,$$

$$(NO_2)_3CCH_2\overset{\overset{\displaystyle NO_2}{|}}{N}-C[CH_2OC(NF_2)_3]_3$$

or

$$[C(NF_2)_3OCH_2C(NO_2)_2CH_2]_2NNO_2$$

4,128,584

OPTICALLY ACTIVE SULFONATES OF ALLETHROLONE

Jacques Martel, Bondy, and Jean Tessier, Vincennes, both of France, assignors to Roussel Uclaf, Paris, France

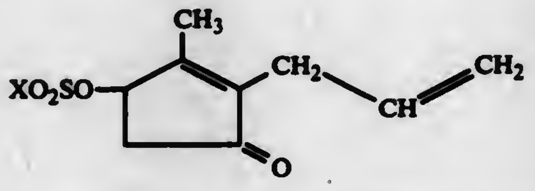
Filed Jun. 16, 1977, Ser. No. 807,069

Claims priority, application France, Jun. 23, 1976, 76 19087

Int. Cl.^{2} C07C *45/24, 45/00*

U.S. Cl. 260—586 R **4 Claims**

1. A process for the preparation of optically active allethrolone comprising subjecting an optically active sulfonate of the formula



wherein X is selected from the group consisting of alkyl of 1 to 3 carbon atoms and phenyl optionally substituted in the para position with a member selected from the group consisting of methyl, fluorine, chlorine and bromine with an (R) or (S) configuration to hydrolysis with a base selected from the group consisting of ion exchange resins of a basic nature, alkali metal carbonates and bicarbonates and alkali metal hydroxides with the latter being used at most in stoichiometric amounts in a water-immiscible organic solvent to obtain optically active allethrolone with a configuration opposite to that possessed by the sulfonate.

4,128,585

PREPARATION OF HALOGENATED ALDEHYDES

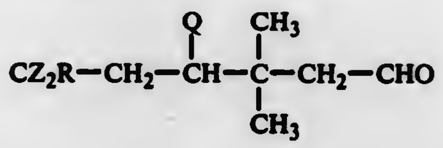
Peter J. V. Cleare, Ascot, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 737,274, Nov. 1, 1976, Pat. No. 4,085,148. This application Dec. 20, 1977, Ser. No. 862,519

Int. Cl.^{2} C07C *47/02*

U.S. Cl. 260—601H **4 Claims**

1. A compound of formula:



$$CZ_2R-CH_2-\overset{\overset{\displaystyle Q}{|}}{CH}-\underset{\underset{\displaystyle CH_3}{|}}{\overset{\overset{\displaystyle CH_3}{|}}{C}}-CH_2-CHO$$

where Q, R and Z are independently selected from chlorine or bromine provided that Q is always bromine when either of R and Z are bromine.

4,128,586

CATALYTIC REDUCTION OF AROMATIC SULFONYL HALIDES WITH HYDROGEN SULFIDE TO YIELD AROMATIC THIOLS

Charles T. Ratcliffe, Morristown, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Feb. 27, 1978, Ser. No. 881,952

Int. Cl.^{2} C07C *149/28*

U.S. Cl. 260—609 D **20 Claims**

1. A process for reducing aromatic sulfonyl halides comprising

contacting the sulfonyl halide with hydrogen sulfide for producing reduced derivatives of the sulfonyl halide.

4,128,587

MANUFACTURE OF TERTIARY BUTYL HYDROPEROXIDE

John C. Jubin, Wallingford, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 26, 1976, Ser. No. 745,142

Int. Cl.^{2} C07D *179/02*

U.S. Cl. 568—571 **4 Claims**

1. In the method in which a liquid feedstock containing a major amount of liquid isobutane is oxidized continuously by an oxygen-containing gas in a reactor of a predetermined size at a pressure maintaining isobutane in liquid phase, said pressure being within a range from 300 to 1000 psig, at a temperature within a range from about 250° F. to about 300° F. in an oxidation zone to produce continuously a liquid effluent from said reactor, processing said reactor effluent to separate unreacted isobutane and to separate a liquid oxidate containing tertiary butyl hydroperoxide from said reactor effluent, and recovering continuously a product containing tertiary butyl hydroperoxide from said method, the improvement which consists of:

employing as the liquid feedstock for said continuous method a mixture consisting of from 70% to 90% isobutane and an amount of tertiary butyl alcohol constituting from 10% to 30% by weight of said feedstock;

said tertiary butyl alcohol in said feedstock enhancing the rate of production of tertiary butyl hydroperoxide in said reactor of a predetermined size so that the rate of tertiary butyl hydroperoxide production assuredly measures greater than the rate of tertiary butyl hydroperoxide production measured at conditions in the absence of said tertiary butyl alcohol in the feedstock and said tertiary butyl alcohol in said feedstock enhancing the selectivity for the formation of tertiary butyl hydroperoxide in said oxidation zone, so that the quantity of tertiary butyl hydroperoxide relative to tertiary butyl alcohol formed in said liquid oxidate assuredly measures significantly greater than the quantity of teritary butyl hydroperoxide measured in a liquid oxidate obtained at corresponding conditions in the absence of said tertiary butyl alcohol in the feedstock.

4,128,588

PROCESS FOR THE PREPARATION OF NITROPHENYL HYDROXY SUBSTITUTED ACETYLENE AND CONVERSION TO NITROPHENYLACETYLENE

Edward T. Sabourin, Allison Park, and Charles M. Selwitz, Monroeville, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

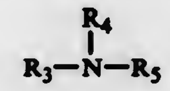
Filed Oct. 11, 1977, Ser. No. 840,553

Int. Cl.^{2} C07C *79/10, 33/04*

U.S. Cl. 260—645 **10 Claims**

1. A process for the production of a nitrophenyl hydroxy substituted acetylene which comprises:

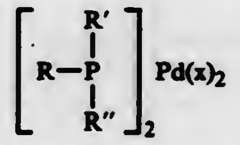
reacting a nitrobromobenzene with a substituted terminal acetylene compound containing at least three carbon atoms and an hydroxy group on the carbon atom adjacent to the acetylene group in the presence of a solvent comprising a compound having the formula:



$$R_3-\overset{\overset{\displaystyle R_4}{|}}{N}-R_5$$

where R_3, R_4, and R_5 can be the same or different and are selected from the group consisting of hydrogen and lower alkyl groups having from 1 to 4 carbon atoms with the proviso that no more than one of said R groups can be hydrogen, and in the added presence of:

a catalyst comprising a compound having the formula:



$$\left[R-\underset{\underset{\displaystyle R''}{|}}{\overset{\overset{\displaystyle R'}{|}}{P}}\right]_2 Pd(x)_2$$

where

x can be Br, I, or Cl;

and where R, R' and R'' can be the same or different and are selected from the group consisting of phenyl, substituted phenyl and alkyl groups having from 1 to 4 carbon atoms,

and a promoter comprising cuprous iodide; to produce HBr and the resultant nitrophenylhydroxyacetylene.

4,128,589

GENERATION OF CF_4 FROM TEFLON FOR REACTIVE ATMOSPHERE PROCESSING AND GROWTH OF METAL FLUORIDES

Ricardo C. Pastor, Manhattan Beach, and Morton Robinson, Malibu, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 22, 1977, Ser. No. 808,844

Int. Cl.^{2} C07C *21/18*

U.S. Cl. 260—653 **6 Claims**

1. A controllable process for generating CF_4 from commercially available polytetrafluoroethylene comprising the steps of:

(a) charging a depolymerization reactor with precisely known quantities of tetrafluoroethylene;

(b) selecting a reactor temperature, from a plot of tetrafluoroethylene decay constants versus temperature, which provides for the generation of C_2F_4 at a desired rate;

(c) creating an atmospheric purge by causing an inert carrier gas to flow through said reactor;

(d) raising the temperature of said reactor to said selected temperature thereby causing a C_2F_4-purge gas mixture to be formed within said reactor;

(e) directing said C_2F_4-purge gas mixture from said reactor into a pyrolysis chamber, previously heated to a temperature high enough to cause the C_2F_4 component of said mixture to decompose into known amounts of CF_4 and elemental carbon, at a flow rate sufficient to insure a gas mixture dwell time within said chamber of from 5 to 15 minutes; and

(f) removing said CF_4 from said chamber with said carrier gas while allowing said elemental carbon to be trapped along the relatively cool walls of said chamber.

4,128,590
DEHYDROGENATION METHOD

Ernest L. Pollitzer, Skokie, and John C. Hayes, Palatine, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 673,764, Apr. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 538,240, Jan. 2, 1975, Pat. No. 3,957,624. This application Apr. 15, 1977, Ser. No. 788,101

The portion of the term of this patent subsequent to May 18, 1993, has been disclaimed.

Int. Cl.² C07E ***5/36***

U.S. Cl. 260—666 A **34 Claims**

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon, at dehydrogenation conditions, with a catalytic composite consisting essentially of a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.1 to about 5 wt. % cobalt, and about 0.01 to about 5 wt. % germanium; wherein the platinum group metal, catalytically available cobalt and germanium are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group metal is present in the elemental metallic state; wherein substantially all of the germanium is present in an oxidation state above that of the elemental metal; and wherein substantially all of the catalytically available cobalt is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under dehydrogenation conditions or in a mixture of these states.

4,128,591
ALKYL AROMATIC ISOMERIZATION

William C. Carr, Weehawken; Leon M. Polinski, North Plainfield; Saul G. Hindin, Mendham, and James L. Kosco, Fanwood, all of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Filed May 31, 1977, Ser. No. 802,204

Int. Cl.² C07C ***15/08***

U.S. Cl. 260—668 A **2 Claims**

1. A process for isomerizing C_8 alkyl aromatic compounds including ethylbenzene in amounts greater than the equilibrium amount comprising passing said alkyl aromatic compounds and hydrogen under isomerizing conditions over a catalyst and producing a near equilibrium amount of mixed xylenes and ethylbenzene, said catalyst consisting essentially of:

(a) a catalytically active amount of a component selected from the group consisting of platinum and platinum plus one or more of palladium, ruthenium, rhodium, iridium, and rhenium, deposited on particulate alumina; and

(b) particulate hydrogen mordenite containing less than 0.1 gram equivalent of alkali and alkaline earth metal cations per gram atom of aluminum and having a silica to alumina ratio greater than about 9-11 to 1 and less than about 17 to 1, said component on particulate alumina of (a) and said particulate hydrogen mordenite of (b) being prepared separately and thereafter combined to produce said catalyst.

4,128,592
SELECTIVE PRODUCTION OF PARA DIALKYL BENZENE

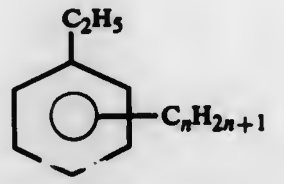
Warren W. Kaeding, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 23, 1977, Ser. No. 854,454

Int. Cl.² C07C ***3/52, 3/62***

U.S. Cl. 260—671 C **16 Claims**

1. Process for selectively producing the para isomer of the compound:



where *n* is 1 or 2 which comprises contacting a hydrocarbon precursor selected from the group consisting of ethylbenzene and mixtures of ethylbenzene or toluene with ethylene in which the molar ratio of ethylbenzene or toluene to ethylene is between about 1 and about 10, under conversion conditions, in the presence of a catalyst comprising a crystalline aluminosilicate zeolite, characterized by a silica to alumina mole ratio of at least about 12, a constraint index within the approximate range of 1 to 12 and a minimum crystal dimension greater than about 0.5 micron, said zeolite having undergone the following prior sequential treatment:

(1) steaming at a temperature of between about 250° and about 1000° C. for a period of at least 0.5 hour;

(2) impregnation with at least about 0.25 weight percent of phosphorus oxide;

(3) impregnation with at least about 0.25 weight percent of magnesium oxide and

(4) coking for deposition of at least about 1 weight percent of coke thereon

to yield a resulting reaction product mixture in which the para isomer of said compound is present in an amount exceeding 99 percent of the total of said compound produced.

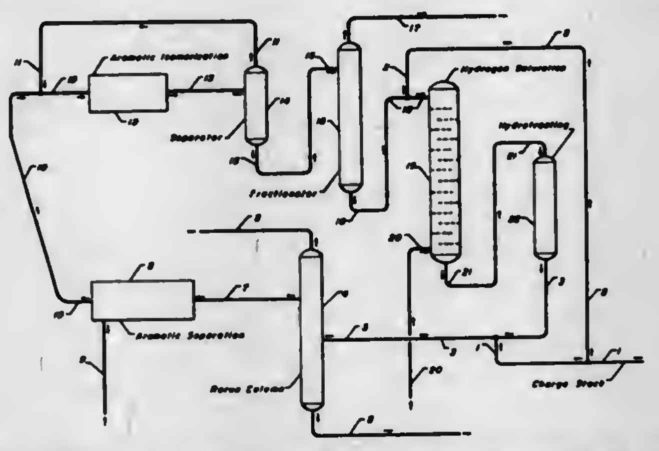
4,128,593
PRODUCTION AND RECOVERY OF PARA-CYMENE

Thomas R. Fritsch, Lombard, and Mark C. Anderson, Palatine, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 836,273, Sep. 26, 1977. This application Apr. 17, 1978, Ser. No. 896,967

Int. Cl.² C07C ***7/13***

U.S. Cl. 260—674 A **10 Claims**



1. A process for the production and recovery of para-cymene from a mixture of cymene isomers which process comprises the sequential steps of:

(a) contacting said mixture with a crystalline aluminosilicate adsorbent, in an adsorption-separation zone, at conditions selected to effect the selective retention therein of para-cymene;

(b) withdrawing a para-cymene deficient raffinate stream from said adsorption-separation zone and contacting said adsorbent with a desorbent to effect removal and recovery of para-cymene therefrom;

(c) introducing said raffinate stream into an aromatic isomerization reaction zone maintained at isomerization conditions which convert cymene isomers into para-cymene and which effect the production of olefinic hydrocarbons;

(d) hydrotreating the resulting isomerization reaction zone effluent, in a hydrotreating zone, at hydrotreating conditions selected to (i) provide a liquid-phase operation and (ii) saturate said olefinic hydrocarbons without substantial saturation of cymene isomers; and,

(e) introducing at least a portion of the resulting olefin-free reaction zone effluent into said adsorption-separation zone to recover additional para-cymene.

4,128,594
PROCESS FOR THE PURIFICATION OF ALKYL AROMATICS

Helmut Westernacher, Haltern, Fed. Rep. of Germany, assignor to Chemische Werke Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 760,714, Jan. 19, 1977, abandoned. This application Apr. 18, 1978, Ser. No. 897,606

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1976, 2602069

Int. Cl.² C07C ***7/01***

U.S. Cl. 260—674 A **5 Claims**

1. In a process for the purification of an impure alkyl aromatic compound, produced by a Friedel-Crafts reaction employing aluminum chloride reaction catalyst and a promoter, by the successive steps of phase separation of the reaction product to separate therefrom the major proportion of reaction catalyst, neutralization with anhydrous ammonia of residual catalyst complex and hydrogen chloride present in the separated impure alkyl aromatic compound, and filtration of the neutralized product, the improvement wherein the neutralization with ammonia is conducted at a temperature of 40°–70° C at pH of 7–9 and at a pressure of 0.5–25 bars.

4,128,595
ACETYLENE HYDROGENATION IN LIQUID PHASE WITH A LIQUID HYDROCARBON REACTION MEDIUM

Dean P. Montgomery, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 2, 1977, Ser. No. 792,734

Int. Cl.² C07C ***11/04***

U.S. Cl. 260—677 H **5 Claims**

1. A process for the selective hydrogenation of acetylenic compounds in the liquid phase, which comprises contacting hydrogen and a gaseous hydrocarbon stream containing acetylene with an inert saturated liquid hydrocarbon reaction medium having a boiling range of about 150° F. (66° C.) to about 600° F. (316° C.) and with a supported catalyst comprising a Group VIII metal under hydrogenation conditions including a pressure sufficient to maintain said reaction medium in the liquid phase to hydrogenate at least a portion of the acetylenes contained in said stream.

4,128,596
ALKYLATION OF OLEFINS WITH PARAFFINS UTILIZING ALUMINUM HALIDE AND GROUP VA METAL HALIDE INTERCALATED IN GRAPHITE

Clifford E. Smith, and Hans D. Holtz, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 748,085, Dec. 6, 1976. This application Feb. 21, 1978, Ser. No. 879,571

Int. Cl.² C07C ***3/56***

U.S. Cl. 260—683.53 **7 Claims**

1. A method for alkylation of olefins with paraffins comprising contacting said olefins and paraffins under alkylation conditions in the presence of a catalytic composition consisting essentially of intercalated structure of graphite containing aluminum halide and Group VA metal halide in the graphite lattice, the molar ratio of said Group VA metal halide to said aluminum halide being about 1.4:1 to about 0.15:1.

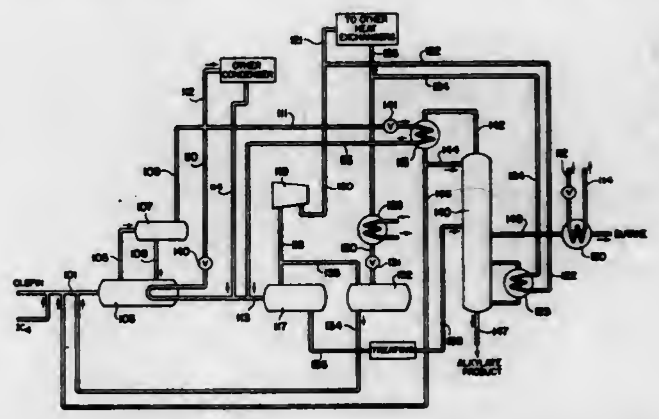
4,128,597
ALKYLATION PROCESS UTILIZING HYDROCARBON PHASE FOR COOLING AND COMPRESSED VAPOR FOR SUPPLYING HEAT TO DISTILLATION COLUMN

Richard H. Jones, South Euclid, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 742,949, Nov. 18, 1976, which is a continuation-in-part of Ser. No. 650,341, Jan. 19, 1976, abandoned, and Ser. No. 650,342, Jan. 19, 1976. This application Oct. 26, 1977, Ser. No. 845,762

Int. Cl.² C07C ***3/54***

U.S. Cl. 260—683.62 **20 Claims**



1. A process for catalytic alkylation of isobutane with an olefin comprising the steps of:

(a) contacting said olefin with a molar excess of isobutane and inert alkanes in the presence of an acid catalyst in a reactor to form a reactor effluent containing alkylate, isobutane, acid catalyst and inert alkanes;

(b) separating said acid catalyst from said reactor effluent to form a hydrocarbon mixture;

(c) effecting a liquid vapor separation on a portion of said hydrocarbon mixture to obtain a liquid bottoms stream containing isobutane and alkylate and an overhead vapor stream containing isobutane and inert alkanes;

(d) heating in a distillation zone said liquid bottoms stream to separate a liquid bottoms product containing alkylate and a vaporous distillation effluent containing isobutane;

(e) passing a portion of said hydrocarbon mixture from step (b) as a cooling effluent in indirect heat exchange with said vaporous distillation effluent in an overhead condenser for said distillation zone to condense isobutane in said vaporous distillation effluent and to vaporize at least a portion of said cooling effluent;

(f) admixing said cooling effluent from step (e) with said portion of the hydrocarbon mixture of step (c) so that said cooling effluent is subjected to liquid-vapor separation along with said portion of the hydrocarbon mixture in step (c);

(g) compressing the overhead vapor stream produced in step (c) in a compressor to obtain a compressed vapor stream; and

(h) passing at least a portion of said compressed vapor stream in indirect heat exchange relation with a liquid separated from said distillation zone of (d) to condense at least a portion of the compressed vapor stream and to supply heat to said distillation zone.

4,128,598
THERMOSETTING RESIN COMPOSITIONS HAVING EXCELLENT HIGH TEMPERATURE CHARACTERISTICS

Kiyoji Makino, Yokosuka, and Tsutomu Ohkawa, Yokohama, both of Japan, assignors to Toshiba Chemical Products Co. Ltd., Tokyo, Japan

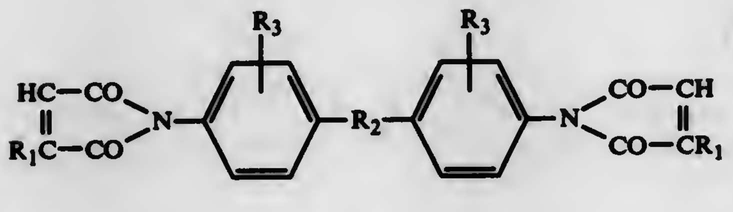
Filed Jun. 24, 1977, Ser. No. 809,769

Claims priority, application Japan, Jun. 25, 1976, 51-75096

Int. Cl.² C08L *63/02, 63/00*

U.S. Cl. 260—837 R **7 Claims**

1. A thermosetting resin composition which is essentially prepared from a polymeric reaction product obtained by mixing an addition product of at least one bismaleimide compound expressed by the general structural formula:



(A)

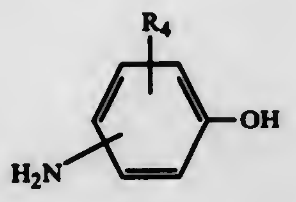
where:

R_1 is, the same or different, hydrogen or alkyl group having one or two carbon atoms,

R_2 is —O—, —CH_2—, —SO_2— or —S—S—, and

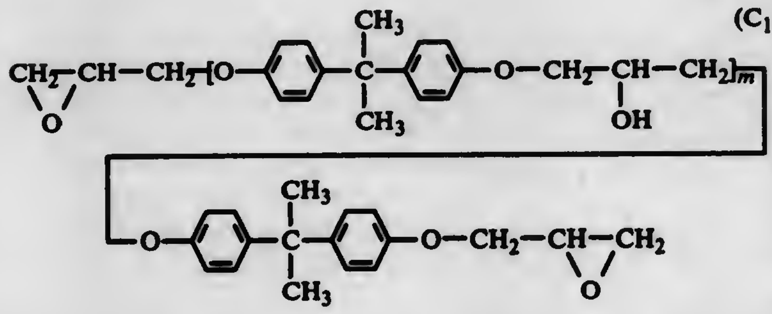
R_3 is, the same or different, hydrogen, chlorine or alkyl group having one or two carbon atoms; and

at least one aminophenol compound expressed by the general structural formula:



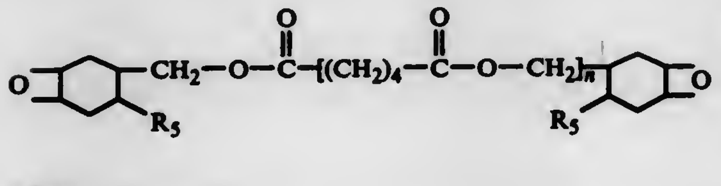
(B)

where R_4 is hydrogen, halogens, or alkyl group having one or two carbon atoms, wherein said addition product is formed of from 0.2 to 2 mols of said aminophenol per mol of said bismaleimide; with at least one epoxy compound selected from the group consisting of a compound expressed by the general structural formula:



(C_1)

where m is 0 or an integer of 1 to 4, a compound expressed by the general structural formula:

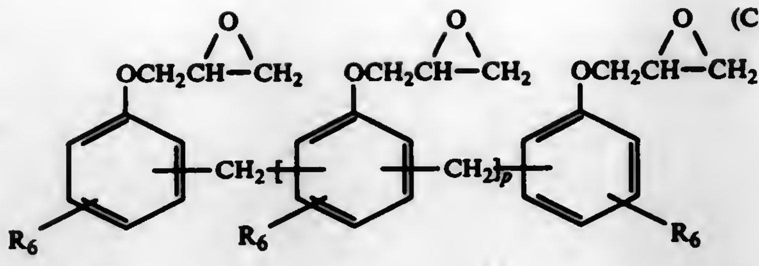


(C_2)

where:

n is 0 or 1, and

R_5 is, the same or different, hydrogen or methyl, a compound expressed by the general structural formula:

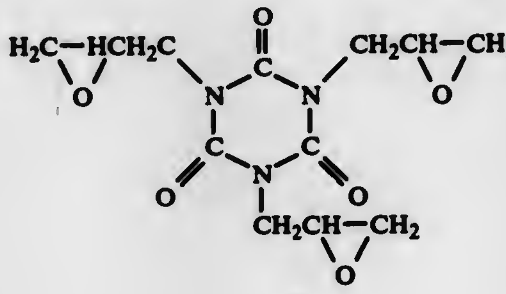


(C_3)

where:

p is 0, 1 or 2, and

R_6 is, the same or different, hydrogen, bromine or methyl, and a compound expressed by the general structural formula:



(C_4)

4,128,599
POLYAMIDES FOR EXTRUSION APPLICATIONS

Norman W. Thomas, Warren; Frank M. Berardinelli, Millington, both of N.J., and Robert Edelman, Staten Island, N.Y., assignors to Celanese Corporation, New York, N.Y.

Filed Dec. 22, 1976, Ser. No. 753,384

Int. Cl.² C08L *77/00*

U.S. Cl. 260—857 R **12 Claims**

1. A process for preparing a polycarbodiimide modified tractable polyamide of increased melt strength, shear sensitivity and relative viscosity, from a reaction mixture of a tractable polyamide and at least one polycarbodiimide which process comprises incorporating into the structure of, from about 99.5 to about 95% by weight of said mixture, of a tractable polyamide, having at least one carboxyl end group and at least one amine end group, from about 0.5 to about 5% by weight of said mixture of, at least one polycarbodiimide which polycarbodiimide both (a) is derived from at least one aromatic diisocyanate which is either unsubstituted or contains up to one methyl substituent on each aromatic ring, and (b) contains at least three carbodiimide units per polycarbodiimide molecule, by reacting the end groups of the polyamide, at a temperature not less than the melting point of the polyamide and less than the decomposition temperature of the polyamide and polycarbodiimide, with the carbodiimide groups of the polycarbodiimide, said modified tractable polyamide having a melt strength ratio of T_1/T_2, wherein T_1, is the time necessary to extrude a first three inch portion of a six inch continuous strand of molten polyamide, and T_2 is the time necessary to extrude the second three inches of the six inch continuous strand, of less than about 1.76 at 270° C., a relative viscosity, as determined from an 11%, by solution weight of a solution of the polyamide in formic acid, of about 75 to about 600 and utility in extrusion applications.

4,128,600
INTERPENETRATING DUAL CURE RESIN COMPOSITIONS

Earl Skinner, Wayzata; Marvin Emeott, Lake Elmo, and Allan Jevne, Anoka, all of Minn., assignors to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed Jan. 14, 1977, Ser. No. 759,311

Int. Cl.² C08L *75/06*

U.S. Cl. 260—859 R **12 Claims**

5. An interpenetrating urethane-linking, radiation-sensitive resin composition comprising:

(a) from about 40% to about 90% by weight of a saturated polyol which is a hydroxy functional acrylic copolymer of:
  (1) methyl methacrylate;
  (2) butyl acrylate, and
  (3) hydroxyethyl acrylate and,
(b) from about 10% to about 60% by weight of a reactive diluent selected from the group consisting of the fully substituted polyacrylates and polymethacrylates of polyfunctional alcohols, 2-ethylhexylacrylate, isodecylacrylate, diallyl maleate, styrene, divinylbenzene, vinyl acetate, and N-vinyl-2-pyrrolidone, and mixtures thereof; and,
(c) from about 80% to about 120% on a hydroxylisocyanate equivalent basis of a polyisocyanate.

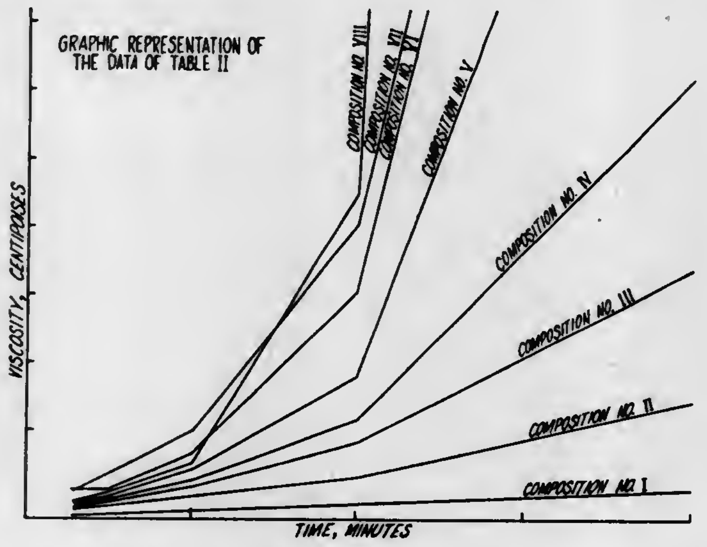
4,128,601
THICKENING AGENTS FOR LOW PRESSURE MOLDING COMPOSITIONS

John J. McCluskey, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Feb. 28, 1977, Ser. No. 772,781

Int. Cl.² C08L *67/06*

U.S. Cl. 260—862 **7 Claims**



1. A moldable composition comprising:
(a) an unsaturated, crosslinkable polyester resin having an acid number of about 15 to about 45 and a molecular weight from about 1,300 to about 2,500;
(b) an ethylenically unsaturated monomer;
(c) a thermoplastic resin having an acid number up to about 3.5 and a molecular weight of about 80,000 to about 350,000 soluble in said monomer; and
(d) a thickening agent consisting essentially of at least one alkaline-earth metal hydroxide and zinc oxide in an amount sufficient to thicken said moldable composition, the amount of said zinc oxide being sufficient to retard the rate of thickening of said molding compound as compared to the rate at which the molding compound thickens in the absence of said zinc oxide.

4,128,602
POLYPHENYLENE ETHER COMPOSITIONS CONTAINING RUBBER MODIFIED POLYSTYRENE

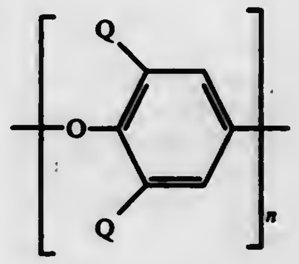
Arthur Katchman, Delmar, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 489,510, Jul. 18, 1974, abandoned, which is a continuation-in-part of Ser. No. 122,079, Mar. 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 31,793, Apr. 24, 1970, abandoned. This application Jun. 23, 1977, Ser. No. 809,440

Int. Cl.² C08L *51/04*

U.S. Cl. 260—876 R **19 Claims**

1. A high impact thermoplastic composition comprising from 1 to 99% by weight of a polyphenylene ether having the repeating structural formula:



wherein the oxygen ether atom of one unit is connected to the benzene nucleus of the next adjoining unit, n is a positive integer and is at least 50, and each Q is a monovalent substituent selected from the group consisting of hydrogen, halogen, hydrocarbon radicals free of a tertiary alpha-carbon atom, halohydrocarbon radicals having at least two carbon atoms between the halogen atom and the phenyl nucleus, hydrocarbonoxy radicals and halohydrocarbonoxy radicals having at least two carbon atoms between the halogen atom and the phenyl nucleus, from 99 to 1% of a polystyrene resin, on a rubber-free basis, and from 0.1 to 30% by weight of the total weight of the composition of a rubber, said composition having a dispersed particulate rubber phase in which the particles have a maximum mean diameter of about 2 microns.

4,128,603
COMPOSITIONS COMPRISING POLYPHENYLENE ETHER AND RUBBER MODIFIED POLYSTYRENE

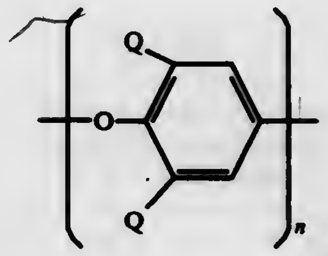
Arthur Katchman, Delmar, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 489,509, Jul. 18, 1974, abandoned, which is a continuation-in-part of Ser. No. 139,215, Apr. 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 31,793, Apr. 24, 1970, abandoned. This application Jun. 23, 1977, Ser. No. 809,441

Int. Cl.² C08L *51/04*

U.S. Cl. 260—876 R **14 Claims**

1. A high impact strength thermoplastic composition comprising
(a) a polyphenylene ether having the repeating structural formula:



wherein the oxygen ether atom of one unit is connected to the benzene nucleus of the next adjoining unit, *n* is a positive integer and is at least 50, and each Q is a monovalent substituent selected from the group consisting of hydrogen, halogen, hydrocarbon radicals free of a tertiary alpha-carbon atom, halohydrocarbon radicals having at least two carbon atoms between the halogen atom and the phenyl nucleus, hydrocarbonoxy radicals and halohydrocarbonoxy radicals having at least two carbon atoms between the halogen atom and the phenyl nucleus and

(b) a rubber modified polystyrene, said rubber modified polystyrene containing from not substantially less than about 22% to about 80% by weight of a particulate elastomeric gel phase dispersed in a polystyrene matrix.

4,128,604

POLYPHENYLENE ETHER COMPOSITIONS

Arthur Katchman, Delmar, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 489,508, Jul. 18, 1974, abandoned, which is a continuation-in-part of Ser. No. 319,159, Dec. 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 122,079, Mar. 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 31,793, Apr. 24, 1970, abandoned. This application Jun. 23, 1977, Ser. No. 809,442

Int. Cl.² C08L *51/04*

U.S. Cl. 260—876 R **19 Claims**

1. A high impact strength thermoplastic composition comprising

(a) a polyphenylene ether and

(b) a rubber modified polystyrene resin,

said composition having a dispersed particulate rubber phase in which the particles have a maximum mean diameter of about 2 microns, said composition containing not substantially less than about 22% by weight of a particulate rubber gel phase, on a polyphenylene ether-free basis, dispersed in a polystyrene matrix, and said rubber comprising a polybutadiene having a cis-1,4 content of at least 50% by weight and a vinyl group content of no more than 10% by weight of said polybutadiene.

4,128,605

PROCESS FOR PREPARING VINYL CHLORIDE RESIN-ACRYLIC GRAFT COPOLYMER COMPOSITION

Kazuo Kishida, Otake; Jinpee Kobayashi, Iwakuni, and Hajime Fukunaga, Otake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1977, Ser. No. 804,157

Claims priority, application Japan, Jun. 4, 1976, 51-65314

Int. Cl.² C08L *51/00*

U.S. Cl. 260—876 R **12 Claims**

1. A process for preparing vinyl chloride resin composition comprising the steps of:

(1) preparing an acrylic elastomer (A) by (a) polymerizing 30 to 50% by wt. of an aromatic vinyl monomer in the presence of a polyfunctional cross-linking agent having at least one allyl group and a carboxylate anion surfactant as an emulsifier at a pH maintained between 7.0–9.5 and then (b) graft-polymerizing 50 to 70% by wt. of an alkyl acrylate of 2 to 10 carbon atoms in the alkyl group onto said polymerized aromatic vinyl polymer in the presence of from 0.1 to 3 parts by wt. of a polyfunctional cross-linking agent with at least one allyl group based on the weight of the sum of said aromatic vinyl monomer and said alkyl acrylate;

(2) preparing a graft copolymer (B) by graft-polymerizing from 20 to 70 parts by wt. of an aromatic vinyl monomer and methyl methacrylate onto 30 to 80 parts by weight of said acrylic elastomer (A) wherein from 70% to 20% by wt. of said aromatic vinyl monomer is first graft-polymerized onto said elastomer (A) in the presence of an oil soluble initiator and then graft-polymerizing from 30 to 80% by wt. of methyl methacrylate onto said grafted elastomer; and

(3) mixing from 60 to 97 parts by wt. of a vinyl chloride polymer with 3 to 40 parts by wt. of said graft copolymer (B).

4,128,606

IMPACT-RESISTANT CHEMICALLY BLENDED PROPYLENE POLYMER COMPOSITION AND PROCESS FOR PREPARATION THEREOF

Kunio Furutachi; Akifumi Kato; Mikio Nakagawa, all of Ohtake; Masaru Nakano, Iwakuni; Shunji Arita, Ohtake, and Aikich Yamamoto, Yamaguchi, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jan. 5, 1977, Ser. No. 757,026

Claims priority, application Japan, Feb. 13, 1976, 51-13915

Int. Cl.² C08F *297/08*

U.S. Cl. 260—878 B **8 Claims**

1. A process for preparing an impact-resistant chemically blended propylene polymer composition having an ethylene content of 3 to 40 mole%, which consists essentially of the following three steps:

(1) a first step of polymerizing propylene containing 0 to 1 mole% of another olefin in the presence of a catalyst composed of (a) a carrier-supported titanium catalyst component containing at least magnesium, halogen and titanium on the surface of the carrier and (b) an organoaluminum compound to form crystalline polypropylene having an isotactic index of at least 90 which accounts for 55 to 95% by weight of the final polymer composition;

(2) a second step of copolymerizing propylene and ethylene in the presence of the reaction product of the first step and the same catalyst while maintaining the content of propylene in the gaseous phase of the polymerization zone at 65 to 90 mole% therby to form a low-crystalline propylene-/ethylene copolymer having a propylene content of 60 to 85 mole% which accounts for 1 to 10% by weight of the final polymer composition; and

(3) a third step of polymerizing ethylene, or both ethylene and propylene in the presence of the reaction product of the second step and the same catalyst while maintaining the content of propylene in the gaseous phase of the polymerization zone at 0 to 15 mole% thereby to form polyethylene or an ethylene/propylene copolymer having a propylene content of up to 10 mole% which has an intrinsic viscosity of at least 2.6 and accounts for 1 to 35% by weight of the final polymer composition.

6. An impact-resistant chemically blended propylene polymer composition having an ethylene content of 3 to 40 mole%, and consisting essentially of

(A) 55 to 95% by weight of crystalline polypropylene containing 0 to 1 mole% of another olefin and having an isotactic index of at least 90,

(B) 1 to 10% by weight of a low-crystalline propylene/ethylene copolymer containing 60 to 85 mole% of propylene, and

(C) 1 to 35 mole% by weight of polyethylene or an ethylene/propylene copolymer containing up to 10 mole% of propylene which has an intrinsic viscosity of at least 2.6, the total proportion of (A), (B) and (C) being 100% by weight.

4,128,607

METHOD FOR THE PRODUCTION OF LOW DENSITY POLYETHYLENE

Tetsunosuke Shiomura; Youzou Kinoshita, both of Takaishi, and Yoshio Kokue, Izumi, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Apr. 6, 1977, Ser. No. 785,252

Claims priority, application Japan, Apr. 6, 1976, 51-37765

Int. Cl.² C08F *4/02, 4/64, 210/00, 297/08*

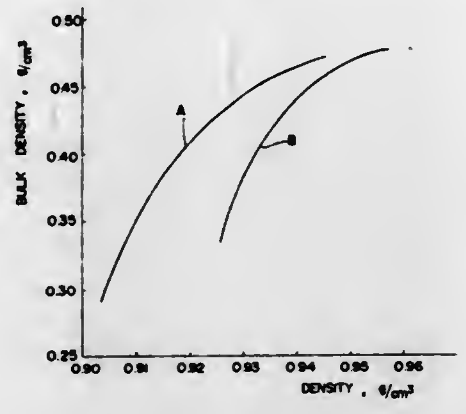
U.S. Cl. 260—878 B **1 Claim**

1. A method for the production of a low density ethylene copolymer of not higher than 0.945 g/cm³ by copolymerizing ethylene and an α-olefin, which comprises:

(i) using a catalyst consisting essentially of (A) a catalyst component having titanium tetrachloride supported on a magnesium compound or a mixture or reaction product thereof with an aluminum compound and (B) an organo-aluminum compound,

(ii) subjecting ethylene to pre-polymerization in the presence of said catalyst prior to the copolymerization, the amount of ethylene to be pre-polymerized being within the range of 1.0 to 50 g per 1.0 g of said catalyst component (A),

(iii) conducting the copolymerization of ethylene and an α-olefin in a two-step process of:



(a) first, conducting the copolymerization until polymers of 10 to 80% by weight based on a finally resulting polymer have been formed while controlling the copolymerization ratio of α-olefin to ethylene at less than 3.0% by weight, and

(b) completing the polymerization reaction while elevating the copolymerization ratio of α-olefin to ethylene to the range of 3.0 to 20% by weight, and

(iv) conducting said copolymerization in slurry state in the presence of a hydrocarbon solvent having a boiling point of not higher than 40° C. at temperature of not higher than 100° C.

4,128,608

2,2,6,6-TETRAMETHYL-4-PIPERIDYL SPIRO ALIPHATIC ETHERS AS STABILIZERS FOR SYNTHETIC POLYMERS

Motonobu Minagawa, Kosigaya; Naohiro Kubota, and Toshihiro Shibata, both of Urawa, all of Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

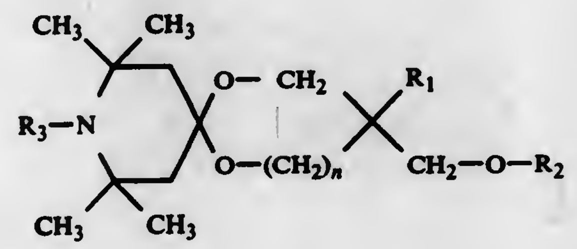
Filed Dec. 8, 1977, Ser. No. 858,774

Claims priority, application Japan, Dec. 24, 1976, 51-156075

Int. Cl.² C07D *211/44, 211/94, 401/12;* **C08K** *5/34*

U.S. Cl. 260—880 R **24 Claims**

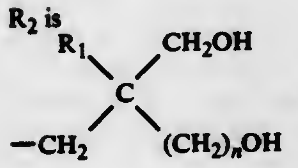
1. A 2,2,6,6-tetramethyl-4-piperidyl spiro aliphatic ether having the general formula:



wherein:

R_1 is selected from the group consisting of hydrogen, lower alkyl and lower hydroxyalkyl having one or two carbon atoms;

R_2 is



or

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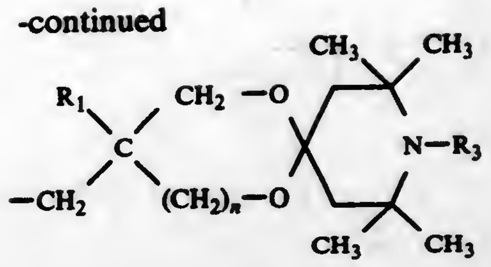


R_3 is selected from the group consisting of hydrogen and $O^{\cdot}$; and

n is 0 or 1.

20. An acrylonitrile-butadiene-styrene polymer having improved resistance to deterioration when heated at 300° F. comprising an acrylonitrilebutadiene-styrene polymer and an amount sufficient to improve resistance to deterioration of the resin of a compound in accordance with claim 1.

4,128,609

METHOD OF ATTACHING HEELS TO SHOES

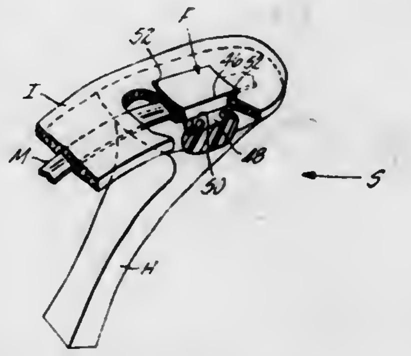
Francis F. H. Rawson, Loughborough, England, assignor to USM Corporation, Farmington, Conn.

Filed Sep. 20, 1977, Ser. No. 834,989

Claims priority, application United Kingdom, Jan. 26, 1977, 3052/77

Int. Cl.² B29D *3/00;* **B29F** *5/00*

U.S. Cl. 264—23 **8 Claims**



1. A method of attaching a thermoplastic heel to a shoe having an insole by means of a fastener having a head portion and a shank portion, the method comprising positioning the heel against the heel seat portion of the shoe, inserting the shank portion through the insole and into the thermoplastic material of the heel with the head portion overlying the insole, vibrating the fastener at an ultrasonic frequency to at least soften the material of the heel adjacent to the shank portion, and pressing the fastener into the heel to embed the shank portion in the material while it is at least softened said fastener having its shank portion formed with at least one hole extending transversely therethrough into which the softened heel material flows.

4,128,610

METHOD FOR CASTING CONCRETE STRUCTURES

Nils H. Ahlgren, 22 Skyttevägen, S-133 00 Saltsjobaden, Sweden

Filed Feb. 14, 1977, Ser. No. 768,691

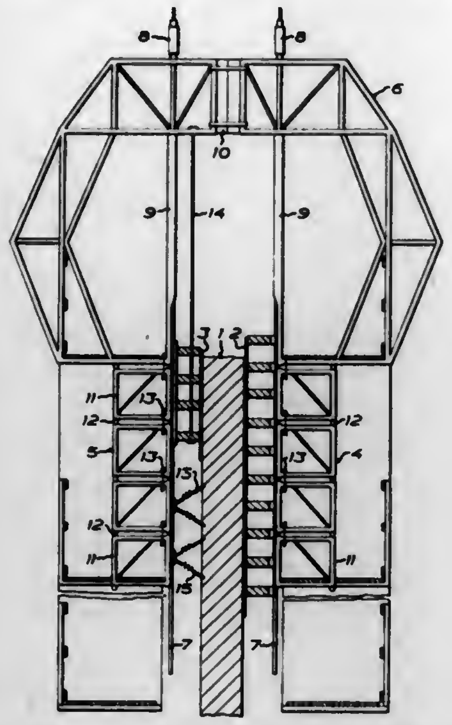
Claims priority, application Sweden, Feb. 20, 1976, 7602035

Int. Cl.² E04B *1/16*

U.S. Cl. 264—33 **7 Claims**

1. A method for the casting of concrete structures by means of moulds disposed at two opposite sides of the structure to be cast, said moulds being pressed against the concrete structure by the legs of a yoke construction which is arranged to be successively lifted by jacks cooperating with jack rods, said jack rods being fixed in place with respect to the concrete structure being cast during any lifting operation of said yoke construction; wherein the legs of said yoke construction are caused to produce a pressure, at least at their lower ends,

against both sides of the concrete structure being cast, the pressure of each leg of said yoke being directed toward the other of said legs, said legs being caused during lifting to slide with respect to said jack rods; and wherein the weight of the yoke construction is carried by friction forces set up between the stationary jack rods and the concrete structure on both sides thereof.

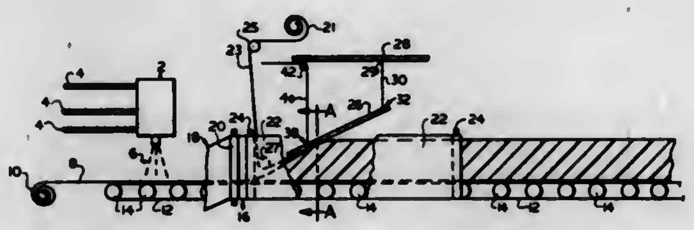


4,128,611
CONTINUOUS PROCESS AND APPARATUS FOR PRODUCING FOAMED POLYMER BUNSTOCK HAVING A SUBSTANTIALLY RECTANGULAR CROSS-SECTION

Richard A. Kolakowski, Northford, Conn., and Richard M. Stroud, Houston, Tex., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 7, 1977, Ser. No. 785,404
Int. Cl.² B29D *27/04*

U.S. Cl. 264—51 **10 Claims**



1. A process for producing a continuous length of polymer foam bunstock having substantially rectangular cross-section, uniform density and uniform cell structure which comprises the steps of:

advancing at a predetermined, constant rate a continuous conveyor surface along a predetermined path of travel, said conveyor surface comprising a lower supporting portion and separate upstanding portions on laterally opposite sides of said lower portion and defining together a generally trough-like moving mold for the developing foam product;

continuously depositing liquid polymerfoam forming mixture on the floor of said moving mold at a location near the entrance thereto;

allowing said foam-forming mixture to expand freely at least until the gel point is reached;

causing said expanding foam, at a point approaching the top of the foam rise and beyond that at which the gel point is reached but before said foam is no longer sufficiently mobile to be molded without distortion of cell structure, to contact the underside of a panel member having a width substantially co-extensive with that of said moving mold and being pivotally mounted, at the downstream end thereof, above said moving mold, said panel member depending from said pivotal mounting and floating freely on said rising foam in tangential contact therewith; and

adjusting the downward pressure exerted by said panel member so that it causes said rising foam to assume a substantially rectangular cross-section

said downward pressure being the sole restraining force applied to the surface of said foam during its entire passage through said trough-like moving mold.

6. An apparatus for the production of a continuous length of polymer foam bunstock having substantially rectangular cross-section which comprises in combination:

conveyor means comprising a continuously advancing lower supporting portion and separate, vertically disposed, continuously advancing side portions associated with said lower portion so as to define an open-topped mold of generally U-shaped cross-section;

means driving said lower and side portions synchronously along a predetermined path of travel.

means located above the entrance to said conveyor for dispensing foam forming mix on the said lower portion of said conveyor;

a panel member of a width substantially co-extensive with that of said open-topped mold having its end remote from the said foam dispensing means adjustably and pivotally mounted above said open top conveyor, said panel member depending downwardly from said pivotal mounting and adapted to make tangential contact on its underside with the surface of foam rising in said open-topped mold at a point approaching the top of the rise and beyond that at which the gel point is reached but before said foam is no longer sufficiently mobile to be molded without distortion of cell structure; and

means located at the end of said conveyor for cutting foam bunstock into lengths of predetermined size and for removing said lengths from said conveyor.

4,128,612
MAKING ABSORBABLE SURGICAL FELT

Roy W. Roth, New Canaan, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 462,559, Apr. 19, 1974, Pat. No. 3,937,223. This application Nov. 3, 1975, Ser. No. 628,029
Int. Cl.² B29D *3/02*

U.S. Cl. 264—126 **5 Claims**

1. A method of making sterile hemostatic surgical felt, having a textured and embossed surface, consisting entirely of a living tissue absorbable polymer which comprises:

spinning a living tissue absorbable polymer into fibers of 0.5 to 12 denier, cutting said fibers into segments of from about ¼ inch to about 3 inches in length,

randomly air laying said fibers into a mat having a uniform density of from about 0.5 to about 4 ounces per square yard,

heating and compressing with a texture surface to emboss said mat and bind the fibers to form a felt,

the heating, embossing and texturing causing a reduction in the rate of blood penetration, and improving the adhesion to bleeding surfaces,

cutting to form individual felt hemostats,

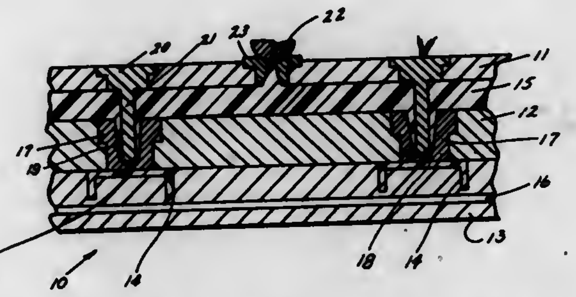
, and, in any order, packaging in contamination resistant packages, and sterilizing.

4,128,613
INJECTION MOLDING METHOD

David O. Allen; Wilmington, Ohio, assignor to Buckeye Molding Company, New Vienna, Ohio

Continuation of Ser. No. 644,832, Dec. 29, 1975, abandoned, which is a continuation of Ser. No. 483,086, Jan. 26, 1974, abandoned. This application Feb. 8, 1977, Ser. No. 766,657
Int. Cl.² B29F *1/05*

U.S. Cl. 264—161 **3 Claims**



1. An improved method of injection molding a molten resin comprising the steps of interposing between a mold chamber and a sprue passageway a gate having wall means defining a gate opening which has a length of perimeter greater than the circumference of a circular opening having a cross-sectional area equal to that of said gate opening, effecting a flow of said resin from said sprue passageway through said gate opening until said chamber is filled with resin, maintaining resin remaining in said sprue passageway immediately adjacent said gate in a molten state, cooling resin remaining in said gate sufficiently to avoid drooling, and thereafter separating resin filling said mold chamber from said gate and resin remaining therein.

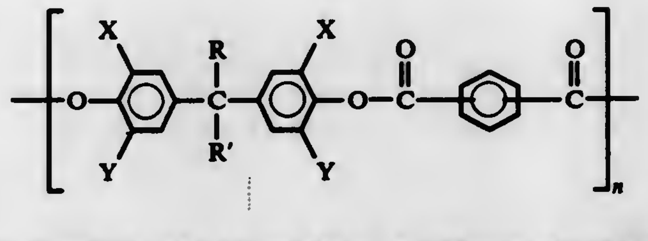
4,128,614
HALOGENATED AROMATIC POLYESTER FIBERS PREPARED VIA DRY-SPINNING HAVING REDUCED SPIN-LINE STATIC GENERATION

William C. Gilbert, Fairfield, Conn., assignor to Celanese Corporation, New York, N.Y.

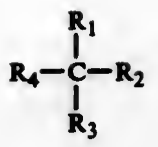
Filed May 20, 1977, Ser. No. 798,973
Int. Cl.² D01F *6/00*

U.S. Cl. 264—205 **13 Claims**

1. In a dry-spinning process for forming fibers of certain halogenated aromatic polyesters by extruding a solution of a halogenated aromatic polyester of the recurring structural formula:



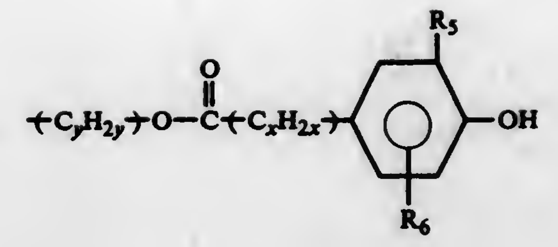
where X which may be the same or different is chlorine or bromine, Y which may be the same or different is hydrogen, chlorine or bromine, R and R′ may be the same or different and represent lower alkyl groups, hydrogen, or together constitute a cyclic hydrocarbon group, and n equals at least 25, while dissolved in methylene chloride, through an opening into an evaporative atmosphere for the methylene chloride; the improvement comprising incorporating an esterified hindered phenol having the structural formula:



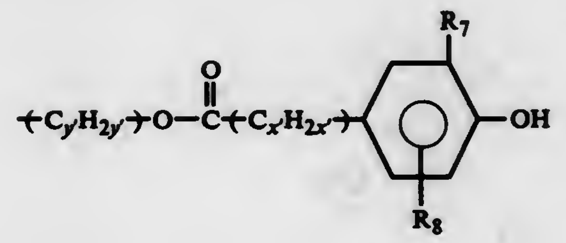
$$R_4-\underset{R_3}{\overset{R_1}{C}}-R_2$$

where

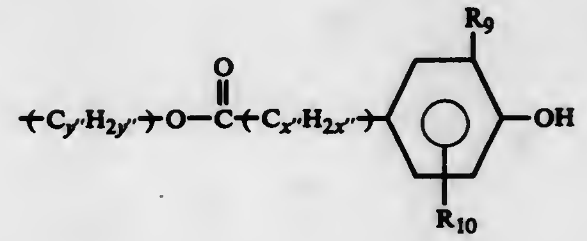
R₁ is



R₂ is

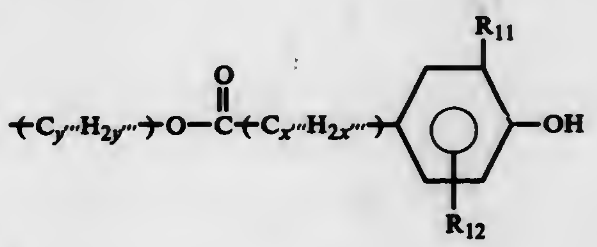


R₃ is



and

R₄ is



and where

$x, x', x'', x''', y, y', y'', y'''$ represent an integer which can vary from 1 to 6 and R_5, R_6, R_7, R_8, R_9, R_{10}, R_{11} and R_{12} which may be the same or different represent a straight or branched chain hydrocarbon having from 1 to 6 carbon atoms, into said solution in an amount of from about 0.1 to about 2.5% by weight based on the weight of said dissolved halogenated aromatic polyester which serves to reduce the generation of spin-line static during the extrusion process.

4,128,615
METHOD FOR PROCESSING AN ELECTRIC SIGNAL USING ELASTIC SURFACE WAVES

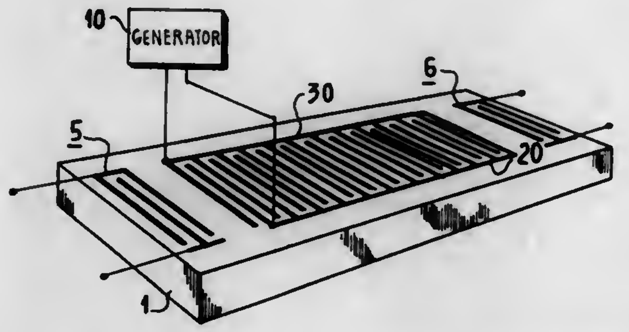
Pierre Tournois, and Charles Maerfeld, both of Paris, France, assignors to Thomson-CSF, Paris, France

Division of Ser. No. 629,905, Nov. 7, 1975, abandoned. This application May 27, 1977, Ser. No. 801,250
Claims priority, application France, Nov. 8, 1974, 74 37079
Int. Cl.² H01L *41/10*

U.S. Cl. 310—313 **7 Claims**

1. A method for processing an electric signal by means of an

acoustic surface wave device, said device being of a type that comprises:
- a piezoelectric substrate;
- at least one electromechanical transducer for receiving said signal, termed the initial signal, and for generating elastic waves on the surface of said substrate;
- means for exciting electromagnetic waves; and
- means for fixing a potential pattern;
- said method comprising the steps of:
- producing a first interaction between a first elastic wave corresponding to said initial signal, and a second wave, selected from a group consisting of elastic wave and electromagnetic wave, corresponding to a second electric signal, said first interaction generating a time-independent spatial potential pattern, representing the correlation function between said initial signal and said second signal, and fixed by said fixing means;
- producing a second interaction between said pattern, a third wave, which is an acoustic wave corresponding to a third electric signal and a fourth wave, which is an acoustic wave corresponding to a fourth signal, the angular frequencies of said third and fourth waves being distinct from the preceding angular frequencies, said third and fourth waves being generated substantially simultaneously, said second interaction generating a resulting wave having an angular frequency distinct from the preceding angular frequencies and an amplitude representing the integral on the interaction zone of the product of said signal represented by said pattern and said third and fourth signals.



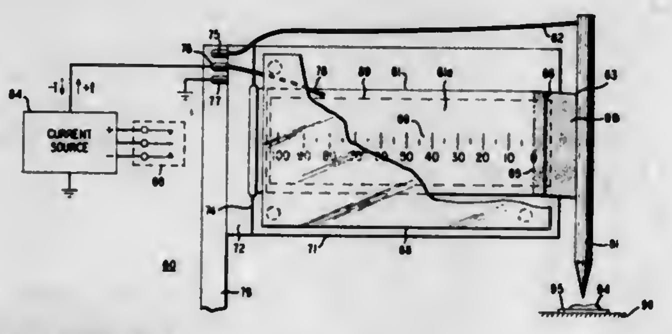
4,128,616
MICROPOSITIONERS USING A CRYSTAL HAVING MOVEABLE DOMAIN WALLS

Larry A. Coldren, Holmdel, and Ross A. Lemons, Tinton Falls, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 11, 1977, Ser. No. 823,726

Int. Cl.² H01L *41/10*

U.S. Cl. 310—328 **19 Claims**



1. In combination,
- means for receiving a specimen,
- a body having a fixed end and a free end,
- control means for providing relative motion between said specimen and an individual one of said ends, said body being comprised of a body of crystalline material having at least a first domain wall, said material being such that movement of said domain wall causes relative motion between said fixed and free ends, said control means comprising means for moving said domain wall, and
- means for enabling the position of said domain wall to be observed,
- said combination characterized by a ruled scale disposed on said body perpendicular to the plane of said domain wall.

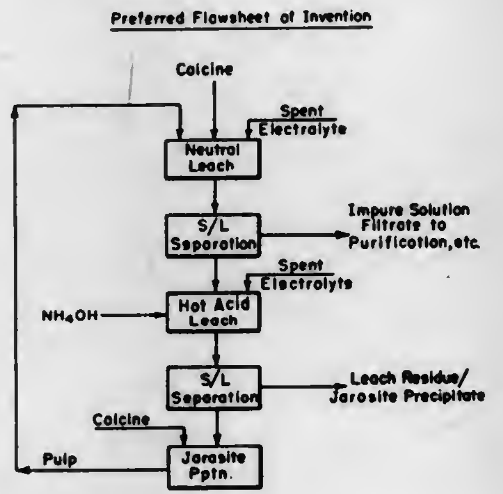
4,128,617
TREATMENT OF ZINC CALCINES FOR ZINC RECOVERY

Marcel F. DeGuire, Southbury, and John H. Wirag, III, Bethel, both of Conn., assignors to Newmont Exploration Limited, Danbury, Conn.

Filed Jul. 11, 1977, Ser. No. 814,659

Int. Cl.² C01G *9/06*

U.S. Cl. 423—106 **20 Claims**



1. A process for the treatment of zinc calcine containing zinc oxides, zinc sulfates and zinc ferrites for the recovery of zinc which comprises:
- (a)(1) neutral leaching the zinc calcine with an effective volume of an aqueous sulfuric acid containing solution to dissolve a substantial amount of the zinc oxides and the zinc sulfates, and thereafter contacting the resulting pulp with an effective amount of a neutralizing agent to neutralize the acid content of the pulp, and
- (2) separating the solids and liquid to produce an impure solution filtrate and a neutral leach residue;
- (b) (1) hot acid leaching the neutral leach residue with an effective volume of aqueous sulfuric acid containing solution to dissolve a substantial amount of the zinc ferrites, and
- (2) separating the solids and liquid to produce an acid leach solution and an acid leach residue, said acid leach residue containing jarosite precipitate recycled from step (c)(2);
- (c)(1) contacting the acid leach solution with an effective amount of a neutralizing agent and in the presence of an effective amount of an alkali to precipitate the ferric iron as jarosite, and
- (2) recycling the resulting pulp to step (a)(1).

4,128,618
PROCESS FOR EXTRACTING ALUMINA FROM ALUMINA-CONTAINING ORES

Koichi Yamada; Takuo Harato; Takahiro Ishida, all of Niihama, and Yasumi Shiozaki, Saijo, all of Japan, assignors to Sumitomo Aluminium Smelting Company, Ltd., Osaka, Japan

Filed Aug. 1, 1977, Ser. No. 820,897

Claims priority, application Japan, Aug. 6, 1976, 51-94280

Int. Cl.² C01F *7/06*

U.S. Cl. 423—119 **8 Claims**

1. In a process for extracting alumina from alumina-containing ores on a two-stream system by individually preheating a slurry of alumina-containing ores and an aqueous alkali solution each in preheaters of indirect heating, mixing the preheated slurry with the preheated aqueous alkali solution, and extracting alumina from the alumina-containing ores in a digester which is either heated by direct injection of live steam or is a digester of the heat-insulated type, the improvement which comprises preparing the slurry of alumina-containing ores having a solid matter concentration of about 20% by weight or higher with water or a diluted aqueous alkali solution having an alkali concentration of not more than about 10 g/l in terms of M_2O, where M represents Na or K, preheating the slurry, mixing the preheated slurry with an aqueous alkali solution preheated as another stream as a decomposition solution, and extracting alumina from the ores, thereby completely or substantially preventing scale formation on an inside surface of the preheater for the slurry.

4,128,619
PROCESS FOR DESULFURIZATION USING PARTICULATE ZINC OXIDE SHAPES OF HIGH SURFACE AREA AND IMPROVED STRENGTH

Victor S. Robinson, Brooklyn Heights, N.Y., assignor to The New Jersey Zinc Company, Bethlehem, Pa.

Continuation-in-part of Ser. No. 801,498, May 3, 1977, abandoned, which is a division of Ser. No. 594,391, Jul. 9, 1975, Pat. No. 4,071,609. This application Jan. 13, 1978, Ser. No. 869,335

Int. Cl.² C01B *17/00*

U.S. Cl. 423—244 **6 Claims**

1. A process for desulfurizing sulfur-containing gases, said process including the steps of:
- a. providing a bed of high surface area and high crush strength particulate zinc oxide formed by the steps of:
  - (1) forming normal zinc oxide having a specific surface area less than 10 square meters per gram into pre-determined shapes without the addition of extraneous binding material;
  - (2) exposing said normal zinc oxide shapes to a carbon dioxide-containing atmosphere including water vapor;
  - (3) converting at least about 45% of said zinc oxide into basic zinc carbonate; and
  - (4) decomposing substantially all of said basic zinc carbonate into particulate zinc oxide shapes such that said particulate zinc oxide shapes have a crushing strength between about five and about thirty times greater than the crushing strength of the pre-determined zinc oxide shapes;
- b. passing said sulfur containing gas over said bed in order to remove the sulfur from said gas; and
- c. collecting said desulfurized gas.

4,128,620
PRODUCTION OF PHOSPHINE

Jurgen Stenzel, and Gero Heymer, both of Erftstadt-Liblar, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 2, 1977, Ser. No. 830,160

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1976, 2639941

Int. Cl.² C01B *25/00*

U.S. Cl. 423—299 **9 Claims**

1. A process for making phosphine, which comprises reducing, in a first step, anhydrous zinc phosphate to zinc phosphide by treatment with carbon at a temperature higher than 1000° C., and, in a second step, reacting the zinc phosphide formed in the first step with phosphoric acid, the resulting gaseous phosphine being collected, and the resulting zinc phosphate, which is obtained as a difficultly soluble precipitate, being dried, dehydrated and recycled to the first step.

4,128,621
PRODUCTION OF AMMONIA

Edwin H. Homeier, Maywood, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 736,687, Oct. 28, 1976, abandoned. This application Oct. 31, 1977, Ser. No. 846,852

Int. Cl.² C01C *1/04*

U.S. Cl. 423—362 **9 Claims**

1. A process for the production of ammonia which comprises reacting hydrogen and nitrogen at reaction conditions in the presence of a catalyst comprising an activated phthalocyanine, corrin or porphyrin of a transition metal, said catalyst having been activated prior to the hydrogen-nitrogen reaction by treatment with a reducing agent selected from the group consisting of sodium borohydride, potassium borohydride, lithium borohydride, calcium hydride, magnesium hydride, strontium hydride, sodium methylate, sodium ethylate, trimethyl aluminum chloride, triethyl aluminum chloride, tripropyl aluminum chloride, triethyl aluminum, tripropyl aluminum and tri-t-butyl aluminum.

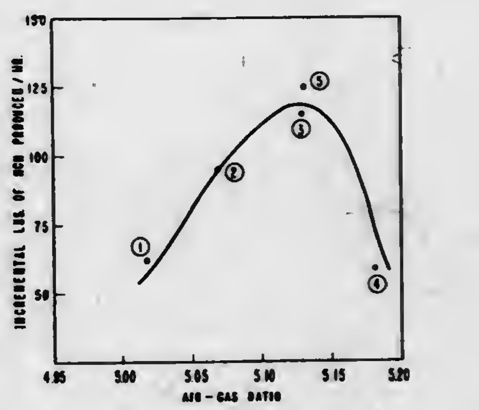
4,128,622
PROCESS FOR PRODUCING HYDROGEN CYANIDE

Karl D. Loos, II; Kenneth C. McCullough, both of Memphis, Tenn., and Don Q. Whitworth, Keller, Tex., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 27, 1976, Ser. No. 718,141

Int. Cl.² C01C *3/02*

U.S. Cl. 423—376 **7 Claims**



1. In a process for producing hydrogen cyanide by contacting in a converter in the vapor phase, ammonia, a hydrocarbon gas and an oxygen-containing gas which contain about 21% by volume oxygen, in the presence of a platinum-group metal catalyst at a temperature of from about 1000° C. to 1200° C. to produce an off-gas containing hydrogen cyanide, the improvement comprising
- (1) feeding to said converter a ratio of oxygen-containing gas to hydrocarbon gas within the range of 4.5:1 to 5.5:1,
- (2) feeding to said converter a ratio of oxygen-containing gas to ammonia within the range of 3.0:1 to 9.0:1,
- (3) measuring the converter off-gas to determine the weight percent of the hydrogen cyanide present at these ratios and then calculating HCN production,
- (4) varying the hydrocarbon gas feed while maintaining the oxygen-containing gas to ammonia ratio constant,
- (5) continuing to vary the hydrocarbon gas feed until the highest calculated HCN production is obtained, and
- (6) maintaining the hydrocarbon gas feed at the rate corresponding to the highest production of hydrogen cyanide in the off-gas.

4,128,623

MANUFACTURE OF A SOLUTION OF NITROSYLSULFURIC ACID IN SULFURIC ACID

Karl Schmeidl, Frankenthal; Wilhelm Brunkhorst, Limburgerhof, and Eberhard Michaelis, Weingarten, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 16, 1978, Ser. No. 869,672

Int. Cl.² C01B ***21/54***

U.S. Cl. 423—388 **6 Claims**

1. A process for the manufacture of a solution of nitrosylsulfuric acid in sulfuric acid by reacting nitric acid with sulfur in sulfuric acid or oleum, wherein less than 0.33 gram atom of sulfur is employed per mole of nitric acid and after completion of the reaction the free nitric acid still present in the nitrosylsulfuric acid solution is reduced with a lactone.

4,128,624

METHOD FOR INTRODUCING CARBON INTO EVACUATED OR PRESSURIZED REACTION VESSELS AND REACTION PRODUCTS THEREFROM

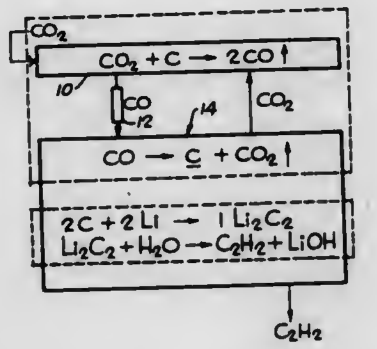
Murry A. Tamers, 14131 Cypress Ct., Miami Lakes, Fla. 33014

Continuation-in-part of Ser. No. 572,165, Apr. 28, 1975, Pat. No. 4,009,219. This application Oct. 20, 1975, Ser. No. 623,943

The portion of the term of this patent subsequent to Feb. 22, 1994, has been disclaimed.

Int. Cl.² C01B ***31/30, 31/02;*** **C09C** ***1/48***

U.S. Cl. 423—439 **20 Claims**



1. The method for introducing elemental carbon in solid form in a reaction vessel operating under pressure other than atmospheric and reacting the carbon that is formed to a metal carbide comprising introducing carbon monoxide in a gaseous state under the pressure conditions existing within the reactor and thermally converting said carbon monoxide in the presence of lithium, its oxide or hydroxide as the catalyst at a temperature within the range of 400–900° C. to elemental carbon and carbon dioxide under non-oxidizing conditions existing within the reactor, and removing carbon dioxide that is formed, leaving the elemental carbon in solid form as a reactant, reacting the carbon with lithium along or with lithium in combination with other alkali or alkaline earth metals at a temperature within the range of about 700°–1000° C. to form the corresponding carbides.

4,128,625

PROCESS FOR SYNTHESIZING DIAMONDS

Hiroshi Ishizuka, 19-2 Ebara 6-chome, Shinagawa-ku Tokyo, Japan

Filed Oct. 13, 1977, Ser. No. 841,715

Claims priority, application Japan, Oct. 18, 1976, 51-125212

Int. Cl.² C01B ***31/06***

U.S. Cl. 423—446 **4 Claims**

1. In the process for synthesizing diamonds by subjecting in a reaction vessel a non-diamond material carbon and a solvent-catalyst metal to a high pressure-high temperature condition in diamond-stable region of carbon phase diagram, the improvement comprising the material carbon being initially isolated from the solvent-catalyst metal by a thin plate of a metal selected from the group consisting of copper, gold, silver and an alloy thereof, said thin metal plate melting partially under said condition to allow initiation of nucleation for diamond formation in a limited area increasing the size of the diamonds obtained.

4,128,626

PURIFICATION OF GASEOUS HYDROGEN CHLORIDE

Dihrendra R. Merchant, Paducah, Ky., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 153,839, Jun. 16, 1971, abandoned. This application Apr. 26, 1973, Ser. No. 354,715

Int. Cl.² C01B ***7/08***

U.S. Cl. 423—488 **6 Claims**

1. A process for purifying gaseous hydrogen chloride containing hydrogen fluoride contamination which comprises contacting with solid, particulate, substantially anhydrous calcium chloride a gaseous mixture of hydrogen chloride containing from 0.1 to about 5 percent by weight of hydrogen fluoride, at a temperature within the range of about 50° F. to about 120° F., to effect substantial removal of the hydrogen fluoride from the gaseous hydrogen chloride, whereby the hydrogen fluoride content thereof is reduced to less than 0.01 weight percent.

4,128,627

SYNTHESIS OF HYDROGEN PEROXIDE

Paul N. Dyer, Horsham, and Fred Moseley, Cobham, both of England, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 4, 1977, Ser. No. 774,577

Claims priority, application United Kingdom, Mar. 9, 1976, 9351/76

Int. Cl.² C01B ***15/02***

U.S. Cl. 423—584 **9 Claims**

1. In a process for producing hydrogen peroxide wherein a gaseous mixture comprising hydrogen and oxygen are contacted with a catalyst in the presence of water and an organic solvent, the improvement for reducing the risk of danger to explosion in said process which comprises:

employing an organic solvent which is immiscible with water and unreactive with hydrogen peroxide under the contacting conditions, and the distribution coefficient for hydrogen peroxide between water and said organic solvent is greater than one;

employing a catalyst of the formula L_2MX_2 wherein L is a ligand represented by the formula $AR_1R_2R_3$ wherein R_1R_2 and R_3 are alkyl, cycloalkyl or aryl groups, hydrogen and halogen, and A is a Group 5b element selected from the group consisting of nitrogen, phosphorus and arsenic, M is Group 8 metal and X is halogen, said catalyst being soluble in said organic solvent and insoluble in water; and

employing a gaseous mixture which is nonignitable under the process conditions.

4,128,628

AUTOMATED IMMUNOASSAY

Gary L. Brooker; Wesley L. Terasaki, and Michael G. Price, all of Charlottesville, Va., assignors to University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Continuation-in-part of Ser. No. 666,302, Mar. 12, 1976, Pat. No. 4,022,577, and a continuation-in-part of Ser. No. 730,630, Oct. 7, 1976. This application Feb. 3, 1977, Ser. No. 765,348

Int. Cl.² A61B ***10/00;*** **G01N** ***33/00***

U.S. Cl. 424—1 **16 Claims**

1. An automated immunoassay apparatus which comprises:

means for time controlled incubation of a multiplicity of sample solutions, each of which comprises a mixture of (a) a sample, possibly containing an antigen or antibody intended to be assayed, (b) a solution of a known concentration of a tagged antigen or tagged antibody, and when assaying for antigen, optionally (c) a solution of a known titer of an antibody reactable with said antigen;

activating detector means for determining the presence of the incubated sample and for activating a timing means upon detection of said sample at a detection station;

means for introducing said incubated sample into said activating detector means;

timing means, which is activatable by said activating detector means when said detector means detects the presence of the incubated sample at a detection station, for generating control signals at predetermined time sequences;

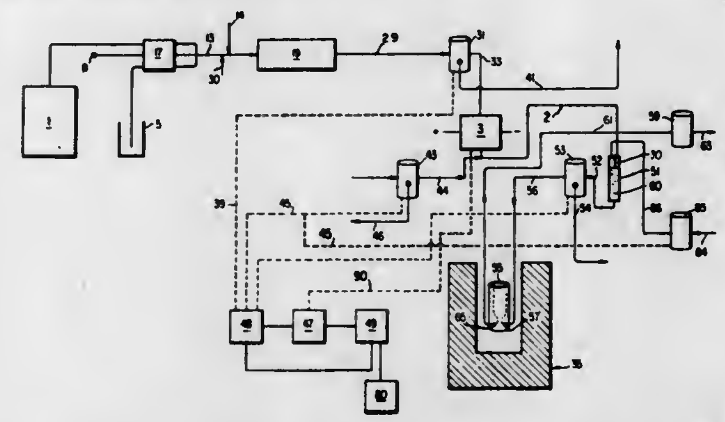
means for separating said incubated sample into a first portion containing antigen or antibody which has not been complexed during the said incubation, and a second portion containing antigen or antibody which has been complexed during said incubation;

means for introducing one of said portions from said separating means into a measuring detector means;

measuring detector means for detecting the amount of tagged material in said portion while said portion is maintained in a virtually static condition;

recording means coupled to said detector means for recording the amounts of tagged material in said measuring detector means;

means for isolating said incubated sample from additional sample solutions introduced into said apparatus for assay, wherein said isolating means is activatable by a control signal emitted from said timing means, whereby said isolating means isolates the system at a first predetermined signal from said timing means, and whereby said isolating means reconnects the system to said incubation means at a second predetermined signal from said timing means, wherein the second predetermined time period is set so as to enable sufficient time to complete said measurement before the next incubated sample arrives in the said detector means for the next sequential measurement; and



means for flushing said portion from said system after said measurement thereof so as to prepare said detector for the next sequential sample for said measurement.

10. A method for continuous immunoassay, which comprises:

incubating for a predetermined time period, a multiplicity of sample solutions, each of which comprises a mixture of (a) a sample possibly containing an antigen intended to be assayed; (b) a solution of a known concentration of a tagged antigen; and when assaying for antigen, optionally, (c) a solution containing a known titer of antibody reactable with said antigen, the concentration of said antibody being selected so as to form an incubated sample containing an antibody-antigen complex, and possibly containing unreacted antigen and tagged antigen, if said sample contains an antigen;

directing said incubated sample into an activating detector which is capable of determining the presence of said sample and activating,

activating a timing means upon detection of said sample in said detector;

isolating said incubated sample from any additional samples being incubated on a predetermined signal from said timing means;

separating said incubated solution into a first portion containing an antigen or antibody which has not been complexed during the said incubation and a second portion containing antigen or antibody which has been complexed during said incubation;

directing one of said portions into a measuring detector, detecting the amount of tagged material in said portion while said portion is maintained in a virtually static condition, and recording said measurement;

evacuating said portion to waste;

directing a subsequent incubated sample into said activating detector on a second predetermined signal from said timing means so that the next subsequent incubated sample to be assayed arrives in the activating detector for the next measurement after the previous measurement is completed; and

comparing the measurement with precalibrated values to determine the quantity of antigen being assayed.

4,128,629

EXTRACTION-FREE CORTISOL ASSAY

Emmet W. Eldred, North Attleboro, and Hubert J. P. Schoemaker, Newton, both of Mass., assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 5, 1977, Ser. No. 812,992

Int. Cl.² G01N ***33/16***

U.S. Cl. 424—1 **8 Claims**

1. An immunoassay for determining the concentration of cortisol in a serum sample, the assay comprising the steps of:

(a) incubating the sample, labeled cortisol, and an effective amount of deblocking agent in an aqueous medium with a composite comprising anti-cortisol antibodies fixed onto the surfaces of a negatively charged support material, the incubation being at a pH ranging from about 4.0 to about 6.5 and being under conditions sufficient to result in the formation of immunochemical complexes on the composite, some of which complexes include labeled cortisol;

(b) separating the composite from the incubation medium;

(c) determining the amount of label on the separated composite or in the remaining incubation medium; and

(d) relating the determination of step (c) to a standard to determine the cortisol concentration in the sample.

4,128,630

COSMETICS AND PROCESS FOR PREPARATION THEREOF

Katsutake Hayashi; Tutomu Saitoh, both of Tokyo; Katsuyuki Yomogida, and Hiromasa Saito, both of Yokohama, all of Japan, assignors to Shiseido Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1977, Ser. No. 785,253

Claims priority, application Japan, Apr. 6, 1976, 51-38660

Int. Cl.² A61K ***7/035***

U.S. Cl. 424—69 **16 Claims**

1. A process for preparing a cosmetic powder which comprises treating an inorganic pigment powder with a metal ion blocking agent, dehydrating and drying the treated powder, treating the inorganic pigment powder with a metallic soap before or after treatment with the metal ion blocking agent, and blending the resulting pigment with a perfume.

10. A cosmetic comprising an inorganic pigment powder treated with both a metal ion blocking agent and a metallic soap, and a perfume blended therewith.

4,128,631

METHOD OF IMPARTING LUBRICITY TO KERATINOUS SUBSTRATES AND MUCOUS MEMBRANES

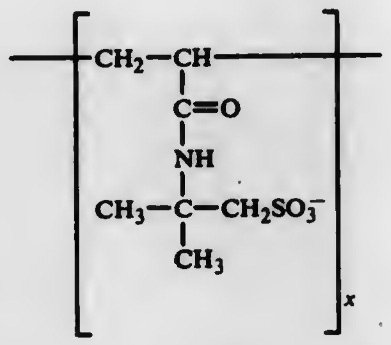
Larry D. Lundmark, Richfield; Allan Melby, Andover, and Ho-Ming Chun, New Brighton, all of Minn., assignors to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed Feb. 16, 1977, Ser. No. 769,354

Int. Cl.² A61K *7/00, 7/06, 7/15, 7/48*

U.S. Cl. 424—70 **4 Claims**

1. A method of imparting lubricity to a substrate comprising skin, hair or mucous membranes including contacting the substrate with a composition including a sufficient amount of a salt of



$$-\!\!\left[\begin{array}{c}\mathrm{CH_2-CH-}\\ |\\ \mathrm{C{=}O}\\ |\\ \mathrm{NH}\\ |\\ \mathrm{CH_3-C-CH_2SO_3^-}\\ |\\ \mathrm{CH_3}\end{array}\right]_x\!\!-$$

wherein x has a value such that the molecular weight of the anionic portion of the polymer is from about 1,000,000 to about 5,000,000 to achieve a lubricated feel upon the contacted substrate.

4,128,632

SOLUBILIZATION OF RAFOXANIDE

Pak-Kan A. Lo, Edison, and James B. Williams, Freehold, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 13, 1978, Ser. No. 876,968

Int. Cl.² A61K *31/79, 31/165*

U.S. Cl. 424—80 **7 Claims**

1. A process for the preparation of an aqueous solution of a Rafoxanide-polyvinylpyrrolidone complex which comprises:
   (a) combining the Rafoxanide and polyvinylpyrrolidone in a mixture of acetone or glycerolformal and water;
   (b) agitating the mixture until a solution is achieved;
   (c) removing the acetone or optionally removing the glycerolformal; and
   (d) if necessary, diluting the solution to the desired volume with water.

4,128,633

PROCESS FOR PREPARING PVP-IODINE COMPLEX

Donald H. Lorenz, Basking Ridge, N.J., and Earl P. Williams, Pen Argyl, Pa., assignors to GAF Corporation, New York, N.Y.

Filed Apr. 27, 1977, Ser. No. 791,520

Int. Cl.² A61K *31/79, 33/18*

U.S. Cl. 424—80 **5 Claims**

1. An improved in situ process of forming a PVP-iodine complex powder which is stable for prolonged periods of time at a high level of iodine power, but which requires a reduced amount of iodine to form said complex at said level which comprises the following sequence of steps in combination:
   (a) suspension polymerizing vinylpyrrolidone in a solvent in which said vinylpyrrolidone is miscible but in which PVP is insoluble to form a slurry of polyvinylpyrrolidone powder in said solvent,
   (b) adding free water to said slurry in an amount of about 1-10% by weight of said polyvinylpyrrolidone thereby to form polyvinylpyrrolidone powder having a predetermined concentration of water therein, and,
   (c) adding finely divided elemental iodine to said slurry in an amount of about 5-25% by weight based on the complex at a temperature of about 65-85° C. and for a time sufficient to form said desired complex.

4,128,634

COSMETIC EMULSIONS CONTAINING COPOLYMERS OF ALKYL(METH)ACRYLATES AND MONO-(N-HYDROXYALKYL) OR BIS-(N-HYDROXYALKYL) (METH)ACRYLAMIDES

Brigitte Hase, Erkrath; Joachim Galinke, Langenfeld, and Bernd Wegemund, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

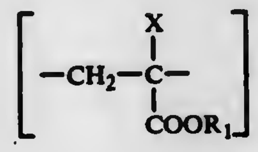
Filed Mar. 2, 1977, Ser. No. 773,606

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1976, 2608834

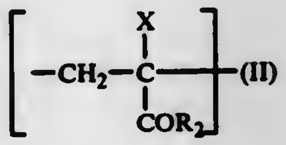
Int. Cl.² A61K *31/78*

U.S. Cl. 424—81 **10 Claims**

1. A cosmetic emulsion of the water-in-oil type, comprising (1) from 2% to 20% by weight of statistical copolymers which are composed, in the molar ratio of (I) to (II) of 2:1 to 20:1, of units of the general formulae



(I) and



(II)

$$\left[\begin{array}{c}\mathrm{X}\\ |\\ \mathrm{-CH_2-C-}\\ |\\ \mathrm{COOR_1}\end{array}\right]\ \text{(I) and}\ \left[\begin{array}{c}\mathrm{X}\\ |\\ \mathrm{-CH_2-C-}\\ |\\ \mathrm{COR_2}\end{array}\right]\text{(II)}$$

wherein X is hydrogen or a methyl radical, R_1 is an alkyl radical of 6 to 24 carbon atoms, and R_2 is a radical selected from the group consisting of $-NH-CH_2OH$, $-NH-CH_2CH_2OH$, and $-N(CH_2CH_2OH)_2$, (2) from 20% to 75% by weight of water, and (3) the remainder to 100% by weight of conventional oily substances used in cosmetic emulsions.

4,128,635

COSMETIC EMULSIONS CONTAINING COPOLYMERS OF ALKYL (METH) ACRYLATES AND MONO- OR POLYHYDROXYALKYL (METH) ACRYLATES

Brigitte Hase; Christian Hase, both of Erkrath; Joachim Galinke, Langenfeld, and Bernd Wegemund, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

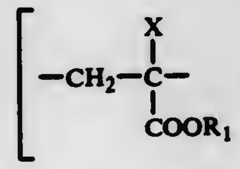
Filed Mar. 2, 1977, Ser. No. 773,607

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1976, 2608875

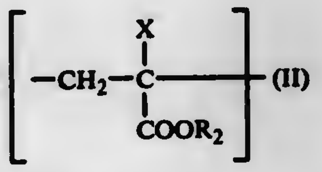
Int. Cl.² A61K *31/78*

U.S. Cl. 424—81 **10 Claims**

1. A cosmetic emulsion of the water-in-oil type, comprising (1) from 2% to 20% by weight of statistical copolymers which are composed, in the molar ratio of (I) to (II) of 2:1 to 20:1, of units of the general formulae



(I) and



(II)

$$\left[\begin{array}{c}\mathrm{X}\\ |\\ \mathrm{-CH_2-C-}\\ |\\ \mathrm{COOR_1}\end{array}\right]\text{(I) and}\ \left[\begin{array}{c}\mathrm{X}\\ |\\ \mathrm{-CH_2-C-}\\ |\\ \mathrm{COOR_2}\end{array}\right]\text{(II)}$$

wherein X is hydrogen or a methyl radical, R_1 is an alkyl radical of 6 to 24 carbon atoms, and R_2 is a radical selected from the group consisting of $-CH_2-CH_2OH$, $-CH_2-CH(OH)-CH_3$, $-CH_2-CH(OH)-CH_2OH$, and $-CH_2-CH_2O-CH_2CH_2OH$, (2) from 20% to 75% by weight of water, and (3) the remainder to 100% by weight of conventional oily substances used in cosmetic emulsions.

4,128,636

COSMETIC EMULSIONS CONTAINING COPOLYMERS OF 2-HYDROXY-3-HYDROXYALKYL-AMINOPROPYL(-METH)ACRYLATES AND ALKYL (METH)ACRYLATES

Brigitte Hase, Erkrath; Joachim Galinke, Langenfeld, and Bernd Wegemund, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

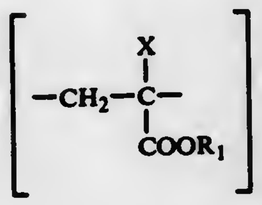
Filed Mar. 2, 1977, Ser. No. 773,608

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1976, 2612886

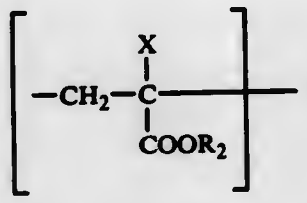
Int. Cl.² A61K *31/78*

U.S. Cl. 424—81 **10 Claims**

1. A cosmetic emulsion of the water-in-oil type, comprising (1) from 2% to 20% by weight of statistical copolymers which are composed, in the molar ratio of (I) to (II) of 2:1 to 20:1, of units of the general formulae



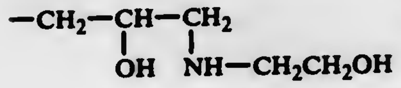
(I) and



(II)

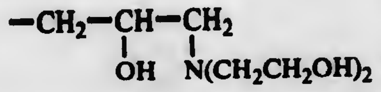
$$\left[\begin{array}{c}\mathrm{X}\\ |\\ \mathrm{-CH_2-C-}\\ |\\ \mathrm{COOR_1}\end{array}\right]\text{(I) and}\ \left[\begin{array}{c}\mathrm{X}\\ |\\ \mathrm{-CH_2-C-}\\ |\\ \mathrm{COOR_2}\end{array}\right]\text{(II)}$$

wherein X is hydrogen or a methyl radical, R_1 is an alkyl radical of 6 to 24 carbon atoms, and R_2 is a radical selected from the group consisting of



$$\mathrm{-CH_2-\underset{OH}{\underset{|}{C}H}-\underset{NH-CH_2CH_2OH}{\underset{|}{C}H_2}}$$

and



$$\mathrm{-CH_2-\underset{OH}{\underset{|}{C}H}-\underset{N(CH_2CH_2OH)_2}{\underset{|}{C}H_2}}$$

(2) from 20% to 75% by weight of water, and (3) the remainder to 100% by weight of conventional oily substances used in cosmetic emulsions.

4,128,637

PROCESS FOR PRODUCING THYMOSIN

Robert Naylor, Glendale, and Howard F. Coyer, Wauwatosa, both of Wis., assignors to Pabst Brewing Company, Milwaukee, Wis.

Continuation of Ser. No. 669,862, Mar. 24, 1976, abandoned. This application Jun. 23, 1977, Ser. No. 809,083

Int. Cl.² A61K *35/26, 35/56, 37/24*

U.S. Cl. 424—95 **2 Claims**

1. In a process for producing thymosin-fraction 3 wherein calf thymus glands are extracted in aqueous saline solution, undissolved material is removed, the resultant liquid material is heated, after heating the resultant product is cooled, the precipitate formed on cooling is removed, acetone is added to the resultant liquid in sufficient amount to precipitate thymosin-fraction 3 and the resultant precipitate is recovered, the improvement which comprises in combination:
   (a) grinding calf thymus glands to a coarse state with a meat grinder,
   (b) mixing the ground glands with an 0.15M sodium chloride solution, thereby forming a suspension,
   (c) filtering the resultant suspension on a filter press with the aid of a filter aid,
   (d) heating the resultant filtrate instantaneously to 80°–85° C. by injecting steam under superatmospheric pressure into a flowing stream of the filtrate,
   (e) maintaining the said temperature of 80°–85° C. for a period of approximately 1–2 minutes, said period being at least sufficient to denature the undesired protein but not long enough to denature thymosin,
   (f) rapidly cooling the resultant product,
   (g) filtering off the resultant precipitate,
   (h) concentrating the filtrate to approximately half its volume,
   (i) adding acetone to the concentrated filtrate in sufficient amount to precipitate thymosin-fraction 3, and
   (j) recovering the resultant precipitate.

4,128,638

NONA- AND DECA-PEPTIDE AMIDE DERIVATIVES DEMONSTRATING HIGH OVULATION INDUCING ACTIVITY

Keith Moody, Watsonia, Australia, assignor to ICI Australia Limited, Melbourne, Australia

Filed Apr. 5, 1976, Ser. No. 673,545

Claims priority, application Australia, Apr. 15, 1975, PC1247

Int. Cl.² A61K *37/02;* **C07C** *103/52*

U.S. Cl. 424—177 **14 Claims**

1. A peptide amide derivative selected from the group consisting of:

L-pyroglutamyl-L-histidyl-L-tryptophanyl-L-seryl-L-tyrosyl-β-alanyl-L-leucyl-L-arginyl-L-prolyl-glycinamide;
L-pyroglutamyl-L-histidyl-L-tryptophanyl-L-seryl-L-tyrosyl-glycyl-L-leucyl-L-arginyl-L-prolyl-alaninamide;
L-pyroglutamyl-L-histidyl-L-tryptophanyl-L-seryl-L-tyrosyl-glycyl-L-leucyl-L-arginyl-L-prolyl-sarcosinamide;
L-pyroglutamyl-L-histidyl-L-tryptophanyl-L-seryl-L-tyrosyl-β-alanyl-L-leucyl-L-arginyl-L-proline N-methylamide;
L-pyroglutamyl-L-histidyl-L-tryptophanyl-L-seryl-L-tyrosyl-β-alanyl-L-leucyl-L-arginyl-L-proline N-ethylamide;
L-pyroglutamyl-L-histidyl-L-tryptophanyl-L-seryl-L-tyrosyl-β-alanyl-L-leucyl-L-arginyl-L-proline N-n-propylamide;
and L-pyroglutamyl-L-histidyl-L-tryptophanyl-L-seryl-L-tyrosyl-β-alanyl-L-leucyl-L-arginyl-L-proline pyrrolidide.

4,128,639

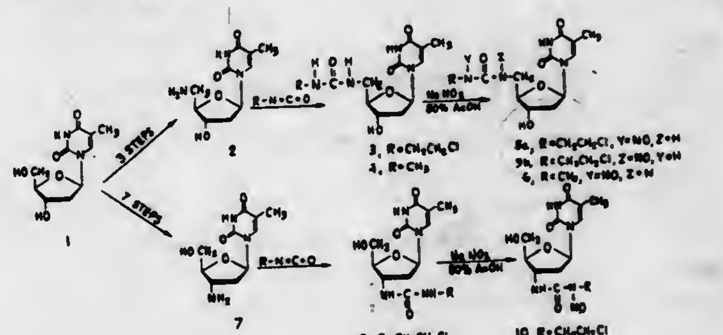
NITROSOUREA ANALOGS OF THYMIDINE

Tai-Shun Lin, North Haven; Paul H. Fischer, North Branford; William H. Prusoff, Branford, and George T. Shiau, New Haven, all of Conn., assignors to Research Corporation, New York, N.Y.

Filed Dec. 14, 1977, Ser. No. 860,453

Int. Cl.² A61K *31/70;* **C07H** *17/00*

U.S. Cl. 424—180 **11 Claims**



7. A pharmaceutical composition containing a compound selected from the group consisting of:

5'-[3-(2-chloroethyl)-nitrosoureido]-5'-deoxythymidine,
5'-(3-methyl-3-nitrosoureido)-5'-deoxythymidine,
3'-[3-(2-chloroethyl)-3-nitrosoureido]-3'-deoxythymidine,
3'-(3-methyl-3-nitrosoureido)-3'-deoxythymidine,

and a pharmaceutically acceptable carrier.

4,128,640

FEED FOR POULTRY

Samuel Klein, 1814 Manor Dr., Union, N.J. 07083

Continuation-in-part of Ser. No. 676,985, Apr. 14, 1976, abandoned. This application Nov. 16, 1977, Ser. No. 851,917

Int. Cl.^{2} A61K *35/78;* **A23K** *1/14, 1/165*

U.S. Cl. 424—195 **3 Claims**

1. A feed supplement for poultry effective to decrease the cholesterol content of eggs comprising the following composition:

Capsicum pods	12	parts
Powered licorice	12	
Parsley	6	
Elder flowers	1	
Fenugreek	1	
Rose hips	1	
Dulse	1	
Devil's apron	2	

2. The method of decreasing the cholesterol content of eggs comprising feeding a cholesterol decreasing effective amount of the composition of claim 1 to poultry.

4,128,641

TETRACYCLIC PSYCHOTROPIC DRUG

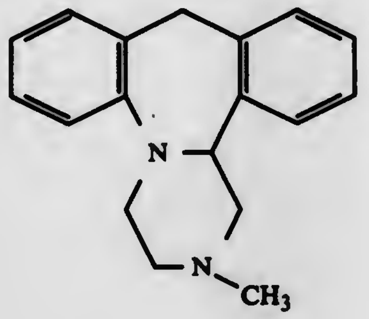
Turan M. Itil, Tarrytown, N.Y., assignor to HZI Research Center Inc., Tarrytown, N.Y.

Continuation-in-part of Ser. No. 600,597, Jul. 31, 1975, abandoned. This application Feb. 28, 1977, Ser. No. 772,663

Int. Cl.^{2} A61K *31/495*

U.S. Cl. 424—250 **10 Claims**

1. A method of treating psychiatric patients exhibiting psychotic behavior, and in particular a schizophrenic symdrome which comprises administering to such patient a therapeutically-effective amount of a compound having the formula



4,128,642

METHOD OF PROMOTING GROWTH AND IMPROVING FEED EFFICIENCY OF ANIMALS

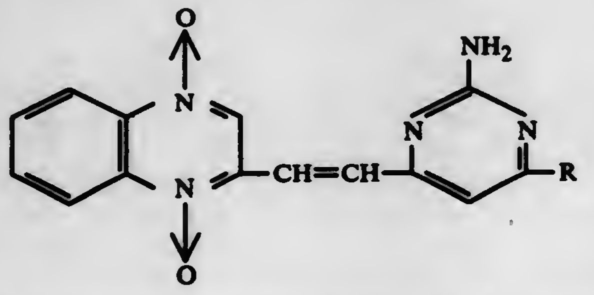
Richard E. Ivy, and Robert D. Williams, both of Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Dec. 20, 1976, Ser. No. 752,596

Int. Cl.^{2} A61K *31/505*

U.S. Cl. 424—251 **11 Claims**

1. A method of increasing the growth rate of fowl, ruminants, swine or rabbits comprising orally administering to the animal a compound represented by the formula:



where R is hydrogen or an alkyl group of from 1 to 4 carbon atoms at a dosage of from about 10 to about 150 g per ton of feed rations.

4,128,643

4-QUINAZOLINYL-GUANIDINES

Wulf Merkel, Bad Soden am Taunus; Hans G. Alpermann, Königstein, Taunus; Karl Geisen, Frankfurt am Main; Norbert Kothe, Kronberg, Taunus, and Walter Ried, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

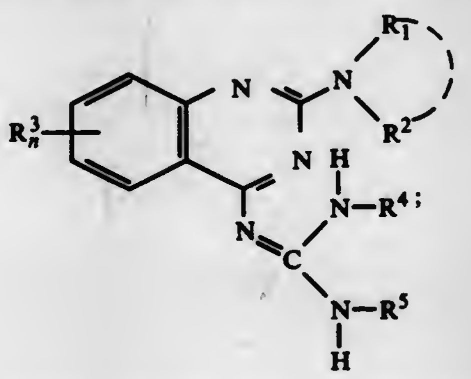
Filed May 26, 1977, Ser. No. 800,918

Claims priority, application Fed. Rep. of Germany, May 28, 1976, 2623846

Int. Cl.^{2} C07D *413/04;* **A61K** *31/505*

U.S. Cl. 424—251 **6 Claims**

1. A (2-amino-4-quinazolinyl)-guanidine of the formula



and physiologically tolerable acid addition salts thereof wherein

R^1 and R^2, taken together with the nitrogen atom to which they are attached, are morpholino, N-methyl piperazino, N-benzylpiperazino, piperidins, or pyrrolidino;

R^3 is hydrogen, halogen, —CF_3, —CCl_3, alkyl alkoxy, alkylthio, each having from 1 to 3 carbon atoms phenoxy, phenyl, phenylthio, or dialkylamino having up to 8 carbon atoms altogether and

n is an integer from 1 to 4, or R_3 is a fused benzo group; and

R^4 and R^5 are hydrogen, alkyl having 1 to 4 carbon atoms, cyclopentyl, cyclohexyl, or benzyl.

4,128,644

PYRAZOLO(1,5-C)QUINAZOLINE DERIVATIVES AND RELATED COMPOUNDS

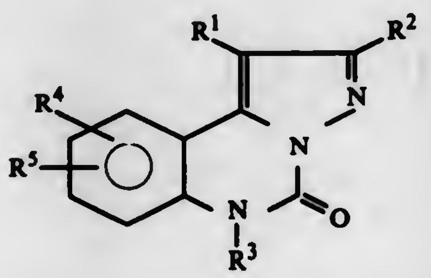
B. Richard Vogt, Yardley, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 29, 1977, Ser. No. 820,289

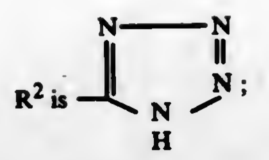
Int. Cl.^{2} A61K *31/505;* **C07D** *403/14*

U.S. Cl. 424—251 **14 Claims**

1. A compound of the structure

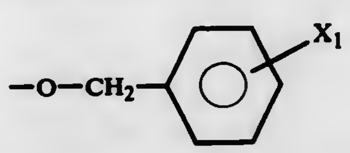


wherein R^1 represents hydrogen, lower alkyl, phenyl, or phenyl substituted with mono-lower alkyl, di-lower alkyl, or monohalo,



R^3 is hydrogen, lower alkyl, benzyl, phenyl or phenyl substituted by a single substituent selected from the group consisting of lower alkyl, halo, trifluoromethyl or lower alkoxy;

R^4 and R^5 may be the same or different and are hydrogen, lower alkyl, lower alkoxy, hydroxy, lower alkanoyloxy,



(X_1 is hydrogen, lower alkoxy, or NO_2); and physiologically acceptable salts thereof.

13. A pharmaceutical composition for use in treating allergic conditions comprising an effective amount of a compound as defined in claim 1 and a pharmaceutically acceptable carrier therefor.

4,128,645

4H-PYRAZOLO[1,5-a]PYRAZOLO[4',3':5,6]PYRIDO[3,4-e]PYRIMIDIN-5(8H)ONE AND DERIVATIVES THEREOF

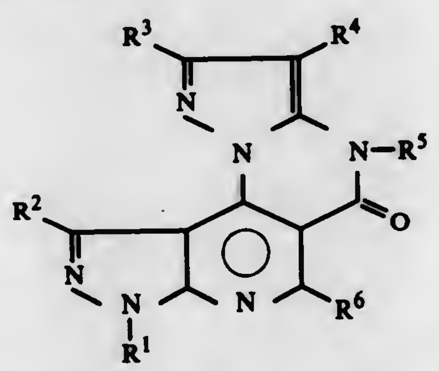
Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 659,291, Feb. 19, 1976, Pat. No. 4,070,466. This application Sep. 1, 1977, Ser. No. 829,839

Int. Cl.^{2} A61K *31/415;* **C07D** *471/04*

U.S. Cl. 424—251. **10 Claims**

1. A compound of the formula

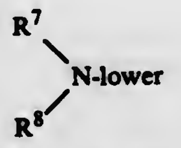


wherein R^1 is hydrogen, lower alkyl, phenyl, phenyl-lower alkylene, benzoyl or substituted benzoyl;

R^2, R^4 and R^6 each is hydrogen or lower alkyl;

R^3 is hydrogen, lower alkyl or phenyl;

R^5 is amino-lower alkylene or



alkylene wherein R^7 and R^8 each is lower alkyl; the substituent on said substituted benzoyl being halogen, lower alkyl or lower alkoxy, and physiologically acceptable acid addition salts thereof.

10. A method for treating inflammatory conditions which comprises administering to a mammal suffering therefrom a composition comprising about 10 to 250 mg. of a compound of claim 1 and a physiologically acceptable carrier therefor.

4,128,646

PYRIMIDO[5,6-b]QUINOXALINE-4-(3H)-ONE-2-CARBOXYLIC ACID COMPOUNDS

Yasuhiro Morinaka, and Kazuo Takahashi, both of Amimachi, Japan, assignors to Mitsubishi Yuka Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1977, Ser. No. 865,135

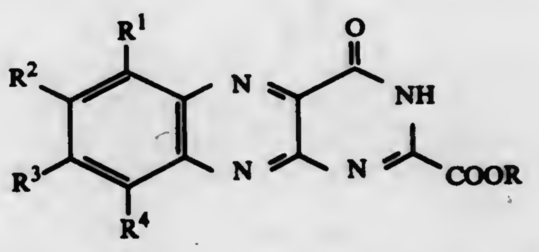
Claims priority, application Japan, Dec. 28, 1976, 51-158332; Nov. 30, 1977, 51-143458

Int. Cl.^{2} A61K *31/505;* **C07D** *487/04*

U.S. Cl. 424—251 **4 Claims**

1. A Substituted pyrimido[5,6-b]quinoxaline-4(3H)-one-2-carboxylic acid compound represented by the formula

(I)

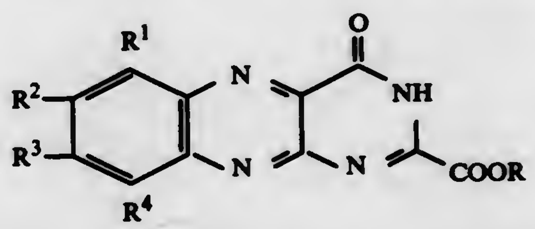


wherein: R designates a member selected from the group consisting of hydrogen, alkyl groups having 1 to 4 carbon atoms, benzyl group, and phenyl group; and each of R^1, R^2, R^3, and R^4 independently designates a member selected from the group consisting of hydrogen, alkyl groups having 1 to 4 carbon atoms, alkoxy groups having 1 to 4 carbon atoms, halogens, benzyloxy group, hydroxy group, alkylthio groups having 1 to 4 carbon atoms, and alkylenedioxy groups having 1 to 4 carbon atoms and formed by the bonding of two of R^1, R^2, R^3, and R^4, or a pharmacologically acceptable salt of said compound.

3. A medicinal composition useful in the treatment of allergic asthma which comprises

a pharmacologically active amount of a substituted pyrimido[5,6-b]quinoxaline-4(3H)-one-2-carboxylic acid compound or a pharmacologically acceptable salt thereof, said compound being represented by the formula

(I)



wherein: R designates a member selected from the group consisting of hydrogen, alkyl groups having 1 to 4 carbon atoms, benzyl group, and phenyl group; and each of R^1, R^2, R^3 and R^4 independently designates a member selected from the group consisting of hydrogen, alkyl groups having 1 to 4 carbon atoms, alkoxyl groups having 1 to 4 carbon atoms, halogens, benzyloxy group, hydroxyl group, alkylthio groups having 1 to 4 carbon atoms, and alkylenedioxy groups having 1 to 4 carbon atoms and formed by the bonding of two of R^1, R^2, R^3 and R^4, or pharmacologically acceptable salts of said compounds; and

a pharmaceutical carrier.

4,128,647

SUBSTITUTED THIAZOLO [3,2-a]-THIOPYRANO[4,3-d]PYRIMIDINES

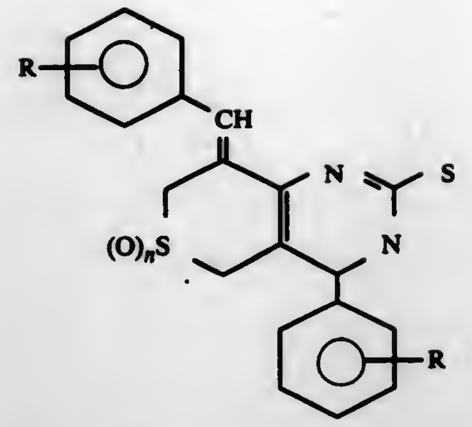
George C. Rovnyak, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 24, 1978, Ser. No. 889,712

Int. Cl.^{2} A61K *31/18;* **C07D** *409/14*

U.S. Cl. 424—251 **11 Claims**

1. A compound of the structure



wherein R is hydrogen, lower alkyl, halogen, acyl, cyano, carboxyl, trifluoromethyl, and lower alkoxy, *n* is 0 or 2 and *m* is 2 or 3, and pharmaceutically acceptable salts thereof.

11. A method for treating an inflammatory condition in a mammalian host, which comprises administering to said host a therapeutically effective amount of a compound as defined in claim 1.

4,128,648

SUBSTITUTED PYRANO[4,3-d]-THIAZOLO[3,2-a]PYRIMIDINES

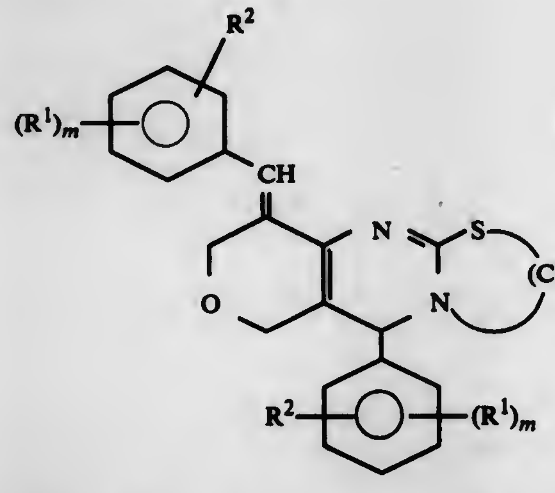
George C. Rovnyak, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 24, 1978, Ser. No. 889,714

Int. Cl.^{2} A61K *31/18;* C07D *405/14*

U.S. Cl. 424—251 **11 Claims**

1. A compound of the structure



wherein R^1 and R^2 may be the same or different and are selected from the group consisting of hydrogen, lower alkyl, halogen, carbethoxy, cyano, carboxyl, trifluoromethyl, and lower alkoxy, *m* is 0 to 2 and *n* is 2 or 3, and pharmaceutically acceptable salts thereof.

11. A method for treating an inflammatory condition in a mammalian host, which comprises administering to said host a therapeutically effective amount of a compound as defined in claim 1.

4,128,649

4-HYDROXY-PYRIDO[2,3-B]PYRIDINE-2(1H)-ONE-3-CARBOXYLIC ACIDS AND ESTERS

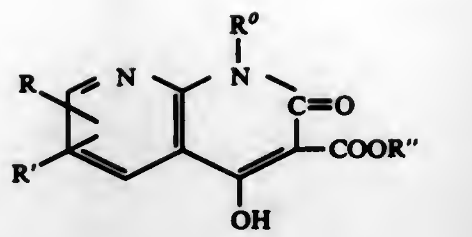
Goetz E. Hardtmann, Morristown, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Jun. 29, 1977, Ser. No. 810,949

Int. Cl.^{2} A61K *31/435;* C07D *471/04*

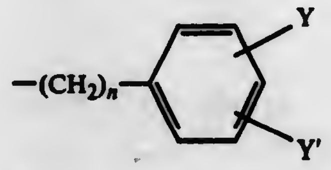
U.S. Cl. 424—256 **37 Claims**

1. A compound having in free acid form the formula:



wherein

R^o is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, cycloalkylalkyl in which the cycloalkyl is of 3 to 6 carbon atoms and the alkyl portion is of 1 or 2 carbon atoms, or



R'' is hydrogen, alkyl of 1 to 4 carbon atoms, alkenyl of 3 to 6 carbon atoms or alkynyl of 3 to 6 carbon atoms,

n is 0 or 1,

Y and Y' are independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms or trifluoromethyl, and

R and R' are independently hydrogen or alkyl of 1 to 4 carbon atoms, with the proviso that the unsaturation in any alkenyl or alkynyl is other than on the alpha carbon atom; or a mono- or di-salt form thereof in which the salt forming cation is a pharmaceutically acceptable cation.

37. A pharmaceutical composition comprising an inert pharmaceutically acceptable carrier and an amount of a compound of claim 1 effective to symptomatically treat allergic conditions.

4,128,650

DIBENZO[de, h]QUINOLINE DERIVATIVES

Jean-Louis Fabre, Paris; Daniel Farge, Thiais, and Claude James, Paris, all of France, assignors to Rhone-Poulenc Industries, Paris, France

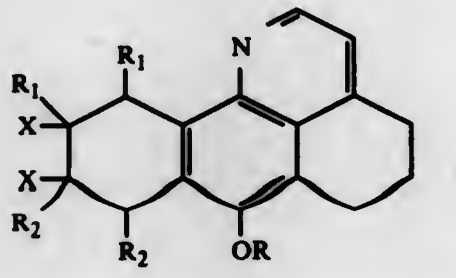
Filed May 18, 1977, Ser. No. 798,139

Claims priority, application France, May 21, 1976, 76 15379

Int. Cl.^{2} A61K *31/47;* C07D *215/20*

U.S. Cl. 424—258 **8 Claims**

1. A dibenzo[de,h]quinoline of the formula:



wherein the symbols X each represent hydrogen or methoxy, R represents hydrogen or carboxymethyl, the symbols R_1 each represent hydrogen or together represent a valency bond, the pair of symbols R_2 have the same significance as the pair of symbols R_1, and, when the symbols R_1 and R_2 represent hydrogen the symbols X also represent hydrogen, and, when R is carboxymethyl, a pharmaceutically acceptable salt thereof.

7. A pharmaceutically acceptable alkali metal, alkaline earth metal, ammonium, or amine salt of a dibenzo[de,h]quinoline as claimed in claim 1 wherein R represents carboxymethyl.

8. An anti-viral pharmaceutical composition which comprises a dibenzo[de,h]quinoline as claimed in claim 1, or, when R is carboxymethyl, a pharmaceutically acceptable salt thereof, in association with a pharmaceutically acceptable carrier.

4,128,651

BIS-QUATERNARY PYRIDINIUM-2-ALDOXIME SALTS AND A PROCESS FOR THEIR PREPARATION

Ilse Hagedorn, Freiburg, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

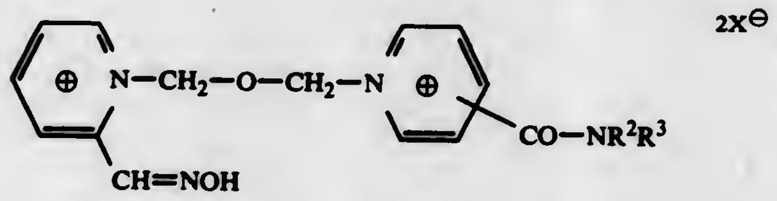
Filed Apr. 11, 1977, Ser. No. 786,693

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1976, 2616481

Int. Cl.^{2} A61K *31/44, 31/455;* C07D *213/78*

U.S. Cl. 424—263 **17 Claims**

1. A bis-quaternary pyridinium-2-aldoxime salt of the formula



wherein R^2 is H, cyclohexyl, Ar, aralkyl of 7–13 carbon atoms; R^3 is alkyl of 2–6 carbon atoms, cyclohexyl, Ar or aralkyl of 7–13 carbon atoms; Ar is phenyl, naphthyl or phenyl substituted by up to 5 of alkyl of 1–4 carbon atoms, methoxy or Cl; and X is Cl, Br or I.

4,128,652

TRIAZAPENTADIENES AS ACARICIDES

Alexander B. Penrose, Tilmanstone, Nr. Deal, and Michael R. G. Leeming, Canterbury, both of England, assignors to Pfizer Inc., New York, N.Y.

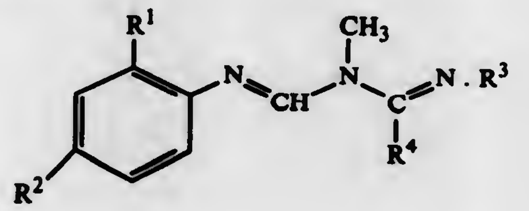
Filed Apr. 13, 1977, Ser. No. 787,084

Claims priority, application United Kingdom, Apr. 20, 1976, 15812/76; Aug. 18, 1976, 34319/76

Int. Cl.^{2} C07D *213/89;* A61K *31/44*

U.S. Cl. 424—263 **17 Claims**

1. A triazapentadiene of the formula:



wherein

R^1 is alkyl of 1 to 4 carbon atoms;

R^2 is selected from the group consisting of hydrogen, chlorine, bromine, fluorine, iodine and alkyl of 1 to 4 carbon atoms;

R^3 is pyridyl optionally containing one or two substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine, bromine, fluorine and iodine.

17. A method of combating ectoparasites on animals which comprises contacting said animals with an acaricidally effective amount of a compound of claim 1.

4,128,653

REDUCTION OF BLOOD PRESSURE WITH CARBOXYALKYLACYL-PIPECOLIC ACID DERIVATIVES

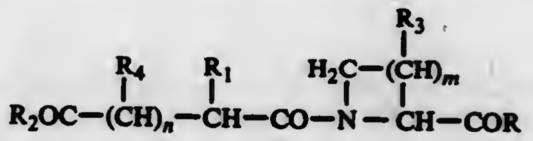
David W. Cushman, West Windsor, and Miguel A. Ondetti, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 657,793, Feb. 13, 1976, Pat. No. 4,052,511. This application Feb. 11, 1977, Ser. No. 768,003

Int. Cl.^{2} A61K *31/445*

U.S. Cl. 424—267 **16 Claims**

1. A method for reducing blood pressure in hypertensive mammals by inhibiting the conversion of angiotensin I to angiotensin II which comprises administering a composition comprising an amount of a compound of the formula



$$R_2OC-\overset{R_4}{\overset{|}{(CH)_n}}-\overset{R_1}{\overset{|}{CH}}-CO-\overset{H_2C-\overset{R_3}{\overset{|}{(CH)_m}}}{\overset{|\qquad\quad|}{N-CH}}-COR$$

wherein

R is hydroxy, amino or lower alkoxy;

R_1 and R_4 each is hydrogen, lower alkyl or phenyl-lower alkyl;

R_2 is hydroxy, amino, hydroxyamino or lower alkoxy;

R_3 is hydrogen, hydroxy or lower alkyl;

m is 3;

n is 0, 1 or 2;

and physiologically acceptable salts thereof, effective for inhibiting said conversion, and a pharmaceutically acceptable vehicle therefor.

4,128,654

5-HALOMETHYL-3-PHENYL-2-OXAZOLIDINONES

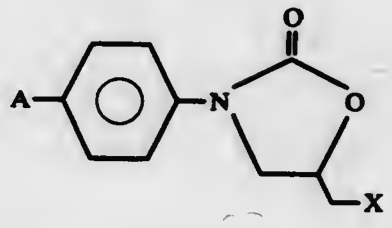
Robert B. Fugitt, Newark, and Raymond W. Luckenbaugh, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 10, 1978, Ser. No. 876,679

Int. Cl.^{2} A61K *31/42;* C07D *263/38*

U.S. Cl. 424—272 **18 Claims**

1. A compound of the formula



wherein

A is 1-methylethyl or $RS(O)_n$—;

X is Cl, Br or F;

R is alkyl of 1–3 carbon atoms; and

n is 0, 1 or 2.

7. A disease control composition consisting essentially of an effective amount of a compound of claim 1 and at least one of a) about 0.01% to 20% by weight surfactant(s) and b) about 5 to 99% by weight solid or liquid diluent(s).

4,128,655

IMIDAZOLINE COMPOUNDS USEFUL AS BACTERICIDES AND FUNGICIDES

Jerry H. Hunsucker, and James R. Selleck, Jr., both of Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

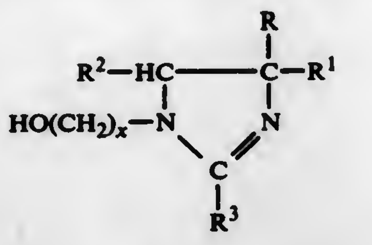
Filed Mar. 11, 1977, Ser. No. 776,801

Int. Cl.^{2} A01N *9/22*

U.S. Cl. 424—273 R **11 Claims**

1. A method of controlling the growth of bacteria and fungi

by applying to them or to the environment inhabited by them, a growth inhibiting amount of an imidazoline of the formula



where R is hydrogen or methyl, R^1 is hydrogen or alkyl of 1–3 carbon atoms, R^2 is hydrogen or methyl, R^3 is alkyl of 6–10 carbon atoms and x is 1 or 2.

4,128,656
PIPERONYLAMINE DERIVATIVES

Louis Lafon, Paris, France, assignor to Societe Anonyme Dite: Laboratoire L. Lafon, Maisons Alfort, France

Filed Mar. 21, 1977, Ser. No. 779,585

Claims priority, application United Kingdom, Mar. 23, 1976, 11709/76

Int. Cl.² A61K *31/36*

U.S. Cl. 424—282 **2 Claims**

1. A pharmaceutical composition useful in the treatment of aggression comprising an anti-aggression effective amount of N-propargyl-piperonylamine or a non-toxic addition salt thereof in combination with a physiologically acceptable excipient.

2. A method of reducing aggression which comprises administering to a patient an anti-aggression effective amount of N-propargylpiperonylamine or a non-toxic addition salt thereof.

4,128,657
METHOD OF AND FEED FOR FARMING EGG-LAYING HENS USING NIFUROXAZIDE

Germano Cagliero, Ivrea (Turin), Italy, assignor to Marxer S.p.A., Loranze d'Ivrea (Turin), Italy

Filed Apr. 7, 1977, Ser. No. 785,458

Claims priority, application Italy, Apr. 23, 1976, 67989 A/76

The portion of the term of this patent subsequent to Oct. 17, 1995, has been disclaimed.

Int. Cl.² A61K *31/34*

U.S. Cl. 424—285 **4 Claims**

1. A method for promoting the growth and ovideposition of egg-laying poultry hens, comprising nourishing the hens with a feed containing 20–40 ppm of nifuroxazide.

4,128,658
AMINOALKYL FURAN DERIVATIVES

Barry J. Price, Hertford; John W. Clitherow, Sawbridgeworth, and John Bradshaw, Ware, all of England, assignors to Allen & Hanburys Limited, London, England

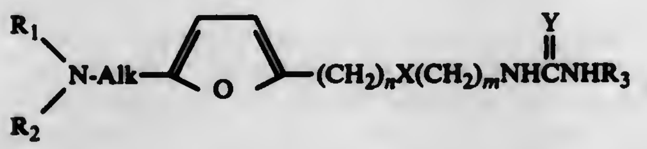
Filed Jul. 25, 1977, Ser. No. 818,762

Claims priority, application United Kingdom, Aug. 4, 1976, 32465/76; Dec. 6, 1976, 50685/76; May 13, 1977, 20187/77

Int. Cl.² A01N *9/12, 9/20;* **C07F** *307/52, 307/54*

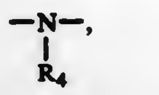
U.S. Cl. 424—285 **45 Claims**

1. A compound of the general formula I:



(I)

or a physiologically acceptable salt, N-oxide or hydrate thereof in which R_1 and R_2 which may be the same or different represent hydrogen, lower alkyl, cycloalkyl, lower alkenyl, aralkyl in which the aryl portion is phenyl or phenyl substituted by alkyl, alkoxy or halo or lower alkyl interrupted by an oxygen atom or a group



$$-\underset{\displaystyle R_4}{\underset{|}{N}}-,$$

in which R_4 represents hydrogen or lower alkyl;

R_3 is hydrogen, lower alkyl, lower alkenyl or alkoxyalkyl;
X is —CH$_2$—, O or S;
Y represents $=S$, $=O$, $=NR_5$ or $=CHR_6$;
Alk denotes a straight or branched alkylene chain of 1 to 6 carbon atoms;
R_5 is H, nitro, cyano, lower alkyl, phenyl, phenyl substituted by alkyl, alkoxy or halo, alkylsulphonyl, or arylsulphonyl in which the aryl portion is phenyl or phenyl substituted by alkyl, alkoxy or halo;
R_6 represents nitro, arylsulphonyl in which the aryl portion is phenyl or phenyl substituted by alkyl, alkoxy or halo or alkylsulphonyl;
m is an integer from 2 to 4; and
n is 1 or 2; or when $X = S$, or —CH$_2$—, n is zero, 1 or 2.

42. A method of treating a condition mediated through histamine H_2-receptors which comprises administering to a patient an effective amount of a compound as claimed in claim 1 to relieve said condition.

4,128,659
ANTIMICROBIAL POLYCYCLIC NITROFURANS

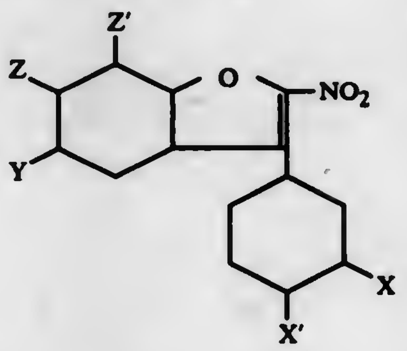
Robert A. Scherrer, White Bear Lake, and Richard M. Stern, Cottage Grove, both of Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

Filed Dec. 19, 1977, Ser. No. 861,893

Int. Cl.² C07D *307/92, 307/83;* **A61K** *31/34*

U.S. Cl. 424—285 **3 Claims**

1. A compound of the formula



wherein

X and X' are individually hydrogen, fluorine, chlorine, bromine or carboxyl,
Y is hydrogen, fluorine, chlorine, bromine, carboxyl, carboxymethyl or, together with Z, can form a propylene chain,
Z and Z' are individually hydrogen or together can complete a benzo ring,

provided that the compound contains one and only one of the rings including Y and Z, and Z and Z', and provided further that the compound contains not more than a single carboxyl function, and, when the compound contains a carboxyl function, pharmaceutically acceptable salts thereof.

3. A method for arresting or inhibiting the growth of microorganisms comprising contacting microorganisms with a compound according to claim 1 in an amount sufficient to arrest or inhibit the growth of said microorganisms.

4,128,660
ANTI-ALLERGIC AMINOOXANILIC ACIDS AND ESTERS

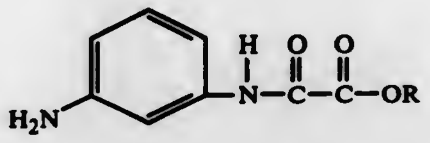
Charles M. Hall, and John B. Wright, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 19, 1976, Ser. No. 742,437

Int. Cl.² A61K *31/24, 31/195*

U.S. Cl. 424—309 **25 Claims**

1. A pharmaceutical composition which comprises as the sole active agent an anti-asthma, allergic rhinitis, food allergy or urticaria effective amount of a compound of the formula



wherein R is hydrogen, a physiologically acceptable metal or amine cation or alkyl of one to eight carbon atoms, inclusive, or a physiologically acceptable acid addition salt thereof in association with a pharmaceutical carrier and in the form of a tablet or capsule.

4,128,661
(BIS-DIETHYLAMINE)2,5-DIHYDROXYBENZENE-1,4-DISULFONATE, USEFUL AS A MEDICAMENT AGAINST GLAUCOMA

Adrian Schulthess, Vaud, and Alfred de Courten, Geneve, all of Switzerland, assignors to Laboratyories OM Societe Anonyme, Geneve, Switzerland

Filed Nov. 22, 1977, Ser. No. 853,912

Int. Cl.² A61K *31/205*

U.S. Cl. 424—316 **3 Claims**

1. A method of treating a human being suffering from glaucoma, comprising administering in galenic form to said human a pharmaceutically effective amount of (bis-diethylamine)2,5-dihydroxybenzene-1,4-disulfonate in a pharmaceutically acceptable carrier.

4,128,662
GLYCINE TOXICANTS

Myron J. Lover, Mountainside; Arnold J. Singer, South Orange; Donald M. Lynch, Waldwick, and William E. Rhodes, III, Roselle, all of N.J., assignors to Block Drug Company, Inc., Kenilworth, N.J.

Filed Apr. 28, 1977, Ser. No. 791,780

Int. Cl.² A01N *9/20*

U.S. Cl. 424—319 **6 Claims**

1. A method of controlling insects or their ova which comprises applying to a human or animal in need of such control an effective toxic amount of at least one N-$C_{12\text{-}24}$ aliphatic acyl-N-methyl glycine.

4,128,663
ANILIDE DERIVATIVES AS ANTIDEPRESSANTS

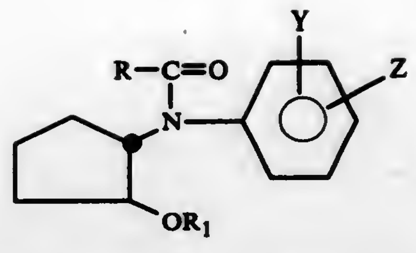
Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 777,599, Mar. 15, 1977, which is a continuation-in-part of Ser. No. 746,191, Nov. 30, 1976, abandoned. This application May 16, 1977, Ser. No. 796,989

Int. Cl.² A61K *31/165, 31/195, 31/655;* **C07C** *103/10*

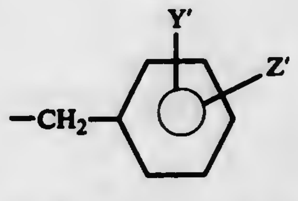
U.S. Cl. 424—324 **17 Claims**

1. A compound of the formula

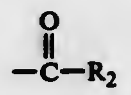


wherein the heavy dot (•) at the 1-position carbon atom of the cyclopentyl ring denotes the trans-configuration relative to the oxygen group (—OR$_1$) in the 2-position of the cyclopentyl ring;

R is hydrogen, C_1 to C_3-alkyl, or C_2 to C_4-alkenyl,;
R_1 is hydrogen, C_1 to C_3-alkyl, C_3 to C_5-(allylic)alkenyl, the benzyl group

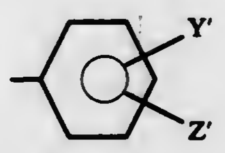


wherein Y' and Z' are as defined below, or R_1 is the group



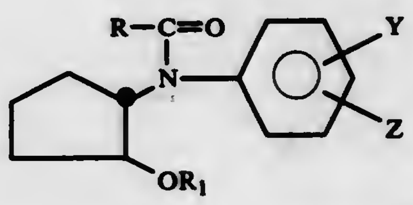
$$-\overset{\displaystyle O}{\overset{\|}{C}}-R_2$$

where R_2 is hydrogen, C_1 to C_3-alkyl, the benzyl group as above, or a phenyl group



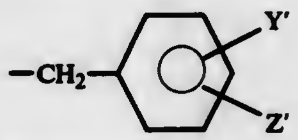
wherein Y' and Z' are as defined hereinbelow; and each of Y and Z or Y' and Z' is selected from the group consisting of hydrogen, a halogen having an atomic number of from 9 to 35, trifluoromethyl, C_1 to C_3-alkyl and C_1 to C_3-alkyloxy wherein Y, Z, or Y' and Z' can be the same or different, and Y, Z, or Y' and Z' are not necessarily the same at the same time.

11. A process for treating depression which comprises administering to a depressed human a compound of the formula

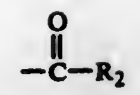


wherein the heavy dot (•) at the 1-position of thecyclopentyl ring denotes the trans configuration relative to the oxygen group (OR$_1$) in the 2-position of the cyclopentyl ring;

R is hydrogen, C_1 to C_3-alkyl, or C_2 to C_4-alkenyl;
R_2 is hydrogen, C_1 to C_3-alkyl, C_3 to C_5-(allylic)alkenyl, the benzyl group,

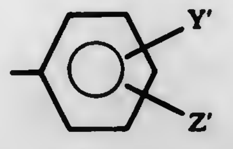


wherein Y' and Z' are as defined below, or R_1 is the group



$$-\overset{\overset{\displaystyle O}{\|}}{C}-R_2$$

where R_2 is hydrogen, C_1 to C_3-alkyl, the benzyl group as defined above or the phenyl group



wherein Y' and Z' are as defined below, and each of Y, Z, Y' and Z' is selected from the group consisting of hydrogen, a halogen having an atomic number of from 9 to 35, trifluoromethyl, C_1 to C_3-alkyl and C_1 to C_3-alkyloxy, and wherein Y, Z, Y' and Z' can be the same or different, and Y, Z, Y' and Z' are not necessarily the same at the same time, in a non-toxic amount effective to alleviate the conditions of depression, in association with a pharmaceutical carrier.

4,128,664

SUBSTITUTED BENZAMIDES AS ANTI-INFLAMMATORY AGENTS

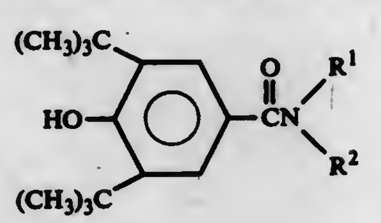
George G. I. Moore, Birchwood, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Division of Ser. No. 797,175, May 16, 1977, abandoned. This application Jan. 16, 1978, Ser. No. 869,620

Int. Cl.² A01N *9/20*

U.S. Cl. 424—324 **8 Claims**

1. A method for combatting inflammatory processes in a mammal which comprises administering an effective dose less than the toxic amount of a compound of the formula



wherein R^1 is hydrogen, alkyl of 1 to 4 carbon atoms or alkoxyalkyl of 2 to 4 carbon atoms or allyl, and R^2 is alkyl of 1 to 4 carbon atoms or alkoxyalkyl of 2 to 4 carbon atoms or allyl to said mammal.

4,128,665

SUBSTITUTED DINITROTRIFLUOROMETHYLDIPHENYLAMINE AND PESTICIDAL COMPOSITIONS CONTAINING SAME

John D. Hunt, Wokingham, and Frederick C. Peacock, Ascot, both of England, assignors to Imperial Chemical Industries Limited, London, England

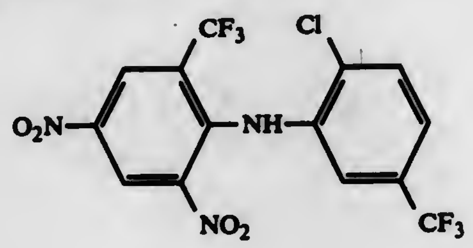
Filed Oct. 28, 1975, Ser. No. 627,771

Claims priority, application United Kingdom, Nov. 6, 1974, 47977/74

Int. Cl.² C07C *87/54;* A01N *9/20*

U.S. Cl. 424—330 **6 Claims**

1. 2,5'-Bistrifluoromethyl-2'-chloro-4,6-dinitrodiphenylamine having the formula:



4,128,666

4 AND 5-HALO SUBSTITUTED 2-INDANAMINE COMPOUNDS

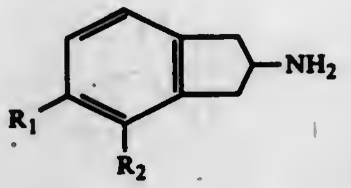
William E. Bondinell, Cherry Hill, N.J., and Robert G. Pendleton, Philadelphia, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Aug. 18, 1977, Ser. No. 825,623

Int. Cl.² A01N *9/20*

U.S. Cl. 424—330 **6 Claims**

1. A compound of the formula:



in which:

R_1 and R_2 are chloro, bromo, fluoro, iodo or trifluoromethyl, R_1 and R_2 being the same or different or a pharmaceutically acceptable acid addition salt thereof.

4,128,667

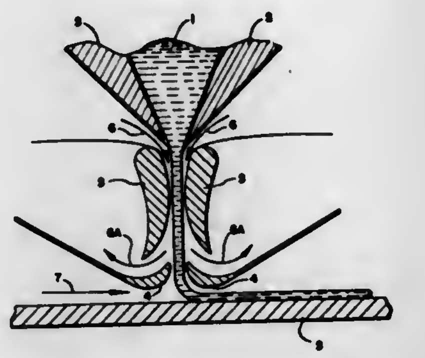
MANIPULATION OF COATING STREAMS WITH AIR FOILS

William J. Timson, Pocasset, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 487,227, Jan. 10, 1974, abandoned. This application Mar. 18, 1976, Ser. No. 668,210

Int. Cl.² B05D *3/04*

U.S. Cl. 427—348 **6 Claims**



1. In an apparatus which includes a means for dispensing a free falling stream of fluid coating composition onto a moving web;

the improvement which comprises at least one air foil located below said deposition means and positioned to be adjacent a stream of coating composition dispensed from said composition deposition means, and means for passing a stream of gas over the surface of the air foil immediately adjacent said stream of coating composition;

whereby the stream of gas passed over said air foil provides a frictional effect acting generally parallel to and upon said stream of coating composition and alters the free fall velocity of the stream of coating composition as it moves toward the web.

4. A method for altering the free fall velocity of a free falling fluid coating composition stream dispersed from a coating applicator prior to reaching a moving web, said method comprising directing a stream of gas over at least one air foil having a surface situated immediately adjacent said stream of coating composition whereby a frictional effect acting generally parallel to and upon said stream of coating composition alters the free fall velocity of said stream of coating composition as it moves toward said web.

4,128,668

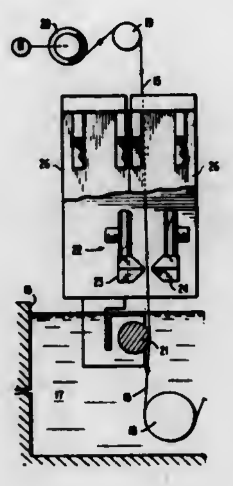
METHOD OF REMOVING EXCESS LIQUID COATING FROM WEB EDGES IN LIQUID COATING THICKNESS CONTROL

Robert T. Ernest, Valparaiso, Ind., assignor to National Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 685,801, May 12, 1976, which is a continuation of Ser. No. 540,599, Jan. 13, 1975, abandoned. This application Oct. 29, 1976, Ser. No. 737,024

Int. Cl.² B05D *3/04*

U.S. Cl. 427—349 **2 Claims**



1. A method of removing excess liquid coating from both surfaces of a moving, continuous imperforate web issuing from a bath of liquid coating of the type that will harden to form a solid coating on a substrate while preventing objectionable residual heavier liquid coating from remaining on the longitudinal marginal portions of the surfaces of the web comprising

providing fluid under pressure,

forming a pair of opposed streams of fluid under pressure arranged respectively on each of the opposite surfaces of the moving web,

forming each stream of the pair of opposed streams of fluid under pressure in a nozzle having an elongated plenum chamber and a fluid emitting orifice forming means having an opening facing toward the associated surface of the web and extending across the width of the associated surface of the web for connecting the plenum chamber with the exterior of the nozzle so as to form a continuous steam extending across the width of the associated surface of the moving web at least from one longitudinal edge to the other longitudinal edge of the web,

impinging the opposed streams of fluid under pressure respectively against the associated opposite surfaces of the moving web to remove excess liquid coating from the opposite surfaces of the web,

determining the direction of movement of the fluid under pressure in each stream by shaping each stream of fluid under pressure in the nozzle,

the direction of movement of the fluid under pressure in each stream being determined at least in part by admitting fluid under pressure into the intermediate portion only of the elongated plenum to cause the fluid under pressure in each end portion of the plenum chamber to have a component of motion parallel to the length dimension of the plenum chamber and a component of motion normal to the associated surface of the web to thereby impart to the fluid under pressure issuing from the fluid emitting orifice forming means and impinging on the two marginal portions of the associated surface of the web movement in respect to each marginal portion having a component normal to the surface of the marginal portion of the web and a component parallel to the surface of the marginal portion of the web and in a direction toward the associated longitudinal edge of the web to cause movement of excess liquid coating on the surface of each of the two marginal portions of the web downwardly and outwardly toward the respective longitudinal edges of the web to thereby eliminate objectionable residual heavier liquid coating on the longitudinal marginal portions of the surfaces of the web.

4,128,669

METHOD OF SURFACE TREATING PAPER WEBS

Bengt A. Wennerblom, Piteå, Sweden, assignor to SCA Development Aktiebolag, Sundsvall, Sweden

Filed Aug. 2, 1977, Ser. No. 821,231

Claims priority, application Sweden, Aug. 27, 1976, 7609524

Int. Cl.² B05D *1/26, 1/34*

U.S. Cl. 427—8 **2 Claims**

1. A method of controlling the amount of active substance applied to the surface of a continuously-moving paper web, said active substance being dissolved in or dispersed in a treating liquid, said paper web being passed over a coating unit in the form of a container, said container being positioned transverse to the direction of movement of said paper web and having an opening through which the treating liquid is applied to the paper web, including the steps of:

supplying a first fluid with a predetermined amount of said active substance to a first batching device,

supplying a second fluid consisting of pure solvent or dispersing agent to a second batching device,

controlling the output of said first batching device in response to the speed of said paper web to control the amount of active substance supplied to a mixer,

controlling the output of said second batching device in response to the fluid pressure at said opening to control the amount of solvent or dispersing agent supplied to said mixer,

mixing the outputs of said first and second batching devices at said mixer to form said treating liquid, and

supplying said treating liquid to said openings so that said paper web is completely covered with said treating liquid.

4,128,670

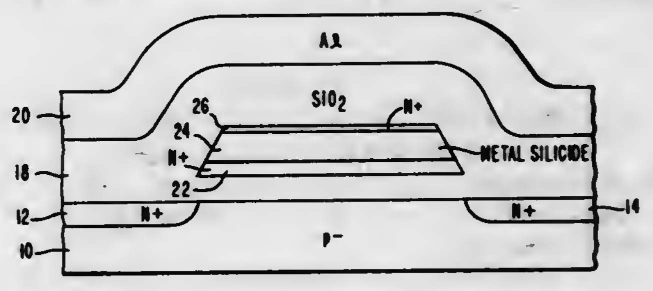
FABRICATION METHOD FOR INTEGRATED CIRCUITS WITH POLYSILICON LINES HAVING LOW SHEET RESISTANCE

Fritz H. Gaensslen, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 11, 1977, Ser. No. 850,586

Int. Cl.² B05D *5/12*

U.S. Cl. 427—86 **12 Claims**



1. A method for fabricating an electrically conductive combined polysilicon and metal silicide structure for integrated circuits comprising the steps of depositing a first layer of polysilicon on a substrate,

depositing a layer of silicide forming metal on said first polysilicon layer,

depositing a second layer of polysilicon on said silicide forming metal layer,

and heating said polysilicon and metal structure to cause said metal layer to react with said first and second polysilicon layers to form a metal silicide layer intermediate said first and second polysilicon layers.

4,128,671
INSTANT SILVERING SOLUTION

Robert Suggs, Barrington, Ill., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Mar. 14, 1973, Ser. No. 341,262

Int. Cl.^{2} B05D *5/12;* C23C *3/00*

U.S. Cl. 427—125 **2 Claims**

1. A silverplating bath in clear liquid solution form which may be applied to the surface of copper or copper-based substrates to instantaneously deposit a fine layer of silver on the surface thereof without need of applied electric current, said silverplating bath consisting of an aqueous solution in which has been combined two parts by way of sodium cyanide and 1 part of silver nitrate by weight, and the water content of the bath comprises 128 parts by weight.

4,128,672
PROCESS OF MAKING A MAGNETIC RECORDING MEDIUM

Gerd Wunsch, Speyer; Paul Deigner, Weisenheim; Roland Falk, Achern; Karl Mahler, Kehl; Werner Loeser, Ludwigshafen; Friedrich Domas, Altlussheim; Peter Felleisen, Lampertheim, and Werner Steck, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 24, 1975, Ser. No. 625,659

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1974, 2451276

Int. Cl.^{2} H01F *10/00*

U.S. Cl. 427—130 **5 Claims**

1. In a process for the manufacture of rigid magnetic recording media in which a thin film of a cobalt-containing ferromagnetic metal having a coercivity of from 23 to 75k A/m is deposited by electroless deposition on an activated rigid base followed by the application of a less than 0.1 μ thick protective layer to the surface of the said thin film of cobalt-containing ferromagnetic metal and said rigid base includes a non-magnetic metallic base disc at least one surface of which carry a layer (S) from 2 to 100 μm thick, which layer (S) has been brought by machining to a peak-to-valley height R_t of not more than 0.3 μ, is insoluble in, and virtually non-swellable by, organic solvents and consists of a dispersion of from 0.5 to 5 parts by weight of a finely divided non-magnetic pigment (P) of a Mohs' hardness of at least 6, per part by weight of a cured binder (B) which firmly bonds the pigments to the base disc, the improvement which comprises: activating the surface of the base disc by treatment with a solution of a palladium(O) complex in an organic solvent and decomposing the complex, and thereafter depositing a thin film of ferromagnetic metal of about 0.05 to 1 μ thickness on the so-activated surface of the base disc by electroless deposition.

4,128,673
METHOD FOR SUPER CALENDERING MAGNETIC RECORDING ELEMENTS

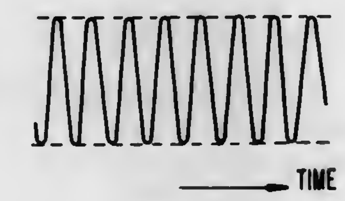
Kenzi Watanabe, and Masaaki Fujiyama, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 657,800, Feb. 13, 1976, abandoned. This application Jul. 25, 1977, Ser. No. 818,706

Claims priority, application Japan, Feb. 13, 1975, 50-18213; Mar. 7, 1975, 50-27783

Int. Cl.^{2} H01F *10/02*

U.S. Cl. 427—130 **7 Claims**



1. In a method for super calendering a magnetic recording element comprising a non-magnetic flexible support having provided thereon a magnetic layer mainly composed of ferromagnetic powders and a binder using a super calendering roll assembly having a metal roll in contact with the magnetic layer side and having an elastic roll on the support side opposite said metal roll which comprises pressing the surface of said magnetic layer to thereby super calender the same, the improvement wherein at least the surface area of said elastic roll comprises a polyamide resin having a Shore hardness D of 80 to 95, a linear expansion coefficient of at least 8×10^{-5}/° C. a compressive strength of at least about 700, and a molecular weight of 10,000 to 1,000,000.

4,128,674
METHOD OF MAKING PIGMENTED PHOSPHORS

Robert A. Hedler, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Mar. 31, 1976, Ser. No. 672,112

Int. Cl.^{2} C09K *11/08, 11/20, 11/42*

U.S. Cl. 427—218 **8 Claims**

1. A method of making free-flowing, pigmented phosphors comprising the steps of: diluting with water a 20% pigment stock suspension containing a polyacrylamide; adding phosphor particles and agitating vigorously; adjusting the pH to about 5.0 by adding a 10% acetic acid solution; adding a small amount of a positively charged colloidal silica with constant stirring; adding a base to raise the pH to about 9; stirring for a suitable time to allow said silica and said pigment to co-precipitate upon said phosphor particles; and removing the remaining liquid and drying said phosphor particles; and removing the remaining liquid and drying said phosphor particles.

4,128,675
PROCESS FOR TREATING TEXTILES WITH REACTIVE POLYMERS

Erich Rössler, Leitershofen; Hans Deiner, Neusass; Bernhard Sandner, Diedorf, and Hans Schilling, Langweid, all of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 11, 1977, Ser. No. 786,162

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1976, 2616797

Int. Cl.^{2} B05D *3/02*

U.S. Cl. 427—390 E **17 Claims**

1. A process for making textiles water-proof and water-repellent, comprising the steps of

(a) applying to a textile an aqueous composition comprising a reactive copolymer which is stable to hydrolysis in the aqueous medium, which is a copolymer of ethylenically unsaturated monomers which include 1.5 to 20%, by weight of the copolymer, of a monomer which contains a carboxylic acid amide methylol group or a C_1–C_3 alkyl ether thereof or a mixture thereof; 0.5 to 15%, by weight of the copolymer, of an aminosilane or an aminosiloxane or a mixture thereof; and 0.5 to 15%, by weight of copolymer, of an organometallic catalyst; and

(b) heating the treated textile to harden the copolymer thereon.

4,128,676
METHOD OF HOT-DIP COATING A FERROUS SUBSTRATE WITH A ZINC-ALUMINUM ALLOY RESISTANT TO INTERGRANULAR CORROSION

Harvie H. Lee, Glenwood, Ill., assignor to Inland Steel Company, Chicago, Ill.

Division of Ser. No. 646,530, Jan. 5, 1976, Pat. No. 4,029,478. This application Apr. 18, 1977, Ser. No. 788,109

Int. Cl.^{2} C23C *1/02*

U.S. Cl. 427—433 **4 Claims**

1. A method of providing a zinc-aluminum alloy coated ferrous metal sheet having a zinc-aluminum alloy hot-dip coating which has improved resistance to intergranular corrosion

comprising the step of continuously immersing a ferrous metal sheet in a hot-dip coating bath which consists essentially of between about 0.2 wt. % and about 17 wt. % aluminum, between about 0.06 wt. % and about 0.15 wt. % lead, and about 0.1 wt. % magnesium with the balance being essentially zinc.

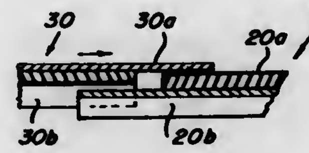
4,128,677
MULTI-FLUTE-LAYER CORRUGATED BOARD

Walther J. Hoelzinger, Vienna, Austria, assignor to Boise Cascade Corporation, Boise, Id.

Division of Ser. No. 722,699, Sep. 13, 1976. This application Mar. 23, 1978, Ser. No. 889,387

Int. Cl.^{2} B31F *1/22;* B32B *3/28*

U.S. Cl. 428—57 **4 Claims**



1. A continuous horizontal web of corrugated paperboard of indefinite length formed from a plurality of successive sections each including an upper first planar facer layer, and a lower first corrugated layer bonded in superimposed generally coextensive relation to said planar layer, the layers of each section having generally the same outer cross-sectional dimensions and being longitudinally offset to cause the facer layer to protrude at one end beyond the corrugated layer, and the corrugated layer to protrude at the other end beyond the facer layer, the flutes of the corrugated layer extending longitudinally beween the protruding ends of each section, the protruding portion of the facing layer of each section being bonded in overlapping relation to the protruding portion of the corrugated layer of the adjacent preceding section and to the adjacent portion of the facing layer of said preceding section, the protruding portion of the corrugated layer of each section being bonded in underlying flute-enmeshing relation with the corrugated layer of the adjacent trailing section, thereby to define a continuous web the flutes of which extend longitudinally.

4,128,678
HEAT INSULATING MATERIAL AND METHOD OF AND APPARATUS FOR THE MANUFACTURE THEREOF

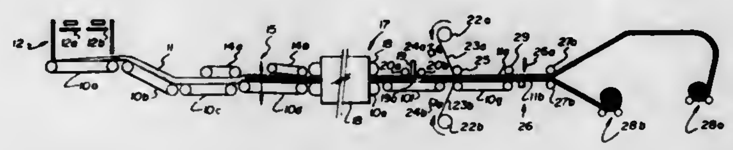
Paul E. Metcalfe; Randall W. Rolio, and Malcolm J. Stagg, all of Sarnia, Canada, assignors to Fiberglas Canada Limited, Toronto, Canada

Filed Jul. 7, 1977, Ser. No. 813,674

Claims priority, application Canada, Apr. 12, 1977, 275977

Int. Cl.^{2} C04B *43/02*

U.S. Cl. 428—119 **11 Claims**



1. Apparatus for manufacturing a heat insulating material from an uncured, longitudinally advancing strip-shaped felt of fibres containing a heat hardenable bonding substance, the apparatus comprising:

means for forming in the uncured felt corrugations extending across the entire width of the felt and following one another in succession along the length of the felt;

means for compressing the corrugated felt in the direction of advance of the felt to press the successive corrugations of the felt against one another;

a felt curing section for applying heat to the corrugated felt to form a cured felt containing fibres extending in a serpentine array along the felt between opposite flat sides of the felt with the successive corrugations of the felt bonded to one another;

means for providing a pair of backing sheets secured to outermost portions of the corrugations along the opposite major surfaces of the corrugated felt;

means for longitudinally cutting the cured felt between and parallel to the backing sheets to separate the cured felt into two partial felts; and

means for longitudinally conveying the felt along a path of travel extending past the cutting means;

the cutting means comprising a cutting blade extending transversely across said path of travel, whereby the corrugations are severed so that the fibres form U-shaped arrays disposed in succession along each of the partial felts.

4,128,679
SOFT, NON-WOVEN FABRICS AND PROCESS FOR THEIR MANUFACTURE

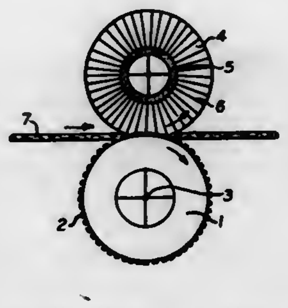
Alois Pohland, Weinheim, Germany, assignor to Firma Carl Freudenberg, Weinheim, Germany

Continuation of Ser. No. 306,126, Nov. 13, 1972, abandoned. This application Oct. 21, 1974, Ser. No. 516,837

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1971, 2156961

Int. Cl.^{2} B32B *3/10, 31/00*

U.S. Cl. 428—131 **23 Claims**



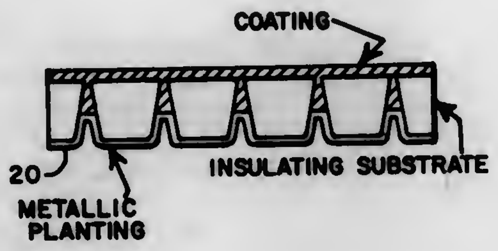
1. A process for preparing a soft, non-woven fabric which comprises passing a mat of non-woven fibers free of binder, at least a portion of which fibers comprises thermoplastic fibers, through the nip of opposed rollers without embossing the same, one of which rollers has a heated surface which is uneven and bears against said fabric with sufficient pressure to cause the raised portions of the uneven surface thereof to be depressed within the fibrous mat and to pass and penetrate within the surface of the opposed roller, the roller opposed thereto being resilient, the raised portion of the heated uneven surface having heated teeth which heated teeth pass within the interior of said non-woven fabric while the fabric is maintained free of regions of non-uniform compression whereby to form holes therein and welding of the fibers of said fabric together at the margin of said holes, said fibers being selected from the group consisting of nylon fibers, styrene fibers, styrene copolymer fibers, acrylic fibers, cellulosic fibers, polyolefin fibers and polyvinyl chloride fibers.

21. A soft, non-woven fabric free of binding agents and composed, at least in part, of thermoplastic fibers selected from the group consisting of nylon fibers, styrene copolymer fibers, acrylic fibers, cellulose fibers, polyolefin fibers and polyvinylchloride fibers, such fibers bonded to other fibers at their crossing points, said fabric having a smooth surface, said fabric being produced by the process of claim 1.

4,128,680
SILICON COATED CERAMIC SUBSTRATE WITH IMPROVEMENTS FOR MAKING ELECTRICAL CONTACT TO THE INTERFACE SURFACE OF THE SILICON

Joseph D. Heaps, Minnetonka, and Obert N. Tufte, Prior Lake, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 3, 1977, Ser. No. 803,010
Int. Cl.² B32B *3/10, 9/04, 13/04;* **B05D** *5/12*
U.S. Cl. 428—137 **6 Claims**



1. A crystalline silicon coated ceramic substrate providing electrical contacts to the interface surface of the silicon coating from the substrate side comprising:

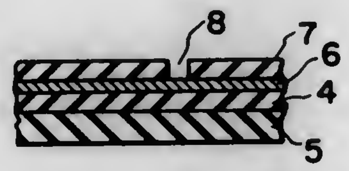
a ceramic substrate having narrow openings through the thickness of said substrate from front face to back face thereof;

a layer of crystalline silicon grown onto the front face of said ceramic substrate and through said openings by contacting said front face with molten silicon to form said silicon layer, said silicon layer while still molten also wicking through said narrow openings from said layer on said front face towards said back face to thereby provide electrical contacts to the interface surface of the silicon layer from the substrate side.

4,128,681
METHOD FOR PRODUCING AN InSb THIN FILM ELEMENT

Nobuo Kotera, Kokubunji, and Nobuo Miyamoto, Hachioji, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 26, 1976, Ser. No. 735,139
Claims priority, application Japan, Oct. 24, 1975, 50-127403
Int. Cl.² B32B *15/20*
U.S. Cl. 428—138 **36 Claims**

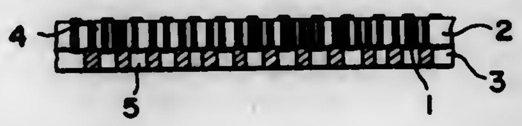


1. An InSb thin film element comprising a substrate at least one surface of which is made of alumina or an inorganic insulating material containing at least 12 mol % of alumina, an InSb thin film which is provided on the surface of said substrate, which has a thickness of at most 0.2 μm and which has been molten and recrystallized, and a film which is provided on said InSb thin film and which is made of alumina or an inorganic insulating material containing at least 12 mol % of alumina.

4,128,682
AUTO CEILING PANEL AND ITS MANUFACTURING METHOD

Takao Nomura; Yoshiro Umemoto, both of Nagoya, and Tatsuo Sakamoto, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 30, 1978, Ser. No. 891,643
Int. Cl.² B62D *25/06;* **B32B** *3/10, 3/26*
U.S. Cl. 428—138 **10 Claims**



1. Auto ceiling panel comprising:

a polyethylene foam on the auto interior side which has been bored with numerous small holes;

a polyethylene foam on the ceiling side to be pasted to said polyethylene foam which has been bored with numerous large holes;

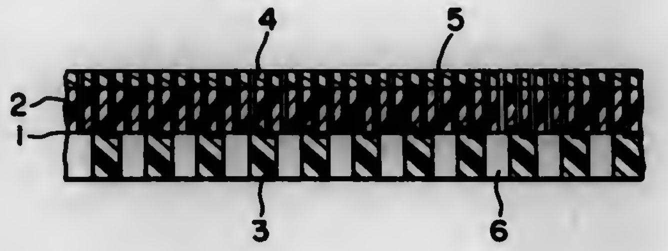
and a metal lath sandwiched between said auto interior side polyethylene foam and said ceiling side polyethylene foam.

5. Auto ceiling panel of claim 1, wherein a permeable leather is attached to the interior side surface of said interior side polyethylene foam.

4,128,683
AUTO CEILING PANEL AND ITS MANUFACTURING PROCESS

Takao Nomura; Yoshiro Umemoto, both of Nagoya, and Tatsuo Sakamoto, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 11, 1978, Ser. No. 895,387
Int. Cl.² B62D *25/06;* **B32B** *3/10, 3/26*
U.S. Cl. 428—138 **20 Claims**



1. Auto ceiling panel comprising:

an interior side polyethylene foam;

a vinyl chloride sheet bonded to the internal surface of said interior side polyethylene foam;

a large number of fine holes running through both said interior side polyethylene foam and said vinyl chloride sheet;

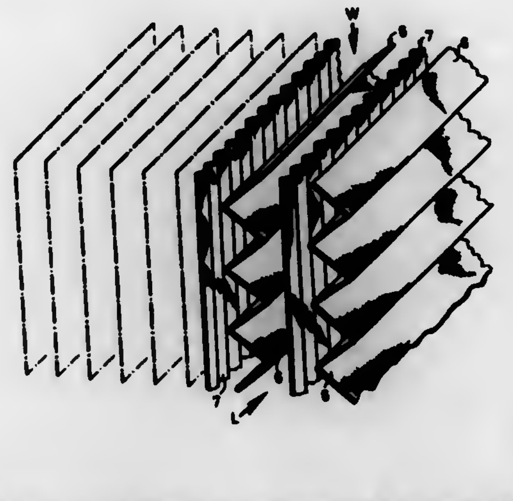
a ceiling side polyethylene foam thermally fused through a metal lath to the ceiling side surface of said interior side polyethylene foam;

and a large number of less fine holes bored on said ceiling side polyethylene foam.

4,128,684
METHOD OF PRODUCING A PACKING AND A PACKING LAYER MADE THEREBY

Pietro Bomio, Winterthur, and Werner Meier, Elgg, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Continuation of Ser. No. 593,381, Jul. 7, 1975, abandoned. This application Nov. 5, 1976, Ser. No. 739,047
Claims priority, application Switzerland, Jul. 9, 1974, 9404/74
Int. Cl.² B32B *1/00*
U.S. Cl. 428—175 **11 Claims**

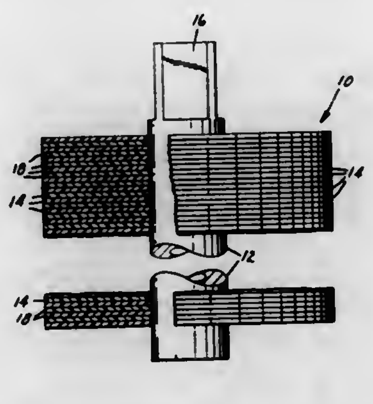


1. A packing comprising a plurality of shaped layers of a textile sheet-structure, at least some of said layers defining flow ducts and at least some of said layers being formed of thin non-metallic multifilament yarns and thicker monofilament plastic yarns with at least some of said thicker plastic yarns being permanently deformed to impart a self-supported shape to said layers, each of said flow ducts of said deformed layers having a constant dimension throughout.

4,128,685
SKIVABLE BILLET AND PRODUCTS

Robert D. Lowrey, North Oaks; Arthur A. Wegwerth, Maplewood; Donna M. Koeck, Saint Paul, and Sanford Cobb, Jr., Saint Mary's Point, all of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Dec. 6, 1976, Ser. No. 747,506
Int. Cl.² B32B *9/00, 23/08, 27/30*
U.S. Cl. 428—212 **3 Claims**

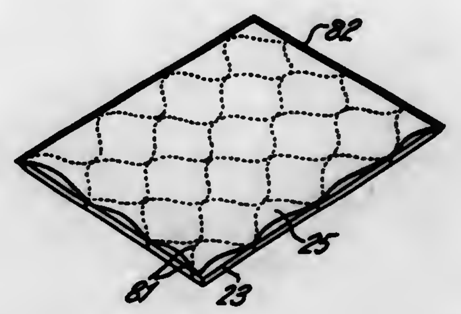


1. A skivable billet of alternating layers of low and relatively high optical density, said layers being relatively similar in absorptive properties toward infrared radiation, said layers of low optical density being essentially cellulose acetate butyrate and said layers of relatively higher optical density being a composition comprised of composite self-cross-linking anionic acrylates, finely divided silica and water soluble polyazo direct dye.

4,128,686
MANAGEMENT OF INCONTINENCE

William Kyle, 206, Templestowe Rd., Lower Templestowe, Victoria, and Bruce H. Lee, 9, Wimbourne Rd., Mount Waverley, Victoria, both of Australia

Filed Jan. 14, 1977, Ser. No. 759,549
Claims priority, application Australia, Feb. 3, 1976, PC4702; Feb. 12, 1976, PC4831; Apr. 1, 1976, PC5435
Int. Cl.² B32B *5/02;* **A61F** *13/16;* **B32B** *5/06*
U.S. Cl. 428—219 **19 Claims**



1. In an assembly for the management of incontinence comprising at least one layer of non-absorbent hydrophobic textile material through which urine can freely pass and at least one layer of absorbent hydrophilic textile material behind the said at least one non-absorbent layer to receive and absorb urine passing through the said at least one non-absorbent layer,

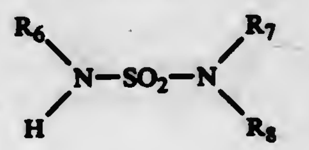
the improvement comprised in that the absorbent layer is formed of aligned cellulosic staple fibers of at least 0.5 inch length and denier in the range 2 to 7 formed into a cross-laid web and needled at 1500 to 2000 punchings per square inch to form a felt which will absorb at least 350% by weight of urine based upon its dry weight and will disperse urine laterally by capillarity throughout the felt.

4,128,687
PROCESS FOR FIREPROOFING POLYESTER FIBER MATERIALS WITH SUBSTITUTED SULPHURYLAMIDES

Hermann Nachbur, Dornach; Armin Hiestand, Binningen, and Peter Rohringer, Schönenbuch, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 20, 1977, Ser. No. 808,006
Claims priority, application Switzerland, Jun. 25, 1976, 8153/76
Int. Cl.² B32B *27/36;* **B05D** *3/02;* **C09D** *5/18;* **C09K** *3/28*
U.S. Cl. 428—253 **11 Claims**

1. A process for fireproofing fiber materials consisting essentially of polyester, which process comprises treating these materials with a preparation containing a flameproofing agent consisting essentially of at least one substituted sulphurylamide which corresponds to the formula



$$\frac{R_6}{H}\!>\!N-SO_2-N\!<\!\frac{R_7}{R_8}$$

wherein

R_6 is phenyl, naphthyl, phenylethyl, benzyl, cyclohexyl or hydrogen; and R_7 and R_8 each have the meanings given for R_6, with at most two of the radicals R_6, R_7 and R_8 being hydrogen and subjecting the materials treated in this manner to a heat treatment.

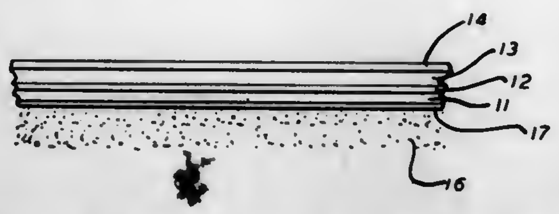
4,128,688
RESINOUS MOISTURE RESISTANT LAMINATE

John W. Wiley, Woodstown, N.J., assignor to Mannington Mills, Inc., Salem, N.J.

Filed Dec. 14, 1976, Ser. No. 750,570

Int. Cl.^{2} B32B *3/26*

U.S. Cl. 428—311 **11 Claims**



1. A resinous, moisture resistant laminate comprising:
(a) a moisture permeable backing layer which is dimensionally stable under varying moisture conditions and resistant to degradation from water;
(b) a barrier layer overlying the backing layer which is dimensionally stable under varying moisture conditions and substantially impervious to moisture penetration;
(c) an intermediate, open-cellular, foamed resinous layer overlying the barrier layer; and
(d) a resinous wear layer overlying the intermediate layer.

4,128,689
THERMOPLASTIC POLYMER SHEETS OR WEB MATERIAL USEFUL AS SURFACING MATERIALS AND THEIR MANUFACTURE

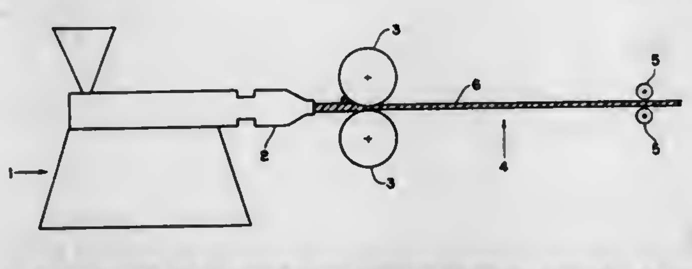
John M. Heaps, Bourne End, and Chisen Lu, Hounslow, both of England, assignors to Formica International Limited, London, England

Filed Apr. 26, 1977, Ser. No. 790,990

Claims priority, application United Kingdom, Apr. 27, 1976, 17005/76

Int. Cl.^{2} B29D *27/00*

U.S. Cl. 428—311 **14 Claims**



1. A process for preparing thermoplastic sheets or webs, which process comprises the steps of:
(i) extruding a foamable thermoplastic polymer mixture through the die of a screw extruder to produce a foamed extrudate in sheet or web form, the foamable thermoplastic polymer mixture containing at least a first and a second thermoplastic polymer, the first thermoplastic polymer being substantially crystalline and having a higher melting point than, and being substantially immiscible with, the second thermoplastic polymer, and the temperature of extrusion being equal to or greater than the melting point of the first thermoplastic polymer;
(ii) stretching the foamed extrudate from step (i) in the direction of extrusion as it leaves the die to rupture most of the cells of the foamed extrudate and to elongate the walls of the collapsed cells in the direction of stretch;
(iii) compressing the stretched extrudate from step (ii) while it remains plastic; and
(iv) cooling and foamed, stretched and compressed extrudate from step (iii).

13. The thermoplastic sheet or web having an integral patterning and fibrous structure prepared in accordance with the process of claim 1.

4,128,690
TOUGHENED GLASS SHEETS

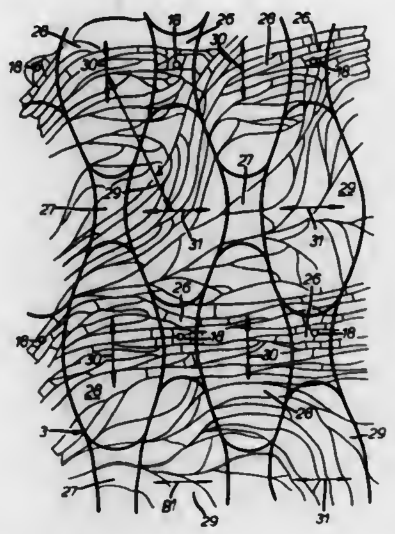
James Boardman, Kings Norton, and Peter M. Ash, Studley, both of England, assignors to Triplex Safety Glass Company Limited, Kings Norton, England

Filed Mar. 1, 1977, Ser. No. 773,165

Claims priority, application United Kingdom, Mar. 5, 1976, 8995/76

Int. Cl.^{2} C08B *27/00*

U.S. Cl. 428—332 **4 Claims**



1. A glass sheet for use as a side or rear window for a motor vehicle and of thickness in the range 2.5 mm to 3.5 mm which sheet is differentially quenched to produce in the glass sheet a distribution of regions of more highly toughened glass interspersed with regions of lesser toughened glass, the average central tensile stress in the glass sheet being in the range of from a maximum of 62 MN/m^2 for all glass thicknesses from 2.5 to 3.5 mm to a minimum of 56.5 MN/m^2 for 2.5 mm thick glass varying inversely with thickness down to a minimum of 53 MN/m^2 for 3.5 mm thick glass, and there being a distribution of medium toughened glass areas interspersed among said more highly toughened and said lesser toughened regions in the glass sheet and in which there are major and minor principal stresses acting in the plane of the glass sheet, the difference between said major and minor principal stresses in at least some of said medium toughened areas being at a maximum in the range 8 MN/m^2 to 25 MN/m^2, the major principal stresses in adjacent ones of such medium toughened areas being in substantially different directions, and the distance between the centres of such adjacent areas being in the range 15 mm to 30 mm, the number and location of such adjacent areas being sufficient that upon fracture there is an absence of splines of more than 6 cm in length in the glass sheet.

4,128,691
PROCESS FOR THE PRODUCTION OF A MAGNETIC RECORDING MEDIUM

Ryuji Shirahata; Tatsuji Kitamoto, and Masaaki Suzuki, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Continuation of Ser. No. 550,906, Feb. 19, 1975, abandoned. This application Jul. 27, 1976, Ser. No. 709,103

Claims priority, application Japan, Feb. 21, 1974, 49-19897

Int. Cl.^{2} H01F *10/02*

U.S. Cl. 428—336 **8 Claims**

1. A process for the production of a magnetic recording medium by electroless plating onto a substrate, which comprises carrying out the electroless plating in a plating aqueous solution containing 0.02 to 0.6 mol/l of cobalt ion, 0 to 0.02 mol/l of nickel ion, 0.0002 to 0.005 mol/l of barium ion, 0.03 to 0.4 mol/l of hypophosphite ion and a complexing agent at a temperature of 60° C.-95° C. and wherein the pH of the aqueous solution ranges from 6.5 to 9.0.

4,128,692
SUPERABSORBENT CELLULOSIC FIBERS HAVING A COATING OF A WATER INSOLUBLE, WATER ABSORBENT POLYMER AND METHOD OF MAKING THE SAME

Albert R. Reid, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 501,112, Aug. 27, 1974, abandoned. This application May 25, 1977, Ser. No. 800,248

Int. Cl.^{2} D06M *1/00*

U.S. Cl. 428—378 **17 Claims**

1. Cellulosic fibers having a rapid rate of absorption and a high absorption capacity for water or aqueous salt solutions comprising a long fiber cellulose having on its surfaces a coating of water-insoluble, water-absorbent polymer in an amount equal to 15 to 90% by weight based on the total weight of the coated fiber and being in the form of separate and discrete fibers, said coated fibers having a higher absorption capacity than the uncoated long fiber cellulose.

11. A method of preparing cellulosic fibers having a rapid rate of absorption and a high capacity for water or aqueous salt solutions which comprises preparing an aqueous suspension of separate and discrete long fiber cellulose fibers containing a water-insoluble, water-absorbent polymer, stirring the suspension until the water-insoluble, water-absorbent polymer forms an aqueous gel, adding to the suspension an inert water-miscible diluent in which the polymer is neither soluble nor swellable to precipitate the polymer onto the surface of the long fiber cellulose and thereafter dehydrating the coated fibers by contacting them with a water-miscible diluent in which the polymer is neither soluble nor swellable, removing the diluent and recovering separate and discrete long fiber cellulose fibers therefrom.

4,128,693
WIRE COATED WITH FLUOROCARBON BLEND

Kewal S. Dhami, Shrewsbury; Elmer W. Bennett, Westboro, and Pearl Burton, Leominster, all of Mass., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 615,835, Sep. 9, 1975, abandoned. This application May 5, 1977, Ser. No. 794,313

Int. Cl.^{2} B32B *15/00, 27/00*

U.S. Cl. 428—379 **3 Claims**

1. Wire coated with an extruded coating composition comprising a blend of
(a) from 55 to 95% by weight of a tetrafluoroethylene polymer and
(b) from 5 to 45% by weight of a copolymer of tetrafluoroethylene and an ether of the formula $CF_2{=}CF{-}O{-}R$ wherein R is a perfluoroalkyl radical of 1-5 carbon atoms.

4,128,694
LAMINATES COMPRISING A PLASTICIZED INTERLAYER

David A. Fabel, Springfield; James A. Snelgrove, Monson, and Robert H. Fariss, Northampton, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed May 9, 1977, Ser. No. 794,776

Int. Cl.^{2} B32B *27/36*

U.S. Cl. 428—412 **8 Claims**

1. A laminate comprising at least one sheet of thermoplastic resin selected from the group consisting of polycarbonates and polyacrylates laminated to a sheet of polyvinyl butyral plasticized with an effective amount of a plasticizer which is at least a partial ester formed by the reaction of an alcohol having from 2 to 4 hydroxyl groups and a C_{16} to C_{20} unsaturated fatty acid having a hydroxyl group attached to the acid molecule.

4,128,695
COATED STYRENIC RESIN PLATE FOR INK-ACCEPTABILITY AND PAINTABILITY

Katsuro Kikuchi, Yokohama; Shohachi Masai, Kashiwa, and Tsugane Tanaka, Musashino, all of Japan, assignors to Asahi-Dow Limited and Koyo Sangyo Co., Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 683,082, May 4, 1976, abandoned. This application Mar. 10, 1978, Ser. No. 885,391

Claims priority, application Japan, May 10, 1975, 50-55237; Apr. 19, 1976, 51-44269

Int. Cl.^{2} B32B *27/40, 3/26*

U.S. Cl. 428—423 **8 Claims**

1. A styrenic resin plate excellent in ink-acceptability and paintability comprising a styrenic resin substrate having coated on one surface or both surfaces thereof a layer with a composition comprising 100 parts by weight of a resin mixture consisting of 60 to 95% by weight of a hydrophobic synthetic resin and 40 to 5% by weight of a hydrophilic synthetic resin, 30 to 500 parts by weight of a finely pulverized inorganic filler and 2 to 15 parts by weight of an isocyanate compound having at least two isocyanate groups.

4,128,696
LOW PRESSURE MELAMINE RESIN LAMINATES

James C. Goebel, Stamford; Darwin F. Delapp, New Canaan, both of Conn., and Kenneth D. Bunkowski, Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio

Filed Feb. 11, 1977, Ser. No. 767,707

Int. Cl.^{2} B32B *27/40*

U.S. Cl. 428—424 **5 Claims**

1. A heat and low pressure consolidated laminate comprising
(A) a self-supporting wood particleboard or wood fiberboard substrate and
(B) a decorative cellulosic paper sheet impregnated with a composition of matter comprising
  (1) a blend of an aqueous melamine/formaldehyde resin solution and from about 2% to about 20%, by weight, based on the solids weight of said resin, of an ethylene glycol having a molecular weight of from about 62 to about 2100, or
  (2) an aqueous solution of the resinous reaction product of (I) melamine, (II) formaldehyde and (III) from about 2% to about 20.0%, by weight, based on the total weight of melamine and formaldehyde, of an ethylene glycol having a molecular weight of from about 62 to about 2100, wherein said (1) or (2) contains, in admixture therewith,
  (3) from about 2.5 to about 30.0%, by weight, based on the weight of resin solids, of an elastomer comprising
    (a) an ethylene/vinyl chloride copolymer containing from about 0.5% to about 7.0%, by weight, based on the total weight of (a), of amide groups,
    (b) a polyurethane resin containing from about 3.0% to about 10.0%, by weight, based on the total weight of (b), of carboxyl groups, or
    (c) a butadiene/acrylonitrile copolymer containing from about 1% to about 10.0%, by weight, based on the total weight of (c), of carboxyl groups
said elastomer having a particle size of up to about 20,000 Angstroms.

4,128,697
HERMETIC GLASS-METAL COMPRESSION SEAL

William M. Simpson, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

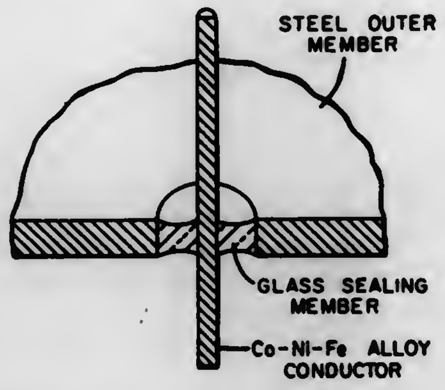
Filed Apr. 22, 1977, Ser. No. 789,963

Int. Cl.^{2} B32B *17/06*

U.S. Cl. 428—433 **3 Claims**

1. In a hermetically sealed lead-in structure for an electronic device comprising a glass-metal compression seal which includes a steel outer member having an opening therethrough, a unitary glassy sealing member positioned in the opening in

the steel outer member and hermetically sealed to the steel, and a metallic conductor passing through the glassy sealing member and hermetically sealed thereto, wherein the steel outer member is composed of a steel having an average linear coefficient of thermal expansion (30°–300° C.) in the range of about 120–130 × 10^{-7}/° C. and the metallic conductor is composed of cobalt-nickel-iron alloy having an average linear coefficient of thermal expansion (30°–400° C.) of about 46–52 × 10^{-7}/° C., the improvement wherein the glassy sealing member is composed of a material selected from the group consisting of:



(a) a glass having an average linear coefficient of thermal expansion (0°–300° C.) of about 88.5 × 10^{-7}/° C. and a composition consisting essentially, in parts by weight, of about 63 parts SiO_2, 2.6 parts Al_2O_3, 14 parts SrO, 5.8 parts Na_2O, 8.9 parts K_2O and 3.0 parts B_2O_3, and

(b) a mixture having an average linear coefficient of thermal expansion (0°–300° C.) of about 84 × 10^{-7}/° C. and a composition consisting essentially of 6 parts zircon and 100 parts glass by weight, the glass consisting essentially, in parts by weight, of about 66 parts SiO_2, 12 parts BaO, 2.7 parts Al_2O_3, 2.0 parts B_2O_3, 6.7 parts Na_2O, 6.6 parts K_2O, 2.0 parts ZrO_2, 0.7 parts Li_2O and 1.6 parts F.

4,128,698

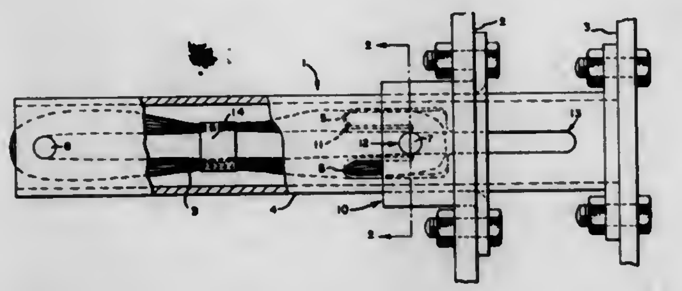
ENERGY ABSORBING MECHANISM

Colin Anolick, Howard J. Kutsch, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

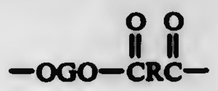
Division of Ser. No. 719,952, Sep. 2, 1976, Pat. No. 4,076,226. This application Sep. 27, 1977, Ser. No. 837,277

Int. Cl.² B32B *27/00*

U.S. Cl. 428—480 **3 Claims**

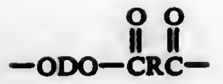


1. An article of manufacture suitable for use in cushioning impact comprising an oriented copolyetherester elastomer in the form of a belt having multiple windings and being capable of absorbing energy when stretched under tension upon force of impact, said oriented copolyetherester elastomer consisting essentially of a multiplicity of recurring long-chain and short-chain ester units joined head-to-tail through ester linkages, said long-chain ester units being represented by the structure:



$$-OGO-\overset{O}{\overset{\|}{C}}R\overset{O}{\overset{\|}{C}}-$$

and said short-chain ester units being represented by the structure:



$$-ODO-\overset{O}{\overset{\|}{C}}R\overset{O}{\overset{\|}{C}}-$$

wherein:

G is a divalent radical remaining after removal of terminal hydroxyl groups from poly(alkylene oxide) glycols having a molecular weight between about 400–6000;

R is a divalent radical remaining after removal of carboxyl groups from a dicarboxylic acid having a molecular weight less than about 300; and

D is a divalent radical remaining after removal of hydroxyl groups from a low molecular weight diol having a molecular weight less than about 250;

said short-chain ester units constitute about 15–95% by weight of the copolyetherester.

4,128,699

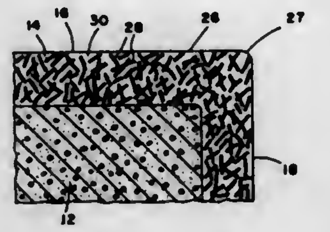
TREATED GYPSUM WALLBOARD PAPER

Donald R. Kole, Cheektowaga, and Donald A. Kossuth, Buffalo, both of N.Y., assignors to National Gypsum Company, Dallas, Tex.

Filed Oct. 3, 1977, Ser. No. 838,478

Int. Cl.² B32B *13/08, 29/00*

U.S. Cl. 428—498 **10 Claims**



7. An improved gypsum wallboard porous paper having cellulose fibers substantially all of which to a depth of at least about 10% of the thickness of the paper are impregnated with a drying oil.

9. Gypsum wallboard comprising a set gypsum core disposed between a face paper and a back paper, at least one of said papers having a structure as defined in claim 7.

4,128,700

FUEL CELL POWER PLANT AND METHOD FOR OPERATING THE SAME

Richard A. Sederquist, Newington, Conn., assignor to United Technologies Corp., Hartford, Conn.

Filed Nov. 26, 1977, Ser. No. 855,118

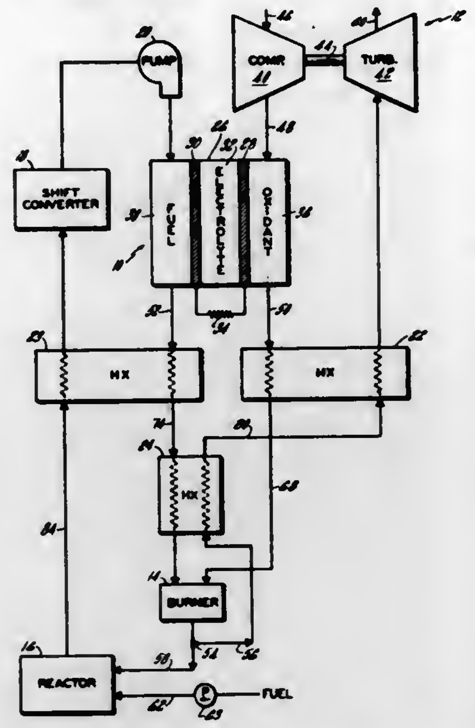
Int. Cl.² H01M *8/06*

U.S. Cl. 429—17 **20 Claims**

1. In the method of operating a fuel cell power plant comprising a plurality of fuel cells, burner means, and fuel conditioning apparatus including a catalytic reactor for producing hydrogen, the steps of:

burning a mixture of fuel cell anode and cathode exhausts in said burner means;

feeding a carbonaceous fuel and a first portion of the burner means exhaust into said fuel conditioning apparatus and reacting the fuel therein;



feeding the fuel conditioning apparatus output to the anode side of the fuel cells; and

venting a second portion of the burner means exhaust.

4,128,701

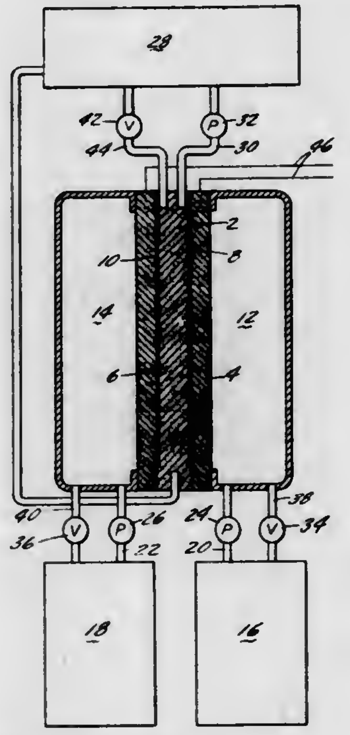
HYDROGEN/CHLORINE REGENERATIVE FUEL CELL

Donald L. Maricle, Glastonbury, Conn., assignor to United Technologies Corp., Hartford, Conn.

Filed Dec. 23, 1977, Ser. No. 863,816

Int. Cl.² H01M *8/18*

U.S. Cl. 429—21 **13 Claims**



1. A regenerative fuel cell including:

a matrix;

an electrode on each side of the matrix;

container means external to the cell for separately containing hydrogen gas and chlorine gas;

means for supplying the hydrogen gas and chlorine gas from said container means to the electrodes on the sides opposite the matrix, one gas to each electrode;

an aqueous electrolyte selected from the group consisting of sodium chloride and hydrochloric acid in said matrix in which the hydrogen chloride gas evolved is dissolved; and

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4,128,702

CELL WITH N,N-BIS (SUBSTITUTED PHENYL)-4,4-DIPYRIDINIUM SALT DEPOLARIZER

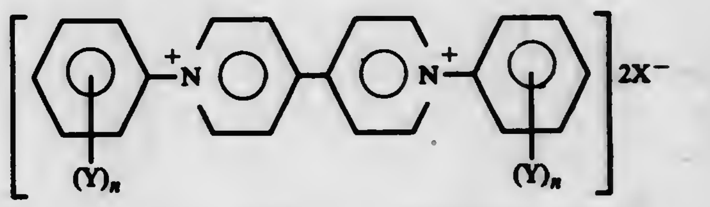
Hiroshi Okaniwa, Hachioji, and Toshiaki Yatabe, Hino, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 25, 1977, Ser. No. 854,965

Int. Cl.² H01M *4/60*

U.S. Cl. 429—27 **9 Claims**

1. In a half-cell using a cathode composition which comprises a mixture of carbon, a depolarizing compound and an electrolyte, the improvement wherein the depolarizing compound has the formula:



in which Y is selected from the group consisting of nitro and cyano groups; n is 1 or 2; and X^- is Cl^- or Br^-.

4,128,703

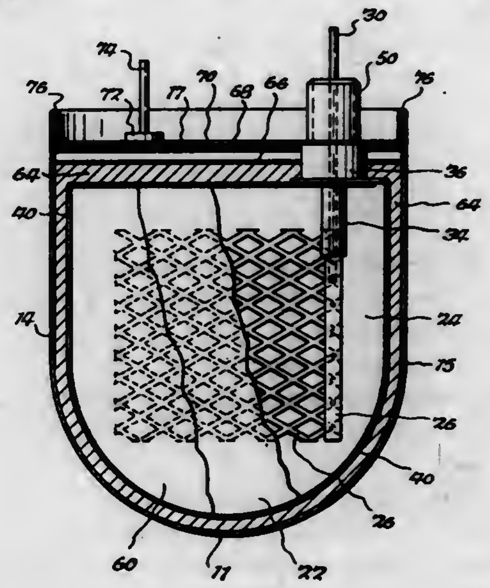
LITHIUM-IODINE CELL

Ralph T. Mead, Kenmore; Wilson Greatbatch, Clarence; Frank W. Rudolph, Depew, and Norbert W. Frenz, Jr., North Tonawanda, all of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Jul. 5, 1977, Ser. No. 812,641

Int. Cl.² H01M *6/18*

U.S. Cl. 429—101 **13 Claims**



1. A lithium-iodine cell comprising:

a. a casing of electrically conducting material;

b. anode means positioned within said casing and comprising an element of lithium having an exposed surface portion and another surface portion;

c. electrical conductor means operatively connected to said other surface portion and extending through said casing, said conductor means having a longitudinal axis;

d. means for sealing said conductor means from the remainder of said cell, said sealing means comprising an insulator element in generally concentric relationship with said conductor within said casing, said insulator element having a longitudinal axis and being of a material which does not exhibit electronic conduction when exposed to iodine, said insulator having a first axial portion embracing said conductor and a second axial portion spaced from said conductor in a radial outward direction, and a ferrule element in generally concentric relationship with said conductor, said ferrule having a portion within said casing which is received in said second portion of said insulator and a portion extending from said casing;

e. cathode means comprising iodine-containing material within said casing and in operative contact with said exposed surface portion of said lithium element and with a major portion of the surface of said casing in a manner such that said casing serves as a cathode current collector; and

f. said sealing means shielding said conductor means from said iodine-containing material and electrically insulating said conductor means from said casing;

g. whereby an electrical potential difference exists between said conductor means and said casing during operation of said cell.

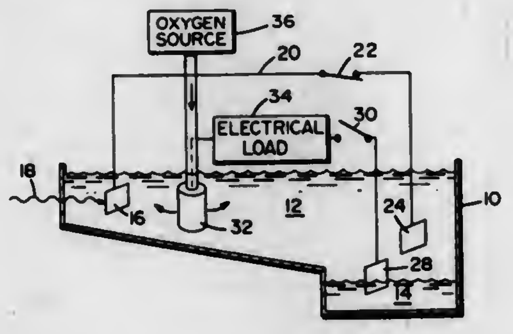
4,128,704
PHOTOELECTROCHEMICAL ENERGY STORAGE SYSTEM

Howard McKinzie, Framingham; Mark S. Wrighton, Medford, and Joseph Lester, Acton, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 14, 1977, Ser. No. 850,916

Int. Cl.² H01M *6/30, 6/36*

U.S. Cl. 429—111 **18 Claims**



1. A photochemical energy storage system for storing energy and for delivering that energy in electrical form upon demand comprising:
(a) a fluid-tight container;
(b) an electrolyte within said container comprising at least one ionizable compound having cationic and anionic portions;
(c) a charging system comprising a photoactive first electrode immersed in said electrolyte and responsive to applied optical energy to oxidize the ionizable compound or a portion thereof to liberate electrons, a first interruptible electron conductor connected in series with said first electrode, a second electrode immersed in said electrolyte and connected to said first interruptible electron conductor for receiving the electrons to reduce the ionizable compound or a portion thereof, and storage means provided in said container for storing the product of the reduction reaction in a phase which differs from the phase of the ionizable compound; and
(d) an energy delivery system having a third electrode in said container for contacting the stored product to abstract electrons therefrom in an oxidation reaction, a second interruptible electron conductor connected in series with said third electrode, and a fourth electrode immersed in said electrolyte connected to said second interruptible electron conductor for transferring the electrons to establish a redox reaction by which said cationic and anionic portions are recombined.

4,128,705
GALVANIC ELEMENT, PARTICULARLY ALKALINE STORAGE BATTERY

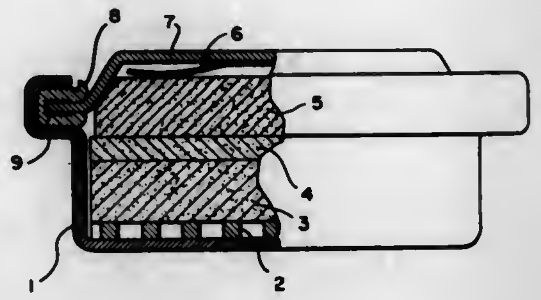
August Winsel, Kelkheim, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 29, 1977, Ser. No. 820,160

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1976, 2636230

Int. Cl.² H01M *2/02*

U.S. Cl. 429—171 **8 Claims**



8. In a storage battery with positive and negative electrodes and alkaline electrolyte, which battery has a housing having two portions and a seal interposed between said portions to close the housing in liquid-tight manner, one portion of the housing having a metal surface bearing against the seal and also connected to the negative electrode, the improvement wherein a passive oxide layer covers the said metal surface bearing against the seal, the oxide layer being non-reducible at the potential of the negative electrode, and being selected from the group of NiO, TiO_2 and oxides of chromium and tantalum.

4,128,706
CARRIER FOR LIQUID CHROMATOGRAPHY

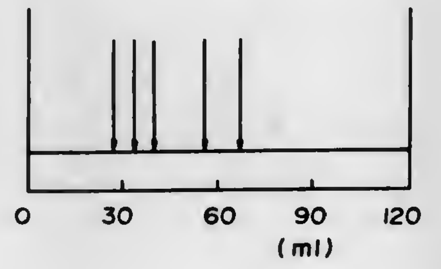
Toru Seita; Akihiko Shimizu; Yoshio Kato, and Tsutomu Hashimoto, Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

Filed Nov. 7, 1977, Ser. No. 849,466

Claims priority, application Japan, Nov. 9, 1976, 51/133761; Nov. 12, 1976, 51/135276

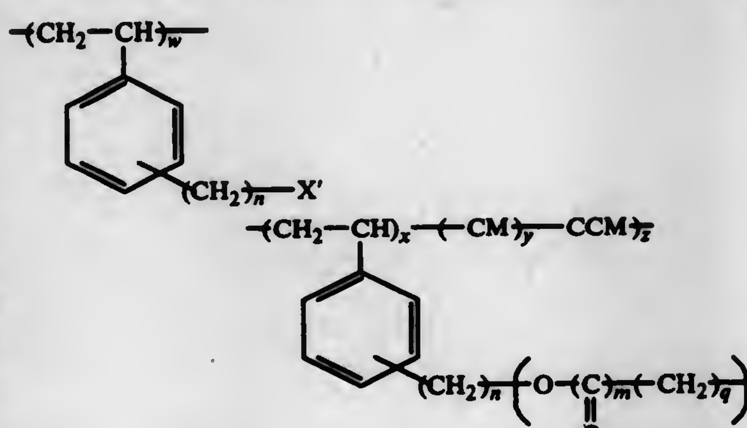
Int. Cl.² C08J *210/00*

U.S. Cl. 526—19 **2 Claims**



1. A carrier for liquid chromatography having main units

(I)



wherein n=0 or an integer of 1 to 3; m=0 or 1; q= an integer of 1 to 3; p=0 or 1; w=90 to 16 and preferably 82 to 42; x=57 to 2 and preferably 30 to 8; y=0 to 30 and preferably 0; z=5 to 30 and preferably 10 to 28; B represents adenine, guanine, thymine, uracil or cytosin; X' represents OH, Cl Br or I; CM represents styrene, a substituted styrene, acrylonitrile, a substituted acrylonitrile, acrylic acid or a substituted acrylic acid and CCM represents crosslinking agent having two or more unsaturated group such as ethylene glycol diacrylate, divinylbenzene etc.

4,128,707
METHOD FOR STABILIZATION OF FLUORO-ORGANIC COPOLYMERS OF THE ETHYLENE SERIES

Olga A. Shustova, Grokholsky pereulok 30, korpus 1, kv. 41; Georgy P. Gladyshev, Vinnitskaya ulitsa 5, kv. 111; Eduard K. Kondrashov, 13 Parkovaya ulitsa 31, korpus 1, kv. 21, and Leonid D. Shustov, bulvar generala Karbysheva 6, korpus 1, kv. 28, all of Moscow, U.S.S.R.

Filed Jul. 11, 1977, Ser. No. 814,483

Int. Cl.² C08F *8/18, 8/00*

U,S, Cl, 526—43 **4 Claims**

1. A method for stabilization of fluoro-organic copolymers of the ethylene series comprising mixing said fluoroorganic copolymer with xenon difluoride taken in an amount of from 0.1 to 15% by weight of the starting copolymer at a temperature of not more than 20° C.

4,128,708
PROCESS FOR PREPARING CIS-POLYISOPRENE

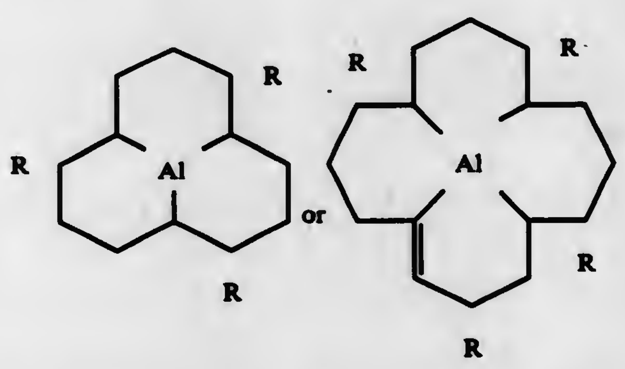
Alexandr G. Liakumovich, ulitsa Galeeva, 10, kv. 8, Kazan; Boris I. Pantukh, ulitsa Khudaiberdina, 162, kv. 89, Bashkirskaya ASSR, Sterlitamak; Mengzda K. Sultanova, ulitsa Kommunisticheskaya, 43, kv. 257, Bashkirskaya ASSR, Sterlitamak; Vasily P. Popov, ulitsa Revoljutsionnaya, 15, kv. 8, Bashkirskaya ASSR, Sterlitamak; Genrikh A. Tolstikov, ulitsa Dostoevskogo, 102/3, kv. 61, Bashkirskaya ASSR, Ufa; Jury B. Monakov, ulitsa Khalturina, 53/1, kv. 8, Bashkirskaya ASSR, Ufa; Valery P. Juriev, ulitsa Dostoevskogo, 102/3, kv. 14, Bashkirskaya ASSR, Ufa; Elena Y. Mandelshtam, prospekt Mira, 72, kv. 2, Moscow; Boris S. Korotkevich, ulitsa Fortunatovskaya, 31/35, kv. 71, Moscow, and Jury A. Shmuk, Leninsky prospekt, 13, kv. 31, Moscow, all of U.S.S.R.

Filed Jan. 19, 1977, Ser. No. 760,546

Int. Cl.² C08F *4/64, 36/08*

U.S. Cl. 526—162 **1 Claim**

1. A process for preparing cis-polyisoprene comprising polymerization of isoprene in a medium of a non-polar hydrocarbon solvent at a temperature ranging from 0° to 60° C. in the presence of a catalyst representing a reaction product of titanium tetrachloride and an intracyclic organo-aluminium compound selected from the group consisting of compounds having the formulae:



wherein R is selected from the group consisting of H and CH_3; said R radicals being the same or different; the reaction product components being taken in a titanium: aluminium molar ratio of 1:1.05–1.1 respectively; weight ratio between isoprene and said catalyst being equal to 100:0.2–0.7; and isolation of the desired product on completion of the polymerization.

4,128,709
ACRYLATE-BASED POLYMERS AND THEIR USE AS FLAMEPROOFING AGENTS

Norbert Vollkommer, Troisdorf; Egon N. Petersen, Neunkirchen-Seelscheid; Herbert Klinkenberg, Troisdorf-Eschmar, and Werner Schmidt, St. Augustin-Niederberg, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Jun. 17, 1976, Ser. No. 697,190

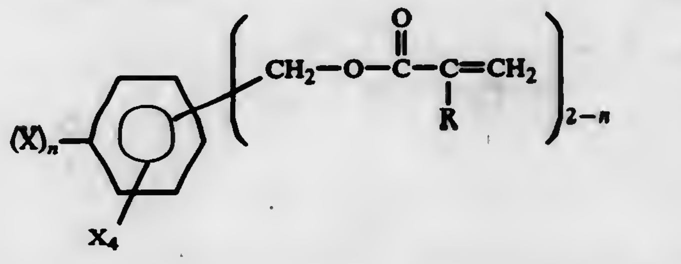
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1975, 2527802; Jun. 21, 1975, 2527803; Oct. 1, 1975, 2543746

Int. Cl.² C08F *4/04, 4/32, 18/00, 118/00*

U.S. Cl. 526—218 **27 Claims**

1. A solid homopolymer of a monomer having the formula

(1)



wherein n = 0 or 1, X is bromine or chlorine, R is hydrogen or methyl, said polymer having a molecular weight between 1 × 10^3 and 10 × 10^6, said molecular weight being determined by gel permeation chromatography in tetrahydrofuran.

4,128,710
PROCESS FOR THE PRODUCTION OF PHOSPHAZENE POLYMERS

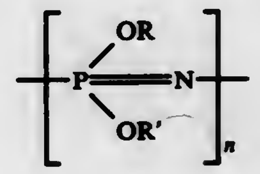
John W. Fieldhouse, Mogadore; Daniel F. Graves, Akron; William M. Cole, Norton; Mark L. Stayer, Suffield, and Steven L. Fenske, Uniontown, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Oct. 25, 1977, Ser. No. 845,009

Int. Cl.² C08G *73/00;* **C08J** *3/00*

U.S. Cl. 528—168 **10 Claims**

1. In a process for producing alkoxy and/or aryloxy polyphosphazene esters represented by the general formula



wherein each OR or OR' represents at least one alkoxy or aryloxy group including groups with either saturated or unsaturated substituents and not all of the OR and OR' groups are required to be the same, and n is an integer of between about 10 and about 50,000 or more;
wherein a solution of a linear dichlorophosphazene represented by the formula $(NPCl_2)_m$ and m is an integer greater than about 7 is reacted with a solution of at least one alkoxide or aryloxide represented by the formula NaOR or NaOR';
and a solution of the desired ester is produced along with NaCl as a by-product of the reaction, the improvements which comprise;
treating the resulting solution of polyphosphazene ester and sodium chloride with CO_2 and water in an amount sufficient to neutralize any alkoxide or aryloxide present in said resulting solution;
treating the neutralized solution with an alkali metal salt solution having a density greater than the density of NaCl

to effect agglomeration of the sodium chloride produced as a by-product of said reaction; and

separating the agglomerated sodium chloride from the remaining materials present.

4,128,711
1-[[1H-PYRROL-2-YLMETHYLENE]AMINO]-2,4-IMIDAZOLIDINEDIONE

Thomas J. Schwan, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Oct. 6, 1977, Ser. No. 839,909

Int. Cl.^{2} C07D *207/50*

U.S. Cl. 542—420 **1 Claim**

1. The compound 1-[[1H-pyrrol-2-ylmethylene]amino]-2,4-imidazolidinedione.

4,128,712
9-DEOXY-9-METHYLENE-PGF$_1$-MORPHOLINYLAMIDES

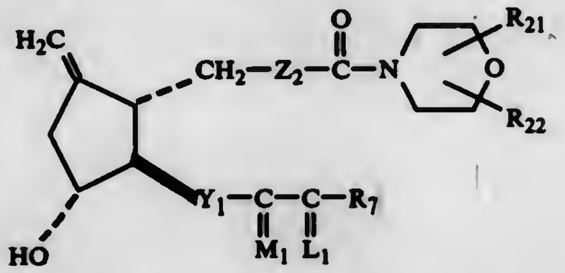
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 786,250, Apr. 11, 1977, Pat. No. 4,098,805, Continuation-in-part of Ser. No. 786,250, Apr. 11, 1977, Pat. No. 4,098,805. This application Apr. 7, 1978, Ser. No. 894,215

Int. Cl.^{2} C07C *177/00*

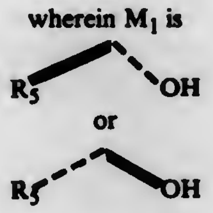
U.S. Cl. 542—426 **32 Claims**

1. A prostaglandin analog of the formula



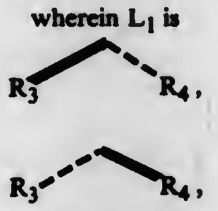
wherein Y_1 is trans—CH=CH—, —C≡C—, or —CH_2CH_2— wherein M_1 is

wherein M_1 is

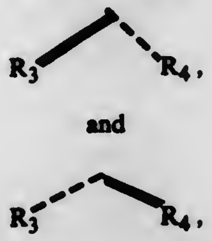


wherein R_5 is hydrogen or methyl;

wherein L_1 is



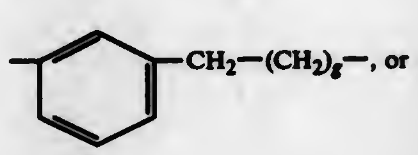
or a mixture of



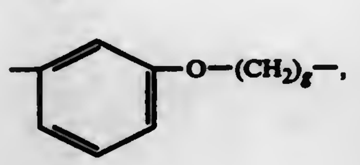
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein Z_2 is

(1) $-(CH_2)_3-(CH_2)_g-CH_2-$,
(2) $-(CH_2)_3-(CH_2)_g-CF_2-$,
(3) $-CH_2-O-CH_2-(CH_2)_g-CH_2-$,
(4) $-C\equiv C-CH_2-(CH_2)_g-CH_2-$,
(5) $-CH_2-C\equiv C-(CH_2)_g-CH_2-$,



(6)

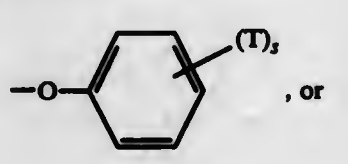


(7)

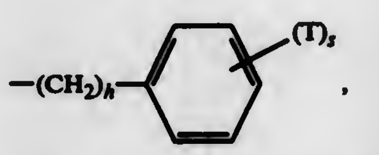
wherein g is one, 2 or 3;

wherein R_7 is

(1) $-(CH_2)_m-CH_3$,

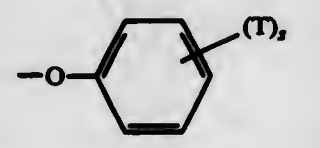


(2)



(3)

wherein m is one to 5, inclusive, h is zero or one, T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and s is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that R_7 is



wherein T and s are as defined above, only when R_3 and R_4 are hydrogen or methyl, being the same or different; and

wherein R_{21} and R_{22} are hydrogen, alkyl of one to 12 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive.

4,128,713
6,7-DIDEHYDRO-PGI$_1$ COMPOUNDS

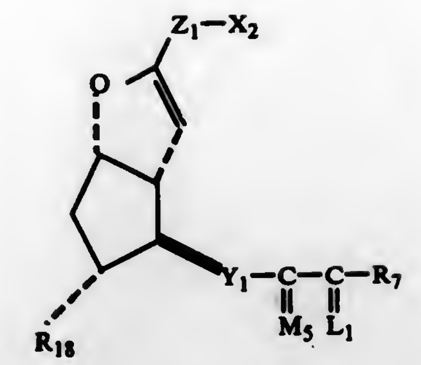
William P. Schneider, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 15, 1977, Ser. No. 860,673

Int. Cl.^{2} C07D *307/93*

U.S. Cl. 542—426 **51 Claims**

1. A prostacyclin intermediate of the formula



wherein Z_1 is

(1) $-(CH_2)_g-(CH_2)_2-CH_2-$, or
(2) $-(CH_2)_g-(CH_2)_2-CF_2-$,

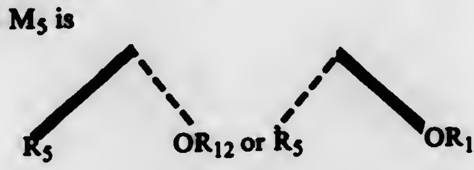
wherein g is the integer one, 2, or 3;

wherein R_{18} is hydrogen; alkanoyloxy of two to 8 carbon atoms, inclusive, or alkanoyloxymethyl of two to 8 carbon atoms, inclusive;

wherein Y_1 is

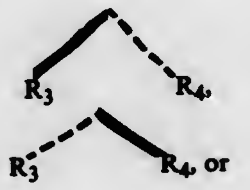
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —CH_2CH_2—, or
(4) —C≡C—;

wherein M_5 is

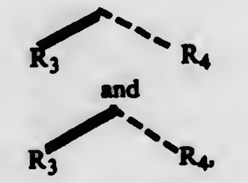


wherein R_5 is hydrogen or methyl and R_{12} is alkanoyl of two to 8 carbon atoms, inclusive;

wherein L_1 is



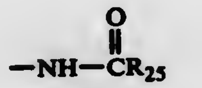
a mixture of



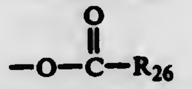
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein X_2 is

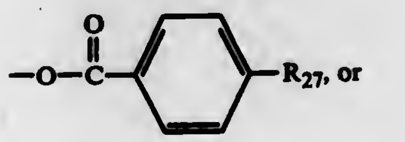
(1) —$COOR_2$ wherein R_2 is alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of 3 to 10 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive; phenyl; phenyl substituted with one, two or three chloro or alkyl of one to 3 carbon atoms; phenyl substituted in the para position by



$$-NH-\overset{O}{\overset{\|}{C}}R_{25} \qquad (a)$$



$$-O-\overset{O}{\overset{\|}{C}}-R_{26} \qquad (b)$$



(c)

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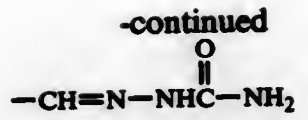
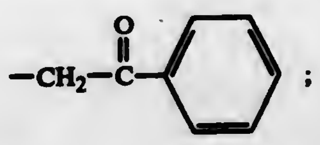


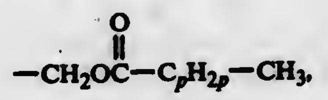
$$-CH=N-NH\overset{O}{\overset{\|}{C}}-NH_2 \qquad (d)$$

wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or —NH_2; R_{26} is methyl, phenyl, —NH_2, or methoxy; and R_{27} is hydrogen or acetamido; phenacyl, i.e.,



or phenacyl substituted in the para position by chloro, bromo, phenyl, or benzamido;

(2)



$$-CH_2O\overset{O}{\overset{\|}{C}}-C_pH_{2p}-CH_3,$$

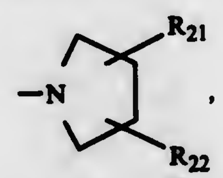
wherein p is zero, one, 2, 3, 4, 5, or 6;

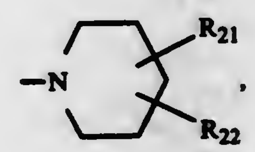
(3) —$CH_2NL_2L_3$ wherein L_2 and L_3 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; or

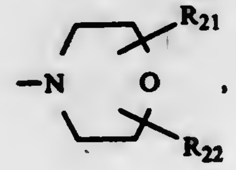
(4) —COL_4, wherein L_4 is

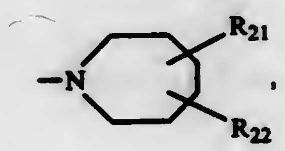
(a) amino of the formula -$NR_{21}R_{22}$; wherein R_{21} and R_{22} are
  (i) hydrogen;
  (ii) alkyl of one to 12 carbon atoms, inclusive;
  (iii) cycloalkyl of 3 to 10 carbon atoms, inclusive;
  (iv) aralkyl of 7 to 12 carbon atoms, inclusive;
  (v) phenyl;
  (vi) phenyl substituted with one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;
  (vii) carboxyalkyl of one to 4 carbon atoms, inclusive;
  (viii) carbamoylalkyl of one to 4 carbon atoms, inclusive;
  (ix) cyanoalkyl of one to 4 carbon atoms, inclusive;
  (x) acetylalkyl of one to 4 carbon atoms, inclusive;
  (xi) benzoylalkyl of one to 4 carbon atoms, inclusive;
  (xii) benzoylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms, inclusive, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;
  (xiii) pyridyl;
  (xiv) pyridyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive;
  (xv) pyridylalkyl of one to 4 carbon atoms, inclusive;
  (xvi) pyridylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, or alkoxy of one to 3 carbon atoms, inclusive;
  (xvii) hydroxyalkyl of one to 4 carbon atoms, inclusive;
  (xviii) dihydroxyalkyl of one to 4 carbon atoms, or
  (xix) trihydroxyalkyl of one to 4 carbon atoms; with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl;

(b) cycloamino selected from the group consisting of









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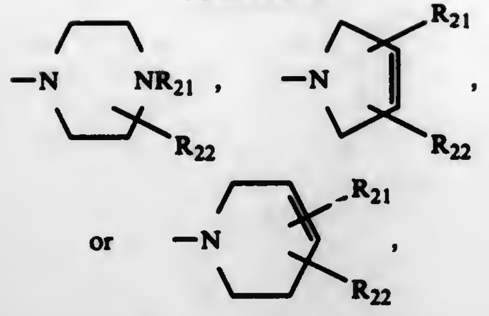


wherein R_{21} and R_{22} are as defined above;

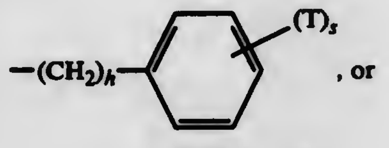
(c) carbonylamino of the formula $—NR_{23}COR_{21}$, wherein R_{23} is hydrogen or alkyl of one to 4 carbon atoms and R_{21} is as defined above;

(d) sulphonylamino of the formula $—NR_{23}SO_2R_{21}$, wherein R_{21} and R_{22} are as defined above; or

(e) hydrazino of the formula $—NR_{23}R_{24}$, wherein R_{23} is as defined above and R_{24} is amino of the formula $—NR_{21}R_{22}$, as defined above, or cycloamino, as defined above;

wherein R_7 is

(1) $—(CH_2)_m—CH_3$,



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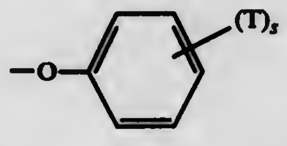
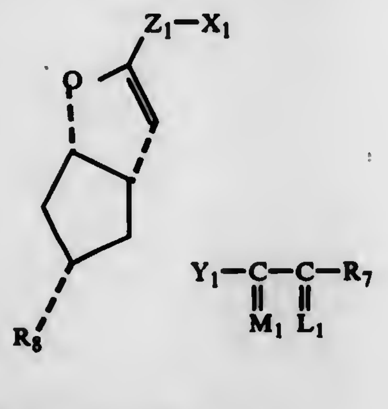


(3)

wherein m is the integer one to 5, inclusive, h is the integer zero to 3, inclusive; s is the integer zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two T's are other than alkyl.

3. A prostacyclin analog of the formula



wherein Z_1 is

(1) $—(CH_2)_g—(CH_2)_2—CH_2—$, or

(2) $—(CH_2)_g—(CH_2)_2—CF_2—$,

wherein g is the integer one, 2, or 3;

wherein Y_1 is

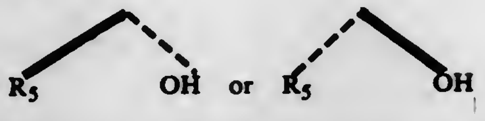
(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) $—CH_2CH_2—$, or

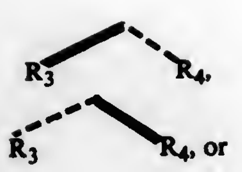
(4) —C≡C—;

wherein M_1 is

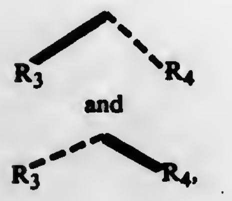


wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive,

wherein L_1 is



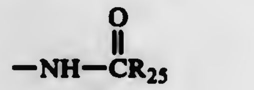
a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

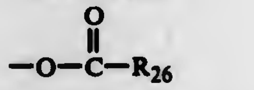
wherein X_1 is

(1) $—COOR_{10}$, wherein R_{10} is hydrogen, alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of 3 to 10 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive; phenyl; phenyl substituted with one, two or three chloro or alkyl of one to 3 carbon atoms; phenyl substituted in the para position by



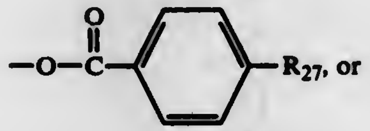
$$—NH—\overset{O}{\overset{\|}{C}}R_{25}$$

(a)

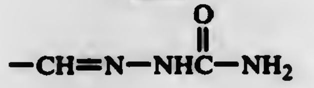


$$—O—\overset{O}{\overset{\|}{C}}—R_{26}$$

(b)



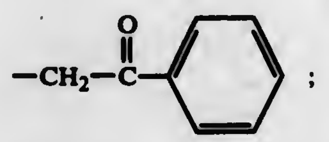
(c)



$$—CH{=}N—NH\overset{O}{\overset{\|}{C}}—NH_2$$

(d)

wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or $—NH_2$; R_{26} is methyl, phenyl, $—NH_2$, or methoxy; and R_{27} is hydrogen or acetamido; phenacyl, i.e.,



phenacyl substituted in the para position by chloro, bromo, phenyl, or benzamido; or a pharmacologically acceptable cation;

(2) $—CH_2OH$;

(3) $—CH_2NL_2L_3$ wherein L_2 and L_3 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; or

(4) $—COL_4$, wherein L_4 is

(a) amino of the formula $—NR_{21}R_{22}$; wherein R_{21} and R_{22} are

(i) hydrogen;

(ii) alkyl of one to 12 carbon atoms, inclusive;

(iii) cycloalkyl of 3 to 10 carbon atoms, inclusive;

(iv) aralkyl of 7 to 12 carbon atoms, inclusive;

(v) phenyl;

(vi) phenyl substituted with one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;

(vii) carboxyalkyl of one to 4 carbon atoms, inclusive;

(viii) carbamoylalkyl of one to 4 carbon atoms, inclusive;

(ix) cyanoalkyl of one to 4 carbon atoms, inclusive;

(x) acetylalkyl of one to 4 carbon atoms, inclusive;

(xi) benzoylalkyl of one to 4 carbon atoms, inclusive;

(xii) benzoylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms, inclusive, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;

(xiii) pyridyl;

(xiv) pyridyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive;

(xv) pyridylalkyl of one to 4 carbon atoms, inclusive;

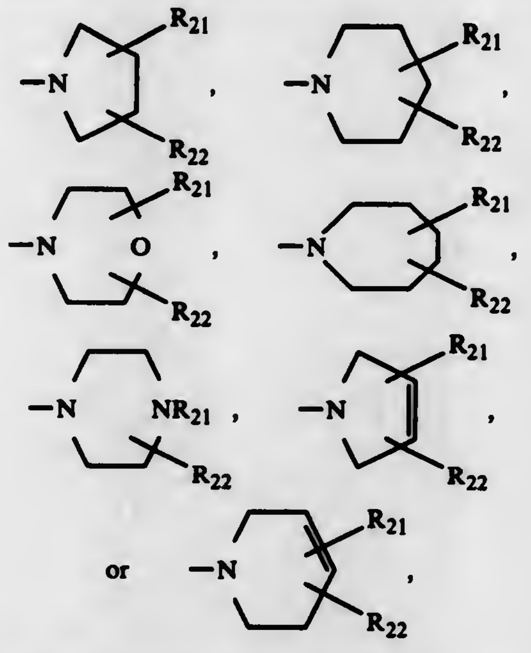
(xvi) pyridylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, or alkoxy of one to 3 carbon atoms, inclusive;

(xvii) hydroxyalkyl of one to 4 carbon atoms, inclusive;

(xviii) dihydroxyalkyl of one to 4 carbon atoms, or

(xix) trihydroxyalkyl of one to 4 carbon atoms; with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl;

(b) cycloamino selected from the group consisting of



wherein R_{21} and R_{22} are as defined above;

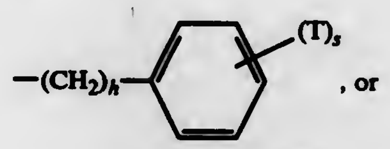
(c) carbonylamino of the formula $—NR_{23}COR_{21}$, wherein R_{23} is hydrogen or alkyl of one to 4 carbon atoms and R_{21} is as defined above;

(d) sulphonylamino of the formula $—NR_{23}SO_2R_{21}$, wherein R_{21} and R_{22} are as defined above; or

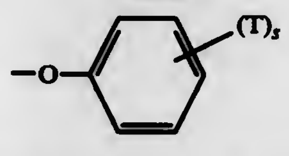
(e) hydrazino of the formula $—NR_{23}R_{24}$, wherein R_{23} is as defined above and R_{24} is amino of the formula $—NR_{21}R_{22}$, as defined above, or cycloamino, as defined above;

wherein R_7 is

(1) $—(CH_2)_m—CH_3$,

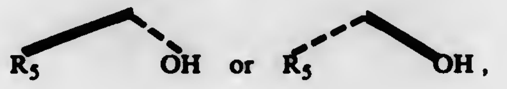


(2)



(3)

wherein m is the integer one to 5, inclusive, h is the integer zero to 3, inclusive; s is the integer zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two T's are other than alkyl, wherein M_1 is



wherein R_5 is hydrogen or methyl; and

wherein R_8 is hydrogen, hydroxy, or hydroxymethyl.

4,128,714

PROCESS FOR THE PREPARATION OF 7-ACYLAMIDA-3-HALO-3-ALKYL-CEPHAM-4-CARBOXYLIC ACIDS AND ESTERS

Masao Koyama, and Shigeo Seki, both of Tokyo, Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

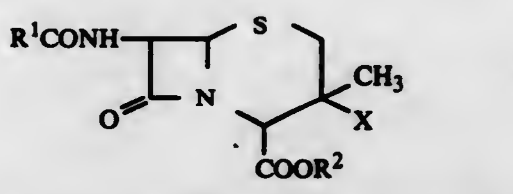
Division of Ser. No. 350,199, Apr. 11, 1973, Pat. No. 3,963,712. This application Feb. 2, 1976, Ser. No. 654,624

Claims priority, application Japan, Apr. 14, 1972, 47-36850

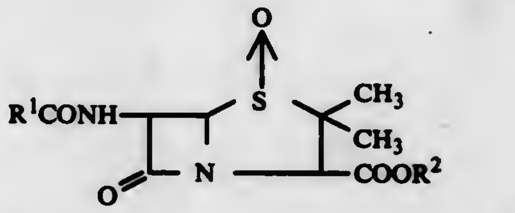
Int. Cl.^{2} C07D *501/10*

U.S. Cl. 544—18 **8 Claims**

1. A process for the preparation of a 7-amino-cepham-4-carboxylic acid having the formula:



wherein R^1 represents benzyl or phenoxymethyl, R^2 represents methyl, benzyl, p-nitrobenzyl or trichloromethyl, and X is chlorine, bromine or iodine, comprising the step of contacting, in an inert solvent at a temperature of from 70° C. to 130° C., one molar proportion of a penicillin sulfoxide ester having the formula:



wherein R^1 and R^2 are the same as above defined, with from 1 to 2 molar proportions of a metal halide having the formula:

MX_n

wherein M is zinc, tin or mercury, X is a halogen selected from the group consisting of chlorine, bromine and iodine, and n is an integer from 1 to 5.

4,128,715

CEPHALOSPORIN ANTIBIOTICS

Christopher J. Sharp, Northolt, England, assignor to Glaxo Laboratories Limited, Greenford, England

Filed Apr. 27, 1977, Ser. No. 791,529

Claims priority, application United Kingdom, Apr. 28, 1976, 17307/76

Int. Cl.^{2} C07D *501/20*

U.S. Cl. 544—22 **1 Claim**

1. The crystalline form of L-lysine salt of cefuroxime characterised by the following X-ray diffraction data:

Line number	d (A)	Relative Intensity	Line number	d (A)	Relative Intensity
1	13.59	100	19	3.26	12
2	10.46	80	20	3.18	12
3	9.18	16	21	3.06	19
4	8.40	75	22	2.97	10
5	6.88	56	23	2.82	14
6	6.31	16	24	2.78	7
7	5.80	2	25	2.69	4
8	5.48	6	26	2.64	17
9	5.23	14	27	2.47	6
10	4.79	52	28	2.38	8
11	4.74	40	29	2.32	6
12	4.58	16	30	2.25	9
13	4.41	76	31	2.03	4

-continued

Line number	d (A)	Relative Intensity	Line number	d (A)	Relative Intensity
14	4.11	40	32	1.99	2
15	3.98	52	33	1.95	1
16	3.82	16	34	2.10	1
17	3.61	71	35	1.90	4
18	3.42	17	36	1.81	5

4,128,716

4-HALO DERIVATIVES OF PYRAZOLO[1,5-a]-QUINOXALINE-3-CARBOXYLIC ACIDS AND ESTERS

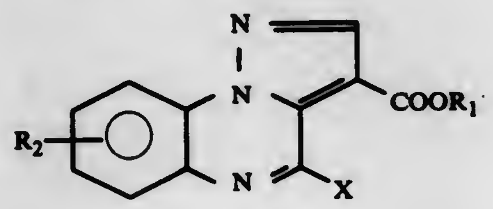
Uwe D. Treuner, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 669,114, Mar. 22, 1976, Pat. No. 4,052,393, which is a continuation-in-part of Ser. No. 628,277, Nov. 3, 1975, Pat. No. 3,994,893. This application Sep. 13, 1977, Ser. No. 833,104

Int. Cl.^{2} A61K *31/495;* **C07D** *487/04*

U.S. Cl. 544—346 **7 Claims**

1. A compound of the formula



wherein

R$_1$ is hydrogen, lower alkyl, alkali metal or alkaline earth metal;

R$_2$ is hydrogen, lower alkyl, halogen or lower alkoxy; and X is halogen.

4,128,717

DERIVATIVES OF 5,6-DIHYDROBENZO[5,6]CYCLOHEPTA[1,2-b] PYRAZOLO-[4,3-e]PYRIDIN-11 (1H)-ONES AND 11 (1H)-IMINES

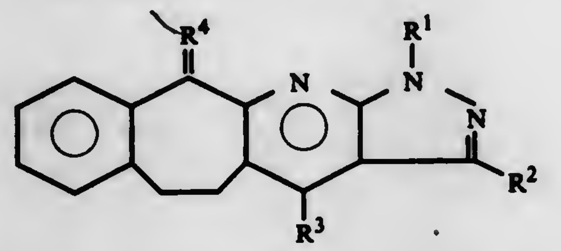
Hans Hoehn, Tegernheim, Germany; Jack Bernstein, New Brunswick, N.J., and B. Richard Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 753,116, Dec. 22, 1976, Pat. No. 4,062,858. This application Jul. 20, 1977, Ser. No. 817,281

Int. Cl.^{2} C07D *471/04*

U.S. Cl. 544—361 **10 Claims**

1. A compound of the formula



wherein R^1 is lower alkyl, phenyl or phenyl-lower alkyl;

R^2 is hydrogen, lower alkyl or phenyl;

R^3 is piperazine or piperazine substituted with a lower alkyl or hydroxy-lower alkyl group;

R^4 is oxo, lower alkylimino or phenylimino; and physiologically acceptable acid addition salts thereof.

4,128,718

HYDROXYPHENYLATED HYDANTOINS

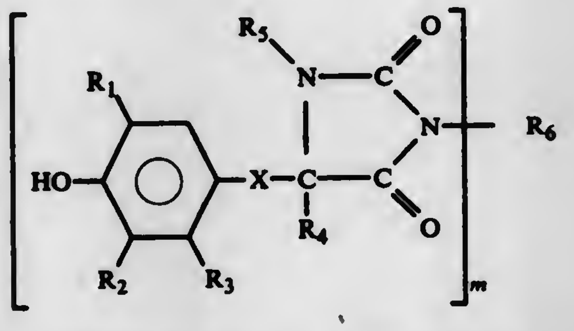
Andreas Schmidt, Reinach, Switzerland; Janet B. Peterson, Yonkers, and Martin Dexter, Briarcliff Manor, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 614,039, Sep. 17, 1975, Pat. No. 4,044,019, which is a division of Ser. No. 469,717, May 14, 1974, Pat. No. 3,939,175, which is a continuation-in-part of Ser. No. 357,744, May 7, 1973, abandoned. This application Mar. 17, 1977, Ser. No. 778,654

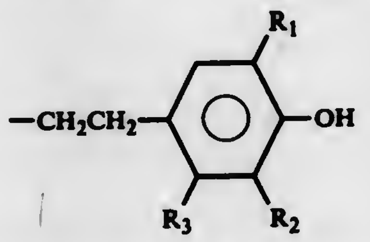
Int. Cl.^{2} C07D *233/78, 235/02*

U.S. Cl. 548—313 **6 Claims**

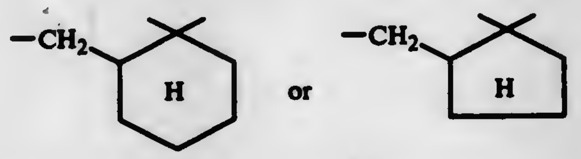
1. A compound of the formula



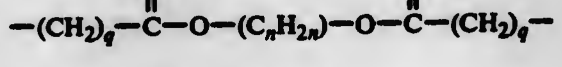
wherein R$_1$ denotes alkyl with 1 to 8 carbon atoms, cycloalkyl with 6 to 8 carbon atoms or aralkyl with 7 to 9 carbon atoms; R$_2$ denotes hydrogen, alkyl with 1 to 8 carbon atoms, cycloalkyl with 6 to 8 carbon atoms or aralkyl with 7 to 9 carbon atoms; R$_3$ denotes hydrogen or methyl; X denotes a direct bond, alkylene with 1 to 18 carbon atoms, which can be interrupted by oxygen or sulphur atoms, or the radical —O—CH$_2$—, wherein the oxygen atoms is bonded to the phenol radical; R$_4$ denotes hydrogen, alkyl with 1 to 17 carbon atoms, alkenyl with 2 to 17 carbon atoms, thiaalkyl with 3 to 21 carbon atoms, oxaalkyl with 3 to 21 carbon atoms, cyclohexyl, benzyl, phenyl, alkylphenyl with 7 to 14 carbon atoms, alkoxyphenyl with 7 to 24 carbon atoms, chlorophenyl, dichlorophenyl, naphthyl or a group



or X and R$_4$ conjointly with the carbon atom in the 5-position of the hydantoin ring denote one of the radicals

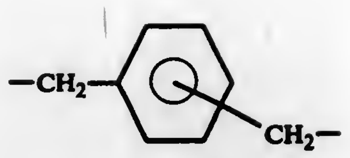


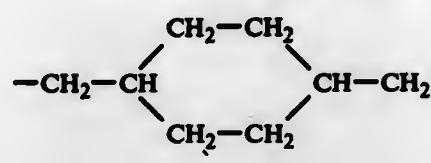
R$_5$ denotes hydrogen, alkyl with 1 to 18 carbon atoms, alkenyl with 3 to 18 carbon atoms, cyclohexyl, benzyl or hydroxybenzyl which is unsubstituted or substituted by 1 to 3 alkyl groups each with 1 to 4 carbon atoms; m denotes 2, and R$_6$ denotes alkylene with 1 to 18 carbon atoms, oxaalkylene with 4 to 21 carbon atoms, wherein the carbon atom bonded to the nitrogen does not carry any further hetero-atoms, thiaalkylene with 4 to 21 carbon atoms, wherein the carbon atom bonded to nitrogen carries no further hetero-atoms, or one of the groups

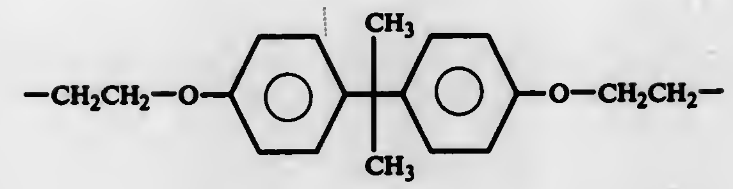


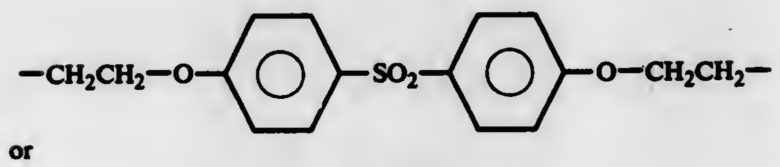
$$-(CH_2)_q-\overset{O}{\overset{\|}{C}}-O-(C_nH_{2n})-O-\overset{O}{\overset{\|}{C}}-(CH_2)_q-$$

wherein q is 1 or 2 and n is 2 to 18,

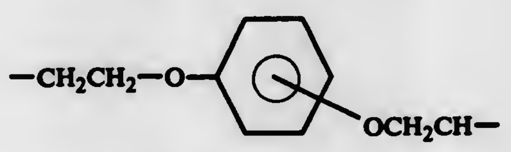








or



4,128,719

PROCESS FOR PRODUCING 4-CARBOXAMIDO-5-CYANO-2-IMIDAZOLONE

Takakazu Kojima, Yamato, and Yozo Ohtsuka, Sagamihara, both of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Continuation of Ser. No. 708,974, Jul. 26, 1976, Pat. No. 4,093,810. This application Dec. 16, 1977, Ser. No. 861,324

Claims priority, application Japan, Jul. 25, 1975, 50-90211

Int. Cl.^{2} C07D *233/90*

U.S. Cl. 548—321 **2 Claims**

1. A process for producing 4-carboxamido-5-cyano-2-imidazolone which comprises reacting diaminomaleonitrile in the presence of sodium cyanide as a basic catalyst with carbon dioxide in an organic solvent selected from the group consisting of dimethylsulfoxide, N,N-dimethylformamide, an alcohol having 1 to 4 carbon atoms, tetrahudrofuran, dioxane, diethyl ether, dimethoxyethane, pyridine, acetonitrile and ethyl acetate at a temperature of from about 0° C. to about 60° C.

4,128,720

PROSTAGLANDIN ANALOGUES

Masaki Hayashi; Seiji Kori, both of Takatsuki, and Hajimu Miyake, Suita, all of Japan, assignors to Ono Pharmaceutical Company, Osaka, Japan

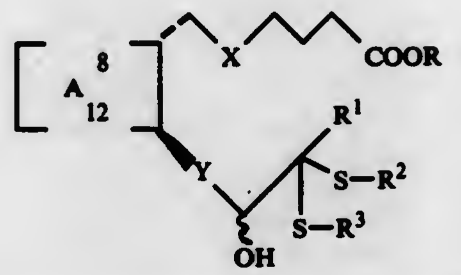
Filed Feb. 11, 1976, Ser. No. 657,125

Claims priority, application United Kingdom, Feb. 14, 1975, 6385/75

Int. Cl.^{2} C07C *177/00*

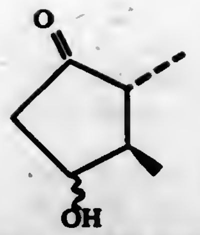
U.S. Cl. 560—9 **5 Claims**

1. A compound of the formula:



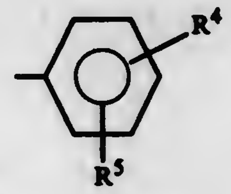
VI

wherein A represents a grouping of the formula:



VIIB

x represents ethylene, Y represents trans-vinylene, R represents a hydrogen atom or a straight- or branched-chain alkyl group containing from 1 to 12 carbon atoms, R^1 represents a hydrogen atom or a straight- or branched-chain alkyl groups containing from 1 to 10 carbon atoms, R^2 represents a straight- or branched-chain alkyl group containing from 1 to 4 carbon atoms, R^3 represents a grouping of the formula:



wherein R^4 and R$_5$ each represents a hydrogen or halogen atom, a trifluoromethyl group or an alkyl group containing from 1 to 3 carbon atoms and cyclodextrin clathrates of such acids and esters and, when R represents a hydrogen atom, non-toxic salts of such acids.

4,128,721

AMINO ACID DERIVATIVES

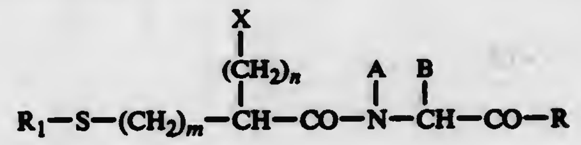
Miguel A. Ondetti, Princeton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 747,282, Dec. 3, 1976, Pat. No. 4,091,024. This application Feb. 21, 1978, Ser. No. 879,410

Int. Cl.^{2} C07C *149/23, 153/07*

U.S. Cl. 560—16 **10 Claims**

1. A compound of the formula

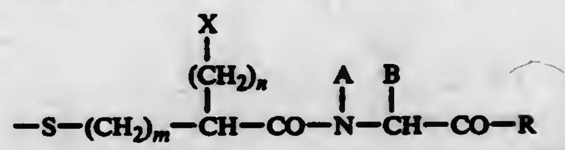


$$R_1-S-(CH_2)_m-\overset{X}{\overset{|}{\overset{(CH_2)_n}{\overset{|}{CH}}}}-CO-\overset{A}{\overset{|}{N}}-\overset{B}{\overset{|}{CH}}-CO-R$$

and salts thereof,

wherein R is hydroxy or lower alkoxy;

R$_1$ is hydrogen, lower alkanoyl, benzoyl or



$$-S-(CH_2)_m-\overset{X}{\overset{|}{\overset{(CH_2)_n}{\overset{|}{CH}}}}-CO-\overset{A}{\overset{|}{N}}-\overset{B}{\overset{|}{CH}}-CO-R$$

A is hydrogen, lower alkyl or hydroxy-lower alkylene;

B is phenyl, phenyl-lower alkylene or hydroxyphenyl-lower alkylene;

X is carboxy, lower alkoxycarbonyl, carbamoyl, N-substituted carbamoyl wherein the N-substituent is lower alkyl or phenyl-lower alkylene, or cyano;

m is 0 or 1; and

n is 0, 1, 2, 3 or 4.

4,128,722

7-TRIFLUOROMETHYLTHIOACETAMIDO-3-(3-SULFOMETHYL-1,2,4-TRIAZOL-5-YLTHIOMETHYL)-3-CEPHEM-4-CARBOXYLIC ACID

David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 726,377, Sep. 24, 1976, Pat. No. 4,083,975.
This application Jan. 30, 1978, Ser. No. 873,561
Int. Cl.² C07D *501/50, 501/36;* **A61K** *31/545*
U.S. Cl. 544—26 **2 Claims**

1. 7-Trifluoromethylthioacetamido-3-(3-sulfomethyl-1,2,4-triazol-5-ylthiomethyl)-3-cephem-4-carboxylic acid or its non-toxic pharmaceutically acceptable alkali metal salts.

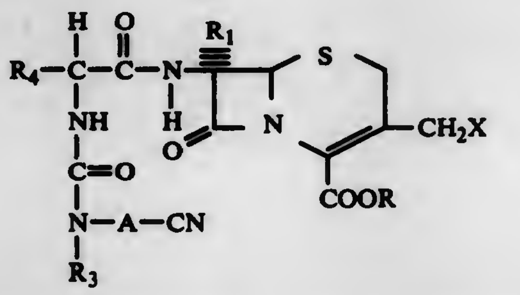
4,128,723

CYANOALKYLUREIDO CEPHALOSPORINS

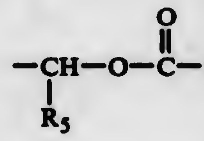
Hermann Breuer, and Uwe D. Treuner, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 765,037, Feb. 2, 1977, Pat. No. 4,096,329, which is a continuation-in-part of Ser. No. 664,128, Mar. 5, 1976, abandoned. This application Mar. 6, 1978, Ser. No. 883,602
Int. Cl.² C07D *501/36, 501/32, 501/46*
U.S. Cl. 544—25 **9 Claims**

1. A compound of the formula:

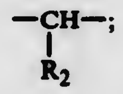


wherein R is hydrogen, straight or branched chain alkyl of 1 to 4 carbons, benzyl, phenethyl, diphenylmethyl, trimethylsilyl, 2,2,2-trichloroethyl, an alkali metal ion, an alkaline earth metal ion, dibenzylamine, N,N-dibenzylethylenediamine, methylamine, triethylamine, N-ethylpiperidine, or



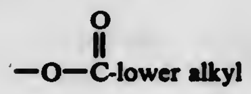
$$-\underset{R_5}{\underset{|}{CH}}-O-\overset{O}{\overset{\|}{C}}-R_6;$$

R_1 is in the α-configuration and is hydrogen or methoxy; A is straight or branched alkylene of 1 to 8 carbons or



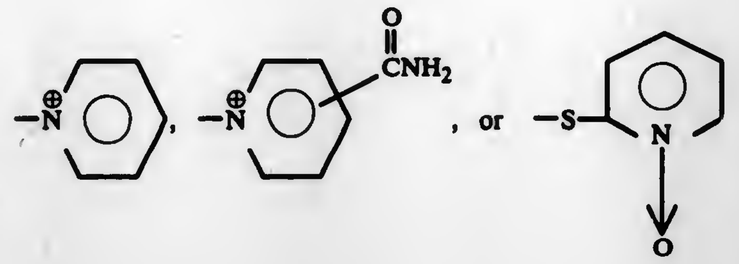
$$-\underset{R_2}{\underset{|}{CH}}-;$$

R_2 is phenyl, 2-thienyl, or 3-thienyl; R_3 is hydrogen or lower alkyl wherein lower alkyl is straight or branched chain of 1 to 8 carbons; R_4 is phenyl, benzyl, phenethyl, substituted phenyl, benzyl or phenethyl wherein said substituent is on the phenyl ring and is one or two members selected from the group consisting of chloro, bromo, methyl, ethyl, methoxy, ethoxy and hydroxy, or R_4 is a mono-substituted or unsubstituted heterocyclic selected from the group consisting of 2-thienyl, 3-thienyl, 2-furyl, and 3-furyl wherein said heterocyclic substituent is attached at an available carbon atom and is chloro, bromo, methyl, or ethyl; R_5 is hydrogen or straight or branched chain alkyl of 1 to 4 carbons; R_6 is straight or branched chain alkyl of 1 to 4 carbons; and X is hydrogen



$$-O-\overset{O}{\overset{\|}{C}}\text{-lower alkyl}$$

and lower alkyl is straight or branched chain of 1 to 4 carbons,



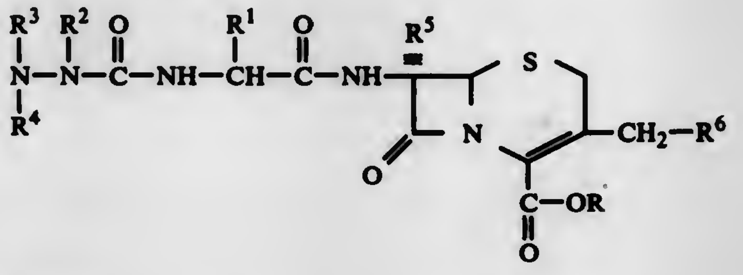
4,128,724

HYDRAZINOCARBONYLAMINO CEPHALOSPORINS

Hermann Breuer, and Uwe D. Treuner, both of Regensburg, Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 745,156, Nov. 26, 1976, Pat. No. 4,091,212.
This application Jan. 12, 1978, Ser. No. 868,781
Int. Cl.² C07D *501/36, 501/56, 501/32*
U.S. Cl. 544—30 **14 Claims**

1. A compound of the formula



wherein

R is hydrogen, lower alkyl, phenyl-lower alkyl, diphenyl-lower alkyl, trihaloethyl, tri(lower alkyl)silyl, tri(lower alkyl)stannyl or a salt forming ion of the group consisting of aluminum, alkali metal, alkaline earth metal, cyclo-lower alkylamine, dicyclo-lower alkylamine and lower alkylamine;

R^1 is hydrogen, lower alkyl, thienyl, furyl, pyridyl, cyclobutyl, cyclopentyl, cyclohexyl, cyclopentenyl, cyclohexenyl, cyclohexadienyl, phenyl, mono-substituted phenyl wherein the phenyl substituent is halo, lower alkyl or lower alkoxy,

R^2 and R^3 each is hydrogen or lower alkyl;

R^4 is hydrogen, lower alkyl, lower alkanoyl, halo-lower alkanoyl, cyanoacetyl or substituted cyanoacetyl wherein the cyanoacetyl substituent is lower alkyl or cyclo-lower alkyl;

R^5 is hydrogen or methoxy;

R^6 is hydrogen, lower alkanoyloxy, pyridyl, substituted pyridyl wherein the pyridyl substituent is carbamoyl, or —S— pyridyl-N-oxide.

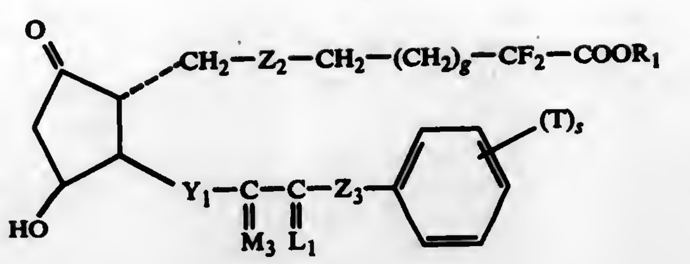
4,128,725

16-PHENOXY-11β-PGE-ANALOGS

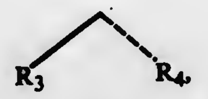
Ernest W. Yankee, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

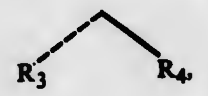
Continuation of Ser. No. 684,637, May 10, 1976, abandoned.
This application Aug. 15, 1977, Ser. No. 824,871
Int. Cl.² C07C *177/00*
U.S. Cl. 560—53 **15 Claims**

1. A prostaglandin analog of the formula

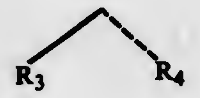


wherein L_1 is

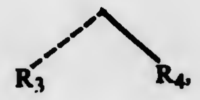




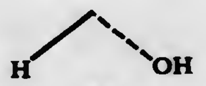
or a mixture of



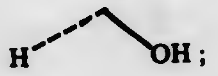
and



wherein R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein M_3 is



or



wherein T is chloro, fluoro, trifluoromethyl, alkyl of 1 to 3 carbon atoms, inclusive, or alkoxy of 1 to 3 carbon atoms, inclusive, and s is 0, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl;
wherein Y_1 is trans-CH═CH— or —CH_2CH_2—;
wherein Z_2 is
(1) cis-CH═CH, or
(2) —$(CH_2)_2$—;
wherein g is 1, 2, or 3; and
wherein R_1 is hydrogen, alkyl of 1 to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of 1 to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

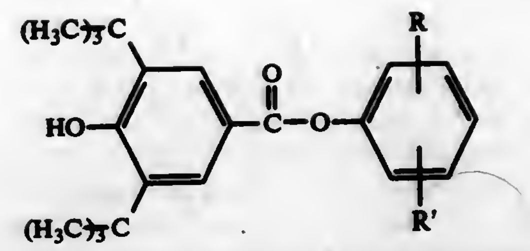
4,128,726

PROCESS FOR THE PREPARATION OF ARYL ESTERS OF 3,5-DI-T-BUTYL-4-HYDROXYBENZOIC ACID

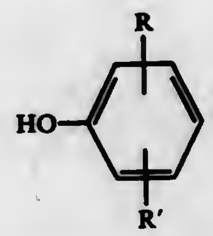
Vincent G. Grosso, New City, N.Y., and Ray L. Hillard, Annandale, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 22, 1977, Ser. No. 863,378
Int. Cl.² C07C *69/76*
U.S. Cl. 560—72 **4 Claims**

1. In a process for the preparation of compounds having the formula



wherein R and R' are, individually, hydrogen or lower alkyl of 1–4 carbon atoms, inclusive, at least one of R and R' being alkyl, whereby 3,5-di-t-butyl-4-hydroxybenzoic acid is reacted with a phenol having the formula



wherein R and R' are as defined above in the presence of phosphorus oxychloride, the improvement which comprises conducting the reaction in the presence of a non-reactive organic solvent comprising di-n-butyl ether.

4,128,727

PROCESS FOR THE MANUFACTURE OF ACETIC ACID ETHYL ESTER

Ernst I. Leupold, Westerfeld; Hans-Jürgen Arpe, Fischbach, Taunus; Albert Renken, Hofheim, Taunus, and Ernst-Günther Schlosser, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 731,767, Oct. 12, 1976, abandoned.
This application Dec. 12, 1977, Ser. No. 859,534
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1975, 2545845
Int. Cl.² C07C *67/05*
U.S. Cl. 560—247 **12 Claims**

1. In a process for the manufacture of acetic acid ethyl ester by reaction of acetic acid and ethylene in the gaseous phase in the presence of an acidic catalyst, the improvement which comprises passing ethylene and acetic acid over a fixed-bed catalyst at a temperature of from 130° to 170° C., the catalyst being composed of silicon dioxide having a surface area of from 50 to 200 m^2/g and being impregnated with H_2SO_4, diethylsulfate or ethylsulfuric acid, or a mixture thereof, the acetic acid concentration, calculated on ethylene, uninterruptedly varying over a range of from 0.01 to 40% by mole.

4,128,728

PRODUCTION OF 2,3,6-TRIMETHYLPHENOL

Lothar Arnold, Heidelberg; Heinrich Pasedach, and Horst Pommer, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

Filed Mar. 4, 1969, Ser. No. 804,282
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1968, 1668874; Jul. 26, 1968, 1793037
Int. Cl.² C07C *37/06, 45/00*
U.S. Cl. 568—799 **10 Claims**

1. A process for the production of 2,3,6-trimethylphenol which comprises reacting a carbonyl compound selected from the group consisting of methyl vinyl ketone, methyl β-hydroxyethyl ketone, methyl β-methoxyethyl ketone, methyl β-phenoxyethyl ketone, methyl β-acetyloxyethyl ketone, methyl β-benzoyloxyethyl ketone, methyl β-methyl-sulfonyloxyethyl ketone, methyl β-phenylsulfonyloxyethyl ketone, methyl β-dimethylaminoethyl ketone, methyl β-chloroethyl ketone,

dimethyl-(β-acetylethyl)-sulfonium bromide or trimethyl-(β-acetylethyl)-ammonium iodide to a mixture of diethyl ketone and a basic reagent selected from the group consisting of an alkali metal, an alkaline earth metal, a hydroxide, oxide, alcoholate, amide, hydride or organo metallic compound of an alkali metal or alkaline earth metal, and a quaternary ammonium hydroxide, the amount of said diethyl ketone being in the molar ratio of 1:1 to 50:1 with respect to the total amount of carbonyl compound added, at a reaction temperature of 20° to 150° C. to produce 2,3,6-trimethyl-2-cyclohexen-1-one, and dehydrogenating the latter to produce 2,3,6-trimethylphenol.

4,128,729

BICYCLO[2.2.2]-OCTENE DERIVATIVES AND MIXTURES THEREOF

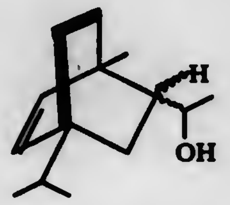
James M. Sanders, Eatontown; Joaquin F. Vinals, Red Bank, and Frederick L. Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Mar. 23, 1977, Ser. No. 780,685

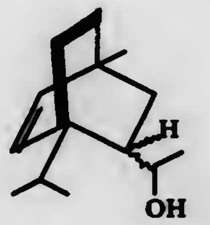
Int. Cl.² C07C ***33/05***

U.S. Cl. 568—820 **2 Claims**

1. A bicyclo[2.2.2]octene derivative having the formula selected from the group consisting of:



and



or a mixture thereof wherein the wavy lines represent exo and endo configurations of the ethanol moiety with respect to the carbon-carbon double bond of the bicyclo[2.2.2]octene moiety.

4,128,730

CATALYTIC SPLITTING OF FORMIC ACID ESTERS ON HYDROGENATION CATALYSTS

Manfred Reich, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Hüels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Continuation of Ser. No. 281,986, Aug. 18, 1972, abandoned, which is a continuation of Ser. No. 867,914, Oct. 20, 1969, abandoned. This application Jan. 14, 1977, Ser. No. 759,802

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1968, 1805403

Int. Cl.² C07C ***29/24***

U.S. Cl. 568—914 **21 Claims**

1. In a process for reducing the amount of formic acid ester in an alkanolic admixture thereof prepared in the oxo synthesis, said formic acid ester consisting of a reaction product of said oxo synthesis, the improvement comprising:

a splitting said formic acid ester in a predominantly liquid state to predominantly the corresponding alcohol by introducing the formic acid ester into a reactor, hydrogenating the formic acid ester in contact with a supported catalytically effective metallic catalyst in a solid bed at a temperature of about 120° to 250° C. and a pressure of about 0 to 350 atmospheres gauge, said supported metallic catalyst consisting essentially of per 100 parts by weight, (a) from 10 to 99 parts by weight of support, and (b) from 90 to 1 part by weight of metallic catalyst calculated on the metal content, said metallic catalyst consisting essentially of a mixture of reduced copper and nickel salts in which the ratio of copper to nickel is from 10:90 to 99:1.

4,128,731

PREPARATION OF 1,1,1-TRICHLORO-2,2-BIS(4-HYDROXYPHENYL)ETHANE

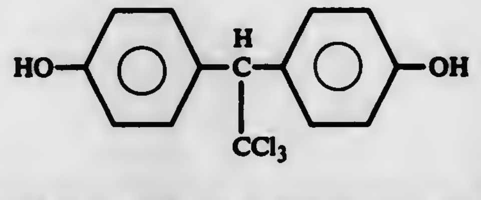
Howard J. Klopfer, and John R. Campbell, both of Clifton Park, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 6, 1977, Ser. No. 803,650

Int. Cl.² C07C ***39/24***

U.S. Cl. 568—726 **3 Claims**

1. The process for making a trichloro-ethane of the formula



which comprises reacting at a temperature of from 15° to below 50° C. under condensation conditions phenol and chloral in a solvent medium consisting essentially of aqueous sulfuric acid of 76.7 to 85.4% concentration.

ELECTRICAL

4,128,732

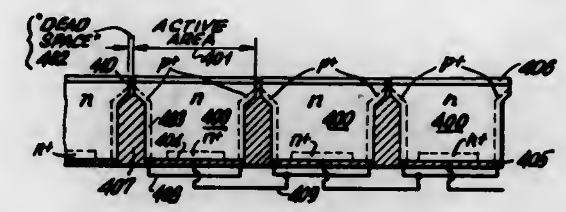
SOLAR CELL

Roy Kaplow, Newton, and Robert I. Frank, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 824,974, Aug. 15, 1977, abandoned. This application Jan. 23, 1978, Ser. No. 871,496

Int. Cl.² H01L ***31/06***

U.S. Cl. 136—89 PC **31 Claims**



1. A semiconductor solar-cell array comprising a plurality of spaced, elongate, parallel units formed from a common substrate, the body material of each of said units being comprised of a first conductivity type and having the same spaced relation to the body material of other of said units as in the original substrate from which they are formed, each unit having upstanding sidewalls, and having therebetween an upper surface adapted for exposure to receive incident radiation and a lower surface, adjacent sidewalls of adjacent units having therebetween a first space portion extending from the lower surface to a point close to but short of the upper surface and a second substantially smaller space portion, connected to the first space portion and extending from said point to the upper surface, at least one sidewall of each unit including a localized region of a second conductivity type, and ohmic connections extending between the second conductivity type region of one unit and a first conductivity type region of an adjacent unit.

4,128,733

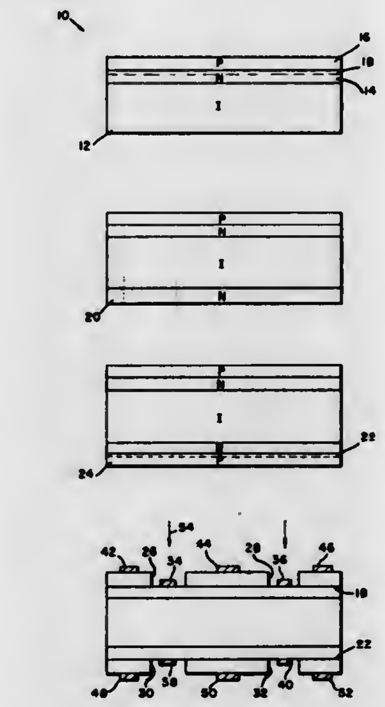
MULTIJUNCTION GALLIUM ALUMINUM ARSENIDE-GALLIUM ARSENIDE-GERMANIUM SOLAR CELL AND PROCESS FOR FABRICATING SAME

Lewis M. Fraas, Malibu; Kenneth R. Zanio, Agoura, and Ronald C. Knechtli, Woodland Hills, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 27, 1977, Ser. No. 864,300

Int. Cl.² H01L ***31/06***

U.S. Cl. 136—89 SJ **8 Claims**



1. A multi-junction semiconductor solar cell comprising:

(a) a gallium arsenide substrate having an outer III–V semiconductor layer thereon establishing a first PN junction of a first bandgap energy equal to that of GaAs,

(b) an intermediate semiconductor material disposed on the opposite side of said gallium arsenide substrate and doped to provide a given conductivity, and

(c) a layer of germanium also doped to provide a given conductivity and disposed on said intermediate semiconductor material, said germanium layer defining a second PN junction of a second bandgap energy equal to that of Ge whereby said first and second PN junctions provide an optimized wavelength response to solar energy impinging on said solar cell.

4,128,734

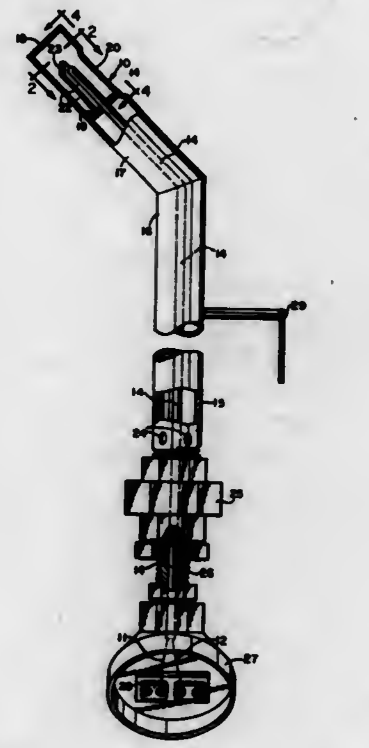
THERMOCOUPLE AND MOUNTING THEREFOR

John F. Straitz, III, Elkins Park, Pa., assignor to Combustion Unlimited Incorporated, Elkins Park, Pa.

Filed Nov. 22, 1977, Ser. No. 854,050

Int. Cl.² H01L ***35/02, 35/28***

U.S. Cl. 136—232 **7 Claims**



1. In combination

a thermocouple having a tubular enclosing sheath with a closed terminal end,

said thermocouple having an end portion within said sheath for activation,

a continuous elongated mounting tube in enclosing relation to said thermocouple and said sheath and having an end closure at its upper end and a transverse wall spaced from said end closure and through which said enclosing sheath of said thermocouple extends,

said mounting tube between said end closure and said transverse wall having in a side portion thereof an opening through which radiant heat is effective on said end portion of said thermocouple.

4,128,735

ATTACHMENT OF ELECTRIC CABLE TO SUBMERGIBLE PUMP MOTOR HEADS

James N. Zehren, Bartlesville, Okla., assignor to TRW Inc., Cleveland, Ohio

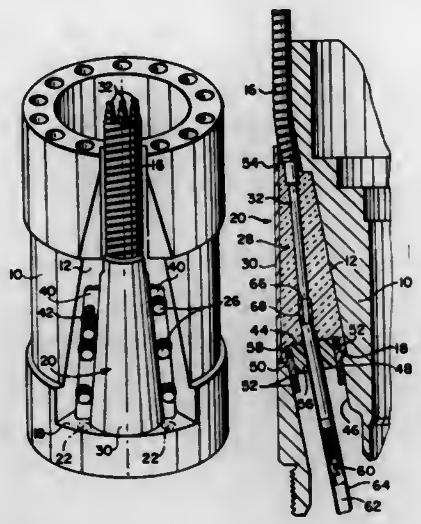
Filed Jan. 17, 1977, Ser. No. 759,990

Int. Cl.² H02K ***5/22;*** **H02G** ***15/00;*** **F04B** ***39/00***

U.S. Cl. 174—65 R **19 Claims**

13. A device for attaching an end of a multi-conductor electric cable to the head of a motor or the like having a depression at one side thereof and having an opening into the head at one end of the depression, said device comprising a compression block having passages therethrough for receiving

corresponding cable conductors and for sealing the conductors therein when the block is compressed, said block being shaped to be received in said recess with said passages extending toward said opening, means for compressively clamping the block to said side of the head in the depression with one end of the passages positioned for connection to said opening, and means for providing a seal about said connection, the last-mentioned means comprising a sleeve adapted to fit said opening and having means for sealing the sleeve in the opening.



4,128,736

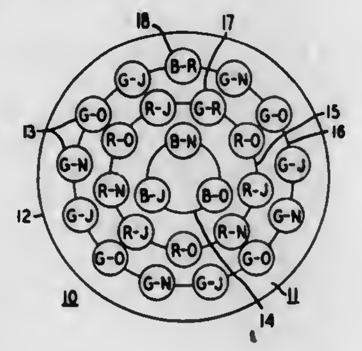
CABLE DESIGN WITH LIMITED COLOR CODING

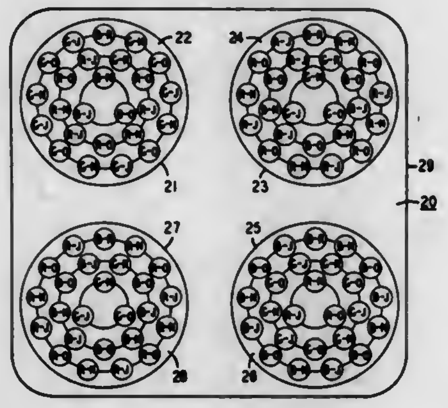
Wendell G. Nutt, Dunwoody, and Mark E. Roach, Duluth, both of Ga., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 30, 1977, Ser. No. 782,722

Int. Cl.² H01B *7/36*

U.S. Cl. 174—112 12 Claims





1. A telecommunications cable comprising:

a plurality of insulated conductors where each conductor has some color identification on its insulation and where said conductors are twisted into conductor pairs, each pair having a first and second conductor with said conductors within each said pair being visibly distinguishable from each other by color;

said conductors being assembled into at least one group having a center layer of nonmarker pairs and at least one layer of pairs surrounding said center layer, where each said surrounding layer comprises at least one marker pair having a unique color combination in said group, and other nonmarker conductor pairs having repeating color combinations in said group and being arranged with respect to said marker pair so that each repeating color combination pair can be uniquely identified by its position with respect to said marker pair;

and where at least said nonmarker pairs or said center layer pairs and said repeating color combination pairs comprise first conductors having a commonality in visible color characteristics identifying them as first conductors and not second conductors, and second conductors having a commonality in visible color characteristics identifying them as second conductors and not first conductors, to thereby render said cable substantially amendable to routine random splicing of pairs with quick and ready visual identification of first and second conductors.

4,128,737

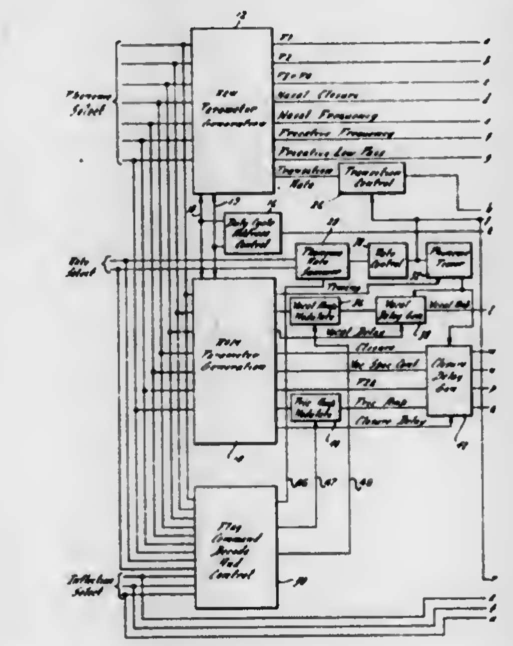
VOICE SYNTHESIZER

Mark V. Dorais, Detroit, Mich., assignor to Federal Screw Works, Detroit, Mich.

Filed Aug. 16, 1976, Ser. No. 714,495

Int. Cl.² G10L *1/00*

U.S. Cl. 179—1 SM 66 Claims



1. In an electronic device for phonetically synthesizing human speech by synthetically generating and combining the basic phonetic sounds in speech including input means responsive to successive input data identifying a desired sequence of phonemes for producing control signals comprising the parameters electronically defining the articulation patterns of said desired sequence of phonemes, a vocal source adapted to produce a voiced excitation signal having associated therewith a fundamental frequency, and output means responsive to said control signals for electronically forming the articulation patterns of said desired sequence of phonemes and further responsive to said voiced excitation signal for producing said desired sequence of phonemes; the improvement comprising:

inflection control means connected to said vocal source for automatically varying the fundamental frequency of said voiced excitation signal in accordance with certain of said control signals produced by said input means.

4,128,738

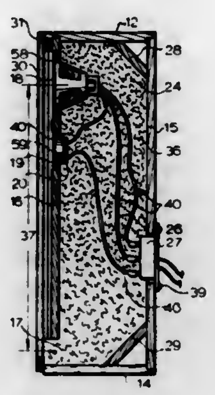
COMPACT TRANSMISSION LINE LOUDSPEAKER SYSTEM

Thomas W. Gallery, 452 Poplar, Wyandotte, Mich. 48192

Filed Sep. 28, 1978, Ser. No. 727,469

Int. Cl.² H04R *1/28*

U.S. Cl. 179—1 E 11 Claims



1. In a compact loudspeaker system wherein an enclosure is provided which is characterized by a short non-folded transmission line completely filled with non-woven randomly oriented fibers and the performance of said system is relatively independent of the volume of said enclosure and port area at the end of said transmission line the combination of;

a loudspeaker enclosure having a non-folded transmission line whose length is within the range of about 24 to about 48 inches;

a loudspeaker mounted on said enclosure, at one end of said transmission line, and having a radiator front surface facing exteriorly and a radiator rear surface facing interiorly of the enclosure and communicating with said transmission line;

a port in said enclosure at the other end of said transmission line having an area greater than the projected area of the radiator front surface of said loudspeaker and communicating the interior of the enclosure to the exterior; and

a packing medium of non-woven randomly oriented wool fibers having a density within the range of about 12 ounces to about 30 ounces per cubic foot and completely filling the transmission line from said loudspeaker to said port whereby said loudspeaker is acoustically coupled to said port by a short non-folded transmission line completely filled with non-woven randomly oriented fibers of relatively high density.

5. A compact loudspeaker system adapted for the reproduction of sound with minimum distortion wherein a ported enclosure is provided having an acoustic circuit for the transmission of sound waves from the rear of a loudspeaker means mounted on said enclosure which is characterized by a short non-folded transmission line completely filled with non-woven randomly oriented fibers and is relatively independent in performance of the interior volume and port means area of said enclosure comprising:

a loudspeaker enclosure having a non-folded transmission line, said enclosure including a top, bottom, front, rear and pair of side panels, whereby said transmission line is formed by the interior walls of said panels;

first loudspeaker means having front and rear radiating surfaces;

means mounting said first loudspeaker means on said enclosure such that said front surface faces exteriorly of the enclosure and said rear surface faces interiorly of the enclosure;

second loudspeaker means having front and rear radiating surfaces;

means mounting said second loudspeaker means on said enclosure such that said front surface thereof faces exteriorly of the enclosure and said rear surface thereof faces interiorly of the enclosure;

port means in said enclosure communicating the interior of the enclosure to the exterior whose area is greater than the projected area of the front radiating surface of said first loudspeaker means and spaced within the range of about 24 to 48 inches from said first loudspeaker means whereby the distance of said port means from said first loudspeaker means defines the length of said transmission line and the performance of said compact loudspeaker system is relatively independent of the area of said port means;

a packing medium comprised of non-woven randomly oriented fibers having a density within the range of about 12 ounces to about 30 ounces per cubic foot and completely filling the interior of said enclosure, whereby said first loudspeaker means is acoustically coupled to said port means by a short non-folded fiber filled transmission line of relatively high density; and

means acoustically isolating said second loudspeaker means from said packing medium.

4,128,739

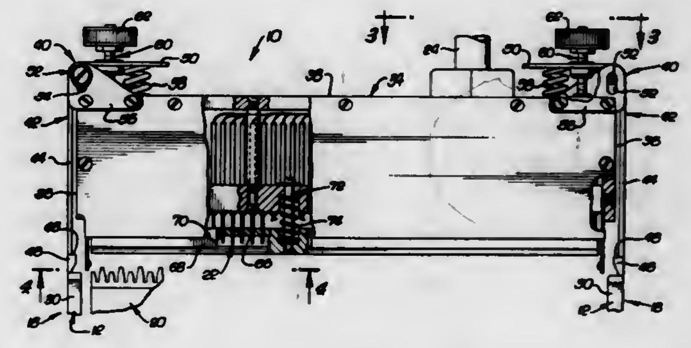
FRONT TAP SHOE FOR MOUNTING ON TEST BLOCK FOR TELEPHONE CONDUCTOR PAIRS

Albert Bernstein, Santa Monica, Calif., assignor to Communications Technology Corporation, Los Angeles, Calif.

Filed Sep. 13, 1977, Ser. No. 832,886

Int. Cl.² H01R *13/44;* H04M *3/22*

U.S. Cl. 179—1 PC 4 Claims



1. A front tap shoe for mounting on a test block for telephone conductor pairs, or the like, the shoe comprising a generally rectangular housing having ends and having front and rear sides, the shoe being provided at its ends with clamps for engagement with the test block, each of said clamps including:

(a) an L-shaped member having a first arm adjacent and overlying the corresponding end of said housing and terminating in a hook, and having a second arm overlying and spaced from said rear side of said housing;

(b) mounting means connecting said L-shaped member to said housing and providing for pivotal movement of said member relative to said housing about a transverse axis paralleling the intersection of said rear side of said housing and the corresponding end of said housing, and for translational movement of said member relative to said housing in a direction generally parallel to the corresponding end of said housing;

(c) spring means between said second arm of said L-shaped member and said rear side of said housing for biasing said first arm of said member toward the corresponding end of said housing and for biasing said second arm of said member away from said rear side of said housing; and

(d) screw means carried by said second arm of said L-shaped member and engagable with said rear side of said housing.

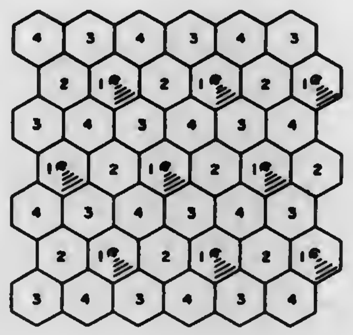
4,128,740
ANTENNA ARRAY FOR A CELLULAR RF COMMUNICATIONS SYSTEM

Victor Graziano, Oak Park, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 14, 1977, Ser. No. 768,260

Int. Cl.² H04Q *7/04*

U.S. Cl. 179—2 EB **13 Claims**



1. A cellular RF Communications System for a plurality of mobile transceivers in a given geographical area of a cellular communications system, the system comprising:

an array of antennas made of a plurality of subarrays, each subarray having a number of cells,

a plurality of sector antennas located substantially at the center of each cell,

means for operating each of the sector antennas of cells of each subarray to provide a predetermined communication channel to the mobile transceivers which is different from that provided by the other sector antennas of the same cell, and

means for repeating channel allocations to sector antennas for subarray to subarray in a predetermined pattern,

means for positioning co-channel antennas with respect to one another so as to eliminate substantially side lobe and frontal lobe interferences from adjacent side and front co-channel sector antennas, and

means for physically spacing and spatially relating co-channel antennas so as to minimize frontal lobe interference from the back co-channel.

4,128,741
ELECTRONIC CROSSPOINT ARRAY

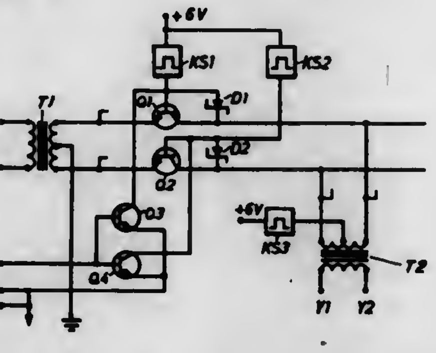
Olaf Sternbeck, Bromma, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Oct. 25, 1977, Ser. No. 845,279

Claims priority, application Sweden, Nov. 2, 1976, 7612207

Int. Cl.² H04Q *1/52*

U.S. Cl. 179—18 GF **4 Claims**



1. Improved cross-point array for telecommunication systems, produced as an *xy*-matrix in a monolithic substrate with switching means arranged at the cross-points between the *x* and *y* conductors in the form of transistors controllable to assume an "on" state with a low impedance and an "off" state with a high impedance, the transistors having their collector-emitter path connected between the *x* and *y* conductors and supplied with current from a constant-current generator and control means for switching the transistors between the "off" and "on" states, the improvement comprising that the collector-base diode of each of the transistors is connected in parallel with a Schottky-diode supplied with current from a second constant-current generator and operating in its forward direction in the "on" state, whereby cross-talk caused by a parasitic transistor function is inhibited between the cross-points in the substrate.

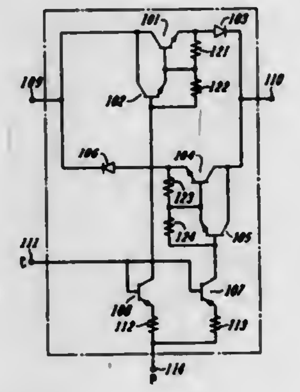
4,128,742
RUGGED CROSSPOINTS FOR COMMUNICATION SYSTEMS

James A. Davis, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 15, 1977, Ser. No. 824,851

Int. Cl.² H04Q *3/52*

U.S. Cl. 179—18 GF **8 Claims**



1. An analog switching circuit arrangement comprising: first and second transmission terminals; and

a crosspoint comprising: first and second Darlington connected pairs of transistors connected in complementary relation to form two oppositely poled transmission paths between said first and second transmission terminals, each of said paths comprising a Darlington connected pair of transistors and one additional series connected semiconductor junction; and control means for selectively supplying control current to said Darlington pairs to place all of said transistors in the conducting state at the same time.

4,128,743
CIRCUIT ARRANGEMENT FOR BLOCKING A BIDIRECTIONAL AMPLIFIER AGAINST RECEIVING OUTGOING SIGNALS

Josef Huellwegen, Altenbeken, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Sep. 30, 1976, Ser. No. 728,438

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1975, 2543861

Int. Cl.² H04B *1/58, 3/36*

U.S. Cl. 179—170 R **8 Claims**

1. A bidirectional amplifier circuit arrangement for use in a bidirectional transmission line to prevent first signals travelling in a first direction from interfering with second signals travelling in a second direction, comprising:

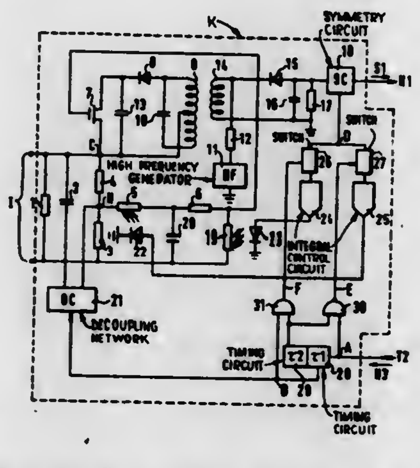
means defining a pair of separate circuits through said bidirectional amplifier circuit;

a pair of electronic hybrid circuits positioned at the juncture between the ends of said pair of separate circuits and the mutually adjacent ends of said transmission line, each of said electronic hybrid circuits having a first input terminal connected to one of said ends of said transmission line, a second input terminal connected to one of said ends of one of said separate circuits and an output terminal connected to one of said ends of the other of said separate circuits, said electronic hybrid circuits further including:

(a) reference voltage generating means having an input connected in circuit with said first input terminal for continuously producing a first voltage signal at the output thereof in response to the impedance characteristic of said one of said transmission lines connected to said first input terminal, said reference voltage generator means including a variable resistor network for reproducing the capacitive and the resistive characteristics of said one of said transmission lines;

(b) signal producing means connected in circuit with said first input terminal and said input to said reference voltage generating means for producing a second voltage signal in response to said second signal from the other of said transmission lines connected in circuit with said second input terminal;

(c) means operatively connected to said variable resistor network of said reference voltage generating means for superposing a control of the magnitude and phase of said first voltage signal thereby producing a third voltage signal corresponding to the magnitude and phase of said second signal;



(d) comparator circuit means operatively connected to said output from said reference voltage generating means and said first input terminal for comparing said second and third voltage signals thereat and effecting the production of a fourth voltage signal in response thereto; and

(e) means operatively connected to said comparator circuit means and being responsive to said fourth voltage signal for controlling said superposing means for effecting a cancelling of said second signal thereby preventing it from reaching said output terminal while simultaneously transmitting said second signal to said one of said ends of said transmission line and remaining ready to receive said first signals from said one of said ends of said transmission lines and passing them through to said output terminal.

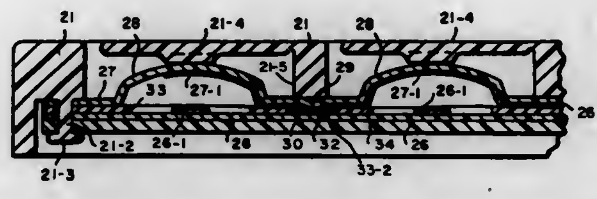
4,128,744
KEYBOARD WITH CONCAVE AND CONVEX DOMES

Richard E. Seeger, Topsfield, Mass., assignor to Chomerics, Inc., Woburn, Mass.

Filed Feb. 22, 1977, Ser. No. 771,016

Int. Cl.² H01H *13/70*

U.S. Cl. 200—5 A **8 Claims**



1. A keyboard comprising a first sheet of flexible and resilient insulator plastic, a first circuit pattern supported on the underside of said sheet, said first circuit pattern having contactors and circuit lines of electrically conductive material, said circuit lines selectively coupled to said contactors, a first plurality of snappable convex domes and at least one concave dome formed in said first sheet, each dome supporting a contactor of said first circuit pattern, an insulator spacer having a plurality of openings in register with said concave and convex domes and of a size to selectively permit the domes to extend into said openings, a second sheet of insulator plastic supporting a second circuit pattern, said second circuit pattern having contacts and circuit lines of electrically conductive material, said circuit lines selectively coupled to said contacts in register with said openings, and means for continuously holding said first sheet, spacer and second sheet together whereby said concave dome extends into said spacer opening in register therewith and said contactor supported thereby is urged against a contact of said second circuit pattern in register therewith, said first circuit pattern contactors supported by said convex domes capable of being snapped into said spacer openings to selectively engage other contacts of said second circuit pattern by depression of said convex domes, said contactors of said first circuit pattern being supported on the interior of said convex domes and on the exterior of said at least one concave dome, and at least the contactor supported by said at least one concave dome being interconnected by a circuit line to a contactor supported by at least one of said convex domes.

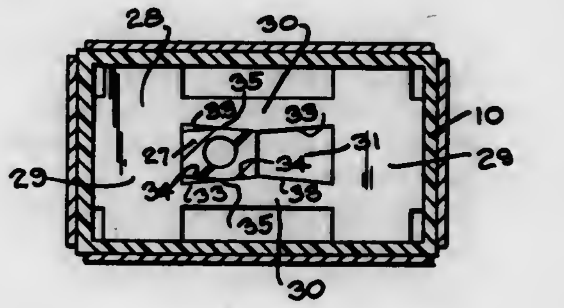
4,128,745
SLIDE SWITCH WITH SNAP-ACTION DETENT MEANS

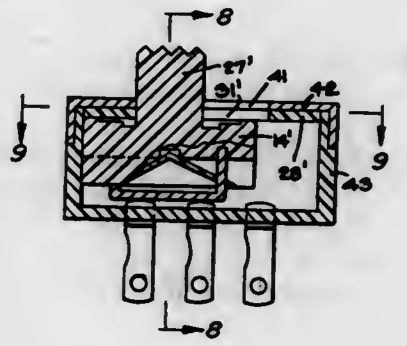
Dominic O. Marsillio, Flourtown, and Edwin J. O'Bryan, Philadelphia, both of Pa., assignors to Continental-Wirt Electronics Corporation, Warminster, Pa.

Filed Jan. 4, 1977, Ser. No. 756,689

Int. Cl.² H01H *15/18, 9/00*

U.S. Cl. 200—16 C **11 Claims**



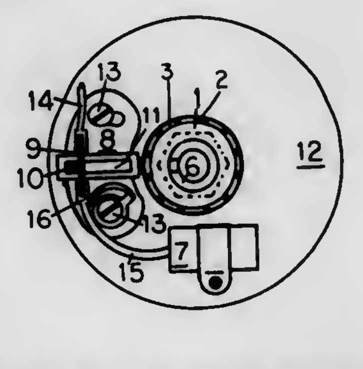


1. A multi-position electrical slide switch comprising an enclosed switch assembly which includes a rectilinearly slidable insulated contact carrier mounting at least one elongated electrical contact movable therewith and a relatively fixed insulating support mounting a plurality of relatively fixed contact terminals spaced along the path of travel of each movable contact in underlying relation thereto, said movable contact being adapted to electrically bridge at least two adjacent ones of said spaced contact terminals upon shifting movement of said contact into one or another selected position, and a relatively stationary longitudinally slotted detent plate disposed above the top surface of said slidable contact carrier in a plane paralleling the path of travel of said movable contact, said contact carrier including an upstanding part having oppositely projecting V-shaped side walls which project upwardly through said slotted detent plate and said detent plate being

provided with a pair of laterally spaced longitudinally extending flexible members which extend along the full length and define therebetween the slot of said detent plate, said flexible members being operatively engageable with opposite sides of said upwardly projecting part of said contact carrier and adapted to be temporarily sidewise oppositely biased by said part when said contact carrier is shifted out of any one of its said selected positions whereby said flexible members upon said temporary biasing thereof under sidewise pressure of said upwardly projecting part of said contact carrier establishes a releasable force for automatically effecting snap action movement of said slidable contact carrier into and retention thereof in said selected position.

4,128,746
BRUSH AND RING DISTRIBUTOR

Donald W. Felder, 837 Hillside Dr., Sherman, Tex. 75090
Filed Apr. 1, 1977, Ser. No. 783,694
Int. Cl.^{2} H01H *19/00;* F02P *1/00*
U.S. Cl. 200—24 3 Claims

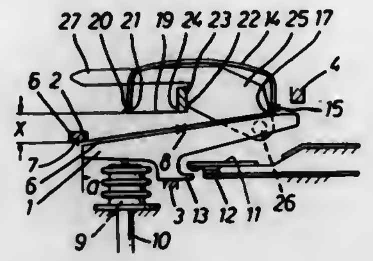


1. A brush and ring distributor assembly for an ignition circuit for an internal combustion engine including a primary coil, a secondary coil, a condenser, a rotary distributor shaft and a breaker plate, comprising:

(a) a generally cylindrical-shaped slip ring of insulative material fixedly mounted coaxially on said distributor shaft for rotary movement therewith, and having a peripheral surface,
(b) a brush holder fixed to said breaker plate adjacent said distributor shaft,
(c) first and second brushes mounted in said brush holder and continuously engaging said peripheral surface at axially spaced positions during rotary movement of said slip ring,
(d) an electrically conductive contact segment for each engine cylinder, uniformly circumferentially spaced on said peripheral surface, each contact segment having an axial dimension great enough for periodical simultaneous electrical engagement by both said brushes as said slip ring rotates, to complete an electrical circuit through said first and second brushes,
(e) a set of axially spaced, electrically conductive, breaker segments for each engine cylinder, uniformly circumferentially spaced on said peripheral surface, each set being located between adjacent pairs of contact segments, and each breaker segment being electrically insulated from every contact segment and every other breaker segment,
(f) the spacing between each pair of breaker segments in each set being such that when said first brush contacts only one of said pair, said second brush contacts only the other of said pair, to open the electrical circuit between said first and second brushes,
(g) said contact segments and said breaker segments being electrically insulated from said distributor shaft,
(h) means in said brush holder electrically connecting said first brush to the primary coil in said ignition circuit,
(i) means in said brush holder electrically grounding said second brush.

4,128,747
HINGE FOR A PIVOTABLE ARM OF AN ELECTRIC SNAP SWITCH

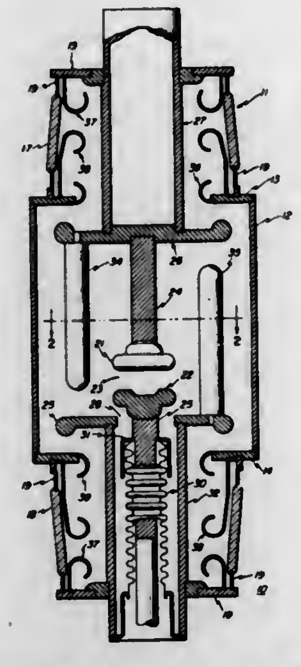
Tage S. Basse, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Aug. 17, 1976, Ser. No. 715,149
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1975, 2536554
Int. Cl.^{2} H01H *21/44*
U.S. Cl. 200—67 D 3 Claims



1. An electric snap switch assembly comprising, a stiff arm pivotal about a fixed axis abutment and being movable in a range between two operative positions, a sheet metal hinge member extending the length of said arm and being attached to said abutment and to said arm, a movable abutment, a sheet metal spacer member attached to said movable abutment, a U-shaped bow spring straddling said movable abutment and being maintained in a compressive state with one leg thereof attached to the free end of said hinge member and the other leg thereof attached to said movable abutment member.

4,128,748
HIGH-CURRENT VACUUM SWITCH WITH REDUCED CONTACT EROSION

James M. Lafferty, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Continuation-in-part of Ser. No. 707,297, Jul. 21, 1976, abandoned. This application Jan. 9, 1978, Ser. No. 867,986
Int. Cl.^{2} H01H *33/66*
U.S. Cl. 200—144 B 10 Claims

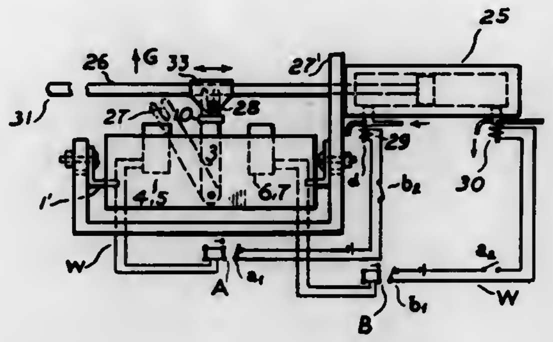


1. In a vacuum arc discharge device enclosed by a hermetically sealed, evacuated envelope containing a pair of longitudinally-disposed, relatively-movable unshielded contacts capable of controllably opening and closing, both contacts being exposed to high electric field intensity when separated from each other, and a pair of interdigitated, noncontacting sets of stationary auxiliary electrodes disposed about the longitudinal axis of the device for carrying the arc when the contacts are parted, each of said contacts, when parted, being separated

from said auxiliary electrodes entirely by vacuum, the improvement wherein each of said contacts is faced with a refractory metal and each of said auxiliary electrodes comprises an easily-vaporizable metal.

4,128,749
LATCHING SWITCH

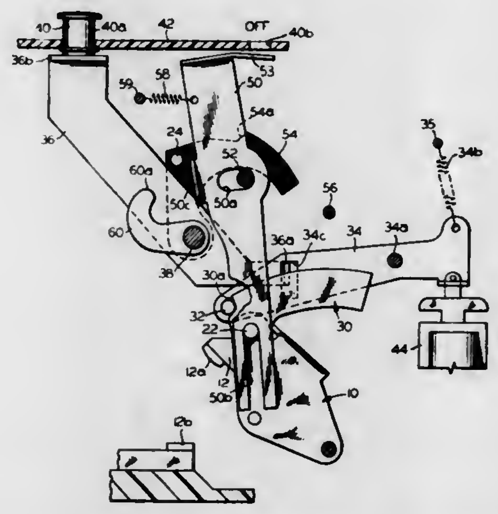
Conan H. Spaderna, 39 Biltmore St., Springfield, Mass. 01115
Filed Sep. 7, 1976, Ser. No. 721,179
Int. Cl.^{2} H01H *1/50*
U.S. Cl. 200—254 10 Claims



1. A latching switch, comprising a housing of insulating material; a trough shaped inside the housing; a lever, insulating the operator from an electrical source, and plying in the trough with a small builtin deviation of the lever run against the trough way, and being pivoted by a pin, seated across the middle of the trough and near its bottom; a flying contact, designed to close and open a circuit and fastened to the lever between the pivot pin and the handling end of the lever; at least one pair of terminal type contact lugs, forming a wedge holder across the run of the flying contact, and latching the lever by an elastic bias.

4,128,750
CIRCUIT BREAKER CLOSURE CONTROL AND CONDITION INDICATOR APPARATUS

Roger N. Castonguay, Terryville; Charles L. Jencks, Avon, and Robert C. Turton, Plainville, all of Conn., assignors to General Electric Company, New York, N.Y.
Filed Feb. 27, 1978, Ser. No. 881,269
Int. Cl.^{2} H01H *9/00, 3/00*
U.S. Cl. 200—308 10 Claims

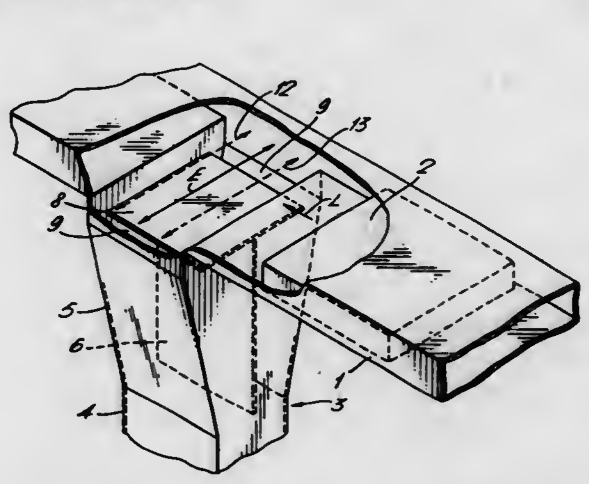


1. In a circuit breaker having a spring powered operating mechanism for translating movable contacts between open and closed circuit positions with respect to stationary contacts, apparatus for controlling the closure of the movable contacts and for indicating the various circuit breaker conditions, said apparatus comprising in combination:

A. latching means releaseably latching the movable contacts in their open circuit position against the force of charged mechanism springs acting to bias the movable contacts toward their closed circuit position;
B. release means selectively operable on said latch means to effect unlatching of the movable contacts, thereby enabling the charged mechanism springs to drive the movable contacts to their closed circuit position; and
C. breaker condition indicating means including
  (1) an indicator arm mounted for movement between first, second and third positions, said arm being directly coupled with the movable contacts,
  (2) a display panel mounted by said arm, said panel bearing plural distinct breaker condition indicia for separate registry with a viewing window depending in the position of said arm,
  (3) a spring biasing said arm to its first position while the movable contacts are in their open circuit position and the operating mechanism springs are discharged, and
  (4) an actuator coupled with the breaker operating mechanism for movement from a discharged position to a charged position incident with articulation of the operating mechanism pursuant to the charging of the mechanism springs, in moving from said discharged to said charged positions, said actuator engaging and shifting said arm from its first to its second position,
  (5) upon unlatching of said latching means by said release means to precipitate translation of said movable contacts to their closed circuit position, said arm being controllably shifted from its second position to its third position by the closing movement of said movable contacts.

4,128,751
MICROWAVE HEATING OF FOODS

Anthony J. H. Sale, Sharnbrook, England, assignor to Lever Brothers Company, New York, N.Y.
Filed Apr. 6, 1977, Ser. No. 785,274
Claims priority, application United Kingdom, Apr. 8, 1976, 14374/76
Int. Cl.^{2} H05B *9/06*
U.S. Cl. 219—10.55 A 16 Claims



1. An apparatus for heating frozen food packs for consumption, said apparatus comprising a microwave energy source, a microwave energy outlet, energy feed means for feeding microwave energy from said source to said outlet, and conveying means for conveying a pack containing frozen food past said outlet, the movement of said conveying means being in a direction at right angles to the direction of propagation from said microwave energy outlet and also at right angles to the plane of polarisation of the Electric Field propagation.

4,128,752

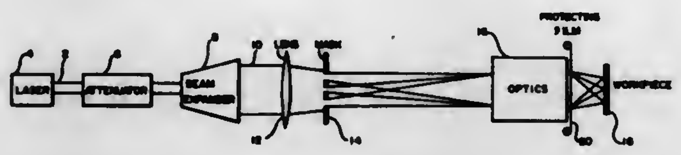
LASER MICROMACHINING APPARATUS

Joseph A. M. Gravel, Quebec, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Dec. 15, 1976, Ser. No. 750,898

Int. Cl.² B23K *9/00*

U.S. Cl. 219—121 L **10 Claims**



1. Laser micromachining apparatus capable of producing a particular machining pattern on a workpiece comprising:

a laser device for producing a laser beam;

a beam expander unit positioned to receive said laser beam and transform it into a beam of larger and substantially uniform cross-sectional area;

a mask device in the path of said laser beam after said beam expander unit, said mask device including a diffraction pattern corresponding to said particular machining pattern, said diffraction pattern including a plurality of different individual perforations;

converging lens means for focusing said laser beam and positioned adjacent said mask device in the path of said beam; and

image optics means in the path of said laser beam after said converging lens means and mask device for imaging the whole of said diffraction pattern of said mask onto said workpiece, said converging lens means being a spherical lens superposing said diffraction pattern of said different individual perforations of said mask at the entrance pupil of said image optics means to provide a minimum size imaging unit for reproducing said diffraction pattern on said workpiece.

4,128,753

LASER BEAM WELDING

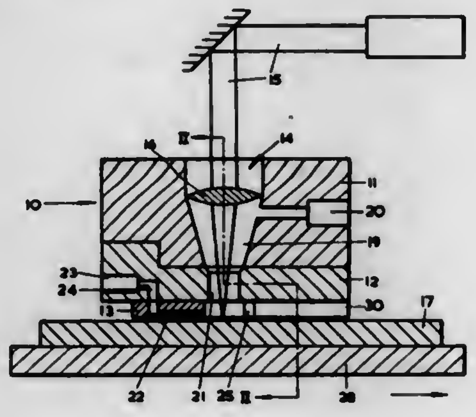
Charles M. Sharp, Nether Heyford, England, assignor to BOC Limited, London, England

Filed Jul. 29, 1977, Ser. No. 820,374

Claims priority, application United Kingdom, Aug. 3, 1976, 32283/76

Int. Cl.² B23K *9/02*

U.S. Cl. 219—121 L **8 Claims**



1. Laser welding apparatus comprising:

a body including a first passage defining an optical path for a laser beam;

means for directing a laser beam along said passage and for focussing such beam to a position outside the body closely adjacent to a terminal portion of said passage at which workpieces to be welded together are, in use, located;

the body including a second passage having an outlet in said terminal portion of the first passage and which is adapted to direct a jet of shielding gas transversely of said first passage to impinge on plasma formed within said terminal portion during welding;

and the wall of said terminal portion of the first passage having an aperture so disposed as to permit said jet to sweep plasma away from the welding zone through the aperture.

4,128,754

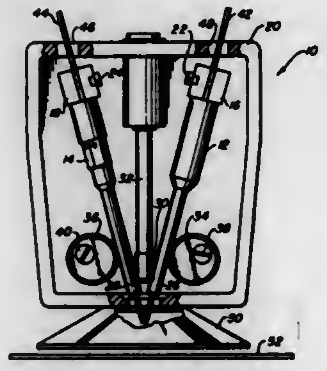
ARC SPRAY WELDING REPLACEABLE ELECTRODE TIP

Edwin H. Rathjen, Jr., Cambridge, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 6, 1978, Ser. No. 883,968

Int. Cl.² B23K *9/12*

U.S. Cl. 219—137 R **6 Claims**



1. The method of replacing electrode tips which are subject to excessive heat and wear wherein said tips are integral with electrodes having base ends affixable within and to an arc spray gun and said electrodes including said base ends and said tips are one piece and have a communicating bore within which and through which metalizing wires pass and wherein there is a close sliding fit between said wires and said tips whereby the ends of said wires are positioned for abutting engagement at a fixed predetermined position to complete an electrical circuit for arcing and liquefying of said wire ends by the intense heat thus generated, and an air stream deposits said liquefied metal directly onto a surface to be thus plated, said method comprising the steps of:

a. obtaining an available tip externally threaded on one end, said tip having a bore of desired diameter,

b. determining and then fabricating an electrode holder of sufficient length whereby upon insertion of the threaded end of said available tip into said holder, said holder and tip have a combined length substantially equal to the length of the electrode being thus replaced,

c. providing internal threads in one end of said holder to receive the threaded end of said tip, and

d. threading said tip into said holder until the desired length is achieved.

4,128,755

APPARATUS FOR AUTOMATIC READING AND EVALUATION OF GRAPHS ON TRIP RECORDER DISKS, AND THE LIKE

John Fairley, Brigachtal; Josef Krickl, Bad Dürrheim, and Robert Weber, Brigachtal, all of Fed. Rep. of Germany, assignors to Kienzle Apparate GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

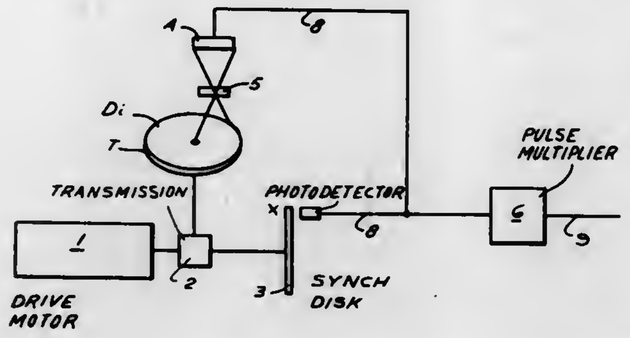
Filed Jan. 21, 1977, Ser. No. 761,181

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1976, 2602461

Int. Cl.² G06F *7/00;* **G06K** *9/00;* **G05B** *1/00*

U.S. Cl. 235—92 T **11 Claims**

1. An apparatus for reading and evaluating the diagrams on a diagram carrier bearing a plurality of graphs of different respective formats in different respective tracks, comprising, in combination, a scanning station including a plurality of scanning elements arranged in a row; drive means for moving the diagram carrier in the direction of the tracks thereon and perpendicular to the row of scanning elements; reading means operative repeatedly for reading the individual scanning elements of the row in succession, including programming and registering means operative for subdividing the row of scanning elements into sectors corresponding to respective tracks, operative during one reading of the row for distinguishing between the first graph-line-activated element in each sector and subsequent activated elements in the same sector and for determining for each sector the total number of activated elements in the sector, and operative during one reading of the row for registering for each sector the location-number of the first activated element in the sector and the total number of activated elements in the sector; tabulating means; and means operative upon the completion of the reading of the row for transferring from the programming and registering means to the tabulating means the registered information representing the location-numbers of the first activated element in each sector and the total number of activated elements in each sector.



4,128,756

COUNT CONTROL APPARATUS

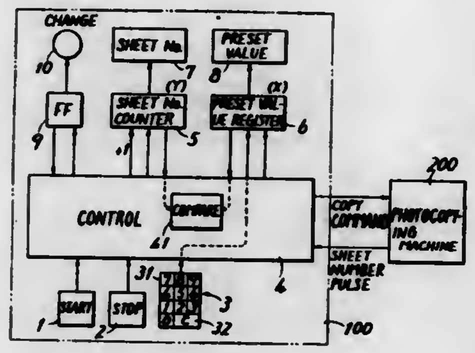
Akira Nagano, Nagaokakyo; Kazuaki Urasaki, Muko; Akira Osato, Mishima, and Isao Sakurai, Tokyo, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto and Konishiroku Photo Industry Co., Ltd., Tokyo, both of, Japan

Filed May 26, 1977, Ser. No. 800,714

Claims priority, application Japan, May 31, 1976, 51-63814

Int. Cl.² G06M *3/02;* **G06B** *27/06*

U.S. Cl. 235—92 SB **29 Claims**



1. A count control apparatus for controlling a processing unit, said processing unit being constructed to be enabled by an enabling signal to effect repetitive processing operations and to generate a count signal for each processing operation, said apparatus comprising counting means operatively coupled to said processing unit for counting the number of said count signals generated by said processing unit, means for presetting a desired number of processing operations to be carried out by said processing unit on a digit by digit basis, decision means operatively coupled to said counting means and said presetting means for judging whether the count value in said counting means is in a predetermined relationship with said preset numerical value, means responsive to said decision means for providing an enabling signal to said processing unit, said enabling signal being conditioned by the output of said decision means, manually operable means operatively coupled to said enabling signal providing means for making said enabling signal providing means non-responsive to said decision means, and means responsive to said manually operable means for causing said enabling signal providing means to generate a differently conditioned enabling signal, whereby said processing unit is normally enabled by said enabling signal generated by said enabling signal providing means as conditioned by the output of said decision means for performing the processing operations, but is differently enabled by said differently conditioned enabling signal generated by said enabling signal providing means, and whereby said preset number of processing operations may be changed without interrupting a current sequence of processing operations of the processing unit.

4,128,757

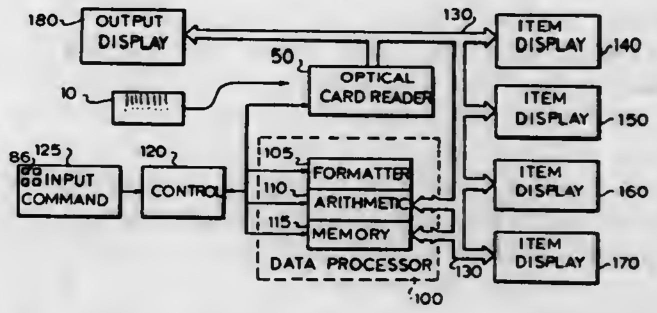
CUSTOMER INITIATED ORDERING SYSTEM

Dudley E. Garner, Jr., 971 SW. Meadowbrook, Palm Bay, Fla. 32905

Filed May 5, 1977, Ser. No. 794,009

Int. Cl.² G06K *15/18, 7/10;* **G06F** *7/38*

U.S. Cl. 235—383 **13 Claims**



1. A customer initiated system for ordering selected quantities of a plurality of customer selected items, said system comprising in combination:

an opaque card of predetermined size including therein a two dimensional data matrix of punch-out blanks for being removed by the customer from the card to form data apertures therein representative of the items and quantities to be ordered, with said data matrix oriented in known registration with a reference edge of said card;

a frame for removably receiving said card so as to be in stationary registration with said reference edge of said card;

a source of light coupled to said frame for illuminating said data apertures of said card;

a two dimensional matrix of photosensitive detectors coupled to and in known stationary registration with said frame and said card, with each of said photosensitive detectors being located adjacent to a corresponding one of said punch-out blanks of said card for generating a data signal responsive to being illuminated by light passing through said data aperture from said source of light;

computer means electrically coupled to each of said photosensitive detectors for sequentially scanning said matrix and receiving said data signals therefrom and responsive thereto generating order signals representative of the items and quantities ordered; and

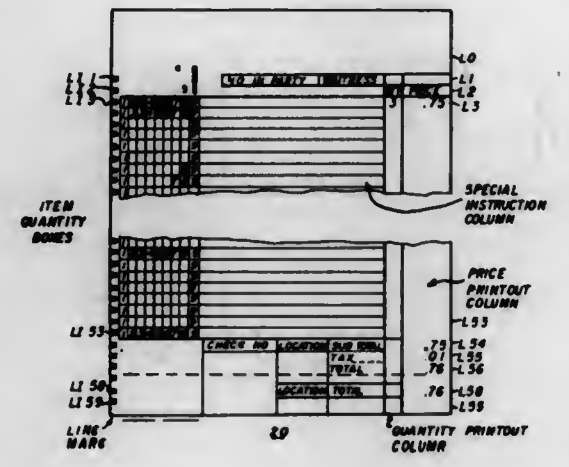
a plurality of visual displays electrically coupled to, but each remotely spaced from, said computer means for visually displaying selected ones of said order signals, whereby individual items comprising the order may be separately assembled and collected from the remote preparation locations to fill the customer's order.

4,128,758

ELECTRONIC ORDER PRICING SYSTEM

Raymond J. Bukowski, Chicago, and Frederick S. Erst, Arlington Hts., both of Ill., assignors to Motiograph, Inc., Richardson, Tex.

Continuation of Ser. No. 14,605, Feb. 26, 1970. This application Oct. 16, 1972, Ser. No. 297,819
Int. Cl.² G06K *1/12*
U.S. Cl. 235—433 **61 Claims**



1. In an electronic order pricing system, the improvement comprising a data card having indicia representative of orderable items and the quantity of each item ordered for a given order, said data card having a plurality of rows with a row mark adjacent each row, certain ones of said rows representing an orderable item and at least one of said certain rows having a plurality of quantity marking positions which as marked represent a different quantity of the item ordered and a corresponding printout area for receiving printed data representing a row total price for the quantity of the item ordered for such row, detecting means for detecting said indicia including first means responsive to the detection of at least the row mark for said row to provide a first output signal identifying the ordered item and a second means responsive to the detection of a mark in one of the quantity positions of said one row to provide a second output signal indicating the quantity of the identified item ordered, processing means responsive to said first and second output signals to effect the calculation of a row total price representing the cost for the quantity of each item ordered and an item total price representing the sum of the row total prices, and printout means controlled by said processing means to effect the printout in the corresponding printout areas of said data card of the row total prices calculated.

4,128,759

FIBER OPTIC DELAY LINE FILTER

Barry R. Hunt; George M. Dillard, and Henry F. Taylor, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 21, 1977, Ser. No. 853,157
Int. Cl.² H04B *9/00*
U.S. Cl. 250—199 **14 Claims**

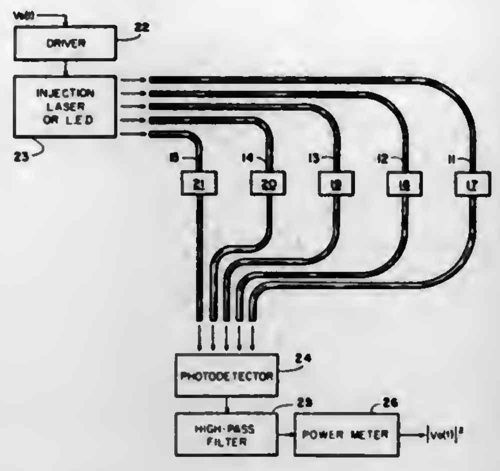
1. A fiber optic delay line filter comprising:

transducer means for converting temporally varying input signals to commensurate light energy signals;

a plurality of fiber optic light paths arranged to receive and transmit said light energy signals,

said fiber optic light paths having determinably variant optical propagation delays; and

a photo detection means disposed to receive the delayed output light energy signals of all said plurality of fiber optic light paths for producing a single electrical output signal as a function of the sum of said delayed output light energy signals.

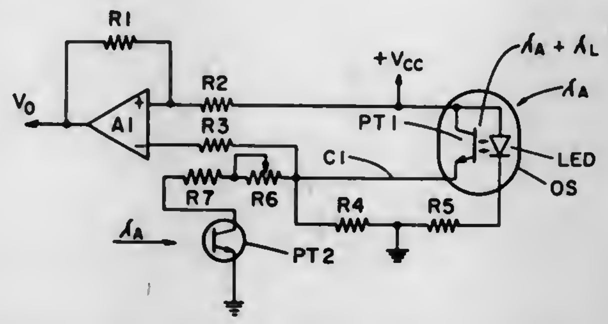


4,128,760

AMBIENT LIGHT COMPENSATING CIRCUIT

James R. Del Signore, II, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 7, 1977, Ser. No. 785,720
Int. Cl.² H01J *39/12*
U.S. Cl. 250—214 B **12 Claims**



1. An ambient light compensating circuit, comprising:

(a) a first light sensing means having an output on which is provided a signal responsive in part to a light source and in part to ambient light;

(b) a second light sensing means responsive only to ambient light and operatively connected in parallel with the output of said first light means, wherein said second light sensing means compensates said signal of said first light sensing means in an amount related to the ambient light; and

(c) signal level means operatively connected to the output of said first light sensing means for detecting that portion thereof responsive to the light source.

4,128,761

PHOTODETECTOR CIRCUIT FOR BALLISTIC VELOCITY MEASUREMENT

Kenneth L. Oehler, Box 840, 501 Noton St., Pflugerville, Tex. 78660

Filed Oct. 7, 1977, Ser. No. 840,254
Int. Cl.² G01D *21/04*
U.S. Cl. 250—222 R **5 Claims**

1. An apparatus for measuring a ballistic characteristic of a projectile traveling along a predetermined path comprising

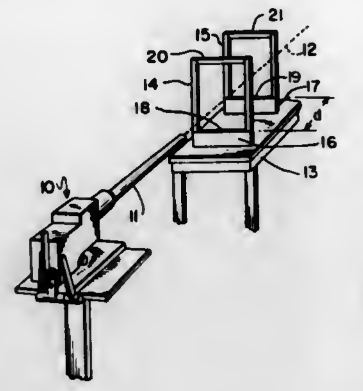
first and second photoresponsive circuit means having photosensitive portions for producing electrical signals substantially linearly representative of the level of light incident upon said photosensitive portions over a predetermined range;

log circuit means connected to said first and second photoresponsive circuit means for producing signals proportional to the logarithms of said electrical signals representative of light level;

an amplifier having an input and an output;

capacitive circuit means connected between said log circuit means and said input to said amplifier for coupling AC signal components of the signals produced by said log circuit means representative of perturbations caused by rapid changes in the light incident upon said photosensitive portion to said amplifier and for blocking DC components thereof; and

means responsive to the output of said amplifier for measuring the interval of time elapsed between successive signals representing said rapid changes.

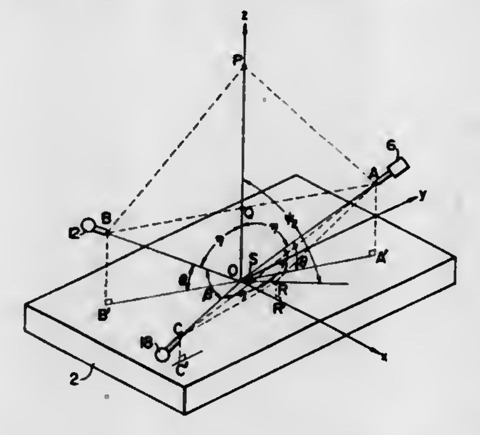


4,128,762

APPARATUS FOR MEASURING MECHANICAL STRESS USING WHITE X-RAYS

Masato Nagao, and Sho Kusumoto, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 6, 1977, Ser. No. 813,299
Claims priority, application Japan, Sep. 8, 1976, 51-106723
Int. Cl.² G01N *23/20*
U.S. Cl. 250—272 **9 Claims**



1. An apparatus for measuring mechanical stress, using white X-rays, comprising

an X-ray source so disposed as to cast white X-rays upon a position in the surface of a sample where the stress is to be measured, said X-rays travelling along a first plane containing a normal to said position and obliquely crossing with a second plane which includes said normal and which extends in the direction in which the stress is measured, said X-rays impinging upon said position at an angle η with said normal;

a first X-ray detector so disposed as to receive the X-rays diffracted from said position at said angle η with said normal, said diffracted X-rays travelling along said first plane;

a second X-ray detector so disposed as to receive the X-rays diffracted from said position at said angle η with a line existing in said second plane, making an angle ψ_2 with said normal, making the angle η with the path of said white X-rays from said X-ray source and passing through said position in the sample surface, said diffracted X-rays travelling along a third plane containing said line and said path; and

a multi-channel pulse height analyzer for analyzing the X-ray signals detected by said first and second X-ray detectors, wherein said stress σ_x is obtained according to the following formula

$$\sigma_x = K\frac{E_{n2} - E_{n1}}{\sin^2 \psi_2},$$

where E_{n1} and E_{n2} are the energies of X-rays detected respectively by said first and second X-ray detectors and K is a constant such that

$$K = -\frac{E}{1 + \upsilon}\ \frac{1}{\bar{\bar{E}}_n},$$

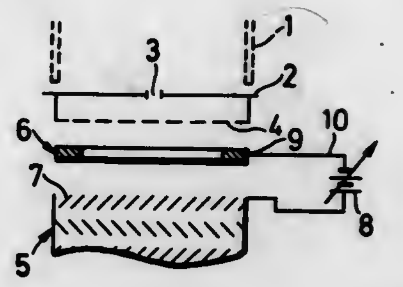
where E is the Young's modulus, ν the Poisson's ratio, and $\bar{\bar{E}}_n$ the energy of diffracted X-rays in the case where is no strain in said sample and where the Bragg angle is complementary to said angle η.

4,128,763

ENERGY ANALYZER FOR CHARGED PARTICLES

Hans-Dietrich Polaschegg, Bornheim, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH & Co. KG, Cologne, Fed. Rep. of Germany

Filed Jun. 2, 1977, Ser. No. 802,962
Int. Cl.² H01J *39/00*
U.S. Cl. 250—305 **7 Claims**



1. Apparatus for analyzing the energies of charged particles, comprising: analyzer means for generating an electric or magnetic field through which the particles pass, said analyzer means having an outlet aperture through which the charged particles exit as a beam; a detector arranged in the path of the beam leaving the analyzer field through said outlet aperture; and electrode means provided between said analyzer means and said detector and being connected to a variable voltage source for adjusting the cross section of the particle beam, thereby to allow the size of the particle beam cross section to be adapted to the size of the sample without changing the optimally adjusted sensitivity of the apparatus.

4,128,764

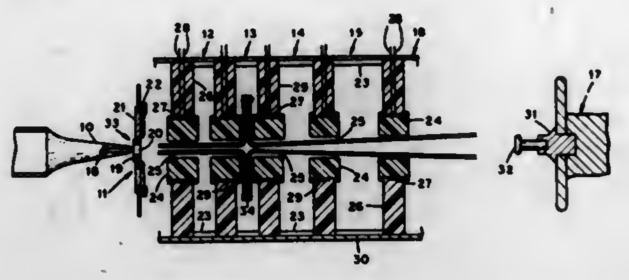
COLLECTIVE FIELD ACCELERATOR

John S. Luce, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 17, 1977, Ser. No. 825,504
Int. Cl.² H01J *37/00*
U.S. Cl. 250—398 **8 Claims**

1. A collective field accelerator in combination with a vacuum diode adapted to operate with a relativistic electron beam with a ν/γ of ~ 1; said vacuum diode comprising a tapered, grooved cathode and an insulated anode assembly having a central hole therein; said collective field accelerator comprising a plurality of spaced focusing lens assemblies having means for producing an axial magnetic field thereabout for focusing plasma vortex filaments made of collectively accelerated elec-

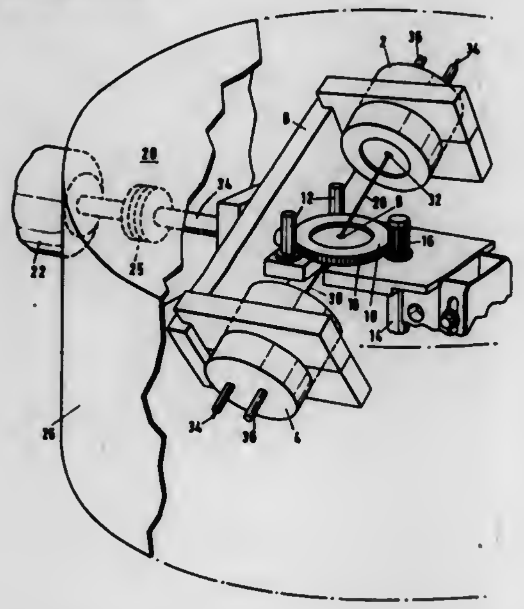
trons and ions which are ejected from said anode assembly onto an associated target; said cathode, anode assembly and



focusing lens assemblies being located on a longitudinally extending axis.

4,128,765
ION BEAM MACHINING TECHNIQUES AND APPARATUS

Joseph Franks, 26 Hamilton Rd., London, England
Filed Oct. 29, 1976, Ser. No. 736,954
Int. Cl.² G21K *5/06*
U.S. Cl. 250—442 **20 Claims**

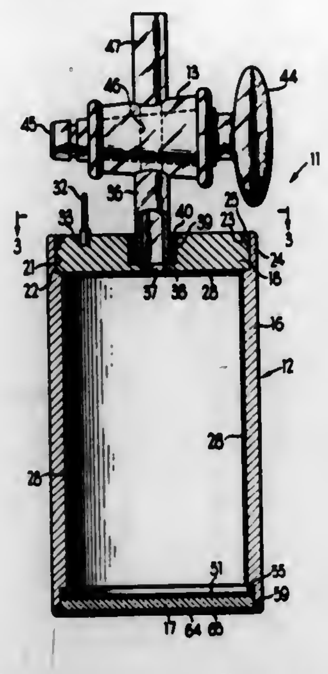


1. A method of ion beam machining for the preparation of specimens to be examined by electron microscopy techniques comprising directing at least one ion beam from an ion source onto a specimen while effecting relative rotation between the ion source and the specimen and simultaneously varying the angle of incidence of said at least one ion beam on said specimen with such angle varying in a random manner with respect to said relative rotation of said ion squrce and said specimen.

4,128,766
STRENGTHENED SCINTILLATION CELL

William M. Stevens, Loveland, Ohio, assignor to Randam Electronics, Inc., Cincinnati, Ohio
Filed Jun. 13, 1977, Ser. No. 805,629
Int. Cl.² G01J *1/58*
U.S. Cl. 250—483 **29 Claims**

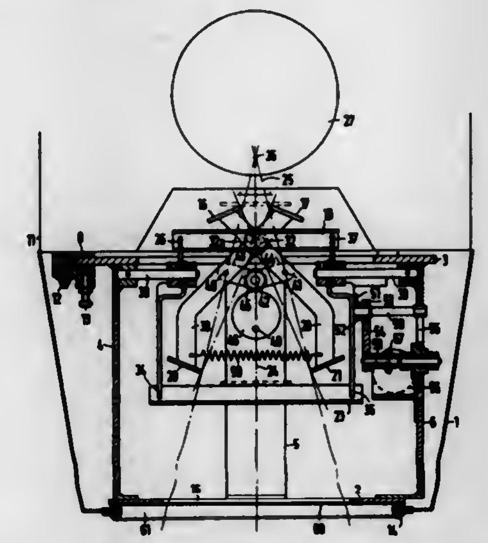
1. A scintillation cell comprising:
(A) a gas tight container including:
  (1) a tube of metal having cylindrical symmetry and open ends;
  (2) a substantially transparent gas-impermeable first section of material rigidly adhered to one end of said tube in a gas-tight relationship; and
  (3) a gas-impermeable second section of material rigidly adhered to the other end of said tube in a gas-tight relationship;
(B) inlet means in fluid communication with the interior of said container for introducing and retaining a gas inside said container; and



(C) a luminescent material coated on said tube and said second section of material on the inside of said container.

4,128,767
X-RAY PRIMARY RADIATION DIAPHRAGM ASSEMBLY

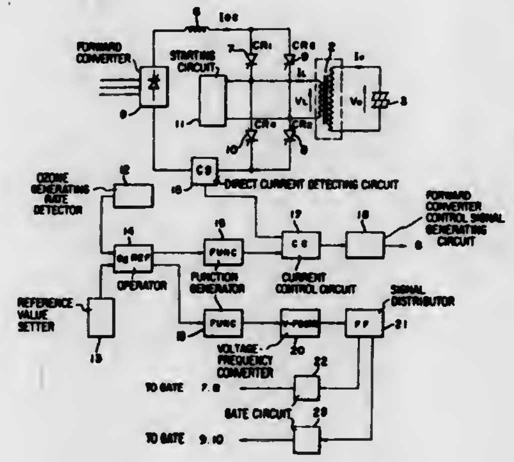
Lars Stödberg, Stenhamra, and Hans Sjöström, Spanga, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed May 6, 1977, Ser. No. 794,406
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1976, 2633059
Int. Cl.² A61B *6/06*
U.S. Cl. 250—513 **3 Claims**



1. A primary x-ray diaphragm assembly comprising two pairs of diaphragm plates, staggered 90°, for mounting in operative relation to an x-ray tube in a relatively close-to-focus position, and further comprising two pairs of diaphragm plates, likewise staggered 90°, for mounting in a relatively remote-from-focus position, the plates of each pair of diaphragm plates being commonly adjustable symmetrically to the longitudinal axis of the diaphragm assembly such that, in the mounted state, the diaphragmed pyramid configuration defined thereby has its vertex lying substantially at the focus of the x-ray tube, characterized in that each close-to-focus diaphragm plate and a complementary remote-from-focus diaphragm plate oppositely disposed with reference to the diaphragm longitudinal axis are secured to at least one lever, respectively, which is pivotably mounted about an axis lying between such diaphragm plates, said axis being common to four diaphragm plates, with the levers pivotal on a common axis being capable of being pivoted in a scissors-like fashion, and with the length of the lever arms being selected to correspond to the desired position of the vertex of the pyramid configuration defined by said diaphragm plates, and characterized in that, on two levers, connected in scissors-like fashion, two arms are provided for each lever axis, said arms being symmetrically linked to said levers and being interconnected in an articulated fashion.

4,128,768
OZONE GENERATING APPARATUS

Yoshihiko Yamamoto; Masahiro Shigenobu, and Hideo Kuwabara, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 577,455, May 14, 1975, Pat. No. 4,051,045. This application Jul. 19, 1977, Ser. No. 817,097
The portion of the term of this patent subsequent to Sep. 27, 1994, has been disclaimed.
Int. Cl.² C01B *13/11*
U.S. Cl. 250—535 **1 Claim**

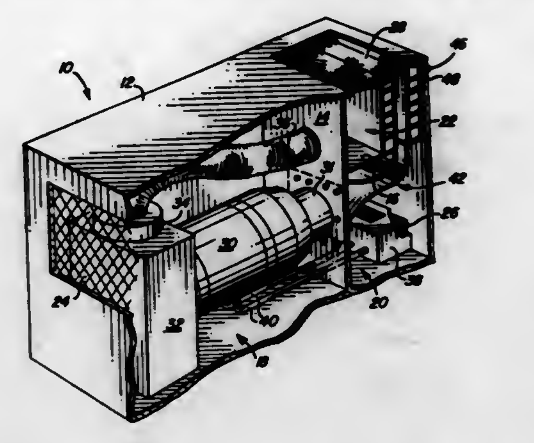


1. An ozone generating apparatus comprising:
an ozone generator having a discharge tube with discharge electrodes,
a rectangular waveform current feeding device for feeding rectangular waveform alternating current through the discharge electrodes of the discharge tube without a capacitive coupling circuit between the discharge electrodes and the rectangular waveform current feeding device for driving the ozone generator, and
control means for controlling the ozone generating rate of the ozone generator by controlling the current and/or the frequency of the rectangular waveform alternating current.

4,128,769
EDUCTOR MUFFLER

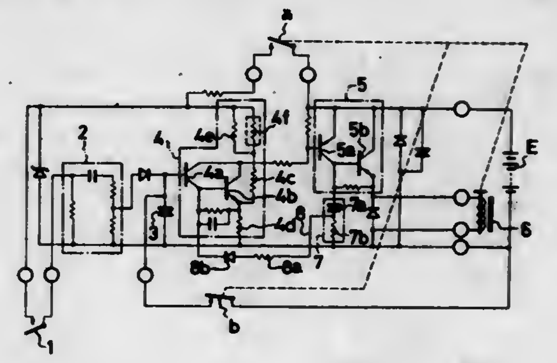
Robert Bons, Scottsdale, and Sam S. Kitaguchi, Phoenix, both of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.
Filed Sep. 27, 1976, Ser. No. 727,209
Int. Cl.² F01D *15/10;* H02K *7/18;* G10K *11/00*
U.S. Cl. 290—52 **14 Claims**

4. A turbine-generator unit comprising:
a housing having first, second, and third chambers and an opening between said second and third chambers;
means for admitting a flow of cooling air into said second chamber;
an exhaust port for exhausting heated gases from said third chamber;
an electric generator mounted in said first chamber;
a gas turbine engine mounted in said first chamber in driving relationship with said generator;
an oil cooler in said second chamber for carrying oil from said turbine engine in heat exchange relationship with said flow of cooling air passing into said second chamber;
muffler means in said third chamber communicating with said opening and said exhaust port; and
an exhaust duct in said second chamber for receiving flow of exhaust gases from said turbine engine and carrying the latter towards said opening, said duct being spaced from said opening whereby flow of exhaust gases from said duct through said opening to said muffler draws in a flow of cooling ambient air from said second chamber to intermix with said exhaust gases in said muffler.



4,128,770
AUTOMATICALLY RETURNING APPARATUS FOR TURN SIGNAL LAMP SWITCH

Kunio Okazaki, Hatano, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan
Filed Sep. 30, 1976, Ser. No. 728,172
Claims priority, application Japan, Jan. 29, 1976, 51/008818
Int. Cl.² H02G *3/00*
U.S. Cl. 307—10 LS **10 Claims**



1. An automatically returning apparatus in combination with a turn signal lamp switch of a wheeled vehicle, comprising:
a turn signal lamp switch (a,b) which includes at least a first switch (a),
contact means (1) coupled to said turn signal lamp switch and to at least one wheel of the vehicle for opening and closing corresponding to the rotation of the wheels of the vehicle after throwing of said turn signal lamp switch and for generating a plurality of intermittent signals responsive to said wheel rotation,
detecting means (2, 4) coupled to said contact means (1) for detecting said intermittent signals, said detecting means including switching means (4) for conducting current responsive to detection of a predetermined number of said intermittent signals,
a solenoid (6) coupled to said turn signal lamp switch for returning said turn signal lamp switch to its non-operating position,
driving circuit means (5) coupled to said switching means (4) and to said solenoid (6) and responsive to the conducting current of said switching means (4) for energizing said solenoid (6) for return of said turn signal lamp switch to its non-operating position, and
circuit means (7, 8) coupled to at least one of (i) said switch-

ing means (4) and (ii) said driving circuit means (5), said circuit means including means for maintaining the energization of said solenoid (6) for a given period of time after initial energization of said solenoid (6) to insure that said turn signal lamp switch fully returns to its non-operating position.

4,128,771

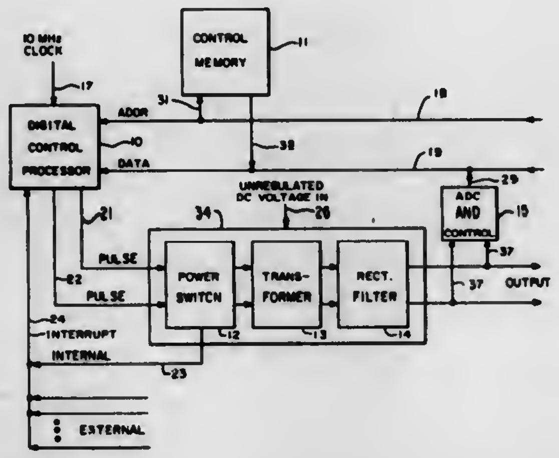
DIGITALLY CONTROLLED POWER SYSTEM

Robert J. Domenico, Los Gatos, Calif., assignor to Palyn Associates, Inc., San Jose, Calif.

Filed Jan. 7, 1977, Ser. No. 757,468

Int. Cl.^{2} G05F *1/02*

U.S. Cl. 307—52 **27 Claims**



1. A digitally controlled power system controlled during timed clock cycles comprising:
  at least one power supply responsive to a pair of control pulses each having a pulse width providing a controlled output voltage,
  means for sensing a difference between a reference voltage and said output voltage whereby said means provides an error signal representative of said difference,
  digital control processor means connected to receive and process said error signal and to provide said pair of control pulses during said clock cycles,
  and control memory means connected to said processor means to provide a program of instructions to said processor means such that said processor means provides a programmed change in the width of said control pulses whereby said power supply provides a change in said output voltage.

4,128,772

GENERATION OF TUNABLE FAR-INFRARED RADIATION

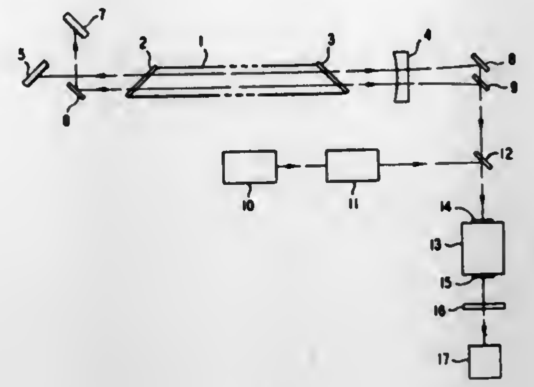
Tao-Yuan Chang, Lincroft; Theodoor C. Damen, Colts Neck, and Van-Tran Nguyen, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

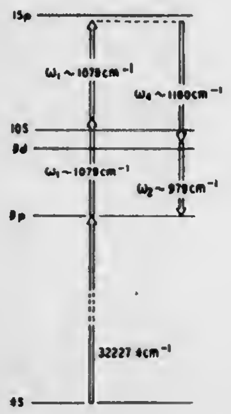
Filed Dec. 29, 1977, Ser. No. 865,434

Int. Cl.^{2} H03F *7/00*

U.S. Cl. 307—88.3 **5 Claims**

1. An apparatus for generating infrared radiation comprising:
  a conversion vessel having infrared transmitting entrance and exit windows for containing a conversion medium;
  said conversion medium including atoms having a ground state, a predetermined first excited state and a plurality of excited states higher in energy than said first excited state;
    means for exciting a portion of said atoms of said conversion medium from said ground state to said first excited state at a predetermined time;
    means for generating at least two beams of infrared photons of at least two predetermined energies such that two of said photons combine to a first energy value close to the energy value associated with a predetermined two-photon transition between said first excited state and one of said plurality of excited states; and such that the photons of one of said beams of photons are substantially equal in energy to the difference between said first energy value and a predetermined output energy, and





  means for directing said beams of photons through said conversion medium in such a manner that said beams of photons overlap spatially and temperally in said conversion medium and have a predetermined temporal relationship to said predetermined time, whereby said two beams of infrared radiation interact in said conversion medium to generate an output beam of infrared radiation.

4,128,773

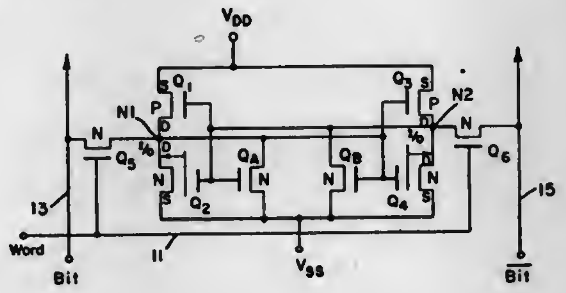
VOLATILE/NON-VOLATILE LOGIC LATCH CIRCUIT

Bruce L. Troutman, Irvine, and Lawrence S. Schmitz, Costa Mesa, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 7, 1977, Ser. No. 848,854

Int. Cl.^{2} G11C *11/40*

U.S. Cl. 307—238 **6 Claims**



1. In combination with an integrated semiconductor memory latch circuit having:
  (a) a pair of branches, each branch including an IGFET load and an IGFET driver connected in series drain-to-drain at a node, the control gate of the IGFET driver of each branch being connected to the node of the other branch, said IGFET drivers having electrically variable thresholds;

  (b) means for normally maintaining a first voltage across said pair of branches which is below that required to change the threshold of said IGFET drivers;
  (c) means for turning on a selected one of said IGFET drivers so as to store information in said latch circuit in volatile form; and
  (d) means for temporarily raising the voltage across said pair of branches to a second, higher level which is sufficient to cause opposite long term threshold shifts in said IGFET drivers, said drivers being subject to being permanently cut off as a result of said voltage being raised beyond said second level;
  the improvement comprising a pair of fixed threshold shunt IGFETs, each connected so as to bypass a respective one of said driver IGFETs having an electrically variable threshold, so that, when one of said drivers is cut off, the shunt IGFET which bypasses it will continue to carry sufficient current to replace that normally conducted by the cut off driver.

4,128,774

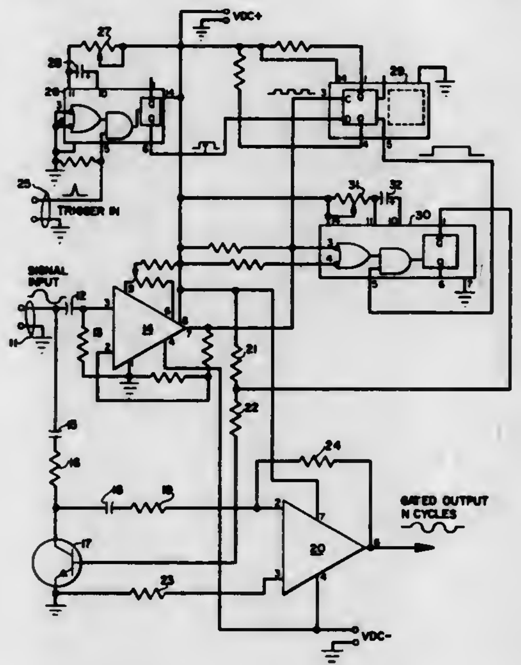
N CYCLE GATED PERIODIC WAVEFORM GENERATOR

Clifford O. Shaw, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 20, 1977, Ser. No. 807,947

Int. Cl.^{2} H03K *3/78*

U.S. Cl. 307—260 **13 Claims**



1. A periodic waveform generator for accurately producing a predetermined number of complete cycles of a cyclic waveform comprising:
  a source of cyclic electrical energy having a desired waveform;
  detector means connected to said source of cyclic electrical energy for producing an output corresponding to the cyclic electrical energy attaining a predetermined value on each cycle thereof;
  switch means connected to said source of cyclic electrical energy and effectively connected to said detector means for selecting one of two current paths;
  a first path where said cyclic electrical energy is shunted to ground;
  a second path for passing a predetermined number of cycles of said cyclic electrical energy having said desired waveform and timing the passed cyclic electrical energy from the time that the predetermined value was attained;
  a source of trigger signals; and
  a control circuit connected to said source of trigger signals and effectively connected to said switch means for initiating the selection of one of said two paths.

4,128,775

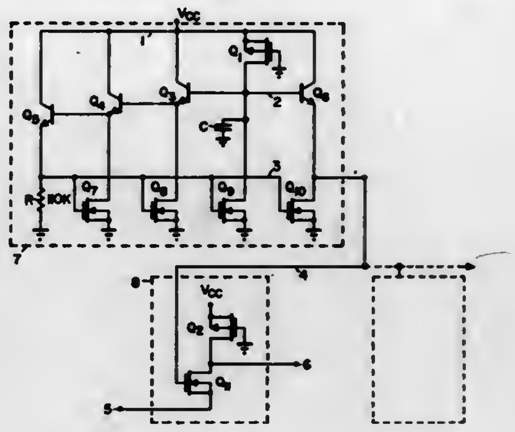
VOLTAGE TRANSLATOR FOR INTERFACING TTL AND CMOS CIRCUITS

Thomas M. Frederiksen, San Jose, and James B. Cecil, Santa Clara, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 22, 1977, Ser. No. 808,752

Int. Cl.^{2} H03K *17/60, 1/02, 1/14, 19/08*

U.S. Cl. 307—264 **28 Claims**



1. An interface circuit especially useful for coupling a TTL circuit output to a CMOS circuit input comprising, in combination,
  current regulation and bias voltage generating means for regulating current and generating a bias voltage source,
  voltage translation means cooperatively connected to said bias voltage source of said current regulation and bias voltage generating means for translating any voltage input received from a TTL circuit output to a voltage level that is suitable for driving a CMOS circuit and that corresponds to the voltage input signal received from the TTL circuit output, and
  said current regulation and bias voltage generating means comprising bipolar transistor means having a plurality of transistors electrically connected together at each base thereof for regulating current and providing a bias voltage output at a certain level, and MOS transistor means having a plurality of MOS transistors each of which is connected to an electrode of one of said plurality of transistors of said bipolar transistor means for providing a current sink for said bipolar transistor means.

4,128,776

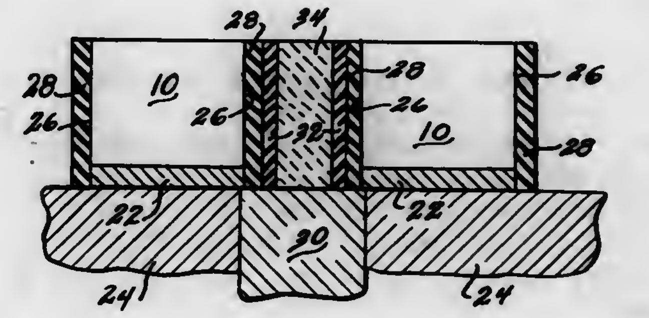
MAGNETOHYDRODYNAMIC ELECTRODE

Carl W. Boquist, Chicago, and David D. Marchant, Naperville, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 29, 1976, Ser. No. 745,942

Int. Cl.^{2} H02N *4/02*

U.S. Cl. 310—11 **9 Claims**



1. A composite electrode for use in a magnetohydrodynamic generator comprising:
  a refractory ceramic matrix containing 10 to 50 volume

percent of a continuous metal reinforcement which is an electrically conductive nonferromagnetic, oxidation-resistant metal or alloy melting above 1000° C., the metal being selected from the group consisting of niobium, hafnium, tantalum, molybdenum, and alloys of niobium-zirconium, hafnium-tantalum, nickel-chromium and nickel-molybdenum, the form of the reinforcement being selected from the group consisting of a sintered fiber mat, an open-pore foamed metal and a three-dimensional woven wire fabric, and the refractory ceramic matrix being selected from the group consisting of stabilized zirconium oxide, stabilized hafnium oxide, iron-doped spinel, chromium-doped spinel, yttrium oxide and strontium-doped lanthanum chromite; the electrode having a top surface, a bottom surface and parallel side walls; an electrically and thermally conductive intermediate attachment plate fastened to the bottom surface of the electrode in electrical contact with the metal reinforcement, the plate having edges in line with the side walls; the side walls of the electrode and edges of the atachment plate being coated with a layer of refractory ceramic electrical insulating material; and a layer of unreinforced refractory ceramic on the top surface of the electrode.

4,128,777

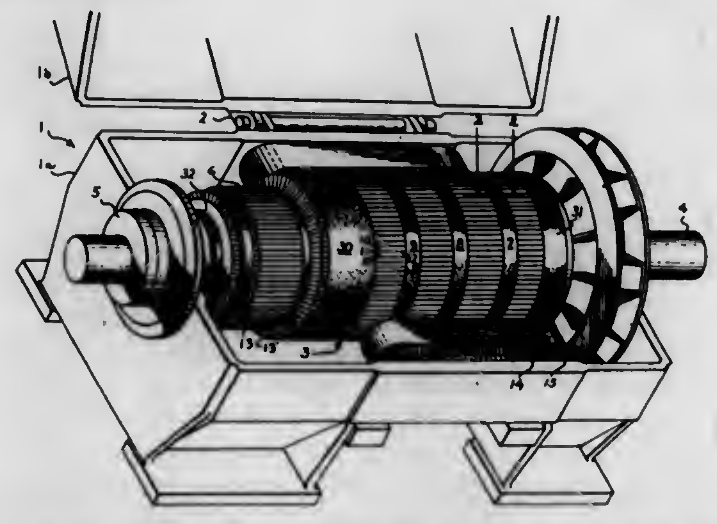
ARMATURE CORE WRAPPED WITH IRRADIATION CURABLE GLASS BANDING

Martin A. Zgraggen, Erie, Pa., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 24, 1976, Ser. No. 726,357

Int. Cl.^{2} B32B *7/00, 17/02;* H02K *15/12*

U.S. Cl. 310—45 **11 Claims**



1. In a dynamoelectric machine having a rotatable core having slots with energizing windings disposed therein the improvement comprising banding said slots with an irradiation curable glass band comprising at least one multi-layer glass core banding tape positioned around the core to exert a radially compressive force thereon, and an irradiation cured epoxy or polyester resin impregnated in each layer of the tape to a substantially uniform thickness in the range of about 0.5 mils to about 2 mils between adjacent layers of the band.

4,128,778

EXTERNAL-ROTOR MOTOR SUPPORTED BY MOUNTING FLANGE

Alfred Merkle, and Georg F. Papst, both of St. Georgen, Fed. Rep. of Germany, assignors to Papst-Motoren KG, St. Georgen im Schwarzwald, Fed. Rep. of Germany

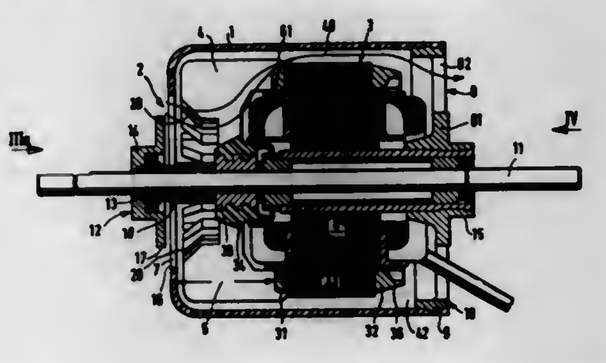
Filed Sep. 2, 1976, Ser. No. 720,082

Claims priority, application Switzerland, Sep. 8, 1975, 011559/75

Int. Cl.^{2} H02K *9/06*

U.S. Cl. 310—67 R **18 Claims**

1. An external rotor motor of protectively insulated and internally cooled design, comprising, in combination, an internal stator; a generally bell-shaped external rotor surrounding the stator, the generally bell-shaped rotor having a bottom constituting one axial end of the bell-shaped rotor; a rotor shaft connected to and rotating with the rotor; a mounting flange located at the other of the two axial ends of the rotor; a bridge fixedly connected with the mounting flange, the bridge being in the form of a protective insulating cylindrical housing connected at one axial end to the mounting flange and extending axially over the whole axial length of the rotor and being circumferentially complete to protect the rotor from physical contact by external objects, at least the exterior of the housing being made of electrically insulating material, the end of the cylindrical housing remote from the end connected to the mounting flange extending radially inward at said one axial end of the rotor with axial spacing from said one axial end of the rotor and having at such remote end a plurality of air inflow openings for the flow of external air therethrough, the air inflow openings being symmetrically arranged relative to the rotor axis, the mounting flange being provided with air outflow openings for the axial flow of air through the interior of the cylindrical housing; and blower blades provided on the external rotor in the region of the bottom of the bell-shaped external rotor axially intermediate the radially inward extending part of the housing and the remainder of the rotor, the blower blades being configured to pull air in through the air inflow openings, circulate the air in the space about the exterior of the rotor and interior of the housing and discharge the air through the air outflow openings.



4,128,779

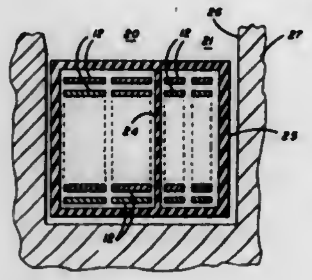
STRANDED CONDUCTOR FOR DYNAMOELECTRIC MACHINES

Sheppard J. Salon, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 5, 1977, Ser. No. 784,753

Int. Cl.^{2} H02K *3/14*

U.S. Cl. 310—213 **3 Claims**



1. A winding conductor for a dynamoelectric machine, said conductor comprising two bars disposed physically and electrically in parallel, each of said bars consisting of a plurality of insulated strands disposed in two side-by-side stacks and transposed between stacks, said bars being subject to unequal division of current between them during operation of the machine, and the cross-sectional areas of the two bars being different such that the current density is substantially the same in both bars.

4,128,780

ROTOR HAVING IMPROVED ARM STRUCTURE TO REDUCE TENSILE STRESSES

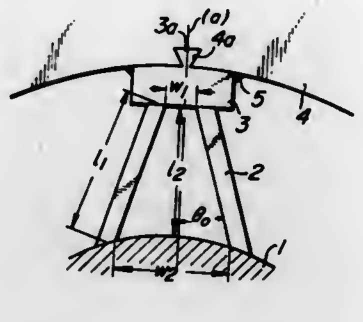
Tadasi Sonobe, Iwaki, Japan, assignor to Hitachi, Ltd., Japan

Filed Sep. 22, 1976, Ser. No. 725,630

Claims priority, application Japan, Sep. 25, 1975, 50-114667

Int. Cl.^{2} H02K *1/22*

U.S. Cl. 310—265 **19 Claims**



1. A rotor for use with rotary electric machinery, comprising:

a rotary shaft;
a plurality of sets of arms extending from said rotary shaft, said each set consisting of at least two arms;
a rotor core having a plurality of silicon steel plates laminated in a predetermined thickness around the arms and welded to the outer ends of said arms;
said each arm having a greater length in section transverse to the axis of the rotary shaft than a minimum length in the radial direction of the rotary shaft; and
at least a portion of each arm extending in a non-parallel direction with a radial line extending from the rotary shaft along the minimum length.

4,128,781

X-RAY TUBE

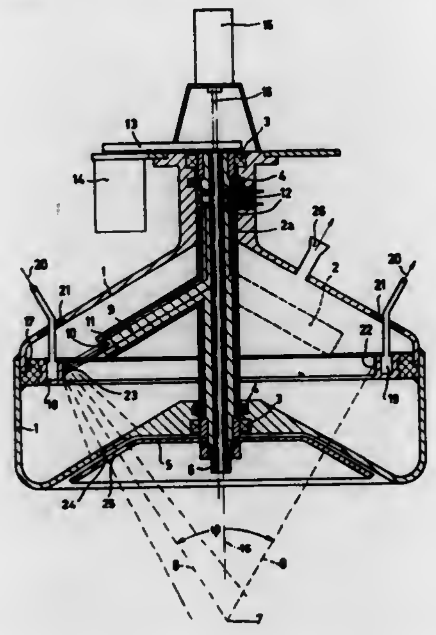
Peter Flisikowski, and Horst Peemöller, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 10, 1977, Ser. No. 767,652

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1976, 2607618

Int. Cl.^{2} H01J *35/04*

U.S. Cl. 313—60 **2 Claims**



1. An x-ray source comprising an envelope, an annular anode having an inner surface arranged in said envelope, a shaft mounted in said envelope for rotation about an axis coaxial with the axis of said anode, a cathode supported on said shaft for movement therewith along a circular path about said axis of rotation, said cathode being arranged to emit a beam of electrons onto the inner surface of said annular anode to produce a beam of X-ray radiation directed towards said axis of rotation so that upon movement of said cathode along said path, said X-ray beam traverses a generally conical path with the apex thereof lying along said axis of rotation, and means for rotating said shaft.

4,128,782

GETTER HOLDER AND ELECTRIC DISCHARGE TUBE COMPRISING SUCH A HOLDER

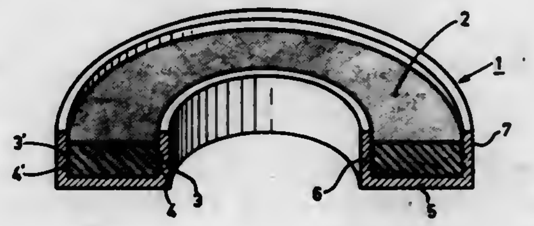
Jan J. B. Fransen, and Franciscus J. Rimmelzwaan, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 613,854, Sep. 16, 1975, abandoned. This application May 19, 1977, Ser. No. 798,318

Claims priority, application Netherlands, Sep. 26, 1974, 7412693

Int. Cl.^{2} H01J *61/26*

U.S. Cl. 313—174 **6 Claims**



1. A getter device comprising a metal holder comprising sidewall and bottom portions shaped to form at least one open cavity having a mainly U-shaped cross-section and compressed vaporative gettering material disposed in said cavity; and shallow indentations extending peripherally into surface areas of said sidewall portions facing inwardly of said cavity, said indentations comprising means to interlock with and hold said gettering material in said cavity during flashing of said gettering material, the depth of said indentations being substantially less than the thickness of said sidewall portions, and outwardly facing surface areas of the same sidewall portions being free from outward projections complementary to said indentations.

4,128,783

TUNGSTEN/BROMINE CYCLE LAMP

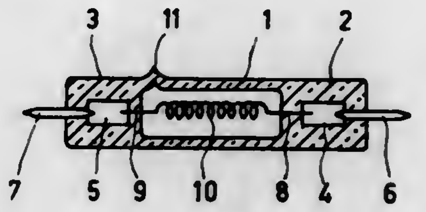
Henricus F. J. I. Giller, and Germain R. T'Jampens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1977, Ser. No. 788,424

Claims priority, application Netherlands, May 10, 1976, 7604953

Int. Cl.^{2} H01J *61/12, 61/26*

U.S. Cl. 313—174 **3 Claims**



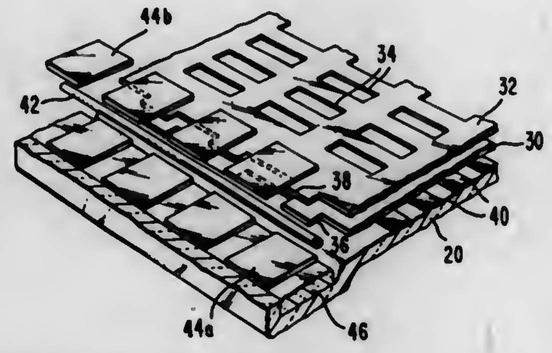
1. A tungsten/bromine cycle lamp having a transparent lamp vessel and further including the following disposed in said envelope:

a tungsten filament;
a getter selected from the group consisting of Ti, Zr, Nb, Ta, V and Hf;
a gas mixture containing inert gas, hydrogen and bromine; and
a compound of the formula Me $NH_xBr_yC_z$ or decomposition products thereof, in which formula z has the value 0, Me is selected from the group consisting of vanadium, niobium, and tantalum, $x = 1, 2$ or 3 and $y = x + 1$, or Me

is selected from the group consisting of titanium, zirconium, and hafnium, and $x = 1$ or 2 and $y = x + 1$.

4,128,784
BEAM GUIDE FOR DISPLAY DEVICE WITH BEAM INJECTION MEANS

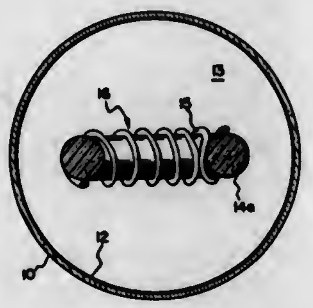
Charles H. Anderson, Rocky Hill, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Sep. 22, 1977, Ser. No. 835,772
Int. Cl.^{2} H01J *29/08*
U.S. Cl. 313—422 **10 Claims**



1. A display device comprising
- an evacuated envelope having spaced, substantially parallel front and back walls,
- an electron beam guide extending along said back wall for confining electrons in a beam as the beam flows along a path substantially parallel to said front wall and for selectively deflecting the beam toward a phosphor screen along said front wall at selected points along the beam path,
- gun means at one end of the beam guide for generating electrons and directing the electrons as a beam toward the beam guide, and
- projecting means on said beam guide at said one end of the beam guide for creating an electrostatic field which causes the electron beam to leave the gun means and enter the beam guide along said path.

4,128,785
CORE CONFIGURATION FOR INDUCTION IONIZED LAMPS

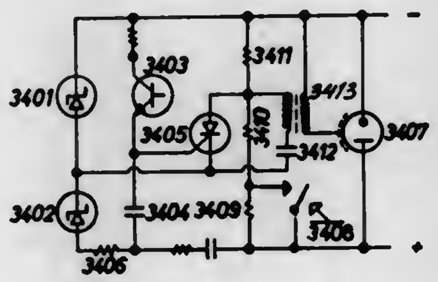
Armand P. Ferro, Schenectady, N.Y., and Loren H. Walker, Salem, Va., assignors to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 789,514, Apr. 21, 1977, abandoned. This application Apr. 17, 1978, Ser. No. 897,208
Int. Cl.^{2} H01J *7/44, 13/46, 17/34, 19/78*
U.S. Cl. 315—57 **12 Claims**



1. In an induction ionized, solenoidal electric field lamp of the type comprising a mass of an ionizable gas and transformer means, including a closed loop magnetic core linking said gas, which function to induce a high frequency electric current flow in said gas; the improvement wherein:
- said magnetic core is of a substantially toroidal shape, defining a central tunnel opening, the generatrix of said core having reduced thickness, as measured along the direction parallel to the axis of said toroidal core, in regions adjacent said tunnel opening.

4,128,786
CONTROL OF ELECTRONICALLY GENERATED LIGHT PULSES

Zoltan Vital, Uccle, and Jean Orban, Clabecq, both of Belgium, assignors to Vivitar Corporation, Los Angeles, Calif.
Division of Ser. No. 580,519, May 23, 1975, Pat. No. 4,049,996, which is a division of Ser. No. 358,974, May 10, 1973, Pat. No. 3,943,406, which is a division of Ser. No. 17,634, Mar. 9, 1970, Pat. No. 3,749,921, which is a continuation-in-part of Ser. No. 799,554, Feb. 13, 1969, abandoned. This application May 24, 1977, Ser. No. 800,041
Claims priority, application Belgium, Mar. 7, 1969, 71104; Jun. 27, 1969, 75962; Sep. 22, 1969, 79321
Int. Cl.^{2} H05B *41/32*
U.S. Cl. 315—151 **1 Claim**



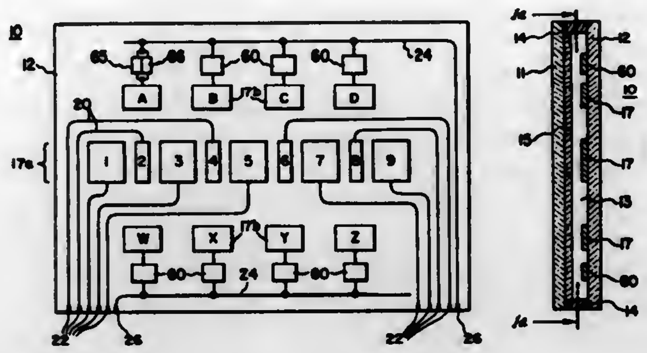
1. In a device for controlling the duration of the light pulses produced by a light flash tube arranged to selectively produce either a full light intensity output or a partial light intensity output in response to electrical pulses produced by the discharge of a supply capacitor and including means for measuring the light produced by the flash tube, and means for terminating the light being produced by the flash tube in response to an indication produced by the measuring means, the terminating means including a trigger capacitor connected to the supply capacitor to be preliminarily charged to a required voltage constituting a fraction of the voltage across the supply capacitor prior to discharge of the supply capacitor and to produce a flash terminating current pulse upon the production of such an indication by the measuring means, the improvement comprising switch means operatively connected to one terminal of said trigger capacitor and switchable between two states for supplying two respectively different fractions of the supply capacitor voltage to said terminal in order to preliminarily charge said trigger capacitor to such required voltage for either full light intensity output or partial light intensity output, respectively, of said tube.

4,128,787
DC POP WITH VARISTOR CONNECTED BETWEEN CONTROL CIRCUIT AND CATHODE

John E. Bigelow, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Apr. 10, 1978, Ser. No. 894,735
Int. Cl.^{2} H05B *37/00, 39/00, 41/00*
U.S. Cl. 315—169 TV **5 Claims**

1. A gas discharge display comprising:
- a first planar electrode structure;
- a multiplicity of electrodes fabricated independent of one another in a plane substantially parallel to, and spaced from, said planar electrode structure;
- a gas filling the volume between said planar electrode structure and said plurality of electrodes;

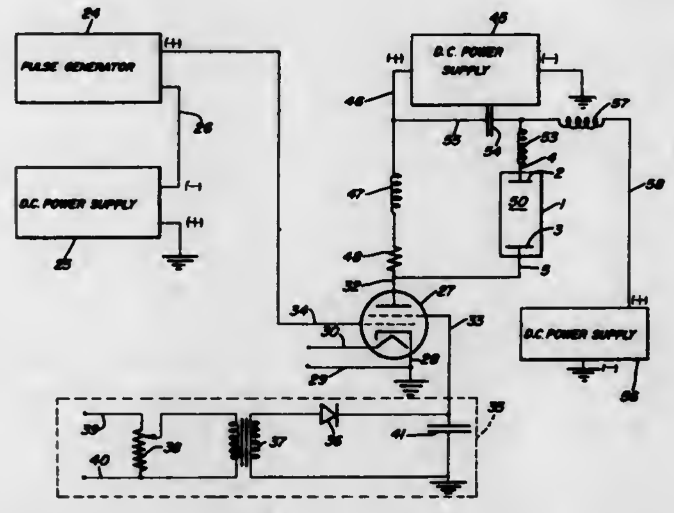
- a conductive lead to be coupld to a plurality of the multiplicity of electrodes; and



- a non-linear electrical resistance element in electrical series connection between each of said plurality of electrodes and said conductive lead.

4,128,788
METHOD AND APPARATUS FOR OPERATING A GASEOUS DISCHARGE LAMP WITH IMPROVED EFFICIENCY

Frank E. Lowther, Buffalo, N.Y., assignor to W. R. Grace & Co., New York, N.Y.
Continuation-in-part of Ser. No. 594,790, Jul. 10, 1975, Pat. No. 4,009,416. This application Feb. 22, 1977, Ser. No. 771,045
The portion of the term of this patent subsequent to Feb. 22, 1994, has been disclaimed.
Int. Cl.^{2} H05B *41/16, 41/30*
U.S. Cl. 315—176 **10 Claims**

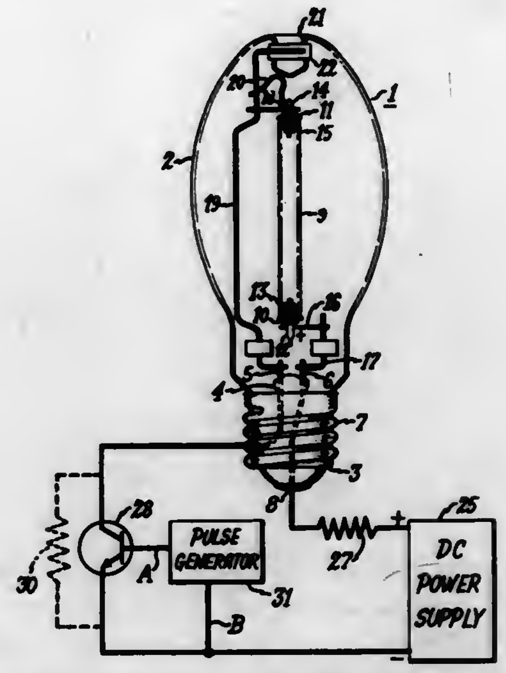


1. An apparatus for producing light from electrical energy which comprises:
- (a) A gas filled tube having discharge electrodes:
- (b) means for applying pulsed electrical energy between said electrodes, said means being adapted to provide pulses at a potential in excess of the ionization potential of said tube, and of a duration less than the gas ion transit time between the electrodes and greater than the electron transit time; and
- (c) means for eliminating gas ions from between the electrodes.

4,128,789
METHOD OF OPERATING GASEOUS DISCHARGE LAMPS

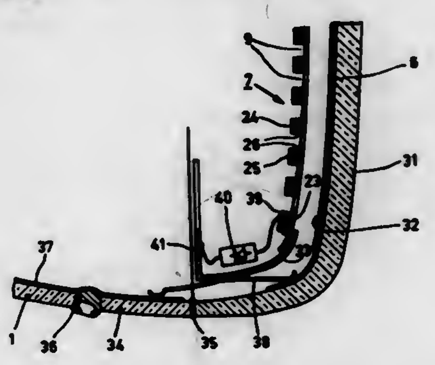
Daniel V. Owen, East Flat Rock, N.C., assignor to General Electric Company, N.Y.
Filed Jun. 30, 1976, Ser. No. 701,333
Int. Cl.^{2} H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—209 R **8 Claims**

1. A method of operating a high pressure sodium vapor gaseous discharge lamp having a filling comprising a mixture of sodium vapor and at least another metal vapor within an elongated envelope provided with spaced electrodes, wherein during DC operation of the lamp said sodium vapor becomes ionized and the sodium ions migrate toward one of said electrodes away from the other metal vapor, which method comprises energizing said gaseous discharge lamp by electrical pulses having a unidirectional current wave form with a sufficient time interval between pulses to permit said migrated sodium ions to re-diffuse with said other metal vapor, whereby separation of color in the lamp and efficacy loss in the lamp due to said migration are avoided.



4,128,790
CATHODE RAY TUBE FOR DISPLAYING COLORED PICTURES

Martin H. G. Steeghs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 2, 1976, Ser. No. 746,878
Claims priority, application Netherlands, Dec. 23, 1975, 7514975
Int. Cl.^{2} H01J *29/58*
U.S. Cl. 315—382 **1 Claim**

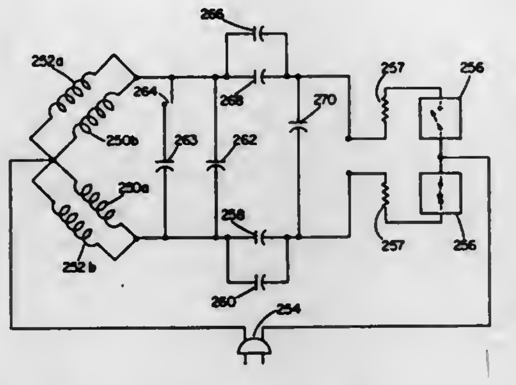


1. A cathode ray tube for displaying colour pictures comprising in an evacuated envelope, means to generate a plurality of electron beams, a display screen having a large number of regions luminescing in different colours, colour selection means for assigning each electron beam to luminescent regions of one colour, said colour selection means including at least two electrodes at two different potentials for postfocusing the electron beams, and a voltage stabilizing rectifier having a cathode and an anode, the electrode of said colour selection means at the lower of said two different potentials being electrically connected to said anode of said rectifier and the electrode of said colour selection means at the higher potential and said cathode of said rectifier being electrically connected to a high voltage connection of the tube, said voltage stabilizing rectifier being mounted within said envelope in order to reduce

the total number of external connections for said electrodes to a single external connection.

4,128,791
PHASE SHIFT CIRCUIT FOR SYNCHRONOUS MOTOR

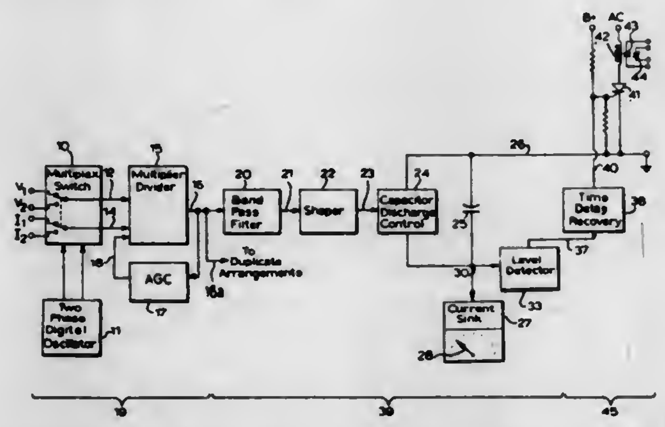
Jonathon H. Katz, 78 Cypress St., Brookline, Mass. 02146
Filed Apr. 22, 1977, Ser. No. 789,975
Int. Cl.^{2} H02P *7/36*
U.S. Cl. 318—724 **5 Claims**



1. A synchronous motor system comprising
a two-phase synchronous motor having first and second phase windings, and
drive circuitry comprising
  a voltage source,
    one terminal of said source being effectively connected to one end of each of said first and second windings,
  a first capacitance connected between the other terminal of said source and the other end of said first windings,
  a second capacitance connected between said other terminal of said source and the other end of said second windings, and
  a third capacitance connected between the junction of said first capacitance with said first windings and the junction of said second capacitance with said second windings,
  said capacitance being selected to produce a desired phase relation and to minimize any amplitude difference in the voltage supplied to said first and second windings.

4,128,792
CONTROL AND PROTECTION OF BRUSHLESS SYNCHRONOUS MOTORS

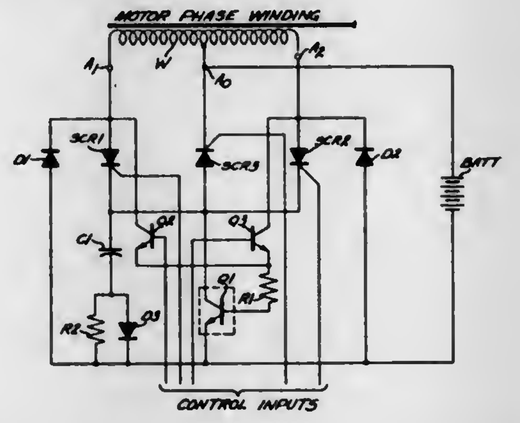
Gordon W. Herzog, and Herbert A. Gaensbauer, both of Peterborough, Canada, assignors to Canadian General Electric Company Limited, Toronto, Canada
Filed Apr. 7, 1977, Ser. No. 785,503
Claims priority, application Canada, Apr. 29, 1976, 251478
Int. Cl.^{2} H02P *1/46*
U.S. Cl. 318—706 **11 Claims**



1. Apparatus for use in the starting of a three phase salient pole synchronous motor, said motor having means to accelerate the rotor thereof towards synchronous speed and field excitation means to be energized to provide field excitation when the rotor reaches a predetermined speed, comprising
  power sensing means for deriving a first signal proportional to twice slip frequency, said power sensing means being connected only to the source of power supplying the motor,
  a capacitor,
  means connected to said capacitor for charging said capacitor at a predetermined rate,
  capacitor discharge control means responsive to said first signal proportional to twice slip frequency for discharging said capacitor at intervals related to said first signal, the charge on said capacitor being greater at said intervals become longer,
  lever detector means connected to said capacitor and responsive to the charge exceeding a predetermined level providing a second signal, and
  field excitation control means responsive to said second signal for energizing said field excitation means.

4,128,793
POWER CIRCUIT FOR VARIABLE FREQUENCY, VARIABLE MAGNITUDE POWER CONDITIONING SYSTEM

Frederick A. Stich, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Jul. 25, 1977, Ser. No. 818,986
Int. Cl.^{2} H02P *5/40*
U.S. Cl. 318—808 **16 Claims**

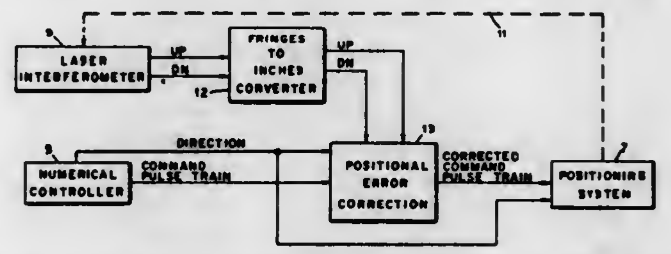


1. In a power conditioning system for supplying variable frequency and variable magnitude power to an electromagnetic device having at least one winding provided with a center tap, a power circuit including first and second inverting thyristors which are adapted to be connected to the respective ends of said winding, said winding center tap being adapted to be connected to one polarity of a unidirectional source, a semiconductor chopper coupling said first and second inverting thyristors to the other polarity of said source, whereby said first and second inverting thyristors may be gated on alternately at a relatively low frequency to energize the respective halves of said winding in push-pull while said chopper is time ratio controlled at a higher carrier frequency to selectively vary the voltage applied to said winding, and a capacitor in shunt to said chopper, whereby said inverting thyristors may be commutated off by the charge on said capacitor when said chopper is off so they are not conducting load current.

4,128,794
INTERFEROMETRIC CORRECTION SYSTEM FOR A NUMERICALLY CONTROLLED MACHINE

Robert R. Burleson, Clinton, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Oct. 11, 1977, Ser. No. 841,087
Int. Cl.^{2} G05B *19/28*
U.S. Cl. 318—603 **4 Claims**

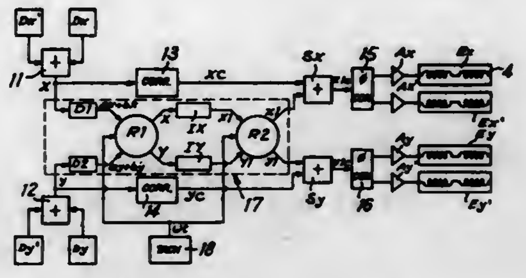
1. In combination with a numerically controlled machine including a numerical controller for generating command pulses at an output and a direction control signal at a separate output and applying said command pulses to an input of a positioning system to position an article along an axis in a forward or reverse direction as indicated by said direction control signal, and an interferometer feedback system for monitoring the movement of said article and generating pulses on an up pulse line when movement is sensed in said forward direction and generating pulses on a down pulse line when movement is sensed in the reverse direction, a positioning error correction circuit comprising:
  a bidirectional error counter having an up count input, a down count input and a zero count output which is activated each time said counter is counted down through zero count;
  an error count limit selector means for selecting and registering an error count limit value corresponding to an absolute error limit magnitude;
  a comparator means for comparing said error count registered by said counter with said error count limit value registered by said selector means and generating a correction signal at an output thereof when said error count exceeds said error count limit value;
  input circuit means responsive to said direction control signal from said controller for gating said up and down pulses from said interferometer feedback system and said command pulses from said controller to first and second outputs of said input circuit means so that the difference in the number of pulses appearing at said first and second outputs of said input circuit means represents the positioning error of said system;
  an error direction sensing and control means responsive to said zero count output of said counter for directing pulses from said first and second outputs of said input circuit means to said up and down count inputs of said counter so that an absolute error count is registered by said counter and further responsive to the output of said comparator for generating a first error correction signal at a first output thereof when said error is a lagging error and generating a second error correction signal at a second output thereof when said error is a leading error;
  an add-a-pulse circuit means responsive to said first error correction signal for adding command pulses to said input of said positioning system until said lagging error is less than said error limit; and
  a delete-a-pulse circuit means responsive to said second error correction signal for deleting command pulses from the input of said positioning system until said leading error is less than said error limit.



4,128,795
DEVICE FOR DAMPING THE CRITICAL FREQUENCIES OF A ROTOR SUSPENDED BY A RADIAL ELECTROMAGNETIC BEARING

Helmut Habermann; Maurice Brunet, and Pierre Joly, all of Vernon, France, assignors to Societe Europeene de Propulsion, Puteaux, France
Filed Dec. 17, 1976, Ser. No. 751,968
Claims priority, application France, Dec. 24, 1975, 75 39760
Int. Cl.^{2} G05B *5/01*
U.S. Cl. 318—618 **6 Claims**

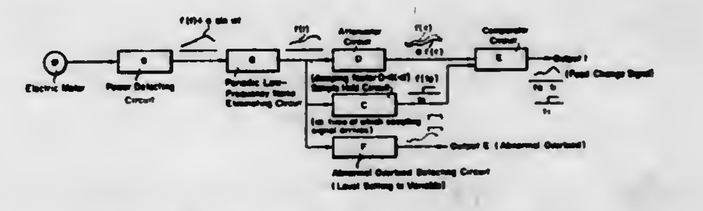
1. A magnetic suspension system for suspending a rotor and comprising at least one electromagnetic radial bearing from which said rotor is suspended, said bearing including electromagnetic windings; detecting means for detecting the radial position of the rotor and for producing a position signal representative of said radial position of the rotor; energizing means for supplying a current to said windings; and a servo-circuit coupled between said detecting means and said energizing means for controlling the current supplied to said windings in response to said position signal so as to keep said rotor in a predetermined radial position, wherein said servo-circuit comprises:



  selective amplification means for selectively amplifying said position signal in a frequency band centered on a controllable central frequency; and
  means for supplying to said selective amplification means a signal representative of the speed of rotation of the rotor for continuously slaving said central frequency of the frequency band in which said position signal is amplified to the rotational speed of the rotor, whereby critical frequencies of the rotor are damped by selective increase of the stiffness of the bearing.

4,128,796
GAP ELIMINATOR

Yasuji Ohashi, and Yoichiro Mitani, both of Osaka, Japan, assignors to NTN Toyo Bearing Company Limited, Osaka, Japan
Filed Mar. 29, 1976, Ser. No. 671,377
Claims priority, application Japan, Apr. 1, 1975, 50-40068
Int. Cl.^{2} G05B *21/02*
U.S. Cl. 318—636 **2 Claims**


Electric Motor
Power Detecting Circuit
Periodic Low-Frequency Noise Eliminating Circuit
Attenuator Circuit
Comparator Circuit
Output I
Output II (Abnormal Overload)
Abnormal Overload Detecting Circuit (Level Setting is Variable)

1. A gap eliminator for use in machine tools and the like having an associated electric motor, said gap eliminator comprising a power detecting circuit operatively connected to the electric motor for detecting the power or current of said motor under no-load or light conditions and producing a first output signal thereof under such conditions, a periodic low-frequency noise eliminating circuit electrically coupled with said power detecting circuit for converting an output signal $f(t) = a\cdot\sin\omega t$ from the power detecting circuit into an output signal $f(t)$, said noise eliminating circuit including band-pass filter circuits whereby a signal wave fed therein is put to the phase of $a\cdot\sin\omega t$, a level adjuster circuit for causing the signal wave fed from said band-pass filter circuits and to appear as $a\cdot\sin\omega t$ by adjusting its volume, a phase inverter circuit for inverting the phase of the signal wave fed from said level adjuster circuit so as to provide $-a\cdot\sin\omega t$, and an adder circuit for adding together the power and the signal wave $-a\cdot\sin\omega t$ which has fed from said phase inverter to provide the desired signal $f(t)$, a sample hold circuit electrically coupled to said noise eliminating circuit for receiving and storing the first output signal from the detecting circuit when the motor is under a no-load or light load condition, attenuator circuit means electrically coupled with said noise eliminating circuit in parallel with the sample hold circuit for producing a second output signal when said motor is under

a loaded condition, and a comparator circuit for comparing said first and second output signals, said comparator circuit including means providing a deviation value as an output signal to control the feed rate of the machine tool.

4,128,797

CHAIR FOR DENTAL TREATMENT

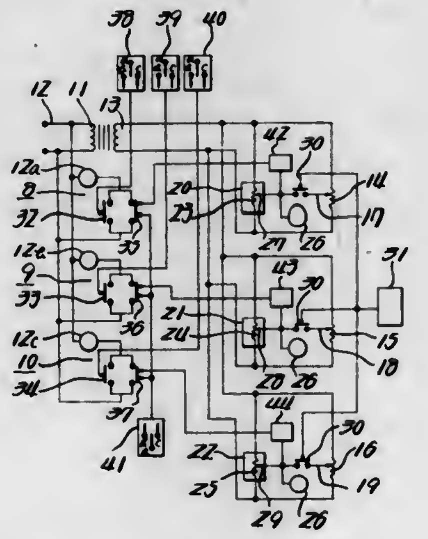
Hiroshi Murata, Warabi, Japan, assignor to Daiko Iryoki Seisakusho Co., Ltd., Saitama, Japan

Filed Jul. 29, 1977, Ser. No. 820,119

Claims priority, application Japan, Jun. 11, 1976, 51/68502

Int. Cl.² G05B *1/06*

U.S. Cl. 318—666 **1 Claim**



1. A chair for dental treatment comprising:

a seat having at least one movable part;

operating means for moving the movable part of the seat;

power means for driving the operating means;

a position detector for detecting the present position of the movable part of the seat;

means connected to the position detector for presetting the movable part of the seat to an optimum position;

a memory connected to the position detector for storing the optimum position of the movable part of the seat;

first actuatable control means for controlling the power means;

second actuatable control means for controlling the power means;

the power means including at least one motor coupled to said at least one movable part, normally open first switch means connected between the motor and the operating means and adapted to close when the first control means is activated, and second switch means connected across the first switch means between the motor and the operating means and adapted to close when the second control means is activated, said first and said second control means each having two operating modes by which the direction of rotation of said at least one motor is controlled, whereby it is correspondingly controlled by the direction of movement of said at least one movable part of said seat; and

means for reading the optimum position of the movable part of the seat from the memory and opening the second switch means when the present position matches the optimum position.

4,128,798

CHARGING CIRCUIT

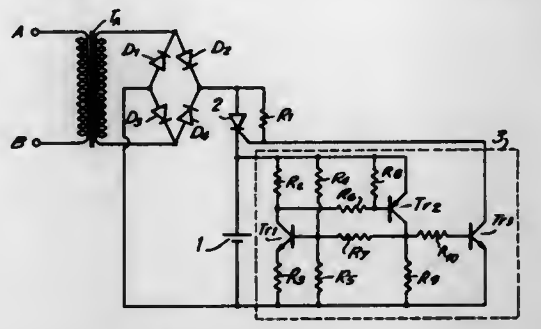
Yoshihiro Takei, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed May 3, 1976, Ser. No. 682,239

Claims priority, application Japan, May 2, 1975, 50-60087[U]; May 2, 1975, 50-60088[U]; Dec. 10, 1975, 50-146980

Int. Cl.² H02J *7/04*

U.S. Cl. 320—23 **14 Claims**



1. A charging circuit for charging a DC cell, comprising in combination supply means for producing a current, current gaing means disposed intermediate said DC cell and said supply means for selectively supplying a charging current of a first selected value to said DC cell in response to said current produced by said supply means, and control means coupled to said DC cell and to said gating means, said control means being adapted to detect when said cell is charged to a predetermined maximum voltage, and in response thereto, control said gating means to prevent said charging current from being supplied to said DC cell, said control means in response to a drop in the voltage of said cell to a second predetermined level defining a first closed current path means in parallel with said DC cell and controlling said gating means to permit said charging current to be applied to said DC cell and to said first closed current path means so that a charging current of a second value reduced with respect to said first value is supplied to said DC cell.

4,128,799

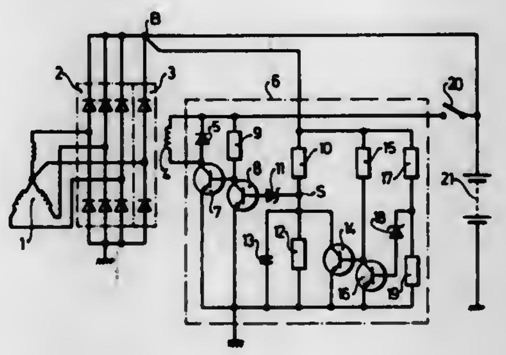
SEMI-CONDUCTOR VOLTAGE REGULATOR, PARTICULARLY FOR AUTOMOTIVE USE

Toshio Morishima, Kariya, Japan, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 15, 1977, Ser. No. 824,818

Int. Cl.² H02J *7/14;* **H02P** *9/30*

U.S. Cl. 322—28 **7 Claims**



1. Semi-conductor voltage regulator for connection to a dynamo electric generator (1) and adapted to control current flow through the field winding (4) of the generator (1) as a function of the output voltage of the generator, comprising

a main semi-conductor controlled switch (7) having its output connected to controlled current flow through the field winding (4) of the dynamo electric generator (1);

a main voltage sensing means (10, 11, 12) including a main voltage divider (10, 12) connected to sense average output voltage of the dynamo electric generator and controlling conduction of said main semi-conductor switch (7);

an auxiliary voltage sensing means (17, 18, 19) connected to the output voltage of the dynamo electric generator (1) and sensing minimum instantaneous voltage levels thereof;

and an auxiliary semi-conductor controlled switch (14, 16) having its output connected to the main voltage divider (10, 12) and modifying the voltage division ratio thereof, said auxiliary semi-conductor controlled switch (13, 16) having its input controlled by said auxiliary sensing means.

4,128,800

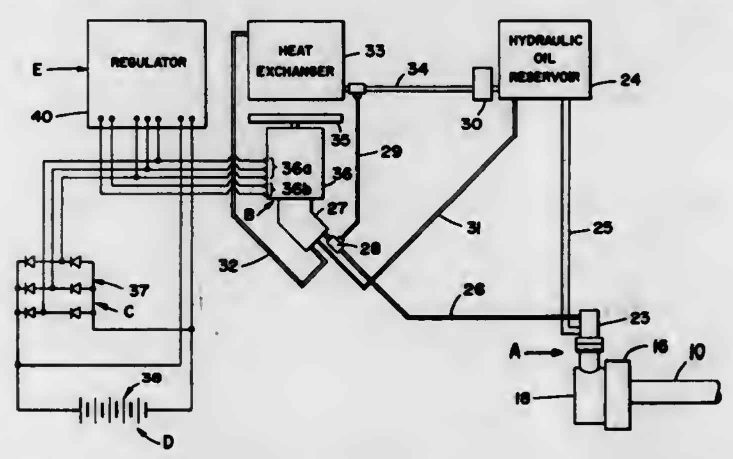
VEHICULAR BATTERY CHARGING SYSTEM

John P. Scott, 44 Crane Dr., San Anselmo, Calif. 94960; Dudley C. Peters, 6550 Vicksburg Pl., and Richard C. Foster, 11750 W. Eight Mile Rd., both of Stockton, Calif. 95207

Filed Jun. 23, 1976, Ser. No. 699,137

Int. Cl.² H02J *7/14;* **F16H** *37/00*

U.S. Cl. 322—28 **17 Claims**



1. A vehicular battery charging system comprising a hydraulic pump, drive means rotationally coupling said hydraulic pump to a rotating axle of said vehicle, said drive means including a right angle gear drive disposed at one end of said axle and flexible coupling means for rotationally coupling the end of said axle and the input of said right angle gear drive, said hydraulic pump being coupled to the output of said right angle gear drive, a hydraulic motor disposed remote from said hydraulic pump and coupled to the output thereof, an alternator rotationally coupled to said hydraulic motor, and rectifier means for rectifying the a.c. output of said alternator, the output of the alternator from said rectifier means being coupled to said battery for charging.

15. A variable duty cycle free running multivibrator circuit comprising a first pair of transistors, a pair of capacitors, said first pair of transistors and said capacitors being connected in free running multivibrator configuration and second and third pairs of transistors respectively connected in complimentary Darlington differential configuration with the outputs thereof respectively connected to said capacitors to control the charging thereof, the differential inputs of said complimentary Darlington differential thereby controlling the duty cycle of said multivibrator.

4,128,801

VOLTAGE REGULATOR STRUCTURE FOR AUTOMOTIVE-TYPE GENERATORS

Willi Gansert, Kornwestheim, and Norbert Rittmannsberger, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 7, 1977, Ser. No. 775,283

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1976, 2610136

Int. Cl.² H02P *9/30;* **H01L** *25/00*

U.S. Cl. 322—28 **19 Claims**

1. Voltage regulator for combination with an automotive-type generator, said generating having two line output terminals and an exciter field terminal, the voltage regulator comprising

a free-wheeling diode (19);

a control circuit stage (13);

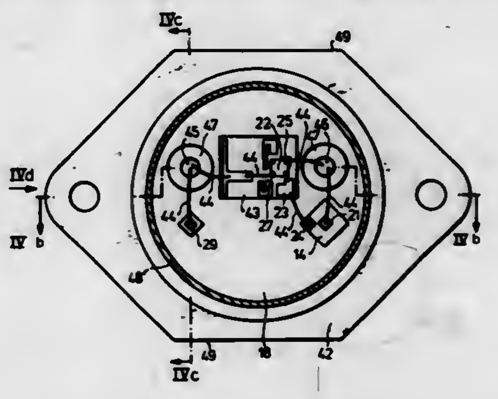
a power circuit stage (14);

said circuit stages including active semiconductor elements (15, 31) and passive electrical circuit elements (16, 32, 33, 34);

a housing (42, 48) having a metallic base (42) and a housing cap (48) secured to and sealed to the metallic base, covering and sealing said free-wheeling diode, and said circuit stages in one covered, sealed, composite element;

an insulating plate (43) secured within the housing;

two connecting lugs or pins (45, 46) passing through the housing and being sealed therethrough in insulated relation with respect thereto, and forming the positive and negative line terminals of the voltage regulator, connectable to the line terminals of the generator, the housing forming the field terminal of the voltage regulator and being connectable to the exciter field terminal of the generator, said housing, base and cover forming a standard power transistor housing package assembly;



wherein the power circuit stage (12) comprises a first chip (14) forming an integrated circuit directly electrically and mechanically secured to the metallic base (42) of the housing of the regulator;

the control circuit portion (13) comprises a second semiconductor chip (22) forming an integrated circuit supported on the insulating plate (43);

and wherein the free-wheeling diode comprises a third semiconductor chip (29) on which the diode structure is grown, the third chip (29) being secured to the metallic base (42) of the housing of the regulator.

4,128,802

SOLID STATE VOLTAGE REGULATED AUTOMOTIVE-TYPE ELECTRICAL POWER SUPPLY SYSTEM

Willi Gansert, Kornwestheim; Dietrich Bergfried, Boblingen; Gert Heinrich, Ludwigsburg; Dietmar Schnepf, Esslingen; Harry Slansky, Muhlacker, Grossglattbach; Eberhard Pfluger, Leonberg, and Jean Dorkel, Reutlingen-Betzingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 7, 1977, Ser. No. 775,284

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1976, 2610137

Int. Cl.² H02P *9/30;* **H01L** *25/00*

U.S. Cl. 322—28 **10 Claims**

1. Solid state regulated power supply system having

a shunt excited ac generator (10) subject to widely varying drive speeds, including a shunt field (14); comprising

a free-wheeling bypass diode (19) connected in parallel with the field (14);

a voltage regulator (R) connected to the output of the generator and further connected to intermittently control energization of the field (14) including a power semi-conductor (LT) in series with the field (14), a comparator and control stage (ST) connected to and comparing the output voltage of the alternator with a reference (35) and controlling conduction of the power semi-conductor (LT), a first integrated circuit (IC) monolithic chip (28) on which the power semi-conductor (LT) is formed and a second IC monolithic chip (36) on which the comparator and control stage (ST) is formed,

a single, hermetically sealed housing (G, 51, 52) including a metal base plate (51) and a housing cover, or cap (52) sealed thereto;

a third IC monolithic chip (50) on which the freewheeling diode (19) is formed;

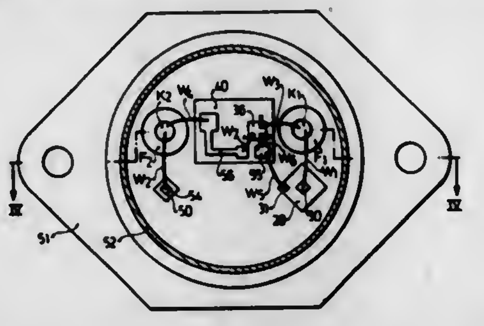
the first, second and third monolithic chips (28, 36, 50) being all located within the sealed housing (G; 51, 52) whereby the entire voltage regulator and the free-wheeling diode is included as a single electrically complete unit in a single sealed housing;

externally projecting terminal posts (K_1, K_2) sealed to the housing (G; 51, 52) and insulated therefrom;

first connecting means connecting the collector (29) of the power semi-conductor (LT) internally within the housing to the metal base plate (51);

second connecting means connecting one of the terminals of the free-wheeling diode (29) internally within the housing to the metal base plate (51);

third connecting means connecting one of the terminals of the shunt field (14) to the metal base plate (51), whereby the metal base plate (51) of the housing (G; 51, 52) will form a common terminal (53) for the collector (29) of the power semi-conductor (LT), one terminal of the free-wheeling diode (19) and one terminal of the shunt field (14);



fourth connecting means (W_1) connecting the emitter of the power semi-conductor (LT) to one of the terminal posts (K_1);

fifth connecting means (W_2) connecting the other terminal of the free-wheeling diode to the other terminal post (K_2) for connection to the other terminal field (14);

internal connecting means (W_3–W_7) interconnecting the first and second monolithic chips and additionally interconnecting said second chip and said terminal posts; the first and third IC monolithic chips (28, 50) being secured with one side thereof to the metal base plate (51) of the housing (G) in good electrical and heat conductive contact;

and an insulating plate (40) secured to the metal base plate (51), the second IC monolithic chip (36) being secured to the insulating plate to position the second IC monolithic chip within the housing in insulated relation with respect thereto.

4,128,803

METAL DETECTOR SYSTEM WITH GROUND EFFECT REJECTION

George C. Payne, Tempe, Ariz., assignor to PNI, Inc., Tempe, Ariz.

Filed Apr. 29, 1977, Ser. No. 790,385

Int. Cl.^{2} G01V *3/10;* G01R *33/02*

U.S. Cl. 324—3 **10 Claims**

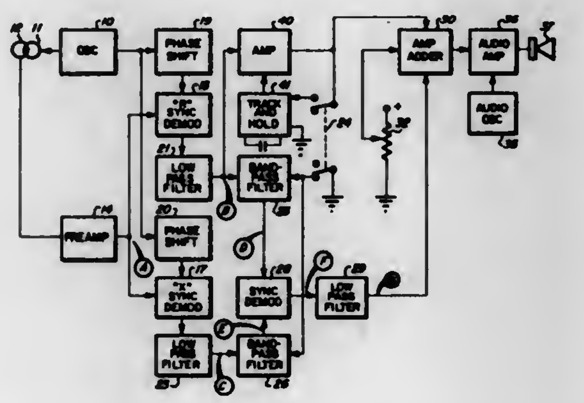
1. A system for detecting metallic objects and for distinguishing between objects of different types including in combination:

an oscillator;

a transmit coil coupled to said oscillator for transmitting signals generated by said oscillators;

a receive coil mounted in proximity to said transmit coil for receiving signals transmitted by said transmit coil, such received signals being modified in amplitude and phase when metallic objects are located in the path of the signals transmitted by said transmit coil;

first and second synchronous demodulator means for detecting "R" (eddy current) and "X" (reactive) signal components, respectively, each having a signal input and a reference input and each coupled to said receive coil for receiving the signals therefrom on the signal input terminals thereof;



means for coupling signals from said oscillator to the reference signal inputs of said first and second demodulator means at different relative phases; third synchronous demodulator means having a signal input and a reference input;

means coupling the outputs of said first and second demodulator means to the signal input and reference input respectively of said third synchronous demodulator means, the amplitude of the output signal from said third synchronous demodulator means being representative of the presence of a metallic object and the polarity of said output signal indicating the type of metallic object being detected; indicating circuit means coupled to the output of said third synchronous demodulator means.

4,128,804

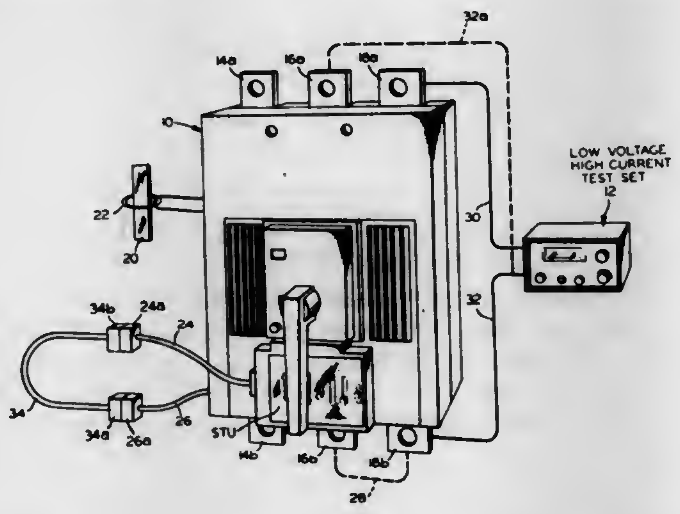
GROUND FAULT DEFEAT CABLE FOR HIGH CURRENT STATIC TRIP CIRCUIT BREAKER TEST SETS

Ronald R. Russell, Plainville, Conn., assignor to General Electric Company, New York, N.Y.

Filed Jan. 19, 1978, Ser. No. 870,904

Int. Cl.^{2} G01R *31/02*

U.S. Cl. 324—28 CB **5 Claims**



1. For use in conjunction with a multipole static trip circuit breaker having separate phase current sensing transformers feeding individual phase current monitoring signals to a static trip unit respectively indicative of the currents flowing through each breaker pole, the static trip unit including a ground fault sensing differential current transformer having a plurality of primary winding, and a high current test set connected to pass test current of overcurrent proportions through a single breaker pole; a ground fault defeat cable electrically interconnected between said phase current sensing transformers and said static trip unit, said defeat cable including a plurality of conductors arranged to route the phase current monitoring signal developed by the phase current transformer associated with the breaker pole through which the test current is passed in opposite relative directions through two of the differential current transformer primary windings, thereby to maintain an overall primary current balance so as to prevent the initiation of a ground fault trip function by said trip unit.

4,128,805

METHOD AND APPARATUS FOR LOCATING A FAULT ON A LINE

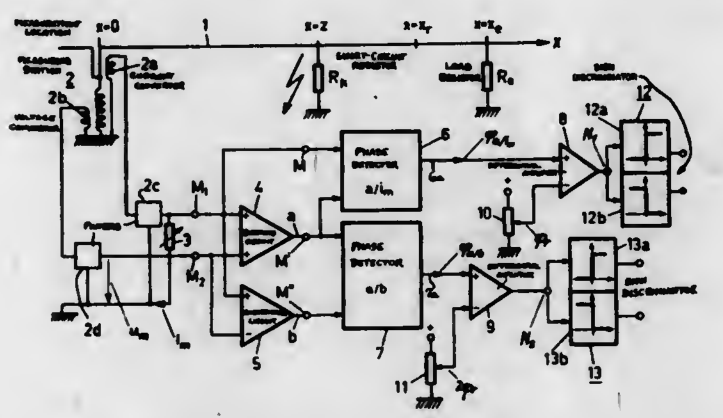
Otto Lanz, Niederrohrdorf, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Mar. 14, 1977, Ser. No. 777,527

Claims priority, application Switzerland, Mar. 25, 1976, 3717/76

Int. Cl.^{2} G01R *31/08*

U.S. Cl. 324—52 **42 Claims**



35. An apparatus for determing a fault location on a line comprising, in combination:

a measuring station including a measurement location;

measuring means provided for the measuring station for measuring the line currents and line voltages appearing at the measuring location;

said measuring means including converter means for transforming the line currents and line voltages into signals corresponding to measurement currents and measurement voltages respectively;

said converter means including multiplier- or divider circuitry for weighting the current signals and voltage signals relative to one another;

an evaluation circuit connected to said converter means for the determination of the fault direction and fault distance;

said evaluation circuit including at least one phase detector delivering a phase angle signal which characterizes by its sign and magnitude the fault direction and the fault distance, respectively, in relation to a reference position on the line; and

said multiplier or divider circuitry being structured so as to add at least approximately no phase shift to said current signals and voltage signals to be weighted.

4,128,806

DEVICE FOR CHECKING THE INSULATION OF THE LEADS CONNECTING A GENERATOR TO A RECEIVER

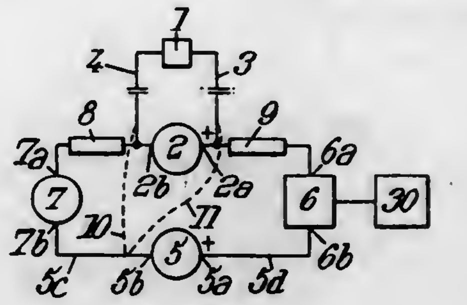
Gérard Lejeune, Fosses, and Jean-Claude Dubrencq, Paris, both of France, assignors to Inter-Elec, Drancy, France

Filed Jul. 26, 1977, Ser. No. 819,125

Claims priority, application France, Jul. 26, 1976, 76 22773

Int. Cl.^{2} G01R *31/02, 31/12*

U.S. Cl. 324—54 **10 Claims**



1. A device for checking the insulation of first and second leads connecting the output terminals of a power generator to a receiver sensitive to signals having a set nature and an amplitude above a given threshold, characterized in that, in order to check the insulation of the leads with respect to an inteference generator having first and second output terminals and operative to transmit signals having the set nature, said device comprises:

current-detecting means having a first input terminal connected to said first lead and a second input terminal connected to said first output terminal of said interference generator, said current-detecting means being sensitive to a signal having a second nature different from the set nature, insensitive to the signals having the set nature, and operative to deliver a signal at a first level when the current between said first and second input terminals is above a threshold i_1 and a signal at a second level when the current is below the threshold i_1;

a checking generator for producing signals having the second nature, said checking generator having a first output terminal connected to said second lead and a second output terminal connected to said second output terminal of said interference generator;

a first impedance disposed in series with said current-detecting means between said first lead and said first output terminal of said interference generator; and

a second impedance disposed in series with said checking generator between said second lead and said second output terminal of said interference generator, the values of said first and second impedances being chosen so that the amplitude of the signals produced by said interference generator and reaching said receiver is below the threshold.

4,128,807

MULTI-DIAL ELECTRIC METER REGISTER

Kenneth G. Halstead, and Thomas G. Willis, both of Raleigh, N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 1, 1977, Ser. No. 847,470

Int. Cl.^{2} G01R *15/08, 11/64*

U.S. Cl. 324—116 **12 Claims**

1. A multi-dial electric utility meter register assembly comprising:

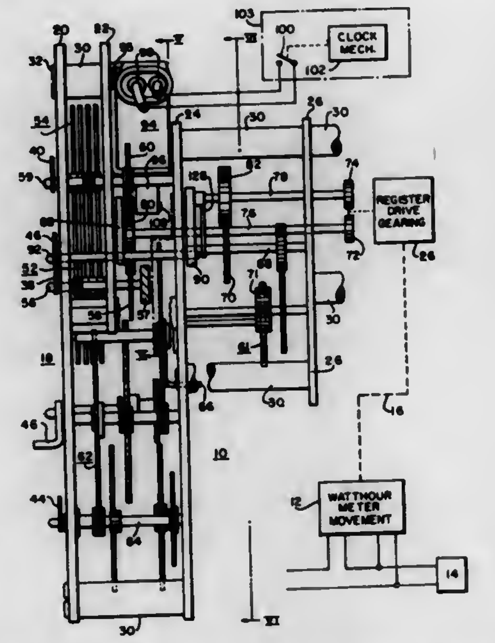
a frame for detachably mounting to a watthour meter movement;

first, second and third gear trains mounted in said frame, each of said first, second and third gear trains having a separate input gear, and each of the gear trains having a separate set of plural dial pointer shafts for indicating totalized values of electrical power usage;

a register drive gearing rotatable in response to measuring operation of said watthour meter movement;

a first shifting control plate carried by said frame for shiftable movement between first and second positions for effecting alternate coupling of said register drive gearing to input gears of said first and second gear trains;

a second shifting control plate carried by said frame for shiftable movement between first and second positions for effecting alternate coupling and uncoupling, respectively between said register drive gearing and said input gear of said third gear train; and



a connecting member extending between said first and second control plates and movable so that both of said first and second control plates are concurrently moved between the respective first and second positions thereof with an outer end of said connecting member providing a dial status indicator for visually indicating the activated dial pointer shafts of the gear trains being drivingly connected to said meter movement; and

an actuator means connected to one of said first and second control plates for moving the control plate connected thereto between said first and second positions thereof.

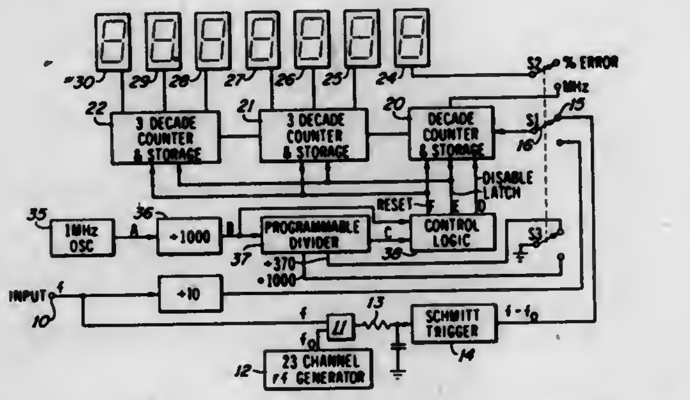
4,128,808
CHANNEL FREQUENCY ANALYSER

Marlin D. Westra, Sioux Falls, S. Dak., assignor to Sencore, Inc., Sioux Falls, S. Dak.

Filed Nov. 4, 1976, Ser. No. 738,647

Int. Cl.² H03C *3/00*

U.S. Cl. 325—134 7 Claims



1. A method of measuring the percentage deviations of any one of a plurality of first frequencies from a plurality of respective reference frequencies, comprising the steps of

counting during a period of predetermined duration the difference between the number of cycles of one of said first frequencies and the number of cycles of the corresponding one of said reference frequencies,

the duration of said period being selected such that said difference is mathematically related to each of said percentage deviations by substantially the same factor for all of said first frequencies and the corresponding ones of said reference frequencies.

4,128,809
TIME DIVERSITY RECEIVER FOR PROCESSING REPEATEDLY RECEIVED SIGNAL BITS IN CONSIDERATION OF A MAXIMUM-LEVEL AND/OR A FAVORABLY RECEIVED SIGNAL BIT

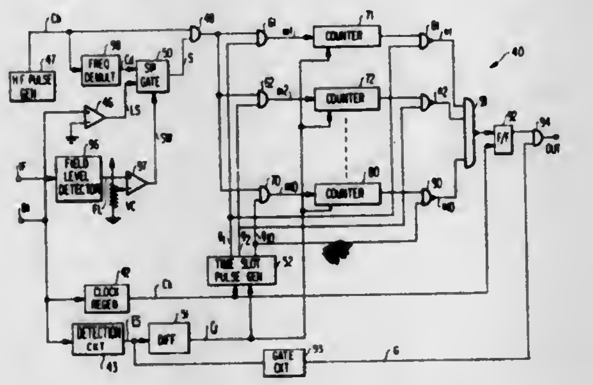
Kouzou Kage, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1977, Ser. No. 829,320

Claims priority, application Japan, Aug. 31, 1976, 51-104596; Aug. 31, 1976, 51-104597; Mar. 29, 1977, 52-35785; Jun. 9, 1977, 52-68604; Jun. 9, 1977, 52-68605

Int. Cl.² H04L *1/08*

U.S. Cl. 325—324 17 Claims



1. In a receiver of a time diversity electrical communication system wherein a first number of signal bits forming a group and carrying information pieces, respectively, are successively transmitted from a transmitter of said system to said receiver through a transmission path in prescribed ones, respectively, of a second number of time slots of a time slot frequency, said signal bit group being repeatedly transmitted from said transmitter to said receiver a third number of times, the signal bits of the repeatedly transmitted groups being received by said receiver together with a background noise of a level variable with time, the received signal bits having levels subjected to inevitable fluctuations due to atmospheric conditions of said path and due to said noise, a combination which comprises:

first means for detecting the levels of the signal bits of said groups to produce first signals of levels representative of the detected signal bit levels;

dividing means for dividing said first signals into groups corresponding to the respective information pieces;

second means for introducing the idea of preference or weight into the levels of the first signals for each of said first signal groups to produce a second signal representative of the result of introduction of the preference or weight, said second means successively producing the second signals for the respective first signal groups; and

reproducing means responsive to said second signals for reproducing said information pieces.

4,128,810
SIGNAL LEVEL INDICATOR DRIVING CIRCUIT

Minoru Ogita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 24, 1976, Ser. No. 717,391

Claims priority, application Japan, Aug. 28, 1975, 50-103430

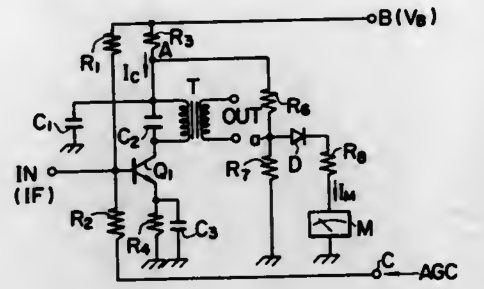
Int. Cl.² H04B *1/26*

U.S. Cl. 325—398 4 Claims

1. A tuning indicator driving circuit for use in a radio receiver circuit including an automatic gain control circuit, comprising:

detector means for detecting a dc component of an output of the automatic gain control circuit, said detector means including a signal amplifying element in the receiver circuit generating an output signal containing said dc component and an ac component, said dc component being controlled by the output of the automatic gain control circuit, means for shunting said ac component of said amplifying element output to ground, and a dc current path means connected to said amplifying element output for transmitting the dc component of said output, said dc current path means comprising means for determining a threshold voltage above which a current is allowed to flow therethrough, said voltage determining means including means for shifting the level of said dc component in said current path means and an element having a threshold voltage connected to said level shifting means; and

a tuning indicator means driven by the output of said threshold voltage determining means.



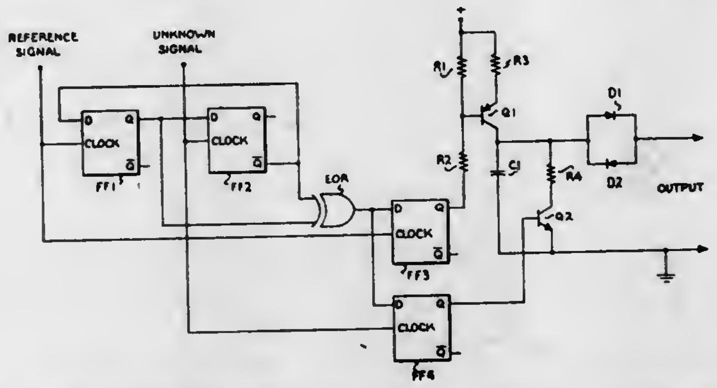
4,128,811
FREQUENCY INDICATING CIRCUIT

Arvid E. Englund, Jr., Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Jul. 5, 1977, Ser. No. 812,919

Int. Cl.² H03D *13/00*

U.S. Cl. 328—134 8 Claims



1. A circuit for indicating the relative frequency of first and second repeating signals, the frequencies of said first and second signals being respectively indicated by first and second repeating pulses, said circuit comprising:

a. first input means for said first pulses;

b. second input means for said second pulses;

c. third means having an exclusive OR device, said third means being connected to said first and second input means for producing at an output a binary signal which switches to a first value in response to receipt of each of said first pulses and which switches to a second value in response to receipt of each of said second pulses;

d. and fourth means having first and second outputs and having inputs, said fourth means inputs being connected to said third means output and to said first and second input means for producing a first value binary signal at said first output in response to said second frequency being equal to or greater than said first frequency; for producing a second value binary signal at said second output in response to said first frequency being equal to or greater than said second frequency; for producing a second value binary signal at said first output in response to said first frequency being greater than said second frequency; and for producing a first value binary signal at said second output in response to said second frequency being greater than said first frequency.

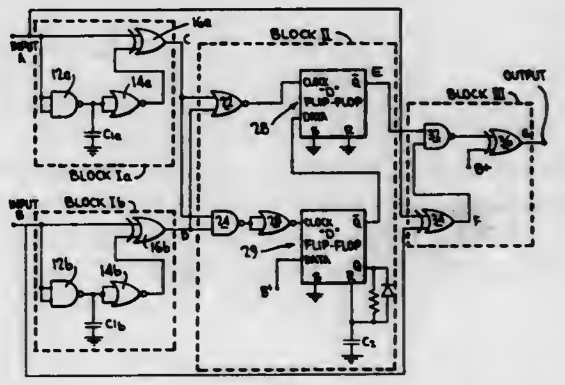
4,128,812
PHASE DISCRIMINATOR

James D. Pavlis, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 9, 1977, Ser. No. 823,078

Int. Cl.² H03D *13/00*

U.S. Cl. 328—134 13 Claims



1. A phase detector for detecting phase synchronism between a first reference input signal and a second input signal comprising:

a pulse generator which generates pulses at each transition of the first and second input signals, said pulse generator comprising pulse delaying circuits each which receives the input signals, and first gating means which is coupled to receive the input signals and the outputs from the pulse delaying circuits for producing a high logical output whenever the logical levels of its inputs are not in concert;

means coupled to the pulse generator for producing an output determinative of whether the pulses generated occur concurrently; and

gating means which compare the first and second input signals to the output of the means for determining concurrence for producing an output indicative of phase relationship, whereby the phase relationship is determined.

4,128,813
AMPLIFIER

Tadao Suzuki, and Tadao Yoshida, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 18, 1977, Ser. No. 852,971

Claims priority, application Japan, Nov. 25, 1976, 51-141519

Int. Cl.² H03F *3/18*

U.S. Cl. 330—264 21 Claims

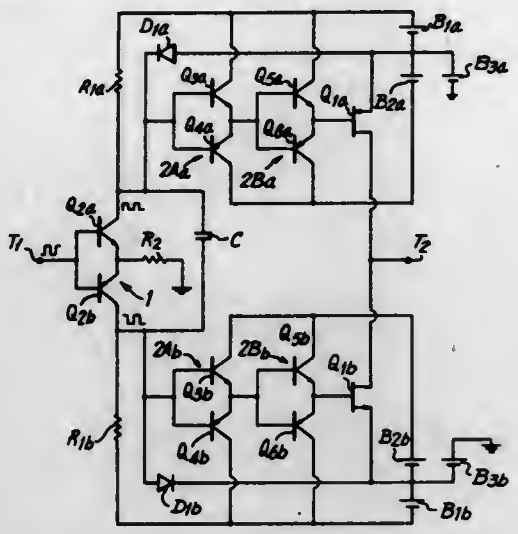
11. An amplifier, comprising:

first and second field effect transistors connected in push-pull relation, each field effect transistor including gate, source and drain electrodes, one of the source and drain electrodes of said first field effect transistor being connected in common to one of the source and drain electrodes of said second field effect transistor and to an output terminal, and the other of the source and drain electrodes of each field effect transistor being adapted to receive a DC energizing voltage;

input signal supply means for supplying input signals for said first and second field effect transistors;

first and second impedance converting means for coupling said input signal supply means to said first and second field effect transistors, respectively, each of said impedance converting means having a relatively low output impedance; and

first and second voltage limiting means connected between said input signal supply means and the source electrodes of said



first and second field effect transistors, respectively, to limit the forward biasing of said first and second field effect transistors and thereby limit the maximum inherent input gate capacitance of said first and second field effect transistors.

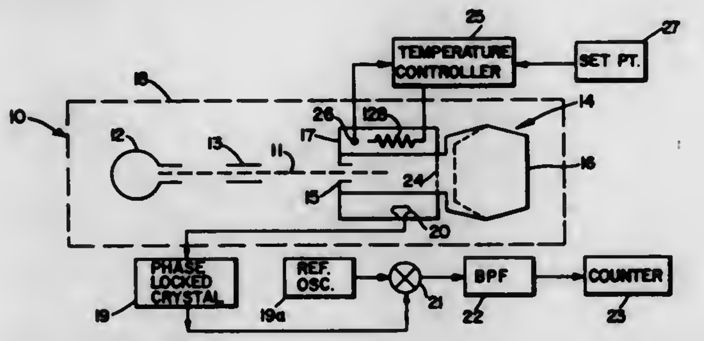
4,128,814
EXTERNAL BULB VARIABLE VOLUME MASER

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Victor S. Reinhardt, Gaithersburg, and Peter O. Cervenka, Rockville, both of Md.

Filed Nov. 30, 1977, Ser. No. 856,464

Int. Cl.² H01S *1/06*

U.S. Cl. 331—94 **8 Claims**



1. In an atomic or molecular frequency standard wherein a collimated beam of atomic or molecular particles is directed through an aperture into a variable volume, constant surface area storage bulb so that there are a random number of collisions between the particles and wall of the bulb and the frequency of the standard is shifted in response to the collisions, said bulb having a fixed volume portion located in a resonant cavity from which the frequency standard is derived, and a variable volume portion exterior to the cavity, said cavity having a length to width ratio of at least 1.5:1 so that stability of the standard is attained without the need for a feedback loop.

4,128,815
SINGLE TRANSVERSE MODE OPERATION IN DOUBLE HETEROSTRUCTURE JUNCTION LASER

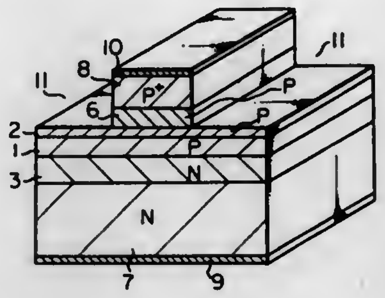
Hitoshi Kawaguchi, Higashi Yamato, and Yoshitaka Furukawa, Musashino, both of Japan, assignors to Nippon Telegraph and Telephone Public Corp., Tokyo, Japan

Filed Sep. 23, 1976, Ser. No. 725,777

Claims priority, application Japan, Oct. 7, 1975, 50-121162

Int. Cl.² H01S *3/19*

U.S. Cl. 331—94.5 H **15 Claims**



1. A single transverse mode semiconductor laser which comprises a semiconductor structure having optical resonator defining parallel opposed surfaces, said semiconductor structure comprising:

(a) a semiconductor substrate of a first conduction type;
(b) an optical confinement semiconductor layer of the first conduction type that is provided on said semiconductor substrate and has a refractive index of n_3;
(c) an optical waveguide active semiconductor layer that is provided on said optical confinement semiconductor layer and has a refractive index of n_1;
(d) a buffer semiconductor layer of a second conduction type that is provided on said optical waveguide active semiconductor layer, and has a refractive index of n_2;
(e) a mode controlling striped semiconductor layer of the second conduction type that is provided on said buffer semiconductor layer, has a width *a*, and has a refractive index of n_6;
(f) a contact forming semiconductor cap layer of the second conduction type that is provided on said mode controlling striped semiconductor layer;
(g) a first ohmic contact provided on said contact forming semiconductor cap layer; and
(h) a second ohmic contact provided on the bottom surface of said substrate;

wherein said refractive indexes satisfy the relations:

$$n_6 \leqq n_2 < n_1 \text{ and } n_3 < n_1\text{; and}$$

said width *a* of said mode controlling striped semiconductor layer satisfies the relation:

$$a \leqq \lambda_o/(2n_1\sqrt{2\Delta n}),$$

where λ_o is the wavelength of propagated light in free space and Δn is a specific equivalent refractive index difference given by:

$$\Delta n = 1 - \sqrt{1 - \frac{n_A^2 - n_b^2}{n_1^2}}\,,$$

wherein n_A is a standardized propagation for a first region, said first region including said mode controlling striped semiconductor layer and the portions of said optical confinement, optical waveguide, and buffer semiconductor layers that lie beneath said mode controlling striped semiconductor layer, and n_B is a standardized propagation constant for a second region, said second region including the portions of said optical confinement, optical waveguide active, and buffer semiconductor layers that are adjacent to said first region.

4,128,816
ELECTRONIC CIRCUIT

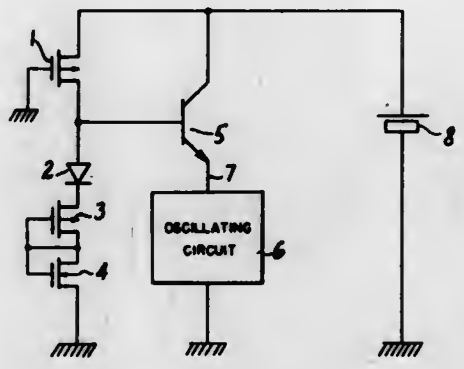
Nobuo Shimotsuma, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Jul. 18, 1977, Ser. No. 816,688

Claims priority, application Japan, Jul. 16, 1976, 51/84754

Int. Cl.² H03B *5/36*

U.S. Cl. 331—116 R **8 Claims**



1. An electronic circuit comprising a reference voltage generating circuit, a voltage controlled element, a load circuit and power source,

said reference voltage generating circuit comprising a current limiting element connected in series with a reference voltage setting circuit comprising a P channel MOS transistor and an N channel MOS transistor in which a gate of said P channel MOS transistor is connected with a gate of said N channel MOS transistor and with drains of said P channel MOS transistor and said N channel MOS transistor,

said voltage controlled element being controlled by an output of a connecting point between said current limiting element and said reference voltage setting circuit, and being connected in series with said load circuit, and said load circuit including a C-MOS inverter and receiving a constant voltage from said voltage controlled element,

said power source being connected with said reference voltage generating circuit in parallel with said voltage controlled element connected in series with said load circuit.

4,128,817
VOLTAGE CONTROLLED OSCILLATOR WITH PHASE CONTROL CIRCUITS

Hiroshi Gomi, Fukaya, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 2, 1977, Ser. No. 773,689

Claims priority, application Japan, Mar. 3, 1976, 51-22270; Mar. 9, 1976, 51-24646; Mar. 9, 1976, 51-24647; Mar. 10, 1976, 51-24998

Int. Cl.² H03B *3/04;* H04N *9/46*

U.S. Cl. 331—177 R **11 Claims**

1. A voltage controlled oscillator comprising:

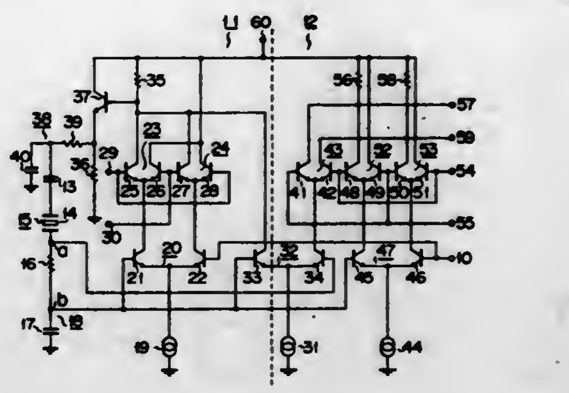
a differential amplifier having a pair of input terminals and an output terminal;

a resonant circuit connected in a closed loop between one of said input terminals and the output terminal of said differential amplifier, to supply a reference signal of predetermined frequency to said one input terminal of said differential amplifier;

phase-shifting means, connected between said respective differential amplifier input terminals for generating a phase shifted reference signal phase shifted from said reference signal by a predetermined amount for application to the other input terminal of said differential amplifier;

anti-phase signal generating means, responsive to said phase shifted reference signal, for generating an anti-phase signal 180° out of phase with said phase shifted reference signal;

control-addition means, responsive to signals indicative of said phase shifted reference and anti-phase signals and a magnitude control signal applied thereto, for controlling the magnitudes of said phase shifted reference and anti-phase signals in accordance with said magnitude control signal and for generating a signal indicative of the vector sum of said phase shifted and anti-phase signals; and



means for generating a signal indicative of the sum of said control-addition means output signal and said differential amplifier output signal and for generating therefrom a positive feedback signal in said closed loop.

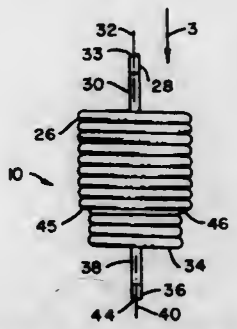
4,128,818
ELECTRICAL FREQUENCY RESPONSIVE STRUCTURE

Michael B. Scherba, Birmingham, Mich., assignor to PY-ROHM, INC., Farmington Hills, Mich.

Filed Apr. 13, 1977, Ser. No. 787,011

Int. Cl.² H03H *5/08;* H01F *5/00, 27/00*

U.S. Cl. 333—70 S **6 Claims**



1. An electrical frequency responsive circuit comprising a first electrical coil of relatively large diameter having an axis of generation, a second electrical coil of relatively small diameter having an axis of generation and an end positioned axially at least partly within the first electrical coil, said first coil having an inner diameter slightly smaller than the outer diameter of the second coil, the second coil is screwed into the first coil and insulating material extending between the first and second coils.

4,128,819
SURFACE ELASTIC WAVE DEVICE

Showko Shiokawa, Yokohama; Takaaki Kusakabe, Tokyo; Toyosaka Moriizumi, Tokyo, and Tsutomu Yasuda, Tokyo, all of Japan, assignors to Toko, Inc., Tokyo, Japan

Filed May 25, 1977, Ser. No. 800,544

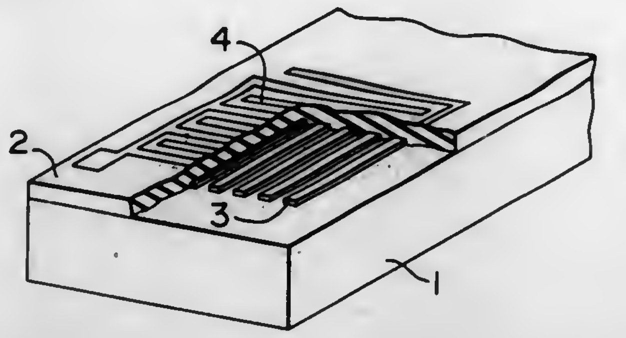
Claims priority, application Japan, Sep. 30, 1976, 51-117737; Sep. 30, 1976, 51-131746[U]; Sep. 30, 1976, 51-131747[U]

Int. Cl.² H03H *9/04, 9/26, 9/32;* H01L *41/10*

U.S. Cl. 333—72 **5 Claims**

1. A surface elastic wave device comprising a substrate of an insulating material, a thin film of a piezoelectric material, provided on said substrate, input transducer means for transmitting a surface elastic wave, and output transducer means for

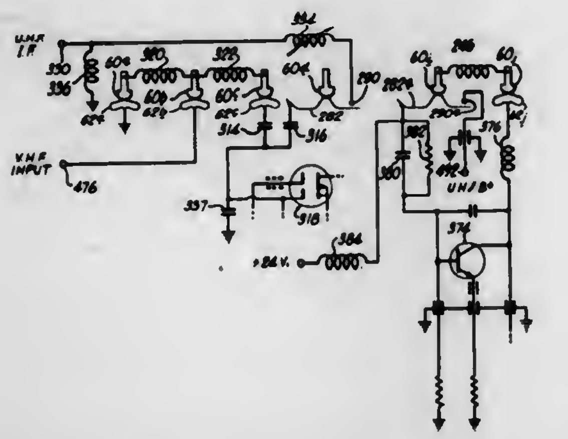
receiving said surface elastic wave, said input transducer means including a comb-like electrode comprising interdigital finger, and a plurality of electrodes extending at right angles across the interdigital fingers of said comb-like electrode in opposing relationship with said comb-like electrode with said thin film interposed therebetween.



4,128,820
COMBINATION VHF AND UHF TUNER ARRANGEMENT

James E. Krepps, Jr., Bloomington, Ind., assignor to Sarkes Tarzian, Inc., Bloomington, Ind.

Filed May 16, 1977, Ser. No. 796,848
Int. Cl.² H03J ***5/30***
U.S. Cl. 334—1 **11 Claims**

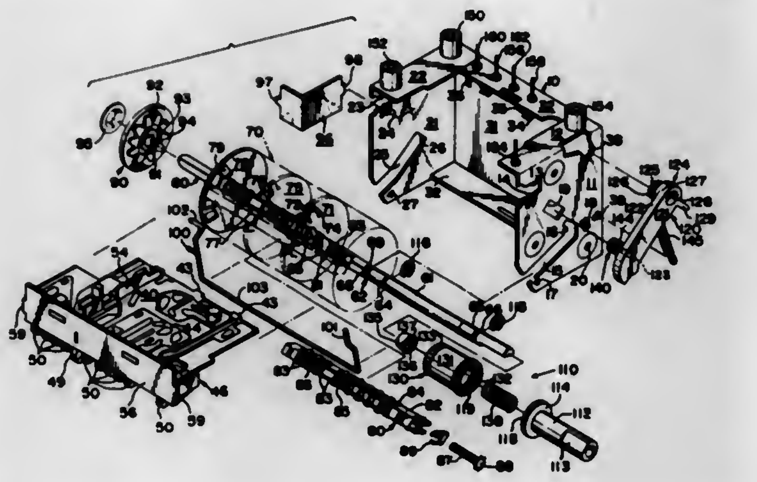


1. A television tuner arrangement for receiving both VHF and UHF television signals comprising, a VHF tuner having a main tuning shaft, detent means for establishing an even number of equally spaced detent positions for said main tuning shaft, said VHF tuner including a fixed stator member carrying a plurality of stator contacts, means carried by said main tuning shaft for supporting a plurality of VHF tuning panels each of which includes a plurality of tuning coils which are connected to said stator contacts in alternate detent positions of said main tuning shaft, an oscillator coil on each of said VHF tuning panels which is connected between first and second contacts carried thereby, a conductive switching member secured to said stator member and movable from a first to a second position by engagement of one of said first panel contacts therewith in said alternate detent positions of said main tuning shaft, a VHF oscillator in said VHF tuner, means including said movable switching member for supplying an enabling potential to said VHF oscillator in said alternate detent positions of said main tuning shaft, a UHF tuner having a continuously variable rotor shaft rotation of which is effective selectively to receive all of the seventy UHF stations, means interconnecting said main tuning shaft and said rotor shaft so that said rotor shaft is moved a distance equal to the width of one UHF channel when said main tuning shaft is moved a predetermined number of detent positions, a fixed switching member connected to said movable switching member when said movable member is in said first position, and means including said fixed switching member for supplying an enabling potential to said UHF tuner when said main tuning shaft is positioned between said alternate detent positions.

4,128,821
TURRET TYPE TELEVISION TUNER

Kazuo Kato, Kyoto, and Michiaki Narihiro, Ueno, both of Japan, assignors to New Nippon Electric Company, Ltd., Osaka, Japan

Filed Mar. 29, 1977, Ser. No. 782,416
Claims priority, application Japan, Oct. 12, 1976, 51-122521
Int. Cl.² H03J ***5/30***
U.S. Cl. 334—51 **10 Claims**



1. A turret type tuner comprising a chassis assembly including a front wall means, rear wall means, and side wall means, a plurality of external connecting terminals operatively secured to said wall means, a rotor assembly including turret means, and selector shaft means, detent biasing means on said selector shaft means, and a plurality of coil units operatively arranged in said rotor assembly, a stator assembly including a stator bar and a plurality of spring contacts as well as a tuner circuit means including electrical circuit elements, a shield plate and printed circuit board means electrically and mechanically connected to said spring contacts and to said electrical circuit elements, bearing fitting means provided in said chassis assembly to mount said rotor assembly and said stator assembly, and torsion bar spring means having interconnected first and second arm means forming bearing means and a detent drive for said selector shaft means, said detent drive employing the torsional force of said torsion bar spring means, said bearing fitting means comprising notch bearing means formed in said front wall means and indent bearing means formed on said selector shaft means, said indent bearing means being located in said notch bearing means and wherein said torsion bar spring means is operatively arranged to apply pressure to the selector shaft means in said indent bearing means at the inside of said front wall means through said first arm means of said torsion bar spring means.

4,128,822
POLYPHASE CIRCUIT BREAKER HAVING IMPROVED TRIP CROSSBAR ASSEMBLY

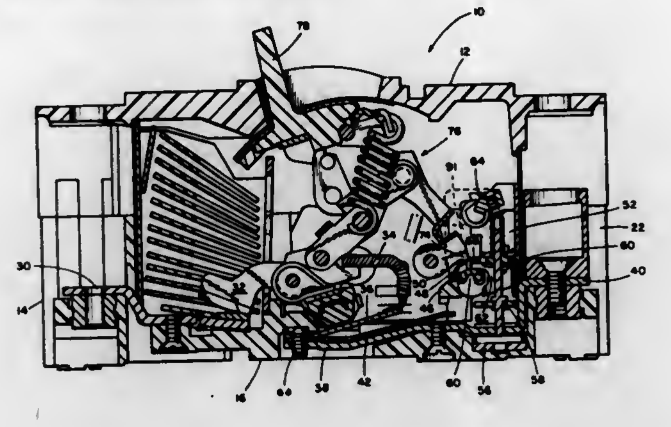
Maurice W. Peterson, Jr., Swisher, Iowa, assignor to Square D Company, Park Ridge, Ill.

Filed Feb. 28, 1977, Ser. No. 773,092
Int. Cl.² H01H ***71/16***
U.S. Cl. 335—8 **11 Claims**

1. A multi-pole circuit breaker including a moulded base having a bottom wall, longitudinally extending side walls and a pair of spaced apart parallel compartment walls located intermediate said side walls to define a plurality of compartments with each compartment wall having a recess, a pair of contacts in each compartment controlled by an operating assembly to extend an electrical circuit from a line terminal through a load terminal and including fault condition sensing means adapted to sense a fault condition in said circuit to

control a trip crossbar having a longitudinal axis extending through said recess of each compartment wall and to pivot said crossbar for releasing said operating assembly to open said contacts in response to a fault condition in said circuit, the improvement comprising:

a pair of first surfaces on said crossbar formed at a predetermined diverging angle to each other and extending in a radial outward direction, and

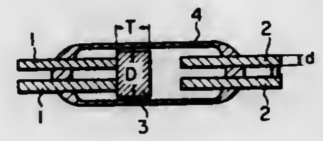


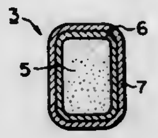
a rail integrally formed on each compartment wall and projecting transverse to said longitudinal axis into a respective one of said recesses and having second surfaces converging towards each other at an angle less than said predetermined angle for receipt between said pair of first surfaces to provide a pivot axis for said crossbar.

4,128,823
SWITCH

Akira Tanaka, Zama; Yuji Hayashi, Suzaka; Makoto Kassai, Yokohama, and Toshito Hara, Sagamihara, all of Japan, assignors to Fujitsu Limited, Japan

Filed Dec. 2, 1976, Ser. No. 746,993
Claims priority, application Japan, Dec. 25, 1975, 50-153973; Feb. 10, 1976, 51-12799
Int. Cl.² H01H ***1/54***
U.S. Cl. 335—196 **23 Claims**



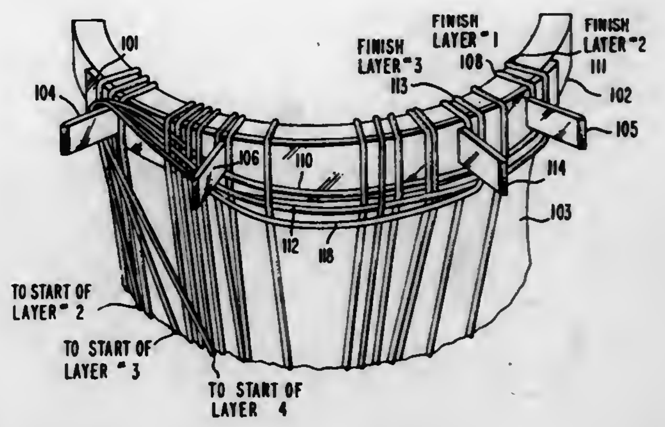


1. A switch comprising two sets of rod-shaped fixed electrodes formed of a magnetic material and one cylindrical moving electrode formed of a permanent magnet, each set of the fixed electrodes being fixed to the respective end of a cylindrical vessel so that the ends of each set of the fixed electrodes face the ends of the other set of the fixed electrodes with the moving electrode capable of reciprocating between the ends of the two sets of fixed electrodes inside the cylindrical vessel, wherein said moving electrode is formed of a rare earth element-cobalt type permanent magnet which comprises at least one adhesive layer of a metal selected from the group consisting of silver, nickel, copper and alloys thereof on the surface of said permanent magnet, and at least one contact layer of a metal selected from the group consisting of rhodium, wolfram, rhenium, ruthenium and alloys thereof, silver-wolfram and gold-chromium on said adhesive layer of metal, and at least said permanent magnet and said adhesive layer of metal are thermally diffused to each other.

4,128,824
MULTILAYERED DEFLECTION YOKE

John W. Mirsch, Levittown, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 29, 1977, Ser. No. 837,854
Int. Cl.² H01F ***5/00***
U.S. Cl. 335—213 **9 Claims**



1. A deflection yoke comprising:

a core;

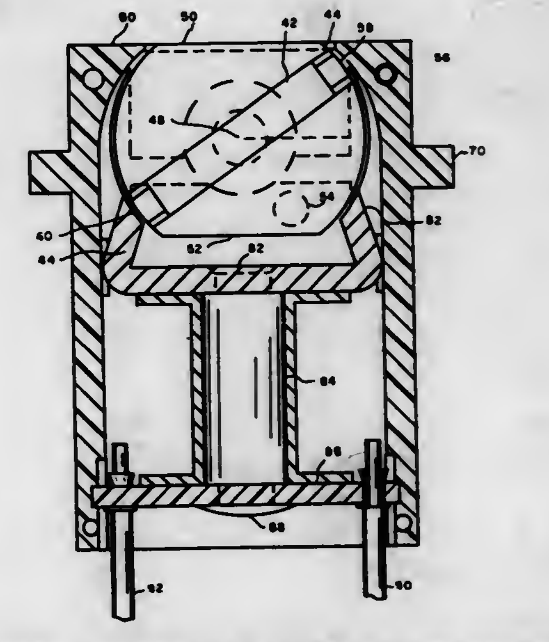
at least two layers of conductor turns wound about said core, including a return traverse conductor traversing said core from a finishing conductor turn of one of said first and second layers to a starting conductor turn of the other of said layers;

at least three projections located adjacent an outer surface of said core for providing pivot points for said return traverse conductor, a first projection located near a starting conductor turn of at least one of said first and second layers, a second projection located near a finishing conductor turn of at least one of said first and second layers, and a third projection located between said first and second projections for preventing said return traverse conductor from protruding beyond an end of said core.

4,128,825
MAGNETICALLY ACTUATED INDICATOR

Elmer W. Madsen, Bristol, Conn., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 13, 1976, Ser. No. 750,008
Int. Cl.² H01F ***7/08, 7/14***
U.S. Cl. 335—272 **13 Claims**



1. An elongated permanent magnet having one north pole at a first end and a south pole at the second end;

means for pivoting said magnet about a geometric axis which extends transversly to the geometric axis of said elongated permanent magnet at a point intermediate said ends thereof, said means for pivoting allowing rotational travel of said magnet between a first angular position and a second angular position;

first and second poles carried by said housing and disposed in spaced relationship to each other, said first pole being proximate to said one end of said elongated magnet in said one angular position of said elongated permanent magnet and said second pole being proximate to said second end of said elongated permanent magnet in said second angular position of said elongated permanent magnet;

a coil cooperating with said first and second poles to vary the polarity thereof; and

interfering surfaces carried on said housing and said elongated permanent magnet to prevent angular movement of either end of said elongated permanent magnet past a point intermediate said first and second pole, said interfering surfaces being spaced from both said first and second poles.

4,128,826

ELECTRICAL HIGH-VOLTAGE APPARATUS

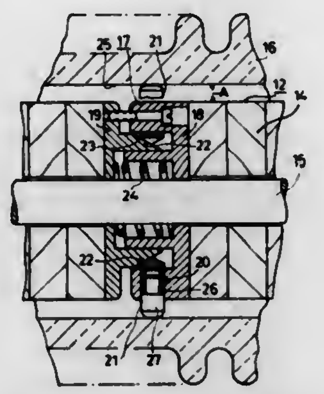
Heinz Brecht, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 1, 1977, Ser. No. 802,425

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1976, 2627769

Int. Cl.^{2} H01C *7/18*

U.S. Cl. 338—204 **10 Claims**



1. An electric high-voltage apparatus adapted to be arranged within the interior of a hollow cylindrical insulating bushing member and in spaced relationship to the interior surfaces thereof, said apparatus comprising:

a shaft;

a plurality of resistor disks arranged along and carried by said shaft;

a centering body arranged on said shaft in the region thereof carrying said resistor disks, said centering body comprising:

first and second members which are movable relative to one another, at least one of said first and second members having actuating edges;

several radially outward-pointing, movable support elements distributed over the circumference of said body each having a radially inner chamfer for cooperating with a corresponding actuating edge of said one member.

4,128,827

TRAVEL ALARM SYSTEM

Donald F. Coleman, Dunlap, and Sammy J. Rhodes, Aurora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 8, 1977, Ser. No. 785,797

Int. Cl.^{2} B60Q *5/00*

U.S. Cl. 340—52 R **14 Claims**

1. A alarm system comprising:

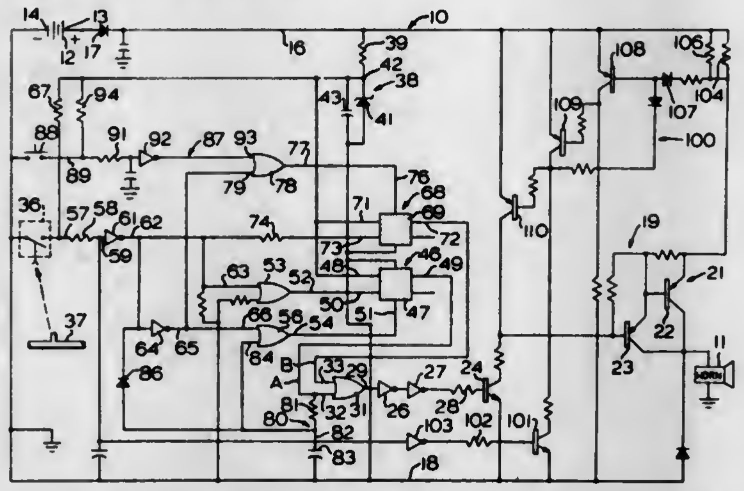
an electrically energized alarm (11);

an electrical power source (12);

switching means (19) connected between said power source and said alarm, said switching means being of the type rendered conductive for energizing said alarm in response to delivery of at least one electrical signal thereto and being rendered nonconductive for deenergizing said alarm in the absence of such an electrical signal;

a switch (36) connected to the power source, and being movable between first and second positions;

first means (46) connected to the switching means for delivering a first electrical signal to the switching means at the first position of the switch;



second means (68) connected to the switching means for delivering a second electrical signal to the switching means at the first position of the switch, said second electrical signal being separate from and independent of said first electrical signal;

timer means (80) for stopping the delivery of the first signal to the switching means only after the first signal has been delivered to the switching means for a predetermined period of time; and

manual override means (87) for manually selectively stopping delivery of the second signal to the switching means.

4,128,828

DIFFERENTIAL DETECTION SYSTEMS WITH NON-REDUNDANT ERROR CORRECTION

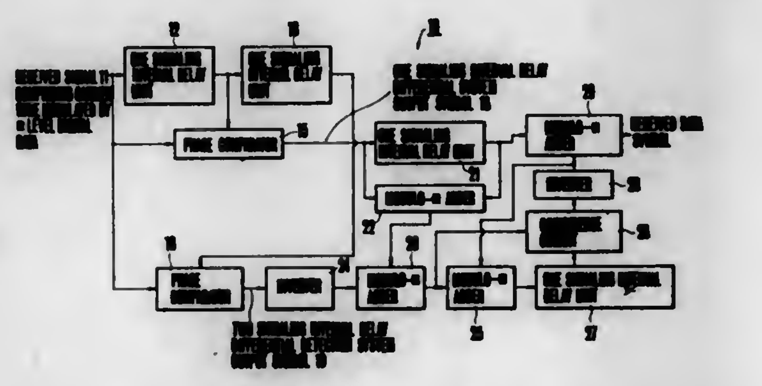
Shuichi Samejima, Yokohama, and Kenkichi Hirade, Yokosuka, both of Japan, assignors to Nippon Telegraph and Telephone Public Corp., Japan

Filed Sep. 26, 1977, Ser. No. 836,759

Claims priority, application Japan, Sep. 28, 1976, 51-116271; Jul. 25, 1977, 52-89014

Int. Cl.^{2} G06F *11/12*

U.S. Cl. 340—146.1 AQ **9 Claims**



1. A differential detection system with non-redundant error correction comprising first delay means for delaying by *n* (*n* is an interger) signaling intervals a received signal comprising a carrier wave modulated by *m* (*m* is an interger) level digital data; a first phase comparator for comparing the phase of the output of said first delay means and the phase of a signal received in the present signaling interval to detect a first symbol; second delay means for delaying said first mentioned received signal by 2*n* signaling intervals; a second phase comparator for comparing the phase of the output of said second delay means and the phase of the signal received in the present signaling interval to detect a second symbol; and a decoder responsive to the first and second symbols produced by said first and second phase comparators respectively, said decoder comprising third delay means for delaying said first symbol by *n* signaling intervals, a first modulo *m* adder for performing a modulo *m* addition operation of the output of said third delay means and said first symbol, a second modulo *m* adder for performing a modulo *m* addition operation of the output of said first modulo *m* adder and an inverted output of said second phase comparator, a third modulo *m* adder connected to receive the output of said second modulo *m* adder, fourth delay means for delaying the output of said third modulo *m* adder by *n* signaling intervals, a logic circuit for determining the coincidence between the output of said fourth delay means and the output of said second modulo *m* adder, a fourth modulo *m* adder for performing a modulo *m* addition operation of an inverted output of said logic circuit and the output of said third delay means, and means for applying said inverted output of said logic circuit to one input of said third modulo *m* adder.

4,128,829

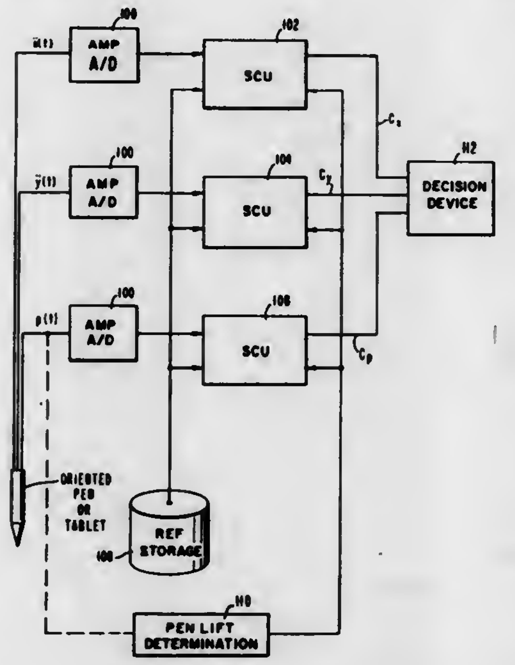
SIGNATURE VERIFICATION METHOD AND APPARATUS UTILIZING BOTH ACCELERATION AND PRESSURE CHARACTERISTICS

Noel M. Herbst, Mount Kisco, and Chao N. Liu, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1977, Ser. No. 866,190

Int. Cl.^{2} G06K *9/10*

U.S. Cl. 340—146.3 SY **24 Claims**



1. A method for verifying a signature which comprises producing and storing a plurality of first signal sets, each set comprising a plurality of electrical signals, wherein at least one set represents acceleration forces and another set represents pressure forces, each transmitted by a known signer's hand to a writing instrument during the writing on a writing surface of at least one signature by a known person, producing and storing a plurality of second signal sets each comprising a plurality of electrical signals representative of said acceleration and pressure forces by a putative signer at a different time, segmenting said plurality of first and second signal sets for both the known and putative signatures to facilitate identifying regions of high probable correlation, individually correlating similar segment pairs in corresponding signal sets of said first and second sets representing acceleration components and pressure components respectively, combining the correlation results obtained for all of said regions in all of said sets and utilizing this combined correlation value to produce a resultant correlation level value.

4,128,830

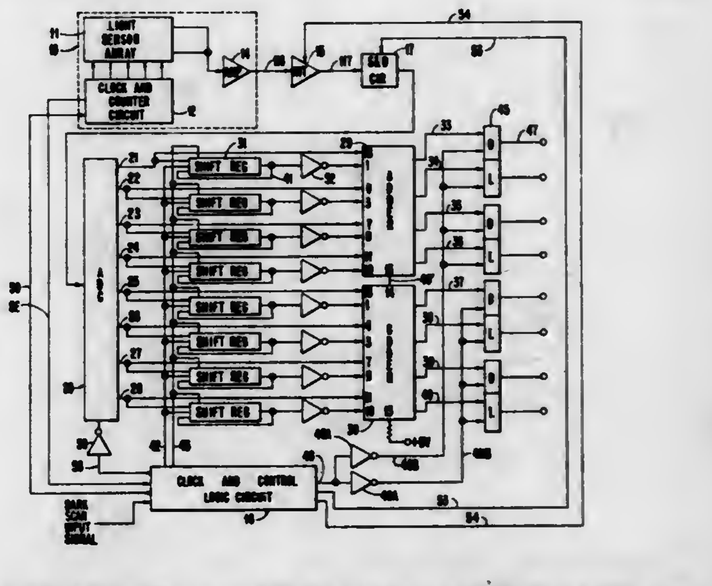
APPARATUS FOR PROVIDING A COMPENSATION SIGNAL FOR INDIVIDUAL LIGHT SENSORS ARRANGED IN A PREDETERMINED RELATION

Gayle A. Weythman, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 26, 1977, Ser. No. 836,881

Int. Cl.^{2} G06K *9/12*

U.S. Cl. 340—146.3 AG **7 Claims**



1. An apparatus for providing a compensation for dark scan noise level for each of a plurality of individual light sensors arranged in a predetermined relation including:

means to produce a separate output signal from each of the individual light sensors in accordance with the level of light received by each of the individual light sensors;

said producing means producing a separate compensation signal for dark scan noise level from each of the individual light sensors when the individual light sensors are prevented from being subjected to light;

storage means for receiving and storing the separate compensation signal from said producing means for each of the light sensors to compensate for the dark scan noise level affecting the accuracy of the separate output signal of the same light sensor from said producing means;

means to connect said producing means to said storage means only when the individual light sensors are prevented from being subjected to light;

subtracting means to subtract the separate compensation signal from said storage means from the output signal of the same light sensor from said producing means to produce a signal compensated for the dark scan noise level;

and means to supply all of the separate output signals from said producing means to said subtracting means.

4,128,831

DEVICE FOR THE CONTINUOUS MONITORING OF OIL LEAKS ON OXYGEN COMPRESSORS

Adam Rensch, Frankenthal, and Otto Albert, Weinheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 6, 1976, Ser. No. 730,283

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1975, 2544730

Int. Cl.^{2} G08B *21/00*; F01B *31/12*

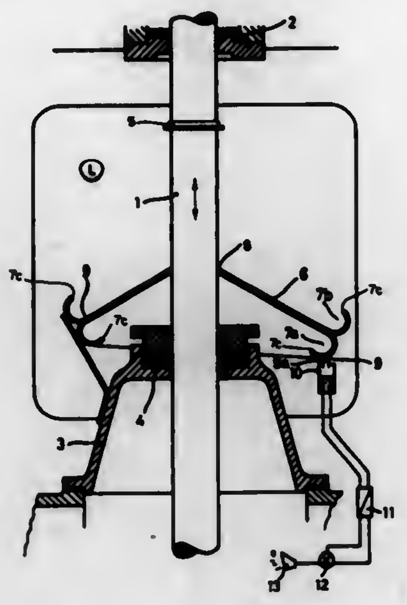
U.S. Cl. 340—605 **5 Claims**

1. A device for continuously monitoring the occurrence of oil leakage about the shaft seals of oxygen compressors having reciprocating or rotating shafts, said device comprising:

a collecting element surrounding the shaft from all sides in the vicinity of the shaft seals,

a collecting channel having one or more orifices formed therein located about the periphery of said collecting element, said collecting channel terminating in an inwardly-directed lip portion which substantially surrounds and is spaced from said shaft,

a vessel means located below said orifices for accumulating said oil leakage from said collecting element and channel, and



an electrical triggering means for actuating a signal when said oil leakage accumulating in said vessel reaches a predetermined amount.

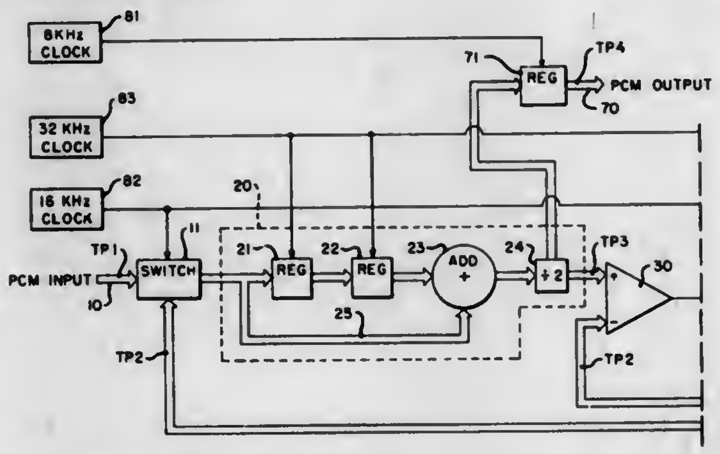
4,128,832
COMBINED ENCODER/DECODER

William L. Betts, St. Petersburg, Fla., assignor to NCR Corporation, Dayton, Ohio

Filed Jan. 8, 1976, Ser. No. 647,536

Int. Cl.² H03K *13/24*

U.S. Cl. 340—347 DD **7 Claims**



7. A combined encoder and decoder for converting between pulse code modulation (PCM) signals and differential code modulation (DM) signals comprising:

(a) a PCM input;
(b) a PCM output;
(c) a DM input;
(d) a DM output;
(e) an interpolator connected to provide PCM signals to said PCM output;
(f) an integrator;
(g) a comparator connected to receive PCM signals from said interpolator and said integrator and connected to provide DM signals to said DM output;
(h) first means for periodically alternatively connecting said PCM input and integrator to said interpolator; and
(i) second means synchronized to said first means for periodically alternatively connecting said DM input and comparator to said integrator.

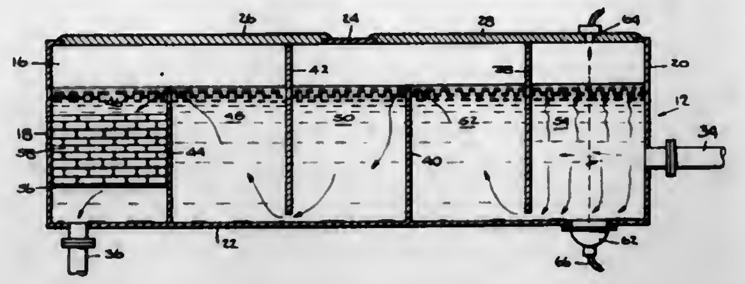
4,128,833
HOTWELL ALARM SYSTEM

Emmanuel J. Tsavaris, 28-33 Hobart St., Woodside, N.Y. 11377

Filed Apr. 7, 1977, Ser. No. 785,608

Int. Cl.² G08B *21/00;* B01D *35/00, 43/00*

U.S. Cl. 340—603 **8 Claims**



1. A pollution detection device comprising an enclosed housing provided with a water inlet line at one end and a water outlet line at the other end, means within the housing to slow up the flow of water therethrough, a lamp disposed in the floor of the housing, with its light beam directed toward the roof of the housing, a photoelectric cell disposed in the roof of the housing in registry with the light beam, and an alarm circuit in engagement with the photoelectric cell, whereby a diminution of light from the lamp causes the photoelectric cell to activate the alarm.

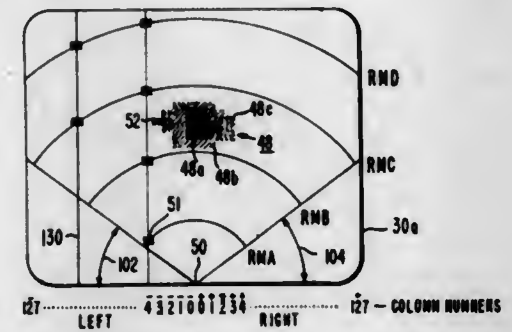
4,128,834
RANGE MARK GENERATION

Kazuo Katagi, Woodland Hills, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 25, 1977, Ser. No. 790,661

Int. Cl.² G01S *9/00;* G08B *5/36*

U.S. Cl. 343—5 EM **8 Claims**



7. In a radar display system employing a pivotable antenna for scanning, at least a sector of space to receive return signals therefrom for displaying on a screen an image corresponding to said return signals, said display screen also displaying at least one arcuate range mark line at a fixed radial distance about an origin which corresponds to said antenna, said image being created by a series of sweep lines each intensity modulated to produce said image including said arcuate range mark, apparatus for determining the position of the portion of said range mark along each sweep line on said display screen comprises in combination:

means for storing for each said sweep line a first value corresponding to the time required for the sweep line to sweep from the origin on said screen of said sweep line to the position of said portion of said range mark therealong;

means responsive to a particular sweep line being created for producing from said storage means a signal corresponding to said value associated with said particular sweep line;

means responsive to said value corresponding signal for producing, after a time laspe corresponding to the time indicated by said value corresponding signal, a position signal indicative of the position of said sweep along said particular sweep line at which said range mark appears; and

means responsive to said position signal for producing on

said screen the part of said range mark corresponding to the sweep line.

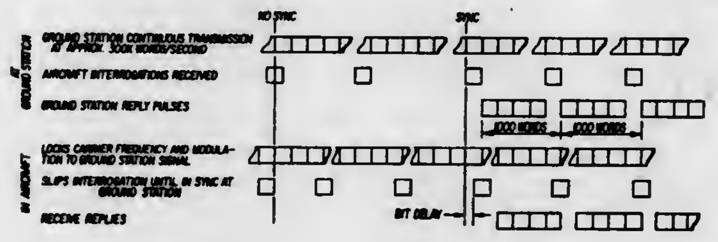
4,128,835
METHOD AND APPARATUS FOR MEASURING DISTANCE BETWEEN AN AIRCRAFT AND A GROUND STATION

James L. Russell, Germantown, Md., assignor to Arinc Research Corporation, Annapolis, Md.

Continuation-in-part of Ser. No. 827,009, Aug. 23, 1977, abandoned. This application Feb. 2, 1978, Ser. No. 874,480

Int. Cl.² G01S *9/04, 9/56*

U.S. Cl. 343—6.5 LC **23 Claims**


NO SYNC
SYNC
AT GROUND STATION
GROUND STATION CONTINUOUS TRANSMISSION AT APPROX. 300K WORDS/SECOND
AIRCRAFT INTERROGATIONS RECEIVED
GROUND STATION REPLY PULSES
1000 WORDS
1000 WORDS
LOCKS CARRIER FREQUENCY AND MODULATION TO GROUND STATION SIGNAL
SLIPS INTERROGATION UNTIL IN SYNC AT GROUND STATION
RECEIVE REPLIES
BIT DELAY

17. A distance measuring method for at least two communication stations comprising the steps of:

transmitting a repeating bit pattern having a first predetermined number of bits from a first station, said repeating bit pattern forming a plurality of code words,

receiving and locking onto said repeating bit pattern at at least one second station,

transmitting from said second station an interrogation signal having a predetermined bit pattern in synchronism with a predetermined code word in said received repeating bit pattern,

receiving said interrogation signal at said first station and determining whether said received interrogation signal is in synchronism within predetermined limits with any code word in the repeating bit pattern transmitted by said first station and transmitting a reply signal if synchronism is achieved,

monitoring at said second station said first station transmissions for said reply signal during a first predetermined time interval following transmission of an interrogation signal, and shifting the transmission time of a subsequent interrogation signal by a second predetermined number of bits relative to said predetermined code word if no reply signal is received during said first predetermined time interval, and for shifting the transmission time of subsequently transmitted interrogation signals relative to said predetermined code word which have not been preceded by the receipt of a reply signal in said first predetermined time interval by additional predetermined numbers of bits,

counting at said second station the number of bits of shifting imparted to said transmitted interrogation signal,

counting at said second station the number of whole word intervals occurring in said received repeating code pattern between the transmission of an interrogation signal and the receipt of said reply signal, and

calculating the distance between said first and second station from said counted number of whole word intervals and said counted number of shifted bits.

4,128,836
TIME DELAY COMPUTER FOR ORDNANCE FUSE

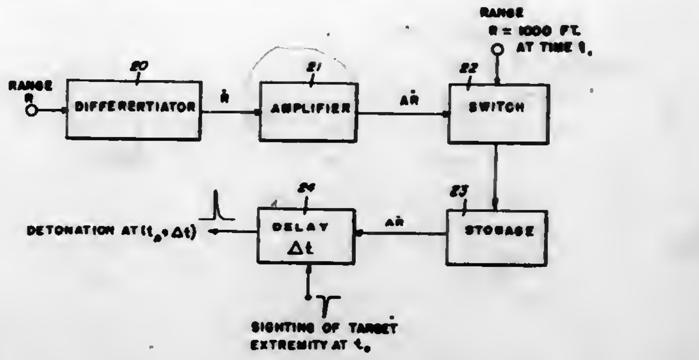
Edward Ramos, and Joseph V. Cuneo, both of Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 14, 1960, Ser. No. 62,804

Int. Cl.² G01S *9/04;* F42C *13/04*

U.S. Cl. 343—7 PF **4 Claims**

1. In a missile having a fuze for detonating the missile warhead in the proximity of a target, means associated with said fuze for sensing the presence of a target, and means responsive to the sensing of a target by said sensing means for delaying the detonation of said warhead for an internally varied time interval until said missile is at an optimum position with respect to said target.



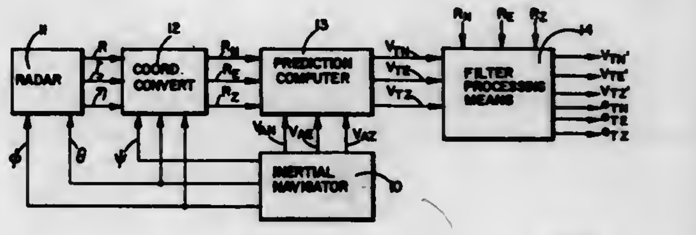
4,128,837
PREDICTION COMPUTATION FOR WEAPON CONTROL

Jerome M. Page, Fullerton, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 22, 1968, Ser. No. 747,781

Int. Cl.² G06G *7/80*

U.S. Cl. 343—7 G **18 Claims**



1. Target tracking apparatus employing second order prediction and comprising in combination

an inertially roll-stabilized range-and-angle sensor for providing output signals indicative of the range tracking and angle tracking errors thereof;

range error resolution means responsive to a set of computed polar coordinate target position data for resolving the sensor tracking error output signals relative to a preselected inertially stabilized Cartesian coordinate system;

doubly integrating feedback means responsive to said resolved tracking error signals and to velocity outputs of the inertial navigator for computing the components of target position, velocity and acceleration resolved in said Cartesian coordinate system; and

target position computing means responsive to said resolved target data components computed by said feedback means for further computing the polar coordinates of said computed target position, said sensor being responsive to said computed polar coordinate target position data.

4,128,838
DIGITAL SCAN CONVERTER

Antoon H. Brands, Borne, and Jouke Gietema, Hengelo, both of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Feb. 7, 1977, Ser. No. 765,937

Claims priority, application Netherlands, Feb. 16, 1976, 7601535

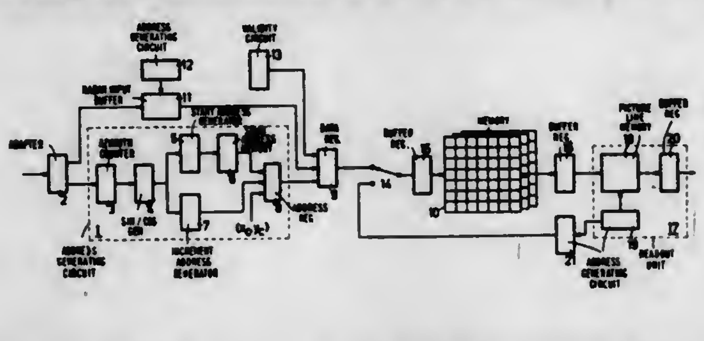
Int. Cl.² G01S *7/06, 9/02*

U.S. Cl. 343—55 C **2 Claims**

1. A digital scan converter for displaying on a raster scan display video data provided by a radar sensor as a field of view is scanned in a predetermined pattern at a first scan rate, said converter comprising an input buffer for storing quantized video data at addresses corresponding to said predetermined

pattern scanned at said first rate; a random access memory for storing data received from said input buffer, said random access memory comprising N × N submemories each having $a \times a$

memory elements and each being simultaneously accessible, wherein a range being considered at any given azimuth ϕ is divided into n segments each having k range increments Δr, where $n \leqq N$, so that the length $k \Delta r$ of each of said segments is equal to at least the range represented by "a" memory elements, multiplied by a factor $\sqrt{2}$; an address generating circuit for generating addresses as a function of said pattern and said first scanning rate to accommodate data read from said input buffer into said random-access memory at locations corresponding to a display line pattern to be produced on the raster scan display; said address generating circuit including an azimuth counter for generating signals representative of an azimuth ϕ, a sine/cosine generator coupled to said azimuth counter for generating signals representative of $\sin \phi$ and $\cos \phi$, a start address generator coupled to said sine/cosine generator for producing start address values $lk \Delta r \cos \phi$ and $lk \Delta r \sin \phi$,



where $l = 0, 1, 2, \ldots, n-1$, and an increment address generator for incrementing, during each random access memory cycle, each of n start addresses by $\Delta r \cos \phi$ and $\Delta r \sin \phi$ to thereby generate in k successive memory cycles the addresses $x = x_c + (lk+m) \Delta r \cos \phi$ and $y = y_c + (lk+m) \Delta r \sin \phi$, where x_c and y_c represent the coordinates of the radar sensor position, $l = 0, 1, 2, \ldots, n-1$ in each memory cycle, and $m = 0, 1, 2, \ldots, k-1$, the data stored in said input buffer corresponding to the n ranges of which the addresses are defined in each memory cycle, being transferred to the x and y address-defined positions of said random-access memory in the respective memory cycle, allocating a position within one submemory by one address only; and a readout unit for reading out data stored in said random-access memory at a second rate for display on the raster scan display, the data for each picture line being read out simultaneously from the respective N submemories, said readout unit including means for storing data for at least one picture line which are read out in the sequence required for presentation on the raster scan display.

4,128,839

MEANS FOR ACCUMULATING AIRCRAFT POSITION DATA FOR A BEACON BASED COLLISION AVOIDANCE SYSTEM AND OTHER PURPOSES

Arthur D. McComas, Baltimore County, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 28, 1977, Ser. No. 810,701

Int. Cl.^{2} G01S *9/56*

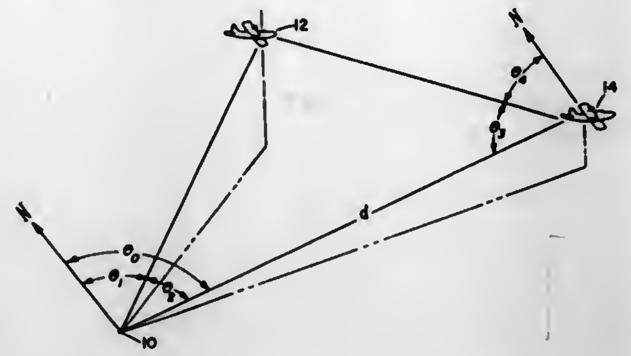
U.S. Cl. 343—112 CA **2 Claims**

1. Means for use in a beacon based collision avoidance system wherein a fixed station transmits an interrogation message along a relatively narrow beam radiated from the fixed station and wherein said relatively narrow beam is scanned through a field of interest on a discoverable schedule and wherein an aircraft illuminated by said beam normally transponds a first reply message said means for use comprising:

an addressable transponder for transmitting a second reply message when addressed, said addressable transponder being arranged in predetermined fixed spatial relationship with said fixed station; and, a protected aircraft comprising:

means for discovering said schedule;

means for transponding a reply message when said protected aircraft is illuminated by said relatively narrow beam;



an interrogator for addressing a message to said addressable transponder whereby said addressable transponder transmits said second reply message, the range between said protected aircraft and said addressable transponder being determined thereby; and,

a directionable antenna means responsive to said range and said schedule for steering a beam therefrom.

4,128,840

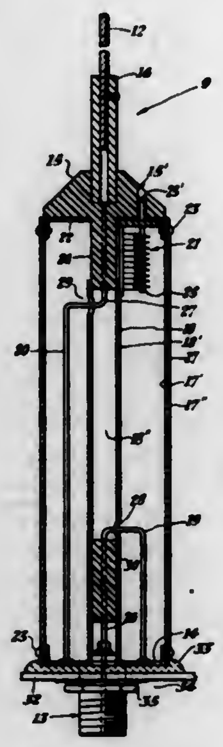
RESONANT RE-ENTRANT CAVITY WHIP ANTENNA

William Tucker, 1965 S. Ocean Dr., Apt. 18-S, Hallandale, Fla. 33009

Filed Jan. 10, 1977, Ser. No. 757,994

Int. Cl.^{2} H01Q *1/32, 9/18*

U.S. Cl. 343—715 **5 Claims**



1. A re-entrant type of cavity resonator whip antenna comprising the combination of:

a base mounted re-entrant cavity,

a five eighths wave whip antenna coaxially mounted on said cavity and electrically coupled thereto whereby said antenna is resonated, bandpass filtered, and impedance matched to the transmission line.

4,128,841

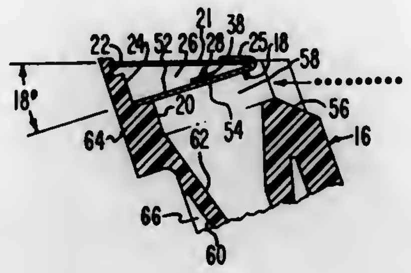
DROPLET MICROPHONE

Michael K. Brown, Canton; Kyriakos Christou, Livonia; David E. Lundquist, Birmingham; Earl P. Maidment, Royal Oak, and Ronald G. Shell, Dearborn Heights, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sep. 28, 1977, Ser. No. 837,645

Int. Cl.^{2} G01D *15/18*

U.S. Cl. 346—75 **8 Claims**



1. A device for converting the impact forces of a moving stream of droplets into a corresponding electrical signal, said device comprising:

flexing means disposed in the path of the moving droplet for flexing in response to an impinging droplet;

support means for supporting said flexing means in the droplet path; and

piezo electric transducer means including a cantilever, one end thereof being fixedly secured to said support means and the opposite end being operatively associated with said flexing means to move therewith the flexing means for generating an electrical signal, said cantilever experiencing bending deformation, wherein the structure including said flexing means and said transducer means has a resonant frequency substantially equal to an integral multiple of the frequency of said stream of droplets.

4,128,842

ELECTROSTATIC PRINTING DEVICE WITH MONOCRYSTALLINE STYLUS

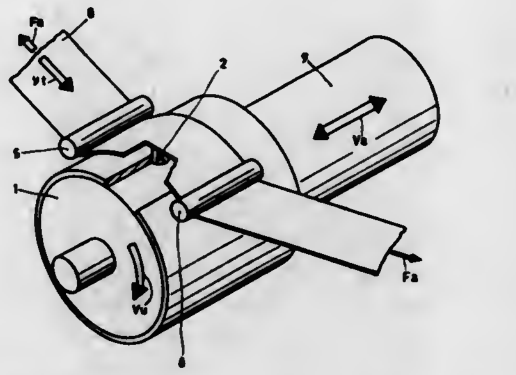
Ulf Rothgordt, Norderstedt; HansDieter Hinz, Tornesch, both of Fed. Rep. of Germany, and Gerrit Verspui, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 14, 1976, Ser. No. 723,053

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1975, 2541367

Int. Cl.^{2} G03G *15/044*

U.S. Cl. 346—155 **8 Claims**



1. A device for the electrostatic printing of characters on an associated record carrier which comprises: an electrode device, means for moving the associated record carrier relative to said electrode, means for supplying controllable pulses to said electrode device during the relative movement of said electrode device and the record carrier, said electrode device sliding directly across the surface of the record carrier under pressure, said electrode device including a whisker mounted to be in galvanic contact with a metal holder, said whisker being a monocrystalline member.

4,128,843

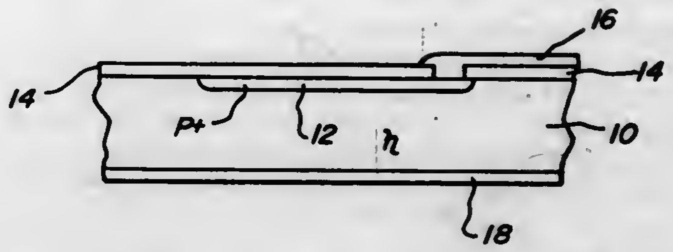
GaP DIRECTED FIELD UV PHOTODIODE

Alice M. Chiang, Weston, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 14, 1977, Ser. No. 842,443

Int. Cl.^{2} H01L *27/14, 29/90*

U.S. Cl. 357—30 **8 Claims**



1. An ultraviolet-sensitive photodiode comprising:

a GaP body having an ultraviolet radiation receiving surface;

an N type region in the GaP body;

a P type region in the GaP body proximate the ultraviolet radiation receiving surface and forming a PN junction with the N type region at a depth from the ultraviolet receiving surface of less than about 0.5 microns, the P type region having a graded impurity distribution which decreases essentially monotonically from the ultraviolet radiation receiving surface to the PN junction and creates an internal directed surface electric field of greater than about 10^3 V/cm which repels minority carriers from the ultraviolet radiation receiving surface toward the PN junction;

first contact means for providing electrical contact to the N type region; and

second contact means providing electrical contact to the P type region.

4,128,844

CAMERA TUBE TARGET STRUCTURE EXHIBITING GREATER-THAN-UNITY AMPLIFICATION

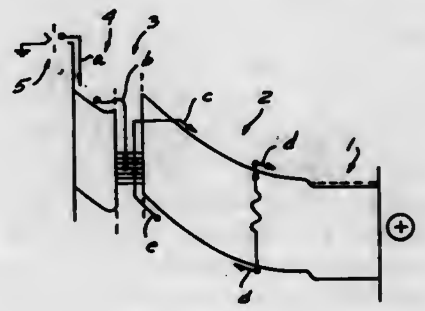
Arno Illenberger; Gert Ruprecht, and Klaus Berger, all of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 599,545, Jul. 28, 1975, abandoned. This application Sep. 26, 1977, Ser. No. 836,856

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1974, 2436990

Int. Cl.^{2} H01L *27/14*

U.S. Cl. 357—31 **12 Claims**



1. In a television-camera pick-up tube, a novel target structure which exhibits greater-than-unity amplification (gain), the target structure having one side facing incident scene light and having an opposite side facing a scanning electron beam, the novel target structure comprising, in combination,

a glass plate (0) on that side of the target structure exposed to scene light;
a transparent signal electrode (1) on the side of the glass plate facing the electron beam;
a homogeneous layer (2) of n-type photoconductive semiconductor material on the side of the transparent signal electrode facing the electron beam;
a homogeneous layer (4) of n-type semiconductor material on the side of the photoconductive layer facing the beam, and having a resistivity greater than 10^8 ohm-centimeters,
the interface (3) between the pair of n-type semiconductor layers being possessed of a multitude of interface states located at energy levels such as to capture both holes optically generated within the n-type photoconductive layer (2) and beam-injected electrons, the interface states being predominently acceptor-level interface states,
the edge energy of the valence band of the layer (4) of 10^8 ohm-centimeter material being at the interface lower than the edge energy of the valence band of the n-type photoconductive layer (2) at the interface (3) to create a potential barrier for holes preventing holes optically generated in the n-type photoconductive layer (2) from crossing the interface (3) to the beam-side of the target structure.

4,128,845

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES HAVING INVERTED FRUSTUM-SHAPE CONTACT LAYERS

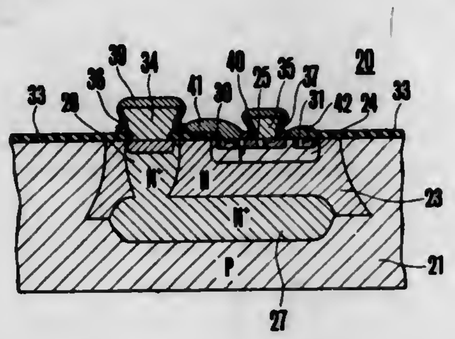
Tetsushi Sakai, Tachikawa, Japan, assignor to Nippon Telegraph and Telephone Public Corp., Japan

Filed Jul. 19, 1976, Ser. No. 706,596

Claims priority, application Japan, Jul. 28, 1975, 50-91090

Int. Cl.^{2} H01L *29/70, 23/48*

U.S. Cl. 357—51 **10 Claims**



1. A semiconductor integrated circuit device including a bipolar transistor comprising a semiconductor substrate, a collector region, a base region and an emitter region which are spaced apart and formed at one surface of said semiconductor substrate, a plurality of inverted frustum-shape polycrystalline semiconductor contact layers having raised upper larger cross sectional surfaces and lower smaller cross sectional surfaces, one of said inverted frustum-shape polycrystalline semiconductor contact layers being formed on and in direct contact with each of said emitter region and said collector region, respectively, a first insulating film covering the raised side surfaces of said inverted frustum-shaped polycrystalline semiconductor contact layers and overlying the upper surface portions of said substrate which are included substantially within the vertical projection of the raised upper larger cross sectional surfaces of the inverted frustum-shape polycrystalline semiconductor contact layers down upon the upper surface of said substrate, a second insulating film covering the surface portions of said one surface of said substrate other than those areas covered by said first insulating film, the contact layers and said base region, a base electrode formed on said base region below the plane of the raised upper larger cross sectional surfaces of the inverted frustum-shape polycrystalline semiconductor contact layers and an emitter electrode and a collector electrode formed on the upper surfaces of the respective inverted frustum-shape polycrystalline semiconductor contact layers.

4,128,846

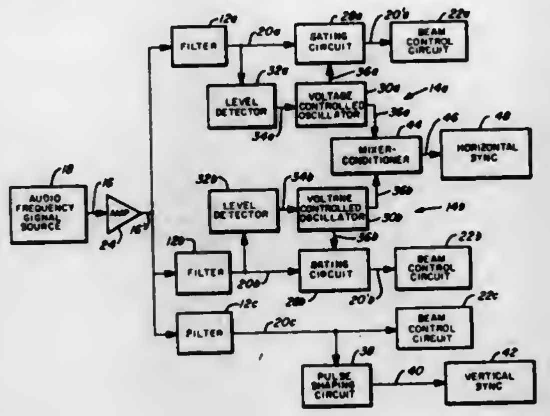
PRODUCTION OF MODULATION SIGNALS FROM AUDIO FREQUENCY SOURCES TO CONTROL COLOR CONTRIBUTIONS TO VISUAL DISPLAYS

Ernest G. Robinson, Jr., Houston, Tex., assignor to Denis J. Kracker, Houston, Tex.

Filed May 2, 1977, Ser. No. 792,936

Int. Cl.^{2} H04N *1/46, 9/02;* H04Q *9/02*

U.S. Cl. 358—82 **23 Claims**



1. Apparatus for modulating electronically controlled visual display systems comprising:

(a) processing means for operating on audio frequency modulating signals to produce processed modulating signals for communication to at least one control circuit of a visual display system, whereby said control circuit controls the contribution of at least one color in a visual display of the visual display system, and for operation on said control circuit to modulate said contribution of color in said visual display;
(b) gating circuit means, as part of said processing means, for operating on at least one said modulating signal to selectively permit or block said communication of said modulating signal;
(c) gate control means, as part of said processing means and including voltage controlled oscillator means, for generating enabling signals for selectively enabling said gating circuit means for so permitting said modulating signal communication such that the frequency of each such enabling signal so generated is determined, at least in part, based on the value of a parameter of the corresponding modulating signal being so operated on by said gating circuit means in response to said enabling signal; and
(d) detector means, as part of said processing means, for responding to a parameter of each modulating signal so operated on by said gating circuit means to produce control signals, corresponding to each such modulating signal, for communication to said gate control means to operate on said voltage controlled oscillator means to vary the frequency of each enabling signal so enabling the gating circuit means operating on the corresponding modulating signal.

4,128,847

OPTICAL READING DEVICE COMPRISING A FOCUSSING DETECTION DEVICE

Gérald Roullet, and Jean-Pierre Bortuzzo, both of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed Oct. 26, 1976, Ser. No. 735,891

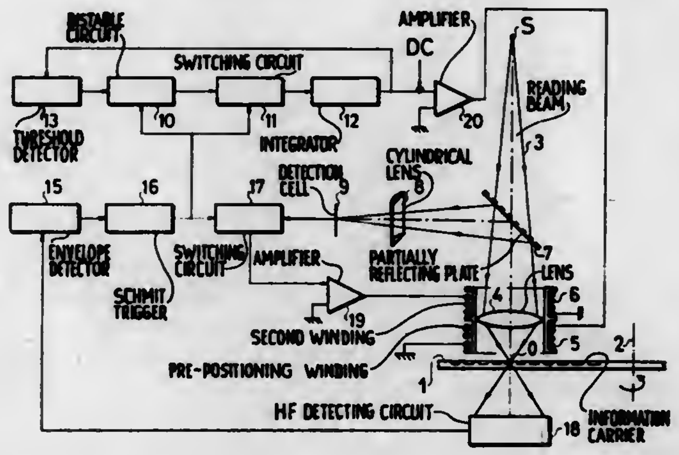
Claims priority, application France, Oct. 31, 1975, 75 33465

Int. Cl.^{2} G01J *1/20;* H04N *5/76*

U.S. Cl. 358—128 **5 Claims**

1. An optical reading device for the read-out of an information signal carried by a moving information carrier comprising a radiation source for emitting a radiation beam having an optical axis, a focussing device for projecting said radiation beam in a focussing spot on said information carrier, first means for displacing said spot along said optical axis about a mean position and in a first range, second means for displacing

said spot along said optical axis in a second range limited by two extreme positions and enclosing said first range, a position control loop comprising a first switching circuit, said loop acting upon said first displacing means for correcting variations in position occurring in said first range, a generator circuit having a control input and an output for supplying an approach signal formed by ascending and descending ramps which act on said second displacing means for moving said spot between said two extreme positions, said generator circuit comprising a bistable circuit having a control input and an output for supplying a signal having one of two predetermined values, a second switching circuit having an input connected to the output of said bistable circuit, a control input forming the control input of said generator circuit and an output, integrator means having an input connected to the output of said second switching circuit, said control input of said bistable circuit being adapted for receiving change of state pulses when said approach signal reaches values corresponding to said extreme positions in said second range, and a detection circuit for detecting said information signal having an output for delivering a control signal, said control signal having a first and a second state according to whether an information signal is and is not detected, said control input of said first switching circuit and said control input of said generator circuit being connected to the output of said detecting circuit and respectively activated by said first and second states of said second signal.



4,128,848

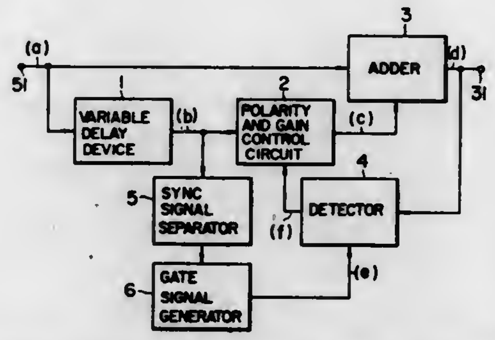
AUTOMATIC GHOST-SUPPRESSION SYSTEM

Isao Nakagawa, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 22, 1976, Ser. No. 735,029

Int. Cl.^{2} H04N *5/14;* H04B *1/10;* H03K *1/12*

U.S. Cl. 358—167 **10 Claims**



1. An automatic ghost-suppression system comprising:
variable delay means for delaying a video signal in accordance with a delay time of a ghost;
polarity and gain control means for adjusting the polarity and amplitude of the video signal delayed by said variable delay means;
adder means for adding said video signal not delayed with the output from said polarity and gain control means to suppress the ghost therein;
synchronizing signal separator means for separating a synchronizing signal from said delayed video signal;
gate signal generator means for generating a gate signal in response to said synchronizing signal separated by said synchronizing signal separator means in order to sample any residual ghost in the vertical blanking period out of said video signal produced at the output of said adder means;
detector means for detecting the residual ghost in the vertical blanking period contained in said video signal produced by said adder in response to said gate signal generated by said gate signal generator; and
means for controlling the polarity and gain of said polarity and gain control means in response to the output signal of said detector means.

4,128,849

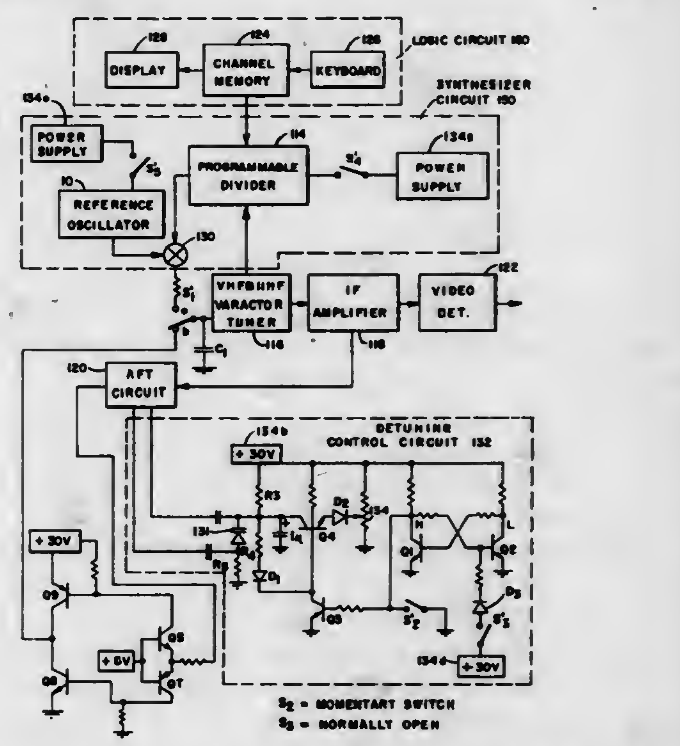
SELECTIVELY COUPLED SYNTHESIZER FOR TUNER OF TV RECEIVER

Dennis W. Rhee, Palatine, Ill., assignor to Admiral Corporation, Schaumburg, Ill.

Filed May 24, 1976, Ser. No. 689,660

Int. Cl.^{2} H04N *5/44, 5/50, 5/21, 1/16*

U.S. Cl. 358—191 **11 Claims**



1. In a television receiver, channel selecting apparatus comprising:

(a) tuning means including a varactor tuning element, a local oscillator and a mixer having a first input from said local oscillator and a second input to which an RF video signal is applied;
(b) synthesizer means for providing a first tuning signal said synthesizer means emanating while operative undesireable high frequency radiations, said synthesizer means including:
  (1) means for setting a TV channel to be tuned by said tuning means;
  (2) variable divider means adapted to be selectively actuated to receive and variably divide the local oscillator output in accordance with a factor corresponding to the channel selected by said setting means;
  (3) means for providing a reference signal; and
  (4) means for comparing the reference signal with the output of said variable divider means and adapted to be selectively coupled to said tuning means to provide the first tuning signal to be applied thereto;
(c) source means to be selectively coupled to said tuning means for providing a second tuning signal thereto; and
(d) control means operative for a relatively short, initial period for energizing said synthesizer means and for cou-

pling said synthesizer means to apply the first tuning signal to said tuning means, and thereafter for de-energizing said variable divider means and said reference signal means of said synthesizer means, whereby the high frequency radiation emanating therefrom is terminated, and decoupling said synthesizer means from said tuning means, while coupling said source means to apply the second tuning signal to said tuning means.

4,128,850

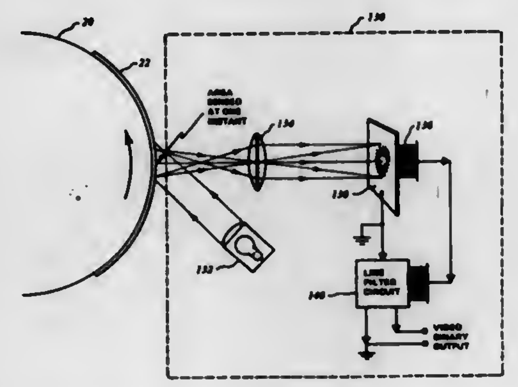
METHOD AND APPARATUS FOR TRANSMITTING FACSIMILES OVER TELEPHONE LINES

Frederic P. Fischer, II, Williamsville, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed May 16, 1977, Ser. No. 797,092

Int. Cl.² H04N *1/40*

U.S. Cl. 358—284 3 Claims



1. A method for improving the quality of facsimiles of fingerprints received at remote locations via telephone lines or the like including the steps of:

- scanning overlapping areas of a fingerprint;
- generating a plurality of signals for each area scanned, with each of the signals representing a portion of the area being scanned;
- processing the plurality of signals generated for each area scanned to determine whether the area scanned is centered on a ridge or a valley;
- producing a single enhanced binary signal representing the presence of either a ridge or a valley at the center of each area scanned;
- transmitting the single enhanced binary signal produced for each area scanned;
- receiving the transmitted signals; and
- processing the received signals to produce a facsimile of the fingerprint.

4,128,851

HAND HELD MAGNETIC CARD ENCODER

Bruce S. Sedley, R.R. 1, Box 96, Koloa, Hi. 96756

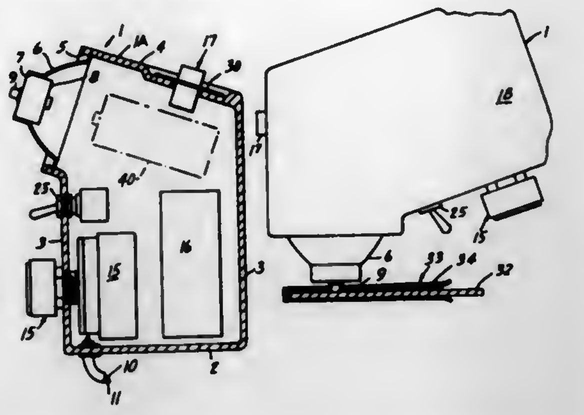
Filed Apr. 29, 1977, Ser. No. 792,396

Int. Cl.² G11B *5/00, 5/12*

U.S. Cl. 360—4 2 Claims

1. A hand held encoder for encoding magnetic card keys and the like comprising:

- housing adapted to be manually held and manipulated,
- a probe mounted on said housing and having an outer tip adapted to be applied against a surface to be magnetized,
- an electrical circuit in said housing and including:
  - a supply of direct current,
  - windings around said probe, and
  - a capacitor,
  - a switch on said housing for discharging said capacitor through said windings to provide a magnetic field for magnetizing a spot at said surface when said tip is applied thereto,



- said housing being formed with a portion thereof providing a pistol grip, said switch being secured to said grip and adapted to be actuated by a finger of the user.

4,128,852

TAPE TRANSPORT MECHANISM FOR RECORDING AND PLAYING BACK VIDEO SIGNALS

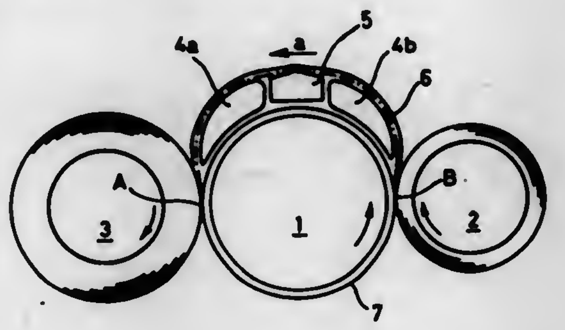
Werner Senkpiel, Laudenbach; Klaus Schoettle, Heidelberg; Heinrich Wittkamp, Mannheim, and Karl Uhl, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 7, 1977, Ser. No. 775,318

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1976, 2611666

Int. Cl.² G11B *15/26, 15/60, 5/78;* B65H *17/32*

U.S. Cl. 360—90 11 Claims



1. In an arrangement for the recording and/or reproduction of video signals by means of a magnetic tape having a substrate of a polyethylene terephthalate film which is coated on one side thereof, said arrangement including a transport mechanism of the type which operates according to the contact-winding principle and which consists essentially of a supply and take-up reel of said magnetic tape and at least one rotating capstan wherein the two tape reels are simultaneously driven by virtue of contacting said capstan under pressure, said transport mechanism further including means for generating tape tension in the span of said magnetic tape between the points of contact of said tape reels with said capstan and said tensioned span of magnetic tape being guided relative to and maintained in contact with at least one magnetic recording and/or playback head by means of a tape guiding element having a guide surface which partially surrounds said capstan, the improvement comprising:

- said magnetic tape being positioned with its coated side facing the guide surface of said tape guiding element and having particles within its coating with a Mohs' hardness of greater than 6, thereby imparting at least a slight polishing effect on said guide surface during the tape transport operation, said magnetic tape being exclusively guided by said tape guiding element and coming into contact only with the magnetic recording and/or playback head and the capstan at the points of contact with the supply and take-up reels within said transport mechanism whereby the substrate surface side of said magnetic tape opposite said coated side will not contact any part of the transport mechanism which could effect the occurrence of slip between such part and the substrate surface during the tape transport operation.

4,128,853

OPERATING MECHANISM OF TAPE RECORDER

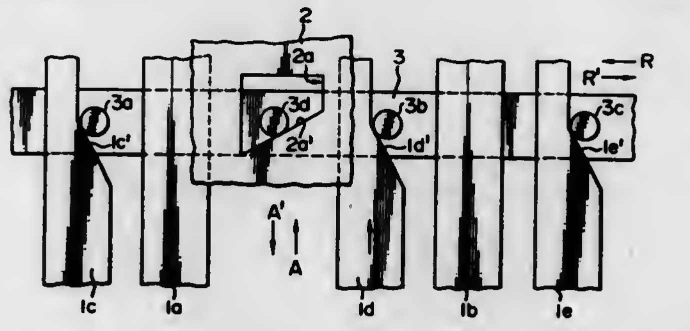
Akio Nakazono, Nagoya, Japan, assignor to Shin-Shirasuna Electric Corp., Aichi, Japan

Filed Oct. 7, 1977, Ser. No. 840,278

Claims priority, application Japan, Oct. 20, 1976, 51/140906; Feb. 23, 1977, 52/21687; Feb. 23, 1977, 52/21688

Int. Cl.² G11B *21/22, 5/54*

U.S. Cl. 360—105 3 Claims



1. An operating mechanism of a tape recorder having at least one of a recording lever and a playback lever, at least one of a pause lever, a cue lever and a review lever, and a subchassis slidably disposed in parallel, spaced apart relationship with said levers and having a head and pinch roller thereon, wherein said subchassis may be advanced by operating one or both of said recording lever and said playback lever to thereby bring the pinch roller and head into engagement with a tape, and wherein said subchassis may be retracted by operating said pause lever, said cue lever or said review lever when said engaged position is brought about, whereby said pinch roller and said head are spaced apart from said tape, characterized in that an edge inclined in one direction is formed on each of said pause lever, said cue lever and said review lever, a through-aperture having an edge inclined in the opposite direction to said one direction is formed on said subchassis, a slider bar is provided on the opposite side from said subchassis and in spaced apart relationship with and transversely of said pause, cue and review levers, and projections engageable with respective ones of said inclined edges are formed on said slider bar whereby movement of any of said levers in one direction causes its inclined edge to cam said slider bar in one direction and the projection thereon in said through-aperture cams said subchassis in a direction to retract said head and roller from said tape.

4,128,854

COMPRESSOR MINIMUM OFF-TIME SYSTEM

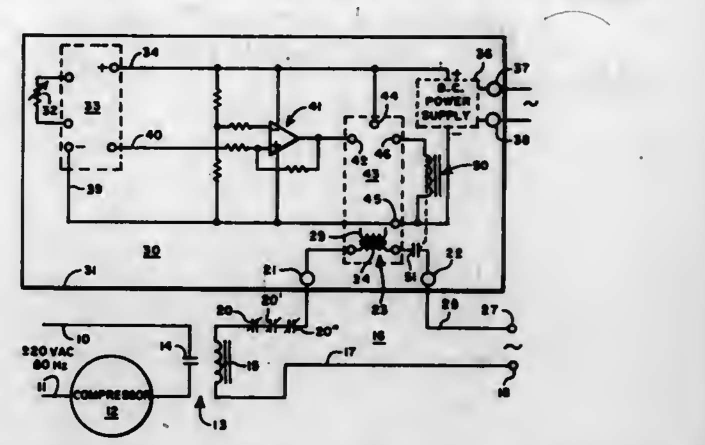
Robert T. Ruminsky, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 25, 1977, Ser. No. 844,766

Int. Cl.² H02H *7/08*

U.S. Cl. 361—22 9 Claims

1. A compressor protection arrangement utilizing a minimum off-time system to insure that a compressor is kept deenergized for a minimum period of time in the event that it becomes deenergized for any reason, including: compressor control switch means including current conducting means adapted to control said compressor in response to condition responsive means; said current conducting means including current transformer means having a first transformer winding connected to sense the flow of current which is controlling said compressor switch means; a second winding of said current transformer means having a voltage output when said first winding has a current flow indicating that said compressor is energized; and minimum off-time delay circuit means connected to said second winding and controlled thereby to initially energize said compressor control switch means upon said condition responsive means requiring the operation of said compressor; said minimum off-time circuit means responsive to a loss of said current in said second transformer winding to keep said compressor deenergized for a minimum period of time regardless of the state of said condition responsive means.



4,128,855

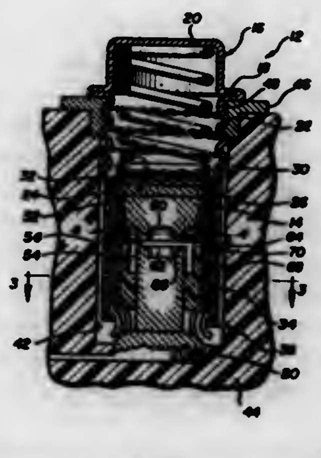
SURGE ARRESTER

Alexander G. Gilberts, Algonquin, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed Apr. 18, 1977, Ser. No. 788,116

Int. Cl.² H02H *3/22*

U.S. Cl. 361—119 5 Claims



1. In a surge arrester providing overvoltage protection for a communications line or the like, and which comprises a pair of carbon electrodes having transverse ends with an arc gap of air therebetween, insulating and spacing means surrounding the arc gap and maintaining the electrodes in a spaced apart condition, a portion of the insulating and spacing means being radially spaced from said transverse end of each electrode, each of said electrodes having facing valleys at their transverse ends, each valley being surrounded by an annular ridge and with the annular ridges being concentric and facing each other to define said arc gap, the ridges each having a radial dimension that is a minor fractional part of the diameter of the transverse end of the associated electrode, said insulating and spacing means and said electrodes defining an annular cavity that extends axially along a part of the length of each electrode and surrounds said ridges immediately adjacent thereto, said valleys and said annular cavity each being sufficiently wide such that the valleys and the cavity are regions of clearance for collection of electrode material on the ridges and for substantially freely accepting a collection of erupted particles from said electrodes during arc discharge regardless of polarity of the electrodes.

4,128,856

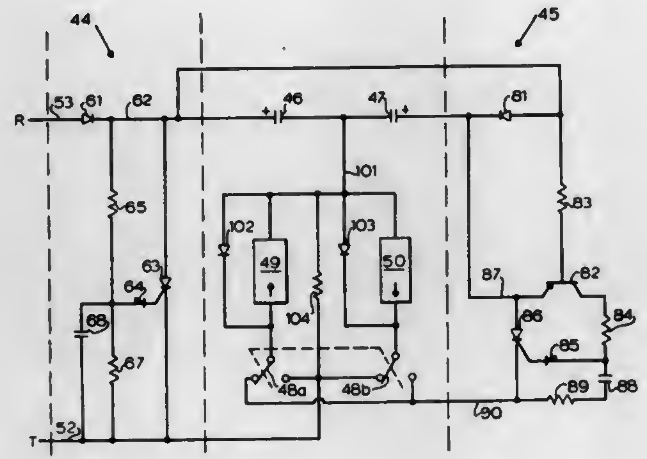
AUTOMATIC RESETTING CONTROL CIRCUIT FOR AIR SWITCH OPERATOR

Donald A. MacLeod, 6815 Ridgewood Dr., Oakland, Calif. 94611

Filed Jul. 29, 1977, Ser. No. 820,039

Int. Cl.^{2} H01H *47/32*

U.S. Cl. 361—156 **7 Claims**



6. An automatic reset circuit for use in conjunction with a remote control system for a valve, a switch and other functionally equivalent devices, characterized by two operating positions and two electrical elements for moving between said positions in opposite directions, said circuit comprising:

- an energy storage capacitor connected in series with said two electrical elements;
- charging means connected to said capacitor for charging it to a predetermined voltage;
- a sensor switch responsive to the position of a said valve, switch and other functionally equivalent devices, and connected to said two electrical elements for reversing connections thereto in accordance with said sensed position;
- a normally non-conductive thyristor having an anode and cathode connected between said energy storage capacitor and said sensor switch, and having a control gate;
- a normally non-conductive trigger diode connected to said control gate;
- a resistor-capacitor time delay network connected to said trigger diode;
- a transistor gate having an emitter and a collector connected between said energy storage capacitor and said time delay network, and having a base connected to said remote control system and responsive to remote actuation of said system to thereupon render said gate conductive, said time delay network to charge from the voltage stored in said energy storage capacitor, whereupon, after the delay of said network, the threshold voltage of said trigger diode is reached, said trigger diode conducts, and said thyristor then conducts to discharge said energy storage capacitor into one of said electrical elements, it being the opposite element to the one operated by the remote control system in the event of the failure of the said valve, switch and other functionally equivalent device to change operating positions in response to actuation of said remote control system thereby resetting said system, and said element being the same element as the one operated by said system when said valves, switch and other functionally equivalent devices has changed operating positions in response to actuation of said remote control system.

4,128,857

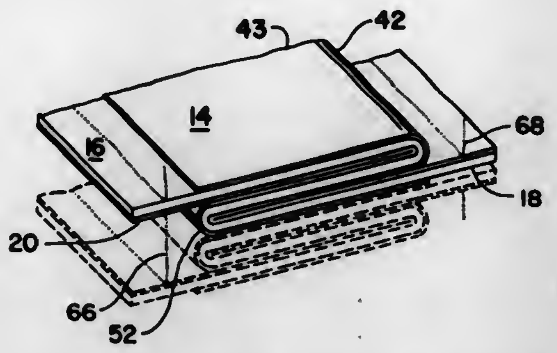
PLEATED METALLIZED FILM CAPACITOR WOUND ABOUT ITS CENTER

Charles C. Rayburn, Mt. Prospect, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 12, 1977, Ser. No. 814,954

Int. Cl.^{2} H01G *1/147*

U.S. Cl. 361—309 **9 Claims**



1. An electrical capacitor segment comprising at least one group of pleated layers comprising a dielectric layer, a first metallized electrode layer applied to one side of said dielectric layer so that an unmetallized margin extends along one edge of a pair of parallel edges of said dielectric layer, a second metallized electrode layer applied to the other side of said dielectric layer so that an unmetallized margin area extends along the opposite parallel edge of said dielectric layer, said dielectric layer being pleated an even number of times so that the margin areas of said pleated dielectric strip extend along their respective ends of said pleated dielectric layer beyond the other pleats that extend along the same end as said respective margin areas with said margin areas facing outwardly from adjacent pleats and metallized spray material sprayed against regions of the metallized electrode layers in the vicinity of said margin areas which face inwardly toward adjacent pleats on both of said ends but, without penetration of said spray far enough to contact any of said pleats.

4,128,858

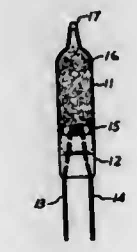
MULTIPLE FLASHLAMP SYSTEM

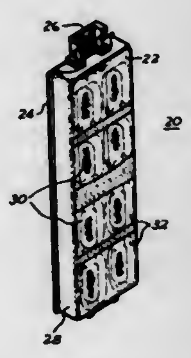
Vaughn C. Sterling, East Cleveland, and Lewis J. Schupp, Chesterland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 14, 1975, Ser. No. 567,576

Int. Cl.^{2} G03B *15/02*

U.S. Cl. 362—13 **14 Claims**





7. A high-voltage activated multiple flashlamp system utilizing a high-voltage low-energy electrical source to ignite the flashlamps in combination with a planar type multiple flashlamp unit comprising a base, a reflector unit mounted on said base having a plurality of outwardly facing reflector cavities disposed in a matrix arrangement and facing outwardly, a plurality of groups of flashlamps, each of said groups including a first group of flashlamps and a last flashlamp connected in series mounted on said base with each one of said lamps being positioned within a respective one of said reflector cavities and

a circuitboard member operatively associated with said lamps to flash the lamps in sequence by providing a series circuit including said lamps adapted to be connected to the energy source, a low resistance switching device connected in series with each lamp of said first group across the energy source and switching to open the circuit upon firing of its associated lamp, said flashlamps each comprising a hermetically sealed light-transmitting envelope, a quantity of filamentary combustible material distributed within said envelope, and flash ignition means within said envelope in the form of a pair of inleads spaced apart with an electrically insulative member and having a mass of primer material connected between said inleads which ignite responsive to application of a high voltage firing pulse thereto and form a conductive residue upon combustion and provide an electrical path to succeeding lamps, said primer material having combustible metal fuel and oxidizer constituents in a ratio of excess combustible metal fuel to oxidizer constituents beyond that necessary for the stoichiometric combustion reaction to take place.

4,128,859

ILLUMINATION DEVICE FOR INDICATOR INSTRUMENTS

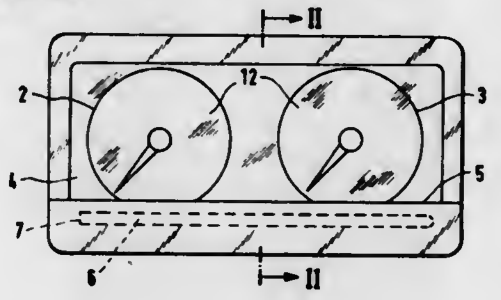
Karl-Heinz Rietmüller, Frankfurt, Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Germany

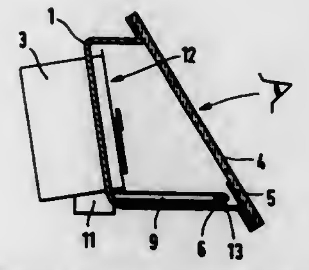
Filed Mar. 16, 1977, Ser. No. 778,030

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1976, 2611434

Int. Cl.^{2} G01D *11/28*

U.S. Cl. 362—26 **13 Claims**





1. A device for the illumination of the instrument dials of at least two indicator instruments which are accommodated in a common housing, particularly of the indicator field of a combination instrument for motor vehicles, comprising

- one housing,
- at least two indicator instruments having an indicator field mounted in said one housing,
- a light source mounted in said housing behind said indicator field,
- a single rod-like light transmitting element extending linearly over a substantial part of the length of said housing spaced relative to said indicator field, and said light transmitting element having at least one end portion thereof extending rearwardly and having a free end disposed so as to be illuminated by said light source,
- said light transmitting element having a smoothly formed surface throughout and has an outer side along its length facing away from said indicator field,
- reflection surface means on said outer side of said light transmitting element for directing light toward said indicator field.

4,128,860

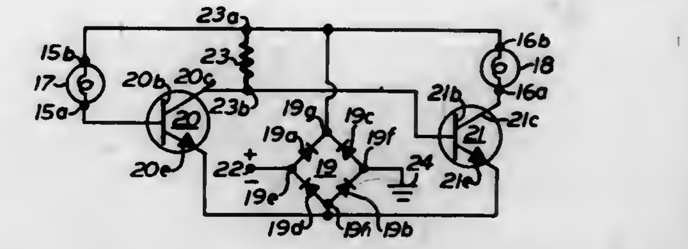
TRUCK MARKER LIGHT

Joseph Spiteri, P.O. Box 71, Harborcreek, Pa. 16421

Filed Nov. 16, 1976, Ser. No. 742,220

Int. Cl.^{2} B60Q *1/26*

U.S. Cl. 362—80 **3 Claims**



1. A marker light for trucks, semi-trailers and the like having electrical systems with either positive or negative ground comprising a base having means for mounting the same on a truck, a lens mounted on the base, lamp supporting means, means for mounting the lamp supporting means on the base, said lamp supporting means having first and second lamp sockets for receiving first and second incandescent lamps, a ground terminal adapted to be connected to the truck electrical system ground, a power terminal adapted to be connected to the live terminal of the truck electrical system, a first transistor, a second transistor, a full wave bridge rectifier having its input connected across said power and ground terminals and having its output connected in series through the base and emitter of said first transistor to the first lamp socket and the filament of its lamp and also having its output connected in series through the collector and emitter of said second transistor to the second lamp socket and the filament of its lamp, a connection from the collector of the first transistor to the base of the second transistor for biasing the second transistor off only while the first transistor is on and current is flowing through the first transistor as would be the case when the filament of the first lamp is unbroken, and a bias resistor connected to the base of the second transistor for biasing said second transistor on, the bias from said resistor being overcome by the bias from said first transistor when said first transistor is on and conducting current through the filament of the first lamp.

4,128,861

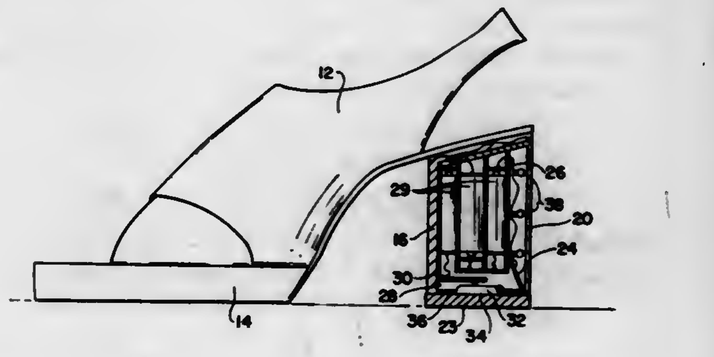
ILLUMINATED SHOE

Akis Pelengaris, 1109 Wm. Floyd Pkwy., Shirley, N.Y. 11967

Filed Mar. 28, 1977, Ser. No. 781,757

Int. Cl.^{2} F21V *33/00*

U.S. Cl. 362—103 **3 Claims**



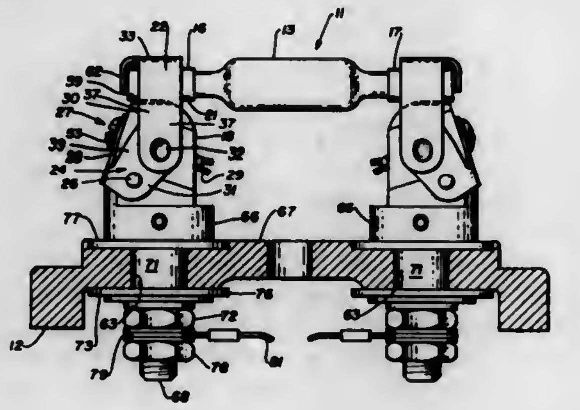
1. An illuminated shoe comprising:

a. a shoe having an upper foot receiving portion and a sole portion including a rear area thereof;

b. a hollow heel defining a chamber therein and including a top, an inner end and a bottom wall, said bottom wall having a central opening, said top wall being fixedly secured on the upper surface thereof to said sole portion adjacent the rear area thereof.

c. an electrical storage battery holder spaced above said bottom wall and secured to any of said other walls and at least one electrical storage battery being removably mounted therein;
d. at least one illuminating lamp coupled to said battery and adapted to be mounted on said battery holder;
e. a resilient pad secured to the outer surface of said bottom wall and having an electrical activating contact penetrating said central opening and being operably connected to said lamp;
f. another electrical actuating contact fixedly secured within the heel chamber and spaced above and opposite said first mentioned electrical actuating contact and operably connected to said battery whereby the movement of said pad when pressed against a rigid surface closes the electrical circuit for illuminating said lamp;
g. a heel side wall having an access opening for the interior of the said chamber;
h. a transparent member opposite said lamp; and
i. means for removable and seal tight affixation of said transparent member over said acess opening.

4,128,862
LAMP MOUNTING
Harold R. Thompson, Sierra Madre, Calif., assignor to Soderberg Manufacturing Co., Inc., Walnut, Calif.
Filed Aug. 30, 1976, Ser. No. 718,902
Int. Cl.^{2} H05B *33/02;* F21V *21/00;* H01R *33/08*
U.S. Cl. 362—217 **11 Claims**

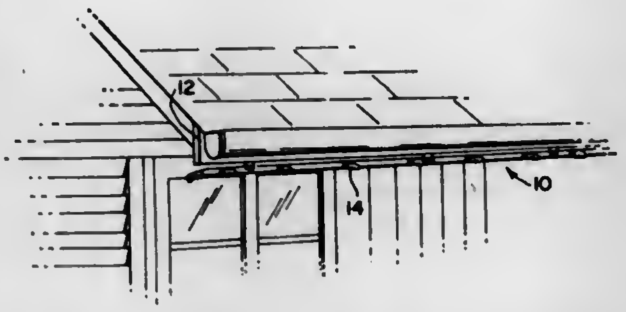


1. In a lamp mounting having a terminal post providing a rest surface for one side of a lamp terminal and a clamping member formed for engagement with the opposite side of said lamp terminal for clamping the latter to said post surface and a link pivoted to said post and member and means adjusting the rotative position of said link relative to said post to control the clamping pressure on said lamp terminal, the improvement comprising:

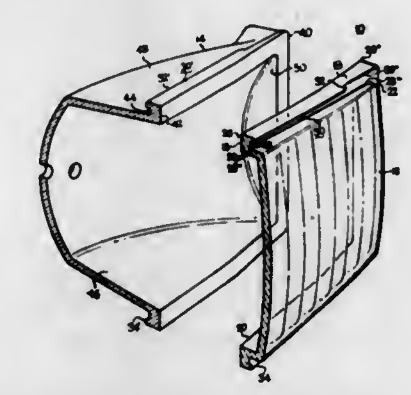
a resilient arm mounted on said link and providing the link connection to said means for providing a resiliently yieldable compression of said lamp terminal between said post surface and member.

4,128,863
STOWABLE DECORATIVE LIGHTS
Michael J. Premetz, 12 Covington Rd., Yonkers, N.Y. 10710, assignor to Michael J. Premetz, Yonkers, N.Y.
Filed May 16, 1977, Ser. No. 796,985
Int. Cl.^{2} F21S *1/00*
U.S. Cl. 362—249 **3 Claims**

1. A decorative electrical lamp display comprising: a flat plastic web; a first electrical conductor embedded in a first outer edge of said web; a second electrical conductor embedded in a second outer edge of said web; lamp sockets installed at intervals along the flat side of said plastic web sand having electrical connections with said first and second electrical conductors; said lamp sockets housing electric lights and giving the plastic web the appearance of a string of lights; said plastic web being hingeably attached to an overhanging facer board of a building; said web being attached by means of hinges, the first end of each of said hinges is fastened to the back side of said facer board while the second end of each of said hinges is hingeably attached to the plastic web; spaced openings along the web provide attachment points for the second ends of said hinges; spaced slits along the flat plastic web provide attachment means for interference fit with protuberances molded onto the backside of the hinges, allowing the string of lights to be hidden behind the facer board when not in use, by swinging the plastic web backwards and up into the protuberances through the slits which are periodicallly spaced along the the plastic web to correspond to said mating protuberances on the hinges; when said string of lights is in use the web is held in place by means of at least one holding tab comprising a member with a protuberance at one end adapted to interference fit with a slit on the plastic web and a slit on the opposite end adapted to interference fit with a protuberance on the backside of the hinge.

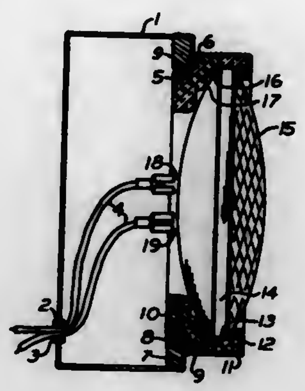


4,128,864
SEALED BEAM LAMP UNIT
Warren T. Brussee, Warren, and William G. Ferris, Chardon, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Jul. 18, 1977, Ser. No. 816,432
Int. Cl.^{2} F21V *7/00*
U.S. Cl. 362—306 **12 Claims**



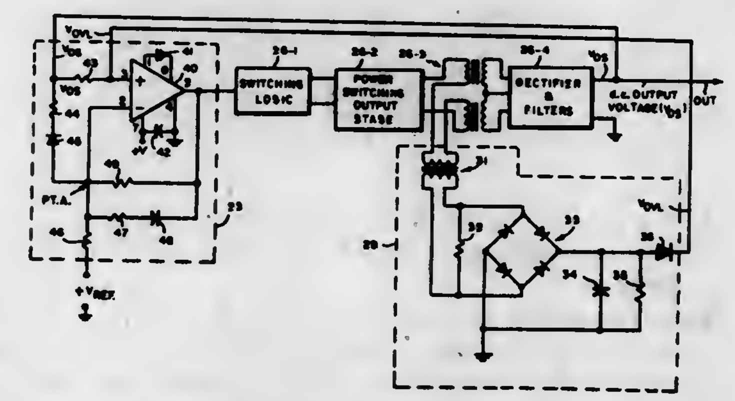
1. A pressed glass lens member for a sealed beam lamp unit which include an inner surface having prism elements to focus light transmitted therethrough including longitudinally extending ribs and an outer sealing rim having front and back sealing surfaces joined by a body section wherein the improvement comprises varying the thickness of said body section so that the thickness of said rim body section is greater in the direction of said longitudinally extending ribs for a circular shaped lens member while the thickness of said rim body section is greater in a direction transverse to the direction of said longitudinally extending ribs for a rectangular shaped lens member.

4,128,865
SHOCK SUPPRESSING RETAINER RING AND GROMMET FOR SEALED BEAM LAMPS
Kenneth L. Johnson, Warren, Pa., assignor to Betts Machine Company, Warren, Pa.
Filed Aug. 8, 1977, Ser. No. 822,528
Int. Cl.^{2} F21V *5/04*
U.S. Cl. 362—369 **1 Claim**



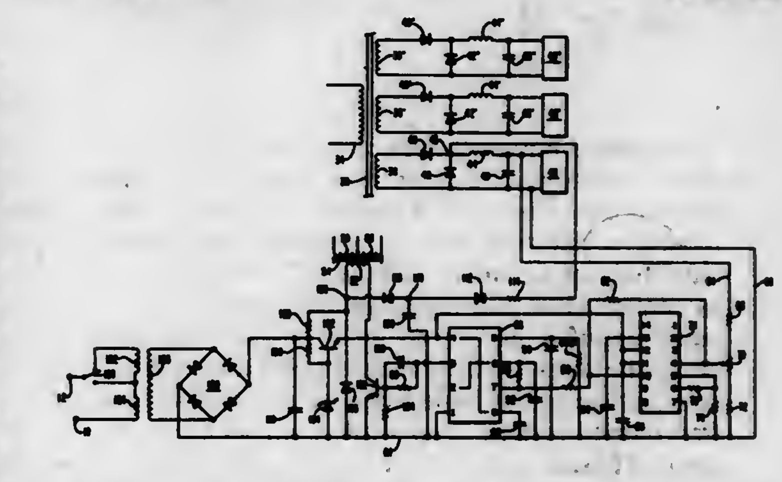
1. A retainer ring and grommet for sealed beam/par lamps, comprising a housing having inner and outer sealing surfaces for surrounding a lamp receiving opening, an annular elastomeric body having its inner end received in said opening with the outer end of said body in overhung relation to said sealing surfaces, the inner end of said body having an integral outwardly projecting O-ring and said inner sealing surface having a groove in sealing engagement with said O-ring, a shoulder on said body engaging said outer sealing surface, said sealing surfaces providing substantially the sole support for said body, an internal groove in the outer end of said body spaced outward from said sealing surfaces, a sealed beam lamp having its rim received in supporting relation in said internal groove, the outermost side of said internal groove being peelable away from said rim to permit removal of the lamp, and the section of said body between said sealing surfaces and said internal groove providing a cantilever support for said lamp for cushioning the lamp from shocks and vibrations and thereby increasing lamp life as compared to a solidly mounted lamp.

4,128,866
POWER SUPPLY WITH CURRENT FOLDBACK
George W. Doerre, Framingham, Mass., assignor to Data General Corporation, Westboro, Mass.
Filed Mar. 21, 1977, Ser. No. 779,733
Int. Cl.^{2} H02M *3/24*
U.S. Cl. 363—15 **7 Claims**



1. In a d.c. switching power supply having a power switcher, a power amplifier coupled to the switcher output, a power transformer coupled to the amplifier, a rectifier and filter coupled to said transformer, and an error amplifier coupled to said power switcher to control same, the improvement of current limit means coupled to said error amplifier for controlling the output error signal thereof upon the detection of a current overload condition in a manner to foldback the power supply output current, said current limit means comprises first means for generating and applying a signal representative of a current overload condition to one input of said error amplifier and said current limit means also comprising second means for altering the input signal applied to another input of said error amplifier.

4,128,867
POWER SUPPLY REGULATION USING SWITCHING TRANSISTORS
Albert M. Heyman, Bedford, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed Oct. 18, 1976, Ser. No. 733,496
Int. Cl.^{2} H02M *5/458*
U.S. Cl. 363—21 **16 Claims**



1. A power supply system for converting standard AC voltage to a low-level DC voltage, said system comprising:

means for converting the standard AC voltage to a first DC voltage level;
means for maintaining said first DC voltage level;
means for transforming the first DC voltage level to the low-level DC voltage said transforming means including a primary winding and at least one secondary winding;
means for applying the first DC voltage level to said means for transforming the first DC voltage level to the low-level DC voltage, said application means comprising:
a first switching means connected to a first terminal of the primary winding of said transforming means,
a second switching means connected to a second terminal of the primary winding of said transforming means, and means for controlling the switching action of said first and second switching means wherein said means comprises:
a control transformer with primary and secondary windings; and
a control means for producing pulse conditions in the primary winding of said control transformer, wherein a pair of secondary windings of said control transformer are each connected to switching terminals within said first and second switching means, wherein a third secondary winding of said control transformer is connected to commonly polarized terminals of said pair of secondary windings of said control transformer and provides a current source to maintain said first and second switching means in conduction,
said control means for producing pulse conditions comprising circuit means for providing a fast turnoff for said first and second switching means, said circuit means being coupled to the positive terminal of said control transformer primary winding and a first terminal and a second terminal of at least one secondary winding of said transformer means.

4,128,868

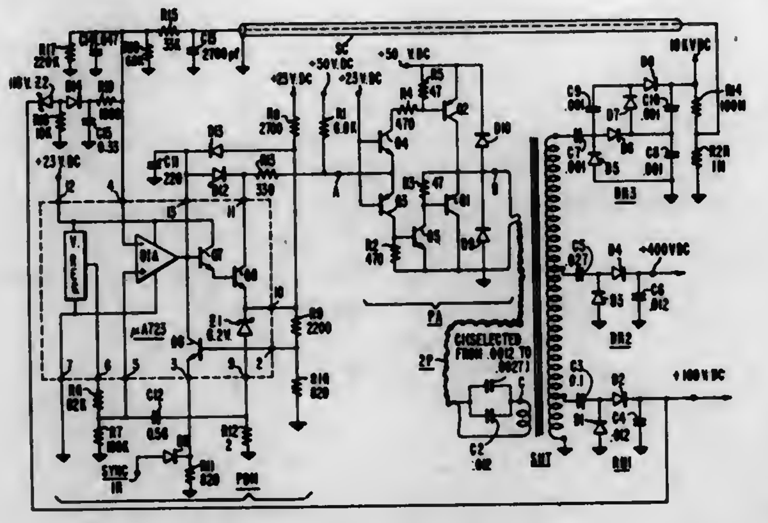
D-C CONVERTER USING PULSED RESONANT CIRCUIT

Edward B. Gamble, Granada Hills, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 30, 1977, Ser. No. 782,751

Int. Cl.^{2} H02M *3/335*

U.S. Cl. 363—26 4 Claims



1. A regulated power supply comprising:

a pulse duration modulator providing output pulses at a substantially constant repetition frequency, said pulses having a duration that is controlled according to the amplitude of a control voltage of relative low frequency as compared to said repetition frequency;

a pulse amplifier having an input circuit connected to receive the output pulses of said pulse duration modulator and having a low impedance output circuit to supply a first output voltage level while each such output pulse is applied to said input circuit and to supply a second output voltage level during each interval between such output pulses;

a step-up transformer having a primary winding and a secondary winding;

capacitance connected in a resonant combination with said primary winding, said resonant combination being connected across the output circuit of said pulse amplifier, and presenting high Q due to the low impedance thereof, the values of said capacitance and the inductance of said primary winding being chosen so the resonant frequency is substantially equal to an integral multiple, one or more, of the constant repetition frequency whereby the voltage being developed across said primary winding in response to the peak output voltage level of said pulse amplifier is multiplied up by said high Q value;

rectifying means for developing a rectified voltage responsive to the voltage appearing across the secondary winding of said step-up transformer; and

means for applying a portion of said rectified voltage as said control voltage to said pulse duration modulator.

4,128,869

PHASE CONTROL ARRANGEMENT OF VALVE CONVERTER

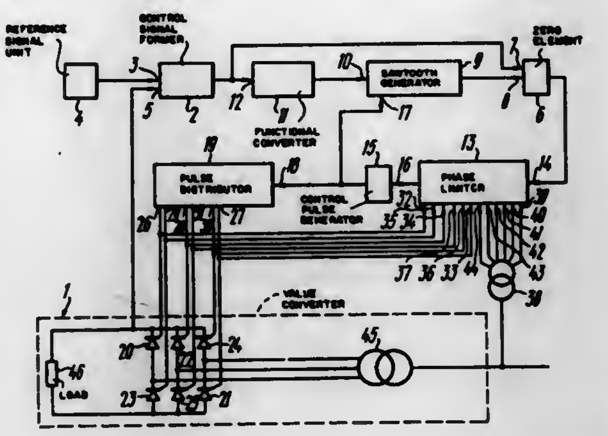
Eduard S. Ermolovich, poselok Krasnaya Gorka, ulitsa Zavodskaya, 2, kv. 4, Istra Moskovskoi oblasti, and Mikhail V. Olshvang, Galyanovo, korpus 13a, kv. 63, Moscow, both of U.S.S.R.

Filed Jan. 12, 1977, Ser. No. 758,689

Int. Cl.^{2} H02M *7/155*

U.S. Cl. 363—87 4 Claims

1. A phase control arrangement of a valve converter comprising: a reference signal unit having an output; a control pulse former having a first input connected to said output of said reference signal unit, a second input electrically coupled to the valve converter and an output; a sawtooth generator having a first input connected to said output of said control signal former, a second input designed for transmitting a signal modifying the amplitude of the sawtooth signal, and an output; a zero element having a first input connected to said output of said control signal former, a second input connected to said output of said sawtooth generator and an output; a phase limiter having an input connected to said output of the zero element and an output; a control pulse generator having an input connected to said output of said phase limiter and an output connected to said second input of said sawtooth generator; a pulse distributor for distributing pulses among valves of the valve converter having an input connected to said output of said control pulse generator and outputs connected to respective valves, the number of outputs corresponding to the number of valves of said valve converter.



4,128,870

HIGH CURRENT-RECTIFIER ARRANGEMENT

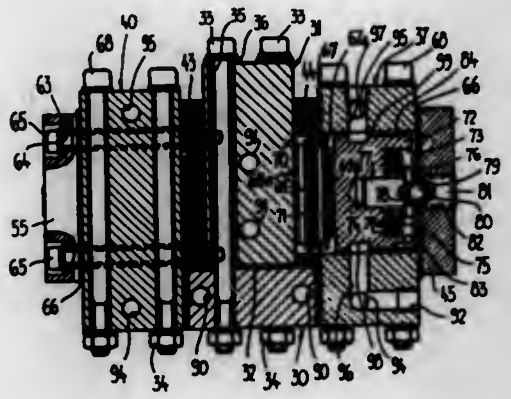
Johannes F. Knobloch, Watt-Regensdorf, and Ernst Brunner, Zürich, both of Switzerland, assignors to H.A. Schlatter AG, Schlieren, Switzerland

Filed Sep. 6, 1977, Ser. No. 831,086

Claims priority, application Switzerland, Sep. 29, 1976, 12295/76

Int. Cl.^{2} H02M *7/06*

U.S. Cl. 363—141 9 Claims



1. A high current-rectifier arrangement comprising:

at least one semiconductor-rectifier element having contact surfaces;

means including at least one contact body equipped with cooling agent-channel means and between which said semiconductor-rectifier element is fixedly clamped by means of its contact surfaces;

means mounting said contact body to be movable;

means for pre-biasing under spring force said movable contact body;

said mounting means including a connection element;

a connection line for electrically connecting the movable contact body with said connection element;

said movable contact body possessing a substantially piston-like structure;

said connection element being provided with a substantially cylinder-shaped compartment having an inner wall and within which there is movably arranged the piston-like, movable contact body with radial play;

said movable contact body being surrounded at its periphery by said connection line which bridges the radial play to the inner wall of said compartment;

said cooling agent-channel means of said movable contact body being constructed to be offset at the periphery thereof with regard to said connection line;

said connection element being provided with cooling agent-channels; and

means for sealingly connecting the cooling agent-channel means of said movable contact body with the cooling agent-channels of the connection element.

4,128,871

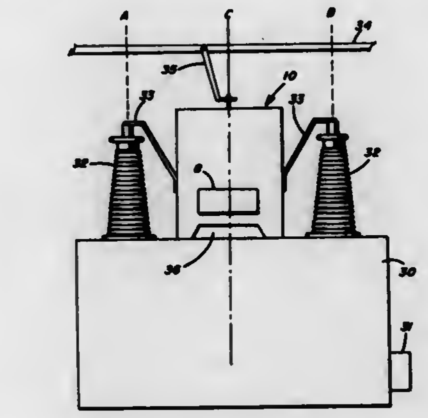
HIGH VOLTAGE DC POWER SUPPLY

Sammy Y. Murad, Fountain Valley, Calif., assignor to Wahlco Inc., Santa Ana, Calif.

Filed Jun. 10, 1977, Ser. No. 805,250

Int. Cl.^{2} H02M *7/00*

U.S. Cl. 363—144 13 Claims



1. A high voltage direct current power supply comprising: a transformer having a metal housing and first and second high voltage output bushings; tank means for retaining a bath of insulating liquid; said tank means formed of an electrically nonconductive material; mounting means for supporting said tank means on said transformer housing intermediate said first and second bushings; a rectifier assembly mounted in said tank means so as to be submersible in said bath; said rectifier assembly having first and second AC input terminals and first and second DC output terminals; input connecting means for electrically connecting said first and second bushiongs to said first and second AC input terminals respectively; and said first DC output terminal being grounded and said second DC output terminal being generally positioned equidistant from said first and second bushings and above said first and second bushings.

4,128,872

HIGH SPEED DATA SHIFTER ARRAY

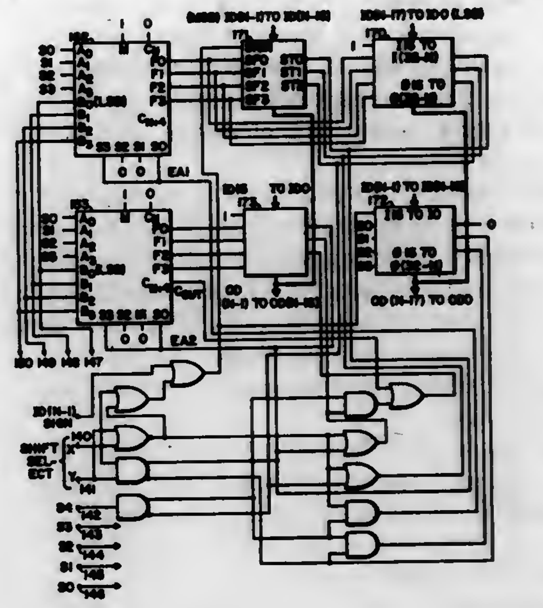
Jerry E. Prioste, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 20, 1977, Ser. No. 808,221

Int. Cl.^{2} G11C *19/00;* G06F *1/00*

U.S. Cl. 364—900 15 Claims

1. A high speed digital data shifter array for shifting digital data in parallel including a plurality of 16 bit programmable data shifters each having a sign bit input, a plurality of scale factor inputs, and a plurality of shift function command inputs, the array comprising: a predetermined number of the sixteen bit programmable data shifters arranged to receive input data and to provide output data, each of the programmable data shifters providing at least rotate right, rotate left, arithmetic shift right, arithmetic shift left, shift left using two's complements, and shift right using two's complement operations in response to input commands; a plurality of scale factor inputs coupled to the plurality of scale factor inputs of the programmable data shifters for selecting the number of positions data is to be shifted by the 16 bit programmable data shifter; and a plurality of logic gates for receiving and decoding input commands for the shifter array, the plurality of logic gates having outputs to provide decoded control commands which are coupled to the plurality of shift function command inputs of the predetermined number of sixteen bit programmable shifters so that the shifter array can shift and can rotate the input data in response to the input commands and can place the sign bit at the outputs in response to a predetermined input command.



SHIFT SELECT		SCALE FACTOR MSB	CARRY OUT	SIGN BIT		170 AND 171			173			172		
Y	X	S4	163	171	172	ST2	ST1	ST0	ST2	ST1	ST0	ST2	ST1	ST0
0	0	0	-	1	1	1	1	0	0	1	0	0	1	0
1	0	0	-	N-1	-	1	1	0	0	0	0	0	1	0
1	1	0	0	1	1	1	1	1	0	1	1	0	0	0
1	1	0	1	1	1	1	1	1	1	1	1	0	0	0
0	1	0	-	1	1	1	1	0	0	0	0	0	1	0
0	0	1	-	1	1	0	1	0	1	1	0	1	1	0
1	0	1	-	N-1	N-1	0	0	0	0	0	0	1	1	0
1	1	1	-	1	1	0	0	1	1	1	1	0	0	0
0	1	1	-	1	1	0	0	0	0	0	0	1	1	0

4,128,873

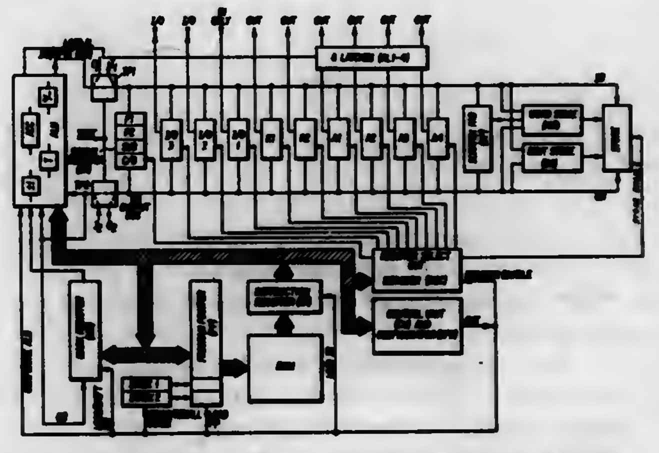
STRUCTURE FOR AN EASILY TESTABLE SINGLE CHIP CALCULATOR/CONTROLLER

Sylves L. Lamiaux, Ancretieville St-Victor, France, assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 20, 1977, Ser. No. 834,929

Int. Cl.^{2} G06F *11/00, 7/00*

U.S. Cl. 364—200 4 Claims



1. A testing structure for a microprocessor comprising:

combinational network means, said combinational network means comprising a plurality of logic elements wherein said logic elements are capable of being selectively configured in a plurality of combinations;

a plurality of data storage elements for containing data, said data storage elements being connected in parallel with

said combinational network means by means of an input bus and an output bus;
program storage means, said program storage means containing a plurality of instructions;
control means for controlling instruction execution;
means for selecting one of said plurality of instructions in response to signals from said control means;
means for storing said selected instruction;
a first means for decoding a portion of said selected instruction to generate a configuration signal for selectively configuring said logic elements of said combinational network means;
a second means for decoding the remainder of said selected instruction to generate a storage element select signal for selectively actuating selected storage elements, said data contents of said selected data storage elements being modified by said selectively configured logic elements of said combinational network means;
diagnostic testing means connected to said input bus and said output bus;
means for selectively routing data flowing along said input bus and said output bus to and from said diagnostic testing means, for selectively testing the operation of said combinational network means and said plurality of data storage elements, respectively; and
data clocking means connected to said combinational network means, said control means, and said first decoding means, for controllably sequencing the operation of said combinational network means, said control means, and said first decoding means.

4,128,874

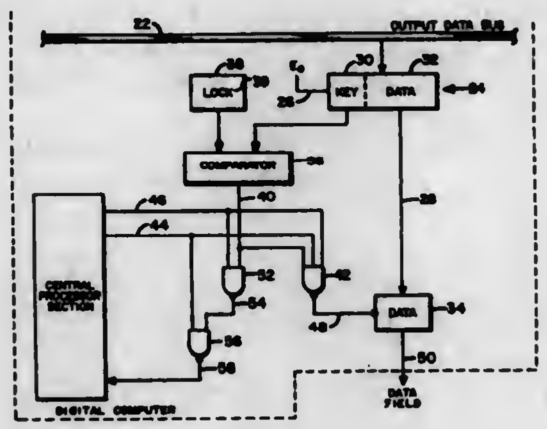
METHOD AND APPARATUS FOR PREVENTING ERRONEOUS DATA TRANSFER FROM A DIGITAL COMPUTER

Jerry H. Pertl, Bloomington, and Howard A. Koehler, Minneapolis, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 686,977, May 17, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 840,699

Int. Cl.² G06F *11/00*

U.S. Cl. 364—200 **8 Claims**



1. In a digital computer having an output word consisting of a key field and a data field, an apparatus for protecting against the erroneous transfer of said data field from said digital computer, comprising:
(a) means for comparing a predetermined lock value with a key value contained in said key field of said output word, said means for comparing being capable of indicating either a first or second condition depending upon the comparison of said lock value and said key value;
(b) means for tranferring said data field of said output word from said digital computer; and
(c) means for inhibiting said transfer of said data field of said output word when said means for comparing indicates said first condition but not inhibiting said transfer when said means for comparing indicates said second condition.

4,128,875

OPTIONAL VIRTUAL MEMORY SYSTEM

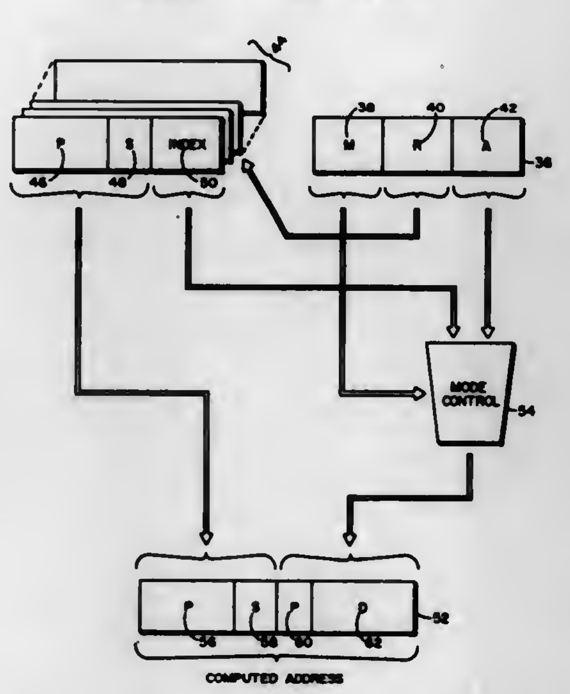
Kenneth J. Thurber, Edina, Minn., and Jon C. Strauss, Wayne, Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 16, 1976, Ser. No. 751,789

Int. Cl.² G06F *3/00*

U.S. Cl. 364—200 **14 Claims**

ADDRESS COMPUTATION



1. In a digital computer of the type having a memory for storing words of data at addressable locations therein, an address generation apparatus for generating a single memory address from a software specified address consisting of a register identifier and offset identifier and from predetermined state information, comprising:
a first register for holding said software specified address including said register identifier and said offset identifier;
a first set of registers selectable from the portion of said first register containing said register identifier, each of said first set of registers containing said predetermined state information consisting of process, segment and pointer identifiers;
a first selector means coupled to said first register and to said first set of registers to receive said register identifier for selecting one of said first set of registers;
a second register, a portion of which is coupled to the portion of said first register containing said offset identifier and another portion of which is coupled to receive the portion of the selected one of said first set of registers containing said process and segment identifiers, said second register for holding at least four fields adapted to specify process and segment identifiers obtained directly from said process and segment identifiers of the selected one of said first set of registers and to further specify page and displacement identifiers obtained by partitioning said offset identifier from said first register;
storage means including a plurality of memory locations, each holding a frame identifier, said storage means being directly addressable by the concatenation of said pointer identifier from the selected one of said first set of registers and said segment and page identifiers from said second register; and
a third register, a portion of which is coupled to said storage means for receiving a selected frame identifier from said storage means and another portion of which is coupled to the portion of said second register containing said displacement identifier, said third register thereby said single memory address obtained by concatenating said frame identifier with said displacement identifier.

4,128,876

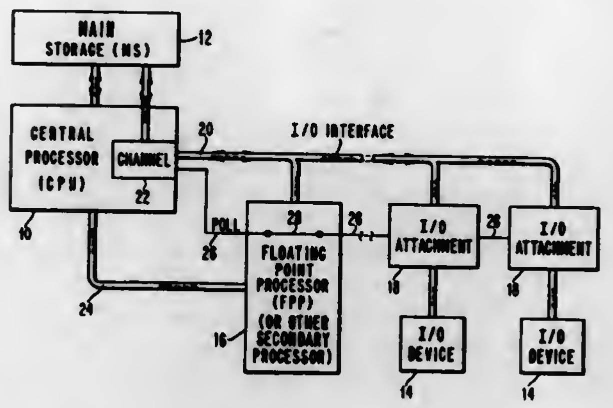
SYNCHRONOUS MICROCODE GENERATED INTERFACE FOR SYSTEM OF MICROCODED DATA PROCESSORS

Richard N. Ames; Dick K. Hardin; Joel C. Leininger, and George P. Taylor, all of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 28, 1977, Ser. No. 792,085

Int. Cl.² G06F *3/00*

U.S. Cl. 364—200 **14 Claims**



1. In a data processing system which has a central processor associated with a plurality of peripheral units including a secondary processor and one or more input/output devices, each of said processors having a microcoded control store and associated addressing means for selecting microwords from said store in a sequence determined at least in part by the operation to be performed, and wherein each of said peripheral units may communicate with said central processor through an interface at least part of which is common to all peripheral units in the system, the interface between said central processor and said secondary processor further including improved features whereby said processors can be synchronously coupled to each other for the joint execution of interrelated procedures and whereby said secondary processor also is able to share the common portion of said interface with the other peripheral units for transferring data to and from said central processor, said improved features comprising:
common timing control means for clocking the respective sequences in which stored microwords are utilized by both of said processors when they are operating conjointly,
a first signal line extending between said processors,
first control means in said central processor operable to place an enabling signal upon said first signal line when communication is to be established between said processors,
a second signal line extending between said processors,
second control means in said secondary processor responsive to an enabling signal on said first signal line when an operation specified by said central processor is being delegated to said secondary processor for placing on said second signal line a signal denoting that said secondary processor is installed and able to execute said operation,
third control means in said central processor responsive to the operation-installed signal on said second signal line for conditioning said common interface to function in a cycle steal mode for transferring data between any of said input-/output devices and said central processor while said secondary processor is performing the operation delegated to it by said central processor, and
fourth control means in said central processor responsive to termination of the operation-installed signal on said second signal line when said secondary processor has substantially completed its performance of the selected operation for conditioning said common interface to function in an interprocessor mode permitting data transfer between said secondary processor and said central processor.

4,128,877

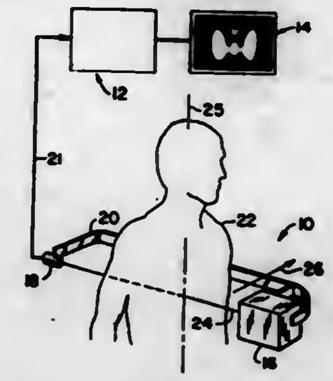
METHOD OF OBTAINING A UNIQUELY DETERMINED CROSS-SECTIONAL RECONSTRUCTION FROM X-RAY PROJECTIONS

Myron B. Katz, 1633 First St., Apt. A, New Orleans, La. 70130

Filed Mar. 31, 1977, Ser. No. 783,083

Int. Cl.² G01N *23/08;* **G06F** *15/42*

U.S. Cl. 364—414 **4 Claims**



1. In a system having means for projecting a plurality of parallel X-ray images of an object onto a recording medium having a resolution of w, means for sampling the recording medium to obtain therefrom projection data representative of said images, means responsive to the sampling means for combining said projection data to generate therefrom a reconstruction representative of the object in the form of a square of side L, grid-like presentation divided into n^2 smaller squares, n being smaller than or equal to the quantity

$$\max\left(\sum_{j=1}^{m} |p_j|, \sum_{j=1}^{m} |q_j|\right)$$

where p_j and q_j are relatively prime integers, m is the number of X-ray images obtained, and $0 \leqq |p|, |q| \leqq n$, and means responsive to the combining means for displaying the presentation, the method of obtaining the X-ray images so that the object reconstructed will be uniquely determined, the method comprising:
orienting the X-ray projecting means about an axis through the object at each one of a number of predetermined angles $\{\theta_1, \theta_2, \ldots, \theta_m\}$ and projecting an X-ray image of the object at each orientation, each of the angles $\{\theta_1, \theta_2, \ldots, \theta_m\}$ being selected from a set of angles $\overline{\theta}(n)$ with elements of the form $\theta = \arctan p/q$, orientation of the X-ray projecting means at each of the angles $\{\theta_1, \theta_2, \ldots, \theta_m\}$ providing resolution in the projection data that is at least as large or larger than w and defined by L/n times the quantity

$(p^2 + q^2)^{-\frac{1}{2}}$.

4,128,878

SYSTEM FOR EXCUTING A PROGRAM-CALL INSTRUCTION IN A COMPUTER

Hiroshi Yasuhara, and Seiki Saito, both of Tokyo, Japan, assignors to Oki Electric Industry, Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1977, Ser. No. 814,333

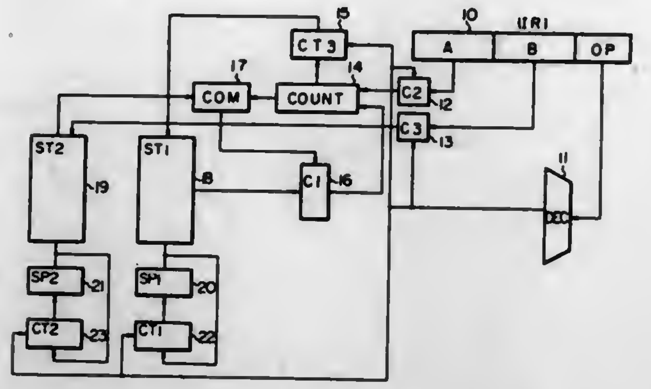
Claims priority, application Japan, Jul. 20, 1976, 51-85612

Int. Cl.² G06F *9/00*

U.S. Cl. 364—200 **4 Claims**

1. A computer system for excuting a program call instruction which facilitates the common use of a common program in a plurality of main programs comprising a first push down stack for storing the next address of the address of the program call instruction, a second push down stack for storing the final address of the common program, a program counter for indicating the current excuted address, being switched to the start address of the common program upon decoding the program call instruction, a comparator for comparing the output of the

second push down stack and the content of the program counter, and means for transferring the output of the first push



down stack to said program counter according to the output of said comparator.

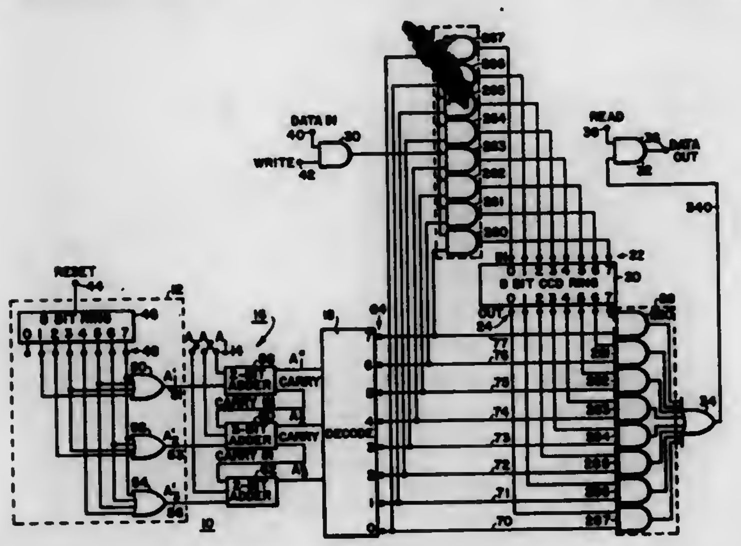
4,128,879
RECIRCULATING MEMORY WITH PLURAL INPUT-OUTPUT TAPS

Harry N. Gardner, Colorado Springs, Colo., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 709,750, Jul. 29, 1976, abandoned. This application Dec. 20, 1977, Ser. No. 862,260

Int. Cl.² G11C ***21/00, 19/28***

U.S. Cl. 365—73 **16 Claims**



1. A memory comprising:

memory means including a plurality of sequentially coupled storage cells for recirculating data, one of said storage cells being a reference storage cell;

address means for addressing any particular bit of data recirculating in said memory means;

first means coupled to said address means and said memory means for counting the number of said memory cells through which said addressed bit has shifted relative to said reference storage cell and combining said number with an address representing the location of the storage cell where said addressed bit was initially stored to produce an internal address corresponding to the actual location of said addressed bit of recirculating data; and

decode means coupled to said plurality of storage cells and to said first means for selecting said actual location.

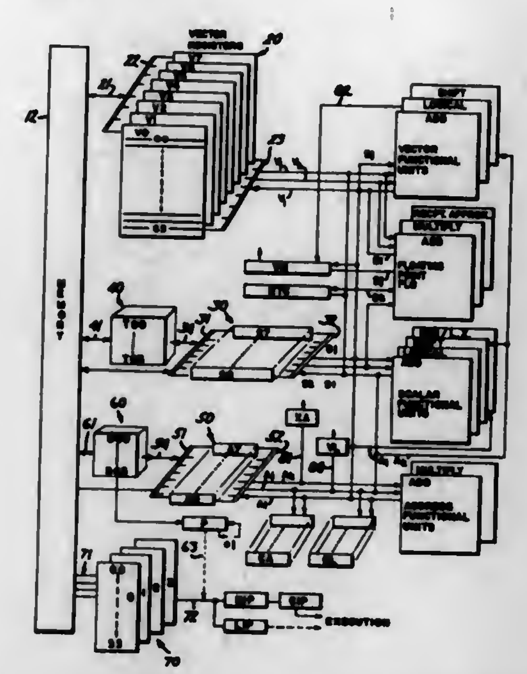
4,128,880
COMPUTER VECTOR REGISTER PROCESSING

Seymour R. Cray, Jr., Lilydale, Minn., assignor to Cray Research, Inc., Chippewa Falls, Wis.

Filed Jun. 30, 1976, Ser. No. 701,119

Int. Cl.² G06F ***9/18***

U.S. Cl. 364—200 **12 Claims**



1. Vector processing apparatus for a computer having a main memory, comprising:

a plurality of vector registers each including means for holding a plurality of elements of an ordered set of data;

at least one arithmetic or logical functional unit having an input for receiving operands and an output for delivering results, said functional unit including segmented means for holding data for operations not yet completed while receiving operands for successive operations;

path select means associated with said vector registers and responsive to program instructions for selectively connecting individual vector registers for transmission of data to or from said main memory, and for selectively connecting individual vector registers for transmitting data as operands to a functional unit and for receiving results from a functional unit; and

control means associated with said vector registers and responsive to program instructions, said control means being operative in conjunction with a vector register selected as an operand register in a vector processing operation to successively transmit the elements of the ordered set of data from the vector register to a functional unit on successive clock periods, said control means being operative in conjunction with a vector register selected as a result register in a vector processing operation to receive and store successive results transmitted from a functional unit as elements of an ordered set of data representing a result vector, on successive clock periods following delivery of the first result from the functional unit.

4,128,881
SHARED MEMORY ACCESS CONTROL SYSTEM FOR A MULTIPROCESSOR SYSTEM

Mitsuru Yamamoto, Kawasaki; Jun Arai, Yokosuka; Takao Isogawa, and Isamu Hasebe, both of Yokohama, all of Japan, assignors to Panafacom Limited, Kawasaki, Japan

Filed Feb. 18, 1976, Ser. No. 658,853

Claims priority, application Japan, Feb. 20, 1975, 50-21250

Int. Cl.² G06F ***9/20, 13/00***

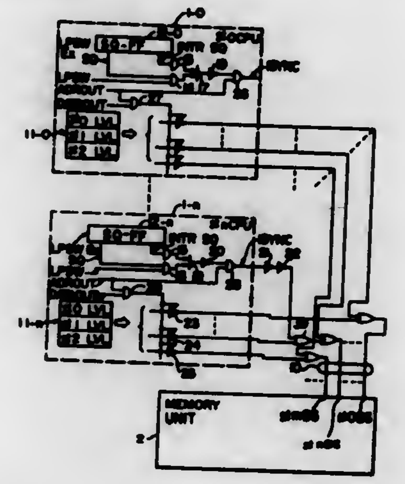
U.S. Cl. 364—200 **10 Claims**

1. In a multiprocessor system having a plurality of processors, each of which has a normal operational state and certain special condition operational states, said system including a

common memory unit and said plurality of processors; a shared memory unit access control system comprising:

a fixed address supply source, one in each processor, for generating address information of multiple bits and for addressing and accessing said common memory unit in accordance therewith, said address information generated by each said fixed address supply source in each of said respective processors being identical, and

a sequential state indicate signal generator, one in each processor, for producing an output signal of a single bit which selectively assumes logic "1" or "0" values in accordance with a predetermined sequence when one of said certain special condition operational states exists; and said system further comprising:



fixing means external to at least each of said processors except for one and responsive to said output signal for fixing at least one bit of said multiple bits, provided by said fixed address supply source of said at least each of said processors except for one, to the logic "1" or "0" values of the output signal produced by said sequential state indicate signal generator, said at least one bit of each respective one of said at least each of said processors except for one being respectively different in identity in relation to said multiple bits, whereby to uniquely alter said address information produced by said fixed address supply source of said at least each of said processors except for one during said special condition operational states.

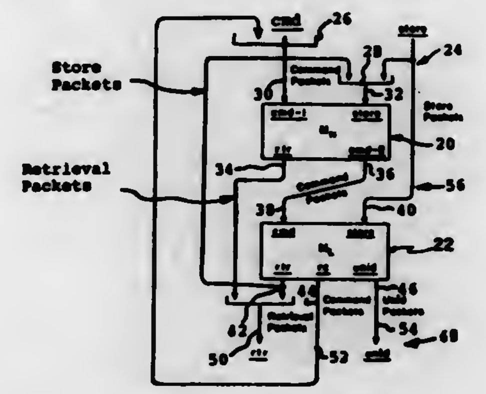
4,128,882
PACKET MEMORY SYSTEM WITH HIERARCHICAL STRUCTURE

Jack B. Dennis, Belmont, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 19, 1976, Ser. No. 716,071

Int. Cl.² G06F ***13/00***

U.S. Cl. 364—200 **17 Claims**



1. A memory system for a digital data processor, said memory system comprising:

(a) at least a higher level sub-memory system means containing higher level records representing relatively active items of information, said higher level sub-memory system means capable of concurrent processing of a plurality of memory transactions;

(b) at least a lower level sub-memory system means containing lower level records representing relatively inactive items of information, said lower level sub-memory means capable of concurrently processing a plurality of memory transactions;

(c) a peripheral input network means for peripheral command signals and peripheral store signals representing peripheral command packets and peripheral store packets, respectively, by which peripheral command signals are transmitted to said higher level sub-memory system means and peripheral store signals are transmitted to said higher level sub-memory system means and to said lower level sub-memory system means;

(d) a peripheral output network means for peripheral retrieval signals, peripheral command signals and peripheral unid (unique identifier) signals representing peripheral retrieval packets, peripheral command packets and peripheral unid packets, respectively, by which peripheral retrieval signals and peripheral command signals are transmitted from said lower level sub-memory system means and to said upper level sub-memory system means and peripheral unid signals are transmitted from said lower level sub-memory system means;

(e) an internal output network means for internal retrieval signals and internal command signals representing internal retireval packets and internal command packets, by which said internal retrieval signals and said internal command signals are transmitted from said higher level sub-memory system means;

(f) an internal input network means for internal command signals representing internal command packets by which said internal command signals are transmitted to said lower level sub-memory system means;

(g) said signals representing peripheral command packets and said signals representing internal command packets specifying whether a store operation or a retrieval operation is to be performed on said records representing items of information or specifying administrative transactions to be performed on said records representing items of information;

(h) said signals representing peripheral store packets and said signals representing internal store packets specifying data items to be stored in said records representing items of information;

(i) said signals representing peripheral retrieval packets and said signals representing internal retrieval packets specifying data items retrieved from said records representing items of information; and

(j) said signals representing peripheral unid packets specifying said records representing items of information and uniquely designating one of said lower level records or one of said higher level records.

4,128,883
SHARED BUSY MEANS IN A COMMON BUS ENVIRONMENT

Jack R. Duke, San Marcos; Niranjan S. Shah, Escondido, and William C. Woolf, San Diego, all of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 30, 1977, Ser. No. 838,280

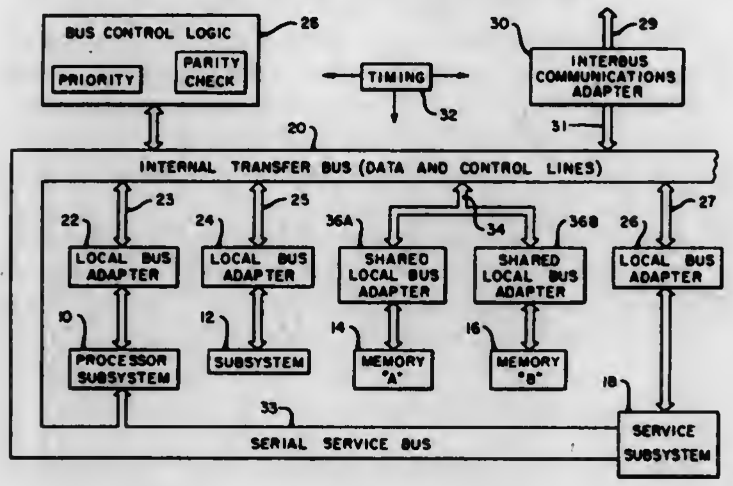
Int. Cl.² G06F ***3/04***

U.S. Cl. 364—200 **8 Claims**

1. In a data processing system wherein each of a group of data handling subsystems communicates with other subsystems of the group by means of an internal transfer bus having a number of bus ports connected to the subsystems by local bus adapters, and wherein each bus port has a single busy line uniquely assigned thereto for signalling busy or available states of the adapter at such bus port to other adapters at other bus ports, and for signalling an incoming message from one of the

other adapters to the adapter at such bus port, the improvement comprising:

first and second shared local bus adapter means for respectively connecting first and second ones of said subsystems in common to one of said ports, the single busy line of such port being a common busy line connected and assigned to both said shared adapter means for signalling states thereof, said shared adapter means including,



means for employing said common busy line to signal to other subsystems on said bus a busy state of both of said first and second subsystems, and

means responsive to a signal addressed to said first subsystem for signalling to other subsystems on said bus a busy state of said first subsystem concurrent with an available state of said second subsystem.

4,128,884

METHODS AND APPARATUS FOR ANALYZING FREQUENCY DISTRIBUTIONS

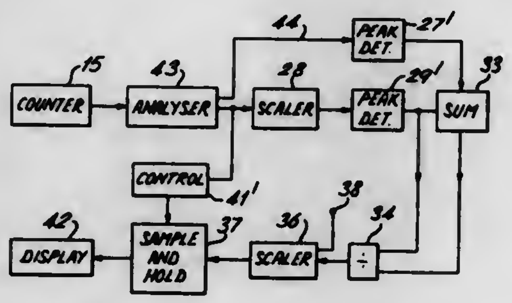
John M. England, Chipperfield, England, assignor to National Research Development Corporation, London, England

Filed Feb. 20, 1976, Ser. No. 659,632

Claims priority, application United Kingdom, Feb. 28, 1975, 08473/75

Int. Cl.^{2} G01N *33/16*

U.S. Cl. 364—416 **16 Claims**



10. Apparatus for determining the proportion of a first type of cell in a blood sample containing cells of the first type and a second type, when the sample has been prepared in such a way that the volumes of the two types of cells form log-normal sub-distributions in a distribution of cell frequency versus cell volume including a counter for processing blood samples and providing a signal for each cell representative of the volume of that cell, and an analyser for determining the frequency of cells within each of a number of linearly divided volume intervals, the analyser providing, in operation, two signals one representative of frequency within an interval and the other representative of mean volume of the interval, calculating means, coupled to receive the said two signals, for providing an output signal representative of $K'M'/K'M' + L'$ where K' is the ratio of the standard deviation of the logarithms of volumes of the first type of cells divided by the standard deviation of the logarithms of the volumes of the second type of cells; M' is the peak of the product frequency of the first type of cells in a volume interval multiplied by mean volume for that interval and L' is the peak of the product frequency of second type of cells in a volume interval multiplied by mean volume for that interval, and means for allowing for any overlap between the sub-distributions in providing a final output signal for the apparatus.

4,128,885

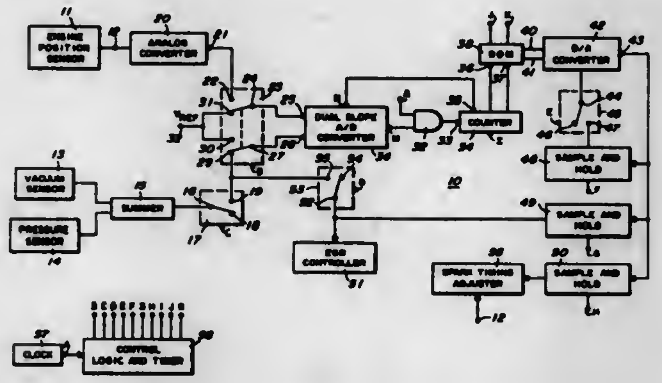
DIGITAL CIRCUITRY FOR SPARK TIMING AND EXHAUST GAS RECIRCULATION CONTROL

Robert J. Valek, Wheaton, and Todd H. Gartner, Elmhurst, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 18, 1977, Ser. No. 798,067

Int. Cl.^{2} F02M *25/06;* F02D *5/00*

U.S. Cl. 364—424 **22 Claims**



1. A spark timing and exhaust gas recirculation control system for an internal combustion engine, said system including:

a signal processing circuit for developing an output which is a complex function of two variable input signals representing different engine conditions, said circuit comprising:

programmable transfer function means for receiving an input signal and producing an output signal having a selectable predetermined relationship to the input signal;

means coupled to said programmable transfer function means for supplying a first analog input signal related to a first engine condition to said transfer function means while selecting a first transfer relationship therefor;

first storage means coupled to said transfer function means for storing a quantity related to the output of said transfer function means produced in response to said first input signal;

said supplying and selecting means including circuitry for supplying a second analog input signal related to a second engine condition to said transfer function means, after said first input signal, while selecting a second relationship for said transfer function means; and

means coupled to said first storage means for multiplying the output of said programmable transfer function means produced in response to said second input signal by a factor related to said stored quantity to produce a complex output analog control signal, whereby a single programmable transfer function means can sequentially process two variable input signals related to engine conditions and develop a complex output signal control which is a product function of both of the input signals;

and wherein said programmable transfer function means includes a function generator comprising:

analog to digital converter means for receiving an input analog signal and producing a first output digital signal related to said input signal; and

read only memory means coupled to said analog to digital converter means for receiving said first output digital signal as an input and producing a second output digital signal having a selectable predetermined functional relationship with respect to said first output digital signal;

and wherein said multiplying means includes:

digital to analog converter means coupled between said read only memory means and said storage means for receiving said second digital output signal and producing a first analog output signal related to said second digital output signal;

and wherein said analog to digital (A/D) converter means comprises:

at least one capacitor:

first means coupled to said capacitor for setting the charge on said capacitor to a first predetermined charge level;

second means coupled to said capacitor for subsequently altering the charge on said capacitor from said first predetermined charge level at a predetermined rate;

means coupled to said capacitor for comparing the charge on said capacitor to a predetermined reference level and producing a digital signal related to the duration of time between the time of starting to alter the charge on said capacitor at said predetermined rate and the time that the charge on said capacitor is equal to the predetermined reference level; and

means for sequentially activating said first and second means and maintaining said first predetermined charge level at a fixed value while determining said first predetermined rate directly in accordance with the variable magnitude of one of said input signals, whereby said produced digital signal is a function of the inverse of the magnitude of said one of said input signals.

4,128,886

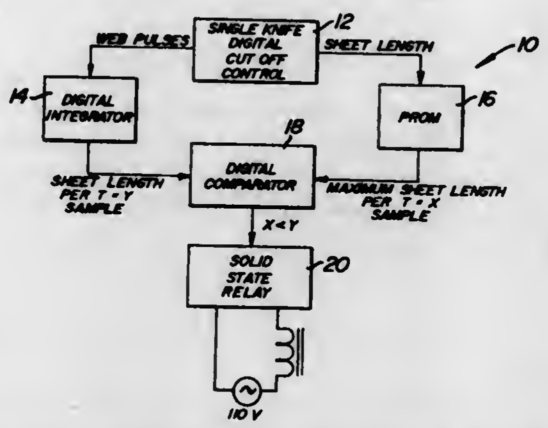
MAXIMUM WEB SPEED MONITOR

Allan B. Woolston, Wynnewood, Pa., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Mar. 15, 1977, Ser. No. 777,973

Int. Cl.^{2} G05B *5/00;* B26D *5/38*

U.S. Cl. 364—475 **8 Claims**



1. A maximum web speed monitor for limiting the speed of a moving web which is cut into sheets by a knife in a cut-off machine having means for providing a signal indicative of the actual length of a sheet cut by the knife from the moving web based on the speed of the knife and means for providing a signal indicative of the speed of the web, comprising:

first means for repetitively providing a sample signal indicative of the actual speed of the moving web during a preselected sampling interval based on said web speed signal,

second programmable means addressable by said actual sheet length signal for storing information representative of the maximum permissible speed of the web as a function of sheet length based on said sampling interval, and

comparator means operatively associated with said first and second means for comparing said stored maximum permissible speed information to said sample signal substantially instantaneously with the production of said actual sheet length signal and for providing a signal indicative of whether the web speed exceeds a maximum permissible speed.

4,128,887

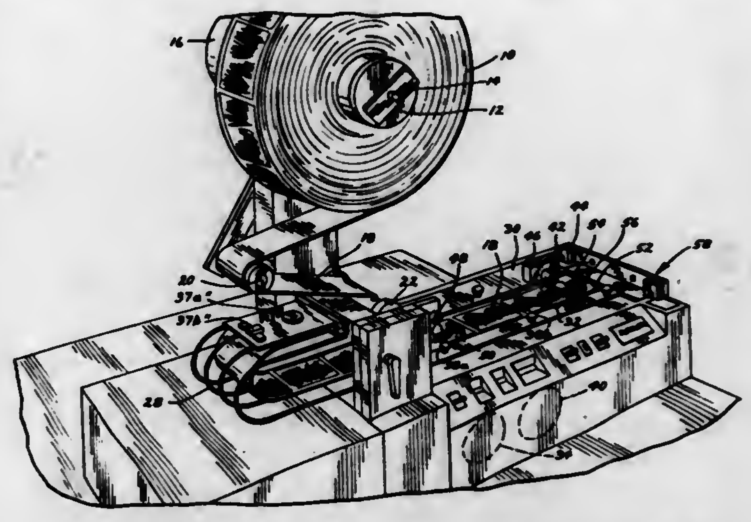
MICROPROCESSOR CONTROLLED PHOTOGRAPHIC PAPER CUTTER

Gerald R. Strunc, Maple Grove, and Francis M. Laciak, Brooklyn Park, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Sep. 29, 1977, Ser. No. 838,064

Int. Cl.^{2} B26D *5/38*

U.S. Cl. 364—475 **25 Claims**



1. A photographic strip advancement system comprising:

stepper motor means for driving, by steps, a strip of photographic material;

stepper motor control means for causing, in response to control signals, the stepper motor means to take steps;

step status means for supplying a step status signal indicative of whether the stepper motor has taken a step;

storage means for storing control information, the control information including a stored program for directing control functions to be performed; and

programmable digital processor means for receiving the step status signal and supplying the control signals to the stepper motor control means as a function of the step status signal and the control information.

4,128,888

VELOCITY CONTROL ARRANGEMENT FOR A COMPUTER-CONTROLLED OIL DRILLING RIG

Loren B. Sheldon, Houston, Tex.; James R. Tomashek, Wood Dale, and Donald H. Ward, Glen Ellyn, both of Ill., assignors to BJ-Hughes Inc., Houston, Tex.

Filed Mar. 15, 1977, Ser. No. 777,677

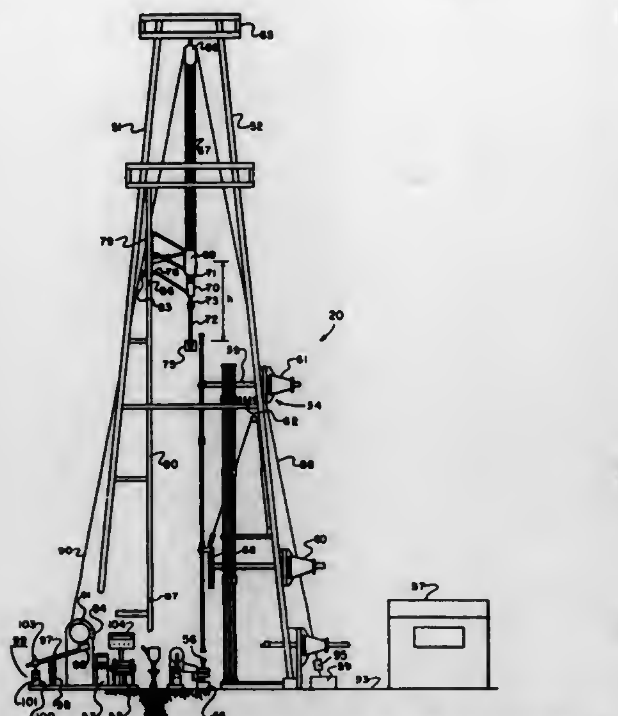
Int. Cl.^{2} E21B *19/00;* G06F *15/20*

U.S. Cl. 364—565 **10 Claims**

1. In an oil drilling rig having a traveling block vertically upwardly and vertically downwardly movable and having transducer means for generating an electrical signal representative of the actual direction of motion of the traveling block and an electrical signal representative of the actual block velocity, wherein the improvement comprises

first means for comparing the signal representative of the actual velocity of the block with a signal representative of a predetermined maximum velocity and for outputting a first alarm signal indicative of the actual velocity being greater than the predetermined maximum velocity; and,

second means for comparing the signal representative of the actual direction of motion of the block with a signal representative of a predetermined direction of motion and for outputting a second alarm signal if the actual direction of the block deviates from the predetermined direction.



4,128,889

PEN TYPE ELECTRONIC DIGITAL CALCULATOR

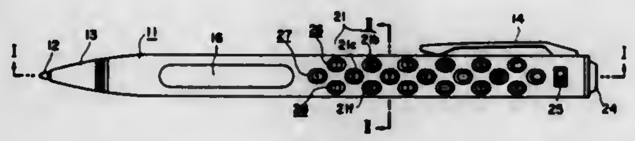
Shin Ojima, Yao; Kazuhiko Ohgami, Higashiosaka; Kazutaka Watanabe, Yao; Masaru Nohara, Yao, and Kenji Yamamoto, Yao, all of Japan, assignors to Hoshidenki-Seizo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 24, 1977, Ser. No. 809,728

Claims priority, application Japan, Jun. 28, 1976, 51-85422[U]; Jan. 14, 1977, 52-3253[U]; Jan. 14, 1977, 52-3254[U]

Int. Cl.^{2} G06F *3/02, 15/02*

U.S. Cl. 364—705 **5 Claims**



1. In a pen type electronic digital calculator of the type comprising:

a tubular body;

a display element for displaying a calculation result, the display element being disposed in one of half portions of the tubular body and arranged to be viewed from the outside through a display window formed in the outer peripheral surface of the tubular body in its lengthwise direction;

a semiconductor integrated circuit element for calculation mounted in the tubular body for supplying the display element with a signal indicative of the result of a calculation;

a battery mounted in the tubular body for supplying operating electric power to the display element and the semiconductor integrated circuit element; and

a keyboard switch having a plurality of keys for inputting numerical value and function information to the semiconductor integrated circuit element for calculation, the keyboard switch being mounted in the other half portion of the tubular body and disposed on the line of extension of the display element;

the improvement wherein the keys are each adapted to input only one piece of information, the keys of said keyboard switch being arranged in three adjacent rows in the lengthwise direction of the tubular body, the keys of each of said rows being disposed in staggered relation to the keys of an adjacent one of said rows, the spacing between adjacent keys in each of said rows being greater than the length of each of said keys along said row, said tubular body being formed with a plurality of depressed recesses in its outer surface, each of the keys being disposed within one of said recesses respectively with the outer peripheral surface of the key being spaced from the peripheral walls of its associated recess, and said keys being so dimensioned and so positioned within their respective recesses that when the tubular body is oriented to position the three rows of keys substantially horizontally, the central row of keys assumes the highest position.

4,128,890

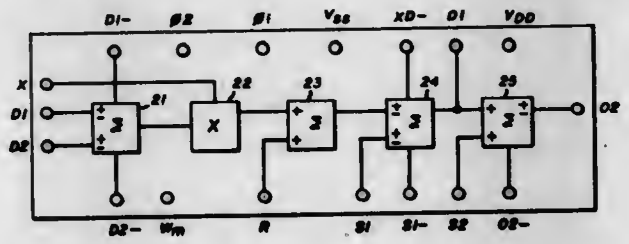
INTEGRATED ARITHMETIC UNIT AND DIGITAL NETWORKS USING THE UNIT

John M. Irwin, Clay, and Fritz H. Schlereth, Baldwinsville, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Jun. 29, 1977, Ser. No. 811,194

Int. Cl.^{2} G06F *15/34, 7/39*

U.S. Cl. 364—724 **21 Claims**



1. An integrated arithmetic unit for use in a serial digital network comprising:

A. a first summer for signed serial data having a pair of inputs (D1, D2) for external connection and producing an output sum in signed serial format;

$$(\mathrm{D1} + \mathrm{D2})$$

B. four quadrant multiplication logic for signed serial data having a first input coupled to the output of said summer, a second input (X) for external connection, said multiplication logic producing a double precision output product in signed serial format;

$$(\mathrm{D1} + \mathrm{D2})\,\mathrm{X}$$

and

C. a second summer for signed serial data having a first input coupled to the output of said multiplication logic, a second input (S1) for external connection, and producing an external output sum (O1) in signed serial format:

$$\mathrm{O1} = [(\mathrm{D1} + \mathrm{D2})\,\mathrm{X} + \mathrm{S1}].$$

4,128,891

MAGNETIC BUBBLE DOMAIN RELATIONAL DATA BASE SYSTEM

Yeong S. Lin, Mt. Kisco; Chao N. Liu, Yorktown Heights, and Donald T. Tang, Mt. Kisco, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1976, Ser. No. 755,892

Int. Cl.^{2} G06F *7/00, 13/00;* **G11C** *11/14, 19/08*

U.S. Cl. 364—900 **14 Claims**

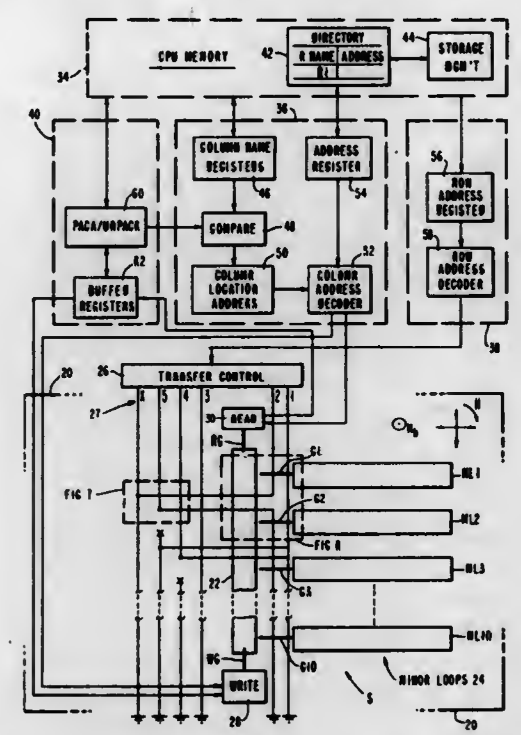
1. A magnetic bubble domain relational data base system using bubble domains to represent information, comprising:

a magnetic medium in which said bubble domains can be stored,

a bubble domain storage device adjacent to said magnetic medium for storing tables of bubble domains representing tables of related data items, said storage device having shift registers for storing columns and rows of bubble domains corresponding to columns and rows of data in said tables,

column access means adjacent to said magnetic medium for accessing selected columns of bubble domains from said storage device,

row access means adjacent to said magnetic medium for accessing selected rows of bubble domains from said storage device including means for accessing an individual row of bubble domain data from said storage device,



control means connected to said column and row access means for determining the addresses of said columns and rows of data in said storage device, and

means connected to said column and row access means and to said control means for forming new tables of said data from said related data items stored in said bubble domain storage device.

4,128,892

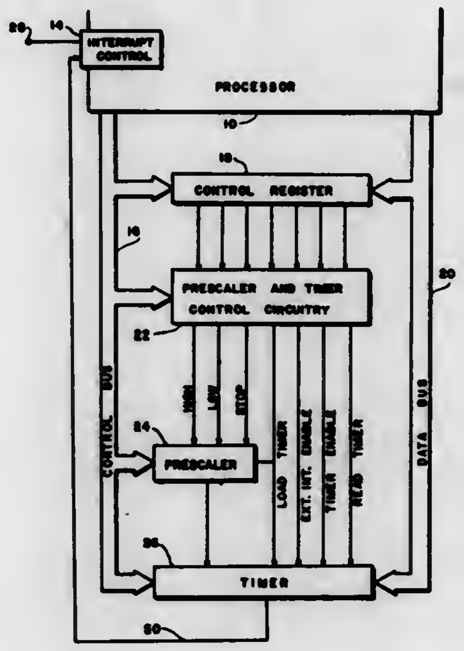
PULSE WIDTH MEASUREMENT CIRCUITRY

Suresh L. Vasa, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Sep. 7, 1977, Ser. No. 831,306

Int. Cl.^{2} G06F *7/38, 9/18;* **G04F** *10/00*

U.S. Cl. 364—900 **7 Claims**



1. External pulse width measuring circuitry for use in a microprocessor system including a microprocessor unit, a data bus for transferring data between said microprocessor and said measuring circuitry, a control bus for transmitting control signals and system clock signals to said measuring circuitry, an interrupt control circuit for receiving interrupt signals generated external of said microprocessor unit, and a counter circuit, said pulse width measuring circuitry comprising:

a control register coupled to the data bus and the control bus for receiving external pulse measurement instruction data from the microprocessor;

prescaler and timer control circuitry coupled to said control register and said control bus for generating from said instruction data, the control signals, and the system clock signals, a plurality of output signals for controlling the operation of the pulse width measuring circuitry;

a prescaler coupled to said control circuitry and said control bus for generating counting pulses from said system clock signals and at a frequency controlled by said control circuitry, the generation of said counting pulses being enabled or inhibited by said control circuitry output signals representing the leading edge and end-of-pulse transitions, respectively, of said external pulse; and

timing circuitry coupled to said prescaler, said control circuitry, said data bus, said control bus, and to the microprocessor interrupt control circuit for counting said counting pulses, storing said count, transferring said count to said data bus upon receipt of a particular first output signal from said control circuitry, and for producing and transmitting to said microprocessor interrupt control circuit an external interrupt request signal upon the occurrence of an end-of-pulse transition of said external pulse.

4,128,893

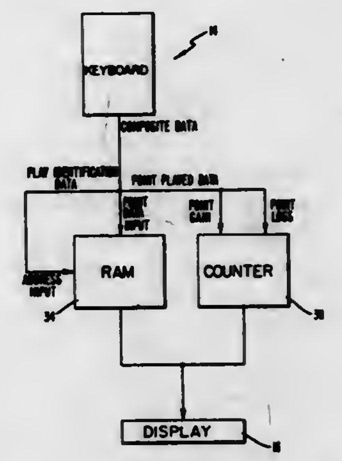
METHOD OF AND DEVICE FOR ANALYZING PERFORMANCES IN ATHLETIC EVENTS

Eugene C. Johnson, 5719 Newington Rd., Bethesda, Md. 20016, and Frederick F. Dalessio, Aston, Pa., assignors to Eugene C. Johnson, Bethesda, Md.

Filed Jan. 13, 1977, Ser. No. 759,251

Int. Cl.^{2} G06F *1/00*

U.S. Cl. 364—900 **17 Claims**



1. An apparatus for logging categorizable data, comprising:

keyboard entry means for generating categorizable first signals, and second signals associated with said first signals;

addressable memory means containing a plurality of category storage locations;

means responsive to said second signals for addressing said category storage locations in said memory means;

means for storing said first signals in said memory means respectively in the category storage locations addressed by said second signals;

means for combining said first signals in said category storage locations with any first signals previously stored in said locations;

means controlled by said keyboard for recalling said com-

bined first signals stored in selected ones of said category storage locations;
means for visually displaying said recalled signals; and
counter means responsive to said keyboard entry means for accumulating a total of said first signals keyboard entered into said plurality of category storage locations within said memory means.

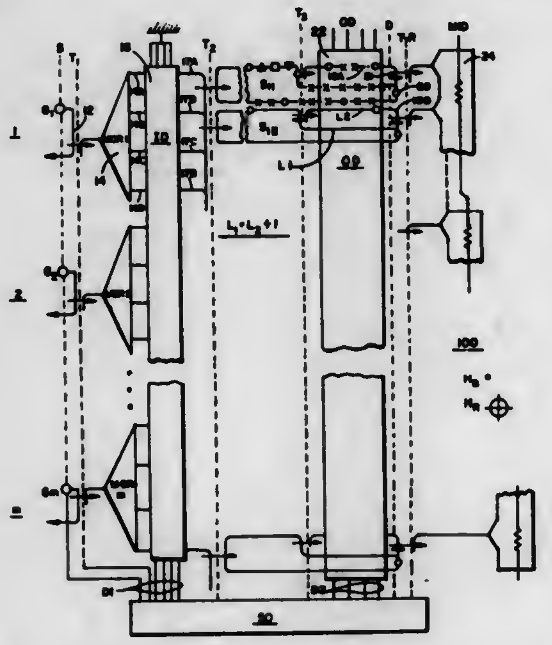
4,128,894
BUBBLE DOMAIN CIRCUIT ORGANIZATION

Thomas T. Chen, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 14, 1977, Ser. No. 806,419

Int. Cl.^{2} G11C *19/08*

U.S. Cl. 365—4 **16 Claims**



1. A device for operating on magnetic bubble domains comprising:
generator means for selectively producing bubble domains;
replicator means for splitting said domains from said generator means into a plurality of new domains;
storage means comprising at least one storage loop for storing and recirculating domains;
input decoder means for selectively transferring said new domains from said replicator means to said storage means;
detector means for detecting said domains;
output decoder means for decoding said domains to be transferred from said storage means to said detector means; and
switch means associated with said storage means for selectively transferring said domains between said storage means and said detector means via said decoding means;
said output decoder means comprising at least one propagation path connected in parallel with a portion of said storage loop in said storage means.

4,128,895
MAGNETIC WALL ASSISTED BUBBLE DOMAIN NUCLEATOR

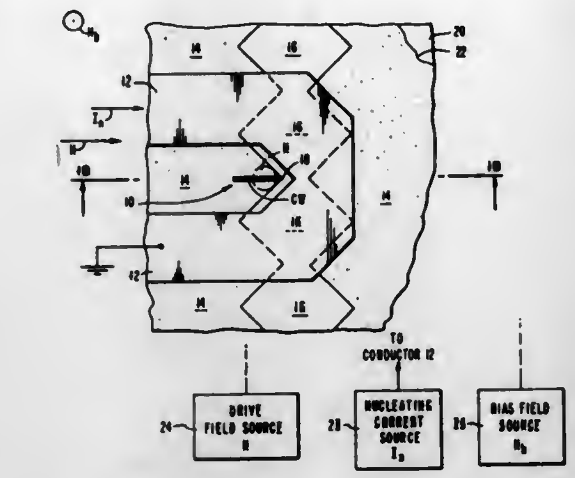
George S. Almasi, Katonah; George E. Keefe, Montrose, and Yeong S. Lin, Mt. Kisco, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1977, Ser. No. 801,963

Int. Cl.^{2} G11C *19/08*

U.S. Cl. 365—11 **23 Claims**

1. A magnetic bubble domain nucleator for nucleating magnetic bubble domains in a magnetic medium, comprising:
means including a magnetic layer for producing a magnetic charged wall therein when a magnetic field is present in said magnetic layer, said charged wall having a first magnetic field associated therewith directed anti-parallel to the direction of magnetization of said magnetic medium,
magnetic means for producing a second magnetic field directed parallel to said first magnetic field,



where the combination of said first and second magnetic fields is of sufficient intensity to nucleate a bubble domain in said magnetic medium.

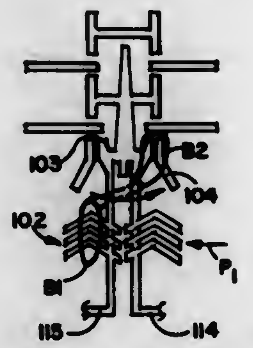
4,128,896
ONE-LEVEL SWITCH FOR MAGNETIC BUBBLE DOMAIN DEVICES

Peter K. George, Morgan Hill; Isoris S. Gergis, Yorba Linda, and Tsutomu Kobayashi, Placentia, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 28, 1977, Ser. No. 820,073

Int. Cl.^{2} G11C *19/08*

U.S. Cl. 365—12 **13 Claims**



1. A one-level switch for magnetic bubble domain devices comprising,
first and second propagation paths deposited adjacent to each other,
a half-disc transfer element included in said first propagation path and adjacent said second propagation path, and
a pair of conductor elements integrally formed with said transfer element and with components in said second propagation path to permit current signals to be applied relative to said first and second propagation paths so that magnetic bubble domains can interact between said first and second propagation paths,
at least one of said conductor elements connected to the base of said transfer element.

4,128,897
ARCHIVAL MEMORY MEDIA AND METHOD FOR INFORMATION RECORDING THEREON

James F. Norton, Alplaus; Harold G. Parks, Scotia, and George E. Possin, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

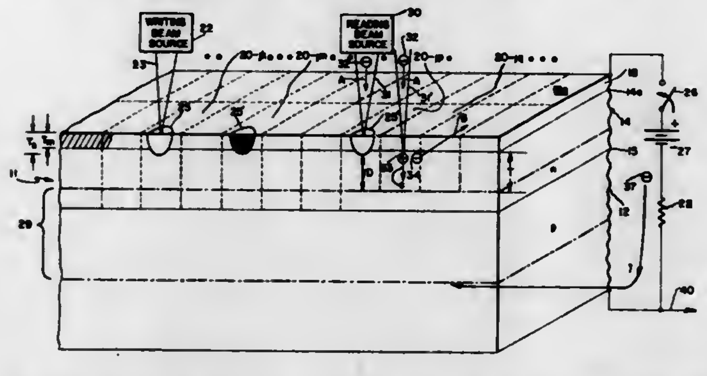
Filed Mar. 22, 1977, Ser. No. 780,175

Int. Cl.^{2} G11C *11/42, 17/06*

U.S. Cl. 365—118 **14 Claims**

1. An archival memory target for essentially permanent storage of binary information, comprising:

a substrate of a semiconductor material containing doping impurities of a first polarity-type, said substrate having a first surface;
a layer of said semiconductor material containing doping impurities of an opposite polarity-type and fabricated upon said first surface of said substrate, said layer having a surface spaced from said first surface; and
an overlayer of a conductive non-doping material capable of forming a eutectic alloy with said semiconductor material, said overlayer being fabricated directly upon said surface



of said semiconductor layer and having a two-dimensional array of possible data storage sites assigned thereto;
a region of an alloy of said semiconductor and non-doping materials formed in a portion of the thickness of said semiconductor layer at each of said data storage sites at which a bit of information having a first binary value is non-erasably stored;
the remaining data storage sites being devoid of an alloy region to store thereat a bit of information having the remaining binary value.

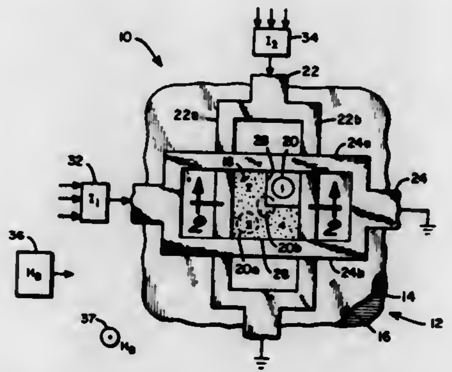
4,128,898
STRUCTURING OF BUBBLE DOMAINS IN A BUBBLE DOMAIN MEMORY PLANE

Roger E. Lund, Woodbury, and Marlin M. Hanson, Cologne, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 11, 1977, Ser. No. 786,318

Int. Cl.^{2} G11C *11/14*

U.S. Cl. 365—2 **10 Claims**



1. In a bubble domain memory system including a planar layer of a magnetizable material in which bubble domains may be generated, sustained and moved between first, second, third and fourth stable positions in a memory area in said layer, which stable positions are within a memory area that is defined by the inside opposing edges of intersecting first and second inductively coupled slotted strip lines, by drive current signals that are coupled to said layer by said slotted strip lines, in the method of preventing said bubble domains from escaping from the magnetomotive effect of said drive current signals to transfer said bubble domains between said first, second, third and fourth stable positions, the improvement comprising:
removing a portion of the surface of said layer within said memory area to form a confinement area having a thickness gradient along the periphery thereof, said thickness gradient generating a field H_P that is oriented normal to the plane of said layer for preventing bubble domains from escaping from said confinement area.

4,128,899
ASSOCIATED READ/WRITE MEMORY

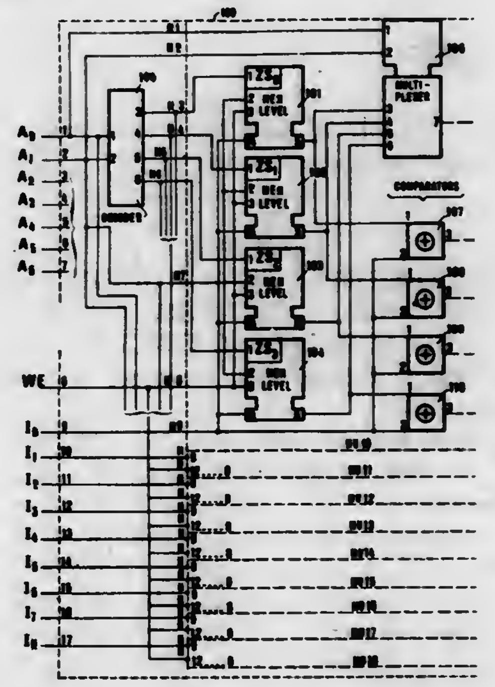
Daniel Vinot, Sucy-en-Brie, France, assignor to Compagnie Internationale pour l'Informatique Cii Honeywell Bull, Paris, France

Filed Apr. 6, 1977, Ser. No. 785,234

Claims priority, application France, Apr. 15, 1976, 76 11233

Int. Cl.^{2} G11C *15/00*

U.S. Cl. 365—49 **5 Claims**



1. An associative read/write memory comprising first storage means which can be read from or written into said first storage means includinng a plurality of memory units of equal capacity, each containing an equal and pretermined number of levels, addressing means connected to the said first storage means for selecting the required memory location on the selected level, and associative means connected to the said first storage means, said associative means consisting of comparators equal in number to the number of levels in each memory unit multiplied by the number of memory units for performing a comparison between the content of a data descriptor at the input to the associative memory and the content of the information read from the memory on the selected level.

4,128,900
PROGRAMMABLE READ ONLY MEMORY FOR ELECTRONIC ENGINE CONTROL

John P. Lappington, Huntsville, Ala., assignor to Chrysler Corporation, Highland Park, Mich.

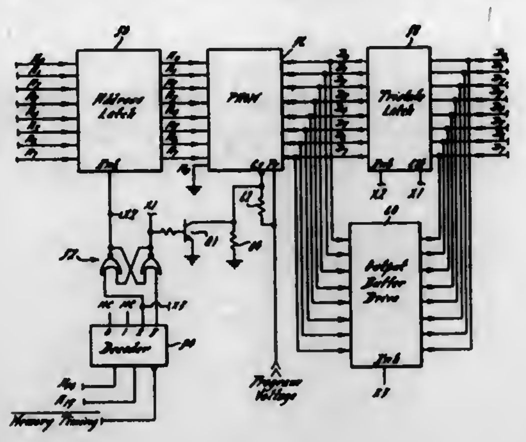
Division of Ser. No. 709,467, Jul. 28, 1976, Pat. No. 4,084,240. This application Feb. 6, 1978, Ser. No. 875,344

Int. Cl.^{2} G11C *17/00, 8/00*

U.S. Cl. 365—94 **1 Claim**

1. A programmable read only memory integrated circuit and associated circuitry for reading and writing data from and on the programmable read only memory integrated circuit comprising in combination:
an address bus containing an address latch circuit;
means connecting the address bus to the address input of the programmable read only memory integrated circuit;
a bi-directional data bus containing a tri-state latch circuit and an output buffer drive circuit connected in parallel;
means connecting said bi-directional data bus to the data input/output of the programmable read only memory integrated circuit;

and control means for reading and writing data from and on the programmable read only memory integrated circuit via said bi-direcitonal data bus in accordance with addresses supplied via said address bus.



4,128,901
GROUND-REFERENCE POWER SUPPLY FOR GAS DISCHARGE DISPLAY/MEMORY PANEL DRIVING AND ADDRESSING CIRCUITRY

John W. V. Miller, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 17, 1977, Ser. No. 825,291

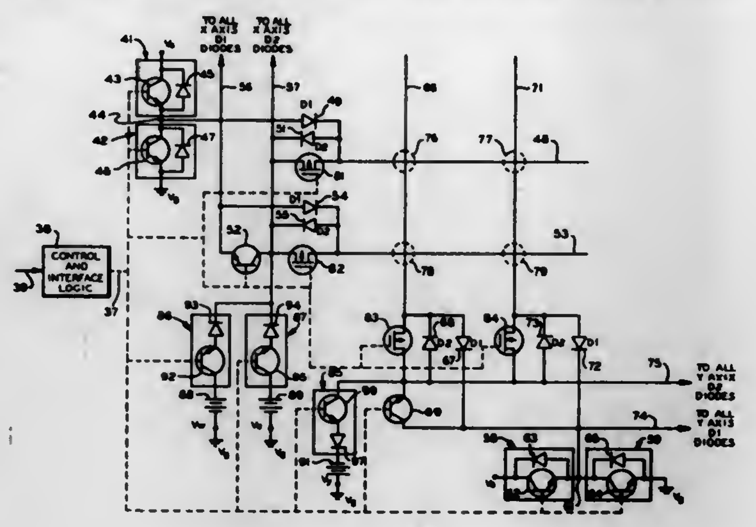
Int. Cl.² G11C *7/00. 11/28*

U.S. Cl. 365—116 **8 Claims**

1. In an operating system for a gas discharge display/memory cell defined by proximate electrode portions of a pair of opposed spaced electrodes; an ionizable gas volume between the spaced electrode portions of the cell; a dielectric charge storage member in contact with the gas insulating at least one electrode portion of the cell from the gas; a sustainer voltage source for cyclically imposing a pulsating voltage having a period and a predetermined maximum potential referenced from a ground potential across the cell; and an addressing means for generating address voltage pulses to manipulate the discharge state of the cell between an "on state" and an "off state," the improvement comprising:

means for generating write and erase address voltage pulses included in the addressing means, said write pulse referenced from the ground potential for changing the cell from the "off state" to the "on state" and said erase pulse referenced from the ground potential for changing the cell from the "on state" to the "off state"; and

switching means connected between the addressing means and the pair of opposed spaced electrodes for applying said write and erase pulses to the cell.



DESIGNS

DECEMBER 5, 1978

250,436
PAINT APPLICATOR

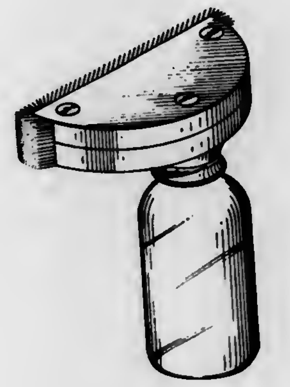
Elias J. Johnson, 503 Steven St., Green Bay, Wis. 54303

Filed Mar. 17, 1976, Ser. No. 661,121

Term of patent 14 years

Int. Cl. D4—*04;* D9—*01;* D7—*99*

U.S. Cl. D4—38



250,437
CHILD'S DESK

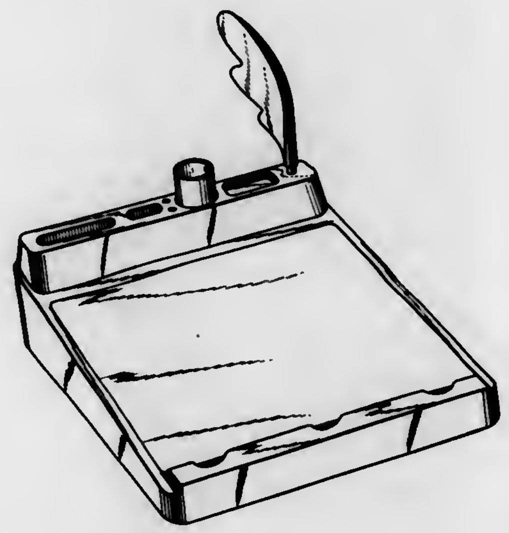
Erkki P. Korpijaakko, Princeton, and Matthew A. Moustakas, Mercerville, both of N.J., assignors to CBS Inc., New York, N.Y.

Filed Mar. 16, 1977, Ser. No. 778,297

Term of patent 14 years

Int. Cl. D6—*99*

U.S. Cl. D6—5



250,438
EYEGLASS DISPLAY RACK

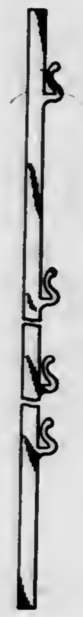
Joseph Loiacono, Fort Salonga, N.Y., assignor to Eye-Vue Systems, Inc., New York, N.Y.

Filed Jul. 21, 1977, Ser. No. 817,720

Term of patent 14 years

Int. Cl. D20—*02;* D25—*01*

U.S. Cl. D6—28



250,439
BATH TUB TRAY

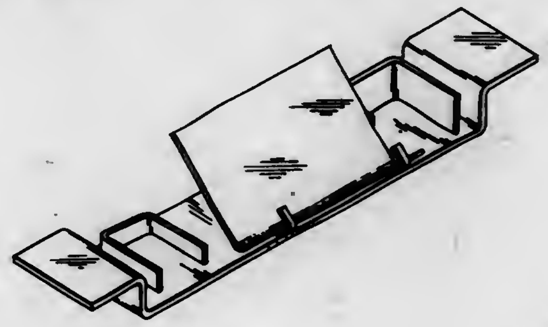
Thomas Holstein, 3300 N. Lake Shore Dr., Chicago, Ill. 60657

Filed Aug. 18, 1976, Ser. No. 715,558

Term of patent 14 years

Int. Cl. D6—*04*

U.S. Cl. D6—86



250,440

FLATWARE CABINET

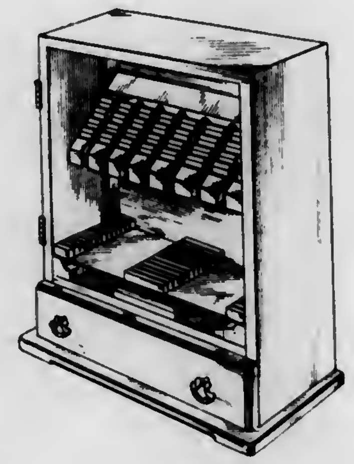
S. Kirk Millspaugh, Baltimore, Md., assignor to The Kirk Corporation, Baltimore, Md.

Filed Nov. 26, 1976, Ser. No. 745,416

Term of patent 14 years

Int. Cl.^{2} D6—*04*

U.S. Cl. D6—172



250,441

COUNTER DISPLAY UNIT FOR COSMETICS

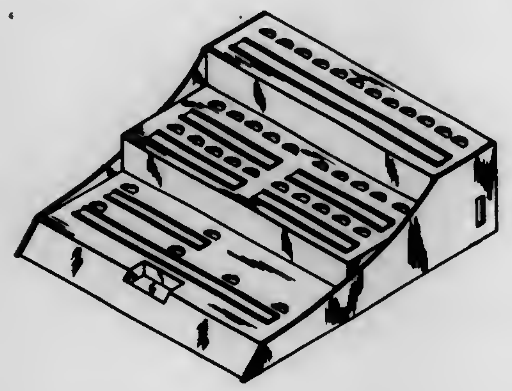
Fred Richman, and Jerry Hammer, both of New York, N.Y., assignors to Revlon, Inc., New York, N.Y.

Filed Oct. 8, 1976, Ser. No. 731,031

Term of patent 14 years

Int. Cl. D20—*02*

U.S. Cl. D6—188



250,442

CHAIR FRAME OR SIMILAR ARTICLE

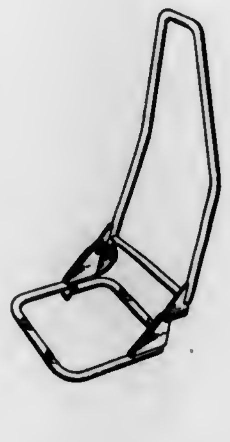
James B. Pesiri, Dana Point, Calif., assignor to J. C. Sales & Mfg. Inc., Irwindale, Calif.

Filed Feb. 11, 1977, Ser. No. 767,816

Term of patent 14 years

Int. Cl. D06—*06*

U.S. Cl. D6—191



250,443

SERVING TRAY

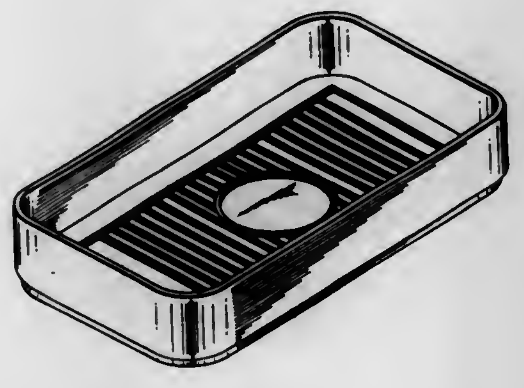
David L. Romanoff, 29 E. 28th St., New York, N.Y. 10016

Filed Apr. 26, 1977, Ser. No. 791,161

Term of patent 14 years

Int. Cl. D7—*99*

U.S. Cl. D7—37



250,444

DRINKING MUG

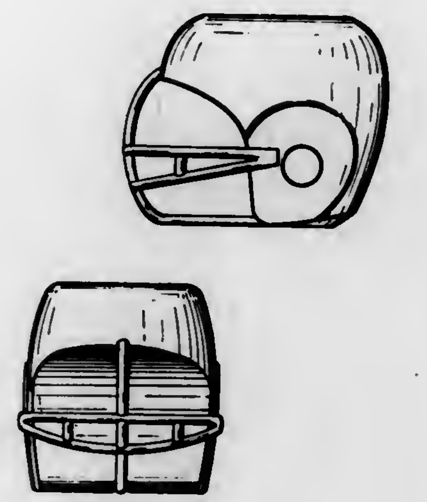
Alfred W. Danat, Huntsville, Ala., and John L. Schaefer, Alexandria, Va., assignors to Sallet, Inc.

Filed Apr. 1, 1977, Ser. No. 783,841

Term of patent 14 years

Int. Cl. D7—*01*

U.S. Cl. D7—5



250,445

COMBINED COFFEE FILTER AND SUPPORT BASE

Werner Braun, Wilen, Sarnen, Switzerland, assignor to Maxs AG, Sachseln, Switzerland

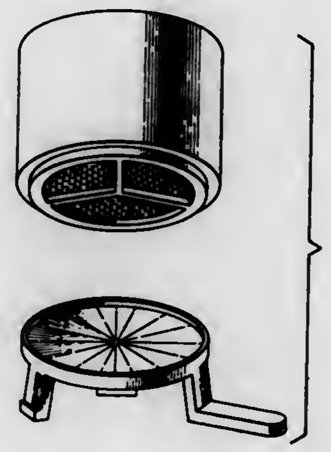
Filed Jun. 16, 1976, Ser. No. 696,494

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1975, URA 940/75

Term of patent 14 years

Int. Cl. D7—*04*

U.S. Cl. D7—47



250,446

CONDIMENT DISPENSER

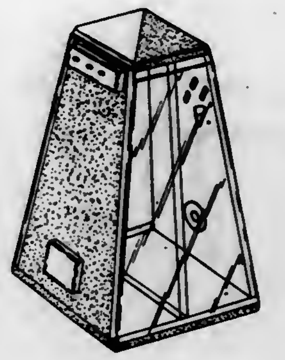
Rodney A. Johnson, 1800 Jamaica Dr., Miramar, Fla. 33023, and Francis W. Selby, Box 170, R.D. #1, Middletown, Del. 19709

Filed Oct. 18, 1976, Ser. No. 733,461

Term of patent 14 years

Int. Cl. D7—*06*

U.S. Cl. D7—57



250,447

ELECTRIC DONUT MAKER

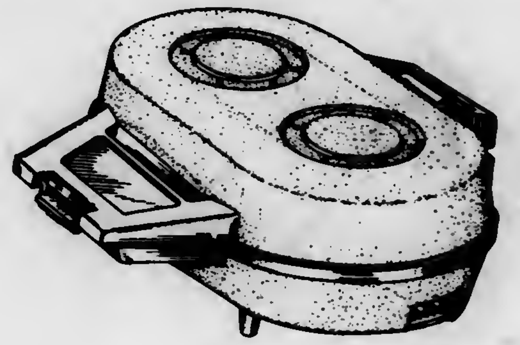
Monte L. Levin, New York, N.Y., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Sep. 19, 1977, Ser. No. 834,431

Term of patent 14 years

Int. Cl. D7—*02*

U.S. Cl. D7—88



250,448

ELECTRIC COOKING UTENSIL

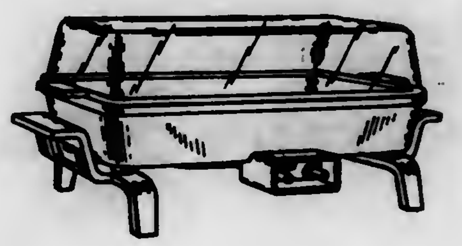
Melvin H. Boldt, Glenview; Thurber H. Morrison, Evanston, and Robert S. Huff, Oak Park, all of Ill., assignors to National Presto Industries, Inc., Eau Claire, Wis.

Filed Oct. 28, 1976, Ser. No. 736,409

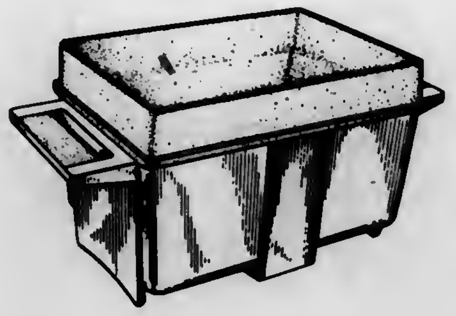
Term of patent 14 years

Int. Cl. D7—*02*

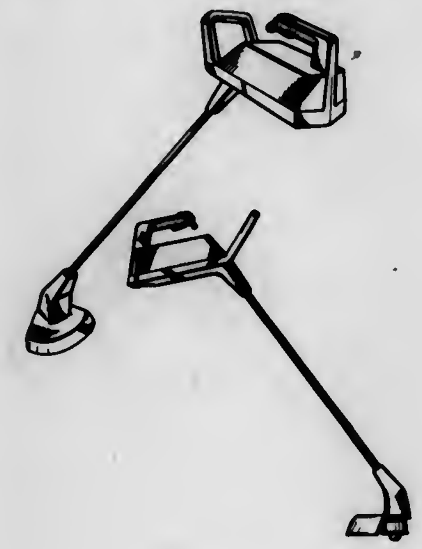
U.S. Cl. D7—94



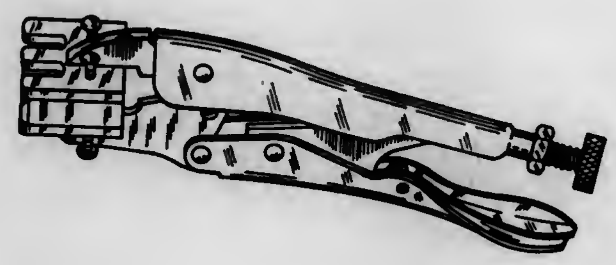
250,449
ELECTRIC DEEP FAT FRYER
Monte L. Levin, New York, N.Y., assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed Jan. 17, 1977, Ser. No. 759,715
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—94



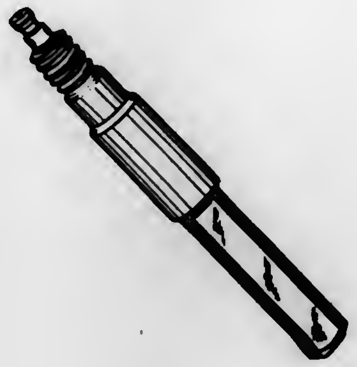
250,450
CORDLESS VEGETATION TRIMMER
Robert J. Tiedemann, Stamford, Conn., assignor to The Toro Company, Minneapolis, Minn.
Filed May 25, 1978, Ser. No. 909,717
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—8



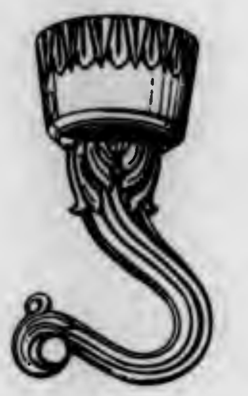
250,451
VISE GRIP CLAMP FOR STRINGING RACQUETS
Donald A. Chartier, 88 Walnut St., Nashua, N.H. 03060, and Richard Janes, 4E Pine Isle Dr., Derry, N.H. 03038
Filed Jan. 5, 1977, Ser. No. 756,763
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—52



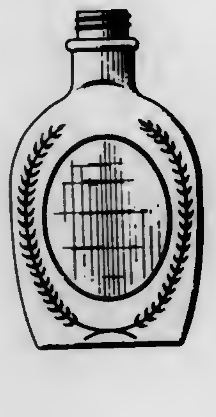
250,452
HONING TOOL
Frederick E. Heischman, Fostoria, Ohio, assignor to Fram Corporation, East Providence, R.I.
Filed Aug. 23, 1976, Ser. No. 716,908
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D8—91



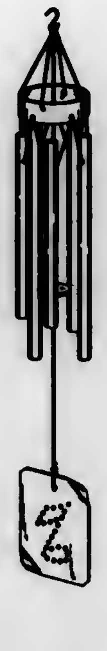
250,453
SWIVEL HOOK
Howard J. Horwitz, Hidden Hills, Calif., assignor to Spencer G. Horwitz, Tarzana, Calif., a part interest
Filed Nov. 10, 1976, Ser. No. 740,304
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—367



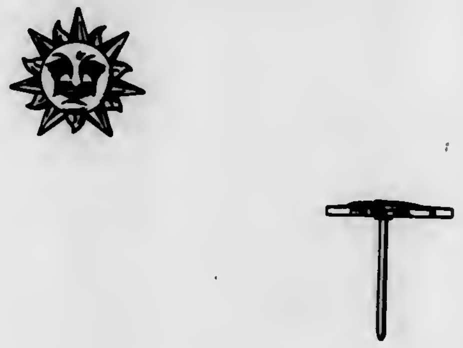
250,454
BOTTLE
Lucien O. Frohling, North Caldwell, N.J., assignor to General Foods Corporation, White Plains, N.Y.
Filed Sep. 22, 1976, Ser. No. 726,023
The portion of the term of this patent subsequent to Dec. 21, 1990, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—67



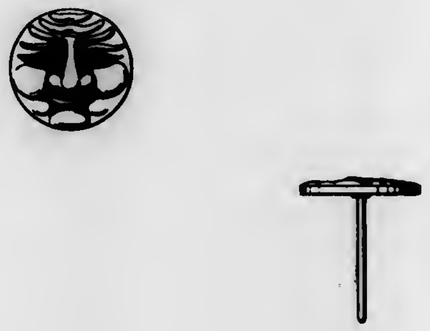
250,455
WIND CHIMES
James E. Mohrhauser, Racine, Wis., assignor to Foxmohr Crafts, Inc., Racine, Wis.
Filed Jan. 27, 1977, Ser. No. 762,844
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D10—116



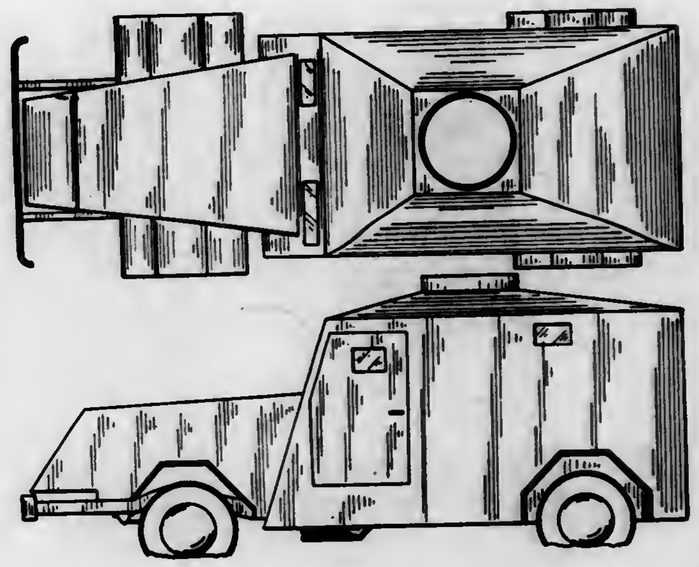
250,456
EARRING
Martin B. Fishman, 765 Massachusetts Ave., Cambridge, Mass. 02139
Filed May 5, 1977, Ser. No. 793,966
Term of patent 7 years
Int. Cl. D11—*01*
U.S. Cl. D11—48



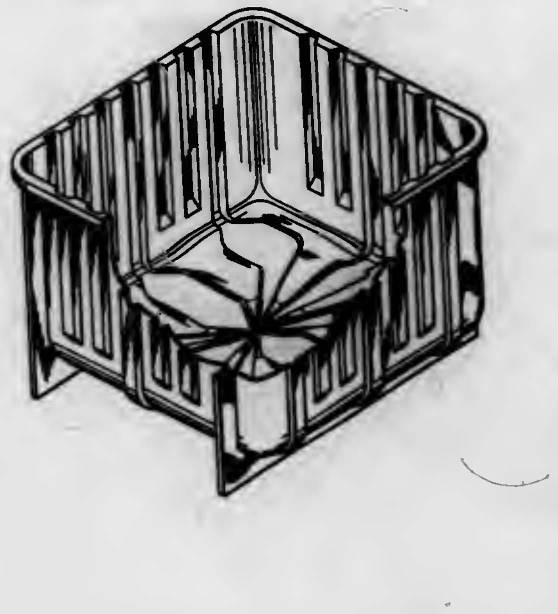
250,457
EARRING
Martin B. Fishman, 765 Massachusetts Ave., Cambridge, Mass. 02139
Filed May 5, 1977, Ser. No. 793,965
Term of patent 7 years
Int. Cl. D11—*01*
U.S. Cl. D11—55



250,458
ARMORED CAR
Russell E. Bauer, 920 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236
Filed May 31, 1977, Ser. No. 802,282
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—12

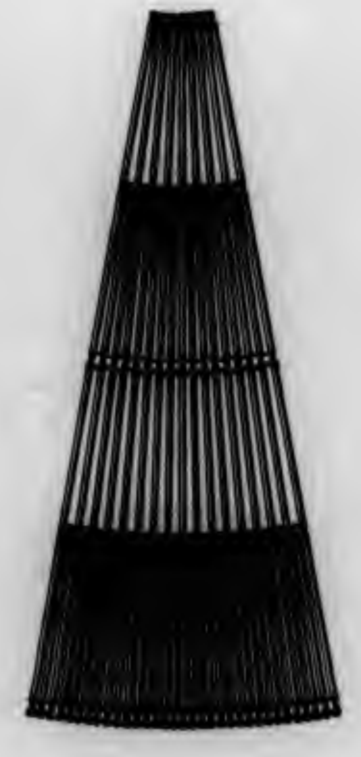


250,459
CONTAINERIZED PALLET
Chester Fields, E. 3143 - 35th Ave., Spokane, Wash. 99203
Filed Apr. 22, 1977, Ser. No. 789,987
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D12—53



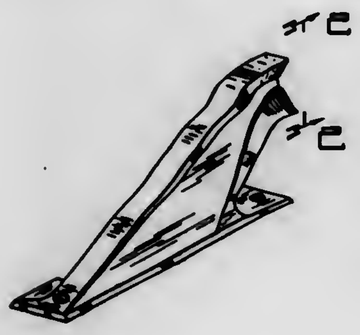
250,460
ROLLER CONVEYOR BELT FOR CURVED PATH

Ronald D. Bourgeois, 119 River St., Waltham, Mass. 02154
Filed Nov. 1, 1976, Ser. No. 737,551
Term of patent 14 years
Int. Cl.² D12—*05*
U.S. Cl. D12—60



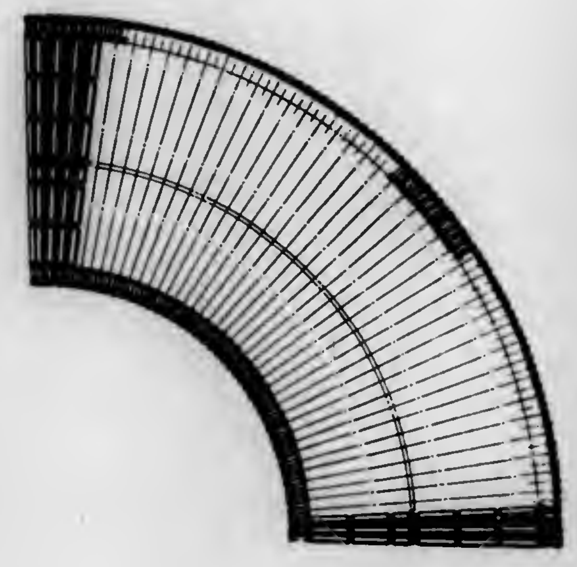
250,461
AUTOMOTIVE LUGGAGE RACK STANCHION

John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236
Filed Jun. 16, 1977, Ser. No. 807,028
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



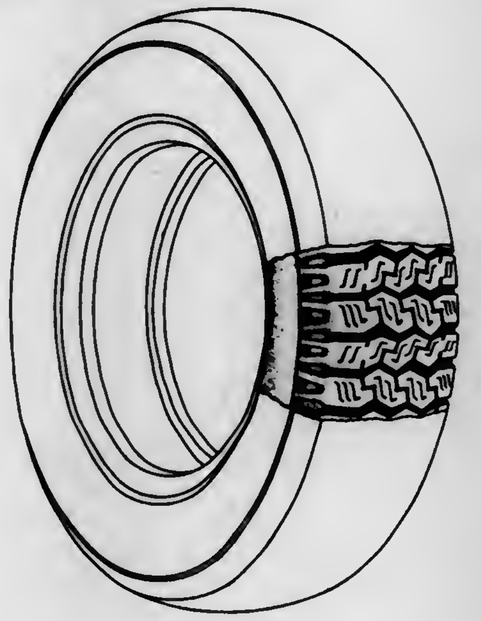
250,462
ROLLER CONVEYOR BELT FOR CURVED PATH

Ronald D. Bourgeois, 138 Ellison Park, Waltham, Mass. 02154
Filed Nov. 1, 1976, Ser. No. 737,665
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—60



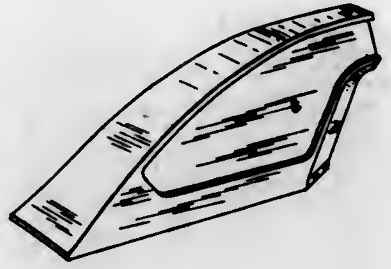
250,463
TIRE

Philippe Jamain, Chatel-Guyon, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Jul. 25, 1977, Ser. No. 818,974
Claims priority, application France, Jan. 24, 1977, 527
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—149



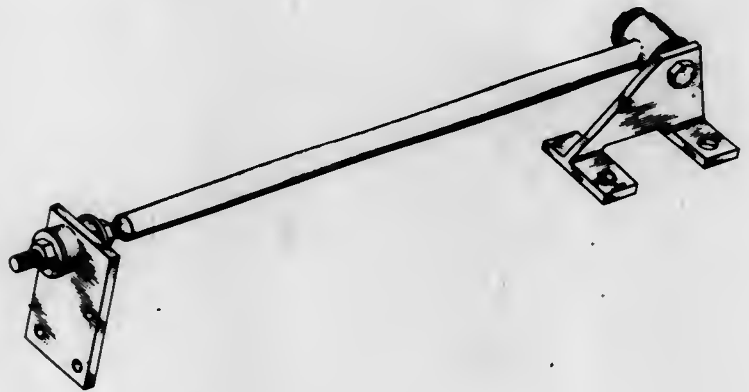
250,464
VEHICLE LUGGAGE RACK STANCHION

John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236
Filed Jun. 16, 1977, Ser. No. 807,029
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



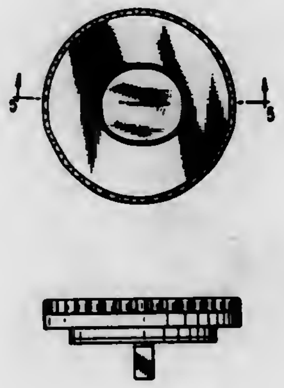
250,465
VEHICLE TRACTION BAR

Charles A. Morrison, 1500 Mono Way, Sonora, Calif. 95370
Filed Feb. 17, 1977, Ser. No. 769,577
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—159



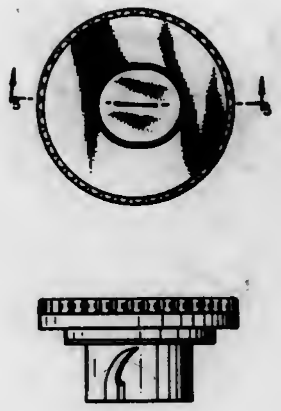
250,466
TANK CAP

John D. O'Banion, Arlington, Tex., assignor to E-Z Fill Corporation
Filed Jun. 10, 1977, Ser. No. 805,497
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—197



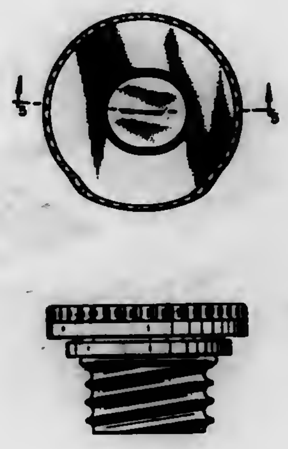
250,467
TANK CAP

John D. O'Banion, Arlington, Tex., assignor to E-Z Fill Corporation
Filed Jun. 10, 1977, Ser. No. 805,504
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—197



250,468
TANK CAP

John D. O'Banion, Arlington, Tex., assignor to E-Z Fill Corporation
Filed Jun. 9, 1977, Ser. No. 805,205
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—197

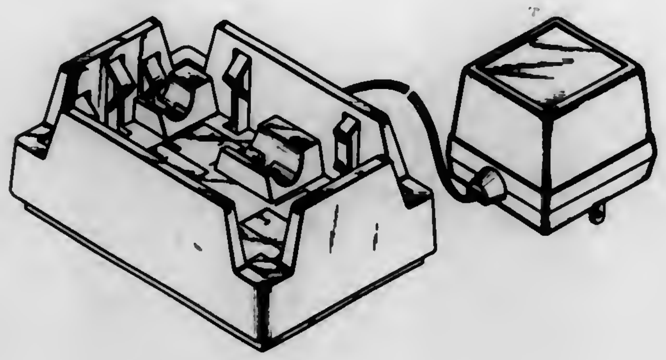


250,469
MULTI-CELL BATTERY CHARGER

William T. Kelly, III, Wilton, Conn., and Francis Stahl, Rocky River, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 7, 1977, Ser. No. 766,385
Term of patent 14 years
Int. Cl. D13—*02*

U.S. Cl. D13—5

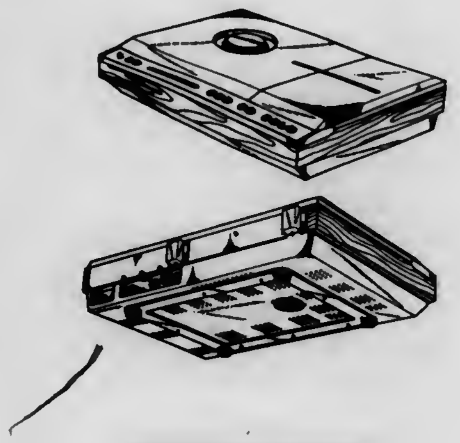


250,470
VIDEO DISC PLAYER

Koichi Nishigaki, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Apr. 20, 1977, Ser. No. 789,321
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D14—2

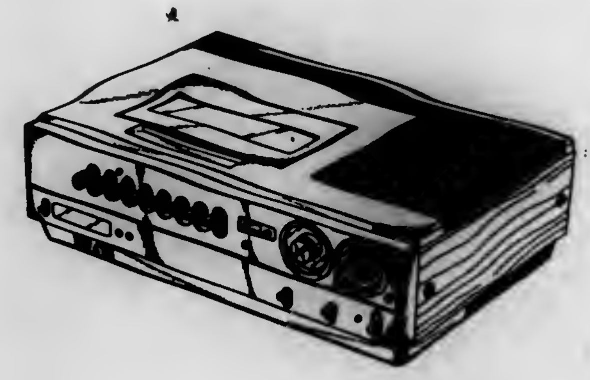


250,471
VIDEO TAPE RECORDER

Koichi Nishigaki, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Apr. 20, 1977, Ser. No. 789,322
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D14—2

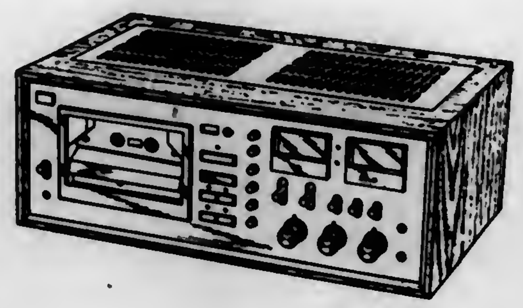


250,472
TAPE DECK

Tethuro Ikoma, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1977, Ser. No. 784,866
Claims priority, application Japan, Nov. 19, 1976, 51/45728
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D14—6

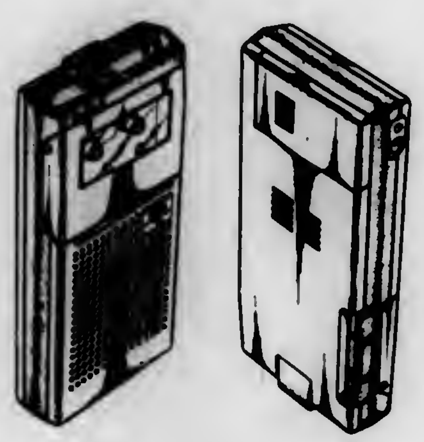


250,473
TAPE RECORDER

Toshihiko Kadota, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Apr. 11, 1977, Ser. No. 786,334
Claims priority, application Japan, Oct. 15, 1976, 51/40843
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D14—6

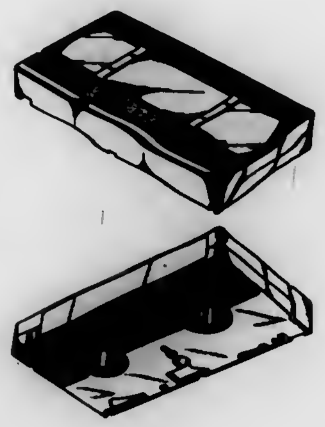


250,474
VIDEO TAPE CASSETTE

Koichi Nishigaki, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Apr. 20, 1977, Ser. No. 789,373
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D14—11

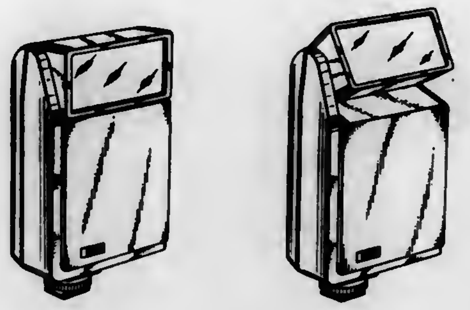


250,475
ADJUSTABLE HEAD ELECTRONIC FLASH UNIT

Masahiro Kando, Tokyo, Japan, assignor to Canon Kabushiki, Tokyo, Japan

Filed Mar. 2, 1977, Ser. No. 773,686
Claims priority, application Japan, Sep. 7, 1976, 51/35272
Term of patent 14 years
Int. Cl. D16—*05*

U.S. Cl. D16—42

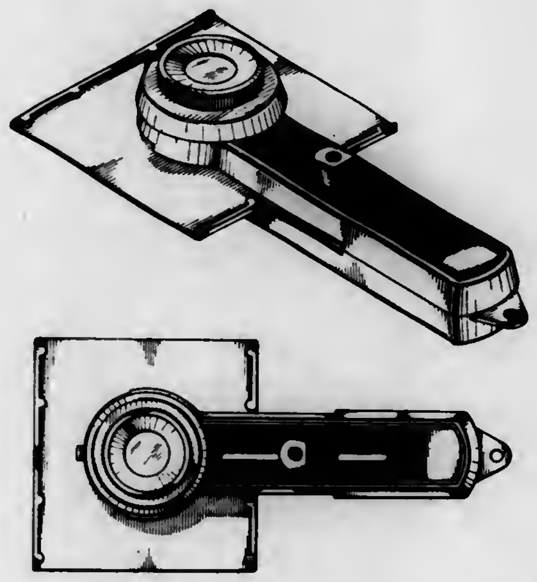


250,476
HAND-HELD VIEWER FOR NAVIGATIONAL CHARTS OR THE LIKE

DeForrest A. Olson, deceased, late of Seattle, Wash. (by Emilline M. Olson, administratrix), assignor to Charles J. Barkee, San Rafael, Calif.

Filed Oct. 6, 1975, Ser. No. 619,659
Term of patent 14 years
Int. Cl. D16—*04*

U.S. Cl. D16—54

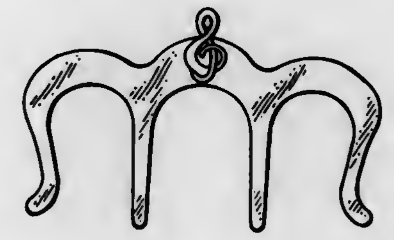


250,477
PAGE HOLDER FOR AN OPEN BOOK

Allan N. Hale, and Helen W. Hale, both of 7207 Hilton Ave., Takoma Park, Md. 20012

Filed Nov. 10, 1975, Ser. No. 630,333
Term of patent 14 years
Int. Cl. D19—*99*

U.S. Cl. D19—34

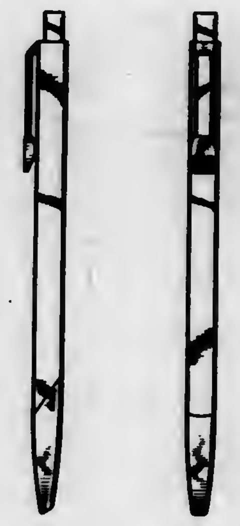


250,478
WRITING PEN

Rudi Jahraus, Keltern-Ellmendingen, Fed. Rep. of Germany, assignor to Moriz Hausch GmbH, Pforzheim, Fed. Rep. of Germany

Filed Feb. 9, 1977, Ser. No. 766,902
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1976, 3755
Term of patent 14 years
Int. Cl. D19—*06*

U.S. Cl. D19—45

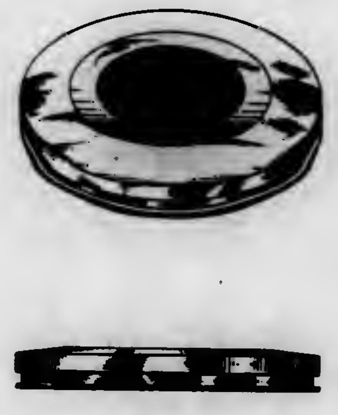


250,479
FOOT CONTROLLER FOR DENTAL HANDPIECE INSTRUMENTS

Giles R. Babcock, Charlotte, N.C., assignor to Pelton & Crane Company, Charlotte, N.C.

Filed Nov. 12, 1976, Ser. No. 741,362
Term of patent 14 years
Int. Cl. D24—*02*

U.S. Cl. D24—5

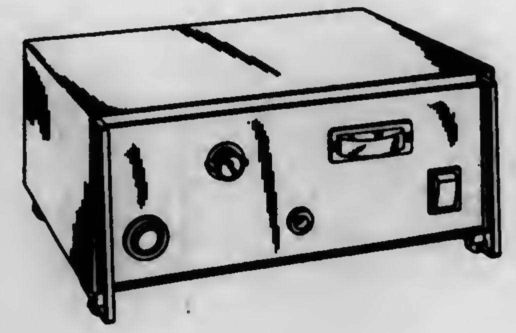


250,480
BIPOLAR ELECTRICAL SURGICAL GENERATOR

Ludwig A. Wettermann, Arlington Heights, Ill., and Peter H. Wettermann, Dayville, Conn., assignors to Richard Wolf Medical Instruments Corporation, Rosemont, Ill.

Filed Feb. 11, 1977, Ser. No. 767,896
Term of patent 14 years
Int. Cl. D24—*02*

U.S. Cl. D24—8

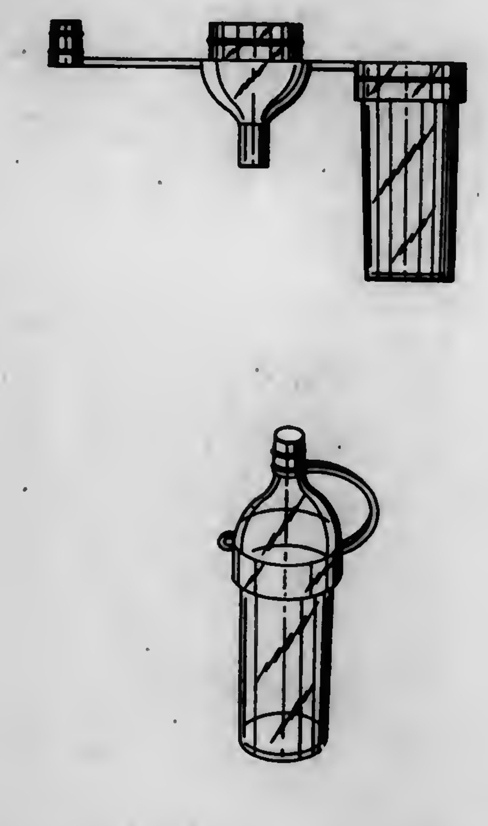


250,481
BLOOD COLLECTOR

Goerge F. Whattam, Timonium, Md., assignor to Hynson, Westcott & Dunning, Inc., Baltimore, Md.

Filed Nov. 8, 1976, Ser. No. 739,784
Term of patent 14 years
Int. Cl. D24—*02*

U.S. Cl. D24—21

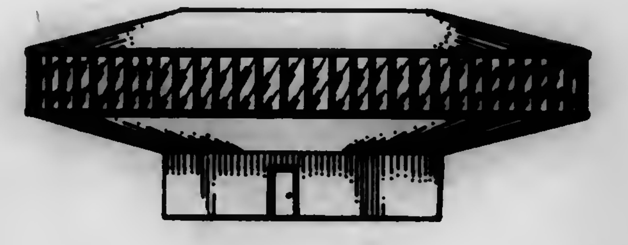


250,482
BUILDING

Robert H. Forstrom, Box 129, N. Hackensack Station, River Edge, N.J. 07661

Filed Oct. 5, 1976, Ser. No. 729,792
Term of patent 14 years
Int. Cl. D25—*03*

U.S. Cl. D25—23

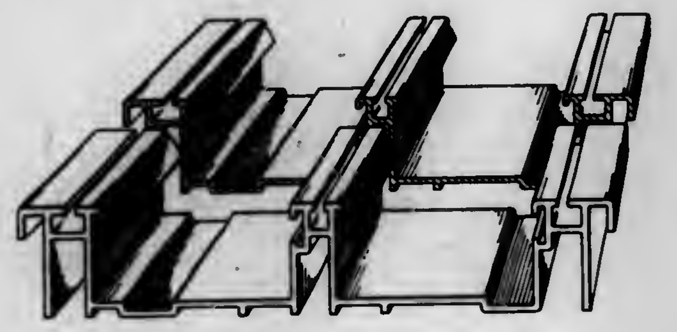


250,483
WINDOW COMPONENT EXTRUSION

Raymond Dallaire, Levis, Canada, assignor to P. H. Tech Inc., Quebec, Canada

Filed Mar. 22, 1977, Ser. No. 780,076
Claims priority, application Canada, Sep. 22, 1976, 2209761
Term of patent 14 years
Int. Cl. D25—*01*

U.S. Cl. D25—74

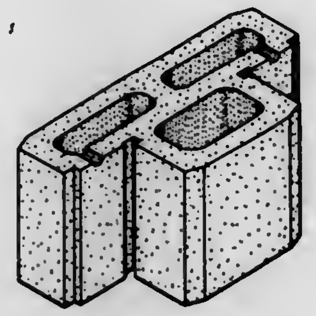


250,484
BUILDING BLOCK

George B. Muse, Hillcrest Dr., Calhoun, Ga. 30701

Filed Dec. 13, 1976, Ser. No. 749,782
Term of patent 14 years
Int. Cl. D25—*01*

U.S. Cl. D25—87

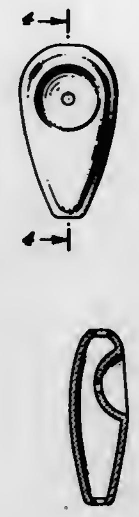


250,485
SMOKING DEVICE

Eugene R. Cuthbertson, 2016 Broadway, Santa Monica, Calif. 90404

Filed Aug. 15, 1977, Ser. No. 824,395
Term of patent 14 years
Int. Cl. D27—*02*

U.S. Cl. D27—03

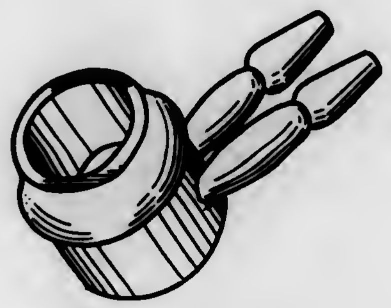


250,486
SMOKING PIPE

Boyce R. McCorkle, 5802 Kingston Pike, Knoxville, Tenn. 37919

Filed Aug. 22, 1977, Ser. No. 826,337
Term of patent 14 years
Int. Cl. D27—*02*

U.S. Cl. D27—03

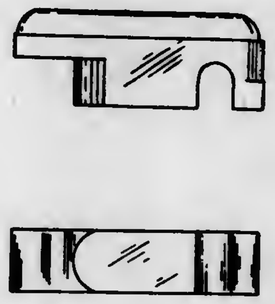


250,487
HINGE FOR POULTRY CAGE GATE

Donald L. DeMyer, c/o Cycle Systems, Inc., 9290 Belding Rd. NE., Rockford, Mich. 49341

Division of Ser. No. 694,567, Jun. 10, 1976, Pat. No. Des. 246,120. This application Jul. 18, 1977, Ser. No. 816,704
Term of patent 14 years
Int. Cl. D30—*02*

U.S. Cl. D30—2

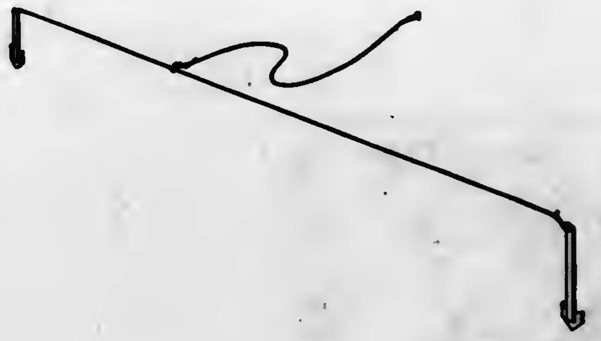


250,488
ANIMAL TETHER

Paul C. Wilmot, P.O. Box 982, Elkhart, Ind. 46514

Filed Jan. 13, 1977, Ser. No. 759,185
Term of patent 14 years
Int. Cl. D30—*09*

U.S. Cl. D30—44

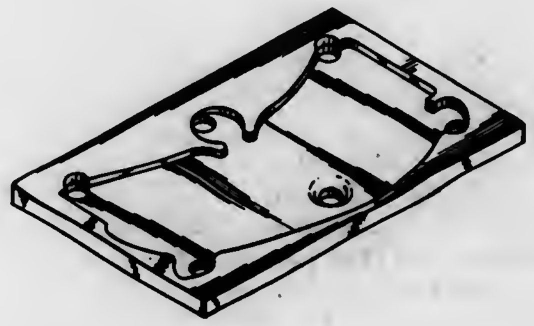


250,489
POOL TABLE TOP WITH NON-UNIFORM RAILS

Carl J. Feck, 116 S. 11th St., Richmond, Ind. 47374

Filed Aug. 2, 1976, Ser. No. 711,054
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—3

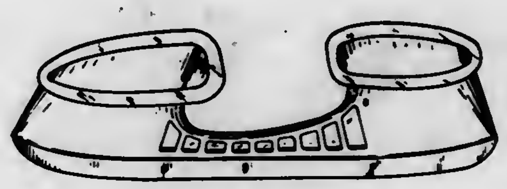


250,490
ICE SKATE

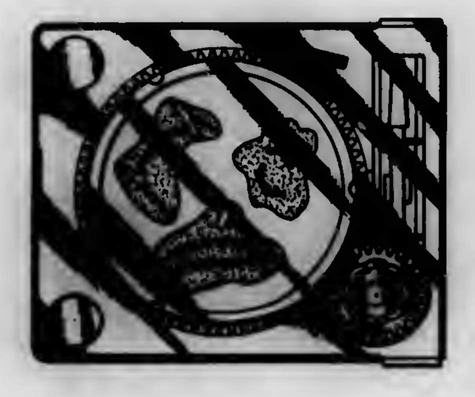
Hugh E. Baikie, Montreal, and Peter W. Schaack, Ville St-Laurent, both of Canada, assignors to Kenbudge Holdings Limited

Continuation-in-part of Ser. No. 649,926, Jan. 19, 1976, Pat. No. Des. 245,872. This application Sep. 27, 1976, Ser. No. 726,742
Term of patent 14 years
Int. Cl. D21—*01*

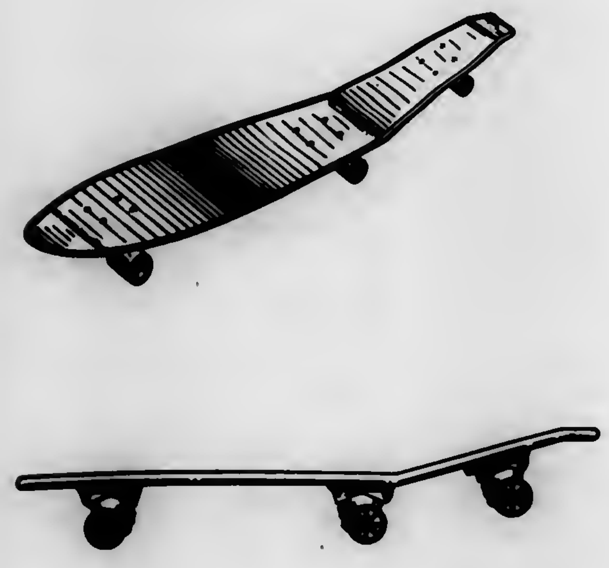
U.S. Cl. D34—14 B



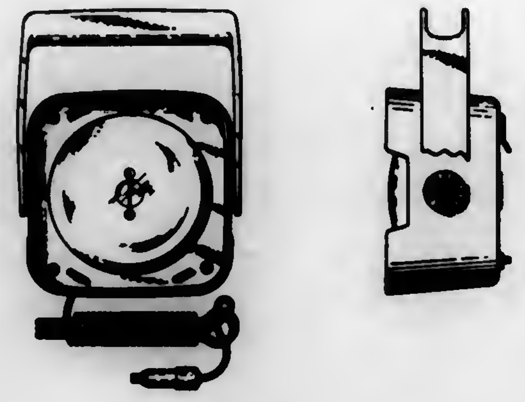
250,491
DRAWING TOY
Iwakichi Ogawa, Kashiwa, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Jun. 9, 1976, Ser. No. 694,132
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 R



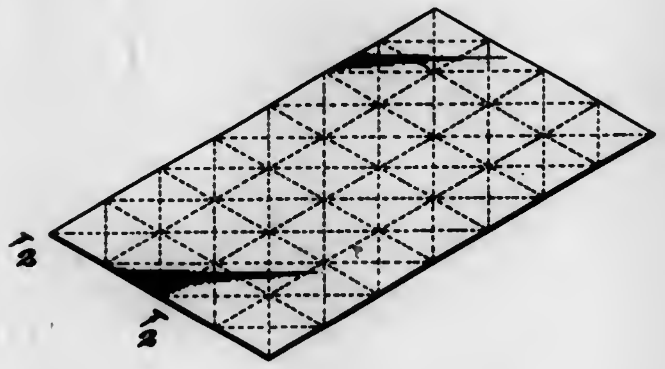
250,492
SKATEBOARD
James F. Kish, 96 Fern Ave., Wharton, N.J. 07885
Filed Nov. 19, 1976, Ser. No. 743,514
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



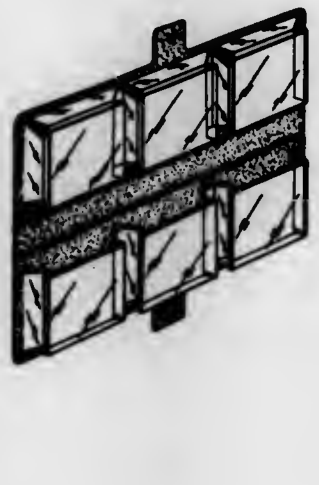
250,493
HAND-HELD SPOTLIGHT
John B. Brinkmann, 3525 Turtle Creek, Dallas, Tex. 75219
Filed Jun. 10, 1977, Ser. No. 805,621
Term of patent 14 years
Int. Cl. D26—*04, 02*
U.S. Cl. D48—20 K



250,494
DISPOSABLE BED COVERING
Melvin E. Householder, 10852 Sierra Hwy., Aqua Dulce, Calif. 91350
Filed Jul. 9, 1976, Ser. No. 703,951
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 B



250,495
CASSETTE CASE
Carlos A. Mollura, 2824 Del Oro Pl., Fullerton, Calif. 92655
Filed Apr. 7, 1977, Ser. No. 785,318
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF DECEMBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Aafjes, Herman C.: *See—*
  - Hyams, Irving; Koch, Harold S.; and Aafjes, Herman C., 4,128,024, Cl. 81-3.800.
- Abbott Laboratories: *See—*
  - Becker, Frank C.; Li, Jorge P.; and Williams, John W., 4,128,529, Cl. 260-45.8NB.
- Abe, Naoto: *See—*
  - Ohta, Hideyasu; Uozumi, Takahiro; Kanbe, Masaru; Abe, Naoto; Shirasaki, Jun; and Mayama, Masayoshi, 4,128,426, Cl. 96-87.00R.
- Abercrombie, Bolling A., to McMurry Oil Tools, Inc. Gas lift valve with a tension spring biasing element. 4,128,106, Cl. 137-155.000.
- ACF Chemiefarma N.V.: *See—*
  - Akkerman, Antony M.; and van Leeuwen, Geertruida C., 4,128,548, Cl. 542-429.000.
- Adams, Richard C.: *See—*
  - Bond, Thomas J.; Kelly, William J.; and Adams, Richard C., 4,128,383, Cl. 425-529.000.
- Adams, Stewart S.; Armitage, Bernard J.; Nicholson, John S.; and Tantum, James G., to Boots Pure Drug Company Limited. 2-(Substituted phenyl)propionic acids. 4,128,573, Cl. 562-465.000.
- Admiral Corporation: *See—*
  - Rhee, Dennis W., 4,128,849, Cl. 358-191.000.
- AECI Limited: *See—*
  - Barlow, Kenneth N., 4,128,442, Cl. 149-46.000.
- Aftergut, Siegfried: *See—*
  - Cole, Herbert S., Jr.; and Aftergut, Siegfried, 4,128,496, Cl. 252-299.000.
  - Cole, Herbert S., Jr.; and Aftergut, Siegfried, 4,128,497, Cl. 252-299.000.
- Agfa-Gevaert AG: *See—*
  - Fergg, Berthold; Hujer, Friedrich; and Zahn, Wolfgang, 4,128,330, Cl. 355-32.000.
  - Geyken, Erwin; and Dawidowitsch, Peter, 4,128,424, Cl. 96-63.000.
  - Stemme, Otto; and Lermann, Peter, 4,128,322, Cl. 354-83.000.
  - Wick, Richard; Stemme, Otto; Lermann, Peter; and Fauth, Gunter, 4,128,323, Cl. 354-86.000.
- Agfa-Gevaert, N.V.: *See—*
  - Monbaliu, Marcel J.; and Van Poucke, Raphael K., 4,128,427, Cl. 96-100.00R.
- Ahlgren, Nils H. Method for casting concrete structures. 4,128,610, Cl. 264-33.000.
- Air Products and Chemicals, Inc.: *See—*
  - Dyer, Paul N.; and Moseley, Fred, 4,128,627, Cl. 423-584.000.
- Akaike, Norio: *See—*
  - Lee, Kai S.; Akaike, Norio; and Brown, Arthur M., 4,128,456, Cl. 195-127.000.
- Akkerman, Antony M.; and van Leeuwen, Geertruida C., to ACF Chemiefarma N.V. Process for preparing 6,7-benzomorphans. 4,128,548, Cl. 542-429.000.
- Akzona Incorporated: *See—*
  - Paoli, Alfred, 4,128,293, Cl. 339-258.00R.
  - Ulin, Roy A., 4,128,007, Cl. 73-352.000.
- Albert, Otto: *See—*
  - Rensch, Adam; and Albert, Otto, 4,128,831, Cl. 340-605.000.
- Albertazzi, Sergio. Pressing arrangement for compressing ceramic and refractory materials into tile preforms. 4,128,376, Cl. 425-415.000.
- Albright, Pierce E., to Automated Machinery Corporation. Molding apparatus employing stick molds. 4,128,384, Cl. 425-548.000.
- Alcan Research and Development Limited: *See—*
  - Lumsden, John R., 4,128,480, Cl. 210-332.000.
- Alfa-Laval AB: *See—*
  - Borjesson, Leif R.; and Johansson, Lars-Ake, 4,128,125, Cl. 165-163.000.
- Alfa Romeo S.p.A.: *See—*
  - Garcea, Giampaolo, 4,128,086, Cl. 123-75.00D.
- Allen-Bradley Company: *See—*
  - Bartley, John E.; Penrod, Orville R.; and Radosevich, Lawrence D., 4,127,934, Cl. 29-626.000.
- Allen, David O., to Buckeye Molding Company. Injection molding apparatus. 4,128,385, Cl. 425-549.000.
- Allen, David O., to Buckeye Molding Company. Injection molding method. 4,128,613, Cl. 264-161.000.
- Allen & Hanburys Limited: *See—*
  - Price, Barry J.; Clitherow, John W.; and Bradshaw, John, 4,128,658, Cl. 424-285.000.
- Allen, Henry C.: *See—*
  - Cucksee, Marjorie T.; and Allen, Henry C., 4,128,441, Cl. 149-19.920.
- Allen, James A.; and Coleman, Clyde F., to RCA Corporation. Stylus position control system. 4,128,247, Cl. 274-23.00R.
- Allied Chemical Corporation: *See—*
  - Bretts, Gerald R.; and Timan, Dirk A., 4,128,459, Cl. 204-28.000.
  - Phillips, Benjamin A., 4,127,993, Cl. 62-101.000.
  - Ratcliffe, Charles T., 4,128,586, Cl. 260-609.00D.
- Allis-Chalmers Corporation: *See—*
  - Finlayson, Thomas J., 4,128,183, Cl. 214-730.000.
  - Stich, Frederick A., 4,128,793, Cl. 318-808.000.
- Almasi, George S.; Keefe, George E.; and Lin, Yeong S., to International Business Machines Corporation. Magnetic wall assisted bubble domain nucleator. 4,128,895, Cl. 365-11.000.
- Alpermann, Hans G.: *See—*
  - Merkel, Wulf; Alpermann, Hans G.; Geisen, Karl; Kothe, Norbert; and Ried, Walter, 4,128,643, Cl. 424-251.000.
- Alpert, Mel, to Diamond Shamrock Corporation. Processing aid for use in worsted and woolen processes. 4,128,398, Cl. 8-127.600.
- Aluminum Company of America: *See—*
  - van Linden, Jan H. L.; Claxton, Raymond J.; Herrick, Joseph R.; and Ormesher, Robert J., 4,128,415, Cl. 75-65.00R.
- Alwani, Dru W.: *See—*
  - Barabas, Eugene S.; Klein, Andrew; and Alwani, Dru W., 4,128,520, Cl. 260-29.70W.
- Amada Company, Limited: *See—*
  - Sato, Masao, 4,128,031, Cl. 83-820.000.
- American Cyanamid Company: *See—*
  - Grosso, Vincent G.; and Hillard, Ray L., 4,128,726, Cl. 560-72.000.
  - Roth, Roy W., 4,128,612, Cl. 264-126.000.
  - Wang, Samuel S.; and Smith, Eugene L., Jr., 4,128,475, Cl. 209-166.000.
- American Home Products Corporation: *See—*
  - Sarantakis, Dimitrios; and Grant, Norman H., 4,128,541, Cl. 260-112.50R.
- American Hospital Supply Corporation: *See—*
  - Bloom, William G.; Choksi, Pradip V.; and Seemayer, Walter, 4,128,098, Cl. 128-272.300.
- American International Tool Company, Inc.: *See—*
  - Parker, Bill B.; Beynand, Rudy; and Cormier, Arthur J., 4,128,108, Cl. 137-327.000.
- American Optical Corporation: *See—*
  - Sussman, Milton H., 4,128,304, Cl. 350-189.000.
- Ames, Richard N.; Hardin, Dick K.; Leininger, Joel C.; and Taylor, George P., to International Business Machines Corporation. Synchronous microcode generated interface for system of microcoded data processors. 4,128,876, Cl. 364-200.000.
- Ammon, John P., to Elfab Corporation. Method for assembly of electrical connectors. 4,127,935, Cl. 29-629.000.
- AMP Incorporated: *See—*
  - Bunnell, Edward D., 4,128,295, Cl. 339-274.000.
  - Lauterbach, John H.; and Rossler, Frederick W., Jr., 4,128,296, Cl. 339-274.000.
  - Mixon, James L., Jr.; and Werner, Walter M., 4,128,058, Cl. 102-28.00R.
- Amrogowicz, Erich. Knock-down container side panel connections. 4,128,354, Cl. 403-186.000.
- Anderson, Charles H., to RCA Corporation. Beam guide for display device with beam injection means. 4,128,784, Cl. 313-422.000.
- Anderson, Mark C.: *See—*
  - Fritsch, Thomas R.; and Anderson, Mark C., 4,128,593, Cl. 260-674.00A.
- Angerer, Dieter; Freund, Peter; Hansel, Werner; and Wilhelm, Fritz, to Zimmer Aktiengesellschaft. Process and apparatus for removing evaporable components from polyamide melts. 4,128,453, Cl. 159-16.00S.
- Anokhin, Vladimir M.: *See—*
  - Shakula, Nikolai M.; Voloschenko, Nikolai I.; Shishkin, Nikolai F.; Muratov, Anatoly S.; Guzchenko, Alexandr P.; Anokhin, Vladimir M.; and Nikitchenko, Vladimir F., 4,128,367, Cl. 425-11.000.
- Anolick, Colin, to Du Pont de Nemours, E. I., and Company. Energy absorbing mechanism. 4,128,698, Cl. 428-480.000.
- Aoki, Keiji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Electronic fuel injection control device. 4,128,082, Cl. 123-32.0EA.
- Aoyama, Syunichi, to Nissan Motor Company, Limited. Exhaust gas recirculation system. 4,128,090, Cl. 123-119.00A.
- ARA, Inc.: *See—*
  - Mazelsky, Bernard, 4,128,217, Cl. 244-122.00R.
- Arai, Jun: *See—*
  - Yamamoto, Mitsuru; Arai, Jun; Isogawa, Takao; and Hasebe, Isamu, 4,128,881, Cl. 364-200.000.
- Argus Chemical Corporation: *See—*
  - Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, 4,128,608, Cl. 260-880.00R.
- Arinc Research Corporation: *See—*
  - Russell, James L., 4,128,835, Cl. 343-6.5LC.

Arita, Shunji: *See—*

Furutachi, Kunio; Kato, Akifumi; Nakagawa, Mikio; Nakano, Masaru; Arita, Shunji; and Yamamoto, Aikich, 4,128,606, Cl. 260-878.00B.

Armitage, Bernard J.: *See—*

Adams, Stewart S.; Armitage, Bernard J.; Nicholson, John S.; and Tantum, James G., 4,128,573, Cl. 562-465.000.

Armstrong Cork Company: *See—*

Barnett, David L.; Christie, Peter A.; and Eckert, Lewis W., 4,128,524, Cl. 260-39.00R.

Oren, Jess W., III; Kirchner, Eugene M.; and Wehry, Charles F., Jr., 4,128,095, Cl. 126-270.000.

Arndt, Friedrich; and Boroschewski, Gerhard, to Schering Aktiengesellschaft. Carbanilic acid esters and herbicidal composition containing same. 4,128,413, Cl. 71-100.000.

Arneson, Edwin L., to Federal Paper Board Company, Inc. Bottle package. 4,128,169, Cl. 206-141.000.

Arnold, Loren G.: *See—*

Green, Robert V.; Wiley, Jack C.; and Arnold, Loren G., 4,128,130, Cl. 172-266.000.

Arnold, Lothar; Pasedach, Heinrich; and Pommer, Horst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of 2,3,6-trimethylphenol. 4,128,728, Cl. 568-799.000.

Arnston, Robert W.; Trussell, Gerald C.; and Rich, Leo G., to Sun Electric Corporation. Automated engine component diagnostic techniques. 4,128,005, Cl. 73-117.300.

Aro Corporation, The: *See—*

Sorce, Peter S.; and Clifford, Earl W., 4,128,451, Cl. 156-555.000.

Arpe, Hans-Jurgen: *See—*

Leupold, Ernst I.; and Arpe, Hans-Jurgen, 4,128,575, Cl. 562-579.000.

Leupold, Ernst I.; Arpe, Hans-Jurgen; Renken, Albert; and Schlosser, Ernst-Gunther, 4,128,727, Cl. 560-247.000.

Aruga, Hatsuo: *See—*

Nozawa, Kazutoshi; Ashibe, Yasue; Aruga, Hatsuo; and Tatsuzawa, Kunio, 4,127,986, Cl. 58-134.000.

Arzola, Rurico. Whistle having angularly joined cylindrical chambers. 4,127,962, Cl. 46-179.000.

Asahi-Dow Limited: *See—*

Kikuchi, Katsuro; Masai, Shohachi; and Tanaka, Tsugane, 4,128,695, Cl. 428-423.000.

Asakawa, Haruma: *See—*

Ogura, Hajime; Asakawa, Haruma; Kondoh, Junichi; Nakamura, Masashi; and Oyaide, Sadamu, 4,128,068, Cl. 114-26.000.

Asami, Kazuto; and Matono, Hirokuni, to Glory Kogyo Kabushiki Kaisha. Incorrect coin stacking detecting device in a coin packaging machine. 4,128,102, Cl. 133-1.00A.

Aschwanden, Paul F.; and Bartosek, Milan, to Maag Gear-Wheel & Machine Co. Ltd. Dressing devices for profiling grinding wheels for the form grinding of involute gears. 4,128,093, Cl. 125-11.00T.

Ash, Peter M.: *See—*

Boardman, James; and Ash, Peter M., 4,128,690, Cl. 428-332.000.

Ashibe, Yasue: *See—*

Nozawa, Kazutoshi; Ashibe, Yasue; Aruga, Hatsuo; and Tatsuzawa, Kunio, 4,127,986, Cl. 58-134.000.

Aske, Vernon H., to Honeywell Inc. Temperature compensated permanent magnet/moving coil accelerometer. 4,128,010, Cl. 73-497.000.

Asselin, Andre A.; Humber, Leslie G.; and Dobson, Thomas A., to Ayerst McKenna & Harrison Ltd. Tricyclic alkylamine derivatives. 4,128,560, Cl. 260-315.000.

Astakhov, Valery V.: *See—*

Sevostiyanov, Vladimir P.; Astakhov, Valery V.; and Usachev, Vasily P., 4,128,314, Cl. 350-341.000.

Astro Engineering Co.: *See—*

Selak, Martin M., 4,128,326, Cl. 354-317.000.

Atchisson, Maxwell G. Automatic bolt catch release apparatus for firearm. 4,128,042, Cl. 89-138.000.

Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Lambert, Robert W.; and Ringrose, Peter S., to Hoffmann-La Roche Inc. Peptide derivatives. 4,128,542, Cl. 260-112.50R.

Atlantic Richfield Company: *See—*

Jubin, John C., 4,128,587, Cl. 568-571.000.

Atlas Powder Company: *See—*

Jablonski, Charles E.; and Kreiger, John W., 4,127,976, Cl. 53-450.000.

Automated Machinery Corporation: *See—*

Albright, Pierce E., 4,128,384, Cl. 425-548.000.

Automatic Oil Tools Limited: *See—*

Cameron, Ian F.; and Layhe, Michael, 4,128,002, Cl. 73-3.000.

Autovox, S.p.A.: *See—*

Cicatelli, Rodolfo, 4,128,015, Cl. 74-89.170.

Avery, Hillard M. Stool. 4,128,063, Cl. 108-91.000.

Ayerst McKenna & Harrison Ltd.: *See—*

Asselin, Andre A.; Humber, Leslie G.; and Dobson, Thomas A., 4,128,560, Cl. 260-315.000.

B. F. Goodrich Company, The: *See—*

Hartitz, Joachim E.; Nehemy, Sam D.; and Wahl, Erwin R., 4,128,379, Cl. 425-446.000.

Bachofen & Meier: *See—*

Meier, Paul, 4,128,077, Cl. 118-104.000.

Bacon, Kenneth H., to Gulf Oil Corporation. Natural gas treatment. 4,128,410, Cl. 62-40.000.

Badertscher, Hans; and Schindler, Walter, to Plascon AG. Device for controlling the incidence of heat and light radiation, particularly for greenhouses and the like. 4,128,307, Cl. 350-263.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*

Arnold, Lothar; Pasedach, Heinrich; and Pommer, Horst, 4,128,728, Cl. 568-799.000.

Baker, Don R.: *See—*

Matsumoto, Kent E.; Chan, Jimmy H.; and Baker, Don R., 4,128,580, Cl. 260-566.00A.

Baker, Melvin C., to Du Pont de Nemours, E. I., and Company. Method for reducing color formation in polyesters. 4,128,535, Cl. 528-272.000.

Bakes, Michel: *See—*

Schirmann, Jean-Pierre; Dubreux, Bernard; Bakes, Michel; Delavarenne, Serge-Yvon; and Daude-Lagrave, Marie-Christine, 4,128,494, Cl. 252-186.000.

Balan, Isadore; and Kopera, Joseph J., to Chrysler Corporation. Hall effect electronic ignition controller with programmed dwell and automatic shut-down timer circuits. 4,128,091, Cl. 123-148.00E.

Balducci, Agostino: *See—*

Corbellini, Margherita; and Balducci, Agostino, 4,128,566, Cl. 260-448.00R.

Corbellini, Margherita; and Balducci, Agostino, 4,128,567, Cl. 260-448.00R.

Baliga, Bantval J., to General Electric Company. Liquid phase epitaxial method of covering buried regions for devices. 4,128,440, Cl. 148-171.000.

Bangor Punta Operations, Inc.: *See—*

Curran, Roger J., 4,127,955, Cl. 42-68.000.

Barabas, Eugene S.; Klein, Andrew; and Alwani, Dru W., to GAF Corporation. Thickening butadiene-styrene latices with terpolymer emulsions. 4,128,520, Cl. 260-29.70W.

Barba, Diego; D'Agostini, Candido; and Pasquinelli, Aldo, to Societa' Italiana Resine S.I.R. S.p.A. Process for the separation of butadiene by plural stage extractive distillation. 4,128,457, Cl. 203-29.000.

Barford, Brian D.; and Benjamin, Lawrence, to Procter & Gamble Company, The. Fabric softening compositions. 4,128,484, Cl. 252-8.800.

Barlow, Kenneth N., to AECI Limited. Emulsified methanol containing explosive composition. 4,128,442, Cl. 149-46.000.

Barmag Barmer Maschinenfabrik AG: *See—*

Renk, Paul, 4,128,342, Cl. 366-99.000.

Barnett, David L.; Christie, Peter A.; and Eckert, Lewis W., to Armstrong Cork Company. Composites of metal-modified urea-melamine-formaldehyde resins and fillers. 4,128,524, Cl. 260-39.00R.

Barron, Iann M.; and Wheeler, David J., to Computer Technology Limited. Synchronizing means. 4,128,201, Cl. 235-304.000.

Barth, Gunter; and Von Langsdorff, Fritz. Slab-elements for covering the ground. 4,128,357, Cl. 404-41.000.

Barth, Hermann, to Mahle GmbH. Pistons and piston rings. 4,128,250, Cl. 277-189.500.

Bartley, John E.; Penrod, Orville R.; and Radosevich, Lawrence D., to Allen-Bradley Company. Method of making terminal construction for electrical circuit device. 4,127,934, Cl. 29-626.000.

Bartosek, Milan: *See—*

Aschwanden, Paul F.; and Bartosek, Milan, 4,128,093, Cl. 125-11.00T.

Bartoszek, Edward J.; and Christofas, Alkis, to Pennwalt Corporation. Aqueous vinylidene fluoride polymer coating composition. 4,128,519, Cl. 260-29.6NR.

BASF Aktiengesellschaft: *See—*

Dehnert, Johannes; and Lamm, Gunther, 4,128,545, Cl. 260-156.000.

Gaiser, Dieter; Woellhaf, Josef; Schoettle, Klaus; Guenther, Friedrich; Kamm, Eugen; and Wendt, Erich, 4,127,925, Cl. 29-430.000.

Horn, Peter; Koehler, Waldemar; and Bittler, Rolf, 4,128,569, Cl. 260-453.0PH.

Kroker, Ruprecht; and Sander, Hans, 4,128,521, Cl. 260-31.40R.

Rensch, Adam; and Albert, Otto, 4,128,831, Cl. 340-605.000.

Schmeidl, Karl; Brunkhorst, Wilhelm; and Michaelis, Eberhard, 4,128,623, Cl. 423-388.000.

Senkpiel, Werner; Schoettle, Klaus; Wittkamp, Heinrich; and Uhl, Karl, 4,128,852, Cl. 360-90.000.

Streit, Werner; Fikentscher, Rolf; Gans, Karl; and Welzel, Gerhard, 4,128,511, Cl. 528-424.000.

Wunsch, Gerd; Deigner, Paul; Falk, Roland; Mahler, Karl; Loeser, Werner; Domas, Friedrich; Felleisen, Peter; and Steck, Werner, 4,128,672, Cl. 427-130.000.

Basse, Tage S., to Danfoss A/S. Hinge for a pivotable arm of an electric snap switch. 4,128,747, Cl. 200-67.00D.

BAT Brevets et Applications Techniques S.A.: *See—*

Beronia, Mario, 4,128,181, Cl. 214-83.300.

Batkiewicz, Stephen A. Auxiliary axial thrust bearing apparatus. 4,128,281, Cl. 308-15.000.

Bauer, Alfred. Characters-carrying disc for printing machine, method of manufacturing this disc and mould for carrying out this method. 4,128,347, Cl. 400-144.200.

Bauer, Siegfried, to Richard Wolf GmbH. Single-pole coagulation forceps. 4,128,099, Cl. 128-303.170.

Bauman, Robert A.; and Kaeser, James A., to Colgate-Palmolive Company. Fabric softening compounds. 4,128,485, Cl. 252-8.800.

Baumer, Wilhelm; Bernhard, Horst; Esselborn, Reiner; Ohngemach, Jorg; Stahlecker, Otto; and Zureda, Fritz, to Merck Patent Gesellschaft mit beschrankter Haftung. Lustrous pigments for pigmenting casein plastics. 4,128,435, Cl. 106-148.000.

Baxter, Ernest W., to National Plastics Corporation. Device for improving the pourability of fluids and also forming an improved closure for a container of such fluids. 4,128,189, Cl. 222-109.000.

Baxter Travenol Laboratories, Inc.: *See—*

White, Leonard A., 4,128,188, Cl. 221-91.000.

Bayer Aktiengesellschaft: *See—*

Buchner, Werner; Degen, Bruno; Fries, Ludwig; Helmut, Judat; Mundil, Rudolf; and Rudolph, Karl-Heinz, 4,128,568, Cl. 260-448.20E.

Eimers, Erich; Dhein, Rolf; and Wiedermann, Rolf, 4,128,532, Cl. 528-79.000.

Hendricks, Udo W.; and Walz, Klaus, 4,128,558, Cl. 260-307.00C.

Kohler, Armin; Pelousek, Herbert; Ohse, Helmut; Westermann, Hans; and Magosch, Karl-Heinz, 4,128,533, Cl. 528-279.000.

Kohler, Armin; Pelousek, Herbert; Ohse, Helmut; Westermann, Hans; and Magosch, Karl-Heinz, 4,128,534, Cl. 528-279.000.

Metzger, Carl; Eue, Ludwig; and Hack, Helmuth, 4,128,412, Cl. 71-90.000.

Nothen, Karl; Creixell, Francisco B.; and Ehrig, Bodo, 4,127,945, Cl. 34-18.000.

BBC Brown, Boveri & Company Limited: *See—*

Lanz, Otto, 4,128,805, Cl. 324-52.000.

Bechtiger, Charles G., to Relhor S.A. Card input device for precision punching of cards. 4,128,237, Cl. 271-241.000.

Beck, Henry E.; Hasten, Jimmie L.; and Sindelar, Ernest C., to Caterpillar Tractor Co. High-reliability air brake system providing a plurality of operational modes. 4,128,276, Cl. 303-13.000.

Becker, Bernard, to Kraftwerk Union Aktiengesellschaft. Gas turbine installation with cooling by two separate cooling air flows. 4,127,988, Cl. 60-39.660.

Becker, Frank C.; Li, Jorge P.; and Williams, John W., to Abbott Laboratories. Industrial biocide. 4,128,529, Cl. 260-45.8NB.

Bell Telephone Laboratories, Incorporated: *See—*

Chang, Tao-Yuan; Damen, Theodoor C.; and Nguyen, Van-Tran, 4,128,772, Cl. 307-88.300.

Coldren, Larry A.; and Lemons, Ross A., 4,128,616, Cl. 310-328.000.

Davis, James A., 4,128,742, Cl. 179-18.0GF.

Hartman, Adrian R.; Melchior, Hans; Schinke, David P.; and Smith, Richard G., 4,127,932, Cl. 29-590.000.

Nutt, Wendell G.; and Roach, Mark E., 4,128,736, Cl. 174-112.000.

Beloit Corporation: *See—*

Justus, Edgar J., 4,128,455, Cl. 162-216.000.

Bendiberica, S. A.: *See—*

Rosell, Jorge E., 4,128,046, Cl. 91-375.00A.

Benditalia S.p.A.: *See—*

Manzini, Ferruccio, deceased; and Manzini, Laura C., administratrix, 4,128,249, Cl. 277-182.000.

Bendix Corporation, The: *See—*

Brown, Arthur K.; and Runkle, Dean E., 4,128,112, Cl. 137-544.000.

McComas, Arthur D., 4,128,839, Cl. 343-112.0CA.

Benjamin, Lawrence: *See—*

Barford, Brian D.; and Benjamin, Lawrence, 4,128,484, Cl. 252-8.800.

Bennett, Anthony E., to Tioxide Group Limited. Chlorine recovery process. 4,128,409, Cl. 62-26.000.

Bennett, Elmer W.: *See—*

Dhami, Kewal S.; Bennett, Elmer W.; and Burton, Pearl, 4,128,693, Cl. 428-379.000.

Berardinelli, Frank M.: *See—*

Thomas, Norman W.; Berardinelli, Frank M.; and Edelman, Robert, 4,128,599, Cl. 260-857.00R.

Berger, Edwin: *See—*

Schlup, Gustave E.; and Berger, Edwin, 4,127,936, Cl. 29-721.000.

Berger, Klaus: *See—*

Illenberger, Arno; Ruprecht, Gert; and Berger, Klaus, 4,128,844, Cl. 357-31.000.

Berges, David A., to SmithKline Corporation. 7-Trifluoromethylthioacetamido-3-(3-sulfomethyl-1,2,4-triazol-5-ylthiomethyl)-3-cephem-4-carboxylic acid. 4,128,722, Cl. 544-26.000.

Bergfried, Dietrich: *See—*

Gansert, Willi; Bergfried, Dietrich; Heinrich, Gert; Schnepf, Dietmar; Slansky, Harry; Pfluger, Eberhard; and Dorkel, Jean, 4,128,802, Cl. 322-28.000.

Bernhard, Horst: *See—*

Baumer, Wilhelm; Bernhard, Horst; Esselborn, Reiner; Ohngemach, Jorg; Stahlecker, Otto; and Zureda, Fritz, 4,128,435, Cl. 106-148.000.

Bernstein, Albert, to Communications Technology Corporation. Front tap shoe for mounting on test block for telephone conductor pairs. 4,128,739, Cl. 179-1.0PC.

Bernstein, Jack: *See—*

Hoehn, Hans; Bernstein, Jack; and Vogt, B. Richard, 4,128,717, Cl. 544-361.000.

Berokoff, Andrew J. Tennis racket. 4,128,240, Cl. 273-75.000.

Beronia, Mario, to BAT Brevets et Applications Techniques S.A. Apparatus for loading and compressing solid waste in a box-like structure. 4,128,181, Cl. 214-83.300.

Berthold, Rudiger, to Hoechst Aktiengesellschaft. Process for the manufacture of α,β-unsaturated cycloaliphatic ketoximes. 4,128,579, Cl. 260-566.00A.

Bessendorf, Mikhael: *See—*

Lerner, Moisey; Morse, James H.; and Bessendorf, Mikhael, 4,128,461, Cl. 204-58.000.

Betts Machine Company: *See—*

Johnson, Kenneth L., 4,128,865, Cl. 362-369.000.

Betts, William L., to NCR Corporation. Combined encoder/decoder. 4,128,832, Cl. 340-347.0DD.

Beynand, Rudy: *See—*

Parker, Bill B.; Beynand, Rudy; and Cormier, Arthur J., 4,128,108, Cl. 137-327.000.

Bicking, John B.: *See—*

Cragoe, Edward J., Jr.; Bicking, John B.; and Smith, Robert L., 4,128,564, Cl. 260-401.000.

Bier, Adolf: *See—*

Leibrock, Kurt; Bier, Adolf; and Buch, Friedrich, 4,128,402, Cl. 44-11.000.

Bigelow, John E., to General Electric Company. DC Pop with varistor connected between control circuit and cathode. 4,128,787, Cl. 315-169.0TV.

Bilinsky, Michael C.; and Gold, Robert L. Compression device for tennis elbow. 4,128,097, Cl. 128-165.000.

Bintner, Dennis W., to Delavan Corporation. Low drift flat spray nozzle and method. 4,128,206, Cl. 239-11.000.

Bio-Dynamics Inc.: *See—*

Yamazaki, Yasuhiro; Johnson, Robert H.; and McNeil, Mark D., 4,128,339, Cl. 356-434.000.

Birch Brothers Southern, Inc.: *See—*

Birch, Steven W., 4,128,212, Cl. 242-56.00R.

Birch, Steven W., to Birch Brothers Southern, Inc. Seam responsive shear and method. 4,128,212, Cl. 242-56.00R.

Bison-werke Bahre & Greten GmbH & Co. KG: *See—*

Greten, Ernst, 4,128,373, Cl. 425-371.000.

Bitterice, Michael G.; and Kealar, Leroy D., to PPG Industries, Inc. Method of preparing lightweight window anti-static circuit and optional heating circuit. 4,128,448, Cl. 156-166.000.

Bittler, Rolf: *See—*

Horn, Peter; Koehler, Waldemar; and Bittler, Rolf, 4,128,569, Cl. 260-453.0PH.

BJ-Hughes Inc.: *See—*

Sheldon, Loren B.; Tomashek, James R.; and Ward, Donald H., 4,128,888, Cl. 364-565.000.

Black, Walter L., to United States of America, Army. Color-disseminating projectile for training cartridge. 4,128,059, Cl. 102-92.700.

Blasetti, David H. Centrifugal mixer. 4,128,344, Cl. 366-348.000.

Block Drug Company, Inc.: *See—*

Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,128,662, Cl. 424-319.000.

Blomqvist, Inge. S., to Sunnex Equipment AB. Servo-controlled valve. 4,128,227, Cl. 251-42.000.

Bloom, William G.; Chokai, Pradip V.; and Seemayer, Walter, to American Hospital Supply Corporation. Valved spike transfer device. 4,128,098, Cl. 128-272.300.

Blumbergs, John H.: *See—*

Finley, Joseph H.; and Blumbergs, John H., 4,128,490, Cl. 252-95.000.

Blumhardt, Harold, to Blumhardt Mfg., Inc. Surface irrigation gate. 4,128,107, Cl. 137-318.000.

Blumhardt Mfg., Inc.: *See—*

Blumhardt, Harold, 4,128,107, Cl. 137-318.000.

Boardman, James; and Ash, Peter M., to Triplex Safety Glass Company Limited. Toughened glass sheets. 4,128,690, Cl. 428-332.000.

BOC Limited: *See—*

Sharp, Charles M., 4,128,753, Cl. 219-121.00L.

Bock, Rudolf. Gas cushioned free piston type engine. 4,128,083, Cl. 123-46.00R.

Boehm, Leah: *See—*

Reisfeld, Renata; Eckstein, Yona; and Boehm, Leah, 4,128,411, Cl. 65-18.000.

Boeing Company, The: *See—*

Hansen, Karl A.; and Hendrickson, I. Glen, 4,127,933, Cl. 29-605.000.

Hogenhout, Franciscus; and McDermott, Arthur W., 4,128,000, Cl. 72-430.000.

Bogosh, Donald. Permanent pier piling. 4,127,992, Cl. 405-61.000.

Boise Cascade Corporation: *See—*

Hoelzinger, Walther J., 4,128,677, Cl. 428-57.000.

Bomio, Pietro; and Meier, Werner, to Sulzer Brothers Limited. Method of producing a packing and a packing layer made thereby. 4,128,684, Cl. 428-175.000.

Bond, Thomas J.; Kelly, William J.; and Adams, Richard C., to Standard Oil Company, The. Apparatus for controlling plastic material distribution in manufacture of biaxially oriented plastic containers. 4,128,383, Cl. 425-529.000.

Bondgrade Limited: *See—*

Ede, Douglas F. C., 4,128,118, Cl. 144-134.00D.

Bondinell, William E.; and Pendleton, Robert G., to SmithKline Corporation. 4 and 5-Halo substituted 2-indanamine compounds. 4,128,666, Cl. 424-330.000.

Bonis, Laszlo J., to Composite Container Corporation. System for preventing mandrel deflection in molding of thermoplastic materials. 4,128,381, Cl. 425-468.000.

Bons, Robert; and Kitaguchi, Sam S., to Garrett Corporation, The. Eductor muffler. 4,128,769, Cl. 290-52.000.

Booth, Eric, to National Research Development Corporation. Peripatetic vehicles. 4,128,137, Cl. 180-6.500.

Boots Pure Drug Company Limited: *See—*

Adams, Stewart S.; Armitage, Bernard J.; Nicholson, John S.; and Tantum, James G., 4,128,573, Cl. 562-465.000.

Boquist, Carl W.; and Marchant, David D., to United States of America, Energy. Magnetohydrodynamic electrode. 4,128,776, Cl. 310-11.000.

Borjesson, Leif R.; and Johansson, Lars-Ake, to Alfa-Laval AB. Spiral heat exchanger. 4,128,125, Cl. 165-163.000.

- Borman, Willem F. H., to General Electric Company. Copolyesters of poly(alkylene glycol aromatic acid esters) and diesters comprising aromatic diols. 4,128,526, Cl. 260-40.00R.
- Boroschewski, Gerhard: *See*—
  - Arndt, Friedrich; and Boroschewski, Gerhard, 4,128,413, Cl. 71-100.000.
- Bortuzzo, Jean-Pierre: *See*—
  - Roullet, Gerald; and Bortuzzo, Jean-Pierre, 4,128,847, Cl. 358-128.000.
- Bosch-Siemens Hausgerate GmbH: *See*—
  - Loch, Friedhelm H.; Mailander, Hans; Riemath, Heinz; Schmid, Richard; and Stickel, Ernst, 4,128,287, Cl. 312-253.000.
- Bost, John R., to Byars Machine Company. Counterbalance bearing assembly. 4,128,282, Cl. 308-20.000.
- Bourne, Arnold H., to Westinghouse Canada Limited. Variable lead optical tracing machine with scanning and vari-focal lens. 4,128,297, Cl. 350-6.100.
- Bourquin, Jean-Pierre; Schwarb, Gustav; and Waldvogel, Erwin, to Sandoz Ltd. Precursors of 4-(1-alkyl-4-piperidylidene-4H-benzo[4,5-]cyclohepta-[1,2-b]thiophen-10(9H)-ones. 4,128,549, Cl. 546-202.000.
- Bourquin, Thomas E., deceased; and by Sanders, Maggie B., executrix. Fishhook extractor. 4,127,957, Cl. 43-53.500.
- Bowen, Duane C. Bathing facility. 4,127,905, Cl. 4-148.000.
- Boyle, Danny P. Multi-segmental cushion assembly for adapting contour dental chairs to a child's physique. 4,128,272, Cl. 297-231.000.
- Bozeman, Arlene, executrix: *See*—
  - Harrison, Charles W.; and Bozeman, Paul P., Jr., deceased, 4,128,472, Cl. 208-33.000.
- Bozeman, Paul P., Jr., deceased: *See*—
  - Harrison, Charles W.; and Bozeman, Paul P., Jr., deceased, 4,128,472, Cl. 208-33.000.
- Bradbury, William B.; Watts, Robert H.; and Scott, E. Timm, to PMS Consolidated. Colorant comminuting apparatus for plastic article forming machine. 4,128,211, Cl. 241-101.600.
- Bradshaw, John: *See*—
  - Price, Barry J.; Clitherow, John W.; and Bradshaw, John, 4,128,658, Cl. 424-285.000.
- Brady, John F., to Universal Technology, Inc. Fluid impulse matrix printer. 4,128,345, Cl. 400-120.000.
- Braga, Albert T.: *See*—
  - Brenner, Robert A.; Cuthbert, Victor W.; and Braga, Albert T., 4,128,210, Cl. 241-46.00R.
- Bramati, Carlo, to Carle & Montanari S.p.A. Unmoulding machine for confectionary products. 4,128,377, Cl. 425-439.000.
- Brandenstein, Manfred: *See*—
  - Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; Brandenstein, Manfred; and Schulz, Toni, 4,128,279, Cl. 308-6.00C.
- Branda, Antoon H.; and Gietema, Jouke, to Hollandse Signaalapparaten B.V. Digital scan converter. 4,128,838, Cl. 343-55.00C.
- Braun, Dieter; and Cramer, Hugo, to Felten & Guilleaume Kabelwerke GmbH. Method of and an apparatus for manufacturing a SZ twisted strand of elongated elements for telecommunication cables. 4,127,982, Cl. 57-294.000.
- Braun, Rudolf; and Kellmann, Werner, to Sulzer Brothers Limited. Entraining element for a gripper shuttle. 4,128,115, Cl. 139-439.000.
- Braunstein, Lee G. Gas regulator and gas-fired torch assemblies. 4,128,391, Cl. 431-354.000.
- Braye, Emile, to Parcor. Process for the preparation of 2-(2-thienyl)-ethylamine and derivatives thereof. 4,128,561, Cl. 260-329.0AM.
- Brecht, Heinz, to Siemens Aktiengesellschaft. Electrical high-voltage apparatus. 4,128,826, Cl. 338-204.000.
- Breda Termomeccanica S.p.A.: *See*—
  - Straffi, Franco, 4,128,221, Cl. 248-68.00R.
- Brenner, Robert A.; Cuthbert, Victor W.; and Braga, Albert T., to Whirlpool Corporation. Food waste disposal apparatus. 4,128,210, Cl. 241-46.00R.
- Brealow, Jeffrey D.: *See*—
  - Hicks, Alan A.; Spinello, John O.; and Brealow, Jeffrey D., 4,128,246, Cl. 273-243.000.
- Bretts, Gerald R.; and Timan, Dirk A., to Allied Chemical Corporation. Continuous electroplating of alloy onto metallic strip. 4,128,459, Cl. 204-28.000.
- Breuer, Hermann; and Treuner, Uwe D., to E. R. Squibb & Sons, Inc. Cyanoalkylureido cephalosporins. 4,128,723, Cl. 544-25.000.
- Breuer, Hermann; and Treuner, Uwe D., to E. R. Squibb & Sons, Inc. Hydrazinocarbonylamino cephalosporins. 4,128,724, Cl. 544-30.000.
- Bristoline Inc.: *See*—
  - Enatsu, Shachio, 4,128,014, Cl. 73-729.000.
- Britton, James E.; Metcalf, Fredric D.; Sommer, John G.; Kuan, Tiong H.; Rilling, Victor R.; and Welch, John A., to General Tire & Rubber Co., The. Polyethylene-EDPM compositions. 4,128,523, Cl. 260-33.6AQ.
- Brodsky, Lee; Lorenz, Donald H.; Nelsen, Suzanne B.; and Tu, Shu T., to GAF Corporation. Cyano-oligomer compositions and processes thereof. 4,128,536, Cl. 427-54.000.
- Brooker, Gary L.; Terasaki, Wesley L.; and Price, Michael G., to University of Virginia Alumni Patents Foundation. Automated immunoassay. 4,128,628, Cl. 424-1.000.
- Brown, Arthur K.; and Runkle, Dean E., to Bendix Corporation, The. Spool valve for hydraulic brake booster. 4,128,112, Cl. 137-544.000.
- Brown, Arthur M.: *See*—
  - Lee, Kai S.; Akaike, Norio; and Brown, Arthur M., 4,128,456, Cl. 195-127.000.
- Brown, Boveri & Cie AG: *See*—
  - Rohr, Franz-Josef; and Krapf, Rudolf, 4,128,469, Cl. 204-195.00S.
- Brown, Michael K.; Christou, Kyriakos; Lundquist, David E.; Maidment, Earl P.; and Shell, Ronald G., to Burroughs Corporation. Droplet microphone. 4,128,841, Cl. 346-75.000.
- Brown & Root, Inc.: *See*—
  - Tillinghast, William S.; and Rochelle, William R., 4,127,950, Cl. 37-62.000.
- Brown & Sharpe Manufacturing Company: *See*—
  - Headen, William E.; and Levesque, George N., 4,128,278, Cl. 308-3.00A.
- Brownlee, Merrel F. Step ladder bracket. 4,128,223, Cl. 248-211.000.
- Brunet, Maurice: *See*—
  - Habermann, Helmut; Brunet, Maurice; and Joly, Pierre, 4,128,795, Cl. 318-618.000.
- Brunkhorst, Wilhelm: *See*—
  - Schmeidl, Karl; Brunkhorst, Wilhelm; and Michaelis, Eberhard, 4,128,623, Cl. 423-388.000.
- Brunner, Ernst: *See*—
  - Knobloch, Johannes F.; and Brunner, Ernst, 4,128,870, Cl. 363-141.000.
- Brussee, Warren T.; and Ferris, William G., to General Electric Company. Sealed beam lamp unit. 4,128,864, Cl. 362-306.000.
- Buch, Friedrich: *See*—
  - Leibrock, Kurt; Bier, Adolf; and Buch, Friedrich, 4,128,402, Cl. 44-11.000.
- Bucher, David H.; and Meinert, Harry M., to Deere & Company. Multiple section implement with beam raised and lowered on mast thereof. 4,128,131, Cl. 172-311.000.
- Buchholz, Adolf. Method for steam drying. 4,127,946, Cl. 34-28.000.
- Buchner, Werner; Degen, Bruno; Fries, Ludwig; Helmut, Judat; Mundil, Rudolf; and Rudolph, Karl-Heinz, to Bayer Aktiengesellschaft. Process for the continuous preparation of polydiorganosiloxanes. 4,128,568, Cl. 260-448.20E.
- Buckeye International, Inc.: *See*—
  - Roberts, Leslie N., 4,128,062, Cl. 105-420.000.
- Buckeye Molding Company: *See*—
  - Allen, David O., 4,128,385, Cl. 425-549.000.
  - Allen, David O., 4,128,613, Cl. 264-161.000.
- Buddecke, William A. Combined catfish killer and holder. 4,127,919, Cl. 17-70.000.
- Bukamier, Gary L. Electrode structures. 4,128,468, Cl. 204-195.00F.
- Bukowski, Raymond J.; and Erst, Frederick S., to Motiograph, Inc. Electronic order pricing system. 4,128,758, Cl. 235-433.000.
- Bundy, Gordon L., to Upjohn Company, The. 9-Deoxy-9-methylene-PGF$_1$-morpholinylamides. 4,128,712, Cl. 542-426.000.
- Bunker Ramo Corporation: *See*—
  - Grabow, Ronald D., 4,128,006, Cl. 73-724.000.
  - Occhipinti, Carl, 4,128,289, Cl. 339-75.0MP.
- Bunkowski, Kenneth D.: *See*—
  - Goebel, James C.; Delapp, Darwin F.; and Bunkowski, Kenneth D., 4,128,696, Cl. 428-424.000.
- Bunnell, Edward D., to AMP Incorporated. Eccentric bore connecting device. 4,128,295, Cl. 339-274.000.
- Burdge, Lanny G.: *See*—
  - Layman, Bobby C.; and Burdge, Lanny G., 4,128,071, Cl. 114-221.00A.
- Burleson, Robert R., to United States of America, Energy. Interferometric correction system for a numerically controlled machine. 4,128,794, Cl. 318-603.000.
- Burness, Arnold M.; Ling, Hans G.; and Doppen, Glen M., to Eastman Kodak Company. Crosslinking polymeric dye mordant composition reaction product of bisalkane or bisarene sulfonate and vinyl polymer. 4,128,538, Cl. 260-884.000.
- Burns, William K.; and Milton, A. Fenner, to United States of America, Navy. Optical waveguide power divider. 4,128,301, Cl. 350-96.150.
- Buros, Melvin S., to Micr-Shield Company. Document carrier. 4,128,202, Cl. 235-493.000.
- Burroughs Corporation: *See*—
  - Brown, Michael K.; Christou, Kyriakos; Lundquist, David E.; Maidment, Earl P.; and Shell, Ronald G., 4,128,841, Cl. 346-75.000.
  - Lamiaux, Sylves L., 4,128,873, Cl. 364-200.000.
  - Zachry, Clyde; White, Paul K.; and Layton, Wilbur T., 4,128,288, Cl. 339-45.00M.
- Burton, Pearl: *See*—
  - Dhami, Kewal S.; Bennett, Elmer W.; and Burton, Pearl, 4,128,693, Cl. 428-379.000.
- Bustos, Rafael T., to Leggett & Platt, Incorporated. Display rack with improved shelf assembly. 4,128,177, Cl. 211-49.00D.
- Butler, Donald E., to Warner-Lambert Company. 3-Phenoxypyridine monosulfate and a method for its production. 4,128,555, Cl. 546-290.000.
- Butler, Louis R. P., to South African Inventions Development Corporation, The. Spectroscopic apparatus and method. 4,128,336, Cl. 356-307.000.
- Byars Machine Company: *See*—
  - Bost, John R., 4,128,282, Cl. 308-20.000.
- C. J. Hendry Company: *See*—
  - Pizzo, Frank, 4,127,909, Cl. 9-11.00A.
- Caero, Jose G., to Textron Inc. Actuator with locking valves. 4,128,047, Cl. 91-420.000.
- Cagliero, Germano, to Marxer S.p.A. Method of and feed for farming egg-laying hens using nifuroxazide. 4,128,657, Cl. 424-285.000.
- Cain, Shirley A., heir: *See*—
  - Terry, James A., deceased; Russell, Barbara P., heir; Terry, James F., heir; and Cain, Shirley A., heir, 4,128,117, Cl. 144-3.00K.
- Calspan Corporation: *See*—
  - Fischer, Frederic P., II, 4,128,850, Cl. 358-284.000.

- Cameron, Ian F.; and Layhe, Michael, to Automatic Oil Tools Limited. Meter proving apparatus. 4,128,002, Cl. 73-3.000.
- Campbell, Charles R.; Heckle, William A.; and Mathews, Marion J., to Monsanto Company. Thermal conversion of 4-cyano-suberonitrile to acrylonitrile. 4,128,571, Cl. 260-465.900.
- Campbell, John R.: *See*—
  - Klopfer, Howard J.; and Campbell, John R., 4,128,731, Cl. 568-726.000.
- Campbell Soup Company: *See*—
  - Hildebolt, William M., 4,128,051, Cl. 99-348.000.
- Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
  - Gravel, Joseph A. M., 4,128,752, Cl. 219-121.00L.
- Canadian General Electric Company Limited: *See*—
  - Herzog, Gordon W.; and Gaensbauer, Herbert A., 4,128,792, Cl. 318-706.000.
- Cantarutti, Armindo, to NRM Corporation. Tire component building drum. 4,128,450, Cl. 156-417.000.
- Capewell, James T.: *See*—
  - Niblett, David C.; and Capewell, James T., 4,128,267, Cl. 294-81.00R.
- Caputo, William R.; and Husson, Alan L., to Westinghouse Electric Corp. Elevator system. 4,128,141, Cl. 187-29.00R.
- Carl Freudenberg, Firma: *See*—
  - Pohland, Alois, 4,128,679, Cl. 428-131.000.
- Carle & Montanari S.p.A.: *See*—
  - Bramati, Carlo, 4,128,377, Cl. 425-439.000.
- Carlisle, Richard S. Frictional coupling device. 4,128,356, Cl. 403-292.000.
- Caron, Jacques; Poncet, Jean-Claude; and Varney, Bernard, to Societe Anonyme dite: CECA S.A. Method and apparatus for determining permeability of filter media. 4,128,004, Cl. 73-38.000.
- Carpenter Technology Corporation: *See*—
  - Karpen, William L., 4,128,487, Cl. 252-28.000.
- Carr, William C.; Polinski, Leon M.; Hindin, Saul G.; and Kosco, James L., to Engelhard Minerals & Chemicals Corporation. Alkyl aromatic isomerization. 4,128,591, Cl. 260-668.00A.
- Carstensen, Kenneth J.: *See*—
  - Hauk, Ernest D.; Hauk, Thomas D.; and Carstensen, Kenneth J., 4,127,927, Cl. 29-407.000.
- Casaleggi, Charles J.: *See*—
  - Gaither, Howard H.; and Casaleggi, Charles J., 4,128,251, Cl. 277-233.000.
- Cassar, Luigi; and Foa, Marco, to Montedison S.p.A. Process for preparing phenylacetic acid. 4,128,572, Cl. 562-406.000.
- Castonguay, Roger N.; Jencks, Charles L.; and Turton, Robert C., to General Electric Company. Circuit breaker closure control and condition indicator apparatus. 4,128,750, Cl. 200-308.000.
- Catano, Paul S.: *See*—
  - Stotts, Larry B.; Martin, William E.; and Catano, Paul S., 4,128,300, Cl. 350-96.140.
- Caterpillar Tractor Co.: *See*—
  - Beck, Henry E.; Hasten, Jimmie L.; and Sindelar, Ernest C., 4,128,276, Cl. 303-13.000.
  - Chamberlain, Richard W., 4,127,952, Cl. 37-141.00R.
  - Coleman, Donald F.; and Rhodes, Sammy J., 4,128,827, Cl. 340-52.00R.
  - Meisel, Thomas C., Jr., 4,128,277, Cl. 305-54.000.
  - Moen, Lowell J.; and Olson, Harris S., 4,128,132, Cl. 172-747.000.
  - Ritter, Arthur J., 4,128,022, Cl. 74-694.000.
- Cecchini, Giuliano. Stereoscopic films and viewers therefor. 4,128,320, Cl. 353-120.000.
- Cecil, James B.: *See*—
  - Frederiksen, Thomas M.; and Cecil, James B., 4,128,775, Cl. 307-264.000.
- Celanese Corporation: *See*—
  - Gilbert, William C., 4,128,614, Cl. 264-205.000.
  - Thomas, Norman W.; Berardinelli, Frank M.; and Edelman, Robert, 4,128,599, Cl. 260-857.00R.
- Cervenka, Peter O.: *See*—
  - United States of America, National Aeronautics and Space Administration; Reinhardt, Victor S.; and Cervenka, Peter O., 4,128,814, Cl. 331-94.000.
- Challenge-Cook Bros., Inc.: *See*—
  - Freze, Benjamin H., 4,128,388, Cl. 431-116.000.
- Chamberlain, Richard W., to Caterpillar Tractor Co. Replaceable adapter for an earthworking tool. 4,127,952, Cl. 37-141.00R.
- Champion International Corporation: *See*—
  - Roccaforte, Harry I., 4,128,168, Cl. 206-45.140.
- Champion Laboratories, Inc.: *See*—
  - Gaither, Howard H.; and Casaleggi, Charles J., 4,128,251, Cl. 277-233.000.
- Champion Spark Plug Company: *See*—
  - Manning, William R., 4,128,433, Cl. 106-55.000.
- Chan, Jimmy H.: *See*—
  - Matsumoto, Kent E.; Chan, Jimmy H.; and Baker, Don R., 4,128,580, Cl. 260-566.00A.
- Chang, Tao-Yuan; Damen, Theodoor C.; and Nguyen, Van-Tran, to Bell Telephone Laboratories, Incorporated. Generation of tunable far-infrared radiation. 4,128,772, Cl. 307-88.300.
- Chapel, James F., to Chapel, James Frederick; Harper, Homer C., III; and Coyne, Michael F. Sterile oxygen system and replaceable filter therefore. 4,128,407, Cl. 55-259.000.
- Chapel, James Frederick: *See*—
  - Chapel, James F., 4,128,407, Cl. 55-259.000.
- Charnley, Ralph L.: *See*—
  - Melander, Theodore A.; and Charnley, Ralph L., 4,128,325, Cl. 354-298.000.
- Chemische Werke Huels Aktiengesellschaft: *See*—
  - Reich, Manfred, 4,128,730, Cl. 568-914.000.
  - Westernacher, Helmut, 4,128,594, Cl. 260-674.00A.
- Chen, Thomas T., to Rockwell International Corporation. Bubble domain circuit organization. 4,128,894, Cl. 365-4.000.
- Chenot, Louis A., to Mid-Equipment, Inc. Trash compactor. 4,128,054, Cl. 100-233.000.
- Chervenak, Michael C.; and Wolk, Ronald H., to Hydrocarbon Research, Inc. Pressure let-down valve assembly for handling abrasive liquids. 4,128,109, Cl. 137-375.000.
- Chevron Research Company: *See*—
  - Honnen, Lewis R., 4,128,403, Cl. 44-71.000.
- Chiang, Alice M., to Honeywell Inc. GaP Directed field UV photodiode. 4,128,843, Cl. 357-30.000.
- Chicago Bridge & Iron Company: *See*—
  - Shadid, Fahim E.; and Johnson, Paul R., 4,128,070, Cl. 114-74.00A.
- Chikamatsu, Shigeru: *See*—
  - Otsu, Shinpei; Sekiguchi, Akira; Tobita, Nobuyoshi; Chikamatsu, Shigeru; Hosoe, Yoshihisa; Matsui, Motoaki; Sugimoto, Noboru; and Totsuka, Noriyoshi, 4,128,378, Cl. 425-445.000.
- Chimura, Kozo: *See*—
  - Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,127,984, Cl. 58-7.000.
- Choksi, Pradip V.: *See*—
  - Bloom, William G.; Choksi, Pradip V.; and Seemayer, Walter, 4,128,098, Cl. 128-272.300.
- Chomerics, Inc.: *See*—
  - Seeger, Richard E., 4,128,744, Cl. 200-5.00A.
- Christie, Peter A.: *See*—
  - Barnett, David L.; Christie, Peter A.; and Eckert, Lewis W., 4,128,524, Cl. 260-39.00R.
- Christofas, Alkis: *See*—
  - Bartoszek, Edward J.; and Christofas, Alkis, 4,128,519, Cl. 260-29.6NR.
- Christou, Kyriakos: *See*—
  - Brown, Michael K.; Christou, Kyriakos; Lundquist, David E.; Maidment, Earl P.; and Shell, Ronald G., 4,128,841, Cl. 346-75.000.
- Chrysler Corporation: *See*—
  - Balan, Isadore; and Kopera, Joseph J., 4,128,091, Cl. 123-148.00E.
  - Lappington, John P., 4,128,900, Cl. 365-94.000.
- Chun, Ho-Ming: *See*—
  - Lundmark, Larry D.; Melby, Allan; and Chun, Ho-Ming, 4,128,631, Cl. 424-70.000.
- Chung, Ming-Sum: *See*—
  - Chung, Ming-To; and Chung, Ming-Sum, 4,128,064, Cl. 108-111.000.
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  - Nachbur, Hermann; Hiestand, Armin; and Rohringer, Peter, 4,128,687, Cl. 428-253.000.
  - Rossler, Erich; Deiner, Hans; Sandner, Bernhard; and Schilling, Hans, 4,128,675, Cl. 427-390.00E.
  - Schmidt, Andreas; Peterson, Janet B.; and Dexter, Martin, 4,128,718, Cl. 548-313.000.
  - Wick, Arnold; and Jost, Max, 4,128,396, Cl. 8-39.00C.
- Cicatelli, Rodolfo, to Autovox, S.p.A. Device for the storage of power and its controllable, slow rate release. 4,128,015, Cl. 74-89.170.
- Clarke, Ernest J., to NCR Corporation. Cover plate for a microform reader. 4,128,319, Cl. 353-27.00R.
- Clarke, George C. Variable speed drive. 4,128,017, Cl. 74-230.17D.
- Classic Chemical: *See*—
  - Coryell, Stanley W., 4,128,192, Cl. 222-525.000.
- Claudio, Gillio, to Ing. C. Olivetti & C., S.p.A. Keyboard recocking mechanism. 4,128,382, Cl. 400-478.000.
- Claxton, Raymond J.: *See*—
  - van Linden, Jan H. L.; Claxton, Raymond J.; Herrick, Joseph R.; and Ormesher, Robert J., 4,128,415, Cl. 75-65.00R.
- Cleare, Peter J. V., to Imperial Chemical Industries Limited. Preparation of halogenated aldehydes. 4,128,585, Cl. 260-601.00H.
- Clesid S.A.: *See*—
  - Maubon, Andre, 4,128,230, Cl. 266-89.000.
- Clifford, Earl W.: *See*—
  - Sorce, Peter S.; and Clifford, Earl W., 4,128,451, Cl. 156-555.000.
- Clitherow, John W.: *See*—
  - Price, Barry J.; Clitherow, John W.; and Bradshaw, John, 4,128,658, Cl. 424-285.000.
- Coash, Ronald J., to Reinke Manufacturing Company. Wind correction method and apparatus for irrigation systems. 4,128,205, Cl. 239-1.000.
- Coats Brothers & Company Ltd.: *See*—
  - O'Hara, Kevin J.; and Kilvington, Howard J., 4,128,436, Cl. 106-243.000.
- Cobb, Sanford, Jr.: *See*—
  - Lowrey, Robert D.; Wegwerth, Arthur A.; Koeck, Donna M.; and Cobb, Sanford, Jr., 4,128,685, Cl. 428-212.000.
- Cohen, A. David, to Imperial Oil Limited. Lewis acid-fluorine compounds of carbon. 4,128,499, Cl. 252-378.00R.
- Coin Cop Co.: *See*—
  - Dautremont, Joseph L., Jr., 4,128,158, Cl. 194-100.00A.

- Coldren, Kenneth M., to M & W Gear Company. Rocking bolster utilizing shock absorbers. 4,128,255, Cl. 280-143.000.
- Coldren, Larry A.; and Lemons, Ross A., to Bell Telephone Laboratories, Incorporated. Micropositioners using a crystal having moveable domain walls. 4,128,616, Cl. 310-328.000.
- Cole, Herbert S., Jr.; and Stein, Charles R., to General Electric Company. Liquid crystal display with dark characters on light background. 4,128,313, Cl. 350-340.000.
- Cole, Herbert S., Jr.; and Aftergut, Siegfried, to General Electric Company. Dichroic liquid crystal compositions. 4,128,496, Cl. 252-299.000.
- Cole, Herbert S., Jr.; and Aftergut, Siegfried, to General Electric Company. Dichroic liquid crystal compositions. 4,128,497, Cl. 252-299.000.
- Cole, William M.: *See—*
  - Fieldhouse, John W.; Graves, Daniel F.; Cole, William M.; Stayer, Mark L.; and Fenske, Steven L., 4,128,710, Cl. 528-168.000.
- Coleman, Clyde F.: *See—*
  - Allen, James A.; and Coleman, Clyde F., 4,128,247, Cl. 274-23.00R.
- Coleman, Donald F.; and Rhodes, Sammy J., to Caterpillar Tractor Co. Travel alarm system. 4,128,827, Cl. 340-52.00R.
- Colgate-Palmolive Company: *See—*
  - Bauman, Robert A.; and Kaeser, James A., 4,128,485, Cl. 252-8.800.
- Collins, Melvin. Emergency bumper and bike rack. 4,128,195, Cl. 224-42.03B.
- Colt Industries Operating Corp.: *See—*
  - Herman, Ronald E., 4,128,088, Cl. 123-119.0EC.
- Columbia Ribbon and Carbon Manufacturing Co., Inc.: *See—*
  - Newman, Douglas A.; and Emerson, Robert T., 4,128,430, Cl. 106-31.000.
- Colwell, David J., to Keep View Ltd. Waterbeds. 4,127,908, Cl. 5-370.000.
- Combustion Engineering, Inc.: *See—*
  - Palmer, David N.; and Davison, John E., 4,128,486, Cl. 252-25.000.
- Combustion Unlimited Incorporated: *See—*
  - Straitz, John F., III, 4,128,389, Cl. 431-202.000.
  - Straitz, John F., III, 4,128,734, Cl. 136-232.000.
- Communications Technology Corporation: *See—*
  - Bernstein, Albert, 4,128,739, Cl. 179-1.0PC.
- Compagnie Internationale pour l'Informatique Cii Honeywell Bull: *See—*
  - Vinot, Daniel, 4,128,899, Cl. 365-49.000.
- Composite Container Corporation: *See—*
  - Bonis, Laszlo J., 4,128,381, Cl. 425-468.000.
- Compton, Marshall F. Concrete control joint. 4,128,358, Cl. 404-47.000.
- Compur-Electronic Gesellschaft mit beschrankter Haftung: *See—*
  - Muhlbock, Franz; Karpaty, Akos; and Pross, Wilhelm, 4,128,400, Cl. 422-101.000.
- Computer Technology Limited: *See—*
  - Barron, Iann M.; and Wheeler, David J., 4,128,201, Cl. 235-304.000.
- Conibear, Frank, to Woodstream Corporation. Trigger for rotating frame traps. 4,127,960, Cl. 43-92.000.
- Continental Can Company, Inc.: *See—*
  - Saumsiegle, Robert W.; and Harry, Ieuan L., 4,128,374, Cl. 425-403.000.
- Continental Oil Company: *See—*
  - Frohreich, Richard A.; and Scamehorn, John F., 4,128,405, Cl. 55-59.000.
- Continental-Wirt Electronics Corporation: *See—*
  - Marsilio, Dominic O.; and O'Bryan, Edwin J., 4,128,745, Cl. 200-16.00C.
- Cook, Jack E., Sr. Automatic levelling and locking ladder. 4,128,139, Cl. 182-202.000.
- Cooper, Charles R., Jr.; Ellis, Charles K.; and Starcher, David. Self-propelled concrete vibrator apparatus. 4,128,359, Cl. 404-72.000.
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- Cormier, Arthur J.: *See—*
  - Parker, Bill B.; Beynand, Rudy; and Cormier, Arthur J., 4,128,108, Cl. 137-327.000.
- Corning Glass Works: *See—*
  - Eldred, Emmet W.; and Schoemaker, Hubert J. P., 4,128,629, Cl. 424-1.000.
  - Simpson, William M., 4,128,697, Cl. 428-433.000.
- Cory Food Services, Inc.: *See—*
  - Petry, Stanton H., 4,128,050, Cl. 99-304.000.
- Coryell, Stanley W., to Classic Chemical. Throw-away can with integral closure and pull-up spout. 4,128,192, Cl. 222-525.000.
- Cottman, Kirkwood S., to Goodyear Tire & Rubber Company, The. Mercapto phenolic and alkylthio phenolic antioxidants. 4,128,530, Cl. 260-45.95C.
- Coyer, Howard F.: *See—*
  - Naylor, Robert; and Coyer, Howard F., 4,128,637, Cl. 424-95.000.
- Coyne, Michael F.: *See—*
  - Chapel, James F., 4,128,407, Cl. 55-259.000.
- Cragoe, Edward J., Jr.; Bicking, John B.; and Smith, Robert L., to Merck & Co., Inc. 9-Thia- and oxothia- and 9-dioxothia-11,12-seco-prostaglandins. 4,128,564, Cl. 260-401.000.
- Cram, Donald J., to University of California, The Regents of the. Certain multioxymacrocycle compounds containing pyridyl as part of the macrocycle. 4,128,556, Cl. 546-26.000.
- Cramer, Hugo: *See—*
  - Braun, Dieter; and Cramer, Hugo, 4,127,982, Cl. 57-294.000.
- Cray Research, Inc.: *See—*
  - Cray, Seymour R., Jr., 4,128,880, Cl. 364-200.000.
- Cray, Seymour R., Jr., to Cray Research, Inc. Computer vector register processing. 4,128,880, Cl. 364-200.000.
- Creixell, Francisco B.: *See—*
  - Nothen, Karl; Creixell, Francisco B.; and Ehrig, Bodo, 4,127,945, Cl. 34-18.000.
- Croon & Lucke Maschinenfabrik GmbH & Co. KG: *See—*
  - Lucke, Florian, 4,127,978, Cl. 53-585.000.
- Crowley, Richard P.: *See—*
  - Underwood, Robert H., 4,128,215, Cl. 242-118.610.
- Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
  - Di Vita, Pietro, 4,128,302, Cl. 350-96.180.
- Cucksee, Marjorie T.; and Allen, Henry C., to United States of America, Army. Solubility of NPGA in a polyurethane binder. 4,128,441, Cl. 149-19.920.
- Cuneo, Joseph V.: *See—*
  - Ramos, Edward; and Cuneo, Joseph V., 4,128,836, Cl. 343-7.0PF.
- Cupp, Charles D.; Matthies, Bruce J.; and Wood, Frederick J., Jr., to Shur-Line Manufacturing Co., Inc. Applicator with multi-positional handle. 4,127,911, Cl. 15-210.00R.
- Curran, Roger J., to Bangor Punta Operations, Inc. Extractor assembly for rimless cartridges. 4,127,955, Cl. 42-68.000.
- Cushman, David W.; and Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Reduction of blood pressure with carboxyalkylacyl-pipecolic acid derivatives. 4,128,653, Cl. 424-267.000.
- Cuthbert, Victor W.: *See—*
  - Brenner, Robert A.; Cuthbert, Victor W.; and Braga, Albert T., 4,128,210, Cl. 241-46.00R.
- D'Agostini, Candido: *See—*
  - Barba, Diego; D'Agostini, Candido; and Pasquinelli, Aldo, 4,128,457, Cl. 203-29.000.
- Dai Nippon Toryo Co., Ltd.: *See—*
  - Hase, Takashi; Yoshikawa, Masatake; and Takanashi, Haruyuki, 4,128,498, Cl. 252-301.40F.
- Daiko Iryoki Seisakusho Co., Ltd.: *See—*
  - Murata, Hiroshi, 4,128,797, Cl. 318-666.000.
- Daiwa Kasei Kenkyujo Kabushiki Kaisha: *See—*
  - Nishimura, Hideo; Masaki, Seishi; Miyauchi, Takao; and Kobayashi, Nariyoshi, 4,128,460, Cl. 204-35.00N.
- Dalessio, Frederick F.: *See—*
  - Johnson, Eugene C.; and Dalessio, Frederick F., 4,128,893, Cl. 364-900.000.
- Damen, Theodoor C.: *See—*
  - Chang, Tao-Yuan; Damen, Theodoor C.; and Nguyen, Van-Tran, 4,128,772, Cl. 307-88.300.
- Dana Corporation: *See—*
  - Sink, William H., 4,128,045, Cl. 91-217.000.
- Danfoss A/S: *See—*
  - Basse, Tage S., 4,128,747, Cl. 200-67.00D.
- Data General Corporation: *See—*
  - Doerre, George W., 4,128,866, Cl. 363-15.000.
- Daude-Lagrave, Marie-Christine: *See—*
  - Schirmann, Jean-Pierre; Dubreux, Bernard; Bakes, Michel; Delavarenne, Serge-Yvon; and Daude-Lagrave, Marie-Christine, 4,128,494, Cl. 252-186.000.
- Daunheimer, Lyn R., to Masonite Corporation. Apparatus for decorating embossed panels. 4,128,076, Cl. 118-70.000.
- Dautremont, Joseph L., Jr., to Coin Cop Co. Precision coin analyzer for numismatic application. 4,128,158, Cl. 194-100.00A.
- D'Autry, Eric Marteau. Adjustable diluting device. 4,128,009, Cl. 73-425.600.
- Davis, James A., to Bell Telephone Laboratories, Incorporated. Rugged crosspoints for communication systems. 4,128,742, Cl. 179-18.0GF.
- Davison, John E.: *See—*
  - Palmer, David N.; and Davison, John E., 4,128,486, Cl. 252-25.000.
- Dawidowitsch, Peter: *See—*
  - Geyken, Erwin; and Dawidowitsch, Peter, 4,128,424, Cl. 96-63.000.
- Deal, Douglas O.; and Morley, Robert C., to Sam Stein Associates, Inc. Leak free housing for vertical screw conveyor. 4,128,160, Cl. 198-657.000.
- de Courten, Alfred: *See—*
  - Schulthess, Adrian; and de Courten, Alfred, 4,128,661, Cl. 424-316.000.
- Deere & Company: *See—*
  - Bucher, David H.; and Meinert, Harry M., 4,128,131, Cl. 172-311.000.
  - Green, Robert V.; Wiley, Jack C.; and Arnold, Loren G., 4,128,130, Cl. 172-266.000.
- Deffeyes, Kenneth S.: *See—*
  - Ghiringhelli, Hugh A.; and Deffeyes, Kenneth S., 4,128,462, Cl. 204-109.000.
- Degen, Bruno: *See—*
  - Buchner, Werner; Degen, Bruno; Fries, Ludwig; Helmut, Judat; Mundil, Rudolf; and Rudolph, Karl-Heinz, 4,128,568, Cl. 260-448.20E.
- DeGuire, Marcel F.; and Wirag, John H., III, to Newmont Exploration Limited. Treatment of zinc calcines for zinc recovery. 4,128,617, Cl. 423-106.000.
- Dehnert, Johannes; and Lamm, Gunther, to BASF Aktiengesellschaft. Azo dyes with 2,6-diamino-pyridine coupling component. 4,128,545, Cl. 260-156.000.

- Deibel, Raymond A.; Gowans, Neil A.; and Riester, William C., to Trico Products Corporation. Wiper blade. 4,127,912, Cl. 15-250.420.
- Deigner, Paul: *See—*
  - Wunsch, Gerd; Deigner, Paul; Falk, Roland; Mahler, Karl; Loeser, Werner; Domas, Friedrich; Felleisen, Peter; and Steck, Werner, 4,128,672, Cl. 427-130.000.
- Deiner, Hans: *See—*
  - Rossler, Erich; Deiner, Hans; Sandner, Bernhard; and Schilling, Hans, 4,128,675, Cl. 427-390.00E.
- Deknatel Inc.: *See—*
  - Kurtz, Leonard D.; and Ludwig, Philip, 4,128,351, Cl. 128-305.000.
- Delapp, Darwin F.: *See—*
  - Goebel, James C.; Delapp, Darwin F.; and Bunkowski, Kenneth D., 4,128,696, Cl. 428-424.000.
- Delavan Corporation: *See—*
  - Bintner, Dennis W., 4,128,206, Cl. 239-11.000.
- Delavarenne, Serge-Yvon: *See—*
  - Schirmann, Jean-Pierre; Dubreux, Bernard; Bakes, Michel; Delavarenne, Serge-Yvon; and Daude-Lagrave, Marie-Christine, 4,128,494, Cl. 252-186.000.
- Del Bon, Luigi. Fountain brush. 4,128,349, Cl. 401-151.000.
- Del Signore, James R., II, to NCR Corporation. Ambient light compensating circuit. 4,128,760, Cl. 250-214.00B.
- deMauriac, Richard A.: *See—*
  - Knight, Phillip D.; deMauriac, Richard A.; and Graham, Patricia A., 4,128,557, Cl. 260-299.000.
- Denka Chemical Corporation: *See—*
  - Fitzgerald, Kenneth D., 4,128,514, Cl. 260-17.00A.
- Dennis, Jack B., to Massachusetts Institute of Technology. Packet memory system with hierarchical structure. 4,128,882, Cl. 364-200.000.
- Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. 4H-pyrazolo[1,5-a]pyrazolo[4',3':5,6]pyrido[3,4-e]pyrimidin-5(8H)one and derivatives thereof. 4,128,645, Cl. 424-251.000.
- DePenti, Kenneth L.; and Metzger, William J., to Midland-Ross Corporation. Rotary type railway car coupler. 4,128,178, Cl. 213-62.00A.
- Deuterium Corporation: *See—*
  - Spevack, Jerome S., 4,128,406, Cl. 55-237.000.
- Deutsche Gold- und Silber- Scheideanstalt vormals Roessler: *See—*
  - Wolff, Siegfried; and Rothbuhr, Lothar, 4,128,438, Cl. 106-307.000.
- Dexter, Martin: *See—*
  - Schmidt, Andreas; Peterson, Janet B.; and Dexter, Martin, 4,128,718, Cl. 548-313.000.
- Dhami, Kewal S.; Bennett, Elmer W.; and Burton, Pearl, to International Telephone and Telegraph Corporation. Wire coated with fluorocarbon blend. 4,128,693, Cl. 428-379.000.
- Dhein, Rolf: *See—*
  - Eimers, Erich; Dhein, Rolf; and Wiedermann, Rolf, 4,128,532, Cl. 528-79.000.
- Diamond Shamrock Corporation: *See—*
  - Alpert, Mel, 4,128,398, Cl. 8-127.600.
  - Magee, Thomas A., 4,128,581, Cl. 260-566.0AC.
  - Sieglaff, Charles L.; Hora, Charles J.; and Tiefenbach, Joseph P., 4,128,318, Cl. 351-160.00R.
- Dillard, George M.: *See—*
  - Hunt, Barry R.; Dillard, George M.; and Taylor, Henry F., 4,128,759, Cl. 250-199.000.
- Di Meo, Lino: *See—*
  - Lore, Nicola; and Di Meo, Lino, 4,128,285, Cl. 312-196.000.
- Di Vita, Pietro, to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A. Ray-path equalizer for signal transmission via multimode optical waveguides. 4,128,302, Cl. 350-96.180.
- Dobson, Thomas A.: *See—*
  - Asselin, Andre A.; Humber, Leslie G.; and Dobson, Thomas A., 4,128,560, Cl. 260-315.000.
- Dr. Boy KG: *See—*
  - Jamann, Helmut, 4,128,380, Cl. 425-450.100.
- Doerre, George W., to Data General Corporation. Power supply with current foldback. 4,128,866, Cl. 363-15.000.
- Dohmeier, Hans O., to Dome Inventions (Proprietary) Limited. Method for embedding tire chains in the tread portion of a tire. 4,128,446, Cl. 156-114.000.
- Dolak, Lester A.: *See—*
  - Sebek, Oldrich K.; and Dolak, Lester A., 4,128,563, Cl. 260-343.450.
- Domas, Friedrich: *See—*
  - Wunsch, Gerd; Deigner, Paul; Falk, Roland; Mahler, Karl; Loeser, Werner; Domas, Friedrich; Felleisen, Peter; and Steck, Werner, 4,128,672, Cl. 427-130.000.
- Dome Inventions (Proprietary) Limited: *See—*
  - Dohmeier, Hans O., 4,128,446, Cl. 156-114.000.
- Domenico, Robert J., to Palyn Associates, Inc. Digitally controlled power system. 4,128,771, Cl. 307-52.000.
- Domoto, Masahiro: *See—*
  - Oyamada, Takeo; Tomizawa, Choji; Domoto, Masahiro; and Narisawa, Shizuo, 4,128,518, Cl. 260-29.6WB.
- Doppen, Glen M.: *See—*
  - Burness, Arnold M.; Ling, Hans G.; and Doppen, Glen M., 4,128,538, Cl. 260-884.000.
- Dorais, Mark V., to Federal Screw Works. Voice synthesizer. 4,128,737, Cl. 179-1.0SM.
- Dorkel, Jean: *See—*
  - Gansert, Willi; Bergfried, Dietrich; Heinrich, Gert; Schnepf, Dietmar; Slansky, Harry; Pfluger, Eberhard; and Dorkel, Jean, 4,128,802, Cl. 322-28.000.
- Dorst-Keramikmaschinen-Bau Otto Dorst u. Dipl.-Ing. Walter Schlegel: *See—*
  - Schubart, Rolf E. R., 4,128,375, Cl. 425-405.00H.
- Dow Chemical Co., The: *See—*
  - McKendry, Lennon H., 4,128,551, Cl. 546-293.000.
  - McKendry, Lennon H., 4,128,553, Cl. 546-293.000.
- Dresser Industries, Inc.: *See—*
  - Golwas, Robert F.; and Feuerstein, Herman G., 4,128,361, Cl. 408-137.000.
  - Shepherd, Wilburn O.; and Gaslow, Jonathon C., 4,128,362, Cl. 415-112.000.
- Dressler, Goldsmith, Clements, Gordon & Shore, Ltd.: *See—*
  - Marsh, Harold G.; and Pierret, James A., 4,128,421, Cl. 75-251.000.
- Dubreucq, Jean-Claude: *See—*
  - Lejeune, Gerard; and Dubreucq, Jean-Claude, 4,128,806, Cl. 324-54.000.
- Dubreux, Bernard: *See—*
  - Schirmann, Jean-Pierre; Dubreux, Bernard; Bakes, Michel; Delavarenne, Serge-Yvon; and Daude-Lagrave, Marie-Christine, 4,128,494, Cl. 252-186.000.
- Duclos, Clovis R. Alignment device for golf clubs. 4,128,244, Cl. 273-164.000.
- Du Corday, Gerard M. Magazine cover. 4,128,262, Cl. 281-34.000.
- Duke, Jack R.; Shah, Niranjan S.; and Woolf, William C., to NCR Corporation. Shared busy means in a common bus environment. 4,128,883, Cl. 364-200.000.
- Du Pont de Nemours, E. I., and Company: *See—*
  - Anolick, Colin, 4,128,698, Cl. 428-480.000.
  - Baker, Melvin C., 4,128,535, Cl. 528-272.000.
  - Fugitt, Robert B.; and Luckenbaugh, Raymond W., 4,128,654, Cl. 424-272.000.
  - Loos, Karl D., II; McCullough, Kenneth C.; and Whitworth, Don Q., 4,128,622, Cl. 423-376.000.
- Dura Corporation: *See—*
  - Leaf, Ronn J., 4,128,355, Cl. 403-222.000.
- Dyer, Paul N.; and Moseley, Fred, to Air Products and Chemicals, Inc. Synthesis of hydrogen peroxide. 4,128,627, Cl. 423-584.000.
- Dynamit Nobel Aktiengesellschaft: *See—*
  - Gawlick, Heinz; and Homburg, Axel, 4,128,060, Cl. 102-92.700.
  - Vollkommer, Norbert; Petersen, Egon N.; Klinkenberg, Herbert; and Schmidt, Werner, 4,128,709, Cl. 526-218.000.
  - Wissinger, Waldemar; and Webermeier, Kurt, 4,128,386, Cl. 425-462.000.
- Dzugutov, Mikhail Y.: *See—*
  - Terekhov, Kuzma I.; Tumanov, Alexei T.; Ozerova, Alexandra P.; Topilin, Valentin V.; Dzugutov, Mikhail Y.; Ljubinskaya, Mara A.; Pashchnik, Gennady A.; Nikishov, Alexandr S.; and Ustinov, Terenty I., 4,128,419, Cl. 75-171.000.
- E. R. Squibb & Sons, Inc.: *See—*
  - Breuer, Hermann; and Treuner, Uwe D., 4,128,723, Cl. 544-25.000.
  - Breuer, Hermann; and Treuner, Uwe D., 4,128,724, Cl. 544-30.000.
  - Cushman, David W.; and Ondetti, Miguel A., 4,128,653, Cl. 424-267.000.
  - Denzel, Theodor; and Hoehn, Hans, 4,128,645, Cl. 424-251.000.
  - Hoehn, Hans; Bernstein, Jack; and Vogt, B. Richard, 4,128,717, Cl. 544-361.000.
  - Ondetti, Miguel A., 4,128,721, Cl. 560-16.000.
  - Rovnyak, George C., 4,128,647, Cl. 424-251.000.
  - Rovnyak, George C., 4,128,648, Cl. 424-251.000.
  - Treuner, Uwe D., 4,128,716, Cl. 544-346.000.
  - Vogt, B. Richard, 4,128,644, Cl. 424-251.000.
- Eastman Kodak Company: *See—*
  - Burness, Arnold M.; Ling, Hans G.; and Doppen, Glen M., 4,128,538, Cl. 260-884.000.
  - Fletcher, George L.; Wadsworth, Donald H.; and Jones, Jean E., 4,128,422, Cl. 96-48.0HD.
  - Knight, Phillip D.; deMauriac, Richard A.; and Graham, Patricia A., 4,128,557, Cl. 260-299.000.
  - Pond, David M.; and Wang, Richard H., 4,128,559, Cl. 260-308.00B.
- Eaton Corporation: *See—*
  - Larson, Gerald L.; Treadwell, William A.; and Seaver, James, 4,128,044, Cl. 91-20.000.
  - Maltby, Edgar W., 4,128,203, Cl. 236-100.000.
- Eckert, Lewis W.: *See—*
  - Barnett, David L.; Christie, Peter A.; and Eckert, Lewis W., 4,128,524, Cl. 260-39.00R.
- Eckstein, Yona: *See—*
  - Reisfeld, Renata; Eckstein, Yona; and Boehm, Leah, 4,128,411, Cl. 65-18.000.
- Ede, Douglas F. C., to Bondgrade Limited. Tooling jig. 4,128,118, Cl. 144-134.00D.
- Edelman, Robert: *See—*
  - Thomas, Norman W.; Berardinelli, Frank M.; and Edelman, Robert, 4,128,599, Cl. 260-857.00R.
- Ehrig, Bodo: *See—*
  - Nothen, Karl; Creixell, Francisco B.; and Ehrig, Bodo, 4,127,945, Cl. 34-18.000.
- Eimers, Erich; Dhein, Rolf; and Wiedermann, Rolf, to Bayer Aktiengesellschaft. Polyetheresters which contain hydroxyl groups and the use thereof in the production of flame resistant synthetic resins. 4,128,532, Cl. 528-79.000.

Elam, Richard C., to Gulf & Western Industries, Inc. Method and maskant composition for preventing the deposition of a coating on a substrate. 4,128,522, Cl. 260-32.80R.

Eldred, Emmet W.; and Schoemaker, Hubert J. P., to Corning Glass Works. Extraction-free cortisol assay. 4,128,629, Cl. 424-1.000.

Elfab Corporation: *See—*
Ammon, John P., 4,127,935, Cl. 29-629.000.

Elkins, Vance V., Jr., to Pratt-Read Corporation. Correlated set of golf clubs. 4,128,242, Cl. 273-77.00A.

Elliott, Charles. Combination tackle box, bait holder, cooler and seat means. 4,128,170, Cl. 206-315.00R.

Ellis, Charles K.: *See—*
Cooper, Charles R., Jr.; Ellis, Charles K.; and Starcher, David, 4,128,359, Cl. 404-72.000.

Elliston, Thomas L., to Hydra-Rig, Inc. Hoist apparatus with dual mast structure and compound power transmission system. 4,128,229, Cl. 254-139.000.

Emeott, Marvin: *See—*
Skinner, Earl; Emeott, Marvin; and Jevne, Allan, 4,128,600, Cl. 260-859.00R.

Emerson, Robert T.: *See—*
Newman, Douglas A.; and Emerson, Robert T., 4,128,430, Cl. 106-31.000.

Enatsu, Shachio, to Bristoline Inc. Fine-adjusting arrangement for a sphygmomanometer. 4,128,014, Cl. 73-729.000.

Engelhard Minerals & Chemicals Corporation: *See—*
Carr, William C.; Polinski, Leon M.; Hindin, Saul G.; and Kosco, James L., 4,128,591, Cl. 260-668.00A.

England, John M., to National Research Development Corporation. Methods and apparatus for analyzing frequency distributions. 4,128,884, Cl. 364-416.000.

English, George J.: *See—*
Levin, Robert E.; and English, George J., 4,128,333, Cl. 355-67.000.

Englund, Arvid E., Jr., to General Electric Company. Frequency indicating circuit. 4,128,811, Cl. 328-134.000.

Ennis, Robert E., to Linatex Corporation of America. Process for cleaning and dewatering fine coal. 4,128,474, Cl. 209-2.000.

Erickson, Norman; and Meier, James. Keyboard assembly. 4,128,035, Cl. 84-433.000.

Ermolovich, Eduard S.; and Olshvang, Mikhail V. Phase control arrangement of valve converter. 4,128,869, Cl. 363-87.000.

Ernest, Robert T., to National Steel Corporation. Method of removing excess liquid coating from web edges in liquid coating thickness control. 4,128,668, Cl. 427-349.000.

Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; Brandenstein, Manfred; and Schulz, Toni, to SKF Kugellagerfabriken GmbH. Linear motion ball bearings. 4,128,279, Cl. 308-6.00C.

Errede, Louis A.; and Sinclair, Robert A., to Minnesota Mining and Manufacturing Company. Sorbent foam material. 4,128,513, Cl. 521-50.000.

Erst, Frederick S.: *See—*
Bukowski, Raymond J.; and Erst, Frederick S., 4,128,758, Cl. 235-433.000.

Erwin Sick GmbH Optik-Elektronik: *See—*
Schreyer, Heinz B., 4,128,481, Cl. 250-202.000.

Erygin, Evgeny N.: *See—*
Ischenko, Vitaly G.; Shvetsov, Vladimir A.; Erygin, Evgeny N.; and Girshik, Roman L., 4,128,197, Cl. 225-97.000.

Eshelman, Donald M.: *See—*
Robinson, Victor S.; and Eshelman, Donald M., 4,128,619, Cl. 423-244.000.

Esper, Friedrich J.; and Zeller, Robert, to Robert Bosch GmbH. High-strength iron-molybdenum-nickel-phosphorus containing sintered alloy. 4,128,420, Cl. 75-230.000.

Esselborn, Reiner: *See—*
Baumer, Wilhelm; Bernhard, Horst; Esselborn, Reiner; Ohngemach, Jorg; Stahlecker, Otto; and Zureda, Fritz, 4,128,435, Cl. 106-148.000.

Etablissements Rene Guichard: *See—*
Guichard, Claude, 4,128,224, Cl. 248-316.00A.

Ethyl Corporation: *See—*
Governale, Luke J.; and Wollensak, John C., 4,128,582, Cl. 260-578.000.

Eue, Ludwig: *See—*
Metzger, Carl; Eue, Ludwig; and Hack, Helmuth, 4,128,412, Cl. 71-90.000.

Euler, John W., to Lambert Brake Corporation. Combination failsafe brake and one-way clutch. 4,128,145, Cl. 188-71.200.

Euverard, Maynard R., to Velten & Pulver, Inc. Chain conveyor assembly. 4,128,165, Cl. 198-844.000.

Evans, Mark, to Kidde Consumer Durables Corp. Packaged light fixture. 4,128,171, Cl. 206-320.000.

Exxon Production Research Company: *See—*
Kaigler, Noyle B., Jr., deceased; Kaigler, Mary A., executrix; Hochstein, Spence L.; and Maple, James A., 4,128,219, Cl. 248-55.000.

Exxon Research & Engineering Co.: *See—*
Wiener, Charles; and Tyler, William E., III, 4,128,583, Cl. 260-584.00C.

Eysn, Manfred; and Moser, Hans, to Vereinigte Osterreichische Eisen- und Stahlwerke — Alpine Montan Aktiengesellschaft. Converter-bottom-fastening mechanism. 4,128,233, Cl. 266-243.000.

Fabel, David A.; Snelgrove, James A.; and Fariss, Robert H., to Monsanto Company. Laminates comprising a plasticized interlayer. 4,128,694, Cl. 428-412.000.

Fabre, Jean-Louis; Farge, Daniel; and James, Claude, to Rhone-Poulenc Industries. Dibenzo[de, h]quinoline derivatives. 4,128,650, Cl. 424-258.000.

Fairchild Camera and Instrument Corporation: *See—*
Vasa, Suresh L., 4,128,892, Cl. 364-900.000.

Fairley, John; Krickl, Josef; and Weber, Robert, to Kienzle Apparate GmbH. Apparatus for automatic reading and evaluation of graphs on trip recorder disks, and the like. 4,128,755, Cl. 235-92.00T.

Falk, Roland: *See—*
Wunsch, Gerd; Deigner, Paul; Falk, Roland; Mahler, Karl; Loeser, Werner; Domas, Friedrich; Felleisen, Peter; and Steck, Werner, 4,128,672, Cl. 427-130.000.

Farge, Daniel: *See—*
Fabre, Jean-Louis; Farge, Daniel; and James, Claude, 4,128,650, Cl. 424-258.000.

Fariss, Robert H.: *See—*
Fabel, David A.; Snelgrove, James A.; and Fariss, Robert H., 4,128,694, Cl. 428-412.000.

Faserwerke Huls Gesellschaft mit beschrankter Haftung: *See—*
Kohler, Armin; Pelousek, Herbert; Ohse, Helmut; Westermann, Hans; and Magosch, Karl-Heinz, 4,128,533, Cl. 528-279.000.
Kohler, Armin; Pelousek, Herbert; Ohse, Helmut; Westermann, Hans; and Magosch, Karl-Heinz, 4,128,534, Cl. 528-279.000.

Fauth, Gunter: *See—*
Wick, Richard; Stemme, Otto; Lermann, Peter; and Fauth, Gunter, 4,128,323, Cl. 354-86.000.

Federal Paper Board Company, Inc.: *See—*
Arneson, Edwin L., 4,128,169, Cl. 206-141.000.

Federal Screw Works: *See—*
Dorais, Mark V., 4,128,737, Cl. 179-1.0SM.

Felder, Donald W. Brush and ring distributor. 4,128,746, Cl. 200-24.000.

Felleisen, Peter: *See—*
Wunsch, Gerd; Deigner, Paul; Falk, Roland; Mahler, Karl; Loeser, Werner; Domas, Friedrich; Felleisen, Peter; and Steck, Werner, 4,128,672, Cl. 427-130.000.

Felten & Guilleaume Kabelwerke GmbH: *See—*
Braun, Dieter; and Cramer, Hugo, 4,127,982, Cl. 57-294.000.

Fender, Ferdinand G.; and Tegethoff, Jon E., to Ni-Tec, Inc. Portable test apparatus for low light level devices. 4,128,340, Cl. 356-218.000.

Fenske, Steven L.: *See—*
Fieldhouse, John W.; Graves, Daniel F.; Cole, William M.; Stayer, Mark L.; and Fenske, Steven L., 4,128,710, Cl. 528-168.000.

Fenster, Abraham S.; and Salloga, Fred W., to United States Pipe and Foundry Company. Hydrant valve connection. 4,128,265, Cl. 285-305.000.

Fergg, Berthold; Hujer, Friedrich; and Zahn, Wolfgang, to Agfa-Gevaert AG. Evaluation and copying of originals arranged in a strip. 4,128,330, Cl. 355-32.000.

Ferguson, Hugo S. Crossflow mower with automatic brake/sharpener. 4,127,980, Cl. 56-11.300.

Ferris, William G.: *See—*
Brussee, Warren T.; and Ferris, William G., 4,128,864, Cl. 362-306.000.

Ferro, Armand P.; and Walker, Loren H., to General Electric Company. Core configuration for induction ionized lamps. 4,128,785, Cl. 315-57.000.

Festo-Maschinenfabrik Gottlieb Stoll: *See—*
Maier, Fred, 4,128,119, Cl. 144-317.000.

Feuerstein, Herman G.: *See—*
Golwas, Robert F.; and Feuerstein, Herman G., 4,128,361, Cl. 408-137.000.

Fiberglas Canada Limited: *See—*
Metcalfe, Paul E.; Rollo, Randall W.; and Stagg, Malcolm J., 4,128,678, Cl. 428-119.000.

Fieldhouse, John W.; Graves, Daniel F.; Cole, William M.; Stayer, Mark L.; and Fenske, Steven L., to Firestone Tire & Rubber Company, The. Process for the production of phosphazene polymers. 4,128,710, Cl. 528-168.000.

Fikentscher, Rolf: *See—*
Streit, Werner; Fikentscher, Rolf; Gans, Karl; and Welzel, Gerhard, 4,128,511, Cl. 528-424.000.

Finlayson, Thomas J., to Allis-Chalmers Corporation. Straddle-type lift truck with a apparatus for handling loads at the front and sides thereof. 4,128,183, Cl. 214-730.000.

Finley, Joseph H.; and Blumbergs, John H., to FMC Corporation. Phenyl sulfonate esters as peroxygen activators. 4,128,490, Cl. 252-95.000.

Firestone Tire & Rubber Company, The: *See—*
Fieldhouse, John W.; Graves, Daniel F.; Cole, William M.; Stayer, Mark L.; and Fenske, Steven L., 4,128,710, Cl. 528-168.000.

Fischbach, Wolfgang, to Heinrich Baumgarten Eisen- und Blechwarenfabrik. Handle for a pot. 4,127,914, Cl. 16-110.00A.

Fischer, Frederic P., II, to Calspan Corporation. Method and apparatus for transmitting facsimiles over telephone lines. 4,128,850, Cl. 358-284.000.

Fischer, Konrad, to Licentia Patent-Verwaltungs-G.m.b.H. Method of ion etching Cd-Hg-Te semiconductors. 4,128,467, Cl. 204-192.00E.

Fischer, Paul H.: *See—*
Lin, Tai-Shun; Fischer, Paul H.; Prusoff, William H.; and Shiau, George T., 4,128,639, Cl. 424-180.000.

Fischer & Porter Co.: *See—*
Hyams, Irving; Koch, Harold S.; and Aafjes, Herman C., 4,128,024, Cl. 81-3.800.

Fischetti, Frank, Jr.: *See—*
Kulka, Kurt; Mild, Frank; and Fischetti, Frank, Jr., 4,128,101, Cl. 131-17.00R.

Fitzgerald, Kenneth D., to Denka Chemical Corporation. Stable polychloroprene latex. 4,128,514, Cl. 260-17.00A.

Flaten, James F., to Tobin-Arp Manufacturing Company. Method and apparatus for reconditioning cylinder heads. 4,127,942, Cl. 33-181.0AT.

Fleischer, Henry. Support frames adapted for use with car seats and beds. 4,127,907, Cl. 5-94.000.

Fletcher, George L.; Wadsworth, Donald H.; and Jones, Jean E., to Eastman Kodak Company. Cyclopropenone vesicular imaging composition, element and process. 4,128,422, Cl. 96-48.0HD.

Flisikowski, Peter; and Peemoller, Horst, to U.S. Philips Corporation. X-ray tube. 4,128,781, Cl. 313-60.000.

Flynn, Patrick F.: *See—*
Wise, Lawrence D.; Flynn, Patrick F.; and Morrison, Glenn C., 4,128,552, Cl. 546-294.000.

FMC Corporation: *See—*
Finley, Joseph H.; and Blumbergs, John H., 4,128,490, Cl. 252-95.000.

Foa, Marco: *See—*
Cassar, Luigi; and Foa, Marco, 4,128,572, Cl. 562-406.000.

Follett, John L. Automatic shut-off valve and method of operation thereof. 4,128,105, Cl. 137-1.000.

Formanik, Bert J., to TRW Inc. Method for stripping tungsten carbide from titanium or titanium alloy substrates. 4,128,463, Cl. 204-146.000.

Formax, Inc.: *See—*
Sandberg, Glenn A., 4,128,164, Cl. 198-813.000.

Formica Corporation: *See—*
Goebel, James C.; Delapp, Darwin F.; and Bunkowski, Kenneth D., 4,128,696, Cl. 428-424.000.

Formica International Limited: *See—*
Heaps, John M.; and Lu, Chisen, 4,128,689, Cl. 428-311.000.

Formica Limited: *See—*
King, Peter G., 4,128,284, Cl. 312-330.00R.

Forster, Siegfried; and Kleemann, Manfred, to Kernforschungsanlage Julich Gesellschaft m.beschrankter Haftung. Apparatus for support of sheet-metal-type heat exchanger matrices for recuperative heat exchange. 4,128,126, Cl. 165-165.000.

Foster, Richard C.: *See—*
Scott, John P.; Peters, Dudley C.; and Foster, Richard C., 4,128,800, Cl. 322-28.000.

Fotis, Peter: *See—*
Kildahl, Nicholas K.; and Fotis, Peter, 4,128,502, Cl. 252-431.00R.

Fraas, Lewis M.; Zanio, Kenneth R.; and Knechtli, Ronald C., to Hughes Aircraft Company. Multijunction gallium aluminum arsenide-gallium arsenide-germanium solar cell and process for fabricating same. 4,128,733, Cl. 136-89.0SJ.

Frank, Robert I.: *See—*
Kaplow, Roy; and Frank, Robert I., 4,128,732, Cl. 136-89.0PC.

Franks, Joseph. Ion beam machining techniques and apparatus. 4,128,765, Cl. 250-442.000.

Fransen, Jan J. B.; and Rimmelzwaan, Franciscus J., to U.S. Philips Corporation. Getter holder and electric discharge tube comprising such a holder. 4,128,782, Cl. 313-174.000.

Franzl, Gertrude K. Burglar-resistant door assembly. 4,127,967, Cl. 49-171.000.

Frase, Roland J.; Meitl, Harold G.; and McNaull, Tom M., to International Harvester Company. Collector for a pneumatic dispenser. 4,128,191, Cl. 222-167.000.

Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees, The Stoneleigh Trust: *See—*
Massa, Frank, 4,128,370, Cl. 425-128.000.

Frederiksen, Thomas M.; and Cecil, James B., to National Semiconductor Corporation. Voltage translator for interfacing TTL and CMOS circuits. 4,128,775, Cl. 307-264.000.

Frenz, Norbert W., Jr.: *See—*
Mead, Ralph T.; Greatbatch, Wilson; Rudolph, Frank W.; and Frenz, Norbert W., Jr., 4,128,703, Cl. 429-101.000.

Freund, Peter: *See—*
Angerer, Dieter; Freund, Peter; Hansel, Werner; and Wilhelm, Fritz, 4,128,453, Cl. 159-16.00S.

Frey, Frederick J., to InterRoyal Corporation. Tambour door and housing assembly. 4,128,120, Cl. 160-191.000.

Freze, Benjamin H., to Challenge-Cook Bros., Inc. Geyseric burner assembly and method for combusting fuels. 4,128,388, Cl. 431-116.000.

Fries, Ludwig: *See—*
Buchner, Werner; Degen, Bruno; Fries, Ludwig; Helmut, Judat; Mundil, Rudolf; and Rudolph, Karl-Heinz, 4,128,568, Cl. 260-448.20E.

Frisbie, Milo W.; and Swapp, Mavin C., to Motorola, Inc. High-speed integrated circuit handler. 4,128,174, Cl. 209-573.000.

Frisque, Alvin J.; and McDermott, Arthur R., to Nalco Chemical Company. Clay-polymer concentrates for beneficiating clays. 4,128,528, Cl. 260-42.550.

Fritsch, Thomas R.; and Anderson, Mark C., to UOP Inc. Production and recovery of para-cymene. 4,128,593, Cl. 260-674.00A.

Fritz Buser AG Maschinenfabrik: *See—*
Voegelin, Heinrich, 4,128,154, Cl. 192-67.00P.

Fritz Keiper KG, Firma: *See—*
Kluting, Bernd; and Voss, Hans W., 4,128,225, Cl. 248-421.000.

Fritzmeier AG: *See—*
Tschursch, Arnold, 4,128,152, Cl. 192-43.100.

Fritzsche Dodge & Olcott Inc.: *See—*
Kulka, Kurt; Mild, Frank; and Fischetti, Frank, Jr., 4,128,101, Cl. 131-17.00R.

Frohreich, Richard A.; and Scamehorn, John F., to Continental Oil Company. Incomplete drying of activated carbon in a process for VCM reduction in vapors. 4,128,405, Cl. 55-59.000.

Fuchs, Ernst E., to Mecafina S.A. Shearing devices. 4,128,027, Cl. 83-198.000.

Fugitt, Robert B.; and Luckenbaugh, Raymond W., to Du Pont de Nemours, E. I., and Company. 5-Halomethyl-3-phenyl-2-oxazolidinones. 4,128,654, Cl. 424-272.000.

Fuji Photo Film Co., Ltd.: *See—*
Hiratsuka, Nobuo; and Yaginuma, Nakatsugu, 4,128,470, Cl. 204-299.00R.
Idota, Yoshio, 4,128,464, Cl. 204-151.000.
Ikenoue, Shinpei; Masuda, Takao; Suzuki, Nobuo; Tanaka, Toshiharu; and Sashihara, Kenji, 4,128,428, Cl. 96-114.100.
Shirahata, Ryuji; Kitamoto, Tatsuji; and Suzuki, Masaaki, 4,128,691, Cl. 428-336.000.
Watanabe, Kenzi; and Fujiyama, Masaaki, 4,128,673, Cl. 427-130.000.

Fujikake, Kenji; Katagiri, Haruo; and Yamada, Katsuhito, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Axial flow fan. 4,128,363, Cl. 416-236.00A.

Fujisaki, atsumi: *See—*
Wada, Ryoichi; Fujisaki, atsumi; Nakajima, Masaya; Tsunoo, Masahiko; and Kimura, Takeji, 4,128,032, Cl. 84-1.010.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kurita, Masaru; Jomon, Kazuyoshi; Komori, Tadaaki; Nakatani, Isami; and Tsuji, Masahiro, 4,128,546, Cl. 260-239.00A.

Fujitsu Limited: *See—*
Tanaka, Akira; Hayashi, Yuji; Kassai, Makoto; and Hara, Toshito, 4,128,823, Cl. 335-196.000.

Fujiyama, Masaaki: *See—*
Watanabe, Kenzi; and Fujiyama, Masaaki, 4,128,673, Cl. 427-130.000.

Fukunaga, Hajime: *See—*
Kishida, Kazuo; Kobayashi, Jinpee; and Fukunaga, Hajime, 4,128,605, Cl. 260-876.00R.

Fukuyama, Yoshiya: *See—*
Ura, Shigeru; Kondo, Norio; Fukuyama, Yoshiya; and Nakahara, Makoto, 4,128,437, Cl. 106-287.240.

Fuller Company: *See—*
Tock, Wilfred H., 4,128,392, Cl. 432-58.000.

Funatsuki, Genuemon: *See—*
Ishida, Shiro; Funatsuki, Genuemon; Izaiku, Hiromi; and Hirano, Jiro, 4,128,483, Cl. 252-8.600.

Furukawa, Yoshitaka: *See—*
Kawaguchi, Hitoshi; and Furukawa, Yoshitaka, 4,128,815, Cl. 331-94.50H.

Furutachi, Kunio; Kato, Akifumi; Nakagawa, Mikio; Nakano, Masaru; Arita, Shunji; and Yamamoto, Aikich, to Mitsui Petrochemical Industries, Ltd. Impact-resistant chemically blended propylene polymer composition and process for preparation thereof. 4,128,606, Cl. 260-878.00B.

G. E. Schlup & Co.: *See—*
Schlup, Gustave E.; and Berger, Edwin, 4,127,936, Cl. 29-721.000.

Gaensbauer, Herbert A.: *See—*
Herzog, Gordon W.; and Gaensbauer, Herbert A., 4,128,792, Cl. 318-706.000.

Gaensslen, Fritz H., to International Business Machines Corporation. Fabrication method for integrated circuits with polysilicon lines having low sheet resistance. 4,128,670, Cl. 427-86.000.

GAF Corporation: *See—*
Barabas, Eugene S.; Klein, Andrew; and Alwani, Dru W., 4,128,520, Cl. 260-29.70W.
Brodsky, Lee; Lorenz, Donald H.; Nelsen, Suzanne B.; and Tu, Shu T., 4,128,536, Cl. 427-54.000.
Lorenz, Donald H.; and Williams, Earl P., 4,128,633, Cl. 424-80.000.

Gaiser, Dieter; Woellhaf, Josef; Schoettle, Klaus; Guenther, Friedrich; Kamm, Eugen; and Wendt, Erich, to BASF Aktiengesellschaft. Method of manufacturing and loading magnetic tape cassettes, particularly compact cassettes. 4,127,925, Cl. 29-430.000.

Gaither, Howard H.; and Casaleggi, Charles J., to Champion Laboratories, Inc. Sealing gasket for air filter. 4,128,251, Cl. 277-233.000.

Galbraith, Lyle D.: *See—*
Corey, Bernard S., 4,128,104, Cl. 135-3.00R.

Galinke, Joachim: *See—*
Hase, Brigitte; Galinke, Joachim; and Wegemund, Bernd, 4,128,634, Cl. 424-81.000.
Hase, Brigitte; Hase, Christian; Galinke, Joachim; and Wegemund, Bernd, 4,128,635, Cl. 424-81.000.
Hase, Brigitte; Galinke, Joachim; and Wegemund, Bernd, 4,128,636, Cl. 424-81.000.

Gallery, Thomas W. Compact transmission line loudspeaker system. 4,128,738, Cl. 179-1.00E.

Gamache, Robert J. Applicator attachment. 4,128,350, Cl. 401-208.000.

Gamble, Edward B., to RCA Corporation. D-C converter using pulsed resonant circuit. 4,128,868, Cl. 363-26.000.

Gane, Gordon R., to Kaiser Aluminum & Chemical Corporation. Easy open end. 4,128,186, Cl. 220-268.000.

Gans, Karl: *See—*
Streit, Werner; Fikentscher, Rolf; Gans, Karl; and Welzel, Gerhard, 4,128,511, Cl. 528-424.000.

Gansert, Willi; and Rittmannsberger, Norbert, to Robert Bosch GmbH. Voltage regulator structure for automotive-type generators. 4,128,801, Cl. 322-28.000.

Gansert, Willi; Bergfried, Dietrich; Heinrich, Gert; Schnepf, Dietmar; Slansky, Harry; Pfluger, Eberhard; and Dorkel, Jean, to Robert

Bosch GmbH. Solid state voltage regulated automotive-type electrical power supply system. 4,128,802, Cl. 322-28.000.

- Garcea, Giampaolo, to Alfa Romeo S.p.A. Automatic device for controlling the pressure of the intake air of an I.C. engine as its operating altitude varies. 4,128,086, Cl. 123-75.00D.
- Gardner-Denver Company: *See—*
  - Mitchhart, Ray M.; and Zingl, Hans, 4,128,135, Cl. 175-52.000.
- Gardner, Harry N., to Motorola, Inc. Recirculating memory with plural input-output taps. 4,128,879, Cl. 365-73.000.
- Garner, Dudley E., Jr. Customer initiated ordering system. 4,128,757, Cl. 235-383.000.
- Garnett, Kenneth J.: *See—*
  - Pohio, James N.; Richards, Douglas E.; Robertson, Angus A. J.; Williams, William; and Garnett, Kenneth J., 4,127,917, Cl. 17-21.000.
- Garrett Corporation, The: *See—*
  - Bona, Robert; and Kitaguchi, Sam S., 4,128,769, Cl. 290-52.000.
- Garriss, Daniel E.: *See—*
  - Garriss, John E.; and Garriss, Daniel E., 4,128,123, Cl. 165-1.000.
- Garriss, John E.; and Garriss, Daniel E. Passive heat-transport system. 4,128,123, Cl. 165-1.000.
- Gartner, Todd H.: *See—*
  - Valek, Robert J.; and Gartner, Todd H., 4,128,885, Cl. 364-424.000.
- Gaslow, Jonathon C.: *See—*
  - Shepherd, Wilburn O.; and Gaslow, Jonathon C., 4,128,362, Cl. 415-112.000.
- Gasser, Hermann, to Luwa AG. Apparatus for feeding a textile fiber band composed of staple fibers. 4,127,920, Cl. 19-236.000.
- Gawlick, Heinz; and Homburg, Axel, to Dynamit Nobel Aktiengesellschaft. Short-range projectile for practice ammunition. 4,128,060, Cl. 102-92.700.
- Gay, Danny; Horine, James; Hudson, James C.; Sallee, Joseph P.; and Wininger, Hershel R., to Irvin Industries, Inc. Support table for circular saw. 4,128,029, Cl. 83-437.000.
- Gay, Derek J.: *See—*
  - Goy Yu Chin, Manuel; and Gay, Derek J., 4,127,948, Cl. 35-60.000.
- Gebruder Junghans GmbH: *See—*
  - Kaiser, Hans, 4,128,061, Cl. 102-249.000.
- Gebrueder Buehler AG: *See—*
  - Mueller, Roman; and Kalapos, Josef, 4,128,052, Cl. 99-516.000.
- Geisen, Karl: *See—*
  - Merkel, Wulf; Alpermann, Hans G.; Geisen, Karl; Kothe, Norbert; and Ried, Walter, 4,128,643, Cl. 424-251.000.
- General Electric Company: *See—*
  - Baliga, Bantval J., 4,128,440, Cl. 148-171.000.
  - Bigelow, John E., 4,128,787, Cl. 315-169.0TV.
  - Borman, Willem F. H., 4,128,526, Cl. 260-40.00R.
  - Brussee, Warren T.; and Ferris, William G., 4,128,864, Cl. 362-306.000.
  - Castonguay, Roger N.; Jencks, Charles L.; and Turton, Robert C., 4,128,750, Cl. 200-308.000.
  - Cole, Herbert S., Jr.; and Stein, Charles R., 4,128,313, Cl. 350-340.000.
  - Cole, Herbert S., Jr.; and Aftergut, Siegfried, 4,128,496, Cl. 252-299.000.
  - Cole, Herbert S., Jr.; and Aftergut, Siegfried, 4,128,497, Cl. 252-299.000.
  - Englund, Arvid E., Jr., 4,128,811, Cl. 328-134.000.
  - Ferro, Armand P.; and Walker, Loren H., 4,128,785, Cl. 315-57.000.
  - Haberl, John B.; and Ozolins, Janis, 4,128,335, Cl. 356-37.000.
  - Irwin, John M.; and Schlereth, Fritz H., 4,128,890, Cl. 364-724.000.
  - Katchman, Arthur; and Lee, Gim F., Jr., 4,128,602, Cl. 260-876.00R.
  - Katchman, Arthur; and Lee, Gim F., Jr., 4,128,603, Cl. 260-876.00R.
  - Katchman, Arthur; and Lee, Gim F., Jr., 4,128,604, Cl. 260-876.00R.
  - Klopfer, Howard J.; and Campbell, John R., 4,128,731, Cl. 568-726.000.
  - Lafferty, James M., 4,128,748, Cl. 200-144.00B.
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  - Rose, Larry E.; and Lawrence, Norman F., 4,128,372, Cl. 425-311.000.
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  - Lundmark, Larry D.; Melby, Allan; and Chun, Ho-Ming, 4,128,631, Cl. 424-70.000.
  - MacKay, Kenneth D.; and Rogier, Edgar R., 4,128,493, Cl. 252-184.000.
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  - Hegedus, Louis; and Summers, Jack C., 4,128,506, Cl. 252-466.0PT.
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  - Britton, James E.; Metcalf, Fredric D.; Sommer, John G.; Kuan, Tiong H.; Rilling, Victor R.; and Welch, John A., 4,128,523, Cl. 260-33.6AQ.
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  - van der Drift, Johannes K.; Henniger, Peter W.; and van Veen, Gerard J., 4,128,547, Cl. 260-239.100.
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- Gladyshev, Georgy P.: *See—*
  - Shustova, Olga A.; Gladyshev, Georgy P.; Kondrashov, Eduard K.; and Shustov, Leonid D., 4,128,707, Cl. 526-43.000.
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  - Sharp, Christopher J., 4,128,715, Cl. 544-22.000.
- Glory Kogyo Kabushiki Kaisha: *See—*
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- Grabow, Ronald D., to Bunker Ramo Corporation. Packaging of pressure sensor cells. 4,128,006, Cl. 73-724.000.
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  - Knight, Phillip D.; deMauriac, Richard A.; and Graham, Patricia A., 4,128,557, Cl. 260-299.000.

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  - Paitula, Hannu O., 4,128,261, Cl. 280-744.000.
- Grant, Norman H.: *See—*
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- Grassl, Reinhold. Tool changer apparatus. 4,128,043, Cl. 90-11.00D.
- Gravel, Joseph A. M., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Laser micromachining apparatus. 4,128,752, Cl. 219-121.00L.
- Graves, Daniel F.: *See—*
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- Gray, Rodger. Reconditioning panel for the floors of pick-up truck cargo boxes and cargo vans. 4,128,271, Cl. 296-39.00R.
- Graziano, Victor, to Motorola, Inc. Antenna array for a cellular RF communications system. 4,128,740, Cl. 179-2.0EB.
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- Green, Robert V.; Wiley, Jack C.; and Arnold, Loren G., to Deere & Company. Tool support. 4,128,130, Cl. 172-266.000.
- Green, Talmage O., to Snap-on Tools Corporation. Measuring meter pointer assembly. 4,127,928, Cl. 29-453.000.
- Greenwald, Harry; and Larkin, Dennis J., to Walter Kidde & Company, Inc. Anti-slug mechanism for a coin operated device. 4,128,156, Cl. 194-61.000.
- Greenwald, Richard B., to Polaroid Corporation. Photographic developers. 4,128,425, Cl. 96-66.0HD.
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- Grenadier, Lewis. Solid molded paddle construction. 4,128,239, Cl. 273-67.00R.
- Greten, Ernst, to Bison-werke Bahre & Greten GmbH & Co. KG. Continuously operating rough or finishing press. 4,128,373, Cl. 425-371.000.
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- Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Transmission mechanisms for vehicles. 4,128,151, Cl. 192-4.00A.
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  - Wyant, Robert E.; and Grotta, Henry M., 4,128,429, Cl. 106-15.00R.
- Gruber, Vincent A. Post mix soft drink dispenser. 4,128,190, Cl. 222-129.200.
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  - McKinzie, Howard; Wrighton, Mark S.; and Lester, Joseph, 4,128,704, Cl. 429-111.000.
- GTE Sylvania Incorporated: *See—*
  - Hedler, Robert A., 4,128,674, Cl. 427-218.000.
  - Levin, Robert E.; and English, George J., 4,128,333, Cl. 355-67.000.
- Guenther, Friedrich: *See—*
  - Gaiser, Dieter; Woellhaf, Josef; Schoettle, Klaus; Guenther, Friedrich; Kamm, Eugen; and Wendt, Erich, 4,127,925, Cl. 29-430.000.
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  - Bacon, Kenneth H., 4,128,410, Cl. 62-40.000.
- Gulf Research & Development Company: *See—*
  - Malone, Huey P.; Paraskos, John A.; and Taylor, Herman, Jr., 4,128,471, Cl. 208-8.000.
  - Sabourin, Edward T.; and Selwitz, Charles M., 4,128,588, Cl. 260-645.000.
- Gulf & Western Industries, Inc.: *See—*
  - Elam, Richard C., 4,128,522, Cl. 260-32.80R.
- Guzchenko, Alexandr P.: *See—*
  - Shakula, Nikolai M.; Voloschenko, Nikolai I.; Shishkin, Nikolai F.; Muratov, Anatoly S.; Guzchenko, Alexandr P.; Anokhin, Vladimir M.; and Nikitchenko, Vladimir F., 4,128,367, Cl. 425-11.000.
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  - Knobloch, Johannes F.; and Brunner, Ernst, 4,128,870, Cl. 363-141.000.
- Haberl, John B.; and Ozolins, Janis, to General Electric Company. Condensation nuclei counter with automatic ranging. 4,128,335, Cl. 356-37.000.
- Habermann, Helmut; Brunet, Maurice; and Joly, Pierre, to Societe Europeene de Propulsion. Device for damping the critical frequencies of a rotor suspended by a radial electromagnetic bearing. 4,128,795, Cl. 318-618.000.
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- Hadfield, Harry R.; Sumner, Harry H.; and Williams, Gerald, to Imperial Chemical Industries Limited. Transfer printing with carboxylic dyes. 4,128,395, Cl. 8-2.50A.
- Hagedorn, Ilse, to Merck Patent Gesellschaft mit beschrankter Haftung. Bis-quaternary pyridinium-2-aldoxime salts and a process for their preparation. 4,128,651, Cl. 424-263.000.
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  - Sauvey, Donald R.; and Magnuson, Robert E., 4,128,036, Cl. 84-441.000.
- Haney, C. Rex. Animal feeder. 4,128,080, Cl. 119-51.500.
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  - Lund, Roger E.; and Hanson, Marlin M., 4,128,898, Cl. 365-2.000.
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  - Schmitt, Eugene W., 4,128,148, Cl. 188-197.000.
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- Harper, Homer C., III: *See—*
  - Chapel, James F., 4,128,407, Cl. 55-259.000.
- Harrison, Charles W.; and Bozeman, Paul P., Jr., deceased (by Bozeman, Arlene, executrix), to Texaco Inc. Solvent dewaxing process. 4,128,472, Cl. 208-33.000.
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  - Saumsiegle, Robert W.; and Harry, Ieuan L., 4,128,374, Cl. 425-403.000.
- Hart, William A., to United States of America, Air Force. Double plug shuttle valve. 4,128,113, Cl. 137-627.500.
- Hartitz, Joachim E.; Nehemy, Sam D.; and Wahl, Erwin R., to B. F. Goodrich Company, The. Apparatus for processing extruded thermoplastic polymer. 4,128,379, Cl. 425-446.000.
- Hartman, Adrian R.; Melchior, Hans; Schinke, David P.; and Smith, Richard G., to Bell Telephone Laboratories, Incorporated. Method of fabricating silicon photodiodes. 4,127,932, Cl. 29-590.000.
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- Hashimoto, Tsutomu: *See—*
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- Hassall, Cedric H.: *See—*
  - Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Lambert, Robert W.; and Ringrose, Peter S., 4,128,542, Cl. 260-112.50R.

- Hasten, Jimmie L.: *See—*
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- Hausmann, Erich. Extended capacity cartridge magazine structure. 4,127,954, Cl. 42-50.000.
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  - Uthoff, Werner; and Kluepfel, Olaf, 4,128,116, Cl. 141-1.000.
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  - Okamoto, Tomiyasu; Nishimoto, Tsunanori; Sawada, Kaoru; Hayakawa, Koji; and Kurihara, Tomomichi, 4,128,187, Cl. 220-464.000.
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- Hazelett Strip-Casting Corporation: *See—*
  - Kemerer, William J.; and Vassar, Clyde W., 4,128,369, Cl. 425-113.000.
- Headen, William E.; and Levesque, George N., to Brown & Sharpe Manufacturing Company. Linear motion ball bearing with dynamic stiffness. 4,128,278, Cl. 308-3.00A.
- Heaps, John M.; and Lu, Chisen, to Formica International Limited. Thermoplastic polymer sheets or web material useful as surfacing materials and their manufacture. 4,128,689, Cl. 428-311.000.
- Heaps, Joseph D.; and Tufte, Obert N., to Honeywell Inc. Silicon coated ceramic substrate with improvements for making electrical contact to the interface surface of the silicon. 4,128,680, Cl. 428-137.000.
- Heck, Richard F., to University of Delaware. Process for the preparation of carboxylic acid amides from organic halides. 4,128,554, Cl. 546-317.000.
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  - Campbell, Charles R.; Heckle, William A.; and Mathews, Marion J., 4,128,571, Cl. 260-465.900.
- Hedler, Robert A., to GTE Sylvania Incorporated. Method of making pigmented phosphors. 4,128,674, Cl. 427-218.000.
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  - Fischbach, Wolfgang, 4,127,914, Cl. 16-110.00A.
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- Heinrich Wunder KG: *See—*
  - Zoor, Reinhold, 4,128,257, Cl. 280-614.000.
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- Helmut, Judat: *See—*
  - Buchner, Werner; Degen, Bruno; Fries, Ludwig; Helmut, Judat; Mundil, Rudolf; and Rudolph, Karl-Heinz, 4,128,568, Cl. 260-448.20E.
- Hendricks, Udo W.; and Walz, Klaus, to Bayer Aktiengesellschaft. N(O,O dialkylphosphonyl alkylene) esters of oxazolidone, benzoxazolinone and dihydrooxazinone. 4,128,558, Cl. 260-307.00C.
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  - Hansen, Karl A.; and Hendrickson, I. Glen, 4,127,933, Cl. 29-605.000.
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  - Hase, Brigitte; Galinke, Joachim; and Wegemund, Bernd, 4,128,634, Cl. 424-81.000.
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- Henniger, Peter W.: *See—*
  - van der Drift, Johannes K.; Henniger, Peter W.; and van Veen, Gerard J., 4,128,547, Cl. 260-239.100.
- Henville, Michael I., to Mars, Inc. Coin testing mechanisms. 4,128,157, Cl. 194-97.00R.
- Herbst, Noel M.; and Liu, Chao N., to International Business Machines Corporation. Signature verification method and apparatus utilizing both acceleration and pressure characteristics. 4,128,829, Cl. 340-146.3SY.
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  - Reid, Albert R., 4,128,692, Cl. 428-378.000.
  - Richwine, John R., 4,128,510, Cl. 528-36.000.
- Herman, Ronald E., to Colt Industries Operating Corp. Apparatus and system for controlling the air-fuel ratio supplied to a combustion carburetor. 4,128,088, Cl. 123-119.0EC.
- Herrick, Joseph R.: *See—*
  - van Linden, Jan H. L.; Claxton, Raymond J.; Herrick, Joseph R.; and Ormesher, Robert J., 4,128,415, Cl. 75-65.00R.
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  - Stenzel, Jurgen; and Heymer, Gero, 4,128,620, Cl. 423-299.000.
- Hicks, Alan A.; Spinello, John O.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Chase-type board game apparatus. 4,128,246, Cl. 273-243.000.
- Hiestand, Armin: *See—*
  - Nachbur, Hermann; Hiestand, Armin; and Rohringer, Peter, 4,128,687, Cl. 428-253.000.
- Hildebolt, William M., to Campbell Soup Company. Protein texturization by extrusion with internal steam injection. 4,128,051, Cl. 99-348.000.
- Hill, Edward J. Device for carrying hanging clothes. 4,128,196, Cl. 224-45.00T.
- Hillard, Ray L.: *See—*
  - Grosso, Vincent G.; and Hillard, Ray L., 4,128,726, Cl. 560-72.000.
- Hille, Ernst: *See—*
  - Kummerle, Kurt; Heise, Hartmut; and Hille, Ernst, 4,128,578, Cl. 260-562.00R.
- Hindin, Saul G.: *See—*
  - Carr, William C.; Polinski, Leon M.; Hindin, Saul G.; and Kosco, James L., 4,128,591, Cl. 260-668.00A.
- Hinz, Gerhardt J. Carrying apparatus detachably mountable on clothing and other fabric-like materials. 4,128,194, Cl. 224-5.00R.
- Hinz, HansDieter: *See—*
  - Rothgordt, Ulf; Hinz, HansDieter; and Verspui, Gerrit, 4,128,842, Cl. 346-155.000.
- Hioki, Issaku, to NTN Toyo Bearing Company Limited. Shim for cassette tapes and method of shaping the same. 4,128,216, Cl. 242-199.000.
- Hirade, Kenkichi: *See—*
  - Samejima, Shuichi; and Hirade, Kenkichi, 4,128,828, Cl. 340-146.1AQ.
- Hirano, Jiro: *See—*
  - Ishida, Shiro; Funatsuki, Genuemon; Izaiku, Hiromi; and Hirano, Jiro, 4,128,483, Cl. 252-8.600.
- Hiratsuka, Nobuo; and Yaginuma, Nakatsugu, to Fuji Photo Film Co., Ltd. Supports for electrophoresis and process for the production of the same. 4,128,470, Cl. 204-299.00R.
- Hirose, Shintaro: *See—*
  - Ishii, Yasuhiro; Hirose, Shintaro; and Kawasaki, Ryoichi, 4,128,138, Cl. 181-167.000.
- Hisatomi, Takashi: *See—*
  - Hayashi, Makio; and Hisatomi, Takashi, 4,128,087, Cl. 123-103.00E.
- Hitachi Chemical Company, Ltd.: *See—*
  - Toyoda, Shinichi; Sakai, Masahiko; Goto, Kazuo; Narahara, Toshikazu; and Karasawa, Yoshiharu, 4,128,531, Cl. 528-53.000.
- Hitachi, Ltd.: *See—*
  - Kinjo, Noriyuki; Nishikawa, Akio; Katagiri, Junichi; Yokono, Hitoshi; Ikeda, Tamotsu; and Kobayashi, Tsuguo, 4,128,527, Cl. 260-42.180.
  - Kotera, Nobuo; and Miyamoto, Nobuo, 4,128,681, Cl. 428-138.000.
  - Nagao, Masato; and Kusumoto, Sho, 4,128,762, Cl. 250-272.000.
  - Nakagawa, Isao, 4,128,848, Cl. 358-167.000.
  - Otsu, Shinpei; Sekiguchi, Akira; Tobita, Nobuyoshi; Chikamatsu, Shigeru; Hosoe, Yoshihisa; Matsui, Motoaki; Sugimoto, Noboru; and Totsuka, Noriyoshi, 4,128,378, Cl. 425-445.000.
  - Sonobe, Tadasi, 4,128,780, Cl. 310-265.000.
- Hitachi Shipbuilding & Engineering Co., Ltd.: *See—*
  - Okamoto, Tomiyasu; Nishimoto, Tsunanori; Sawada, Kaoru; Hayakawa, Koji; and Kurihara, Tomomichi, 4,128,187, Cl. 220-464.000.
- HOBEG Hochtemperaturreaktor-Brennelement G.m.b.H: *See—*
  - Huschka, Hans; and Warzawa, Wolfgang, 4,128,075, Cl. 118-49.100.
- Hoch, Manfried L., to International Harvester Company. Hay conditioning roll. 4,127,979, Cl. 56-1.000.

- Hochstein, Spence L.: *See—*
  - Kaigler, Noyle B., Jr., deceased; Kaigler, Mary A., executrix; Hochstein, Spence L.; and Maple, James A., 4,128,219, Cl. 248-55.000.
- Hoebrechts, Albert G.: *See—*
  - van den Berg, Johan H.; van Eekelen, Alex H.; and Hoebrechts, Albert G., 4,127,916, Cl. 15-250.420.
- Hoechst Aktiengesellschaft: *See—*
  - Berthold, Rudiger, 4,128,579, Cl. 260-566.00A.
  - Kummerle, Kurt; Heise, Hartmut; and Hille, Ernst, 4,128,578, Cl. 260-562.00R.
  - Leupold, Ernst I.; and Arpe, Hans-Jurgen, 4,128,575, Cl. 562-579.000.
  - Leupold, Ernst I.; Arpe, Hans-Jurgen; Renken, Albert; and Schlosser, Ernst-Gunther, 4,128,727, Cl. 560-247.000.
  - Merkel, Wulf; Alpermann, Hans G.; Geisen, Karl; Kothe, Norbert; and Ried, Walter, 4,128,643, Cl. 424-251.000.
  - Stenzel, Jurgen; and Heymer, Gero, 4,128,620, Cl. 423-299.000.
- Hoehn, Hans; Bernstein, Jack; and Vogt, B. Richard, to E. R. Squibb & Sons, Inc. Derivatives of 5,6-dihydrobenzo[5,6]cyclohepta[1,2-B]pyrazolo-[4,3-E]pyridin-11 (1H)-ones and 11 (1H)-imines. 4,128,717, Cl. 544-361.000.
- Hoehn, Hans: *See—*
  - Denzel, Theodor; and Hoehn, Hans, 4,128,645, Cl. 424-251.000.
- Hoelzinger, Walther J., to Boise Cascade Corporation. Multi-flute-layer corrugated board. 4,128,677, Cl. 428-57.000.
- Hoesch Werke Aktiengesellschaft: *See—*
  - Hater, Martin; Pluschkell, Wolfgang; and Wisnewski, Heinrich, 4,128,414, Cl. 75-58.000.
- Hoffmann-La Roche Inc.: *See—*
  - Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Lambert, Robert W.; and Ringrose, Peter S., 4,128,542, Cl. 260-112.50R.
  - Mlodozeniec, Arthur R., 4,128,444, Cl. 156-64.000.
  - Sturzenegger, August; Mlodozeniec, Arthur R.; and Lipinsky, Edward S., 4,128,445, Cl. 156-64.000.
- Hogenhout, Franciscus; and McDermott, Arthur W., to Boeing Company, The. Electromagnetic high energy impact apparatus. 4,128,000, Cl. 72-430.000.
- Hogshead, Rodney C., III. Shipping and display carton for plants and the like. 4,128,167, Cl. 206-44.00R.
- Hollandse Signaalapparaten B.V.: *See—*
  - Brands, Antoon H.; and Gietema, Jouke, 4,128,838, Cl. 343-55.00C.
- Hollick, John G., to USM Corporation. Process for stiffening flexible sheet material. 4,127,910, Cl. 12-146.00D.
- Holset Engineering Company Limited: *See—*
  - Main, Peter L., 4,128,153, Cl. 192-58.00B.
  - Palmer, Clifford A., 4,128,283, Cl. 308-237.00R.
- Holtz, Hans D.: *See—*
  - Smith, Clifford E.; and Holtz, Hans D., 4,128,596, Cl. 260-683.530.
- Homburg, Axel: *See—*
  - Gawlick, Heinz; and Homburg, Axel, 4,128,060, Cl. 102-92.700.
- Homeier, Edwin H., to UOP Inc. Production of ammonia. 4,128,621, Cl. 423-362.000.
- Homsy, Charles A. Structure suitable for in vivo implantation. 4,127,902, Cl. 3-1.000.
- Honeywell Inc.: *See—*
  - Aske, Vernon H., 4,128,010, Cl. 73-497.000.
  - Chiang, Alice M., 4,128,843, Cl. 357-30.000.
  - Heaps, Joseph D.; and Tufte, Obert N., 4,128,680, Cl. 428-137.000.
  - Ruminsky, Robert T., 4,128,854, Cl. 361-22.000.
  - Wong, Theodore T. S., 4,128,338, Cl. 356-432.000.
- Honeywell Information Systems Inc.: *See—*
  - Heyman, Albert M., 4,128,867, Cl. 363-21.000.
- Honnen, Lewis R., to Chevron Research Company. Fuel additive for distillate fuels. 4,128,403, Cl. 44-71.000.
- Hoover, Richard L. Means and graphical method of calculating moments of inertia. 4,127,941, Cl. 33-1.00C.
- Hora, Charles J.: *See—*
  - Sieglaff, Charles L.; Hora, Charles J.; and Tiefenbach, Joseph P., 4,128,318, Cl. 351-160.00R.
- Horie, Koshi: *See—*
  - Yamauchi, Shin; Yonehara, Kiyoshi; Horie, Koshi; Ono, Tetsuji; and Ohara, Takashi, 4,128,503, Cl. 252-435.000.
- Horine, James: *See—*
  - Gay, Danny; Horine, James; Hudson, James C.; Sallee, Joseph P.; and Wininger, Hershel R., 4,128,029, Cl. 83-437.000.
- Horn, Peter; Koehler, Waldemar; and Bittler, Rolf, to BASF Aktiengesellschaft. Continuous manufacture of organic isocyanates. 4,128,569, Cl. 260-453.0PH.
- Hoshi, Kinji; and Sugita, Kazuhiro, to Sony Corporation. Method of making a semiconductor wafer. 4,127,969, Cl. 51-283.00R.
- Hoshidenki-Seizo Kabushiki Kaisha: *See—*
  - Ojima, Shin; Ohgami, Kazuhiko; Watanabe, Kazutaka; Nohara, Masaru; and Yamamoto, Kenji, 4,128,889, Cl. 364-705.000.
- Hosoe, Yoshihisa: *See—*
  - Otsu, Shinpei; Sekiguchi, Akira; Tobita, Nobuyoshi; Chikamatsu, Shigeru; Hosoe, Yoshihisa; Matsui, Motoaki; Sugimoto, Noboru; and Totsuka, Noriyoshi, 4,128,378, Cl. 425-445.000.
- Houbion, John A., to Monsanto Company. o-Aroylvinyl benzoyl chlorides. 4,128,576, Cl. 260-544.00D.
- Hsu, John S., to Ingersoll-Rand Co. Extruder screw. 4,128,341, Cl. 366-89.000.
- Hubbard, Harold C., to Motor Wheel Corporation. Remote control circuit for electric trailer brakes. 4,128,146, Cl. 188-138.000.
- Hudson, James C.: *See—*
  - Gay, Danny; Horine, James; Hudson, James C.; Sallee, Joseph P.; and Wininger, Hershel R., 4,128,029, Cl. 83-437.000.
- Huellwegen, Josef, to Nixdorf Computer AG. Circuit arrangement for blocking a bidirectional amplifier against receiving outgoing signals. 4,128,743, Cl. 179-170.00R.
- Hug, Hans A., to United States of America, Interior. Torquer/thruster for flexible roofdrill. 4,128,133, Cl. 173-149.000.
- Hughes Aircraft Company: *See—*
  - Fraas, Lewis M.; Zanio, Kenneth R.; and Knechtli, Ronald C., 4,128,733, Cl. 136-89.0SJ.
  - Lim, Hong S.; and Little, Michael J., 4,128,312, Cl. 350-336.000.
  - Pastor, Ricardo C.; and Robinson, Morton, 4,128,589, Cl. 260-653.000.
  - Troutman, Bruce L.; and Schmitz, Lawrence S., 4,128,773, Cl. 307-238.000.
- Hujer, Friedrich: *See—*
  - Fergg, Berthold; Hujer, Friedrich; and Zahn, Wolfgang, 4,128,330, Cl. 355-32.000.
- Humber, Leslie G.: *See—*
  - Asselin, Andre A.; Humber, Leslie G.; and Dobson, Thomas A., 4,128,560, Cl. 260-315.000.
- Humphreys, Hutcheson & Moseley: *See—*
  - Sneed, Jackson B., 4,128,393, Cl. 431-351.000.
- Hunsucker, Jerry H.; and Selleck, James R., Jr., to International Minerals & Chemical Corp. Imidazoline compounds useful as bactericides and fungicides. 4,128,655, Cl. 424-273.00R.
- Hunt, Barry R.; Dillard, George M.; and Taylor, Henry F., to United States of America, Navy. Fiber optic delay line filter. 4,128,759, Cl. 250-199.000.
- Hunt, John D.; and Peacock, Frederick C., to Imperial Chemical Industries Limited. Substituted dinitrotrifluoromethyldiphenylamine and pesticidal compositions containing same. 4,128,665, Cl. 424-330.000.
- Huron Tool & Manufacturing Division of U.S. Industries, Inc.: *See—*
  - Oldford, William G., 4,128,264, Cl. 285-41.000.
- Huschka, Hans; and Warzawa, Wolfgang, to HOBEG Hochtemperaturreaktor-Brennelement G.m.b.H. Apparatus for coating fuel fertile or absorber material containing particles for high temperature fuel elements. 4,128,075, Cl. 118-49.100.
- Husson, Alan L.: *See—*
  - Caputo, William R.; and Husson, Alan L., 4,128,141, Cl. 187-29.00R.
- Hwang, Yu-Tang; and Grimmett, Howard L. Polymerization catalyst and method. 4,128,500, Cl. 252-430.000.
- Hyams, Irving; Koch, Harold S.; and Aafjes, Herman C., to Fischer & Porter Co. Fuse-mate. 4,128,024, Cl. 81-3.800.
- Hydra-Rig, Inc.: *See—*
  - Elliston, Thomas L., 4,128,229, Cl. 254-139.000.
- Hydrocarbon Research, Inc.: *See—*
  - Chervenak, Michael C.; and Wolk, Ronald H., 4,128,109, Cl. 137-375.000.
- Hydrotechnic Corporation: *See—*
  - Nebolsine, Rostislav, 4,128,477, Cl. 210-50.000.
- HZI Research Center Inc.: *See—*
  - Itil, Turan M., 4,128,641, Cl. 424-250.000.
- ICI Australia Limited: *See—*
  - Moody, Keith, 4,128,638, Cl. 424-177.000.
- Ideal Industries, Inc.: *See—*
  - McCord, Daniel, 4,128,294, Cl. 339-266.00R.
- Idota, Yoshio, to Fuji Photo Film Co., Ltd. Process for regenerating bleaching-fixing solution. 4,128,464, Cl. 204-151.000.
- Ikeda, Tamotsu: *See—*
  - Kinjo, Noriyuki; Nishikawa, Akio; Katagiri, Junichi; Yokono, Hitoshi; Ikeda, Tamotsu; and Kobayashi, Tsuguo, 4,128,527, Cl. 260-42.180.
- Ikenoue, Shinpei; Masuda, Takao; Suzuki, Nobuo; Tanaka, Toshiharu; and Sashihara, Kenji, to Fuji Photo Film Co., Ltd. Heat developable light-sensitive material. 4,128,428, Cl. 96-114.100.
- Illenberger, Arno; Ruprecht, Gert; and Berger, Klaus, to Robert Bosch GmbH. Camera tube target structure exhibiting greater-than-unity amplification. 4,128,844, Cl. 357-31.000.
- Illinois Tool Works Inc.: *See—*
  - Kobetsky, Robert G., 4,128,449, Cl. 156-380.000.
  - Rayburn, Charles C., 4,128,857, Cl. 361-309.000.
- Imperial Chemical Industries Limited: *See—*
  - Cleare, Peter J. V., 4,128,585, Cl. 260-601.00H.
  - Hadfield, Harry R.; Sumner, Harry H.; and Williams, Gerald, 4,128,395, Cl. 8-2.50A.
  - Hunt, John D.; and Peacock, Frederick C., 4,128,665, Cl. 424-330.000.
- Imperial Oil Limited: *See—*
  - Cohen, A. David, 4,128,499, Cl. 252-378.00R.
- Ing. C. Olivetti & C., S.p.A.: *See—*
  - Claudio, Gillio, 4,128,382, Cl. 400-478.000.
- Ingersoll-Rand Co.: *See—*
  - Hsu, John S., 4,128,341, Cl. 366-89.000.
  - Schleinkofer, Rudi W., 4,128,454, Cl. 162-49.000.
- Inland Steel Company: *See—*
  - Lee, Harvie H., 4,128,676, Cl. 427-433.000.
- Innovation and Technical Development Co.: *See—*
  - Townsend, David J., 4,127,921, Cl. 24-27.000.
- Inolex Corporation: *See—*
  - Johnsen, Vernon L.; and Stern, Elaine S., 4,128,543, Cl. 260-123.700.

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Lejeune, Gerard; and Dubreucq, Jean-Claude, 4,128,806, Cl. 324-54.000.
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Lundblad, Leif, 4,128,236, Cl. 271-10.000.
Interlemo Holding, S.A. c/o Curia Treuchand A.G.: *See—*
Mouttet, Leon, 4,128,292, Cl. 339-176.00R.
International Business Machines Corporation: *See—*
Almasi, George S.; Keefe, George E.; and Lin, Yeong S., 4,128,895, Cl. 365-11.000.
Ames, Richard N.; Hardin, Dick K.; Leininger, Joel C.; and Taylor, George P., 4,128,876, Cl. 364-200.000.
Gaensslen, Fritz H., 4,128,670, Cl. 427-86.000.
Herbst, Noel M.; and Liu, Chao N., 4,128,829, Cl. 340-146.3SY.
Jambotkar, Chakrapani G., 4,128,439, Cl. 148-1.500.
Lin, Yeong S.; Liu, Chao N.; and Tang, Donald T., 4,128,891, Cl. 364-900.000.
Weythman, Gayle A., 4,128,830, Cl. 340-146.3AG.
International Flavors & Fragrances Inc.: *See—*
Sanders, James M.; Vinals, Joaquin F.; and Schmitt, Frederick L., 4,128,729, Cl. 568-820.000.
International Harvester Company: *See—*
Frase, Roland J.; Meitl, Harold G.; and McNaull, Tom M., 4,128,191, Cl. 222-167.000.
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International Minerals & Chemical Corp.: *See—*
Hunsucker, Jerry H.; and Selleck, James R., Jr., 4,128,655, Cl. 424-273.00R.
Ivy, Richard E.; and Williams, Robert D., 4,128,642, Cl. 424-251.000.
Traxler, James T.; Lira, Emil P.; and Kraemer, John F., 4,128,263, Cl. 282-27.500.
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Munden, David R., 4,128,508, Cl. 252-522.000.
International Telephone and Telegraph Corporation: *See—*
Dhami, Kewal S.; Bennett, Elmer W.; and Burton, Pearl, 4,128,693, Cl. 428-379.000.
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McCrudden, Joseph E., 4,128,495, Cl. 252-186.000.
InterRoyal Corporation: *See—*
Frey, Frederick J., 4,128,120, Cl. 160-191.000.
Irvin Industries, Inc.: *See—*
Gay, Danny; Horine, James; Hudson, James C.; Sallee, Joseph P.; and Wininger, Hershel R., 4,128,029, Cl. 83-437.000.
Irwin, John M.; and Schlereth, Fritz H., to General Electric Company. Integrated arithmetic unit and digital networks using the unit. 4,128,890, Cl. 364-724.000.
Ischenko, Vitaly G.; Shvetsov, Vladimir A.; Erygin, Evgeny N.; and Girshik, Roman L. Device for removing flash from moulded rubber articles. 4,128,197, Cl. 225-97.000.
Ishida, Shiro; Funatsuki, Genuemon; Izaiku, Hiromi; and Hirano, Jiro, to Nippon Oil and Fats Co. Ltd. Sulfur-containing complex esters and spin finishing compositions using said esters. 4,128,483, Cl. 252-8.600.
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Yamada, Koichi; Harato, Takuo; Ishida, Takahiro; and Shiozaki, Yasumi, 4,128,618, Cl. 423-119.000.
Ishii, Yasuhiro; Hirose, Shintaro; and Kawasaki, Ryoichi, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Elctric Co., Ltd. Diaphragm for speaker. 4,128,138, Cl. 181-167.000.
Ishizuka, Hiroshi. Process for synthesizing diamonds. 4,128,625, Cl. 423-446.000.
Isogawa, Takao: *See—*
Yamamoto, Mitsuru; Arai, Jun; Isogawa, Takao; and Hasebe, Isamu, 4,128,881, Cl. 364-200.000.
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Ryan, Edward W.; and Israel, George H., Jr., 4,128,208, Cl. 239-265.390.
Itil, Turan M., to HZI Research Center Inc. Tetracyclic psychotropic drug. 4,128,641, Cl. 424-250.000.
Ivy, Richard E.; and Williams, Robert D., to International Minerals & Chemical Corp. Method of promoting growth and improving feed efficiency of animals. 4,128,642, Cl. 424-251.000.
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Jablonski, Charles E.; and Kreiger, John W., to Atlas Powder Company. Method and apparatus for making dual compartment containers. 4,127,976, Cl. 53-450.000.
Jackson, Denis H. Indirectly fired vertical shaft furnace. 4,128,231, Cl. 266-154.000.
Jamann, Helmut, to Dr. Boy KG. Fluid pressure actuated drive for the closing unit of an injection moulding machine. 4,128,380, Cl. 425-450.100.
Jambotkar, Chakrapani G., to International Business Machines Corporation. Method for forming self-aligned field effect device by ion implantation and outdiffusion. 4,128,439, Cl. 148-1.500.
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Johns-Manville Corporation: *See—*
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Johnsen, Vernon L.; and Stern, Elaine S., to Inolex Corporation. Process for preparing alcohol soluble condensates of abietic acid and a protein hydrolysate. 4,128,543, Cl. 260-123.700.
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Johnson, Eugene C.; and Dalessio, Frederick F., to Johnson, Eugene C. Method of and device for analyzing performances in athletic events. 4,128,893, Cl. 364-900.000.
Johnson, Herbert E.; and Richards, William W. Apparatus for separating adhesively connected material. 4,128,452, Cl. 156-584.000.
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Johnson, Kenneth L., to Betts Machine Company. Shock suppressing retainer ring and grommet for sealed beam lamps. 4,128,865, Cl. 362-369.000.
Johnson, Paul R.: *See—*
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Johnson, Robert. Extensible utility wagon. 4,128,258, Cl. 280-656.000.
Johnson, Robert H.: *See—*
Yamazaki, Yasuhiro; Johnson, Robert H.; and McNeil, Mark D., 4,128,339, Cl. 356-434.000.
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Jones, Jean E.: *See—*
Fletcher, George L.; Wadsworth, Donald H.; and Jones, Jean E., 4,128,422, Cl. 96-48.0HD.
Jones, Richard H., to Standard Oil Company, The. Alkylation process utilizing hydrocarbon phase for cooling and compressed vapor for supplying heat to distillation column. 4,128,597, Cl. 260-683.620.
Jones, Robert W.; and Jones, Wesley E., to Jones, Wesley E. Livestock guide and manipulator. 4,128,200, Cl. 231-2.00E.
Jones, W. Dale. Rockable against-the-wall type reclining chair. 4,128,273, Cl. 297-327.000.
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Jones, Robert W.; and Jones, Wesley E., 4,128,200, Cl. 231-2.00E.
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Joyce, Michael F., to Gillette Company, The. Holder for shaving units. 4,128,172, Cl. 206-352.000.
Jubin, John C., to Atlantic Richfield Company. Manufacture of tertiary butyl hydroperoxide. 4,128,587, Cl. 568-571.000.
Judkins, Thomas. Concealed fasteners for wall panels. 4,127,975, Cl. 52-489.000.
Junker, Arnold E. Water closet seat and bidet assembly. 4,127,904, Cl. 4-7.000.
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Justus, Edgar J., to Beloit Corporation. Headbox trailing element mounting and method. 4,128,455, Cl. 162-216.000.
Kabelitz, Hans-Peter; and Sideris, Nikolas, to Leybold-Heraeus GmbH & Co. KG. Shaft seal. 4,128,248, Cl. 277-15.000.
Kabushiki Kaisha Daini Seikosha: *See—*
Shimotsuma, Nobuo, 4,128,816, Cl. 331-116.00R.
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Kabushiki Kaisha Suwa Seikosha: *See—*
Takei, Yoshihiro, 4,128,798, Cl. 320-23.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Fujikake, Kenji; Katagiri, Haruo; and Yamada, Katsuhito, 4,128,363, Cl. 416-236.00A.
Kachadorian, James. Solar-heated concrete slab building structure. 4,127,973, Cl. 52-169.110.
Kaeding, Warren W., to Mobil Oil Corporation. Selective production of para dialkyl benzene. 4,128,592, Cl. 260-671.00C.
Kaeser, James A.: *See—*
Bauman, Robert A.; and Kaeser, James A., 4,128,485, Cl. 252-8.800.
Kage, Kouzou, to Nippon Electric Co., Ltd. Time diversity receiver for processing repeatedly received signal bits in consideration of a maximum-level and/or a favorably received signal bit. 4,128,809, Cl. 325-324.000.
Kaigler, Mary A., executrix: *See—*
Kaigler, Noyle B., Jr., deceased; Kaigler, Mary A., executrix; Hochstein, Spence L.; and Maple, James A., 4,128,219, Cl. 248-55.000.

Kaigler, Noyle B., Jr., deceased; by Kaigler, Mary A., executrix; Hochstein, Spence L.; and Maple, James A., to Exxon Production Research Company. Aboveground sliding support assembly for a pipeline. 4,128,219, Cl. 248-55.000.
Kaiser Aluminum & Chemical Corporation: *See—*
Gane, Gordon R., 4,128,186, Cl. 220-268.000.
Kaiser, Hans, to Gebruder Junghans GmbH. Safety system for a projectile fuse. 4,128,061, Cl. 102-249.000.
Kalapos, Josef: *See—*
Mueller, Roman; and Kalapos, Josef, 4,128,052, Cl. 99-516.000.
Kaminski, Gerald W.: *See—*
Samuel, Robert A.; Kaminski, Gerald W.; and Layne, Michael W., 4,127,939, Cl. 32-11.000.
Kamiya, Hajime: *See—*
Onoki, Fumio; and Kamiya, Hajime, 4,128,303, Cl. 350-164.000.
Kamm, Eugen: *See—*
Gaiser, Dieter; Woellhaf, Josef; Schoettle, Klaus; Guenther, Friedrich; Kamm, Eugen; and Wendt, Erich, 4,127,925, Cl. 29-430.000.
Kanbe, Masaru: *See—*
Ohta, Hideyasu; Uozumi, Takahiro; Kanbe, Masaru; Abe, Naoto; Shirasaki, Jun; and Mayama, Masayoshi, 4,128,426, Cl. 96-87.00R.
Kankaanpaa, Matti, to Valmet Oy. Supercalenders. 4,128,053, Cl. 100-162.00R.
Kaplit, Michael: *See—*
Smith, George W.; Kaplit, Michael; and Hayden, Daniel B., 4,128,311, Cl. 350-331.000.
Kaplow, Roy; and Frank, Robert I., to Massachusetts Institute of Technology. Solar cell. 4,128,732, Cl. 136-89.0PC.
Karasawa, Yoshiharu: *See—*
Toyoda, Shinichi; Sakai, Masahiko; Goto, Kazuo; Narahara, Toshikazu; and Karasawa, Yoshiharu, 4,128,531, Cl. 528-53.000.
Karpaty, Akos: *See—*
Muhlbock, Franz; Karpaty, Akos; and Pross, Wilhelm, 4,128,400, Cl. 422-101.000.
Karpen, William L., to Carpenter Technology Corporation. Stabilization of sodium/potassium silicate-containing coating bath. 4,128,487, Cl. 252-28.000.
Karr, Clarence, Jr.; and McCaskill, Kenneth B., to United States of America, Energy. Catalytic hydrotreating process. 4,128,473, Cl. 208-108.000.
Kassai, Makoto: *See—*
Tanaka, Akira; Hayashi, Yuji; Kassai, Makoto; and Hara, Toshito, 4,128,823, Cl. 335-196.000.
Katagi, Kazuo, to RCA Corporation. Range mark generation. 4,128,834, Cl. 343-5.0EM.
Katagiri, Haruo: *See—*
Fujikake, Kenji; Katagiri, Haruo; and Yamada, Katsuhito, 4,128,363, Cl. 416-236.00A.
Katagiri, Junichi: *See—*
Kinjo, Noriyuki; Nishikawa, Akio; Katagiri, Junichi; Yokono, Hitoshi; Ikeda, Tamotsu; and Kobayashi, Tsuguo, 4,128,527, Cl. 260-42.180.
Katchman, Arthur; and Lee, Gim F., Jr., to General Electric Company. Polyphenylene ether compositions containing rubber modified polystyrene. 4,128,602, Cl. 260-876.00R.
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Kato, Akifumi: *See—*
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Kato, Kazuo; and Narihiro, Michiaki, to New Nippon Electric Company, Ltd. Turret type television tuner. 4,128,821, Cl. 334-51.000.
Kato, Yoshio: *See—*
Seita, Toru; Shimizu, Akihiko; Kato, Yoshio; and Hashimoto, Tsutomu, 4,128,706, Cl. 526-19.000.
Katz, Jonathon H. Phase shift circuit for synchronous motor. 4,128,791, Cl. 318-724.000.
Katz, Myron B. Method of obtaining a uniquely determined cross-sectional reconstruction from X-ray projections. 4,128,877, Cl. 364-414.000.
Katz, Solly. Solar heaters. 4,128,096, Cl. 126-271.000.
Kawaguchi, Hitoshi; and Furukawa, Yoshitaka, to Nippon Telegraph and Telephone Public Corp. Single transverse mode operation in double heterostructure junction laser. 4,128,815, Cl. 331-94.50H.
Kawano, Haruyoshi, to Ricoh Company, Ltd. Apparatus for producing bias voltage for use in electrophotographic copying machines. 4,128,329, Cl. 355-14.000.
Kawasaki, Ryoichi: *See—*
Ishii, Yasuhiro; Hirose, Shintaro; and Kawasaki, Ryoichi, 4,128,138, Cl. 181-167.000.
Keefe, George E.: *See—*
Almasi, George S.; Keefe, George E.; and Lin, Yeong S., 4,128,895, Cl. 365-11.000.
Keep View Ltd.: *See—*
Colwell, David J., 4,127,908, Cl. 5-370.000.
Kellmann, Werner: *See—*
Braun, Rudolf; and Kellmann, Werner, 4,128,115, Cl. 139-439.000.
Kelly, James F.; and Johnson, Edwin, to Materials Recovery Corporation. General purpose incinerator/combustor. 4,128,065, Cl. 110-211.000.
Kelly, William J.: *See—*
Bond, Thomas J.; Kelly, William J.; and Adams, Richard C., 4,128,383, Cl. 425-529.000.
Kemerer, William J.; and Vassar, Clyde W., to Hazelett Strip-Casting Corporation. Continuous apparatus for forming products from thermoplastic polymeric material having three-dimensional patterns and surface textures. 4,128,369, Cl. 425-113.000.
Kemmner, Ulrich; and Ruhl, Karl, to Robert Bosch GmbH. Fuel supply unit. 4,128,365, Cl. 417-423.00R.
Kempler, Fred. Optical magnifying device. 4,128,306, Cl. 350-239.000.
Kennecott Copper Corporation: *See—*
Rappas, Alkis S.; and Pemsler, J. Paul, 4,128,416, Cl. 75-119.000.
Kernforschungsanlage Julich Gesellschaft m.beschrankter Haftung: *See—*
Forster, Siegfried; and Kleemann, Manfred, 4,128,126, Cl. 165-165.000.
Keslar, Leroy D.: *See—*
Bitterice, Michael G.; and Keslar, Leroy D., 4,128,448, Cl. 156-166.000.
Kidde Consumer Durables Corp.: *See—*
Evans, Mark, 4,128,171, Cl. 206-320.000.
Kienzle Apparate GmbH: *See—*
Fairley, John; Krickl, Josef; and Weber, Robert, 4,128,755, Cl. 235-92.00T.
Kikuchi, Katsuro; Masai, Shohachi; and Tanaka, Tsugane, to Asahi-Dow Limited; and Koyo Sangyo Co., Ltd. Coated styrenic resin plate for ink-acceptability and paintability. 4,128,695, Cl. 428-423.000.
Kildahl, Nicholas K.; and Fotis, Peter, to Standard Oil Company (Indiana). Ethylene polymerization catalyst. 4,128,502, Cl. 252-431.00R.
Kilvington, Howard J.: *See—*
O'Hara, Kevin J.; and Kilvington, Howard J., 4,128,436, Cl. 106-243.000.
Kimura, Takeji: *See—*
Wada, Ryoichi; Fujisaki, atsumi; Nakajima, Masaya; Tsunoo, Masahiko; and Kimura, Takeji, 4,128,032, Cl. 84-1.010.
Kinder, Mark R., to TRW Inc. Coupling apparatus. 4,128,023, Cl. 74-750.00R.
King, Peter G., to Mackenzie King Holdings Limited; and Formica Limited. Construction of articles of furniture. 4,128,284, Cl. 312-330.00R.
Kinjo, Noriyuki; Nishikawa, Akio; Katagiri, Junichi; Yokono, Hitoshi; Ikeda, Tamotsu; and Kobayashi, Tsuguo, to Hitachi, Ltd. Dynamoelectric machine having coil windings and core encapsulated with resin-filler composition. 4,128,527, Cl. 260-42.180.
Kinoko Company, The: *See—*
Mee, Henry M., 4,127,964, Cl. 47-1.100.
Mee, Henry M., 4,127,965, Cl. 47-1.100.
Kinoshita, Youzou: *See—*
Shiomura, Tetsunosuke; Kinoshita, Youzou; and Kokue, Yoshio, 4,128,607, Cl. 260-878.00B.
Kirchner, Eugene M.: *See—*
Oren, Jess W., III; Kirchner, Eugene M.; and Wehry, Charles F., Jr., 4,128,095, Cl. 126-270.000.
Kishida, Kazuo; Kobayashi, Jinpee; and Fukunaga, Hajime, to Mitsubishi Rayon Co., Ltd. Process for preparing vinyl chloride resin-acrylic graft copolymer composition. 4,128,605, Cl. 260-876.00R.
Kitaguchi, Sam S.: *See—*
Bons, Robert; and Kitaguchi, Sam S., 4,128,769, Cl. 290-52.000.
Kitamoto, Tatsuji: *See—*
Shirahata, Ryuji; Kitamoto, Tatsuji; and Suzuki, Masaaki, 4,128,691, Cl. 428-336.000.
Kleemann, Manfred: *See—*
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Klein, Andrew: *See—*
Barabas, Eugene S.; Klein, Andrew; and Alwani, Dru W., 4,128,520, Cl. 260-29.70W.
Klein, Samuel. Feed for poultry. 4,128,640, Cl. 424-195.000.
Klinkenberg; Herbert: *See—*
Vollkommer, Norbert; Petersen, Egon N.; Klinkenberg, Herbert; and Schmidt, Werner, 4,128,709, Cl. 526-218.000.
Klopfer, Howard J.; and Campbell, John R., to General Electric Company. Preparation of 1,1,1-trichloro-2,2-bis(4-hydroxyphenyl)ethane. 4,128,731, Cl. 568-726.000.
Kluepfel, Olaf: *See—*
Uthoff, Werner; and Kluepfel, Olaf, 4,128,116, Cl. 141-1.000.
Kluting, Bernd; and Voss, Hans W., to Fritz Keiper KG, Firma. Constant torque adjustable seat. 4,128,225, Cl. 248-421.000.
Knechtli, Ronald C.: *See—*
Fraas, Lewis M.; Zanio, Kenneth R.; and Knechtli, Ronald C., 4,128,733, Cl. 136-89.0SJ.
Knibbe, Jan C.; and McPhee, Willard J., to Springfield Tool & Die, Inc. Piercing apparatus. 4,128,028, Cl. 83-411.00R.
Knight, Phillip D.; deMauriac, Richard A.; and Graham, Patricia A., to Eastman Kodak Company. Silver salts of 1,2,4-mercaptotriazole derivatives. 4,128,557, Cl. 260-299.000.
Knight, Robert K., to Union Oil Company of California. Mobility control of aqueous fluids in porous media. 4,128,482, Cl. 252-8.55D.
Knobloch, Johannes F.; and Brunner, Ernst, to H.A. Schlatter AG. High current-rectifier arrangement. 4,128,870, Cl. 363-141.000.
Knowles, Reginald. Differential mechanism. 4,128,021, Cl. 74-650.000.
Kobayashi, Hideo: *See—*
Yokota, Masato; and Kobayashi, Hideo, 4,128,092, Cl. 123-191.00S.
Kobayashi, Jinpee: *See—*
Kishida, Kazuo; Kobayashi, Jinpee; and Fukunaga, Hajime, 4,128,605, Cl. 260-876.00R.

- Kobayashi, Nariyoshi: *See—*
  - Nishimura, Hideo; Masaki, Seishi; Miyauchi, Takao; and Kobayashi, Nariyoshi, 4,128,460, Cl. 204-35.00N.
- Kobayashi, Tsuguo: *See—*
  - Kinjo, Noriyuki; Nishikawa, Akio; Katagiri, Junichi; Yokono, Hitoshi; Ikeda, Tamotsu; and Kobayashi, Tsuguo, 4,128,527, Cl. 260-42.180.
- Kobayashi, Tsutomu: *See—*
  - George, Peter K.; Gergis, Isoris S.; and Kobayashi, Tsutomu, 4,128,896, Cl. 365-12.000.
- Kobetsky, Robert G., to Illinois Tool Works Inc. Induction heating fixture for applying adhesive-backed articles. 4,128,449, Cl. 156-380.000.
- Kobori, Toshio; and Uchida, Isamu, to Minolta Camera Kabushiki Kaisha. Pentagonal prism and related optical structures for single lens reflex cameras. 4,128,321, Cl. 354-23.00R.
- Koch, Harold S.: *See—*
  - Hyams, Irving; Koch, Harold S.; and Aafjes, Herman C., 4,128,024, Cl. 81-3.800.
- Koeck, Donna M.: *See—*
  - Lowrey, Robert D.; Wegwerth, Arthur A.; Koeck, Donna M.; and Cobb, Sanford, Jr., 4,128,685, Cl. 428-212.000.
- Koehler, Howard A.: *See—*
  - Pertl, Jerry H.; and Koehler, Howard A., 4,128,874, Cl. 364-200.000.
- Koehler, Waldemar: *See—*
  - Horn, Peter; Koehler, Waldemar; and Bittler, Rolf, 4,128,569, Cl. 260-453.0PH.
- Kohler, Armin; Pelousek, Herbert; Ohse, Helmut; Westermann, Hans; and Magosch, Karl-Heinz, to Bayer Aktiengesellschaft; and Faserwerke Huls Gesellschaft mit beschrankter Haftung. Process for the production of high molecular weight polyesters. 4,128,533, Cl. 528-279.000.
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- Kojima, Takakazu; and Ohtsuka, Yozo, to Sagami Chemical Research Center. Process for producing 4-carboxamido-5-cyano-2-imidazolone. 4,128,719, Cl. 548-321.000.
- Kokue, Yoshio: *See—*
  - Shiomura, Tetsunosuke; Kinoshita, Youzou; and Kokue, Yoshio, 4,128,607, Cl. 260-878.00B.
- Kolakowski, Richard A.; and Stroud, Richard M., to Upjohn Company, The. Continuous process and apparatus for producing foamed polymer bunstock having a substantially rectangular cross-section. 4,128,611, Cl. 264-51.000.
- Kole, Donald R.; and Kossuth, Donald A., to National Gypsum Company. Treated gypsum wallboard paper. 4,128,699, Cl. 428-498.000.
- Komori, Tadaaki: *See—*
  - Kurita, Masaru; Jomon, Kazuyoshi; Komori, Tadaaki; Nakatani, Isami; and Tsuji, Masahiro, 4,128,546, Cl. 260-239.00A.
- Komorita, Fujio; and Nakahara, Muneo, to Kabushiki Kaisha Ohara Kogaku Garasu Seizosho. Optical glass. 4,128,432, Cl. 106-53.000.
- Komulainen, Pekka, to Oy Wartsila AB. Method for regulating a winding process. 4,128,213, Cl. 242-66.000.
- Kondo, Norio: *See—*
  - Ura, Shigeru; Kondo, Norio; Fukuyama, Yoshiya; and Nakahara, Makoto, 4,128,437, Cl. 106-287.240.
- Kondoh, Junichi: *See—*
  - Ogura, Hajime; Asakawa, Haruma; Kondoh, Junichi; Nakamura, Masashi; and Oyaide, Sadamu, 4,128,068, Cl. 114-26.000.
- Kondrashov, Eduard K.: *See—*
  - Shustova, Olga A.; Gladyshev, Georgy P.; Kondrashov, Eduard K.; and Shustov, Leonid D., 4,128,707, Cl. 526-43.000.
- Konishiroku Photo Industry Co., Ltd.: *See—*
  - Nagano, Akira; Urasaki, Kazuaki; Osato, Akira; and Sakurai, Isao, 4,128,756, Cl. 235-92.0SB.
  - Ohta, Hideyasu; Uozumi, Takahiro; Kanbe, Masaru; Abe, Naoto; Shirasaki, Jun; and Mayama, Masayoshi, 4,128,426, Cl. 96-87.00R.
- Kopera, Joseph J.: *See—*
  - Balan, Isadore; and Kopera, Joseph J., 4,128,091, Cl. 123-148.00E.
- Kopp, Eugen, to Werner & Pfleiderer. Device for pressing out material in the form of a strand. 4,128,371, Cl. 425-192.00R.
- Kori, Seiji: *See—*
  - Hayashi, Masaki; Kori, Seiji; and Miyake, Hajimu, 4,128,720, Cl. 560-9.000.
- Korotkevich, Boris S.: *See—*
  - Liakumovich, Alexandr G.; Pantukh, Boris I.; Sultanova, Mengzda K.; Popov, Vasily P.; Tolstikov, Genrikh A.; Monakov, Jury B.; Juriev, Valery P.; Mandelshtam, Elena Y.; Korotkevich, Boris S.; and Shmuk, Jury A., 4,128,708, Cl. 526-162.000.
- Kosco, James L.: *See—*
  - Carr, William C.; Polinski, Leon M.; Hindin, Saul G.; and Kosco, James L., 4,128,591, Cl. 260-668.00A.
- Kossuth, Donald A.: *See—*
  - Kole, Donald R.; and Kossuth, Donald A., 4,128,699, Cl. 428-498.000.
- Kotcharian, Michel, to Technigaz. Method of mounting a heat-insulating composite wall structure in a liquefied gas transportation and/or storage tank. 4,128,069, Cl. 114-74.00A.
- Kotera, Nobuo; and Miyamoto, Nobuo, to Hitachi, Ltd. Method for producing an InSb thin film element. 4,128,681, Cl. 428-138.000.
- Kothe, Norbert: *See—*
  - Merkel, Wulf; Alpermann, Hans G.; Geisen, Karl; Kothe, Norbert; and Ried, Walter, 4,128,643, Cl. 424-251.000.
- Kovats, Lawrence H. G., to Mayfran, Incorporated. Endless belt conveyor system. 4,128,166, Cl. 198-860.000.
- Koyama, Masao; and Seki, Shigeo, to Meiji Seika Kaisha Ltd. Process for the preparation of 7-acylamida-3-halo-3-alkyl-cepham-4-carboxylic acids and esters. 4,128,714, Cl. 544-18.000.
- Koyo Sangyo Co., Ltd.: *See—*
  - Kikuchi, Katsuro; Masai, Shohachi; and Tanaka, Tsugane, 4,128,695, Cl. 428-423.000.
- Kracker, Denis J.: *See—*
  - Robinson, Ernest G., Jr., 4,128,846, Cl. 358-82.000.
- Kraemer, John F.: *See—*
  - Traxler, James T.; Lira, Emil P.; and Kraemer, John F., 4,128,263, Cl. 282-27.500.
- Kraftwerk Union Aktiengesellschaft: *See—*
  - Becker, Bernard, 4,127,988, Cl. 60-39.660.
- Krall, Heribert A.; and Maag, Helmut, to Technica-Guss GmbH. Continuous casting assembly. 4,128,122, Cl. 164-438.000.
- Krapf, Rudolf: *See—*
  - Rohr, Franz-Josef; and Krapf, Rudolf, 4,128,469, Cl. 204-195.00S.
- Krause, Walter: *See—*
  - Reichert, Wolfgang, 4,127,970, Cl. 52-63.000.
- Kreiger, John W.: *See—*
  - Jablonski, Charles E.; and Kreiger, John W., 4,127,976, Cl. 53-450.000.
- Kreppa, James E., Jr., to Sarkes Tarzian, Inc. Combination VHF and UHF tuner arrangement. 4,128,820, Cl. 334-1.000.
- Krickl, Josef: *See—*
  - Fairley, John; Krickl, Josef; and Weber, Robert, 4,128,755, Cl. 235-92.00T.
- Kroker, Ruprecht; and Sander, Hans, to BASF Aktiengesellschaft. Baking finishes of low solvent content. 4,128,521, Cl. 260-31.40R.
- Krueger, Friedrich; and Palleduhn, Dieter, to Joh. A. Benckiser GmbH. Process of producing a cyclohexane-1,2,3,4-tetracarboxylic acid-containing scale inhibitor. 4,128,492, Cl. 252-180.000.
- Kuan, Tiong H.: *See—*
  - Britton, James E.; Metcalf, Fredric D.; Sommer, John G.; Kuan, Tiong H.; Rilling, Victor R.; and Welch, John A., 4,128,523, Cl. 260-33.6AQ.
- Kubota, Naohiro: *See—*
  - Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, 4,128,608, Cl. 260-880.00R.
- Kulka, Kurt; Mild, Frank; and Fischetti, Frank, Jr., to Fritzsche Dodge & Olcott Inc. Tobacco compositions containing 3-ethoxy-4-hydroxybenzaldehyde 2,2-dimethyl propanediol acetal. 4,128,101, Cl. 131-17.00R.
- Kummerle, Kurt; Heise, Hartmut; and Hille, Ernst, to Hoechst Aktiengesellschaft. Process for the manufacture of 3-hydroxybutyric acid arylamides with trialkyl phosphate and substituted phosphine promotor. 4,128,578, Cl. 260-562.00R.
- Kundikoff, Peter. Cutting guide square. 4,128,030, Cl. 83-745.000.
- Kunii, Kazuya, to Nissan Motor Company, Limited. Engine mechanical loss reducing system. 4,128,085, Cl. 123-75.00E.
- Kupka, Dieter. Stirring mechanism for a clearing vat employed in breweries. 4,128,019, Cl. 74-424.80R.
- Kurihara, Tomomichi: *See—*
  - Okamoto, Tomiyasu; Nishimoto, Tsunanori; Sawada, Kaoru; Hayakawa, Koji; and Kurihara, Tomomichi, 4,128,187, Cl. 220-464.000.
- Kurita, Masaru; Jomon, Kazuyoshi; Komori, Tadaaki; Nakatani, Isami; and Tsuji, Masahiro, to Fujisawa Pharmaceutical Co., Ltd. Process for the purification of FR-1923 substance. 4,128,546, Cl. 260-239.00A.
- Kurtz, Leonard D.; and Ludwig, Philip, to Deknatel Inc. Sternotomy surgical needle. 4,128,351, Cl. 128-305.000.
- Kusakabe, Takaaki: *See—*
  - Shiokawa, Showko; Kusakabe, Takaaki; Moriizumi, Toyosaka; and Yasuda, Tsutomu, 4,128,819, Cl. 333-72.000.
- Kusumoto, Sho: *See—*
  - Nagao, Masato; and Kusumoto, Sho, 4,128,762, Cl. 250-272.000.
- Kuwabara, Hideo: *See—*
  - Yamamoto, Yoshihiko; Shigenobu, Masahiro; and Kuwabara, Hideo, 4,128,768, Cl. 250-535.000.
- Kuwazawa, Hiroyasu: *See—*
  - Yoshino, Masataka; Matsuno, Nobuyoshi; Kuwazawa, Hiroyasu; and Nomaguchi, Tomatsu, 4,128,390, Cl. 431-242.000.
- Kydonieus, Nicholas, to Pennwalt Corporation. Method of washing polymer latices by aerating. 4,128,517, Cl. 260-29.60F.
- Kyle, William; and Lee, Bruce H. Management of incontinence. 4,128,686, Cl. 428-219.000.
- Laboratories OM Societe Anonyme: *See—*
  - Schulthess, Adrian; and de Courten, Alfred, 4,128,661, Cl. 424-316.000.
- Laciak, Francis M.: *See—*
  - Strunc, Gerald R.; and Laciak, Francis M., 4,128,887, Cl. 364-475.000.
- Lafferty, James M., to General Electric Company. High-current vacuum switch with reduced contact erosion. 4,128,748, Cl. 200-144.00B.
- Lafon, Louis, to Societe Anonyme Dite: Laboratoire L. Lafon. Piperonylamine derivatives. 4,128,656, Cl. 424-282.000.
- Lafuente Ruberte, Antonio. Vehicle speed reducer or eddy current brake. 4,128,147, Cl. 188-164.000.
- Lamage Limited: *See—*
  - Generoux, Robert E., 4,128,136, Cl. 175-330.000.

- Lambert Brake Corporation: *See—*
  - Euler, John W., 4,128,145, Cl. 188-71.200.
- Lambert, Robert W.: *See—*
  - Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Lambert, Robert W.; and Ringrose, Peter S., 4,128,542, Cl. 260-112.50R.
- Lamiaux, Sylves L., to Burroughs Corporation. Structure for an easily testable single chip calculator/controller. 4,128,873, Cl. 364-200.000.
- Lamm, Gunther: *See—*
  - Dehnert, Johannes; and Lamm, Gunther, 4,128,545, Cl. 260-156.000.
- Lanz, Otto, to BBC Brown, Boveri & Company Limited. Method and apparatus for locating a fault on a line. 4,128,805, Cl. 324-52.000.
- Lappington, John P., to Chrysler Corporation. Programmable read only memory for electronic engine control. 4,128,900, Cl. 365-94.000.
- Larkin, Dennis J.: *See—*
  - Greenwald, Harry; and Larkin, Dennis J., 4,128,156, Cl. 194-61.000.
- Larson, Gerald L.; Treadwell, William A.; and Seaver, James, to Eaton Corporation. Method of controlling apparatus and servoactuator therefor. 4,128,044, Cl. 91-20.000.
- Lauterbach, Jacques V. Allochirally divided connector for tubular frame members. 4,128,353, Cl. 403-175.000.
- Lauterbach, John H.; and Rossler, Frederick W., Jr., to AMP Incorporated. Eccentric bore electrical connecting device. 4,128,296, Cl. 339-274.000.
- Lawrence, Norman F.: *See—*
  - Ross, Larry E.; and Lawrence, Norman F., 4,128,372, Cl. 425-311.000.
- Layhe, Michael: *See—*
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- McNaney, Joseph T. Optical system for changing the cross sectional dimensions of a collimated beam of light. 4,128,308, Cl. 350-286.000.
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Mixon, James L., Jr.; and Werner, Walter M., to AMP Incorporated. Ignitor assembly. 4,128,058, Cl. 102-28.00R.
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Plank, Charles J.; Rosinski, Edward J.; and Givens, Edwin N., 4,128,504, Cl. 252-455.00Z.
Tobias, Michael A.; and Martinez, Carlos J., 4,128,515, Cl. 260-18.0EP.
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Schleppnik, Alfred A., 4,128,509, Cl. 252-522.000.
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Moore, Arthur R. Tandem wheel suspension for a vehicle frame. 4,128,260, Cl. 280-676.000.
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Gardner, Harry N., 4,128,879, Cl. 365-73.000.

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Prioste, Jerry E., 4,128,872, Cl. 364-900.000.
Valek, Robert J.; and Gartner, Todd H., 4,128,885, Cl. 364-424.000.
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Mueller, Roman; and Kalapos, Josef, to Gebrueder Buehler AG. Apparatus for moistening whole grains. 4,128,052, Cl. 99-516.000.
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Muntean, Andy. Drive wheel. 4,128,018, Cl. 74-413.000.
Murad, Sammy Y., to Wahlco Inc. High voltage DC power supply. 4,128,871, Cl. 363-144.000.
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Nagati, Rashed N., to Pennsylvania Engineering Corporation. Cooling assembly for metallurgical vessels. 4,128,232, Cl. 266-241.000.
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National Storage Systems, Inc.: *See*—
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Clarke, Ernest J., 4,128,319, Cl. 353-27.00R.
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Nelson, James A.: *See*—
Lazarus, Harrison; and Nelson, James A., 4,128,173, Cl. 206-570.000.
Nelson, Norman A., to Upjohn Company, The. 15-Methyl- and 16-phenoxy-PGF$_2\alpha$, amides. 4,128,577, Cl. 260-559.00B.
New Jersey Zinc Company, The: *See*—
Robinson, Victor S.; and Eshelman, Donald M., 4,128,619, Cl. 423-244.000.
New Nippon Electric Company, Ltd.: *See*—
Kato, Kazuo; and Narihiro, Michiaki, 4,128,821, Cl. 334-51.000.
New Pneumatics, Inc.: *See*—
Schmidt, Oscar W., 4,127,966, Cl. 49-141.000.
Newcomb, Nelson F.; and Newcomb, Nelson F., Jr. Practice baseball. 4,128,238, Cl. 273-26.00R.
Newcomb, Nelson F., Jr.: *See*—
Newcomb, Nelson F.; and Newcomb, Nelson F., Jr., 4,128,238, Cl. 273-26.00R.
Newell, William H., to Perkin-Elmer Corporation, The. Two axis flexure. 4,128,352, Cl. 403-57.000.
Newman, Douglas A.; and Emerson, Robert T., to Columbia Ribbon and Carbon Manufacturing Co., Inc. Master sheets and process for printing same. 4,128,430, Cl. 106-31.000.
Newmont Exploration Limited: *See*—
DeGuire, Marcel F.; and Wirag, John H., III, 4,128,617, Cl. 423-106.000.
Nguyen, Van-Tran: *See*—
Chang, Tao-Yuan; Damen, Theodoor C.; and Nguyen, Van-Tran, 4,128,772, Cl. 307-88.300.
Ni-Tec, Inc.: *See*—
Fender, Ferdinand G.; and Tegethoff, Jon E., 4,128,340, Cl. 356-218.000.
Niblett, David C.; and Capewell, James T., to Simon-Hartley Limited. Lifting beam. 4,128,267, Cl. 294-81.00R.
Nicholson, John S.: *See*—
Adams, Stewart S.; Armitage, Bernard J.; Nicholson, John S.; and Tantum, James G., 4,128,573, Cl. 562-465.000.
Nicolaides, Ernest D.: *See*—
Rebstock, Mildred C.; Nicolaides, Ernest D.; Mick, Thomas F.; Tinney, Francis J.; and Wittle, Eugene L., 4,128,540, Cl. 260-112.50R.
Nighswonger, James; and Spector, George. Pressurized coating container with depth of color indicator. 4,128,193, Cl. 222-402.210.
Nikishov, Alexandr S.: *See*—
Terekhov, Kuzma I.; Tumanov, Alexei T.; Ozerova, Alexandra P.; Topilin, Valentin V.; Dzugutov, Mikhail Y.; Ljubinskaya, Mara A.; Pashchnik, Gennady A.; Nikishov, Alexandr S.; and Ustinov, Terenty I., 4,128,419, Cl. 75-171.000.
Nikitchenko, Vladimir F.: *See*—
Shakula, Nikolai M.; Voloschenko, Nikolai I.; Shishkin, Nikolai F.; Muratov, Anatoly S.; Guzchenko, Alexandr P.; Anokhin, Vladimir M.; and Nikitchenko, Vladimir F., 4,128,367, Cl. 425-11.000.
Nippon Electric Co., Ltd.: *See*—
Kage, Kouzou, 4,128,809, Cl. 325-324.000.
Shiba, Hiroshi, 4,127,931, Cl. 29-571.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Ogita, Minoru, 4,128,810, Cl. 325-398.000.
Nippon Oil and Fats Co. Ltd.: *See*—
Ishida, Shiro; Funatsuki, Genuemon; Izaiku, Hiromi; and Hirano, Jiro, 4,128,483, Cl. 252-8.600.
Nippon Shokubai Kagaku Kogyo Co. Ltd.: *See*—
Yamauchi, Shin; Yonehara, Kiyoshi; Horie, Koshi; Ono, Tetsuji; and Ohara, Takashi, 4,128,503, Cl. 252-435.000.
Nippon Soken, Inc.: *See*—
Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,128,081, Cl. 123-32.0SP.

- Nippon Telegraph and Telephone Public Corp.: *See*—
  - Kawaguchi, Hitoshi; and Furukawa, Yoshitaka, 4,128,815, Cl. 331-94.50H.
  - Sakai, Tetsushi, 4,128,845, Cl. 357-51.000.
  - Samejima, Shuichi; and Hirade, Kenkichi, 4,128,828, Cl. 340-146.1AQ.
- Nishiba, Kenzo, to Teijin Seiki Company Limited. Radial piston type hydraulic pump-motor. 4,128,048, Cl. 91-491.000.
- Nishikawa, Akio: *See*—
  - Kinjo, Noriyuki; Nishikawa, Akio; Katagiri, Junichi; Yokono, Hitoshi; Ikeda, Tamotsu; and Kobayashi, Tsuguo, 4,128,527, Cl. 260-42.180.
- Nishimoto, Tsunanori: *See*—
  - Okamoto, Tomiyasu; Nishimoto, Tsunanori; Sawada, Kaoru; Hayakawa, Koji; and Kurihara, Tomomichi, 4,128,187, Cl. 220-464.000.
- Nishimura, Hideo; Masaki, Seishi; Miyauchi, Takao; and Kobayashi, Nariyoshi, to Daiwa Kasei Kenkyujo Kabushiki Kaisha. Coloring by electrolysis of aluminum or aluminum alloys. 4,128,460, Cl. 204-35.00N.
- Nissan Motor Company, Limited: *See*—
  - Aoyama, Syunichi, 4,128,090, Cl. 123-119.00A.
  - Hayashi, Makio; and Hisatomi, Takashi, 4,128,087, Cl. 123-103.00E.
  - Kunii, Kazuya, 4,128,085, Cl. 123-75.00E.
  - Tanaka, Shigenori, 4,128,114, Cl. 139-435.000.
- Niven, Ralph E., to White-Westinghouse Corporation. Oil stirrer for refrigeration compressor. 4,127,994, Cl. 62-469.000.
- Nixdorf Computer AG: *See*—
  - Huellwegen, Josef, 4,128,743, Cl. 179-170.00R.
- Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, to Nippon Soken, Inc. Torch ignition type internal combustion engine. 4,128,081, Cl. 123-32.0SP.
- Nohara, Masaru: *See*—
  - Ojima, Shin; Ohgami, Kazuhiko; Watanabe, Kazutaka; Nohara, Masaru; and Yamamoto, Kenji, 4,128,889, Cl. 364-705.000.
- Nomaguchi, Tomatsu: *See*—
  - Yoshino, Masataka; Matsuno, Nobuyoshi; Kuwazawa, Hiroyasu; and Nomaguchi, Tomatsu, 4,128,390, Cl. 431-242.000.
- Nomura, Takao; Umemoto, Yoshiro; and Sakamoto, Tatsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Auto ceiling panel and its manufacturing method. 4,128,682, Cl. 428-138.000.
- Nomura, Takao; Umemoto, Yoshiro; and Sakamoto, Tatsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Auto ceiling panel and its manufacturing process. 4,128,683, Cl. 428-138.000.
- Norstrom, Gote J. W., to Uddeholms Aktiegolag. Degreasing apparatus. 4,128,103, Cl. 134-143.000.
- North American Philips Corporation: *See*—
  - Madsen, Elmer W., 4,128,825, Cl. 335-272.000.
- Northup, John D. Child-proof container and cap. 4,128,184, Cl. 215-222.000.
- Norton, James F.; Parks, Harold G.; and Possin, George E., to General Electric Company. Archival memory media and method for information recording thereon. 4,128,897, Cl. 365-118.000.
- Nose, Yukihiko: *See*—
  - Malchesky, Paul S.; and Nose, Yukihiko, 4,128,479, Cl. 210-321.00B.
- Nothen, Karl; Creixell, Francisco B.; and Ehrig, Bodo, to Bayer Aktiengesellschaft. Process and a dryer for drying polychloroprene sheets. 4,127,945, Cl. 34-18.000.
- Nozawa, Kazutoshi; Ashibe, Yasue; Aruga, Hatsuo; and Tatsuzawa, Kunio, to Rhythm Watch Co., Ltd. Pendulum clock mechanism. 4,127,986, Cl. 58-134.000.
- NRM Corporation: *See*—
  - Cantarutti, Armindo, 4,128,450, Cl. 156-417.000.
- NSK-Warner, K.K.: *See*—
  - Mita, Akira, 4,127,922, Cl. 24-230.00A.
- NTN Toyo Bearing Company Limited: *See*—
  - Hioki, Isaaku, 4,128,216, Cl. 242-199.000.
  - Ohashi, Yasuji; and Mitani, Yoichiro, 4,128,796, Cl. 318-636.000.
- Nutt, Wendell G.; and Roach, Mark E., to Bell Telephone Laboratories, Incorporated. Cable design with limited color coding. 4,128,736, Cl. 174-112.000.
- O.A.H. Homes (Proprietary) Ltd.: *See*—
  - Hansen, Otto A. H., 4,128,275, Cl. 298-19.00B.
- Obiaya, Joseph O. Combustible element and oxygen concentration sensor. 4,128,458, Cl. 204-1.00T.
- O'Bryan, Edwin J.: *See*—
  - Marsilio, Dominic O.; and O'Bryan, Edwin J., 4,128,745, Cl. 200-16.00C.
- Occhipinti, Carl, to Bunker Ramo Corporation. Electrical connector having a low insertion force for flat circuit bearing elements. 4,128,289, Cl. 339-75.0MP.
- Oce-Nederland B.V.: *See*—
  - Vosbeek, Gerardus J., 4,128,423, Cl. 96-49.000.
- Oehler, Kenneth L. Photodetector circuit for ballistic velocity measurement. 4,128,761, Cl. 250-222.00R.
- Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, to Seiko Koki Kabushiki Kaisha. Slip mechanism of clock. 4,127,984, Cl. 58-7.000.
- Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. Signal level indicator driving circuit. 4,128,810, Cl. 325-398.000.
- Ogura, Hajime; Asakawa, Haruma; Kondoh, Junichi; Nakamura, Masashi; and Oyaide, Sadamu, to Mitsubishi Jukogyo Kabushiki Kaisha. Floating-refuse-collecting boat. 4,128,068, Cl. 114-26.000.
- O'Hara, Kevin J.; and Kilvington, Howard J., to Coats Brothers & Company Ltd. Rheological agents. 4,128,436, Cl. 106-243.000.
- Ohara, Takashi: *See*—
  - Yamauchi, Shin; Yonehara, Kiyoshi; Horie, Koshi; Ono, Tetsuji; and Ohara, Takashi, 4,128,503, Cl. 252-435.000.
- Ohashi, Yasuji; and Mitani, Yoichiro, to NTN Toyo Bearing Company Limited. Gap eliminator. 4,128,796, Cl. 318-636.000.
- Ohgami, Kazuhiko: *See*—
  - Ojima, Shin; Ohgami, Kazuhiko; Watanabe, Kazutaka; Nohara, Masaru; and Yamamoto, Kenji, 4,128,889, Cl. 364-705.000.
- Ohkawa, Tsutomu: *See*—
  - Makino, Kiyoji; and Ohkawa, Tsutomu, 4,128,598, Cl. 260-837.00R.
- Ohngemach, Jorg: *See*—
  - Baumer, Wilhelm; Bernhard, Horst; Esselborn, Reiner; Ohngemach, Jorg; Stahlecker, Otto; and Zureda, Fritz, 4,128,435, Cl. 106-148.000.
- Ohse, Helmut: *See*—
  - Kohler, Armin; Pelousek, Herbert; Ohse, Helmut; Westermann, Hans; and Magosch, Karl-Heinz, 4,128,533, Cl. 528-279.000.
  - Kohler, Armin; Pelousek, Herbert; Ohse, Helmut; Westermann, Hans; and Magosch, Karl-Heinz, 4,128,534, Cl. 528-279.000.
- Ohta, Hideyasu; Uozumi, Takahiro; Kanbe, Masaru; Abe, Naoto; Shirasaki, Jun; and Mayama, Masayoshi, to Konishiroku Photo Industry Co., Ltd. Process for subbing photographic hydrophobic films. 4,128,426, Cl. 96-87.00R.
- Ohtsuka, Yozo: *See*—
  - Kojima, Takakazu; and Ohtsuka, Yozo, 4,128,719, Cl. 548-321.000.
- Ojima, Shin; Ohgami, Kazuhiko; Watanabe, Kazutaka; Nohara, Masaru; and Yamamoto, Kenji, to Hoshidenki-Seizo Kabushiki Kaisha. Pen type electronic digital calculator. 4,128,889, Cl. 364-705.000.
- Okamoto, Tomiyasu; Nishimoto, Tsunanori; Sawada, Kaoru; Hayakawa, Koji; and Kurihara, Tomomichi, to Hitachi Shipbuilding & Engineering Co., Ltd. Secondary barrier construction for low temperature liquified gas storage tank carrying vessels. 4,128,187, Cl. 220-464.000.
- Okaniwa, Hiroshi; and Yatabe, Toshiaki, to Teijin Limited. Cell with N,N-bis (substituted phenyl)-4,4- dipyridinium salt depolarizer. 4,128,702, Cl. 429-27.000.
- Okazaki, Kunio, to Stanley Electric Co., Ltd. Automatically returning apparatus for turn signal lamp switch. 4,128,770, Cl. 307-10.0LS.
- Oki Electric Industry, Co., Ltd.: *See*—
  - Yasuhara, Hiroshi; and Saito, Seiki, 4,128,878, Cl. 364-200.000.
- Oldford, William G., to Huron Tool & Manufacturing Division of U.S. Industries, Inc. Two-piece fitting assembly. 4,128,264, Cl. 285-41.000.
- Olin Corporation: *See*—
  - Vitek, John M., 4,128,418, Cl. 75-157.500.
- Olschewski, Armin: *See*—
  - Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; Brandenstein, Manfred; and Schulz, Toni, 4,128,279, Cl. 308-6.00C.
- Olshvang, Mikhail V.: *See*—
  - Ermolovich, Eduard S.; and Olshvang, Mikhail V., 4,128,869, Cl. 363-87.000.
- Olson, Harris S.: *See*—
  - Moen, Lowell J.; and Olson, Harris S., 4,128,132, Cl. 172-747.000.
- Omron Tateisi Electronics Co.: *See*—
  - Nagano, Akira; Urasaki, Kazuaki; Osato, Akira; and Sakurai, Isao, 4,128,756, Cl. 235-92.0SB.
- Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Amino acid derivatives. 4,128,721, Cl. 560-16.000.
- Ondetti, Miguel A.: *See*—
  - Cushman, David W.; and Ondetti, Miguel A., 4,128,653, Cl. 424-267.000.
- Onizawa, Masao, to Sanyo Trading Co., Ltd. Curable vinyl chloride resin composition. 4,128,539, Cl. 260-4.00R.
- Ono Pharmaceutical Company: *See*—
  - Hayashi, Masaki; Kori, Seiji; and Miyake, Hajimu, 4,128,720, Cl. 560-9.000.
- Ono, Tetsuji: *See*—
  - Yamauchi, Shin; Yonehara, Kiyoshi; Horie, Koshi; Ono, Tetsuji; and Ohara, Takashi, 4,128,503, Cl. 252-435.000.
- Onoki, Fumio; and Kamiya, Hajime, to Kabushiki Kaisha Hoya Lens. Anti reflection coating with a composite middle layer. 4,128,303, Cl. 350-164.000.
- Orban, Jean: *See*—
  - Vital, Zoltan; and Orban, Jean, 4,128,786, Cl. 315-151.000.
- Oren, Jess W., III; Kirchner, Eugene M.; and Wehry, Charles F., Jr., to Armstrong Cork Company. Solar energy collector. 4,128,095, Cl. 126-270.000.
- Ormesher, Robert J.: *See*—
  - van Linden, Jan H. L.; Claxton, Raymond J.; Herrick, Joseph R.; and Ormesher, Robert J., 4,128,415, Cl. 75-65.00R.
- Osato, Akira: *See*—
  - Nagano, Akira; Urasaki, Kazuaki; Osato, Akira; and Sakurai, Isao, 4,128,756, Cl. 235-92.0SB.
- Otis Engineering Corporation: *See*—
  - Taylor, Donald F., 4,128,127, Cl. 166-105.000.
- Otsu, Shinpei; Sekiguchi, Akira; Tobita, Nobuyoshi; Chikamatsu, Shigeru; Hosoe, Yoshihisa; Matsui, Motoaki; Sugimoto, Noboru; and Totsuka, Noriyoshi, to Hitachi, Ltd. Equipment for producing high voltage rectifying units. 4,128,378, Cl. 425-445.000.
- Owen, Daniel V., to General Electric Company. Method of operating gaseous discharge lamps. 4,128,789, Cl. 315-209.00R.
- Owens-Corning Fiberglas Corporation: *See*—
  - McCluskey, John J., 4,128,601, Cl. 260-862.000.
- Owens-Illinois, Inc.: *See*—
  - Miller, John W. V., 4,128,901, Cl. 365-116.000.
- Oy Wartsila AB: *See*—
  - Komulainen, Pekka, 4,128,213, Cl. 242-66.000.

  - Malminen, Henrikki; and Martikainen, Kaarlo, 4,127,996, Cl. 70-365.000.
- Oyaide, Sadamu: *See*—
  - Ogura, Hajime; Asakawa, Haruma; Kondoh, Junichi; Nakamura, Masashi; and Oyaide, Sadamu, 4,128,068, Cl. 114-26.000.
- Oyamada, Takeo; Tomizawa, Choji; Domoto, Masahiro; and Narisawa, Shizuo, to Sumitomo Chemical Company, Limited. Pressure-sensitive adhesive and vinyl acetate-ethylene copolymer emulsion useful as base material therefor. 4,128,518, Cl. 260-29.6WB.
- Ozerova, Alexandra P.: *See*—
  - Terekhov, Kuzma I.; Tumanov, Alexei T.; Ozerova, Alexandra P.; Topilin, Valentin V.; Dzugutov, Mikhail Y.; Ljubinskaya, Mara A.; Pashchnik, Gennady A.; Nikishov, Alexandr S.; and Ustinov, Terenty I., 4,128,419, Cl. 75-171.000.
- Ozolins, Janis: *See*—
  - Haberl, John B.; and Ozolins, Janis, 4,128,335, Cl. 356-37.000.
- Pabst Brewing Company: *See*—
  - Naylor, Robert; and Coyer, Howard F., 4,128,637, Cl. 424-95.000.
- Pacht, Amos; and Johnson, Herbert L. Fluid delivery system. 4,128,207, Cl. 239-186.000.
- Page, Jerome M., to Rockwell International Corporation. Prediction computation for weapon control. 4,128,837, Cl. 343-7.00G.
- Paitula, Hannu O., to Granges Essem Aktiebolag Fack. Locking device for vehicle safety seat belts. 4,128,261, Cl. 280-744.000.
- Pako Corporation: *See*—
  - Melander, Theodore A.; and Charnley, Ralph L., 4,128,325, Cl. 354-298.000.
  - Strunc, Gerald R.; and Laciak, Francis M., 4,128,887, Cl. 364-475.000.
- Palitex Project Company GmbH: *See*—
  - Munker, Gert, 4,127,983, Cl. 57-279.000.
- Palleduhn, Dieter: *See*—
  - Krueger, Friedrich; and Palleduhn, Dieter, 4,128,492, Cl. 252-180.000.
- Palmer, Clifford A., to Holset Engineering Company Limited. Bearing retaining plate. 4,128,283, Cl. 308-237.00R.
- Palmer, David N.; and Davison, John E., to Combustion Engineering, Inc. Lubricant for high temperature nuclear service. 4,128,486, Cl. 252-25.000.
- Palyn Associates, Inc.: *See*—
  - Domenico, Robert J., 4,128,771, Cl. 307-52.000.
- Panafacom Limited: *See*—
  - Yamamoto, Mitsuru; Arai, Jun; Isogawa, Takao; and Hasebe, Isamu, 4,128,881, Cl. 364-200.000.
- Pantukh, Boris I.: *See*—
  - Liakumovich, Alexandr G.; Pantukh, Boris I.; Sultanova, Mengzda K.; Popov, Vasily P.; Tolstikov, Genrikh A.; Monakov, Jury B.; Juriev, Valery P.; Mandelshtam, Elena Y.; Korotkevich, Boris S.; and Shmuk, Jury A., 4,128,708, Cl. 526-162.000.
- Paoli, Alfred, to Akzona Incorporated. Conductive strip. 4,128,293, Cl. 339-258.00R.
- Papst, Georg; and Wrobel, Guenter, to Papst-Motoren KG. Radial flow fan with motor cooling and resilient support of rotor shaft. 4,128,364, Cl. 417-354.000.
- Papst, Georg F.: *See*—
  - Merkle, Alfred; and Papst, Georg F., 4,128,778, Cl. 310-67.00R.
- Papst-Motoren KG: *See*—
  - Merkle, Alfred; and Papst, Georg F., 4,128,778, Cl. 310-67.00R.
  - Papst, Georg; and Wrobel, Guenter, 4,128,364, Cl. 417-354.000.
- Paraskos, John A.: *See*—
  - Malone, Huey P.; Paraskos, John A.; and Taylor, Herman, Jr., 4,128,471, Cl. 208-8.000.
- Parcor: *See*—
  - Braye, Emile, 4,128,561, Cl. 260-329.0AM.
- Parke, Davis & Company: *See*—
  - Rebstock, Mildred C.; Nicolaides, Ernest D.; Mick, Thomas F.; Tinney, Francis J.; and Wittle, Eugene L., 4,128,540, Cl. 260-112.50R.
- Parker, Bill B.; Beynand, Rudy; and Cormier, Arthur J., to American International Tool Company, Inc. Mud retaining valve. 4,128,108, Cl. 137-327.000.
- Parks, Harold G.: *See*—
  - Norton, James F.; Parks, Harold G.; and Possin, George E., 4,128,897, Cl. 365-118.000.
- Parrish, Charles A.; and Webb, Bryant F., to Sperry Rand Corporation. Drive means for a crop harvesting machine. 4,127,981, Cl. 56-14.400.
- Pasedach, Heinrich: *See*—
  - Arnold, Lothar; Pasedach, Heinrich; and Pommer, Horst, 4,128,728, Cl. 568-799.000.
- Pashchnik, Gennady A.: *See*—
  - Terekhov, Kuzma I.; Tumanov, Alexei T.; Ozerova, Alexandra P.; Topilin, Valentin V.; Dzugutov, Mikhail Y.; Ljubinskaya, Mara A.; Pashchnik, Gennady A.; Nikishov, Alexandr S.; and Ustinov, Terenty I., 4,128,419, Cl. 75-171.000.
- Pasquinelli, Aldo: *See*—
  - Barba, Diego; D'Agostini, Candido; and Pasquinelli, Aldo, 4,128,457, Cl. 203-29.000.
- Pastor, Ricardo C.; and Robinson, Morton, to Hughes Aircraft Company. Generation of CF_4 from Teflon for reactive atmosphere processing and growth of metal fluorides. 4,128,589, Cl. 260-653.000.
- Pataki, William V. Apparatus for feeding and orienting parts. 4,128,159, Cl. 198-389.000.
- Pavlis, James D., to United States of America, Army. Phase discriminator. 4,128,812, Cl. 328-134.000.
- Pawlak, Daniel E.; and Levenson, Michael. Deflagrating propellant compositions. 4,128,443, Cl. 149-71.000.
- Pay Television Corporation: *See*—
  - Urwin, Peter T., 4,128,038, Cl. 85-45.000.
- Payne, George C., to PNI, Inc. Metal detector system with ground effect rejection. 4,128,803, Cl. 324-3.000.
- Peacock, Frederick C.: *See*—
  - Hunt, John D.; and Peacock, Frederick C., 4,128,665, Cl. 424-330.000.
- Peemoller, Horst: *See*—
  - Flisikowski, Peter; and Peemoller, Horst, 4,128,781, Cl. 313-60.000.
- Pelengaris, Akis. Illuminated shoe. 4,128,861, Cl. 362-103.000.
- Peloggio, Alessandro. Apparatus for sewing together portions of knitted articles. 4,128,066, Cl. 112-27.000.
- Pelosi, Stanford S., Jr., to Morton-Norwich Products, Inc. 1-Methyl-4-piperidyl 5-phenyl-2-furoates. 4,128,550, Cl. 546-214.000.
- Pelousek, Herbert: *See*—
  - Kohler, Armin; Pelousek, Herbert; Ohse, Helmut; Westermann, Hans; and Magosch, Karl-Heinz, 4,128,533, Cl. 528-279.000.
  - Kohler, Armin; Pelousek, Herbert; Ohse, Helmut; Westermann, Hans; and Magosch, Karl-Heinz, 4,128,534, Cl. 528-279.000.
- Pemaler, J. Paul: *See*—
  - Rappas, Alkis S.; and Pemaler, J. Paul, 4,128,416, Cl. 75-119.000.
- Pendleton, Robert G.: *See*—
  - Bondinell, William E.; and Pendleton, Robert G., 4,128,666, Cl. 424-330.000.
- Pennsylvania Engineering Corporation: *See*—
  - Nagati, Rashed N., 4,128,232, Cl. 266-241.000.
- Pennwalt Corporation: *See*—
  - Bartoszek, Edward J.; and Christofas, Alkis, 4,128,519, Cl. 260-29.6NR.
  - Kydonieus, Nicholas, 4,128,517, Cl. 260-29.60F.
  - Merchant, Dihrendra R., 4,128,626, Cl. 423-488.000.
- Penrod, Orville R.: *See*—
  - Bartley, John E.; Penrod, Orville R.; and Radosevich, Lawrence D., 4,127,934, Cl. 29-626.000.
- Penrose, Alexander B.; and Leeming, Michael R. G., to Pfizer Inc. Triazapentadienes as acaricides. 4,128,652, Cl. 424-263.000.
- Periphonics Corporation: *See*—
  - Ragland, Evan L., III, 4,128,346, Cl. 400-144.200.
- Perkin-Elmer Corporation, The: *See*—
  - Newell, William H., 4,128,352, Cl. 403-57.000.
- Perronnet, Jacques; and Taliani, Laurent, to Roussel Uclaf. Novel 3-(phosphoryloxy) and (phosphonyloxy)-thiophenes. 4,128,562, Cl. 260-332.30R.
- Perry, Joseph A. Pressure transducer. 4,128,013, Cl. 73-701.000.
- Pertl, Jerry H.; and Koehler, Howard A., to Sperry Rand Corporation. Method and apparatus for preventing erroneous data transfer from a digital computer. 4,128,874, Cl. 364-200.000.
- Pestolite Inc.: *See*—
  - Phillips, Dennis G., 4,127,961, Cl. 43-139.000.
- Peters, Dudley C.: *See*—
  - Scott, John P.; Peters, Dudley C.; and Foster, Richard C., 4,128,800, Cl. 322-28.000.
- Peters, John; and Thompson, Edward E. Mouse trap. 4,127,958, Cl. 43-81.000.
- Petersen, Egon N.: *See*—
  - Vollkommer, Norbert; Petersen, Egon N.; Klinkenberg, Herbert; and Schmidt, Werner, 4,128,709, Cl. 526-218.000.
- Peterson, Janet B.: *See*—
  - Schmidt, Andreas; Peterson, Janet B.; and Dexter, Martin, 4,128,718, Cl. 548-313.000.
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- Peterson, Richard J., Jr. Fuse adapter terminal. 4,128,291, Cl. 339-154.00A.
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- Petry, Stanton H., to Cory Food Services, Inc. Beverage brewer structure. 4,128,050, Cl. 99-304.000.
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  - Penrose, Alexander B.; and Leeming, Michael R. G., 4,128,652, Cl. 424-263.000.
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- Phillips, Benjamin A., to Allied Chemical Corporation. Method and generator unit of an absorption heat pump system for separating a rich liquor into a refrigerant and a solution low in refrigerant content. 4,127,993, Cl. 62-101.000.
- Phillips, Dennis G., to Pestolite Inc. Apparatus for entrapping insects. 4,127,961, Cl. 43-139.000.
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  - Montgomery, Dean P., 4,128,595, Cl. 260-677.00H.
  - Smith, Clifford E.; and Holtz, Hans D., 4,128,596, Cl. 260-683.530.
- Pickrell, John W. Trash collecting and handling vehicle. 4,128,182, Cl. 214-302.000.
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  - Rejsa, Jack J., 4,128,074, Cl. 118-24.000.

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  - Badertscher, Hans; and Schindler, Walter, 4,128,307, Cl. 350-263.000.
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  - Bradbury, William B.; Watts, Robert H.; and Scott, E. Timm, 4,128,211, Cl. 241-101.600.
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  - Stamatiou, Dimitri S.; and Stamatiou, Lila D., 4,128,404, Cl. 55-1.000.
- Pneutek, Inc.: *See*—
  - Haytayan, Harry M., 4,128,110, Cl. 137-454.200.
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  - Mitzner, Bernard M., 4,128,507, Cl. 252-522.000.
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  - Greenwald, Richard B., 4,128,425, Cl. 96-66.0HD.
  - Timson, William J., 4,128,667, Cl. 427-348.000.
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  - Liakumovich, Alexandr G.; Pantukh, Boris I.; Sultanova, Mengzda K.; Popov, Vasily P.; Tolstikov, Genrikh A.; Monakov, Jury B.; Juriev, Valery P.; Mandelshtam, Elena Y.; Korotkevich, Boris S.; and Shmuk, Jury A., 4,128,708, Cl. 526-162.000.
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  - Riches, Stanley J. W., 4,128,140, Cl. 184-1.500.
- Powell, George A. Skateboard wheels. 4,128,254, Cl. 280-87.04A.
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- Powers, Richard J. Pallet and roller post construction therefor. 4,128,253, Cl. 280-79.10A.
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  - Bitterice, Michael G.; and Keslar, Leroy D., 4,128,448, Cl. 156-166.000.
- Pratt-Read Corporation: *See*—
  - Elkins, Vance V., Jr., 4,128,242, Cl. 273-77.00A.
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  - Brooker, Gary L.; Terasaki, Wesley L.; and Price, Michael G., 4,128,628, Cl. 424-1.000.
- Prioste, Jerry E., to Motorola, Inc. High speed data shifter array. 4,128,872, Cl. 364-900.000.
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  - Schirmann, Jean-Pierre; Dubreux, Bernard; Bakes, Michel; Delavarenne, Serge-Yvon; and Daude-Lagrave, Marie-Christine, 4,128,494, Cl. 252-186.000.
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- Pusch, Walter G., to Johns-Manville Corporation. High density asbestos-free tobermorite thermal insulation containing wollastonite. 4,128,434, Cl. 106-120.000.
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  - Scherba, Michael B., 4,128,818, Cl. 333-70.00S.
- Quehen, Andre, to SECIM. Rolling mill stand. 4,127,997, Cl. 72-19.000.
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- Rana, Victor F.; and Siniscal, Paul D., to Rockwell International Corporation. Cart conveyor system. 4,128,163, Cl. 198-796.000.
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  - Stevens, William M., 4,128,766, Cl. 250-483.000.
- Raniero, John J. Foldable suitcase dolly. 4,128,252, Cl. 280-40.000.
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  - Sugiyama, Mitsuhiko; and Shinkai, Michio, 4,128,327, Cl. 355-3.00R.
- Rappas, Alkis S.; and Pemsler, J. Paul, to Kennecott Copper Corporation. Nickel recovery employing carbonyl ferrates. 4,128,416, Cl. 75-119.000.
- Ratcliffe, Charles T., to Allied Chemical Corporation. Catalytic reduction of aromatic sulfonyl halides with hydrogen sulfide to yield aromatic thiols. 4,128,586, Cl. 260-609.00D.
- Rathjen, Edwin H., Jr., to United States of America, Army. Arc spray welding replaceable electrode tip. 4,128,754, Cl. 219-137.00R.
- Rawson, Francis F. H., to USM Corporation. Method of attaching heels to shoes. 4,128,609, Cl. 264-23.000.
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- Rayburn, Charles C., to Illinois Tool Works Inc. Pleated metallized film capacitor wound about its center. 4,128,857, Cl. 361-309.000.
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  - Allen, James A.; and Coleman, Clyde F., 4,128,247, Cl. 274-23.00R.
  - Anderson, Charles H., 4,128,784, Cl. 313-422.000.
  - Gamble, Edward B., 4,128,868, Cl. 363-26.000.
  - Katagi, Kazuo, 4,128,834, Cl. 343-5.0EM.
  - Mirsch, John W., 4,128,824, Cl. 335-213.000.
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  - Gilberts, Alexander G., 4,128,855, Cl. 361-119.000.
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- Ross, Milton I. Method of assembling electrical connectors. 4,127,924, Cl. 29-413.000.
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- Russell, Ronald R., to General Electric Company. Ground fault defeat cable for high current static trip circuit breaker test sets. 4,128,804, Cl. 324-28.0CB.
- Ryan, Edward W.; and Israel, George H., Jr., to General Electric Company. Exhaust nozzle flap seal arrangement. 4,128,208, Cl. 239-265.390.
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  - Sabrowsky, Gerald; and Walker, Chancy M., 4,127,949, Cl. 37-13.000.
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  - Leibrock, Kurt; Bier, Adolf; and Buch, Friedrich, 4,128,402, Cl. 44-11.000.
- Sabourin, Edward T.; and Selwitz, Charles M., to Gulf Research & Development Company. Process for the preparation of nitrophenyl hydroxy substituted acetylene and conversion to nitrophenylacetylene. 4,128,588, Cl. 260-645.000.
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  - Kojima, Takakazu; and Ohtsuka, Yozo, 4,128,719, Cl. 548-321.000.
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  - Hayashi, Katsutake; Saitoh, Tutomu; Yomogida, Katsuyuki; and Saito, Hiromasa, 4,128,630, Cl. 424-69.000.
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  - Yasuhara, Hiroshi; and Saito, Seiki, 4,128,878, Cl. 364-200.000.
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- Sakai, Tetsushi, to Nippon Telegraph and Telephone Public Corp. Semiconductor integrated circuit devices having inverted frustum-shape contact layers. 4,128,845, Cl. 357-51.000.
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  - Nomura, Takao; Umemoto, Yoshiro; and Sakamoto, Tatsuo, 4,128,682, Cl. 428-138.000.
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- Sale, Anthony J. H., to Lever Brothers Company. Microwave heating of foods. 4,128,751, Cl. 219-10.55A.
- Sallee, Joseph P.: *See—*
  - Gay, Danny; Horine, James; Hudson, James C.; Sallee, Joseph P.; and Wininger, Hershel R., 4,128,029, Cl. 83-437.000.
- Salloga, Fred W.: *See—*
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- Salon, Sheppard J., to Westinghouse Electric Corp. Stranded conductor for dynamoelectric machines. 4,128,779, Cl. 310-213.000.
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  - Deal, Douglas O.; and Morley, Robert C., 4,128,160, Cl. 198-657.000.
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- Sandberg, Glenn A., to Formax, Inc. Constant-tension conveyor drive for thermal processing apparatus. 4,128,164, Cl. 198-813.000.
- Sander, Hans: *See—*
  - Kroker, Ruprecht; and Sander, Hans, 4,128,521, Cl. 260-31.40R.
- Sanders, James M.; Vinals, Joaquin F.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Bicyclo[2.2.2]-octene derivatives and mixtures thereof. 4,128,729, Cl. 568-820.000.
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  - Bourquin, Thomas E., deceased; and Sanders, Maggie B., executrix, 4,127,957, Cl. 43-53.500.
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  - Roesler, Erich; Deiner, Hans; Sandner, Bernhard; and Schilling, Hans, 4,128,675, Cl. 427-390.00E.
- Sandoz, Inc.: *See—*
  - Hardtmann, Goetz E., 4,128,649, Cl. 424-256.000.
- Sandoz Ltd.: *See—*
  - Bourquin, Jean-Pierre; Schwarb, Gustav; and Waldvogel, Erwin, 4,128,549, Cl. 546-202.000.
  - Schneider, Lukas, 4,128,544, Cl. 260-146.00T.
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  - Lerner, Moisey; Morse, James H.; and Bessendorf, Mikhael, 4,128,461, Cl. 204-58.000.
- Sankyo Organic Chemicals Company Limited: *See—*
  - Wyant, Robert E.; and Grotta, Henry M., 4,128,429, Cl. 106-15.00R.
  - Yajima, Kunihiko; and Sayama, Shuji, 4,128,565, Cl. 260-429.700.
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  - Ishii, Yasuhiro; Hirose, Shintaro; and Kawasaki, Ryoichi, 4,128,138, Cl. 181-167.000.
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  - Onizawa, Masao, 4,128,539, Cl. 260-4.00R.
- Sarantakis, Dimitrios; and Grant, Norman H., to American Home Products Corporation. Pentapeptide with morphine- like activity. 4,128,541, Cl. 260-112.50R.
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- Sato, Masao, to Amada Company, Limited. Horizontal bandsaw machines. 4,128,031, Cl. 83-820.000.
- Satoh, Tsuyoshi; and Tachino, Kenzo, to Mitsubishi Denki Kabushiki Kaisha. Elevator speed control system. 4,128,142, Cl. 187-29.00R.
- Saumsiegle, Robert W.; and Harry, Ieuan L., to Continental Can Company, Inc. Injection blow molding apparatus. 4,128,374, Cl. 425-403.000.
- Sauvey, Donald R.; and Magnuson, Robert E., to Hammond Corporation. Electro-mechanical keyboard memory for an electronic musical instrument. 4,128,036, Cl. 84-441.000.
- Savage, Robert J. Investigation of the soundness of structures. 4,128,011, Cl. 73-579.000.
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  - Wennerblom, Bengt A., 4,128,669, Cl. 427-8.000.
- Scaduto, John R. Tool holder. 4,128,026, Cl. 82-11.000.
- Scamehorn, John F.: *See—*
  - Frohreich, Richard A.; and Scamehorn, John F., 4,128,405, Cl. 55-59.000.
- Schachar, Ronald A. Horizontally mounted intraocular lens and the method of implantation thereof. 4,127,903, Cl. 3-13.000.
- Scherba, Michael B., to PYROHM, INC. Electrical frequency responsive structure. 4,128,818, Cl. 333-70.00S.
- Schering Aktiengesellschaft: *See—*
  - Arndt, Friedrich; and Boroschewski, Gerhard, 4,128,413, Cl. 71-100.000.
- Scherrer, Robert A.; and Stern, Richard M., to Riker Laboratories, Inc. Antimicrobial polycyclic nitrofurans. 4,128,659, Cl. 424-285.000.
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  - Roesler, Erich; Deiner, Hans; Sandner, Bernhard; and Schilling, Hans, 4,128,675, Cl. 427-390.00E.
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  - Badertscher, Hans; and Schindler, Walter, 4,128,307, Cl. 350-263.000.
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- Schleinkofer, Rudi W., to Ingersoll-Rand Co. System and method for gas phase pulp bleaching. 4,128,454, Cl. 162-49.000.
- Schleppnik, Alfred A., to Monsanto Company. 1-(Norborn-5′-en-2′-yl) or 1-(norborn-2′-yl) substituted 1-alken-3-ols and alkan-3-ols. 4,128,509, Cl. 252-522.000.
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  - Irwin, John M.; and Schlereth, Fritz H., 4,128,890, Cl. 364-724.000.
- Schlosser, Ernst-Gunther: *See—*
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- Schlup, Gustave E.; and Berger, Edwin, to G. E. Schlup & Co. Device for assembling electronic components on a printed circuit board. 4,127,936, Cl. 29-721.000.
- Schmedemann, Walter, to U.S. Philips Corporation. Adjusting device for a section of a medical treatment apparatus or examining apparatus. 4,128,274, Cl. 297-410.000.
- Schmeidl, Karl; Brunkhorst, Wilhelm; and Michaelis, Eberhard, to BASF Aktiengesellschaft. Manufacture of a solution of nitrosylsulfuric acid in sulfuric acid. 4,128,623, Cl. 423-388.000.

- Schmid, Richard: *See—*
  - Loch, Friedhelm H.; Mailander, Hans; Riemath, Heinz; Schmid, Richard; and Stickel, Ernst, 4,128,287, Cl. 312-253.000.
- Schmidt, Andreas; Peterson, Janet B.; and Dexter, Martin, to Ciba-Geigy Corporation. Hydroxyphenylated hydantoins. 4,128,718, Cl. 548-313.000.
- Schmidt, Oscar W., to New Pneumatics, Inc. Locking and emergency release system for barred windows. 4,127,966, Cl. 49-141.000.
- Schmidt, Werner: *See—*
  - Vollkommer, Norbert; Petersen, Egon N.; Klinkenberg, Herbert; and Schmidt, Werner, 4,128,709, Cl. 526-218.000.
- Schmitt, Eugene W., to Harbil, Inc. Brake rigging for dropped bottom gondola cars. 4,128,148, Cl. 188-197.000.
- Schmitt, Frederick L.: *See—*
  - Sanders, James M.; Vinals, Joaquin F.; and Schmitt, Frederick L., 4,128,729, Cl. 568-820.000.
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  - Troutman, Bruce L.; and Schmitz, Lawrence S., 4,128,773, Cl. 307-238.000.
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- Schneider, William P., to Upjohn Company, The. 6,7-Didehydro-PGI_1 compounds. 4,128,713, Cl. 542-426.000.
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  - Gansert, Willi; Bergfried, Dietrich; Heinrich, Gert; Schnepf, Dietmar; Slansky, Harry; Pfluger, Eberhard; and Dorkel, Jean, 4,128,802, Cl. 322-28.000.
- Schnizler, Albrecht, Jr., to Metabowerke KG Closs, Rauch & Schnizler. Device for releasably securing an auxiliary tool to a manually held power drill. 4,127,923, Cl. 24-270.000.
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  - Eldred, Emmet W.; and Schoemaker, Hubert J. P., 4,128,629, Cl. 424-1.000.
- Schoettle, Klaus: *See—*
  - Gaiser, Dieter; Woellhaf, Josef; Schoettle, Klaus; Guenther, Friedrich; Kamm, Eugen; and Wendt, Erich, 4,127,925, Cl. 29-430.000.
  - Senkpiel, Werner; Schoettle, Klaus; Wittkamp, Heinrich; and Uhl, Karl, 4,128,852, Cl. 360-90.000.
- Schreyer, Heinz B., to Erwin Sick GmbH Optik-Elektronik. Curve following device. 4,128,481, Cl. 250-202.000.
- Schubart, Rolf E. R., to Dorst-Keramikmaschinen-Bau Otto Dorst u. Dipl.-Ing. Walter Schlegel. Apparatus for producing plates and similar articles. 4,128,375, Cl. 425-405.00H.
- Schuetz, Robert C. Blank firing adapter. 4,128,040, Cl. 89-14.00E.
- Schulthess, Adrian; and de Courten, Alfred, to Laboratories OM Societe Anonyme. (Bis-diethylamine)2,5-dihydroxybenzene-1,4-disulfonate, useful as a medicament against glaucoma. 4,128,661, Cl. 424-316.000.
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  - Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; Brandenstein, Manfred; and Schulz, Toni, 4,128,279, Cl. 308-6.00C.
- Schupp, Lewis J.: *See—*
  - Sterling, Vaughn C.; and Schupp, Lewis J., 4,128,858, Cl. 362-13.000.
- Schwab Safe Co., Inc.: *See—*
  - Miller, Norman, 4,127,995, Cl. 70-119.000.
- Schwan, Thomas J., to Morton-Norwich Products, Inc. 1-[[1H-Pyrrol-2-ylmethylene]amino]-2,4-imidazolidinedione. 4,128,711, Cl. 542-420.000.
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- Schweizer, Eduard H. Stand for holding gramophone records and magnetic tape cassette cases. 4,128,175, Cl. 211-40.000.
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  - Bradbury, William B.; Watts, Robert H.; and Scott, E. Timm, 4,128,211, Cl. 241-101.600.
- Scott, John P.; Peters, Dudley C.; and Foster, Richard C. Vehicular battery charging system. 4,128,800, Cl. 322-28.000.
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  - Johnson, John L., 4,128,209, Cl. 239-583.000.
- Seaver, James: *See—*
  - Larson, Gerald L.; Treadwell, William A.; and Seaver, James, 4,128,044, Cl. 91-20.000.
- Sebek, Oldrich K.; and Dolak, Lester A., to Upjohn Company, The. Allylic methyl-hydroxylated novobiocins. 4,128,563, Cl. 260-343.450.
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  - Quehen, Andre, 4,127,997, Cl. 72-19.000.
- Sederquist, Richard A., to United Technologies Corp. Fuel cell power plant and method for operating the same. 4,128,700, Cl. 429-17.000.
- Sedley, Bruce S. Hand held magnetic card encoder. 4,128,851, Cl. 360-4.000.
- Seeger, Alfred. Three-dimensional photography using incoherent light. 4,128,324, Cl. 354-112.000.
- Seeger, Richard E., to Chomerics, Inc. Keyboard with concave and convex domes. 4,128,744, Cl. 200-5.00A.
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  - Bloom, William G.; Choksi, Pradip V.; and Seemayer, Walter, 4,128,098, Cl. 128-272.300.
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  - Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,127,984, Cl. 58-7.000.
- Seita, Toru; Shimizu, Akihiko; Kato, Yoshio; and Hashimoto, Tsutomu, to Toyo Soda Manufacturing Co., Ltd. Carrier for liquid chromatography. 4,128,706, Cl. 526-19.000.
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  - Koyama, Masao; and Seki, Shigeo, 4,128,714, Cl. 544-18.000.
- Sekiguchi, Akira: *See—*
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- Selak, Martin M., to Astro Engineering Co. Chemical dispensing system. 4,128,326, Cl. 354-317.000.
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  - Hunsucker, Jerry H.; and Selleck, James R., Jr., 4,128,655, Cl. 424-273.00R.
- Selwitz, Charles M.: *See—*
  - Sabourin, Edward T.; and Selwitz, Charles M., 4,128,588, Cl. 260-645.000.
- Sencore, Inc.: *See—*
  - Westra, Marlin D., 4,128,808, Cl. 325-134.000.
- Senkpiel, Werner; Schoettle, Klaus; Wittkamp, Heinrich; and Uhl, Karl, to BASF Aktiengesellschaft. Tape transport mechanism for recording and playing back video signals. 4,128,852, Cl. 360-90.000.
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- Sevostiyanov, Vladimir P.; Astakhov, Valery V.; and Usachev, Vasily P. Liquid-crystal indicator. 4,128,314, Cl. 350-341.000.
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  - Duke, Jack R.; Shah, Niranjan S.; and Woolf, William C., 4,128,883, Cl. 364-200.000.
- Shakula, Nikolai M.; Voloschenko, Nikolai I.; Shishkin, Nikolai F.; Muratov, Anatoly S.; Guzchenko, Alexandr P.; Anokhin, Vladimir M.; and Nikitchenko, Vladimir F. Cable repair vulcanizing press. 4,128,367, Cl. 425-11.000.
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- Sharp, Christopher J., to Glaxo Laboratories Limited. Cephalosporin antibiotics. 4,128,715, Cl. 544-22.000.
- Shaw, Clifford O., to United States of America, Navy. N cycle gated periodic waveform generator. 4,128,774, Cl. 307-260.000.
- Sheldon, Loren B.; Tomashek, James R.; and Ward, Donald H., to BJ-Hughes Inc. Velocity control arrangement for a computer-controlled oil drilling rig. 4,128,888, Cl. 364-565.000.
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  - Brown, Michael K.; Christou, Kyriakos; Lundquist, David E.; Maidment, Earl P.; and Shell, Ronald G., 4,128,841, Cl. 346-75.000.
- Shepherd, Wilburn O.; and Gaslow, Jonathon C., to Dresser Industries, Inc. Flushing and cooling system for pumps. 4,128,362, Cl. 415-112.000.
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  - Lin, Tai-Shun; Fischer, Paul H.; Prusoff, William H.; and Shiau, George T., 4,128,639, Cl. 424-180.000.
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  - Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, 4,128,608, Cl. 260-880.00R.
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  - Yamamoto, Yoshihiko; Shigenobu, Masahiro; and Kuwabara, Hideo, 4,128,768, Cl. 250-535.000.
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- Shimotsuma, Nobuo, to Kabushiki Kaisha Daini Seikosha. Electronic circuit. 4,128,816, Cl. 331-116.00R.
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  - Nakazono, Akio, 4,128,853, Cl. 360-105.000.
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  - Naito, Kiyoshi; and Sukuya, Akio, 4,128,394, Cl. 432-137.000.
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  - Yamada, Koichi; Harato, Takuo; Ishida, Takahiro; and Shiozaki, Yasumi, 4,128,618, Cl. 423-119.000.
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  - Ohta, Hideyasu; Uozumi, Takahiro; Kanbe, Masaru; Abe, Naoto; Shirasaki, Jun; and Mayama, Masayoshi, 4,128,426, Cl. 96-87.00R.
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  - Hayashi, Katsutake; Saitoh, Tutomu; Yomogida, Katsuyuki; and Saito, Hiromasa, 4,128,630, Cl. 424-69.000.
- Shishkin, Nikolai F.: *See—*
  - Shakula, Nikolai M.; Voloschenko, Nikolai I.; Shishkin, Nikolai F.; Muratov, Anatoly S.; Guzchenko, Alexandr P.; Anokhin, Vladimir M.; and Nikitchenko, Vladimir F., 4,128,367, Cl. 425-11.000.
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  - Liakumovich, Alexandr G.; Pantukh, Boris I.; Sultanova, Mengzda K.; Popov, Vasily P.; Tolstikov, Genrikh A.; Monakov, Jury B.; Juriev, Valery P.; Mandelshtam, Elena Y.; Korotkevich, Boris S.; and Shmuk, Jury A., 4,128,708, Cl. 526-162.000.
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  - Cupp, Charles D.; Matthies, Bruce J.; and Wood, Frederick J., Jr., 4,127,911, Cl. 15-210.00R.
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  - Shustova, Olga A.; Gladyshev, Georgy P.; Kondrashov, Eduard K.; and Shustov, Leonid D., 4,128,707, Cl. 526-43.000.
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- Sideris, Nikolas: *See—*
  - Kabelitz, Hans-Peter; and Sideris, Nikolas, 4,128,248, Cl. 277-15.000.
- Sieglaff, Charles L.; Hora, Charles J.; and Tiefenbach, Joseph P., to Diamond Shamrock Corporation. Surface-treated soft contact lenses. 4,128,318, Cl. 351-160.00R.
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  - Brecht, Heinz, 4,128,826, Cl. 338-204.000.
  - Soldner, Richard, 4,128,012, Cl. 73-611.000.
  - Stodberg, Lars; and Sjostrom, Hans, 4,128,767, Cl. 250-513.000.
- Sigsbee, Raymond A., to General Electric Company. Nb_3Ge superconductive films. 4,128,121, Cl. 164-46.000.
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  - Mikovsky, Richard J.; and Silvestri, Anthony J., 4,128,505, Cl. 252-465.000.
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  - Niblett, David C.; and Capewell, James T., 4,128,267, Cl. 294-81.00R.
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- Sinclair, Robert A.: *See—*
  - Errede, Louis A.; and Sinclair, Robert A., 4,128,513, Cl. 521-50.000.
- Sindelar, Ernest C.: *See—*
  - Beck, Henry E.; Hasten, Jimmie L.; and Sindelar, Ernest C., 4,128,276, Cl. 303-13.000.
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  - Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,128,662, Cl. 424-319.000.
- Singer Company, The: *See—*
  - Zocher, Josef, 4,128,067, Cl. 112-222.000.
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  - Rana, Victor F.; and Siniscal, Paul D., 4,128,163, Cl. 198-796.000.
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  - Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; Brandenstein, Manfred; and Schulz, Toni, 4,128,279, Cl. 308-6.00C.
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  - Gansert, Willi; Bergfried, Dietrich; Heinrich, Gert; Schnepf, Dietmar; Slansky, Harry; Pfluger, Eberhard; and Dorkel, Jean, 4,128,802, Cl. 322-28.000.
- Slingerland, Henry H., Jr. Vegetation trimmer with cuttings catcher. 4,127,938, Cl. 30-132.000.
- Smith, Clifford E.; and Holtz, Hans D., to Phillips Petroleum Company. Alkylation of olefins with paraffins utilizing aluminum halide and group VA metal halide intercalated in graphite. 4,128,596, Cl. 260-683.530.
- Smith, Eugene L., Jr.: *See—*
  - Wang, Samuel S.; and Smith, Eugene L., Jr., 4,128,475, Cl. 209-166.000.
- Smith, George W.; Kaplit, Michael; and Hayden, Daniel B., to General Motors Corporation. Heater control method for liquid crystal devices. 4,128,311, Cl. 350-331.000.
- Smith, Richard G.: *See—*
  - Hartman, Adrian R.; Melchior, Hans; Schinke, David P.; and Smith, Richard G., 4,127,932, Cl. 29-590.000.
- Smith, Richard N., to Sybron Corporation. Electrodialysis of pickle liquor. 4,128,465, Cl. 204-180.00P.
- Smith, Robert L.: *See—*
  - Cragoe, Edward J., Jr.; Bicking, John B.; and Smith, Robert L., 4,128,564, Cl. 260-401.000.
- Smith, William N.; Malpass, Dennis B.; and Merkley, Joseph H., to Texas Alkyls, Inc. Process for the preparation of organo-magnesium complexes. 4,128,501, Cl. 252-431.00R.
- SmithKline Corporation: *See—*
  - Berges, David A., 4,128,722, Cl. 544-26.000.
  - Bondinell, William E.; and Pendleton, Robert G., 4,128,666, Cl. 424-330.000.
- SMW Packaging Corporation: *See—*
  - Roehn, Herbert F., 4,127,977, Cl. 53-565.000.
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  - Corbellini, Margherita; and Balducci, Agostino, 4,128,566, Cl. 260-448.00R.
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- Snap-on Tools Corporation: *See—*
  - Green, Talmage O., 4,127,928, Cl. 29-453.000.
- Sneed, Jackson B., to Humphreys, Hutcheson & Moseley. Flame shielding device. 4,128,393, Cl. 431-351.000.
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  - Fabel, David A.; Snelgrove, James A.; and Fariss, Robert H., 4,128,694, Cl. 428-412.000.
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  - Barba, Diego; D'Agostini, Candido; and Pasquinelli, Aldo, 4,128,457, Cl. 203-29.000.
- Societe Anonyme Automobiles Citroen: *See—*
  - Grosseau, Albert, 4,128,151, Cl. 192-4.00A.
- Societe Anonyme dite: CECA S.A.: *See—*
  - Caron, Jacques; Poncet, Jean-Claude; and Varney, Bernard, 4,128,004, Cl. 73-38.000.
- Societe Anonyme Dite: Laboratoire L. Lafon: *See—*
  - Lafon, Louis, 4,128,656, Cl. 424-282.000.
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  - Habermann, Helmut; Brunet, Maurice; and Joly, Pierre, 4,128,795, Cl. 318-618.000.
- Soderberg Manufacturing Co., Inc.: *See—*
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- Soldner, Richard, to Siemens Aktiengesellschaft. Ultrasonic examination apparatus operating according to the impulse-echo method. 4,128,012, Cl. 73-611.000.
- Sommer, John G.: *See—*
  - Britton, James E.; Metcalf, Fredric D.; Sommer, John G.; Kuan, Tiong H.; Rilling, Victor R.; and Welch, John A., 4,128,523, Cl. 260-33.6AQ.
- Sone, Shigeru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotor housing for a rotary engine. 4,128,366, Cl. 418-83.000.
- Sonobe, Tadasi, to Hitachi, Ltd. Rotor having improved arm structure to reduce tensile stresses. 4,128,780, Cl. 310-265.000.
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  - Hoshi, Kinji; and Sugita, Kazuhiro, 4,127,969, Cl. 51-283.00R.
  - Suzuki, Tadao; and Yoshida, Tadao, 4,128,813, Cl. 330-264.000.
- Sorce, Peter S.; and Clifford, Earl W., to Aro Corporation, The. Roller members for use in heat sealing apparatus. 4,128,451, Cl. 156-555.000.
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  - Butler, Louis R. P., 4,128,336, Cl. 356-307.000.
- Spaderna, Conan H. Latching switch. 4,128,749, Cl. 200-254.000.
- Spector, George: *See—*
  - Nighswonger, James; and Spector, George, 4,128,193, Cl. 222-402.210.
- Spectra-Physics, Inc.: *See—*
  - Rock, John V., 4,128,476, Cl. 210-31.00C.
- Sperry Rand Corporation: *See—*
  - Lund, Roger E.; and Hanson, Marlin M., 4,128,898, Cl. 365-2.000.
  - Parrish, Charles A.; and Webb, Bryant F., 4,127,981, Cl. 56-14.400.
  - Pertl, Jerry H.; and Koehler, Howard A., 4,128,874, Cl. 364-200.000.
  - Thurber, Kenneth J.; and Strauss, Jon C., 4,128,875, Cl. 364-200.000.
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  - Hicks, Alan A.; Spinello, John O.; and Breslow, Jeffrey D., 4,128,246, Cl. 273-243.000.
- Spiteri, Joseph. Truck marker light. 4,128,860, Cl. 362-80.000.
- Spitler, Keith G.; and Radovich, David A., to Mobay Chemical Corporation. Post treatment of flexible polyurethane foam with organic siloxanes for increasing the water absorbency and penetration. 4,128,512, Cl. 521-55.000.
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  - Knibbe, Jan C.; and McPhee, Willard J., 4,128,028, Cl. 83-411.00R.
- Square D Company: *See—*
  - Peterson, Maurice W., Jr., 4,128,822, Cl. 335-8.000.
- Stagg, Malcolm J.: *See—*
  - Metcalfe, Paul E.; Rollo, Randall W.; and Stagg, Malcolm J., 4,128,678, Cl. 428-119.000.
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  - Baumer, Wilhelm; Bernhard, Horst; Esselborn, Reiner; Ohngemach, Jorg; Stahlecker, Otto; and Zureda, Fritz, 4,128,435, Cl. 106-148.000.
- Stamatiou, Dimitri S.; and Stamatiou, Lila D., to Pneumatic Force Feeder, Inc. Method for separating light-weight compressible material. 4,128,404, Cl. 55-1.000.

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  - Stamatiou, Dimitri S.; and Stamatiou, Lila D., 4,128,404, Cl. 55-1.000.
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  - Bond, Thomas J.; Kelly, William J.; and Adams, Richard C., 4,128,383, Cl. 425-529.000.
  - Jones, Richard H., 4,128,597, Cl. 260-683.620.
- Standard Oil Company (Indiana): *See—*
  - Kildahl, Nicholas K.; and Fotis, Peter, 4,128,502, Cl. 252-431.00R.
- Stanley Electric Co., Ltd.: *See—*
  - Okazaki, Kunio, 4,128,770, Cl. 307-10.0LS.
- Starcher, David: *See—*
  - Cooper, Charles R., Jr.; Ellis, Charles K.; and Starcher, David, 4,128,359, Cl. 404-72.000.
- Stauffer Chemical Company: *See—*
  - Matsumoto, Kent E.; Chan, Jimmy H.; and Baker, Don R., 4,128,580, Cl. 260-566.00A.
- Stayer, Mark L.: *See—*
  - Fieldhouse, John W.; Graves, Daniel F.; Cole, William M.; Stayer, Mark L.; and Fenske, Steven L., 4,128,710, Cl. 528-168.000.
- Steck, Werner: *See—*
  - Wunsch, Gerd; Deigner, Paul; Falk, Roland; Mahler, Karl; Loeser, Werner; Domas, Friedrich; Felleisen, Peter; and Steck, Werner, 4,128,672, Cl. 427-130.000.
- Steckel, Thoams F., to Lubrizol Corporation, The. Overbased phenoxide-halo carboxylic acid condensate additives for lubricants. 4,128,488, Cl. 252-33.600.
- Steeghs, Martin H. G., to U.S. Philips Corporation. Cathode ray tube for displaying colored pictures. 4,128,790, Cl. 315-382.000.
- Steele Associates, Inc.: *See—*
  - Steele, Bazil E.; and Micheel, Paul O., 4,128,348, Cl. 400-198.000.
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- Stein, Charles R.: *See—*
  - Cole, Herbert S., Jr.; and Stein, Charles R., 4,128,313, Cl. 350-340.000.
- Stemme, Otto; and Lermann, Peter, to Agfa-Gevaert AG. Instant-picture camera. 4,128,322, Cl. 354-83.000.
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  - Wick, Richard; Stemme, Otto; Lermann, Peter; and Fauth, Gunter, 4,128,323, Cl. 354-86.000.
- Stenzel, Jurgen; and Heymer, Gero, to Hoechst Aktiengesellschaft. Production of phosphine. 4,128,620, Cl. 423-299.000.
- Sterling, Vaughn C.; and Schupp, Lewis J., to General Electric Company. Multiple flashlamp system. 4,128,858, Cl. 362-13.000.
- Stern, Elaine S.: *See—*
  - Johnsen, Vernon L.; and Stern, Elaine S., 4,128,543, Cl. 260-123.700.
- Stern, Richard M.: *See—*
  - Scherrer, Robert A.; and Stern, Richard M., 4,128,659, Cl. 424-285.000.
- Sternbeck, Olaf, to Telefonaktiebolaget L M Ericsson. Electronic crosspoint array. 4,128,741, Cl. 179-18.0GF.
- Stevens, William M., to Randam Electronics, Inc. Strengthened scintillation cell. 4,128,766, Cl. 250-483.000.
- Stewart, Bonner B., to Stewart, Hazel F. Telescoping room for travel trailers. 4,128,269, Cl. 296-23.00C.
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  - Stewart, Bonner B., 4,128,269, Cl. 296-23.00C.
- Stich, Frederick A., to Allis-Chalmers Corporation. Power circuit for variable frequency, variable magnitude power conditioning system. 4,128,793, Cl. 318-808.000.
- Stickel, Ernst: *See—*
  - Loch, Friedhelm H.; Mailander, Hans; Riemath, Heinz; Schmid, Richard; and Stickel, Ernst, 4,128,287, Cl. 312-253.000.
- Stodberg, Lars; and Sjostrom, Hans, to Siemens Aktiengesellschaft. X-ray primary radiation diaphragm assembly. 4,128,767, Cl. 250-513.000.
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  - Vertegaal, Jacobus G., 4,128,056, Cl. 101-128.100.
- Stotts, Larry B.; Martin, William E.; and Catano, Paul S., to United States of America, Navy. Optical logic elements. 4,128,300, Cl. 350-96.140.
- Straffi, Franco, to Breda Termomeccanica S.p.A. Construction of a supporting grid for pipes. 4,128,221, Cl. 248-68.00R.
- Straitz, John F., III, to Combustion Unlimited Incorporated. Flare stack gas burner. 4,128,389, Cl. 431-202.000.
- Straitz, John F., III, to Combustion Unlimited Incorporated. Thermocouple and mounting therefor. 4,128,734, Cl. 136-232.000.
- Strauss, Jon C.: *See—*
  - Thurber, Kenneth J.; and Strauss, Jon C., 4,128,875, Cl. 364-200.000.
- Streit, Werner; Fikentscher, Rolf; Gans, Karl; and Welzel, Gerhard, to BASF Aktiengesellschaft. Water-soluble, crosslinked nitrogenous condensation products produced by reaction of chlorohydrin-ethers with ethyleneimine. 4,128,511, Cl. 528-424.000.
- Stroud, Richard M.: *See—*
  - Kolakowski, Richard A.; and Stroud, Richard M., 4,128,611, Cl. 264-51.000.
- Strunc, Gerald R.; and Laciak, Francis M., to Pako Corporation. Microprocessor controlled photographic paper cutter. 4,128,887, Cl. 364-475.000.
- Sturzenegger, August; Mlodozeniec, Arthur R.; and Lipinsky, Edward S., to Hoffmann-La Roche Inc. Manufacture of pharmaceutical unit dosage forms. 4,128,445, Cl. 156-64.000.
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  - Hansen, George E.; and Stvan, Richard T., 4,128,111, Cl. 137-515.700.
- Suggs, Robert, to Reliance Electric Company. Instant silvering solution. 4,128,671, Cl. 427-125.000.
- Sugimoto, Noboru: *See—*
  - Otsu, Shinpei; Sekiguchi, Akira; Tobita, Nobuyoshi; Chikamatsu, Shigeru; Hosoe, Yoshihisa; Matsui, Motoaki; Sugimoto, Noboru; and Totsuka, Noriyoshi, 4,128,378, Cl. 425-445.000.
- Sugita, Kazuhiro: *See—*
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- Sugiyama, Mitsuhiko; and Shinkai, Michio, to Rank Xerox Limited. Transfer material feed apparatus for electrophotographic copying machines. 4,128,327, Cl. 355-3.00R.
- Sukuya, Akio: *See—*
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  - Liakumovich, Alexandr G.; Pantukh, Boris I.; Sultanova, Mengzda K.; Popov, Vasily P.; Tolstikov, Genrikh A.; Monakov, Jury B.; Juriev, Valery P.; Mandelshtam, Elena Y.; Korotkevich, Boris S.; and Shmuk, Jury A., 4,128,708, Cl. 526-162.000.
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  - Braun, Rudolf; and Kellmann, Werner, 4,128,115, Cl. 139-439.000.
  - Purtschert, Werner, 4,128,280, Cl. 308-9.000.
- Sumitomo Aluminium Smelting Company, Ltd.: *See—*
  - Yamada, Koichi; Harato, Takuo; Ishida, Takahiro; and Shiozaki, Yasumi, 4,128,618, Cl. 423-119.000.
- Sumitomo Chemical Company, Limited: *See—*
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  - Ura, Shigeru; Kondo, Norio; Fukuyama, Yoshiya; and Nakahara, Makoto, 4,128,437, Cl. 106-287.240.
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- Summers, Jack C.: *See—*
  - Hegedus, Louis; and Summers, Jack C., 4,128,506, Cl. 252-466.0PT.
- Sumner, Harry H.: *See—*
  - Hadfield, Harry R.; Sumner, Harry H.; and Williams, Gerald, 4,128,395, Cl. 8-2.50A.
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  - Arnston, Robert W.; Trussell, Gerald C.; and Rich, Leo G., 4,128,005, Cl. 73-117.300.
- Sundlof, Kenneth C. Flower car converting unit. 4,128,268, Cl. 296-10.000.
- Sunnex Equipment AB: *See—*
  - Blomqvist, Inge. S., 4,128,227, Cl. 251-42.000.
- Sussman, Milton H., to American Optical Corporation. Abbe condenser. 4,128,304, Cl. 350-189.000.
- Sutherland, Alexander R., to Sutherland, Iris Jean Carrington, a part interest. Rotary engine. 4,128,084, Cl. 123-55.0AA.
- Sutherland, Iris Jean Carrington: *See—*
  - Sutherland, Alexander R., 4,128,084, Cl. 123-55.0AA.
- Suzuki, Masaaki: *See—*
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- Suzuki, Minoru, to Ricoh Company, Ltd. Mounting apparatus for a drum and developing roll in a developing unit of magnetic brush type. 4,128,079, Cl. 118-658.000.
- Suzuki, Nobuo: *See—*
  - Ikenoue, Shinpei; Masuda, Takao; Suzuki, Nobuo; Tanaka, Toshiharu; and Sashihara, Kenji, 4,128,428, Cl. 96-114.100.
- Suzuki, Tadao; and Yoshida, Tadao, to Sony Corporation. Amplifier. 4,128,813, Cl. 330-264.000.
- Svec, Paul S., to General Electric Company. Composition for making an investment mold for casting and solidification of superalloys therein. 4,128,431, Cl. 106-38.350.
- Swapp, Mavin C.: *See—*
  - Frisbie, Milo W.; and Swapp, Mavin C., 4,128,174, Cl. 209-573.000.
- Swenson, Henry F. Cutting tool bit and grinding fixture for sharpening said bit for use in an axially actuated back spot facing tool. 4,128,360, Cl. 407-114.000.
- Sybron Corporation: *See—*
  - Smith, Richard N., 4,128,465, Cl. 204-180.00P.
- Szmuszkovicz, Jacob, to Upjohn Company, The. Anilide derivatives as antidepressants. 4,128,663, Cl. 424-324.000.
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- Tagawa, Kazuaki: *See—*
  - Yanagawa, Nobuyuki; and Tagawa, Kazuaki, 4,128,334, Cl. 355-75.000.
- Takahashi, Kazuo: *See—*
  - Morinaka, Yasuhiro; and Takahashi, Kazuo, 4,128,646, Cl. 424-251.000.
- Takanashi, Haruyuki: *See—*
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- Takei, Yoshihiro, to Kabushiki Kaisha Suwa Seikosha. Charging circuit. 4,128,798, Cl. 320-23.000.
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  - Markezich, Ronald L.; and Takekoshi, Tohru, 4,128,574, Cl. 562-473.000.
- Takimoto, Masatami; Teramura, Mitsuyoshi; and Urushidani, Masahiro,

- to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation apparatus for an internal combustion engine. 4,128,089, Cl. 123-119.00A.
- Taliani, Laurent: *See—*
  - Perronnet, Jacques; and Taliani, Laurent, 4,128,562, Cl. 260-332.30R.
- Tamers, Murry A. Method for introducing carbon into evacuated or pressurized reaction vessels and reaction products therefrom. 4,128,624, Cl. 423-439.000.
- Tanaka, Akira; Hayashi, Yuji; Kassai, Makoto; and Hara, Toshito, to Fujitsu Limited. Switch. 4,128,823, Cl. 335-196.000.
- Tanaka, Shigenori, to Nissan Motor Company, Limited. Yarn waste removing means for air jet weaving loom. 4,128,114, Cl. 139-435.000.
- Tanaka, Taro: *See—*
  - Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,128,081, Cl. 123-32.0SP.
- Tanaka, Toshiharu: *See—*
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- Tanaka, Tsugane: *See—*
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- Tanaka, Yukiyasu: *See—*
  - Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,128,081, Cl. 123-32.0SP.
- Tang, Donald T.: *See—*
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- Tantum, James G.: *See—*
  - Adams, Stewart S.; Armitage, Bernard J.; Nicholson, John S.; and Tantum, James G., 4,128,573, Cl. 562-465.000.
- Tatsuzawa, Kunio: *See—*
  - Nozawa, Kazutoshi; Ashibe, Yasue; Aruga, Hatsuo; and Tatsuzawa, Kunio, 4,127,986, Cl. 58-134.000.
- Taylor, Donald F., to Otis Engineering Corporation. Swivel connector. 4,128,127, Cl. 166-105.000.
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- Taylor, Henry F.: *See—*
  - Hunt, Barry R.; Dillard, George M.; and Taylor, Henry F., 4,128,759, Cl. 250-199.000.
- Taylor, Herman, Jr.: *See—*
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- Taylor, Ward G.: *See—*
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- Teepak, Inc.: *See—*
  - Trimble, Roy L., 4,127,918, Cl. 17-41.000.
- Tega, Ezio; and Volpi, Danilo, to Metalmeccanica Gori & Zucchi MGZ S.p.A. Machine for manufacturing chains having differentiated links. 4,127,987, Cl. 59-16.000.
- Tegethoff, Jon E.: *See—*
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- Teijin Limited: *See—*
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- Teijin Seiki Company Limited: *See—*
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  - Takimoto, Masatami; Teramura, Mitsuyoshi; and Urushidani, Masahiro, 4,128,089, Cl. 123-119.00A.
- Terasaki, Wesley L.: *See—*
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- Terekhov, Kuzma I.; Tumanov, Alexei T.; Ozerova, Alexandra P.; Topilin, Valentin V.; Dzugutov, Mikhail Y.; Ljubinskaya, Mara A.; Pashchnik, Gennady A.; Nikishov, Alexandr S.; and Ustinov, Terenty I. Nickel-base alloy. 4,128,419, Cl. 75-171.000.
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  - Terry, James A., deceased; Russell, Barbara P., heir; Terry, James F., heir; and Cain, Shirley A., heir, 4,128,117, Cl. 144-3.00K.
- Tessier, Jean: *See—*
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- Texaco Development Corp.: *See—*
  - Yeakey, Ernest L.; and Waddill, Harold G., 4,128,525, Cl. 260-29.10R.
- Texaco Inc.: *See—*
  - Harrison, Charles W.; and Bozeman, Paul P., Jr., deceased, 4,128,472, Cl. 208-33.000.
  - Powell, Justin C.; and McMahon, Matthew A., 4,128,401, Cl. 44-1.00R.
- Texas Alkyls, Inc.: *See—*
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- Textron Inc.: *See—*
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- Th. Kieserling & Albrecht: *See—*
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- Thatcher, Charles R.: *See—*
  - Stoltz, Woodrow W.; and Thatcher, Charles R., 4,128,078, Cl. 118-603.000.
- Thomas, John C., to Vickers Limited. Coating with antifriction metal. 4,127,930, Cl. 29-527.600.
- Thomas, Norman W.; Berardinelli, Frank M.; and Edelman, Robert, to Celanese Corporation. Polyamides for extrusion applications. 4,128,599, Cl. 260-857.00R.
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  - Lehureau, Jean-Claude; Malissin, Roland; and Roullet, Gerald, 4,128,309, Cl. 350-295.000.
  - Roullet, Gerald; and Bortuzzo, Jean-Pierre, 4,128,847, Cl. 358-128.000.
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  - Tournois, Pierre; and Maerfeld, Charles, 4,128,615, Cl. 310-313.000.
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- Tiritilli, Leonard A. Gun sight. 4,127,943, Cl. 33-260.000.
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  - Yokota, Masato; and Kobayashi, Hideo, 4,128,092, Cl. 123-191.00S.
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  - Deibel, Raymond A.; Gowans, Neil A.; and Riester, William C., 4,127,912, Cl. 15-250.420.
- Trimble, Roy L., to Teepak, Inc. Shirring machine mandrel. 4,127,918, Cl. 17-41.000.
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  - Trulaske, James A., 4,127,968, Cl. 49-404.000.
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  - Formanik, Bert J., 4,128,463, Cl. 204-146.000.
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  - Wiener, Charles; and Tyler, William E., III, 4,128,583, Cl. 260-584.00C.
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  - Norstrom, Gote J. W., 4,128,103, Cl. 134-143.000.
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  - Knight, Robert K., 4,128,482, Cl. 252-8.55D.
  - Mickelson, Grant A., 4,127,989, Cl. 60-641.000.
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  - Gersbacher, Harry C., 4,128,235, Cl. 269-234.000.
- United States Gypsum Company: *See—*
  - Wendt, Alan C., 4,127,974, Cl. 52-288.000.
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  - Air Force: *See—*
    - Hart, William A., 4,128,113, Cl. 137-627.500.
    - Liu, Wai-Min, 4,128,305, Cl. 350-201.000.
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    - Black, Walter L., 4,128,059, Cl. 102-92.700.
    - Cucksee, Marjorie T.; and Allen, Henry C., 4,128,441, Cl. 149-19.920.
    - Pavlis, James D., 4,128,812, Cl. 328-134.000.
    - Ramos, Edward; and Cuneo, Joseph V., 4,128,836, Cl. 343-7.0PF.
    - Rathjen, Edwin H., Jr., 4,128,754, Cl. 219-137.00R.
    - Reisfeld, Renata; Eckstein, Yona; and Boehm, Leah, 4,128,411, Cl. 65-18.000.
    - Schulz, Robert J., 4,128,041, Cl. 89-41.00R.
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    - Boquist, Carl W.; and Marchant, David D., 4,128,776, Cl. 310-11.000.
    - Burleson, Robert R., 4,128,794, Cl. 318-603.000.
    - Harless, Charles E.; and Taylor, Ward G., 4,127,937, Cl. 30-90.700.
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    - Luce, John S., 4,128,764, Cl. 250-398.000.
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    - Shaw, Clifford O., 4,128,774, Cl. 307-260.000.
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  - Flisikowski, Peter; and Peemoller, Horst, 4,128,781, Cl. 313-60.000.
  - Fransen, Jan J. B.; and Rimmelzwaan, Franciscus J., 4,128,782, Cl. 313-174.000.
  - Giller, Henricus F. J. I.; and T'Jampens, Germain R., 4,128,783, Cl. 313-174.000.
  - Pohlig, Winfried, 4,128,218, Cl. 246-247.000.
  - Rothgordt, Ulf; Hinz, HansDieter; and Verspui, Gerrit, 4,128,842, Cl. 346-155.000.
  - Schmedemann, Walter, 4,128,274, Cl. 297-410.000.
  - Steeghs, Martin H. G., 4,128,790, Cl. 315-382.000.
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  - Fenster, Abraham S.; and Salloga, Fred W., 4,128,265, Cl. 285-305.000.
- United Technologies Corp.: *See—*
  - Maricle, Donald L., 4,128,701, Cl. 429-21.000.
  - Sederquist, Richard A., 4,128,700, Cl. 429-17.000.
- Universal Technology, Inc.: *See—*
  - Brady, John F., 4,128,345, Cl. 400-120.000.
- University of California, The Regents of the: *See—*
  - Cram, Donald J., 4,128,556, Cl. 546-26.000.
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  - Heck, Richard F., 4,128,554, Cl. 546-317.000.
- University of Sydney, The: *See—*
  - Harding, Geoffrey L.; McKenzie, David R.; and Window, Brian, 4,128,466, Cl. 204-192.00C.
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  - Brooker, Gary L.; Terasaki, Wesley L.; and Price, Michael G., 4,128,628, Cl. 424-1.000.
- UOP Inc.: *See—*
  - Fritsch, Thomas R.; and Anderson, Mark C., 4,128,593, Cl. 260-674.00A.
  - Homeier, Edwin H., 4,128,621, Cl. 423-362.000.
  - Pollitzer, Ernest L.; and Hayes, John C., 4,128,590, Cl. 260-666.00A.
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  - Bundy, Gordon L., 4,128,712, Cl. 542-426.000.
  - Hall, Charles M.; and Wright, John B., 4,128,570, Cl. 260-465.00D.

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Kolakowski, Richard A.; and Stroud, Richard M., 4,128,611, Cl. 264-51.000.
Nelson, Norman A., 4,128,577, Cl. 260-559.00B.
Schneider, William P., 4,128,713, Cl. 542-426.000.
Sebek, Oldrich K.; and Dolak, Lester A., 4,128,563, Cl. 260-343.450.
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Nagano, Akira; Urasaki, Kazuaki; Osato, Akira; and Sakurai, Isao, 4,128,756, Cl. 235-92.0SB.

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Hollick, John G., 4,127,910, Cl. 12-146.00D.
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Thomas, John C., 4,127,930, Cl. 29-527.600.

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B 48,560	4,002,772	Mar. 30, 1976	Jan. 11, 1977	B 371,912	3,995,738	Mar. 2, 1976	Dec. 7, 1976
B 54,859	4,000,101	Feb. 17, 1976	Dec. 28, 1976	B 372,016	3,989,685	Mar. 9, 1976	Nov. 2, 1976
B 59,512	3,999,216	Mar. 16, 1976	Dec. 21, 1976	B 372,232	4,000,967	Mar. 16, 1976	Jan. 4, 1977
B 66,272	4,014,978	Feb. 24, 1976	Mar. 29, 1977	B 372,722	3,998,925	Mar. 9, 1976	Dec. 21, 1976
B 71,613	4,008,393	Mar. 16, 1976	Feb. 15, 1977	B 373,344	4,053,067	Feb. 3, 1976	Oct. 11, 1977
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B 105,006	4,007,074	Mar. 23, 1976	Feb. 8, 1977	B 378,513	3,981,750	Jan. 27, 1976	Sep. 21, 1976
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B 200,759	3,986,872	Feb. 3, 1976	Oct. 19, 1976	B 384,330	3,985,613	Jan. 27, 1976	Oct. 12, 1976
B 208,916	3,987,106	Jan. 13, 1976	Oct. 19, 1976	B 384,654	3,992,681	Feb. 24, 1976	Nov. 16, 1976
B 214,925	3,997,648	Mar. 9, 1976	Dec. 14, 1976	B 385,024	3,994,911	Feb. 10, 1976	Nov. 30, 1976
B 231,416	4,000,054	Mar. 30, 1976	Dec. 28, 1976	B 385,483	3,993,684	Feb. 17, 1976	Nov. 23, 1976
B 236,266	4,013,624	Mar. 23, 1976	Mar. 22, 1977	B 385,631	3,982,924	Jan. 27, 1976	Sep. 28, 1976
B 236,342	4,001,182	Feb. 10, 1976	Jan. 4, 1977	B 386,257	3,981,915	Feb. 3, 1976	Sep. 21, 1976
B 248,240	3,983,556	Jan. 13, 1976	Sep. 28, 1976	B 386,673	3,993,717	Feb. 3, 1976	Nov. 23, 1976
B 257,143	4,000,111	Mar. 16, 1976	Dec. 28, 1976	B 386,828	3,992,440	Feb. 3, 1976	Nov. 16, 1976
B 270,274	3,982,223	Feb. 17, 1976	Sep. 21, 1976	B 387,337	D 243,157	Mar. 16, 1976	Jan. 25, 1977
B 270,351	3,997,893	Mar. 30, 1976	Dec. 14, 1976	B 388,675	4,012,459	Mar. 30, 1976	Mar. 15, 1977
B 271,743	4,001,195	Mar. 16, 1976	Jan. 4, 1977	B 389,155	4,000,970	Mar. 30, 1976	Jan. 4, 1977
B 276,026	3,992,405	Feb. 3, 1976	Nov. 16, 1976	B 389,304	3,986,829	Jan. 27, 1976	Oct. 19, 1976
B 279,415	4,000,697	Mar. 16, 1976	Jan. 4, 1977	B 390,031	3,985,799	Jan. 13, 1976	Oct. 12, 1976
B 279,969	3,986,073	Jan. 13, 1976	Oct. 12, 1976	B 390,408	3,992,426	Feb. 3, 1976	Nov. 16, 1976
B 281,162	4,009,481	Mar. 23, 1976	Feb. 22, 1977	B 390,979	4,003,850	Mar. 23, 1976	Jan. 18, 1977
B 283,941	3,995,313	Feb. 3, 1976	Nov. 30, 1976	B 391,473	3,988,370	Mar. 2, 1976	Oct. 26, 1976
B 288,757	4,001,072	Mar. 30, 1976	Jan. 4, 1977	B 391,797	3,988,046	Mar. 9, 1976	Oct. 26, 1976
B 301,143	3,991,107	Jan. 27, 1976	Nov. 9, 1976	B 391,828	4,014,933	Apr. 6, 1976	Mar. 29, 1977
B 302,160	3,985,774	Feb. 3, 1976	Oct. 12, 1976	B 391,844	3,999,165	Mar. 16, 1976	Dec. 21, 1976
B 306,668	3,985,713	Feb. 3, 1976	Oct. 12, 1976	B 392,798	3,996,249	Mar. 30, 1976	Dec. 7, 1976
B 307,698	3,993,763	Feb. 3, 1976	Nov. 23, 1976	B 394,248	3,989,764	Jan. 27, 1976	Nov. 2, 1976
B 308,659	3,981,947	Jan. 27, 1976	Sep. 21, 1976	B 394,350	3,982,200	Jan. 13, 1976	Sep. 21, 1976
B 311,450	3,988,976	Mar. 9, 1976	Nov. 2, 1976	B 394,742	4,009,285	Apr. 13, 1976	Feb. 22, 1977
B 311,779	4,013,481	Feb. 10, 1976	Mar. 22, 1977	B 395,554	3,998,156	Mar. 9, 1976	Dec. 21, 1976
B 313,280	4,003,591	Apr. 6, 1976	Jan. 18, 1977	B 395,975	4,001,085	Mar. 2, 1976	Jan. 4, 1977
B 326,211	3,988,272	Mar. 23, 1976	Oct. 26, 1976	B 396,164	3,989,590	Feb. 3, 1976	Nov. 2, 1976
B 328,065	4,014,752	Mar. 30, 1976	Mar. 29, 1977	B 396,377	D 243,148	Apr. 6, 1976	Jan. 25, 1977
B 328,077	4,014,860	Apr. 13, 1976	Mar. 29, 1977	B 397,674	3,998,438	Mar. 16, 1976	Dec. 21, 1976
B 328,116	4,000,774	Mar. 9, 1976	Jan. 4, 1977	B 398,084	3,996,239	Feb. 3, 1976	Dec. 7, 1976
B 330,719	4,001,121	Mar. 16, 1976	Jan. 4, 1977	B 398,220	3,990,834	Feb. 3, 1976	Nov. 9, 1976
B 330,736	3,996,299	Feb. 3, 1976	Dec. 7, 1976	B 398,488	3,987,991	Feb. 24, 1976	Oct. 26, 1976
B 332,442	4,001,231	Mar. 30, 1976	Jan. 4, 1977	B 399,098	3,997,665	Feb. 24, 1976	Dec. 14, 1976
B 333,110	3,989,867	Mar. 16, 1976	Nov. 2, 1976	B 399,632	4,001,046	Mar. 9, 1976	Jan. 4, 1977
B 333,247	4,001,201	Mar. 16, 1976	Jan. 4, 1977	B 399,908	3,983,323	Jan. 13, 1976	Sep. 28, 1976
B 333,838	4,006,263	Mar. 23, 1976	Feb. 1, 1977	B 400,871	3,988,893	Feb. 17, 1976	Nov. 2, 1976
B 335,783	4,013,744	Mar. 30, 1976	Mar. 22, 1977	B 401,042	D 242,197	Mar. 16, 1976	Nov. 9, 1976
B 336,754	3,989,805	Mar. 16, 1976	Nov. 2, 1976	B 401,221	4,014,791	Apr. 6, 1976	Mar. 29, 1977
B 337,023	4,013,188	Mar. 30, 1976	Mar. 22, 1977	B 402,162	3,994,902	Mar. 2, 1976	Nov. 30, 1976
B 337,823	4,002,746	Mar. 23, 1976	Jan. 11, 1977	B 402,328	3,995,545	Apr. 6, 1976	Dec. 7, 1976
B 339,194	3,982,215	Feb. 3, 1976	Sep. 21, 1976	B 402,553	3,983,219	Feb. 17, 1976	Sep. 28, 1976
B 339,446	4,001,067	Feb. 24, 1976	Jan. 4, 1977	B 402,657	4,013,665	Apr. 6, 1976	Mar. 22, 1977
B 340,170	4,000,444	Mar. 30, 1976	Dec. 28, 1976	B 402,929	3,991,251	Feb. 3, 1976	Nov. 9, 1976
B 344,669	4,013,655	Mar. 16, 1976	Mar. 22, 1977	B 403,076	4,014,917	Apr. 20, 1976	Mar. 29, 1977
B 347,661	3,999,218	Mar. 16, 1976	Dec. 21, 1976	B 403,243	3,996,232	Mar. 30, 1976	Dec. 7, 1976
B 348,433	3,984,405	Feb. 3, 1976	Oct. 5, 1976	B 403,326	4,001,212	Mar. 23, 1976	Jan. 4, 1977
B 349,370	3,989,684	Jan. 27, 1976	Nov. 2, 1976	B 403,477	3,995,315	Feb. 3, 1976	Nov. 30, 1976
B 351,455	4,001,309	Feb. 24, 1976	Jan. 4, 1977	B 403,507	3,982,095	Feb. 10, 1976	Sep. 21, 1976
B 354,222	4,012,305	Mar. 23, 1976	Mar. 15, 1977	B 403,766	3,994,834	Feb. 10, 1976	Nov. 30, 1976
B 354,959	3,995,996	Feb. 17, 1976	Dec. 7, 1976	B 403,883	4,001,481	Mar. 23, 1976	Jan. 4, 1977
B 356,187	3,981,222	Jan. 20, 1976	Sep. 21, 1976	B 405,726	3,981,241	Jan. 13, 1976	Sep. 21, 1976
B 356,470	4,014,789	Mar. 23, 1976	Mar. 29, 1977	B 405,899	4,097,710	Mar. 23, 1976	Mar. 21, 1978
B 357,526	4,001,319	Mar. 23, 1976	Jan. 4, 1977	B 406,546	D 242,966	Mar. 16, 1976	Jan. 11, 1977
B 358,260	3,989,661	Mar. 30, 1976	Nov. 2, 1976	B 407,205	4,000,966	Mar. 16, 1976	Jan. 4, 1977
B 358,427	3,989,896	Feb. 3, 1976	Nov. 2, 1976	B 407,737	3,992,546	Feb. 3, 1976	Nov. 16, 1976
B 359,768	4,013,684	Mar. 30, 1976	Mar. 22, 1977	B 407,812	4,010,006	Mar. 23, 1976	Mar. 1, 1977
B 359,901	3,981,729	Jan. 13, 1976	Sep. 21, 1976	B 408,123	4,014,887	Apr. 13, 1976	Mar. 29, 1977
B 361,954	4,014,753	Apr. 6, 1976	Mar. 29, 1977	B 409,848	3,983,270	Jan. 27, 1976	Sep. 28, 1976
B 363,565	4,004,821	Mar. 30, 1976	Jan. 25, 1977	B 410,074	4,001,303	Feb. 24, 1976	Jan. 4, 1977
B 364,797	3,996,131	Feb. 17, 1976	Dec. 7, 1976	B 410,694	3,995,530	Mar. 23, 1976	Dec. 7, 1976
B 367,092	4,014,920	Apr. 13, 1976	Mar. 29, 1977	B 411,471	3,982,933	Feb. 17, 1976	Sep. 28, 1976
B 367,305	3,998,640	Mar. 2, 1976	Dec. 21, 1976	B 411,624	4,001,205	Mar. 16, 1976	Jan. 4, 1977
B 367,621	3,989,589	Feb. 3, 1976	Nov. 2, 1976	B 411,765	3,993,428	Feb. 24, 1976	Nov. 23, 1976
B 369,221	3,985,834	Feb. 24, 1976	Oct. 12, 1976	B 412,068	3,981,244	Jan. 13, 1976	Sep. 21, 1976
B 369,373	4,013,683	Mar. 23, 1976	Mar. 22, 1977	B 412,124	4,007,000	Mar. 23, 1976	Feb. 8, 1977
B 369,379	4,013,754	Mar. 30, 1976	Mar. 22, 1977	B 413,379	4,001,325	Mar. 9, 1976	Jan. 4, 1977
B 370,309	3,989,640	Jan. 20, 1976	Nov. 2, 1976	B 414,028	3,993,738	Feb. 17, 1976	Nov. 23, 1976
B 371,095	4,005,074	Mar. 23, 1976	Jan. 25, 1977	B 414,266	3,993,614	Feb. 10, 1976	Nov. 23, 1976
B 371,635	4,010,290	Mar. 23, 1976	Mar. 1, 1977	B 414,481	3,982,979	Jan. 20, 1976	Sep. 28, 1976

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 414,971	D 242,208	Feb. 10, 1976	Nov. 9, 1976	B 439,542	3,982,199	Jan. 27, 1976	Sep. 21, 1976
B 415,021	3,994,173	Mar. 2, 1976	Nov. 30, 1976	B 439,778	4,001,455	Feb. 3, 1976	Jan. 4, 1977
B 415,122	3,997,503	Feb. 10, 1976	Dec. 14, 1976	B 440,548	4,001,271	Mar. 16, 1976	Jan. 4, 1977
B 415,590	4,009,317	Mar. 23, 1976	Feb. 22, 1977	B 440,632	4,014,955	Apr. 13, 1976	Mar. 29, 1977
B 416,257	4,001,335	Mar. 16, 1976	Jan. 4, 1977	B 440,633	4,000,116	Feb. 10, 1976	Dec. 28, 1976
B 416,589	3,990,363	Jan. 27, 1976	Nov. 9, 1976	B 440,858	3,993,670	Feb. 3, 1976	Nov. 23, 1976
B 417,014	3,981,851	Jan. 13, 1976	Sep. 21, 1976	B 441,543	4,014,755	Mar. 23, 1976	Mar. 29, 1977
B 417,164	4,001,360	Mar. 2, 1976	Jan. 4, 1977	B 441,605	4,026,862	Feb. 3, 1976	May 31, 1977
B 417,349	3,985,076	Mar. 9, 1976	Oct. 12, 1976	B 441,723	3,988,249	Mar. 16, 1976	Oct. 26, 1976
B 417,498	4,013,471	Mar. 23, 1976	Mar. 22, 1977	B 441,789	4,001,449	Mar. 30, 1976	Jan. 4, 1977
B 418,489	3,989,592	Jan. 13, 1976	Nov. 2, 1976	B 442,163	D 242,192	Mar. 16, 1976	Nov. 9, 1976
B 419,173	3,999,728	Mar. 9, 1976	Dec. 28, 1976	B 442,295	4,000,477	Mar. 16, 1976	Dec. 28, 1976
B 419,582	3,989,681	Mar. 2, 1976	Nov. 2, 1976	B 442,431	4,011,260	Mar. 23, 1976	Mar. 8, 1977
B 420,176	4,001,017	Mar. 16, 1976	Jan. 4, 1977	B 442,810	3,997,533	Feb. 24, 1976	Dec. 14, 1976
B 420,321	3,990,645	Mar. 30, 1976	Nov. 9, 1976	B 442,866	3,982,351	Feb. 24, 1976	Sep. 28, 1976
B 420,472	3,993,934	Feb. 24, 1976	Nov. 23, 1976	B 442,953	4,002,657	Mar. 23, 1976	Jan. 11, 1977
B 421,373	4,001,326	Mar. 23, 1976	Jan. 4, 1977	B 442,970	3,989,890	Feb. 3, 1976	Nov. 2, 1976
B 421,608	4,013,806	Mar. 23, 1976	Mar. 22, 1977	B 443,163	3,981,242	Feb. 3, 1976	Sep. 21, 1976
B 421,975	3,994,693	Mar. 2, 1976	Nov. 30, 1976	B 443,446	D 242,494	Apr. 6, 1976	Nov. 23, 1976
B 422,063	3,994,835	Feb. 3, 1976	Nov. 30, 1976	B 443,563	3,996,204	Feb. 24, 1976	Dec. 7, 1976
B 422,156	4,010,401	Mar. 23, 1976	Mar. 1, 1977	B 443,647	3,990,737	Feb. 17, 1976	Nov. 9, 1976
B 423,365	3,996,186	Feb. 17, 1976	Dec. 7, 1976	B 443,712	3,982,233	Jan. 27, 1976	Sep. 21, 1976
B 423,404	3,990,958	Mar. 2, 1976	Nov. 9, 1976	B 444,078	4,014,854	Mar. 23, 1976	Mar. 29, 1977
B 423,441	3,997,137	Feb. 17, 1976	Dec. 14, 1976	B 444,294	4,013,634	Mar. 30, 1976	Mar. 22, 1977
B 423,867	3,990,844	Feb. 3, 1976	Nov. 9, 1976	B 444,437	3,995,171	Mar. 9, 1976	Nov. 30, 1976
B 423,883	3,986,871	Jan. 27, 1976	Oct. 19, 1976	B 445,166	4,001,252	Mar. 2, 1976	Jan. 4, 1977
B 424,354	D 242,416	Feb. 10, 1976	Nov. 23, 1976	B 445,459	3,988,889	Feb. 3, 1976	Nov. 2, 1976
B 424,410	4,021,196	Mar. 30, 1976	May 3, 1977	B 445,493	3,994,903	Mar. 2, 1976	Nov. 30, 1976
B 424,989	3,990,569	Feb. 3, 1976	Nov. 9, 1976	B 445,690	3,999,584	Feb. 3, 1976	Dec. 28, 1976
B 425,193	4,002,107	Mar. 23, 1976	Jan. 11, 1977	B 446,107	4,001,276	Mar. 9, 1976	Jan. 4, 1977
B 425,285	4,014,676	Apr. 13, 1976	Mar. 29, 1977	B 446,956	4,014,765	Apr. 13, 1976	Mar. 29, 1977
B 425,462	3,998,396	Mar. 9, 1976	Dec. 21, 1976	B 447,000	3,984,419	Feb. 3, 1976	Oct. 5, 1976
B 425,588	3,985,111	Jan. 13, 1976	Oct. 12, 1976	B 447,440	3,991,724	Feb. 17, 1976	Nov. 16, 1976
B 426,157	4,013,714	Mar. 23, 1976	Mar. 22, 1977	B 449,837	4,128,582	Mar. 2, 1976	Dec. 5, 1978
B 426,227	3,999,028	Mar. 2, 1976	Dec. 21, 1976	B 449,892	3,997,919	Mar. 23, 1976	Dec. 14, 1976
B 426,266	3,998,839	Mar. 2, 1976	Dec. 21, 1976	B 449,988	4,014,794	Mar. 30, 1976	Mar. 29, 1977
B 426,274	4,014,949	Jan. 20, 1976	Mar. 29, 1977	B 449,989	4,061,572	Mar. 30, 1976	Dec. 6, 1977
B 426,424	3,993,742	Feb. 3, 1976	Nov. 23, 1976	B 450,196	3,997,701	Feb. 10, 1976	Dec. 14, 1976
B 426,639	3,992,539	Feb. 3, 1976	Nov. 16, 1976	B 450,413	4,007,463	Mar. 23, 1976	Feb. 8, 1977
B 426,819	3,995,868	Feb. 17, 1976	Dec. 7, 1976	B 450,521	3,982,838	Feb. 17, 1976	Sep. 28, 1976
B 427,883	3,982,277	Jan. 20, 1976	Sep. 21, 1976	B 450,701	3,991,084	Mar. 16, 1976	Nov. 9, 1976
B 427,946	4,006,161	Mar. 23, 1976	Feb. 1, 1977	B 450,708	3,989,724	Mar. 9, 1976	Nov. 2, 1976
B 428,103	4,000,211	Feb. 10, 1976	Dec. 28, 1976	B 450,870	3,998,951	Mar. 16, 1976	Dec. 21, 1976
B 428,271	3,987,415	Mar. 23, 1976	Oct. 19, 1976	B 450,967	3,983,055	Jan. 13, 1976	Sep. 28, 1976
B 428,408	3,995,252	Mar. 2, 1976	Nov. 30, 1976	B 451,248	3,997,758	Mar. 2, 1976	Dec. 14, 1976
B 428,877	3,984,649	Jan. 27, 1976	Oct. 5, 1976	B 451,308	3,991,037	Feb. 17, 1976	Nov. 9, 1976
B 429,018	3,990,061	Feb. 10, 1976	Nov. 2, 1976	B 451,396	4,000,450	Apr. 13, 1976	Dec. 28, 1976
B 429,027	4,001,260	Mar. 23, 1976	Jan. 4, 1977	B 451,438	Re. 29,066	Mar. 2, 1976	Dec. 7, 1976
B 429,157	3,990,628	Jan. 27, 1976	Nov. 9, 1976	B 451,534	3,986,033	Jan. 13, 1976	Oct. 12, 1976
B 429,434	3,989,223	Feb. 17, 1976	Nov. 2, 1976	B 452,034	4,002,367	Mar. 23, 1976	Jan. 11, 1977
B 430,157	3,992,465	Feb. 17, 1976	Nov. 16, 1976	B 452,138	4,004,278	Mar. 23, 1976	Jan. 18, 1977
B 430,172	3,982,563	Jan. 13, 1976	Sep. 28, 1976	B 452,293	4,014,726	Mar. 30, 1976	Mar. 29, 1977
B 430,213	4,013,514	Mar. 30, 1976	Mar. 22, 1977	B 452,501	4,001,111	Mar. 16, 1976	Jan. 4, 1977
B 430,276	3,982,171	Jan. 20, 1976	Sep. 21, 1976	B 452,672	3,981,602	Jan. 13, 1976	Sep. 21, 1976
B 430,287	D 242,489	Feb. 10, 1976	Nov. 23, 1976	B 452,879	4,001,089	Mar. 16, 1976	Jan. 4, 1977
B 430,326	4,003,581	Mar. 23, 1976	Jan. 18, 1977	B 452,883	3,981,735	Jan. 27, 1976	Sep. 21, 1976
B 430,334	3,981,677	Jan. 27, 1976	Sep. 21, 1976	B 452,915	4,013,933	Mar. 30, 1976	Mar. 22, 1977
B 431,072	3,985,610	Jan. 20, 1976	Oct. 12, 1976	B 452,938	3,994,719	Feb. 17, 1976	Nov. 30, 1976
B 431,334	3,988,095	Mar. 16, 1976	Oct. 26, 1976	B 452,944	4,009,773	Mar. 30, 1976	Mar. 1, 1977
B 431,713	4,000,167	Feb. 10, 1976	Dec. 28, 1976	B 453,031	3,998,678	Mar. 16, 1976	Dec. 21, 1976
B 431,785	3,999,950	Feb. 24, 1976	Dec. 28, 1976	B 453,067	4,005,394	Mar. 23, 1976	Jan. 25, 1977
B 431,797	4,007,290	Mar. 30, 1976	Feb. 8, 1977	B 453,238	3,997,063	Mar. 2, 1976	Dec. 14, 1976
B 432,049	3,995,123	Mar. 23, 1976	Nov. 30, 1976	B 453,432	4,000,514	Mar. 16, 1976	Dec. 28, 1976
B 432,140	3,999,163	Mar. 23, 1976	Dec. 21, 1976	B 453,533	3,997,744	Feb. 17, 1976	Dec. 14, 1976
B 432,265	4,013,480	Mar. 23, 1976	Mar. 22, 1977	B 453,616	3,987,376	Jan. 27, 1976	Oct. 19, 1976
B 432,594	4,003,404	Mar. 30, 1976	Jan. 18, 1977	B 453,759	3,989,790	Jan. 27, 1976	Nov. 2, 1976
B 432,969	3,997,017	Mar. 2, 1976	Dec. 14, 1976	B 453,960	4,014,701	Apr. 13, 1976	Mar. 29, 1977
B 432,991	3,991,669	Mar. 2, 1976	Nov. 16, 1976	B 454,283	3,995,153	Feb. 3, 1976	Nov. 30, 1976
B 433,094	3,987,768	Jan. 27, 1976	Oct. 26, 1976	B 454,833	4,008,733	Mar. 30, 1976	Feb. 22, 1977
B 433,707	4,013,594	Mar. 23, 1976	Mar. 22, 1977	B 455,425	3,990,060	Feb. 3, 1976	Nov. 2, 1976
B 433,892	4,016,061	Apr. 6, 1976	Apr. 5, 1977	B 455,481	3,991,092	Feb. 24, 1976	Nov. 9, 1976
B 433,930	4,012,324	Mar. 23, 1976	Mar. 15, 1977	B 455,486	4,001,353	Mar. 16, 1976	Jan. 4, 1977
B 434,206	3,994,610	Feb. 3, 1976	Nov. 30, 1976	B 455,686	4,001,156	Mar. 2, 1976	Jan. 4, 1977
B 434,441	D 242,849	Mar. 16, 1976	Dec. 28, 1976	B 455,759	3,984,242	Feb. 24, 1976	Oct. 5, 1976
B 435,481	4,000,892	Mar. 9, 1976	Jan. 4, 1977	B 455,806	3,998,919	Mar. 23, 1976	Dec. 21, 1976
B 435,570	4,000,908	Mar. 16, 1976	Jan. 4, 1977	B 456,069	3,998,991	Mar. 9, 1976	Dec. 21, 1976
B 435,617	4,001,234	Mar. 16, 1976	Jan. 4, 1977	B 456,148	3,984,269	Jan. 13, 1976	Oct. 5, 1976
B 436,724	3,991,856	Feb. 24, 1976	Nov. 16, 1976	B 456,153	3,997,992	Mar. 9, 1976	Dec. 21, 1976
B 437,209	4,001,193	Feb. 3, 1976	Jan. 4, 1977	B 456,384	4,014,859	Apr. 6, 1976	Mar. 29, 1977
B 437,559	3,993,287	Feb. 3, 1976	Nov. 23, 1976	B 456,579	3,993,715	Feb. 10, 1976	Nov. 23, 1976
B 437,596	3,985,638	Jan. 27, 1976	Oct. 12, 1976	B 456,869	4,001,277	Mar. 9, 1976	Jan. 4, 1977
B 437,894	4,001,015	Mar. 2, 1976	Jan. 4, 1977	B 456,900	3,996,262	Feb. 3, 1976	Dec. 7, 1976
B 437,986	4,011,399	Apr. 20, 1976	Mar. 8, 1977	B 456,905	4,013,431	Mar. 23, 1976	Mar. 22, 1977
B 438,048	4,001,394	Mar. 23, 1976	Jan. 4, 1977	B 457,547	3,996,397	Feb. 17, 1976	Dec. 7, 1976
B 438,484	3,992,451	Feb. 17, 1976	Nov. 16, 1976	B 457,850	3,993,586	Feb. 10, 1976	Nov. 23, 1976
B 438,882	3,983,719	Feb. 24, 1976	Oct. 5, 1976	B 457,862	3,987,195	Jan. 27, 1976	Oct. 19, 1976
B 438,916	3,983,050	Jan. 13, 1976	Sep. 28, 1976	B 457,886	3,988,498	Jan. 13, 1976	Oct. 26, 1976

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 457,931	4,001,229	Mar. 16, 1976	Jan. 4, 1977	B 472,760	4,001,330	Apr. 13, 1976	Jan. 4, 1977
B 458,500	3,997,805	Feb. 24, 1976	Dec. 14, 1976	B 473,039	3,985,747	Feb. 10, 1976	Oct. 12, 1976
B 458,617	3,984,422	Feb. 3, 1976	Oct. 5, 1976	B 473,040	3,985,738	Feb. 10, 1976	Oct. 12, 1976
B 458,964	3,996,615	Mar. 2, 1976	Dec. 7, 1976	B 473,813	3,989,071	Mar. 9, 1976	Nov. 2, 1976
B 459,190	4,010,786	Mar. 30, 1976	Mar. 8, 1977	B 473,972	3,984,043	Jan. 13, 1976	Oct. 5, 1976
B 459,381	4,000,017	Mar. 9, 1976	Dec. 28, 1976	B 474,573	3,988,375	Jan. 20, 1976	Oct. 26, 1976
B 459,408	4,018,890	Mar. 23, 1976	Apr. 19, 1977	B 474,747	3,997,704	Feb. 24, 1976	Dec. 14, 1976
B 459,597	3,996,711	Feb. 17, 1976	Dec. 14, 1976	B 475,236	3,989,990	Feb. 3, 1976	Nov. 2, 1976
B 459,811	3,982,173	Jan. 20, 1976	Sep. 21, 1976	B 475,385	4,001,071	Mar. 9, 1976	Jan. 4, 1977
B 459,821	4,005,954	Mar. 30, 1976	Feb. 1, 1977	B 475,681	3,983,332	Jan. 20, 1976	Sep. 28, 1976
B 460,388	3,989,448	Jan. 27, 1976	Nov. 2, 1976	B 475,801	4,056,759	Mar. 30, 1976	Nov. 1, 1977
B 460,441	3,981,828	Jan. 13, 1976	Sep. 21, 1976	B 476,267	4,005,068	Apr. 6, 1976	Jan. 25, 1977
B 460,846	3,985,817	Feb. 24, 1976	Oct. 12, 1976	B 476,372	3,985,771	Feb. 24, 1976	Oct. 12, 1976
B 461,184	3,992,482	Feb. 17, 1976	Nov. 16, 1976	B 476,542	4,013,549	Mar. 30, 1976	Mar. 22, 1977
B 461,250	4,000,768	Mar. 16, 1976	Jan. 4, 1977	B 476,568	3,999,456	Mar. 16, 1976	Dec. 28, 1976
B 461,257	4,078,715	Jan. 13, 1976	Mar. 14, 1978	B 476,577	3,982,070	Jan. 20, 1976	Sep. 21, 1976
B 461,336	3,982,231	Feb. 3, 1976	Sep. 21, 1976	B 476,681	3,986,181	Jan. 13, 1976	Oct. 12, 1976
B 461,352	3,981,681	Jan. 13, 1976	Sep. 21, 1976	B 476,776	3,998,715	Mar. 23, 1976	Dec. 21, 1976
B 461,685	4,013,661	Mar. 30, 1976	Mar. 22, 1977	B 476,967	3,995,206	Mar. 9, 1976	Nov. 30, 1976
B 461,752	4,016,541	Apr. 20, 1976	Apr. 5, 1977	B 477,252	3,985,759	Jan. 13, 1976	Oct. 12, 1976
B 461,874	3,982,276	Jan. 27, 1976	Sep. 21, 1976	B 477,481	3,991,076	Feb. 3, 1976	Nov. 9, 1976
B 462,030	4,009,342	Mar. 23, 1976	Feb. 22, 1977	B 477,584	D 242,855	Apr. 6, 1976	Dec. 28, 1976
B 462,386	3,988,188	Jan. 13, 1976	Oct. 26, 1976	B 477,597	3,993,912	Feb. 17, 1976	Nov. 23, 1976
B 462,424	3,989,602	Feb. 24, 1976	Nov. 2, 1976	B 477,892	4,010,355	Mar. 30, 1976	Mar. 1, 1977
B 462,828	3,998,395	Mar. 9, 1976	Dec. 21, 1976	B 478,234	4,010,421	Mar. 30, 1976	Mar. 1, 1977
B 462,893	3,984,253	Feb. 24, 1976	Oct. 5, 1976	B 478,739	3,992,253	Feb. 17, 1976	Nov. 16, 1976
B 463,322	3,989,982	Jan. 20, 1976	Nov. 2, 1976	B 478,759	4,055,681	Mar. 16, 1976	Oct. 25, 1977
B 463,388	3,992,605	Feb. 10, 1976	Nov. 16, 1976	B 479,175	3,985,700	Feb. 17, 1976	Oct. 12, 1976
B 463,473	4,002,068	Mar. 23, 1976	Jan. 11, 1977	B 479,242	3,983,074	Feb. 17, 1976	Sep. 28, 1976
B 463,591	4,015,051	Mar. 30, 1976	Mar. 29, 1977	B 479,502	3,999,030	Mar. 16, 1976	Dec. 21, 1976
B 463,671	3,985,385	Jan. 13, 1976	Oct. 12, 1976	B 479,681	D 242,672	Mar. 16, 1976	Dec. 14, 1976
B 464,027	3,999,390	Mar. 16, 1976	Dec. 28, 1976	B 479,969	4,001,132	Mar. 9, 1976	Jan. 4, 1977
B 464,290	3,990,307	Feb. 3, 1976	Nov. 9, 1976	B 480,114	4,001,327	Mar. 2, 1976	Jan. 4, 1977
B 464,491	4,015,612	Mar. 30, 1976	Apr. 5, 1977	B 480,251	4,008,700	Mar. 23, 1976	Feb. 22, 1977
B 464,587	3,991,091	Feb. 3, 1976	Nov. 9, 1976	B 480,287	4,006,029	Mar. 30, 1976	Feb. 1, 1977
B 464,593	3,997,659	Mar. 9, 1976	Dec. 14, 1976	B 480,292	3,994,011	Mar. 16, 1976	Nov. 23, 1976
B 465,145	3,981,148	Jan. 27, 1976	Sep. 21, 1976	B 480,350	3,994,164	Feb. 10, 1976	Nov. 30, 1976
B 465,202	3,989,757	Feb. 24, 1976	Nov. 2, 1976	B 480,384	3,999,737	Mar. 23, 1976	Dec. 28, 1976
B 465,393	3,987,390	Jan. 27, 1976	Oct. 19, 1976	B 480,452	3,994,923	Feb. 10, 1976	Nov. 30, 1976
B 465,688	3,989,770	Jan. 27, 1976	Nov. 2, 1976	B 480,473	3,995,608	Mar. 2, 1976	Dec. 7, 1976
B 465,955	3,997,502	Feb. 3, 1976	Dec. 14, 1976	B 480,604	3,985,251	Jan. 13, 1976	Oct. 12, 1976
B 466,304	4,007,095	Mar. 23, 1976	Feb. 8, 1977	B 480,625	3,996,227	Feb. 24, 1976	Dec. 7, 1976
B 466,318	3,999,115	Mar. 9, 1976	Dec. 21, 1976	B 480,662	3,988,382	Mar. 2, 1976	Oct. 26, 1976
B 466,390	3,983,349	Feb. 24, 1976	Sep. 28, 1976	B 480,740	3,996,431	Mar. 2, 1976	Dec. 7, 1976
B 466,419	4,011,087	Mar. 23, 1976	Mar. 8, 1977	B 480,749	3,999,207	Mar. 9, 1976	Dec. 21, 1976
B 466,444	3,986,039	Jan. 20, 1976	Oct. 12, 1976	B 480,987	4,001,459	Mar. 30, 1976	Jan. 4, 1977
B 466,906	3,993,037	Mar. 16, 1976	Nov. 23, 1976	B 481,048	3,998,542	Mar. 16, 1976	Dec. 21, 1976
B 466,929	3,991,195	Jan. 27, 1976	Nov. 9, 1976	B 481,190	4,013,468	Mar. 30, 1976	Mar. 22, 1977
B 467,250	3,997,428	Feb. 3, 1976	Dec. 14, 1976	B 481,600	3,981,235	Jan. 27, 1976	Sep. 21, 1976
B 467,328	3,997,599	Mar. 9, 1976	Dec. 14, 1976	B 481,737	3,982,057	Jan. 13, 1976	Sep. 21, 1976
B 467,412	3,981,265	Jan. 13, 1976	Sep. 21, 1976	B 481,778	4,001,385	Mar. 30, 1976	Jan. 4, 1977
B 467,486	3,991,725	Mar. 16, 1976	Nov. 16, 1976	B 481,930	3,992,717	Feb. 24, 1976	Nov. 16, 1976
B 467,971	3,983,453	Jan. 13, 1976	Sep. 28, 1976	B 481,989	4,008,337	Mar. 23, 1976	Feb. 15, 1977
B 468,052	3,988,335	Feb. 10, 1976	Oct. 26, 1976	B 482,058	4,001,398	Mar. 2, 1976	Jan. 4, 1977
B 468,100	3,995,107	Mar. 9, 1976	Nov. 30, 1976	B 482,660	3,995,026	Feb. 10, 1976	Nov. 30, 1976
B 468,330	4,001,475	Mar. 16, 1976	Jan. 4, 1977	B 482,709	3,985,733	Feb. 24, 1976	Oct. 12, 1976
B 468,350	3,981,922	Jan. 13, 1976	Sep. 21, 1976	B 482,907	3,984,811	Jan. 20, 1976	Oct. 5, 1976
B 468,421	4,014,739	Mar. 30, 1976	Mar. 29, 1977	B 483,247	4,001,889	Apr. 13, 1976	Jan. 4, 1977
B 468,603	4,003,839	Mar. 23, 1976	Jan. 18, 1977	B 483,256	3,981,723	Feb. 10, 1976	Sep. 21, 1976
B 469,036	4,005,926	Mar. 16, 1976	Feb. 1, 1977	B 483,268	3,995,215	Mar. 9, 1976	Nov. 30, 1976
B 469,228	4,052,954	Feb. 17, 1976	Oct. 11, 1977	B 483,606	3,986,990	Jan. 27, 1976	Oct. 19, 1976
B 469,468	4,000,220	Mar. 16, 1976	Dec. 28, 1976	B 483,615	3,988,637	Jan. 27, 1976	Oct. 26, 1976
B 469,947	3,984,153	Jan. 20, 1976	Oct. 5, 1976	B 483,746	4,014,923	Mar. 23, 1976	Mar. 29, 1977
B 470,170	3,986,410	Jan. 13, 1976	Oct. 19, 1976	B 483,762	3,993,608	Feb. 10, 1976	Nov. 23, 1976
B 470,305	4,014,043	Apr. 6, 1976	Mar. 22, 1977	B 483,865	3,985,693	Jan. 13, 1976	Oct. 12, 1976
B 470,348	3,981,929	Jan. 13, 1976	Sep. 21, 1976	B 484,029	3,983,558	Feb. 10, 1976	Sep. 28, 1976
B 470,576	3,997,507	Feb. 24, 1976	Dec. 14, 1976	B 484,067	3,992,374	Feb. 17, 1976	Nov. 16, 1976
B 470,601	3,985,655	Mar. 9, 1976	Oct. 12, 1976	B 484,068	3,994,937	Mar. 2, 1976	Nov. 30, 1976
B 470,798	3,987,480	Jan. 20, 1976	Oct. 19, 1976	B 484,121	3,997,770	Mar. 16, 1976	Dec. 14, 1976
B 470,853	4,002,101	Mar. 23, 1976	Jan. 11, 1977	B 484,269	4,000,159	Feb. 10, 1976	Dec. 28, 1976
B 470,899	3,996,441	Mar. 2, 1976	Dec. 7, 1976	B 484,332	3,986,540	Mar. 2, 1976	Oct. 19, 1976
B 470,900	4,001,213	Mar. 2, 1976	Jan. 4, 1977	B 484,365	3,983,578	Jan. 27, 1976	Sep. 28, 1976
B 470,945	4,014,848	Apr. 13, 1976	Mar. 29, 1977	B 484,419	4,001,292	Mar. 9, 1976	Jan. 4, 1977
B 471,116	4,001,318	Feb. 17, 1976	Jan. 4, 1977	B 484,437	4,013,740	Mar. 30, 1976	Mar. 22, 1977
B 471,221	3,981,974	Jan. 13, 1976	Sep. 21, 1976	B 484,482	3,994,017	Mar. 23, 1976	Nov. 23, 1976
B 471,405	3,993,576	Feb. 10, 1976	Nov. 23, 1976	B 484,769	3,999,498	Mar. 16, 1976	Dec. 28, 1976
B 471,494	3,993,660	Mar. 16, 1976	Nov. 23, 1976	B 485,051	3,992,418	Feb. 17, 1976	Nov. 16, 1976
B 471,579	3,985,689	Jan. 13, 1976	Oct. 12, 1976	B 485,060	3,983,067	Feb. 17, 1976	Sep. 28, 1976
B 471,617	3,994,871	Feb. 10, 1976	Nov. 30, 1976	B 485,169	3,989,791	Mar. 16, 1976	Nov. 2, 1976
B 471,681	4,012,844	Apr. 13, 1976	Mar. 22, 1977	B 485,188	4,001,170	Mar. 16, 1976	Jan. 4, 1977
B 471,706	4,076,275	Mar. 16, 1976	Feb. 28, 1978	B 485,401	3,985,859	Jan. 27, 1976	Oct. 12, 1976
B 471,735	3,989,408	Feb. 3, 1976	Nov. 2, 1976	B 485,575	3,996,565	Feb. 24, 1976	Dec. 7, 1976
B 471,836	4,000,150	Feb. 24, 1976	Dec. 28, 1976	B 485,926	4,006,357	Mar. 23, 1976	Feb. 1, 1977
B 472,241	3,992,453	Feb. 17, 1976	Nov. 16, 1976	B 485,972	4,017,472	Mar. 23, 1976	Apr. 12, 1977
B 472,256	3,985,789	Jan. 13, 1976	Oct. 12, 1976	B 486,280	3,983,130	Feb. 3, 1976	Sep. 28, 1976
B 472,284	3,982,078	Jan. 13, 1976	Sep. 21, 1976	B 486,614	3,995,835	Feb. 17, 1976	Dec. 7, 1976
B 472,591	4,013,029	Apr. 6, 1976	Mar. 22, 1977	B 486,678	4,001,273	Mar. 2, 1976	Jan. 4, 1977

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 486,828	3,989,651	Mar. 2, 1976	Nov. 2, 1976	B 496,502	3,987,444	Jan. 20, 1976	Oct. 19, 1976
B 487,062	D 241,256	Feb. 10, 1976	Nov. 9, 1976	B 496,792	3,999,959	Feb. 17, 1976	Dec. 28, 1976
B 487,078	4,012,895	Mar. 30, 1976	Mar. 22, 1977	B 496,964	3,999,219	Apr. 20, 1976	Dec. 21, 1976
B 487,133	3,989,826	Jan. 27, 1976	Nov. 2, 1976	B 496,999	3,983,804	Jan. 27, 1976	Oct. 5, 1976
B 487,260	3,990,610	Jan. 27, 1976	Nov. 9, 1976	B 497,021	3,985,039	Jan. 13, 1976	Oct. 12, 1976
B 487,411	3,983,579	Feb. 24, 1976	Sep. 28, 1976	B 497,194	3,988,267	Feb. 3, 1976	Oct. 26, 1976
B 487,423	3,998,810	Mar. 2, 1976	Dec. 21, 1976	B 497,292	3,994,052	Feb. 3, 1976	Nov. 30, 1976
B 487,427	3,995,788	Mar. 2, 1976	Dec. 7, 1976	B 497,293	4,011,412	Mar. 30, 1976	Mar. 8, 1977
B 487,467	4,014,847	Apr. 13, 1976	Mar. 29, 1977	B 497,473	3,990,839	Feb. 3, 1976	Nov. 9, 1976
B 487,529	4,022,750	Mar. 30, 1976	May 10, 1977	B 497,490	4,118,377	Mar. 23, 1976	Oct. 3, 1978
B 488,111	3,985,765	Jan. 13, 1976	Oct. 12, 1976	B 497,571	4,009,997	Mar. 23, 1976	Mar. 1, 1977
B 488,395	3,982,245	Jan. 27, 1976	Sep. 21, 1976	B 497,584	3,988,184	Feb. 24, 1976	Oct. 26, 1976
B 488,634	3,982,158	Jan. 20, 1976	Sep. 21, 1976	B 497,702	3,996,589	Mar. 2, 1976	Dec. 7, 1976
B 488,756	3,991,810	Mar. 16, 1976	Nov. 16, 1976	B 497,780	3,997,500	Feb. 24, 1976	Dec. 14, 1976
B 488,836	4,013,121	Mar. 30, 1976	Mar. 22, 1977	B 497,853	3,987,934	Feb. 17, 1976	Oct. 26, 1976
B 489,290	3,998,081	Feb. 17, 1976	Dec. 21, 1976	B 497,896	D 243,091	Apr. 6, 1976	Jan. 18, 1977
B 489,328	3,990,088	Jan. 20, 1976	Nov. 2, 1976	B 497,960	3,991,325	Jan. 20, 1976	Nov. 9, 1976
B 489,331	3,996,175	Feb. 17, 1976	Dec. 7, 1976	B 498,208	4,001,480	Apr. 13, 1976	Jan. 4, 1977
B 489,485	D 243,266	Apr. 13, 1976	Feb. 1, 1977	B 498,288	4,013,657	Mar. 23, 1976	Mar. 22, 1977
B 489,550	4,000,710	Mar. 16, 1976	Jan. 4, 1977	B 498,775	3,993,868	Mar. 2, 1976	Nov. 23, 1976
B 489,685	3,984,085	Feb. 24, 1976	Oct. 5, 1976	B 498,205	3,989,611	Feb. 10, 1976	Nov. 2, 1976
B 490,067	3,986,600	Jan. 27, 1976	Oct. 19, 1976	B 498,500	3,982,241	Jan. 20, 1976	Sep. 21, 1976
B 490,547	3,999,439	Feb. 24, 1976	Dec. 28, 1976	B 498,775	3,993,868	Mar. 2, 1976	Nov. 23, 1976
B 490,551	D 243,168	Apr. 6, 1976	Jan. 25, 1977	B 498,820	3,996,670	Mar. 9, 1976	Dec. 14, 1976
B 490,589	3,990,680	Feb. 3, 1976	Nov. 9, 1976	B 498,951	3,996,907	Mar. 2, 1976	Dec. 14, 1976
B 490,623	3,996,964	Mar. 2, 1976	Dec. 14, 1976	B 499,171	3,985,192	Jan. 27, 1976	Oct. 12, 1976
B 490,647	3,985,196	Feb. 24, 1976	Oct. 12, 1976	B 499,209	3,995,907	Feb. 24, 1976	Dec. 7, 1976
B 490,806	3,989,486	Feb. 3, 1976	Nov. 2, 1976	B 499,227	3,981,344	Jan. 27, 1976	Sep. 21, 1976
B 490,812	3,998,842	Mar. 30, 1976	Dec. 21, 1976	B 499,324	4,001,375	Mar. 16, 1976	Jan. 4, 1977
B 490,946	3,993,652	Feb. 17, 1976	Nov. 23, 1976	B 499,352	3,981,391	Jan. 27, 1976	Sep. 21, 1976
B 490,995	3,995,031	Feb. 3, 1976	Nov. 30, 1976	B 499,370	4,013,544	Mar. 30, 1976	Mar. 22, 1977
B 491,032	3,981,892	Feb. 10, 1976	Sep. 21, 1976	B 499,718	3,990,058	Jan. 27, 1976	Nov. 2, 1976
B 491,052	3,985,790	Mar. 2, 1976	Oct. 12, 1976	B 499,786	4,000,663	Mar. 16, 1976	Jan. 4, 1977
B 491,111	3,997,916	Feb. 17, 1976	Dec. 14, 1976	B 500,171	3,997,262	Mar. 30, 1976	Dec. 14, 1976
B 491,455	3,991,167	Feb. 3, 1976	Nov. 9, 1976	B 500,176	3,995,316	Feb. 3, 1976	Nov. 30, 1976
B 491,501	3,984,914	Jan. 13, 1976	Oct. 12, 1976	B 500,408	D 242,721	Mar. 16, 1976	Dec. 14, 1976
B 491,618	4,007,950	Mar. 16, 1976	Feb. 15, 1977	B 500,945	3,996,817	Feb. 24, 1976	Dec. 14, 1976
B 491,650	3,999,044	Mar. 9, 1976	Dec. 21, 1976	B 500,959	4,014,853	Apr. 13, 1976	Mar. 29, 1977
B 491,673	3,994,770	Feb. 17, 1976	Nov. 30, 1976	B 500,981	3,984,681	Jan. 27, 1976	Oct. 5, 1976
B 491,711	4,053,467	Mar. 23, 1976	Oct. 11, 1977	B 501,122	3,981,385	Feb. 17, 1976	Sep. 21, 1976
B 491,776	3,986,298	Mar. 16, 1976	Oct. 19, 1976	B 501,128	4,072,723	Feb. 24, 1976	Feb. 7, 1978
B 491,883	3,984,412	Feb. 3, 1976	Oct. 5, 1976	B 501,181	3,984,761	Feb. 10, 1976	Oct. 5, 1976
B 491,906	D 242,223	Feb. 10, 1976	Nov. 9, 1976	B 501,253	3,994,015	Feb. 3, 1976	Nov. 23, 1976
B 492,039	3,997,541	Feb. 24, 1976	Dec. 14, 1976	B 501,317	3,985,643	Jan. 13, 1976	Oct. 12, 1976
B 492,093	4,003,658	Mar. 23, 1976	Jan. 18, 1977	B 501,379	4,013,696	Mar. 30, 1976	Mar. 22, 1977
B 492,120	3,995,692	Feb. 24, 1976	Dec. 7, 1976	B 501,415	3,982,051	Jan. 13, 1976	Sep. 21, 1976
B 492,301	3,981,073	Jan. 13, 1976	Sep. 21, 1976	B 501,482	4,012,650	Jan. 13, 1976	Mar. 15, 1977
B 492,373	4,010,908	Mar. 30, 1976	Mar. 8, 1977	B 501,503	4,001,640	Mar. 2, 1976	Jan. 4, 1977
B 492,688	3,983,415	Jan. 20, 1976	Sep. 28, 1976	B 501,540	3,985,694	Jan. 13, 1976	Oct. 12, 1976
B 492,716	3,998,739	Mar. 2, 1976	Dec. 21, 1976	B 501,975	3,998,466	Mar. 2, 1976	Dec. 21, 1976
B 492,774	4,001,843	Mar. 9, 1976	Jan. 4, 1977	B 501,993	3,981,606	Jan. 13, 1976	Sep. 21, 1976
B 492,902	3,993,859	Feb. 24, 1976	Nov. 23, 1976	B 502,151	3,998,614	Mar. 23, 1976	Dec. 21, 1976
B 492,946	3,991,303	Jan. 27, 1976	Nov. 9, 1976	B 502,161	4,000,500	Mar. 2, 1976	Dec. 28, 1976
B 493,254	D 243,267	Apr. 13, 1976	Feb. 1, 1977	B 502,289	3,982,274	Jan. 13, 1976	Sep. 21, 1976
B 493,370	3,984,792	Mar. 16, 1976	Oct. 5, 1976	B 502,381	D 242,231	Mar. 16, 1976	Nov. 9, 1976
B 493,463	4,013,510	Mar. 23, 1976	Mar. 22, 1977	B 502,540	3,983,698	Jan. 13, 1976	Oct. 5, 1976
B 493,474	4,013,565	Mar. 23, 1976	Mar. 22, 1977	B 502,571	D 242,433	Apr. 6, 1976	Nov. 23, 1976
B 493,501	3,988,061	Feb. 3, 1976	Oct. 26, 1976	B 502,589	3,989,652	Jan. 27, 1976	Nov. 2, 1976
B 493,686	4,008,338	Mar. 23, 1976	Feb. 15, 1977	B 502,652	3,989,186	Feb. 24, 1976	Nov. 2, 1976
B 493,955	3,989,830	Mar. 9, 1976	Nov. 2, 1976	B 502,667	3,991,431	Feb. 24, 1976	Nov. 16, 1976
B 493,981	3,990,165	Mar. 9, 1976	Nov. 9, 1976	B 502,773	4,125,406	Jan. 13, 1976	Nov. 14, 1978
B 494,138	4,034,002	Mar. 23, 1976	July 5, 1977	B 502,973	3,982,161	Jan. 27, 1976	Sep. 21, 1976
B 494,234	3,983,808	Feb. 10, 1976	Oct. 5, 1976	B 502,993	3,992,489	Feb. 17, 1976	Nov. 16, 1976
B 494,339	4,001,255	Mar. 16, 1976	Jan. 4, 1977	B 503,029	3,986,879	Jan. 27, 1976	Oct. 19, 1976
B 494,383	3,991,289	Feb. 3, 1976	Nov. 9, 1976	B 503,345	4,001,235	Feb. 24, 1976	Jan. 4, 1977
B 494,439	4,057,521	Apr. 13, 1976	Nov. 8, 1977	B 503,371	4,009,401	Mar. 30, 1976	Feb. 22, 1977
B 494,440	4,056,502	Feb. 17, 1976	Nov. 1, 1977	B 503,436	3,988,819	Feb. 24, 1976	Nov. 2, 1976
B 494,450	4,079,029	Feb. 17, 1976	Mar. 14, 1978	B 503,456	4,007,702	Mar. 23, 1976	Feb. 15, 1977
B 494,669	3,991,104	Feb. 3, 1976	Nov. 9, 1976	B 503,521	3,999,646	Mar. 16, 1976	Dec. 28, 1976
B 494,691	3,987,457	Mar. 16, 1976	Oct. 19, 1976	B 503,579	3,989,680	Feb. 10, 1976	Nov. 2, 1976
B 494,806	3,989,210	Feb. 3, 1976	Nov. 2, 1976	B 503,618	3,997,782	Mar. 9, 1976	Dec. 14, 1976
B 494,944	3,992,469	Feb. 17, 1976	Nov. 16, 1976	B 503,742	3,989,756	Feb. 17, 1976	Nov. 2, 1976
B 495,124	4,060,968	Mar. 9, 1976	Dec. 6, 1977	B 503,776	4,016,000	Mar. 23, 1976	Apr. 5, 1977
B 495,185	3,999,166	Mar. 9, 1976	Dec. 21, 1976	B 503,780	3,990,055	Mar. 16, 1976	Nov. 2, 1976
B 495,331	4,000,456	Mar. 16, 1976	Dec. 28, 1976	B 503,817	3,988,307	Jan. 13, 1976	Oct. 26, 1976
B 495,402	3,983,988	Feb. 17, 1976	Oct. 5, 1976	B 504,056	3,993,923	Feb. 24, 1976	Nov. 23, 1976
B 495,408	4,000,222	Feb. 3, 1976	Dec. 28, 1976	B 504,061	3,987,534	Mar. 16, 1976	Oct. 26, 1976
B 495,489	3,984,571	Feb. 3, 1976	Oct. 5, 1976	B 504,156	3,999,048	Mar. 23, 1976	Dec. 21, 1976
B 495,550	3,993,666	Feb. 3, 1976	Nov. 23, 1976	B 504,169	3,981,219	Jan. 13, 1976	Sep. 21, 1976
B 495,554	3,993,665	Feb. 3, 1976	Nov. 23, 1976	B 504,404	3,996,499	Feb. 24, 1976	Dec. 7, 1976
B 495,759	3,989,998	Feb. 3, 1976	Nov. 2, 1976	B 504,405	4,007,401	Apr. 13, 1976	Feb. 8, 1977
B 495,781	4,013,699	Mar. 23, 1976	Mar. 22, 1977	B 504,439	3,999,398	Mar. 16, 1976	Dec. 28, 1976
B 495,903	3,995,997	Feb. 17, 1976	Dec. 7, 1976	B 504,503	3,999,210	Mar. 9, 1976	Dec. 21, 1976
B 496,430	3,991,140	Feb. 10, 1976	Nov. 9, 1976	B 504,582	4,005,138	Mar. 30, 1976	Jan. 25, 1977
B 496,431	3,985,894	Jan. 13, 1976	Oct. 12, 1976	B 504,778	3,986,650	Feb. 24, 1976	Oct. 19, 1976
B 496,487	3,982,261	Jan. 20, 1976	Sep. 21, 1976	B 504,877	3,997,564	Feb. 24, 1976	Dec. 14, 1976
B 496,500	3,985,962	Feb. 3, 1976	Oct. 12, 1976	B 504,899	3,991,273	Mar. 9, 1976	Nov. 9, 1976

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DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 505,126	3,981,745	Feb. 10, 1976	Sep. 21, 1976	B 514,687	3,986,522	Jan. 27, 1976	Oct. 19, 1976
B 505,221	4,013,627	Mar. 30, 1976	Mar. 22, 1977	B 514,839	4,033,816	Mar. 2, 1976	July 5, 1977
B 505,582	4,001,659	Mar. 23, 1976	Jan. 4, 1977	B 515,135	3,990,085	Feb. 17, 1976	Nov. 2, 1976
B 505,689	3,987,631	Mar. 2, 1976	Oct. 26, 1976	B 515,216	4,076,261	Feb. 17, 1976	Feb. 28, 1978
B 505,813	3,985,175	Jan. 13, 1976	Oct. 12, 1976	B 515,303	3,987,939	Jan. 20, 1976	Oct. 26, 1976
B 506,144	3,991,147	Feb. 10, 1976	Nov. 9, 1976	B 515,368	4,014,733	Apr. 6, 1976	Mar. 29, 1977
B 506,148	3,988,319	Feb. 3, 1976	Oct. 26, 1976	B 515,452	3,995,243	Feb. 10, 1976	Nov. 30, 1976
B 506,167	3,990,652	Feb. 10, 1976	Nov. 9, 1976	B 515,455	3,982,149	Jan. 27, 1976	Sep. 21, 1976
B 506,286	3,982,085	Jan. 20, 1976	Sep. 21, 1976	B 515,642	4,001,258	Feb. 24, 1976	Jan. 4, 1977
B 506,461	3,987,348	Jan. 20, 1976	Oct. 19, 1976	B 515,908	3,984,676	Jan. 20, 1976	Oct. 5, 1976
B 506,566	3,985,402	Jan. 20, 1976	Oct. 12, 1976	B 516,002	3,988,638	Jan. 13, 1976	Oct. 26, 1976
B 506,624	3,999,695	Mar. 9, 1976	Dec. 28, 1976	B 516,032	3,986,634	Jan. 27, 1976	Oct. 19, 1976
B 506,648	3,994,857	Feb. 3, 1976	Nov. 30, 1976	B 516,047	3,985,741	Feb. 10, 1976	Oct. 12, 1976
B 506,744	3,981,176	Jan. 13, 1976	Sep. 21, 1976	B 516,060	3,983,572	Feb. 17, 1976	Sep. 28, 1976
B 506,760	4,012,835	Apr. 13, 1976	Mar. 22, 1977	B 516,069	3,986,208	Mar. 16, 1976	Oct. 12, 1976
B 506,839	4,005,389	Mar. 23, 1976	Jan. 25, 1977	B 516,296	3,984,404	Feb. 3, 1976	Oct. 5, 1976
B 506,840	4,002,928	Mar. 23, 1976	Jan. 11, 1977	B 516,537	3,996,784	Feb. 17, 1976	Dec. 14, 1976
B 506,916	3,986,140	Feb. 3, 1976	Oct. 12, 1976	B 516,564	3,993,931	Feb. 17, 1976	Nov. 23, 1976
B 506,926	3,993,232	Feb. 17, 1976	Nov. 23, 1976	B 516,609	3,994,486	Feb. 24, 1976	Nov. 30, 1976
B 507,087	3,991,389	Feb. 17, 1976	Nov. 9, 1976	B 516,625	4,013,542	Mar. 30, 1976	Mar. 22, 1977
B 507,131	4,000,499	Mar. 2, 1976	Dec. 28, 1976	B 516,804	3,991,209	Mar. 23, 1976	Nov. 9, 1976
B 507,166	4,014,738	Apr. 13, 1976	Mar. 29, 1977	B 516,825	3,988,885	Feb. 3, 1976	Nov. 2, 1976
B 507,396	3,995,167	Feb. 10, 1976	Nov. 30, 1976	B 517,273	D 242,798	Mar. 16, 1976	Dec. 21, 1976
B 507,456	4,080,349	Mar. 9, 1976	Mar. 21, 1978	B 517,504	3,999,855	Mar. 9, 1976	Dec. 28, 1976
B 507,476	3,994,680	Feb. 10, 1976	Nov. 30, 1976	B 517,668	4,013,423	Apr. 6, 1976	Mar. 22, 1977
B 507,647	3,982,240	Jan. 27, 1976	Sep. 21, 1976	B 517,762	3,986,065	Mar. 16, 1976	Oct. 12, 1976
B 508,118	3,992,283	Feb. 17, 1976	Nov. 16, 1976	B 517,858	4,000,999	Feb. 17, 1976	Jan. 4, 1977
B 508,119	3,992,285	Feb. 17, 1976	Nov. 16, 1976	B 517,956	D 243,088	Apr. 6, 1976	Jan. 18, 1977
B 508,369	3,985,847	Jan. 13, 1976	Oct. 12, 1976	B 517,957	D 243,089	Apr. 6, 1976	Jan. 18, 1977
B 508,639	4,004,194	Mar. 23, 1976	Jan. 18, 1977	B 518,076	4,014,914	Mar. 30, 1976	Mar. 29, 1977
B 508,817	3,989,891	Feb. 3, 1976	Nov. 2, 1976	B 518,226	3,993,509	Feb. 10, 1976	Nov. 23, 1976
B 508,878	3,994,117	Feb. 3, 1976	Nov. 30, 1976	B 518,326	4,008,282	Mar. 23, 1976	Feb. 15, 1977
B 508,940	3,981,321	Feb. 17, 1976	Sep. 21, 1976	B 518,656	3,989,732	Feb. 17, 1976	Nov. 2, 1976
B 508,961	3,987,477	Feb. 3, 1976	Oct. 19, 1976	B 518,859	3,989,971	Feb. 3, 1976	Nov. 2, 1976
B 509,043	3,996,767	Feb. 24, 1976	Dec. 14, 1976	B 518,999	3,990,323	Feb. 3, 1976	Nov. 9, 1976
B 509,165	3,999,155	Mar. 2, 1976	Dec. 21, 1976	B 519,095	3,993,621	Feb. 24, 1976	Nov. 23, 1976
B 509,185	3,989,996	Feb. 3, 1976	Nov. 2, 1976	B 519,355	4,014,829	Apr. 13, 1976	Mar. 29, 1977
B 509,238	3,982,399	Feb. 24, 1976	Sep. 28, 1976	B 519,377	3,987,223	Jan. 27, 1976	Oct. 19, 1976
B 509,474	3,997,260	Feb. 17, 1976	Dec. 14, 1976	B 519,446	3,985,815	Feb. 24, 1976	Oct. 12, 1976
B 509,586	4,006,645	Feb. 3, 1976	Feb. 8, 1977	B 519,485	3,991,134	Feb. 10, 1976	Nov. 9, 1976
B 509,606	3,989,986	Feb. 3, 1976	Nov. 2, 1976	B 519,486	3,992,481	Feb. 17, 1976	Nov. 16, 1976
B 509,772	3,999,004	Mar. 16, 1976	Dec. 21, 1976	B 519,487	3,992,337	Feb. 17, 1976	Nov. 16, 1976
B 509,819	4,014,712	Apr. 13, 1976	Mar. 29, 1977	B 519,599	3,995,350	Feb. 17, 1976	Dec. 7, 1976
B 510,026	4,016,763	Apr. 13, 1976	Apr. 12, 1977	B 519,623	4,012,049	Apr. 6, 1976	Mar. 15, 1977
B 510,184	D 242,784	Apr. 6, 1976	Dec. 21, 1976	B 519,680	4,014,660	Mar. 30, 1976	Mar. 29, 1977
B 510,278	4,008,972	Mar. 30, 1976	Feb. 22, 1977	B 519,932	3,988,618	Feb. 3, 1976	Oct. 26, 1976
B 510,281	3,993,215	Mar. 9, 1976	Nov. 23, 1976	B 519,979	3,982,067	Feb. 3, 1976	Sep. 21, 1976
B 510,346	D 242,207	Feb. 10, 1976	Nov. 9, 1976	B 520,063	3,989,934	Mar. 2, 1976	Nov. 2, 1976
B 510,458	4,000,221	Feb. 10, 1976	Dec. 28, 1976	B 520,075	3,989,935	Feb. 24, 1976	Nov. 2, 1976
B 510,521	3,990,656	Mar. 2, 1976	Nov. 9, 1976	B 520,076	3,989,936	Mar. 2, 1976	Nov. 2, 1976
B 510,588	3,981,539	Jan. 27, 1976	Sep. 21, 1976	B 520,082	3,989,937	Mar. 23, 1976	Nov. 2, 1976
B 510,677	3,989,541	Feb. 24, 1976	Nov. 2, 1976	B 520,115	4,003,072	Mar. 23, 1976	Jan. 11, 1977
B 510,682	4,000,978	Mar. 30, 1976	Jan. 4, 1977	B 520,227	4,002,823	Mar. 30, 1976	Jan. 11, 1977
B 510,836	4,013,795	Mar. 23, 1976	Mar. 22, 1977	B 520,256	3,985,730	Jan. 13, 1976	Oct. 12, 1976
B 510,850	3,989,841	Feb. 3, 1976	Nov. 2, 1976	B 520,277	3,995,635	Feb. 17, 1976	Dec. 7, 1976
B 510,855	3,981,059	Jan. 27, 1976	Sep. 21, 1976	B 520,341	3,992,028	Mar. 16, 1976	Nov. 16, 1976
B 511,907	3,999,622	Mar. 30, 1976	Dec. 28, 1976	B 520,384	3,986,592	Jan. 27, 1976	Oct. 19, 1976
B 510,998	3,992,336	Feb. 10, 1976	Nov. 16, 1976	B 520,514	3,988,308	Mar. 9, 1976	Oct. 26, 1976
B 511,002	3,998,717	Mar. 2, 1976	Dec. 21, 1976	B 520,534	3,997,119	Feb. 17, 1976	Dec. 14, 1976
B 511,099	3,990,162	Feb. 3, 1976	Nov. 9, 1976	B 520,543	3,986,768	Jan. 27, 1976	Oct. 19, 1976
B 511,156	3,981,364	Jan. 27, 1976	Sep. 21, 1976	B 520,546	4,001,133	Mar. 2, 1976	Jan. 4, 1977
B 511,346	3,984,072	Jan. 27, 1976	Oct. 5, 1976	B 520,613	3,991,341	Mar. 16, 1976	Nov. 9, 1976
B 511,407	3,981,485	Feb. 10, 1976	Sep. 21, 1976	B 520,658	3,998,778	Mar. 9, 1976	Dec. 21, 1976
B 511,454	3,982,333	Feb. 24, 1976	Sep. 28, 1976	B 520,878	4,014,849	Apr. 6, 1976	Mar. 29, 1977
B 511,665	4,001,037	Mar. 2, 1976	Jan. 4, 1977	B 520,884	4,000,433	Mar. 16, 1976	Dec. 28, 1976
B 511,885	3,981,346	Jan. 27, 1976	Sep. 21, 1976	B 520,924	3,982,113	Jan. 27, 1976	Sep. 21, 1976
B 511,886	3,989,991	Feb. 3, 1976	Nov. 2, 1976	B 520,928	3,983,617	Jan. 13, 1976	Oct. 5, 1976
B 511,909	3,981,183	Feb. 17, 1976	Sep. 21, 1976	B 520,952	4,000,876	Mar. 16, 1976	Jan. 4, 1977
B 512,324	3,985,084	Feb. 17, 1976	Oct. 12, 1976	B 520,995	4,009,996	Mar. 23, 1976	Mar. 1, 1977
B 512,547	3,984,193	Jan. 13, 1976	Oct. 5, 1976	B 521,025	3,998,838	Mar. 23, 1976	Dec. 21, 1976
B 512,745	3,981,294	Jan. 13, 1976	Sep. 21, 1976	B 521,044	3,983,435	Feb. 24, 1976	Sep. 28, 1976
B 512,779	4,014,897	Apr. 13, 1976	Mar. 29, 1977	B 521,045	3,983,433	Feb. 24, 1976	Sep. 28, 1976
B 512,818	3,997,363	Apr. 6, 1976	Dec. 14, 1976	B 521,046	3,983,434	Feb. 24, 1976	Sep. 28, 1976
B 512,849	3,982,141	Feb. 3, 1976	Sep. 21, 1976	B 521,125	3,994,865	Feb. 10, 1976	Nov. 30, 1976
B 512,964	3,995,279	Feb. 10, 1976	Nov. 30, 1976	B 521,126	3,997,510	Feb. 10, 1976	Dec. 14, 1976
B 513,014	3,991,113	Feb. 10, 1976	Nov. 9, 1976	B 521,127	3,996,201	Feb. 17, 1976	Dec. 7, 1976
B 513,027	3,995,143	Feb. 17, 1976	Nov. 30, 1976	B 521,128	3,997,511	Feb. 10, 1976	Dec. 14, 1976
B 513,134	4,006,764	Mar. 23, 1976	Feb. 8, 1977	B 521,324	3,983,143	Jan. 27, 1976	Sep. 28, 1976
B 513,280	3,988,211	Jan. 20, 1976	Oct. 26, 1976	B 521,480	3,982,665	Jan. 13, 1976	Sep. 28, 1976
B 513,346	4,124,330	Mar. 9, 1976	Nov. 7, 1978	B 521,600	3,981,458	Jan. 27, 1976	Sep. 21, 1976
B 513,368	3,982,138	Feb. 3, 1976	Sep. 21, 1976	B 521,612	4,000,251	Mar. 9, 1976	Dec. 28, 1976
B 513,706	3,986,064	Jan. 13, 1976	Oct. 12, 1976	B 521,620	3,983,749	Jan. 27, 1976	Oct. 5, 1976
B 513,756	3,993,869	Feb. 3, 1976	Nov. 23, 1976	B 521,643	3,997,567	Mar. 2, 1976	Dec. 14, 1976
B 513,781	4,001,324	Feb. 24, 1976	Jan. 4, 1977	B 521,711	3,989,835	Feb. 10, 1976	Nov. 2, 1976
B 513,789	3,981,599	Feb. 3, 1976	Sep. 21, 1976	B 521,793	3,996,981	Feb. 24, 1976	Dec. 14, 1976
B 513,791	4,008,608	Mar. 30, 1976	Feb. 22, 1977	B 521,984	3,983,220	Feb. 17, 1976	Sep. 28, 1976
B 514,259	4,013,649	Mar. 23, 1976	Mar. 22, 1977	B 521,985	4,012,404	Mar. 23, 1976	Mar. 15, 1977

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 521,986	3,981,607	Feb. 3, 1976	Sep. 21, 1976	B 532,476	3,992,756	Feb. 3, 1976	Nov. 23, 1976
B 522,009	3,995,444	Feb. 17, 1976	Dec. 7, 1976	B 532,477	4,014,895	Apr. 13, 1976	Mar. 29, 1977
B 522,038	3,993,119	Feb. 3, 1976	Nov. 23, 1976	B 532,679	4,010,706	Apr. 6, 1976	Mar. 8, 1977
B 522,227	3,992,904	Mar. 30, 1976	Nov. 23, 1976	B 532,901	3,984,318	Jan. 13, 1976	Oct. 5, 1976
B 522,309	3,991,603	Feb. 3, 1976	Nov. 16, 1976	B 532,969	3,981,706	Jan. 13, 1976	Sep. 21, 1976
B 522,354	3,984,959	Jan. 20, 1976	Oct. 12, 1976	B 532,976	4,000,837	Mar. 23, 1976	Jan. 4, 1977
B 522,446	4,001,194	Mar. 30, 1976	Jan. 4, 1977	B 533,056	3,983,969	Jan. 13, 1976	Oct. 5, 1976
B 522,537	3,999,587	Mar. 30, 1976	Dec. 28, 1976	B 533,259	3,999,556	Feb. 24, 1976	Dec. 28, 1976
B 522,567	3,996,238	Feb. 17, 1976	Dec. 7, 1976	B 533,454	3,996,566	Mar. 2, 1976	Dec. 7, 1976
B 522,568	D 242,785	Apr. 6, 1976	Dec. 21, 1976	B 533,580	3,982,255	Feb. 3, 1976	Sep. 21, 1976
B 522,577	3,982,123	Jan. 27, 1976	Sep. 21, 1976	B 533,652	4,000,196	Mar. 23, 1976	Dec. 28, 1976
B 522,629	4,001,155	Mar. 16, 1976	Jan. 4, 1977	B 533,734	3,984,799	Jan. 27, 1976	Oct. 5, 1976
B 523,226	4,006,367	Mar. 23, 1976	Feb. 1, 1977	B 533,968	3,986,576	Jan. 27, 1976	Oct. 19, 1976
B 523,696	3,986,071	Jan. 13, 1976	Oct. 12, 1976	B 534,016	3,983,381	Feb. 3, 1976	Sep. 28, 1976
B 523,885	3,981,040	Feb. 17, 1976	Sep. 21, 1976	B 534,313	3,981,675	Jan. 27, 1976	Sep. 21, 1976
B 523,952	3,988,707	Mar. 23, 1976	Oct. 26, 1976	B 534,314	3,981,786	Feb. 10, 1976	Sep. 21, 1976
B 524,026	3,992,206	Feb. 10, 1976	Nov. 16, 1976	B 534,333	3,981,480	Feb. 17, 1976	Sep. 21, 1976
B 524,121	3,982,536	Feb. 3, 1976	Sep. 28, 1976	B 534,334	D 242,722	Mar. 16, 1976	Dec. 14, 1976
B 524,179	3,985,872	Jan. 13, 1976	Oct. 12, 1976	B 534,443	3,989,970	Jan. 27, 1976	Nov. 2, 1976
B 524,464	3,985,580	Feb. 10, 1976	Oct. 12, 1976	B 534,574	3,995,624	Feb. 24, 1976	Dec. 7, 1976
B 524,806	4,000,065	Mar. 2, 1976	Dec. 28, 1976	B 534,591	3,991,141	Feb. 17, 1976	Nov. 9, 1976
B 524,849	4,014,938	Mar. 23, 1976	Mar. 29, 1977	B 534,680	4,014,904	Apr. 20, 1976	Mar. 29, 1977
B 525,133	3,996,481	Mar. 23, 1976	Dec. 7, 1976	B 534,767	3,982,180	Feb. 3, 1976	Sep. 21, 1976
B 525,204	4,001,109	Mar. 16, 1976	Jan. 4, 1977	B 534,915	4,012,668	Mar. 23, 1976	Mar. 15, 1977
B 525,809	3,985,040	Feb. 24, 1976	Oct. 12, 1976	B 534,991	3,983,517	Jan. 27, 1976	Sep. 28, 1976
B 525,961	3,985,557	Jan. 13, 1976	Oct. 12, 1976	B 535,076	3,981,718	Jan. 20, 1976	Sep. 21, 1976
B 526,106	3,990,073	Jan. 27, 1976	Nov. 2, 1976	B 535,209	4,001,873	Mar. 16, 1976	Jan. 4, 1977
B 526,190	3,982,129	Feb. 17, 1976	Sep. 21, 1976	B 535,256	3,999,150	Mar. 23, 1976	Dec. 21, 1976
B 526,279	4,013,138	Apr. 13, 1976	Mar. 22, 1977	B 535,268	3,999,045	Mar. 30, 1976	Dec. 21, 1976
B 526,289	3,992,641	Feb. 24, 1976	Nov. 16, 1976	B 535,386	3,981,150	Jan. 13, 1976	Sep. 21, 1976
B 526,388	3,992,017	Feb. 3, 1976	Nov. 16, 1976	B 535,391	3,981,386	Jan. 27, 1976	Sep. 21, 1976
B 526,445	3,984,978	Jan. 20, 1976	Oct. 12, 1976	B 535,411	3,990,543	Feb. 24, 1976	Nov. 9, 1976
B 526,447	4,000,052	Feb. 24, 1976	Dec. 28, 1976	B 535,437	3,997,555	Feb. 24, 1976	Dec. 14, 1976
B 526,510	3,989,708	Jan. 20, 1976	Nov. 2, 1976	B 535,448	3,997,123	Mar. 16, 1976	Dec. 14, 1976
B 526,654	4,011,534	Mar. 23, 1976	Mar. 8, 1977	B 535,466	3,981,309	Jan. 27, 1976	Sep. 21, 1976
B 526,942	4,013,700	Mar. 30, 1976	Mar. 22, 1977	B 535,813	3,981,819	Jan. 27, 1976	Sep. 21, 1976
B 526,997	3,985,695	Jan. 13, 1976	Oct. 12, 1976	B 535,928	3,981,466	Jan. 13, 1976	Sep. 21, 1976
B 527,040	4,013,515	Mar. 23, 1976	Mar. 22, 1977	B 536,009	3,982,112	Jan. 27, 1976	Sep. 21, 1976
B 527,054	3,981,559	Feb. 17, 1976	Sep. 21, 1976	B 536,082	3,997,783	Mar. 16, 1976	Dec. 14, 1976
B 527,171	3,998,248	Mar. 9, 1976	Dec. 21, 1976	B 536,322	4,001,272	Mar. 23, 1976	Jan. 4, 1977
B 527,187	3,995,202	Feb. 17, 1976	Nov. 30, 1976	B 536,403	3,998,341	Mar. 23, 1976	Dec. 21, 1976
B 527,333	3,999,732	Mar. 23, 1976	Dec. 28, 1976	B 536,511	3,995,989	Mar. 9, 1976	Dec. 7, 1976
B 527,669	3,982,206	Jan. 13, 1976	Sep. 21, 1976	B 536,675	3,985,773	Jan. 20, 1976	Oct. 12, 1976
B 527,693	3,995,233	Feb. 3, 1976	Nov. 30, 1976	B 536,923	4,007,828	Mar. 30, 1976	Feb. 15, 1977
B 527,788	D 242,337	Feb. 10, 1976	Nov. 16, 1976	B 536,935	3,985,729	Jan. 13, 1976	Oct. 12, 1976
B 527,972	4,000,016	Mar. 9, 1976	Dec. 28, 1976	B 537,058	4,000,969	Mar. 23, 1976	Jan. 4, 1977
B 527,999	3,981,682	Feb. 3, 1976	Sep. 21, 1976	B 537,102	3,981,829	Jan. 13, 1976	Sep. 21, 1976
B 528,297	4,001,138	Mar. 16, 1976	Jan. 4, 1977	B 537,709	3,981,368	Jan. 13, 1976	Sep. 21, 1976
B 528,303	3,991,023	Feb. 10, 1976	Nov. 9, 1976	B 537,711	3,985,748	Jan. 13, 1976	Oct. 12, 1976
B 528,401	3,991,619	Feb. 3, 1976	Nov. 16, 1976	B 537,722	3,985,423	Feb. 3, 1976	Oct. 12, 1976
B 528,756	3,990,476	Feb. 3, 1976	Nov. 9, 1976	B 537,903	3,986,492	Jan. 20, 1976	Oct. 19, 1976
B 528,761	3,982,221	Feb. 10, 1976	Sep. 21, 1976	B 537,990	4,057,651	Jan. 13, 1976	Nov. 8, 1977
B 528,962	3,989,666	Feb. 24, 1976	Nov. 2, 1976	B 538,472	3,992,884	Feb. 3, 1976	Nov. 23, 1976
B 528,966	3,989,667	Feb. 24, 1976	Nov. 2, 1976	B 538,491	3,982,928	Feb. 17, 1976	Sep. 28, 1976
B 529,156	3,989,158	Jan. 13, 1976	Nov. 2, 1976	B 538,686	3,982,199	Jan. 13, 1976	Sep. 21, 1976
B 529,194	4,000,776	Mar. 23, 1976	Jan. 4, 1977	B 538,753	3,993,642	Feb. 10, 1976	Nov. 23, 1976
B 529,214	4,013,004	Apr. 20, 1976	Mar. 22, 1977	B 539,374	3,996,229	Mar. 9, 1976	Dec. 7, 1976
B 529,659	3,996,875	Feb. 24, 1976	Dec. 14, 1976	B 539,746	3,983,423	Feb. 17, 1976	Sep. 28, 1976
B 529,836	3,994,345	Feb. 3, 1976	Nov. 30, 1976	B 540,078	3,984,701	Jan. 13, 1976	Oct. 5, 1976
B 529,925	4,014,003	Mar. 30, 1976	Mar. 22, 1977	B 540,218	3,986,108	Feb. 10, 1976	Oct. 12, 1976
B 529,974	3,987,098	Feb. 17, 1976	Oct. 19, 1976	B 540,632	3,981,600	Jan. 13, 1976	Sep. 21, 1976
B 530,174	3,993,635	Feb. 24, 1976	Nov. 23, 1976	B 540,703	4,013,206	Apr. 13, 1976	Mar. 22, 1977
B 530,255	3,996,103	Mar. 2, 1976	Dec. 7, 1976	B 540,767	3,986,010	Mar. 16, 1976	Oct. 12, 1976
B 530,263	4,009,736	Mar. 30, 1976	Mar. 1, 1977	B 540,872	3,982,135	Jan. 20, 1976	Sep. 21, 1976
B 530,285	4,013,903	Apr. 6, 1976	Mar. 22, 1977	B 540,888	4,005,528	Mar. 30, 1976	Feb. 1, 1977
B 530,303	4,006,029	Mar. 23, 1976	Feb. 1, 1977	B 541,015	3,993,208	Jan. 27, 1976	Nov. 23, 1976
B 530,318	3,985,752	Jan. 13, 1976	Oct. 12, 1976	B 541,376	3,981,690	Feb. 17, 1976	Sep. 21, 1976
B 530,437	4,014,857	Apr. 13, 1976	Mar. 29, 1977	B 541,415	3,982,080	Feb. 3, 1976	Sep. 21, 1976
B 530,569	3,999,865	Mar. 16, 1976	Dec. 28, 1976	B 541,464	3,995,424	Feb. 17, 1976	Dec. 7, 1976
B 530,580	4,001,151	Mar. 2, 1976	Jan. 4, 1977	B 541,496	3,982,232	Jan. 27, 1976	Sep. 21, 1976
B 530,605	3,989,064	Feb. 3, 1976	Nov. 2, 1976	B 541,501	4,005,826	Apr. 13, 1976	Feb. 1, 1977
B 530,709	4,012,944	Apr. 6, 1976	Mar. 22, 1977	B 541,517	3,986,156	Jan. 13, 1976	Oct. 12, 1976
B 530,813	3,986,131	Feb. 17, 1976	Oct. 12, 1976	B 541,710	3,994,472	Feb. 24, 1976	Nov. 30, 1976
B 530,873	4,001,016	Feb. 17, 1976	Jan. 4, 1977	B 542,135	3,986,939	Feb. 10, 1976	Oct. 19, 1976
B 530,925	3,983,161	Feb. 24, 1976	Sep. 28, 1976	B 542,158	3,981,886	Jan. 13, 1976	Sep. 21, 1976
B 531,096	3,984,415	Feb. 10, 1976	Oct. 5, 1976	B 542,226	3,993,748	Feb. 24, 1976	Nov. 23, 1976
B 531,267	3,997,040	Feb. 24, 1976	Dec. 14, 1976	B 542,258	4,013,536	Mar. 23, 1976	Mar. 22, 1977
B 531,425	3,992,595	Feb. 3, 1976	Nov. 16, 1976	B 543,078	3,995,687	Feb. 17, 1976	Dec. 7, 1976
B 531,566	3,997,820	Mar. 16, 1976	Dec. 14, 1976	B 543,941	3,985,528	Jan. 13, 1976	Oct. 12, 1976
B 531,686	3,990,017	Mar. 23, 1976	Nov. 2, 1976	B 544,034	3,997,175	Feb. 17, 1976	Dec. 14, 1976
B 531,753	3,988,843	Mar. 2, 1976	Nov. 2, 1976	B 544,476	3,993,585	Feb. 24, 1976	Nov. 23, 1976
B 531,929	3,986,067	Jan. 20, 1976	Oct. 12, 1976	B 544,899	3,994,962	Feb. 17, 1976	Nov. 30, 1976
B 532,005	3,992,397	Feb. 24, 1976	Nov. 16, 1976	B 544,961	3,983,492	Jan. 13, 1976	Sep. 28, 1976
B 532,140	4,001,299	Mar. 2, 1976	Jan. 4, 1977	B 545,050	3,982,073	Jan. 20, 1976	Sep. 21, 1976
B 532,319	3,990,292	Feb. 3, 1976	Nov. 9, 1976	B 545,265	D 243,090	Apr. 13, 1976	Jan. 18, 1977
B 532,326	3,993,959	Mar. 23, 1976	Nov. 23, 1976	B 545,299	4,001,259	Feb. 24, 1976	Jan. 4, 1977
B 532,424	D 242,292	Feb. 10, 1976	Nov. 9, 1976	B 545,344	4,012,746	Mar. 30, 1976	Mar. 15, 1977

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 545,464	3,992,387	Feb. 10, 1976	Nov. 16, 1976	B 559,701	4,001,190	Mar. 23, 1976	Jan. 4, 1977
B 545,630	3,981,337	Jan. 27, 1976	Sep. 21, 1976	B 559,737	3,984,668	Jan. 20, 1976	Oct. 5, 1976
B 545,777	4,004,906	Jan. 27, 1976	Jan. 25, 1977	B 559,954	3,982,673	Feb. 3, 1976	Sep. 28, 1976
B 545,856	4,006,939	Mar. 30, 1976	Feb. 8, 1977	B 560,261	3,987,493	Mar. 16, 1976	Oct. 19, 1976
B 545,935	3,990,337	Jan. 27, 1976	Nov. 9, 1976	B 560,488	3,989,940	Mar. 16, 1976	Nov. 2, 1976
B 545,945	3,995,260	Jan. 27, 1976	Nov. 30, 1976	B 560,717	3,982,034	Feb. 10, 1976	Sep. 21, 1976
B 546,097	3,999,309	Mar. 23, 1976	Dec. 28, 1976	B 560,765	3,983,389	Feb. 3, 1976	Sep. 28, 1976
B 546,295	3,987,070	Jan. 20, 1976	Oct. 19, 1976	B 561,062	D 242,248	Feb. 10, 1976	Nov. 9, 1976
B 546,426	3,982,063	Jan. 27, 1976	Sep. 21, 1976	B 561,165	4,013,002	Mar. 30, 1976	Mar. 22, 1977
B 546,631	3,983,729	Feb. 3, 1976	Oct. 5, 1976	B 561,166	4,011,809	Mar. 30, 1976	Mar. 15, 1977
B 546,665	3,990,062	Jan. 20, 1976	Nov. 2, 1976	B 561,365	4,005,078	Apr. 13, 1976	Jan. 25, 1977
B 546,677	4,015,654	Apr. 6, 1976	Apr. 5, 1977	B 561,387	3,985,706	Feb. 10, 1976	Oct. 12, 1976
B 546,911	3,981,058	Jan. 13, 1976	Sep. 21, 1976	B 561,405	4,003,770	Mar. 30, 1976	Jan. 18, 1977
B 546,922	3,987,742	Mar. 16, 1976	Oct. 26, 1976	B 561,712	3,992,126	Feb. 17, 1976	Nov. 16, 1976
B 547,016	3,999,741	Mar. 23, 1976	Dec. 28, 1976	B 561,732	3,991,460	Feb. 3, 1976	Nov. 16, 1976
B 547,208	4,001,218	Feb. 24, 1976	Jan. 4, 1977	B 561,764	3,984,634	Jan. 27, 1976	Oct. 5, 1976
B 547,547	3,997,670	Feb. 24, 1976	Dec. 14, 1976	B 561,770	4,000,366	Mar. 16, 1976	Dec. 28, 1976
B 547,994	3,990,081	Jan. 20, 1976	Nov. 2, 1976	B 561,784	3,984,710	Jan. 27, 1976	Oct. 5, 1976
B 548,028	3,991,517	Feb. 3, 1976	Nov. 16, 1976	B 562,413	4,000,930	Mar. 16, 1976	Jan. 4, 1977
B 548,058	3,983,050	Feb. 17, 1976	Sep. 28, 1976	B 562,462	3,985,836	Jan. 13, 1976	Oct. 12, 1976
B 548,155	3,981,477	Jan. 13, 1976	Sep. 21, 1976	B 562,519	4,013,125	Mar. 30, 1976	Mar. 22, 1977
B 548,440	3,993,401	Feb. 3, 1976	Nov. 23, 1976	B 562,601	3,998,360	Mar. 16, 1976	Dec. 21, 1976
B 548,302	3,983,414	Feb. 17, 1976	Sep. 28, 1976	B 562,698	3,983,972	Jan. 13, 1976	Oct. 5, 1976
B 548,440	3,993,401	Feb. 3, 1976	Nov. 23, 1976	B 562,813	3,985,491	Feb. 3, 1976	Oct. 12, 1976
B 548,462	D 242,283	Feb. 10, 1976	Nov. 9, 1976	B 563,070	3,996,230	Mar. 9, 1976	Dec. 7, 1976
B 548,688	3,995,984	Mar. 9, 1976	Dec. 7, 1976	B 563,165	4,000,977	Mar. 9, 1976	Jan. 4, 1977
B 548,719	3,990,553	Feb. 17, 1976	Nov. 9, 1976	B 563,244	3,983,562	Jan. 27, 1976	Sep. 28, 1976
B 548,978	3,998,139	Mar. 9, 1976	Dec. 21, 1976	B 563,301	3,995,589	Feb. 17, 1976	Dec. 7, 1976
B 549,198	3,981,975	Jan. 13, 1976	Sep. 21, 1976	B 563,412	3,992,127	Feb. 24, 1976	Nov. 16, 1976
B 549,244	3,981,125	Jan. 27, 1976	Sep. 21, 1976	B 563,419	3,999,051	Mar. 23, 1976	Dec. 21, 1976
B 549,394	3,981,611	Jan. 27, 1976	Sep. 21, 1976	B 563,722	3,990,925	Jan. 13, 1976	Nov. 9, 1976
B 549,931	3,986,141	Jan. 20, 1976	Oct. 12, 1976	B 563,780	3,987,769	Feb. 3, 1976	Oct. 26, 1976
B 549,964	3,995,899	Feb. 24, 1976	Dec. 7, 1976	B 563,932	4,000,638	Mar. 23, 1976	Jan. 4, 1977
B 550,693	3,982,194	Jan. 20, 1976	Sep. 21, 1976	B 564,252	4,001,293	Mar. 2, 1976	Jan. 4, 1977
B 550,744	3,993,550	Feb. 17, 1976	Nov. 23, 1976	B 564,255	4,015,996	Mar. 30, 1976	Apr. 5, 1977
B 550,810	4,000,910	Mar. 23, 1976	Jan. 4, 1977	B 564,314	3,984,996	Jan. 20, 1976	Oct. 12, 1976
B 551,133	3,996,740	Mar. 2, 1976	Dec. 14, 1976	B 564,902	4,001,351	Mar. 23, 1976	Jan. 4, 1977
B 551,463	3,996,254	Feb. 17, 1976	Dec. 7, 1976	B 565,180	3,981,685	Jan. 27, 1976	Sep. 21, 1976
B 551,527	3,982,599	Jan. 13, 1976	Sep. 28, 1976	B 565,275	3,990,299	Apr. 6, 1976	Nov. 9, 1976
B 551,809	3,996,743	Feb. 24, 1976	Dec. 14, 1976	B 565,717	3,999,138	Apr. 13, 1976	Dec. 21, 1976
B 551,952	Re. 29,059	Mar. 2, 1976	Dec. 7, 1976	B 565,754	4,011,626	Mar. 30, 1976	Mar. 15, 1977
B 552,006	3,992,129	Feb. 3, 1976	Nov. 16, 1976	B 566,464	3,996,367	Feb. 3, 1976	Dec. 7, 1976
B 552,489	3,994,864	Feb. 10, 1976	Nov. 30, 1976	B 566,556	3,998,511	Mar. 23, 1976	Dec. 21, 1976
B 552,498	3,983,139	Jan. 13, 1976	Sep. 28, 1976	B 566,572	3,988,590	Mar. 16, 1976	Oct. 26, 1976
B 552,508	4,001,250	Mar. 16, 1976	Jan. 4, 1977	B 566,585	4,001,083	Mar. 2, 1976	Jan. 4, 1977
B 552,629	3,994,773	Mar. 23, 1976	Nov. 30, 1976	B 567,058	3,985,188	Jan. 13, 1976	Oct. 12, 1976
B 552,709	4,001,467	Mar. 23, 1976	Jan. 4, 1977	B 567,076	4,011,187	Mar. 23, 1976	Mar. 8, 1977
B 552,932	3,989,292	Feb. 3, 1976	Nov. 2, 1976	B 567,158	3,988,073	Mar. 23, 1976	Oct. 26, 1976
B 553,421	4,001,146	Mar. 23, 1976	Jan. 4, 1977	B 567,207	3,991,689	Apr. 13, 1976	Nov. 16, 1976
B 553,460	3,990,019	Feb. 3, 1976	Nov. 2, 1976	B 567,435	3,995,724	Feb. 3, 1976	Dec. 7, 1976
B 553,584	3,992,456	Feb. 17, 1976	Nov. 16, 1976	B 567,854	3,985,038	Feb. 3, 1976	Oct. 12, 1976
B 553,629	3,999,242	Feb. 24, 1976	Dec. 28, 1976	B 567,892	4,000,855	Mar. 16, 1976	Jan. 4, 1977
B 554,039	3,999,944	Feb. 24, 1976	Dec. 28, 1976	B 568,226	3,992,698	Feb. 24, 1976	Nov. 16, 1976
B 554,164	4,001,465	Mar. 9, 1976	Jan. 4, 1977	B 568,770	3,982,213	Feb. 10, 1976	Sep. 21, 1976
B 554,283	3,981,152	Jan. 27, 1976	Sep. 21, 1976	B 569,125	3,986,980	Feb. 24, 1976	Oct. 19, 1976
B 554,291	4,001,209	Mar. 9, 1976	Jan. 4, 1977	B 569,293	4,004,149	Mar. 30, 1976	Jan. 18, 1977
B 554,380	4,001,147	Mar. 9, 1976	Jan. 4, 1977	B 569,501	3,999,250	Mar. 9, 1976	Dec. 28, 1976
B 554,594	3,985,960	Jan. 20, 1976	Oct. 12, 1976	B 569,519	3,993,133	Feb. 3, 1976	Nov. 23, 1976
B 554,655	4,015,048	Feb. 24, 1976	Mar. 29, 1977	B 569,646	3,985,222	Jan. 13, 1976	Oct. 12, 1976
B 554,848	4,001,265	Feb. 24, 1976	Jan. 4, 1977	B 569,859	3,994,160	Mar. 9, 1976	Nov. 30, 1976
B 554,939	3,994,013	Feb. 10, 1976	Nov. 23, 1976	B 570,172	3,987,763	Feb. 3, 1976	Oct. 26, 1976
B 555,146	4,007,636	Apr. 20, 1976	Feb. 15, 1977	B 570,615	3,998,570	Mar. 23, 1976	Dec. 21, 1976
B 555,437	3,991,152	Feb. 3, 1976	Nov. 9, 1976	B 570,862	3,991,639	Feb. 24, 1976	Nov. 16, 1976
B 555,456	3,993,423	Mar. 30, 1976	Nov. 23, 1976	B 570,925	4,040,802	Mar. 23, 1976	Aug. 9, 1977
B 555,772	3,982,641	Jan. 13, 1976	Sep. 28, 1976	B 571,219	3,991,388	Feb. 24, 1976	Nov. 9, 1976
B 556,057	3,985,349	Jan. 13, 1976	Oct. 12, 1976	B 571,638	4,001,244	Mar. 9, 1976	Jan. 4, 1977
B 556,496	3,990,244	Mar. 16, 1976	Nov. 9, 1976	B 571,659	3,995,186	Apr. 13, 1976	Nov. 30, 1976
B 556,897	3,992,972	Feb. 3, 1976	Nov. 23, 1976	B 572,642	3,990,715	Feb. 10, 1976	Nov. 9, 1976
B 557,153	3,991,603	Feb. 3, 1976	Nov. 16, 1976	B 572,726	4,015,020	Feb. 24, 1976	Mar. 29, 1977
B 557,274	4,016,375	Mar. 23, 1976	Apr. 5, 1977	B 573,033	3,995,224	Mar. 23, 1976	Nov. 30, 1976
B 557,299	3,990,357	Feb. 3, 1976	Nov. 9, 1976	B 573,114	4,014,843	Apr. 6, 1976	Mar. 29, 1977
B 557,621	3,990,800	Feb. 3, 1976	Nov. 9, 1976	B 573,991	4,013,704	Mar. 30, 1976	Mar. 22, 1977
B 557,721	4,013,435	Mar. 23, 1976	Mar. 22, 1977	B 573,994	4,000,641	Mar. 23, 1976	Jan. 4, 1977
B 557,856	3,991,019	Feb. 10, 1976	Nov. 9, 1976	B 574,128	3,982,961	Feb. 17, 1976	Sep. 28, 1976
B 558,220	3,990,009	Jan. 27, 1976	Nov. 2, 1976	B 574,616	4,000,424	Mar. 2, 1976	Dec. 28, 1976
B 558,251	3,981,289	Jan. 13, 1976	Sep. 21, 1976	B 574,996	3,989,718	Feb. 17, 1976	Nov. 2, 1976
B 558,813	3,989,188	Feb. 3, 1976	Nov. 2, 1976	B 575,583	4,000,928	Mar. 16, 1976	Jan. 4, 1977
B 558,818	3,983,762	Jan. 13, 1976	Oct. 5, 1976	B 575,757	3,981,170	Jan. 27, 1976	Sep. 21, 1976
B 558,819	3,990,160	Feb. 3, 1976	Nov. 9, 1976	B 575,761	4,013,123	Apr. 13, 1976	Mar. 22, 1977
B 558,973	3,981,126	Feb. 10, 1976	Sep. 21, 1976	B 575,776	4,013,124	Apr. 20, 1976	Mar. 22, 1977
B 559,111	3,984,854	Feb. 24, 1976	Oct. 5, 1976	B 575,851	3,985,826	Feb. 10, 1976	Oct. 12, 1976
B 559,142	4,001,124	Mar. 2, 1976	Jan. 4, 1977	B 576,385	4,009,498	Mar. 30, 1976	Mar. 1, 1977
B 559,394	4,016,094	Apr. 20, 1976	Apr. 5, 1977	B 576,859	3,991,526	Feb. 24, 1976	Nov. 16, 1976
B 559,441	4,013,609	Mar. 23, 1976	Mar. 22, 1977	B 576,903	3,995,032	Feb. 3, 1976	Nov. 30, 1976
B 559,631	4,011,406	Mar. 23, 1976	Mar. 8, 1977	B 578,447	3,982,658	Jan. 20, 1976	Sep. 28, 1976
B 559,697	3,995,770	Mar. 16, 1976	Dec. 7, 1976	B 579,104	3,982,081	Jan. 27, 1976	Sep. 21, 1976
B 559,700	4,001,189	Mar. 23, 1976	Jan. 4, 1977	B 579,116	3,986,227	Feb. 3, 1976	Oct. 19, 1976

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 579,153	4,013,745	Mar. 30, 1976	Mar. 22, 1977	B 589,179	4,001,102	Mar. 23, 1976	Jan. 4, 1977
B 579,806	3,995,318	Feb. 3, 1976	Nov. 30, 1976	B 589,687	3,995,349	Mar. 23, 1976	Dec. 7, 1976
B 580,379	4,000,796	Apr. 6, 1976	Jan. 4, 1977	B 589,966	3,985,828	Feb. 17, 1976	Oct. 12, 1976
B 580,826	3,988,391	Feb. 17, 1976	Oct. 26, 1976	B 590,158	3,985,163	Feb. 10, 1976	Oct. 12, 1976
B 580,921	3,984,054	Jan. 13, 1976	Oct. 5, 1976	B 590,159	3,985,164	Feb. 3, 1976	Oct. 12, 1976
B 581,564	4,036,653	Mar. 23, 1976	July 19, 1977	B 590,502	4,001,171	Mar. 23, 1976	Jan. 4, 1977
B 581,843	4,000,562	Mar. 16, 1976	Jan. 4, 1977	B 591,141	4,013,631	Mar. 23, 1976	Mar. 22, 1977
B 583,051	3,990,714	Feb. 3, 1976	Nov. 9, 1976	B 592,143	3,984,713	Jan. 27, 1976	Oct. 5, 1976
B 583,089	3,982,174	Jan. 27, 1976	Sep. 21, 1976	B 592,146	4,001,084	Mar. 2, 1976	Jan. 4, 1977
B 583,712	3,995,064	Feb. 10, 1976	Nov. 30, 1976	B 592,658	4,001,164	Mar. 23, 1976	Jan. 4, 1977
B 584,520	3,981,149	Jan. 27, 1976	Sep. 21, 1976	B 593,781	4,015,953	Mar. 16, 1976	Apr. 5, 1977
B 584,997	4,000,030	Mar. 9, 1976	Dec. 28, 1976	B 594,871	3,999,245	Mar. 16, 1976	Dec. 28, 1976
B 585,247	3,989,914	Feb. 3, 1976	Nov. 2, 1976	B 596,692	3,992,349	Feb. 17, 1976	Nov. 16, 1976
B 585,731	3,993,603	Feb. 3, 1976	Nov. 23, 1976	B 597,410	4,000,925	Mar. 30, 1976	Jan. 4, 1977
B 586,215	3,985,302	Jan. 20, 1976	Oct. 12, 1976	B 632,416	4,076,698	Mar. 9, 1976	Feb. 28, 1978
B 586,380	3,983,885	Mar. 2, 1976	Oct. 5, 1976	B 657,438	3,985,701	Jan. 20, 1976	Oct. 12, 1976
B 586,387	3,981,311	Feb. 3, 1976	Sep. 21, 1976	B 747,785	3,981,899	Feb. 10, 1976	Sep. 21, 1976
B 586,663	3,992,080	Feb. 3, 1976	Nov. 16, 1976	B 750,679	4,007,049	Mar. 23, 1976	Feb. 8, 1977
B 587,118	Re. 29,067	Mar. 2, 1976	Dec. 7, 1976	B 843,038	3,981,785	Feb. 3, 1976	Sep. 21, 1976
B 587,786	3,991,204	Feb. 17, 1976	Nov. 9, 1976	B 845,044	4,001,338	Mar. 30, 1976	Jan. 4, 1977
B 587,936	3,999,052	Mar. 23, 1976	Dec. 21, 1976	B 848,336	3,993,752	Mar. 30, 1976	Nov. 23, 1976

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 5TH DAY OF DECEMBER, 1978

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

- Arthur, Leonard T.: *See—*
  - Dulat, Joseph; and Arthur, Leonard T., T977,004, Cl. 260-23.00S.
- Balasubramanian, Peruvemba S.; Grazier, Edwin C.; Henke, John D.; Latham, Robert P.; and Myers, Martin J., to International Business Machines Corporation. Read only memory with optimized dimension for improved performance and chip area utilization. T977,006, 12-5-78, Cl. 357-45.000.
- Bexford Limited Imperial Chemical House: *See—*
  - Huffey, Roy F.; Lothian, David E.; Rennison, Stuart C.; and Titman, Michael K., T977,001, Cl. 96-75.000.
  - Huffey, Roy F.; Lothian, David E.; Rennison, Stuart C.; and Titman, Michael K., T977,002, Cl. 96-75.000.
- Desmarais, Armand J., to Hercules Incorporated. Joint cement compositions containing mica and quaternary compounds. T977,003, 12-5-78, Cl. 260-17.00R.
- Di Sanzo, Carmine P.; and Engel, John F., to FMC Corporation. Control of nematodes with selected N-aminosulfenyl, N-arylsulfenyl and N-acylamidosulfenyl derivatives of 2,3-dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate. T977,008, 12-5-78, Cl. 424-285.000.
- Dulat, Joseph; and Arthur, Leonard T., to United States Borax & Chemical Corporation. Fire retardant polymer compositions. T977,004, 12-5-78, Cl. 260-23.00S.
- Dumas, David H.; and Warren, David R., to Hercules Incorporated. Gypsum wallboard and method for producing same. T977,009, 12-5-78, Cl. 428-476.000.
- Engel, John F.: *See—*
  - Di Sanzo, Carmine P.; and Engel, John F., T977,008, Cl. 424-285.000.
- FMC Corporation: *See—*
  - Di Sanzo, Carmine P.; and Engel, John F., T977,008, Cl. 424-285.000.
- Grazier, Edwin C.: *See—*
  - Balasubramanian, Peruvemba S.; Grazier, Edwin C.; Henke, John D.; Latham, Robert P.; and Myers, Martin J., T977,006, Cl. 357-45.000.
- Henke, John D.: *See—*
  - Balasubramanian, Peruvemba S.; Grazier, Edwin C.; Henke, John D.; Latham, Robert P.; and Myers, Martin J., T977,006, Cl. 357-45.000.
- Hercules Incorporated: *See—*
  - Desmarais, Armand J., T977,003, Cl. 260-17.00R.
  - Dumas, David H.; and Warren, David R., T977,009, Cl. 428-476.000.
- Huffey, Roy F.; Lothian, David E.; Rennison, Stuart C.; and Titman, Michael K., to Bexford Limited Imperial Chemical House. Light-sensitive vesicular recording materials. T977,001, 12-5-78, Cl. 96-75.000.
- Huffey, Roy F.; Lothian, David E.; Rennison, Stuart C.; and Titman, Michael K., to Bexford Limited Imperial Chemical House. Vesicular recording materials having an adhesive layer. T977,002, 12-5-78, Cl. 96-75.000.
- International Business Machines Corporation: *See—*
  - Balasubramanian, Peruvemba S.; Grazier, Edwin C.; Henke, John D.; Latham, Robert P.; and Myers, Martin J., T977,006, Cl. 357-45.000.
- Kearney & Trecker Corporation: *See—*
  - Selander, Douglas S., T977,007, Cl. 364-474.000.
- Latham, Robert P.: *See—*
  - Balasubramanian, Peruvemba S.; Grazier, Edwin C.; Henke, John D.; Latham, Robert P.; and Myers, Martin J., T977,006, Cl. 357-45.000.
- Lothian, David E.: *See—*
  - Huffey, Roy F.; Lothian, David E.; Rennison, Stuart C.; and Titman, Michael K., T977,001, Cl. 96-75.000.
  - Huffey, Roy F.; Lothian, David E.; Rennison, Stuart C.; and Titman, Michael K., T977,002, Cl. 96-75.000.
- Myers, Martin J.: *See—*
  - Balasubramanian, Peruvemba S.; Grazier, Edwin C.; Henke, John D.; Latham, Robert P.; and Myers, Martin J., T977,006, Cl. 357-45.000.
- Rennison, Stuart C.: *See—*
  - Huffey, Roy F.; Lothian, David E.; Rennison, Stuart C.; and Titman, Michael K., T977,001, Cl. 96-75.000.
  - Huffey, Roy F.; Lothian, David E.; Rennison, Stuart C.; and Titman, Michael K., T977,002, Cl. 96-75.000.
- Selander, Douglas S., to Kearney & Trecker Corporation. Program modification registers for numerically controlled machine tools. T977,007, 12-5-78, Cl. 364-474.000.
- Sidles, Peter, Jr.; and Wulff, Bernard J. Step assembly flexibly mounted. T977,005, 12-5-78, Cl. 280-163.000.
- Titman, Michael K.: *See—*
  - Huffey, Roy F.; Lothian, David E.; Rennison, Stuart C.; and Titman, Michael K., T977,001, Cl. 96-75.000.
  - Huffey, Roy F.; Lothian, David E.; Rennison, Stuart C.; and Titman, Michael K., T977,002, Cl. 96-75.000.
- United States Borax & Chemical Corporation: *See—*
  - Dulat, Joseph; and Arthur, Leonard T., T977,004, Cl. 260-23.00S.
- Warren, David R.: *See—*
  - Dumas, David H.; and Warren, David R., T977,009, Cl. 428-476.000.
- Wulff, Bernard J.: *See—*
  - Sidles, Peter, Jr.; and Wulff, Bernard J., T977,005, Cl. 280-163.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF DECEMBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Argauer, Robert J.; and Landolt, George R., to Mobil Oil Corporation. Conversion with ZSM-family of crystalline aluminosilicate zeolites. Re. 29,857, Cl. 208-111.000.
- Burroughs Corporation: *See—*
  - Miller, Donald E., Re. 29,858, Cl. 313-217.000.
- Canon Kabushiki Kaisha: *See—*
  - Kano, Ichiro, Re. 29,856, Cl. 350-183.000.
- Clark Equipment Company: *See—*
  - Shealy, Noah A., Re. 29,854, Cl. 74-711.000.
- Honda, Jack S.: *See—*
  - Yuan, Lloyd T.; and Honda, Jack S., Re. 29,859, Cl. 325-445.000.
- Kano, Ichiro, to Canon Kabushiki Kaisha. Projection lens for mask pattern printing. Re. 29,856, Cl. 350-183.000.
- Landolt, George R.: *See—*
  - Argauer, Robert J.; and Landolt, George R., Re. 29,857, Cl. 208-111.000.
- Miller, Donald E., to Burroughs Corporation. Display panel. Re. 29,858, Cl. 313-217.000.
- Mobil Oil Corporation: *See—*
  - Argauer, Robert J.; and Landolt, George R., Re. 29,857, Cl. 208-111.000.
- Shealy, Noah A., to Clark Equipment Company. Limited slip differential with negligible bias under light load conditions. Re. 29,854, Cl. 74-711.000.
- Thomas, Edward L. Fastener positioning device. Re. 29,855, Cl. 221-263.000.
- TRW Inc.: *See—*
  - Yuan, Lloyd T.; and Honda, Jack S., Re. 29,859, Cl. 325-445.000.
- Yuan, Lloyd T.; and Honda, Jack S., to TRW Inc. Broadband waveguide mixer. Re. 29,859, Cl. 325-445.000.

LIST OF PLANT PATENTEES

Duffett, William E.: *See*—
  Jessel, Walter H., Jr.; and Duffett, William E., 4,341, Cl. 78.000.
Dugan Nurseries Incorporated: *See*—
  Nielsen, Peter R., 4,340, Cl. 63.000.
Jessel, Walter H., Jr.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,341, 12-5-78, Cl. 78.000.
Nielsen, Peter R., to Dugan Nurseries Incorporated. Euonymus plant. 4,340, 12-5-78, Cl. 63.000.
Yoder Brothers, Inc.: *See*—
  Jessel, Walter H., Jr.; and Duffett, William E., 4,341, Cl. 78.000.
Zaiger, C. Floyd. Plumcot tree. 4,338, 12-5-78, Cl. 38.000.
Zaiger, C. Floyd. Apricot tree. 4,339, 12-5-78, Cl. 39.000.

LIST OF DESIGN PATENTEES

Babcock, Giles R., to Pelton & Crane Company. Foot controller for dental handpiece instruments. 250,479, 12-5-78, Cl. D24-5.000.
Baikie, Hugh E.; and Schaack, Peter W., to Kenbudge Holdings Limited. Ice skate. 250,490, 12-5-78, Cl. D34-14.00B.
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  Olson, DeForrest A., decesed, 250,476, Cl. D16-54.000.
Bauer, Russell E. Armored car. 250,458, 12-5-78, Cl. D12-12.000.
Boldt, Melvin H.; Morrison, Thurber H.; and Huff, Robert S., to National Presto Industries, Inc. Electric cooking utensil. 250,448, 12-5-78, Cl. D7-94.000.
Bott, John A. Automotive luggage rack stanchion. 250,461, 12-5-78, Cl. D12-157.000.
Bott, John A. Design for vehicle luggage rack stanchion. 250,464, 12-5-78, Cl. D12-157.000.
Bourgeois, Ronald D. Roller conveyor belt for curved path. 250,460, 12-5-78, Cl. D12-60.000.
Bourgeois, Ronald D. Roller conveyor belt for curved path. 250,462, 12-5-78, Cl. D12-60.000.
Braun, Werner, to Maxs AG. Combined coffee filter and support base. 250,445, 12-5-78, Cl. D7-47.000.
Brinkmann, John B. Hand-held spotlight. 250,493, 12-5-78, Cl. D48-20.00K.
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DeMyer, Donald L. Hinge for poultry cage gate. 250,487, 12-5-78, Cl. D30-2.000.
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  O'Banion, John D., 250,467, Cl. D12-197.000.
  O'Banion, John D., 250,468, Cl. D12-197.000.
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Fishman, Martin B. Earring. 250,456, 12-5-78, Cl. D11-48.000.
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Forstrom, Robert H. Building. 250,482, 12-5-78, Cl. D25-23.000.
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Holstein, Thomas. Bath tub tray. 250,439, 12-5-78, Cl. D6-86.000.
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Jamain, Philippe, to Compagnie Generale des Etablissements Michelin. Tire. 250,463, 12-5-78, Cl. D12-149.000.
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Johnson, Elias J. Paint applicator. 250,436, 12-5-78, Cl. D4-38.000.
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Millspaugh, S. Kirk, to Kirk Corporation, The. Flatware cabinet. 250,440, 12-5-78, Cl. D6-172.000.
Mohrhauser, James E., to Foxmohr Crafts, Inc. Wind chimes. 250,455, 12-5-78, Cl. D10-116.000.
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Nishigaki, Koichi, to Victor Company of Japan, Limited. Video tape recorder. 250,471, 12-5-78, Cl. D14-2.000.
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O'Banion, John D., to E-Z Fill Corporation. Tank cap. 250,466, 12-5-78, Cl. D12-197.000.
O'Banion, John D., to E-Z Fill Corporation. Tank cap. 250,467, 12-5-78, Cl. D12-197.000.
O'Banion, John D., to E-Z Fill Corporation. Tank cap. 250,468, 12-5-78, Cl. D12-197.000.
Ogawa, Iwakichi, to Takara Co., Ltd. Drawing toy. 250,491, 12-5-78, Cl. D34-15.00R.
Olson, DeForrest A., decesed, to Barkee, Charles J. Hand-held viewer for navigational charts or the like. 250,476, 12-5-78, Cl. D16-54.000.

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Schaefer, John L.: *See*—
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  Levin, Monte L., 250,449, Cl. D7-94.000.
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  Nishigaki, Koichi, 250,470, Cl. D14-2.000.
  Nishigaki, Koichi, 250,471, Cl. D14-2.000.
  Nishigaki, Koichi, 250,474, Cl. D14-11.000.
Wettermann, Ludwig A.; and Wettermann, Peter H., to Richard Wolf Medical Instruments Corporation. Bipolar electrical surgical generator. 250,480, 12-5-78, Cl. D24-8.000.
Wettermann, Peter H.: *See*—
  Wettermann, Ludwig A.; and Wettermann, Peter H., 250,480, Cl. D24-8.000.
Whattam, Goerge F., to Hynson, Westcott & Dunning, Inc. Blood collector. 250,481, 12-5-78, Cl. D24-21.000.
Wilmot, Paul C. Animal tether. 250,488, 12-5-78, Cl. D30-44.000.

CLASSIFICATION OF PATENTS

ISSUED DECEMBER 5, 1978

NOTE.—First number, class; second number, subclass; third number, patent number

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[Notice of Dec. 16, 1969, 869 O.G. 6877]

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT): Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of October 3, 1978.

DONALD W. BANNER,
Nov. 7, 1978. *Commissioner of Patents and Trademarks.*

Patent and Trademark Office Board of Appeals Vacancy

In accordance with the provisions of 35 U.S.C. 7 vacancies on the Board of Appeals are filled by appointment of examiners-in-chief under the classified civil service. These appointments will be made at a salary of $47,500 per annum maximum.

Persons interested in being considered for this vacancy are invited to submit their applications to the address given below, on or before January 8, 1979. The duties, qualifications, and factors which will be considered in evaluating the candidates are described below.

Duties: Serves as a member of the Board of Appeals of the Patent and Trademark Office. As an examiner-in-chief, participates in its appellate and administrative responsibilities and exercises independent judgment on all matters before him or her on appeal subject to administrative and policy direction of the Commissioner. Appeals filed in accordance with 35 U.S.C. 134 and 37 CFR 1.191 through 1.198 of the Rules of Practice of the United States Patent and Trademark Office in Patent Cases involve complex legal and technical questions. The Board of Appeals has the sole power to hear and adjudicate appeals from decisions of the Primary Examiners as to patentability in applications for patent and for reissue of patents. Final decisions of the Board, if unfavorable to an applicant, may be appealed to the United States Court of Customs and Patent Appeals or civil action may be taken in accordance with 35 U.S.C. 145.

Qualifications: Candidates must possess (1) a minimum of five years of patent experience of which at least two years involved the exercise of independent judgment in a responsible position as typified by the exercise of Full Signatory Authority as a Patent Examiner or by comparable experience in some other position inside or outside the Patent and Trademark Office; (2) a law degree or be a member in good standing of the bar in any state, D.C., Puerto Rico, or any territorial court under the constitution; (3) a high degree of demonstrated competence in chemical technology; (4) ability to write clearly and logically; (5) comprehensive experience in patent prosecution, examination or administration which demonstrates a thorough knowledge and application of patent laws and rules of practice.

Factors Which Will be Considered in Evaluating Qualified Candidates: Candidates will be evaluated on the total range of their education, training and experience as well as supervisory appraisals of past performance and potential. *Note:* The qualifications of the proposed incumbent will have to be reviewed and approved by the Department of Commerce and by the U.S. Civil Service Commission before an appointment can be made effective.

Employees of the Department of Commerce may apply by submitting a completed Merit Promotion Interest Statement, Form CD 261, and a completed SF 171, Personal Qualifications Statement, if one is not already on file at the address given below. Persons who are not employees of the Department of Commerce should submit only a completed SF 171. Copies of Form SF 171 may be obtained at local post offices. The completed forms should be sent to:

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Questions concerning this notice should be directed to Mr. Mark Meza or Ms. Donna Waters, Office of Personnel, Room 2-9C05, Telephone (703) 557-7624.

DONALD W. BANNER,
November 1978. *Commissioner of Patents and Trademarks.*

Payment of Additional Fees for Claims

Section 41(a) 1 of Title 35 U.S. Code, provides that the Commissioner shall charge "On filing each application for an original patent, except in design cases, $65, in addition on filing or on presentation at any other time, $10 for each claim in independent form which is in excess of one, and $2, for each claim (whether independent or dependent) which is in excess of ten. . . . Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner."

The Office accords filing dates to applications with insufficient fees provided the basic $65.00 filing fee is present. In such cases a notice is mailed requiring that the balance of the fee be paid within two months from the notification of the deficiency.

Occasionally applications contain informal claims that counsel feels should not be present. However, since alteration after execution and before filing is prohibited and could result in the application being stricken from the files, such applications must be filed in the form in which they are received from applicants. In the past the Office has charged fees for these informal claims, resulting in an unnecessary financial burden on applicants. In the future, applicants will be permitted to file with the application a preliminary amendment limited to cancellation of such claims, which will diminish the number of claims to be considered in calculating the filing fee to be paid. Any other changes should be the subject of a separate amendment.

On the other hand, if a preliminary amendment cancelling such claims does not accompany the application at the time the application is filed, the notification of the fee deficiency will inform applicant of his option of correcting the error by (1) paying the additional fee, or (2) filing an amendment cancelling claims, thereby reducing the number of claims to be considered in calculating the fee. However, it should be noted that once the fee for claims is paid, no refund will be made even though applicant later decides that certain claims are informal or otherwise unnecessary.

This change, which will become effective December 1, 1978, should benefit both applicants and the Office. It will alleviate applicants' financial burden and will also result in more efficient examination.

DONALD W. BANNER,
Nov. 9, 1978. *Commissioner of Patents and Trademarks.*

Patent Suits

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Re. 26,887. (See 3,758,051.)

Re. 27,588. (See 3,663,785.)

Further Guidelines Relating to 37 CFR 1.175 and 1.291, as Amended Effective March 1, 1977

The experience with the above revised rules since their effective date has indicated the desirability of further guidelines relating to the manner in which they are to be implemented. The following guidelines are supplemental to those which have already been provided in the publication of the rules in the Federal Register of January 28, 1977 (42 F.R. 5588) (955 O.G. 1054, February 22, 1977), and in the earlier Guidelines published at 957 O.G. 11 on April 12, 1977. Copies of the latter two Official Gazette publications appear as items 59 and 60 of the current "Consolidated Listing of Recent Official Gazette Notices" published at 966 O.G. 22–32. The present guidelines are also supplemental to the appropriate sections of the Manual of Patent Examining Procedure, e.g., Sections 1401–1401.12 relating to reissue, and Section 1309.02 relating to protests. Sections 721 and 721.01 of the MPEP contain guidelines to be followed if either a reissue or other application, or a protest relative to any application, raisea questions of "fraud" or "violation of the duty of disclosure." Accordingly, the above-noted materials should be consulted in addition to these further guidelines, which are in themselves not intended to completely treat the subjects involved. For the most part, the guidelines herein merely identify and clarify existing requirements and practices. The Patent and Trademark Office has a general study underway of the procedures for handling reissue applications and protests which may result in future modifications in these guidelines.

Section 1.175(a)(4) of the revised rules recognizes that reissues may be filed to have the patentability of the original patent, without changes therein, considered in view of prior art or other information relevant to patentability which was not previously considered by the Office.

The experience to date reveals the need to clarify what should be filed by the applicant in order to seek the reexamination contemplated by sub-section (a)(4) and also the type and content of the examination which the examiner will give to applications filed under sub-section (a)(4).

First, sub-section (a)(4) does *not* contemplate, or permit, the filing of a reissue application without an oath or declaration. To the contrary, an oath or declaration is required, and such oath or declaration *must* comply with each of sub-sections (a)(4), (a)(5), and (a)(6). Thus, under sub-section (a)(4) the oath or declaration must particularly specify the "prior art or other information relevant to patentability, not previously considered by the Office," which the reissue applicant considers "might cause the examiner to deem the original patent wholly or partly inoperative or invalid." The reissue oath or declaration must also request, under sub-section (a)(4), that "if the examiner so deems, the applicant be permitted to amend the patent and be granted a reissue patent."

Under sub-section (a)(5), the reissue oath or declaration, including those filed under sub-section (a)(4), must particularly specify "the errors or what might be deemed to be errors relied upon, and how they arose or occurred."[1] This sub-section has two specific requirements, *both of which must be complied with* in, or by, the reissue oath or declaration. Thus, insofar as (a)(4) reissue oaths or declarations are concerned, the oath or declaration must particularly specify "what might be deemed to be errors." For example, if the reissue applicant is seeking reexamination in view of particular prior art or other information, the reissue oath or declaration must point out "what might be deemed to be errors" in patentability in view of such prior art or other information. More specifically, the oath or declaration, in appropriate circumstances, might state that some or all claims might be deemed to be too broad and invalid in view of references X and Y which were not of record in the patented files, Usually, a general statement will suffice. But where appropriate, such as where the pertinence of the new references X and Y are not evident, more specificity about "what might be deemed to be errors" should be provided. Of course, the reissue applicant does *not* have to, and presumably does *not,* agree that "errors" exist. However, the reissue applicant does have to, in the reissue oath or declaration of the sub-section (a)(4) type, particularly specify "what might be deemed to be errors relied upon."

In addition to specifying "what might be deemed to be errors relied upon," sub-section (a)(5) also requires "particularly specifying" "how they arose or occurred." This means, of course, that the reissue oath or declaration must specify the manner in which that which "might be deemed to be errors" "arose or occurred." For example, if the (a)(4) reissue is being filed for reexamination in view of prior art or other information, the reissue oath or declaration must indicate when and the manner in which the reissue applicant became aware of the possible error in the patent, e.g., third party allegation, discovery of prior art or other information subsequent to issuance of patent, knowledge of prior art or other information before issuance of patent with significance being brought out after issuance by third party, through allegations made in litigation involving the patent, etc. It is particularly important that the reissue oath or declaration adequately specify how "what might be deemed to be errors" arose or occurred. If the reissue oath or declaration does not particularly specify "how," i.e., the manner in which any possible errors arose or occurred, the Office will be unable to adequately evaluate reissue applicant's statement in compliance with (a)(6) that the "errors, if any, arose 'without any deceptive intention' on the part of the applicant."

Sub-section (a)(6) specifically requires that the reissue oath or declaration, including those filed under sub-section (a)(4), contain the averment that the "errors, if any, arose 'without any deceptive intention' on the part of the applicant." This requirement must not be overlooked in filing since the requirement for an absence of "deceptive intention" is a necessary part of any reissue application, including those of the (a)(4) type.

The significance and importance of sub-sections (a)(5) and (a)(6) must not be overlooked or minimized insofar as reissue oaths or declarations are concerned, including those filed under sub-section (a)(4). These sub-sections, to a large extent, enable the Office to make its determination required by statute that any error is "without any deceptive intention."

In addition to meeting the requirements of Sections 1.175 (a)(4)–(a)(6) insofar as the reissue oath or declaration is concerned, the reissue applicant, at the time of filing the reissue application, including the (a)(4) type reissue application, must also be aware of the requirements of 37 CFR 1.56, as revised effective March 1, 1977. Reissue applicants may, of course, utilize new Sections 1.97–1.99 to comply with the duty of disclosure required by Section 1.56. While Section 1.97(a) provides for filing of the prior art statement within three months of the filing of the application, reissue applicants are encouraged to file the prior art statement at the time of filing the application in order that such prior art statements will be available to the public during the two-month period provided by Section 1.176.

In situations in which the patent for which reexamination is being sought is, or has been, involved in litigation, which raised a question material to examination of the reissue application, such as the validity of the patent, or any allegation of fraud, the existence of such litigation must be brought to the attention of the Office at the time of, or shortly after, filing the application, either in the reissue oath or declaration, or in a separate paper, preferably accompanying the application as filed. Litigation begun after filing of the reissue application also should be promptly brought to the attention of the Office. The details and documents from the litigation, insofar as they are "material to the examination" of the reissue application as defined in 37 CFR 1.56(a), should accompany the application as filed, or be submitted as promptly thereafter as possible. For example, the defenses raised against validity of the patent, or charging fraud or inequitable conduct in the litigation. would normally be "material to the examination" of the reissue application. It would, in most situations, be appropriate to bring such defenses to the attention of the Office by filing in the reissue application a copy of the Court papers raising such defenses. As a minimum, the applicant should call the attention of the Office to the litigation, the existence and nature of any allegations relating to validity and/or "fraud" relating to the original patent, and the nature of litigation materials relating to these issues. Enough information should be submitted to clearly inform the Office of the nature of these issues so that the Office can intelligently evaluate the need for asking for further materials in the litigation. Thus, the existence of supporting materials which may substantiate allegations of invalidity or "fraud" should, at least, be fully described, or submitted. The Office is *not*, of course, interested in receiving voluminous litigation materials which are *not* relevant to the Office's consideration of the reissue application. The status of the litigation should be updated in the reissue application as soon as significant events happen in the litigation.

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[1] The text of sub-section (a)(5) is incorrectly reproduced in the July 1977 revision of Title 37 CFR. The text, as quoted herein, is correct.

The Examination of Reissue Applications, Including Those Filed Under 37 CFR 1.175(a)(4)

The examination of reissue applications, including those filed under sub-section (a)(4), will be in accordance with Sections 1401–1401.12, M.P.E.P. Attention is particularly directed to Section 1401.09, M.P.E.P. which refers to the two aspects of reissue examination, i.e., examination in the same manner as an original application and examination for compliance with the reissue statute and rules. The purpose of the present guidelines is to supplement those presently in existence and to emphasize certain points, particularly as they relate to reissue applications filed under sub-section (a)(4).

When examining the reissue application the examiner will consider whether or not applicant, in the reissue oath or declaration, has complied with each of the requirements of 37 CFR 1.175. For example, in all reissue applications, the reissue oath or declaration must comply with the requirements of the first sentence of 37 CFR 1.65. When the reissue application is other than the (a)(4) type, the reissue oath or declaration must comply with the appropriate sub-sections (a)(1) to (a)(3) and sub-sections (a)(5) and (a)(6). When the reissue application is filed under sub-section (a)(4), the reissue oath or declaration must also comply with sub-sections (a)(5) and (a)(6). Thus, all reissue applications must comply with sub-sections (a)(5) and (a)(6). If the examination reveals a lack of compliance with any requirement of Section 1.175, e.g., the requirements of sub-sections (a)(5) and/or (a)(6), a rejection will be made on the basis that the reissue oath or declaration is insufficient. See Section 1401.08, M.P.E.P. Under no circumstances will any reissue application be passed for issue without full compliance with 37 CFR 1.175.

Applications filed under sub-section (a)(4) will not, of course, be passed for issue without amendment, but will be rejected as lacking statutory basis for a reissue if *there are no other grounds for rejection,* since 35 U.S.C. 251 does not authorize reissue of a patent unless the patent is deemed wholly or partly inoperative or invalid. If a reissue filed under sub-section (a)(4) is subsequently amended thereby converting it into an application under sub-sections (a)(1) to (a)(3), *a supplemental reissue oath or declaration must be filed containing the appropriate averments.* If such a proper supplemental oath or declaration is not filed, a rejection will be made on the basis that the reissue oath or declaration is insufficient. The supplemental oath or declaration insures compliance with 35 U.S.C. 251 by providing appropriate averments relating to actual errors rather than possible errors.

If the examiner becomes aware of litigation involving the patent sought to be reissued during examination of the reissue application, and applicant has not made the details regarding that litigation of record in the reissue application, the examiner, in the next Office action, will inquire regarding the same. The following paragraph may be used for such an inquiry:

> "It has come to the attention of the examiner that the patent sought to be reissued by this application (is) (has been) involved in litigation. Any documents and/or materials, including the defenses raised against validity, or against enforceability because of fraud or inequitable conduct, which would be material to the examination of this reissue application are required to be made of record in response hereto. See 37 CFR 1.175(b)."

If the additional details of the litigation appear to be material to examination of the reissue application, the examiner may make such additional inquiries as necessary and appropriate under 37 CFR 1.175(b).

However, any application which indicates the existence of *a question* of "fraud" or "violation of the duty of disclosure" will be forwarded to the Office of the Assistant Commissioner for Patents pursuant to Section 721.01, M.P.E.P., as soon as the existence of *such question* is appreciated. For example, any reissue application which seeks reexamination in view of material prior art or other information known before issuance of the patent to a person having a duty under 37 CFR 1.56(a) must be forwarded under Section 721.01, M.P.E.P., to the Assistant Commissioner via the Group Director.

The Filing of Protests Under 37 CFR 1.291

The amendments to Section 1.291 reflected the increased value the Office places on appropriate written protests as an aid in avoiding the issuance of invalid patents. The present supplemental guidelines are in addition to those previously published and referred to above.

The nature of the protest, and the timeliness of its submission, are important factors in determining the consideration which is given the protest, and by whom it is considered. Insofar as the question of timeliness is concerned, the original publication of the rules at 955 O.G. 1054, the earlier Guidelines published at 937 O.G. 11, and Section 1309.02, M.P.E.P. adequately treat this question. Protests should obviously be submitted as early in the examination process as possible in order to be of maximum benefit to the Office in its examination of the application involved.

If the protest is being filed with regard to a reissue application, the protest should be filed within the two-month period following announcement of the filing of the reissue application in the Official Gazette, if it is at all possible to do so. If, for some reason, the protest of the reissue application cannot be filed within the two-month period provided by 37 CFR 1.176, the protest can be submitted at a later time, but protestor must be aware that reissue applications are "special" and a later filed protest may be received after action by the examiner, if submitted later than the two months provided by 37 CFR 1.176. In the event a protest is intended against a reissue application, but cannot be submitted within the two months provided following the O.G. announcement, the protestor can request an additional specified period within which to file the protest, explaining why the additional time is necessary and the nature of the protest intended. A copy of any such request for additional time to protest a reissue application beyond the two months provided must be served on the reissue applicant. The request for additional time should be directed to the appropriate Group Director. The requests for additional time beyond the two months provided will be *critically reviewed as to demonstrated need* before being granted since the delay of examination of a reissue application of another party is being requested. Accordingly, the requests should be made *only where necessary, for the minimum period required* and with a justification establishing the necessity for the extension.

Any protest filed alleging "fraud" or "violation of the duty of disclosure" should be directed to the attention of the Assistant Commissioner for Patents, Building 3, Room 11A–13. Protests based on grounds other than "fraud" or "violation of the duty of disclosure" should be directed to the attention of the Director of the particular examining group in which the application is pending. If the protestor is unable to specifically identify the application to which the protest is directed, but, nevertheless, believes such an application to be pending, the protest should be directed to the attention of the Assistant Commissioner for Patents, Building 3, Room 11A–13, along with as much identifying data for the application as is available.

As indicated in the earlier publications, e.g., Section 1309.02, M.P.E.P., every effort should be made by a protestor to effect service of the protest upon the attorney or agent of applicant who is of record or upon the applicant. The protest filed in the Office should reflect that service has been made. Only in those instances where service is not possible should the protest be filed in duplicate in order that the Office can attempt service. Of course, the copy served upon applicant or applicant's attorney or agent should be accompanied by a copy of each prior art or other document relied upon in the same manner as required by Section 1.291(a) for the Office copy.

The Examiner's Consideration of Protests

Protests other than those alleging "fraud" or "violation of the duty of disclosure" will be received by, or forwarded to, the Group Director of the examining group where the application is, or may be, pending and then referred to the appropriate examiner. If it is then, or later, discovered that a question of "fraud" or "violation of the duty of disclosure" exists, the application and the protest, will be forwarded to the Office of the Assistant Commissioner for Patents pursuant to Section 721.01, M.P.E.P.

If no allegations or questions of "fraud" or "violation of the duty of disclosure" are found to exist, the examiner will consider the protest and report the results of the consideration to the Group Director. If the protest has been timely

submitted, i.e., before final rejection or allowance, the examiner will consider each of the prior art or other documents submitted. At least those prior art documents which the examiner relies on in rejecting claims will be made of record by means of form PTO–892. If the examiner does not cite all of the prior art or other documents on form PTO–892, the examiner will place a notation in the protest paper adjacent to the reference to the documents which will include the examiner's initials and the term "checked."

If the protest is filed after final rejection or allowance of the application, the consideration by the examiner will depend upon the relevance of the prior art documents submitted and the point in time at which they are submitted. Documents which clearly anticipate or render obvious one or more claims will not be knowingly ignored. Prosecution of the application will be reopened where necessary. However, protestor must be aware that the likelihood of consideration by the Examiner decreases as the patent issue date approaches. Accordingly, protests must be filed early in order to ensure their consideration.

If the protest is not accompanied by a copy of each prior art or other document relied upon as required by Section 1.291(a), the protestor cannot be assured that the examiner will consider the missing document. However, if the examiner does so, the examiner will either cite the document on form PTO–892 or place a notation in the protest paper adjacent to the reference to the document which will include the examiner's initials and the term "checked."

If, upon considering the protest or any submissions subsequent thereto, the examiner considers it desirable to obtain applicant's comments on the protest before further action, the examiner will offer applicant an opportunity to file comments within a set period, usually two months.

The following suggested format can be used to offer applicant an opportunity to file comments on the protest:

> "A protest against the issuance of a patent based on this application has been filed under 37 CFR 1.291 on ---------------------- and a copy (has been indicated as having been served on applicant) (is attached hereto). Any comments or response applicant desires to file before consideration of the protest must be filed by ---------- ------------------------."

Section 1.291(a) indicates that protests are acknowledged and this acknowledgement will normally be made by the particular office to which the protest is ultimately directed for consideration. Protests alleging "fraud" or "violation of the duty of disclosure" will normally be acknowledged by the Office of the Assistant Commissioner for Patents. Other protests, i.e., those not alleging "fraud" or "violation of the duty of disclosure" will normally be acknowledged by the Group Director of the examining group where the application is, or may be, pending.

If the protest involves an application to which the protestor has access, e.g., a reissue application filed after March 1, 1977, or one in which protestor has been formally granted access, then protestor may monitor the proceedings and file such additional papers as protestor considers appropriate. If protestor has access to the application, protestor may request the Office to supply protestor with copies of Office actions or other documents mailed by the Office. Such a request should be directed to the particular area in which the application is pending, e.g., Office of Assistant Commissioner for Patents, or Director of the particular examining group. The request should explain why protestor needs the copies in question and should indicate an intent on protestor's part to assist the Office in its examination by supplying relevant comments. Normally, the Office will send copies of Office actions to protestors where the protestor indicates an intent to review actions and, if appropriate, comment to the Office on them. However, since protestor has no right to copies of the Office actions or other documents, the granting or denying of such requests will be within the sole discretion of, and for the convenience of, the Office.

If the protestor has access to the application, the examiner may communicate with the protestor *in writing* to seek clarification and/or additional information if the examiner considers such clarification and/or additional information necessary to properly consider the protest. The following suggested format can be used by the examiner to seek clarification and/or additional information from a protestor having access to an application:

> "The protest, as filed---------------------------, has been noted. However, clarification and/or additional information is desired. In particular [Examiner explains] any submission of the requested information should be made with ONE MONTH of the date of this letter and the submission must indicate service on applicant."

While the examiner should not normally need clarification and/or additional information from the protestor where the grounds involve only published prior art, e.g., patents, periodicals, etc., under some circumstances it may be necessary for the examiner to seek such clarification and/or additional information. For example, if the date of a reference is in question, or some question of public use is involved, and the information being sought is within the knowledge or control of the protestor, the examiner may find it necessary to communicate with the protestor to obtain the same.

Where the examiner feels that a protestor with access to an application can contribute significantly to the examination process, the protestor may be given a specific period, normally one month, within which to comment on responses submitted by patent applicants to Office actions. Such a comment period should only be provided where it would appear to be of benefit to the examination process and only with the approval of a Supervisory Primary Examiner. Where an applicant agrees to such participation by a protestor or where a Court has suspended litigation for consideration of a related application by the Patent and Trademark Office with an expression of its desire for such protestor participation, it should be more liberally granted.

Where a protestor requests permission to participate in any interview between an applicant and the examiner or requests on its own behalf to have an interview with the examiner, the request should be referred to the Office of the Assistant Commissioner for Patents for action. Normally, protestor participation in interviews with examiners will not be allowed unless special justifying circumstances exist. Where authorized, participation by the protestor in an interview will be according to conditions set down by the Patent and Trademark Office. Normally, any transcript of the interview, if authorized, will be at the expense of the party or parties requesting it and will be arranged by such party or parties. Where Office actions are being sent to a protestor or where a protestor is present for an interview, a copy of the Interview Summary Form and other records made of the interview will be provided to the protestor. Where protestor's participate in an interview, they may submit their own record of the interview which will be made of record in the file.

Interviews relating to a patent application with a protestor will not be permitted without the applicant present.

A protestor with access to an application appealed to the Board of Appeals who intends to file comments or a brief in opposition to appellant's brief should file an indication of such intention within one month after the notice of appeal is filed and serve a copy of the same upon appellant. The indication of intention should state that protestor agrees to file such comments or brief in triplicate, within one month after appellant's brief is filed, and also agrees to serve a copy of the comments or brief upon appellant. If such an indication is not filed and served, or the protestor's comments or brief is not timely filed in triplicate and served, no assurance is given that the Examiner will consider the protestor's comments or brief during the preparation of the Examiner's Answer.

A protestor who participates by the filing of comments or a brief in opposition to appellant's brief may also request, at the time of filing the comments or brief, to appear at any oral hearing. If a protestor does not file such comments or brief, the protestor cannot be present at any oral hearing. If a protestor does file such a request, the Board of Appeals, in its discretion, will decide whether or not the issues on appeal are such that protestor's participation at the hearing would be helpful. The Board of Appeals will notify protestor whether or not the request to appear at the hearing is granted and, if granted, how much time will be permitted. Of course, if appellant does not request an oral hearing, or provides timely notification to the Board and protestor that appellant will not appear, protestor will not be heard.

A copy of any examiner's letter or communication to a protestor will be mailed to applicant at the same time it is mailed to the protestor. While the examiner may communicate *in writing* with a protestor having access to the application, the examiner will *not* communicate orally and protestor must refrain from oral communications with the examiner except to ask purely procedural questions which have no relation to the substance of the protest or the merits of the application, unless specifically authorized *in writing* by the Assistant Commissioner for Patents.

Where the handling of a protest or the handling of a reissue application involved in related litigation requires an inordinately larger than normal amount of work on the part of an examiner and where otherwise warranted, Supervisory Primary Examiners may authorize the use of non-examining time for handling some or all of the examination.

The above guidelines are intended to make clearer the policies of the Patent and Trademark Office in respect to the handling of reissue applications, protests and "fraud" questions. The Office is especially interested in seeing that the consideration of reissue applications and protests is thorough and fair. It is interested in seeing that protestors have an opportunity to participate in the proceedings in the Office to the extent that such participation is helpful and appropriate in each case. It is also greatly interested in the completeness and accuracy of the file record, including indications whether or not prior art references and information mentioned in the record have been reviewed by the examiner.

The present guidelines which will be incorporated into the M.P.E.P. as soon as possible, when considered in conjunction with those previously issued and the M.P.E.P., should answer many of the questions being raised about the revised rules.

DONALD W. BANNER,
Commissioner of Patents & Trademarks.

Nov. 13, 1978.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,004,339, Re. S.N. 940,520, Filed Aug. 7, 1978, Cl. 24/243.56, SINGLE PISTON OPERATED CLIP DEVICE, Clyde R. Velarde, et al., Owner of Record: *Rheem Manufacturing Company, New York, N.Y.*, Attorney or Agent: George B. Newitt, et al., Ex. Gp.: 323

4,070,393, Re. S.N. 945,358, Filed Sep. 25, 1978, Cl. 260/465 C, AMMOXIDATION PROCESS, Howard P. Angstadt, et al., Owner of Record: *Sun Ventures, Inc., Radnor, Pa.*, Attorney or Agent: J. Edward Hess, et al., Ex. Gp.: 124

4,096,870, Re. S.N. 948,660, Filed Oct. 5, 1978, Cl. 134/28, METHOD FOR CLEANING SOFT HYDROPHILIC GEL CONTACT LENSES, John A. Manfuso, Jr., Owner of Record: *Burton, Parsons and Company, Inc., Washington, D.C.*, Attorney or Agent: Morris Fidelman, et al., Ex. Gp.: 173

PATENT NOTICES

Certificates of Correction for the Week of Dec. 12, 1978

Re. 29,663
3,784,219
3,862,296
3,969,700
3,991,785
4,000,160
4,001,142
4,025,032
4,025,737
4,029,380
4,032,554
4,033,706
4,038,067
4,041,310
4,045,312
4,057,461
4,059,405
4,060,528
4,063,803
4,064,132
4,065,435
4,066,474
4,066,911
4,067,938
4,069,330
4,070,368
4,076,708
4,080,878
4,084,248
4,085,249
4,087,326
4,087,903
4,088,872
4,088,879
4,089,390
4,089,402
4,089,795
4,090,038
4,090,247
4,090,851
4,091,006
4,091,007
4,091,080
4,091,134
4,091,399
4,092,339
4,093,037
4,093,546
4,093,669
4,093,844
4,094,104
4,094,231
4,094,251
4,094,566
4,094,756
4,094,840
4,094,961
4,095,037
4,095,090
4,095,232
4,095,480
4,095,767
4,095,779
4,096,395
4,097,895
4,112,731
4,112,916
4,113,041
4,113,630
4,113,753
4,113,777
4,113,906
4,114,072
4,114,841
4,115,414
4,115,466
4,115,500
4,115,844
4,116,060
4,116,215
4,116,536
4,116,640

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,421,205, L. J. Pollock, FABRICATION OF STRUCTURES FOR SEMICONDUCTOR INTEGRATED CIRCUITS, Interference No. 99,831, decided Aug. 11, 1978, claims 1 and 3.

Patent No. 3,632,538, O. S. Kauder, ORGANOTIN STABILIZER COMPOSITION CONTAINING MORE THAN 20% TIN AND RESIN COMPOSITIONS CONTAINING THE SAME, Interference No. 98,846, decided May 30, 1978, claims 1–5 and 7–12.

Patent No. 3,672,922, R. E. Brouillard, L. J. Coughlin and V. L. Winfrey, BENZYL STARCH EMULSION COATING COMPOSITIONS, Interference No. 99,596, decided Sept. 25, 1978, claims 1, 2 and 4.

Patent No. 3,673,140, J. F. Ackerman, J. Weisfeld, R. G. Savageau and G. Beerli, ACTINIC RADIATION CURING COMPOSITIONS AND METHOD OF COATING AND PRINTING USING SAME, Interference No. 98,883, decided June 29, 1978, claims 8, 10, 11, and 20–23.

Patent No. 3,673,140, J. F. Ackerman, J. Weisfeld, R. G. Savageau and G. Beerli, ACTINIC RADIATION CURING COMPOSITIONS AND METHOD OF COATING AND PRINTING USING SAME, Interference No. 99,011, decided June 29, 1978, claim 9.

Patent No. 3,673,140, J. F. Ackerman, J. Weisfeld, R. G. Savageau and G. Beerli, ACTINIC RADIATION CURING COMPOSITIONS AND METHOD OF COATING AND PRINTING USING SAME, Interference No. 98,927, decided June 29, 1978, claim 19.

Patent No. 3,898,410, P. H. Peters, Jr., AC to RF CONVERTER CIRCUIT FOR INDUCTION COOKING UNIT, Interference No. 99,304, decided July 13, 1978, claims 42 and 43.

Patent No. 3,803,449, L. J. Schmersal, METHOD AND APPARATUS FOR MANIPULATING DISCRETE DISCHARGE IN A MULTIPLE DISCHARGE GASEOUS DISCHARGE PANEL, Interference No. 99,228, decided June 8, 1978, claims 1–3, 5, 18 and 20–23.

Patent No. 3,816,324, L. W. Fine, M. Grayson & V. S. Grayson, BLEACHING COMPOSITIONS CONTAINING A N-ACYL AZOLE, Interference No. 99,549, decided Sept. 26, 1978, claims 12 and 13.

Patent No. 3,821,815, C. D. Abbott, G. W. Brock, N. L. Robinson, F. B. Shelledy and S. H. Smith, APPARATUS FOR BATCH-FABRICATING MAGNETIC FILM HEADS AND

Patent No. 3,832,815, J. K. Balaz, R. A. Kelly and W. Schulze, MODULAR INSULATION OF FIBROUS MATERIAL, Interference No. 99,749, decided Aug. 14, 1978, claim 1.

Patent No. 3,842,297, B. J. Pleiss, Jr. and T. J. Surmacz, RECEPTACLE FOR SECURING A SENSING ELEMENT WITHIN ELECTRICAL WINDINGS, Interference No. 99,322, decided Sept. 1, 1978, claim 36.

Patent No. 3,846,779, J. G. Martner, ULTRASONIC TRANSDUCER, Interference No. 99,067, decided Mar. 28, 1977, claim 3.

Patent No. 3,951,912, P. V. Susi, HYDROXYBENZYLPHOSPHONATE ANTIOXIDANTS, Interference No. 99,616, decided Aug. 10, 1978, claims 1, 2 and 4–9.

Patent No. 3,963,629, J. H. McLaughlin, FABRIC SOFTENER COMPOSITION FOR USE IN A CLOTHES DRYER AND METHOD, Interference No. 99,536, decided Oct. 19, 1978, claims 1 and 4.

Patent No. 3,983,226, D. B. Nazzer and V. R. Thayer, GAS STRIPPING AND RECIRCULATION PROCESS IN HEAVY
22, 1978, claims 6, 8 and 9.
WATER SEPARATION PLANT, Interference No. 99,844, de-
METHOD THEREFOR, Interference No. 98,999, decided May
cided Aug. 10, 1978, claims 1–6.

National Technical Information Service

Government-Owned Inventions

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications can be purchased from the National Techincal Information Service (NTIS), Springfield, Va., 22161 for $4.00 ($8.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

Douglas J. Campion,
Patent Program Coordinator,
National Technical Information Service.

U.S. Department of the Air Force
AF/JACP, 1900 Half St. SW., Washington, D.C. 20314

Patent 4,079,594. Fusible Heat Sink for a Cryogenic Refrigerator. Filed Jan. 12, 1977. Patented Mar. 21, 1978. Not available NTIS.

Patent application 875,664. Partial Swirl Augmentor for a Turbofan Engine. Filed Feb. 6, 1978.

Patent application 882,526. Centrifugal Aerosol Dispenser Assembly. Filed Mar. 1, 1978.

Patent application 898,067. Digital Hysteresis Circuit. Filed Apr. 20, 1978.

Patent application 900,949. Obturating Split Disc. Filed Apr. 28, 1978.

Patent application 900,950. Ribbed Flange Modified Seal. Filed Apr. 28, 1978.

Patent application 902,180. Frequency Selective Ferrimagnetic Power Limiter. Filed May 2, 1978.

Patent application 902,181. Canted Spar With Intermediate Intercostal Stiffeners. Filed May 2, 1978.

Patent application 902,182. Window Protection From Electron Magnetic Pulse Energy. Filed May 2, 1978.

U.S. DEPARTMENT OF AGRICULTURE

Research Agreements and Patent Branch, General Service
Division, Federal Building, Agricultural Research Service
Hyattsville, Md. 20782

Patent application 911,080. Method and Apparatus for Watering Bees. Filed May 31, 1978.

Patent application 918,892. Alkyd Resins Modified With Tetrafluoroethylene Adduct of Conjugated Triglycerides. Filed June 26, 1978.

Patent 4,089,746. Method for Insolubilising Enzymes on Chitosan. Filed July 19, 1976. Patented May 16, 1978. Not available NTIS.

U.S. DEPARTMENT OF COMMERCE

National Technical Information Service, 5285 Port Royal Rd.
Springfield, Va. 22161

Patent application 848,176. Scanning Electron Microscope Micrometer Scale and Method for Fabricating Same. Filed Nov. 3, 1977.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 760,308. Temperature Sensing Device. Filed Jan. 18, 1977.

Patent 4,001,683. Automatic Range Selector. Filed Apr. 25, 1975. Patented Jan. 4, 1977. Not available NTIS.

Patent 4,008,399. Gamma Compensated, Self Powered Neutron Detector. Filed June 13, 1975. Patented Feb. 15, 1977. Not available NTIS.

Patent 4,052,999. Bumper Wall for Plasma Device. Filed July 15, 1975. Patented Oct. 11, 1977. Not available NTIS.

Patent 4,053,355. Nuclear Reactor Remote Disconnect Control Rod Coupling Indicator. Filed Oct. 14, 1975. Patented Oct. 11, 1977. Not available NTIS.

Patent 4,053,358. Modular Assembly for Supporting, Straining, and Directing Flow to a Core in a Nuclear Reactor. Filed Dec. 30, 1974. Patented Oct. 11, 1977. Not available NTIS.

Patent 4,053,359. Nuclear Reactor. Filed Mar. 17, 1976. Patented Oct. 11, 1977. Not available NTIS.

Patent 4,056,052. Method for Shearing Spent Nuclear Fuel Assemblies. Filed Apr. 29, 1976. Patented Nov. 1, 1977. Not available NTIS.

Patent 4,061,921. Infrared Laser System. Filed May 2, 1974. Patented Dec. 6, 1977. Not available NTIS.

Patent 4,062,515. Compact Gate Valve. Filed May 18, 1976. Patented Dec. 13, 1977. Not available NTIS.

Patent 4,063,190. CO_2 Laser. Filed Dec. 30, 1975. Patented Dec. 13, 1977. Not available NTIS.

Patent 4,064,029. Method of Making an Improved Superconducting Quantum Interference Device. Filed Feb. 8, 1977. Patented Dec. 20, 1977. Not available NTIS.

Patent 4,065,217. Nose Tip Locking Device. Filed Nov. 24, 1976. Patented Dec. 27, 1977. Not available NTIS.

Patent 4,065.351. Particle Beam Injection System. Filed Mar. 25, 1976. Patented Dec. 27, 1977. Not available NTIS.

Patent 4.065,400. Nuclear Waste Solidification. Filed Apr. 8, 1976. Patented Dec. 27, 1977. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch
Westwood Building, Bethesda, Md. 20014

Patent 4.080,325. Synthesis of Methotrexate. Filed Nov. 17, 1976. Patented Mar. 21, 1978. Not available NTIS.

Patent 4,081,356. Fecalator, an Apparatus and Method for Concentration of Parasite Eggs and Larvae. Filed Sept. 24, 1976. Patented Mar. 28, 1978. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents. Office of Naval Research—
Code 302, Arlington, Va. 22217

Patent application 875,831. Radar Signal Simulator. Filed Feb. 7, 1978.

Patent application 877,545. Mine Simulator Planting Rack and Release Mechanism. Filed Feb. 18, 1978.

Patent application 877,546. Underwater Search Coil. Filed Feb. 18, 1978.

Patent application 877,547. Flare Release System. Filed Feb. 13, 1978.

Patent application 890,872. Iron-Doped Indium Phosphide Semiconductor Laser. Filed Mar. 27, 1978.

Patent application 890,873. Explosively Actuated Opening Switch. Filed Mar. 27, 1978.

Patent application 892,580. Charge-Coupled Multiplying Digital-to-Analog Converter. Filed Apr. 3, 1978.

Patent application 896.075. Tapered Velocity Electro-Optical Waveguide Switch. Filed Apr. 13, 1978.

Patent application 896,946. Method and Apparatus for Injecting Gas Into a Laser Cavity. Filed Apr. 17, 1978.

Patent application 897.995. High Precision Optical Alignment System. Filed Apr. 20, 1978.

Patent application 901,163. Degraining, a Three Step Process To Obtain Propellant Samples From Case Bonded Motors. Filed Apr. 28, 1978.

Patent 4,084,172. Highly Electronegative (SN_x) Contacts to Semiconductors. Filed June 10, 1977. Patented Apr. 11, 1978. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—
Code GP-2, Washington, D.C. 20546

N7827,984–1. NASA Patent Abstracts Bibliography: A Continuing Bibliography. Supplement 12 Section 2: Indexes. Jan. 1978.

INTELLECTUAL PROPERTY DIVISION, OTJAG

DEPARTMENT OF THE ARMY
Room 2D 444, Pentagon,
Washington, D.C. 20314

Patent 3,573,755. Electrical Tablet for Graphic Input System. Filed Feb. 16, 1968. Patented Apr. 6, 1971.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

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Patent 4,000,682. Solid Propellant Rocket Motor and Method of Making Same. Patented Jan. 4, 1977.

Patent 4,001,552. Method and Apparatus for Measuring Web Material Wound on a Reel. Patented Jan. 4, 1977.

Patent 4,001,602. Electronic Analog Divider. Patented Jan. 4, 1977.

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Patent 4,003,084. Method of and Means for Testing a Tape Record/Playback System. Patented Jan. 11, 1977.

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U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, Washington, D.C. 20314

Patent 3,984,839. Low Height VLF Antenna System. Filed May 15, 1975. Patented Oct. 5, 1976.

Patent 3,984,980. Integral Heater Thermal Energy Storage Device. Filed Aug. 5, 1975. Patented Oct. 12, 1976.

Patent 3,985,398. Fluidic Antiskid Circuit. Filed Apr. 8, 1975. Patented Oct. 12, 1976.

Patent 3,985,420. Mechanical Step Scanner. Filed Oct. 10, 1975. Patented Oct. 12, 1976.

Patent 3,985,579. Rib and Channel Vertical Multijunction Solar Cell. Filed Nov. 26, 1975. Patented Oct. 12, 1976.

Patent 3,986,0[illegible] Universal Temperature Controlled Reference Junction. Filed Feb. 14, 1975. Patented Oct. 12, 1976

Patent 3,986,127. Integrated Feedback Active Filter/Integrator. Filed May 27, 1975. Patented Oct. 12, 1976.

Patent 3,986,129. Generation of Submicrosecond Pulses in a Long Laser. Filed July 25, 1972. Patented Oct. 12, 1976.

Patent 3,986,138. Isothermal Gas Dynamic Laser Nozzle. Filed Mar. 29, 1974. Patented Oct. 12, 1976.

Patent 3,986,139. Radioactively Preionized Electrical Discharged Laser. Filed Feb. 18, 1975. Patented Oct. 12, 1976.

Patent 3,986,241. In-Place Bearing Staking Device. Filed Nov. 18, 1975. Patented Oct. 19, 1976.

Patent 3,986,683. Jet Tab Steerable Missile. Filed Mar. 27, 1974. Patented Oct. 19, 1976.

Patent 3,986,690. Laser Defense and Countermeasure System for Aircraft. Filed Oct. 28, 1975. Patented Oct. 19, 1976.

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Patent 3,987,288. Time Multiplexing Hybrid Sample Data Filter. Filed Apr. 22, 1975. Patented Oct. 19, 1976.

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U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent 3,970,791. Voice Controlled Disappearing Audio Delay Line. Filed May 27, 1975. Patented July 20, 1976.

Patent 3,978,444. Seafloor Mapping System. Filed May 30, 1975. Patented Aug. 31, 1976.

Patent 3,978,483. Stable Base Band Adaptive Loop. Filed Dec. 26, 1974. Patented Aug. 31, 1976.

Patent 3,980,395. Liquid Crystal Switch for Optical Waveguide. Filed Dec. 2, 1974. Patented Sept. 14, 1976.

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Patent 3,986,003. Multi Position Solid State Touch Switch. Filed Mar. 21, 1975. Patented Oct. 12, 1976.

Patent 3,986,111. Inverted Voltage Gerdien Condenser. Filed Dec. 24, 1974. Patented Oct. 12, 1976.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

Patent 3,984,730. Method and Apparatus for Neutralizing Potentials Induced on Spacecraft Surfaces. Patented Oct. 5, 1976.

INTELLECTUAL PROPERTY DIVISION, OTJAG

Department of the Army, Pentagon Room 2D 444
Washington, D.C. 20314

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U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

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Patent 4,001,681. Vector Voltmeter. Filed Jan. 28, 1976. Patented Jan. 4, 1977.

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Patent 4,001,829. High Average Power Millimeter Duplexer. Filed Aug. 18, 1975. Patented Jan. 4, 1977.

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Patent 4,004,667. Overload Clutch With Zero Parasitic Torque. Filed Sept. 24, 1974. Patented Jan. 25, 1977.

Patent 4,005,142. Fluorocarbon Ether Bis(O-Aminophenol) Compounds. Filed Sept. 4, 1975. Patented Jan. 25, 1977.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 3,952,246. Plasma Digital Density Determining Device. Filed May 29, 1975. Patented Apr. 20, 1976.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, Washington, D.C. 20314

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Patent 3,998.088. Testing Apparatus for Incremental Shaft Encoder. Filed Nov. 12, 1975. Patented Dec. 21, 1976.

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Patent 4,000,477. Recirculation or Stirred Reactor Flow Laser. Filed Feb. 13, 1974. Patented Dec. 28, 1976.

U.S. DEPARTMENT OF AGRICULTURE

Research Agreements and Patent Branch, General Services
Division, Federal Building, Agricultural Research Service
Hyattsville, Md. 20782

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Patent 4.005,040. Foamed and Solid Rubber-Starch Graft Copolymer Compositions and Method of Preparation. Filed Nov. 10, 1975. Patented Jan. 25, 1977.

Patent 4.005.556. Lightweight Truss-Framed House. Filed Sept. 19, 1975. Patented Feb. 1. 1977.

Patent 4,009.324. Photodegradable Polyolefin Composition Containing an N-Halo Lactam. Filed Apr. 2, 1976. Patented Feb. 22, 1977.

Patent 4.011,726. Delta Culvert. Filed Nov. 5, 1975. Patented Mar. 15, 1977.

U.S. DEPARTMENT OF TRANSPORTATION

Patent Counsel, 400 7th St. SW, Washington, D.C. 20590

Patent 4,000.564. Programmable Anthropomorphic Articulation. Filed Jan. 7, 1976. Patented Jan. 4, 1977.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 3,953,617. Method of Producing Encapsulated Thermonuclear Fuel Particles. Filed Jan. 28, 1974. Patented Apr. 27, 1976.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch
Westwood Building, Bethesda, Md. 20014

Patent 3,990,434. Reversible Intravasal Occlusive Device. Filed Feb. 18, 1975. Patented Nov. 9, 1976.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research,
Code 302, Arlington, Va. 22217

Patent 3,891,960. Doppler Sonar System. Filed Feb. 24, 1970. Patented June 24, 1975.

Patent 3,901,075. Acoustic Velocimeter for Ocean Bottom Coring Apparatus. Filed Jan. 10, 1974. Patented Aug. 26, 1975.

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Patent 3.962,485. Method for Forming Uniform Stress-Free Thin Films. Filed Oct. 20, 1975. Patented June 8, 1976.

Patent 3,976,369. Alpha Meter Attachment for Underwater Optical Systems. Filed Sept. 27, 1975. Patented Aug. 24, 1976.

Patent 3,978,384. Precision Laser Beam Deflection Detector. Filed Sept. 24, 1975. Patented Aug. 31, 1976.

Patent 3,978,813. Propeller-Driven Hydrophone Array Tensioning Device. Filed Jan. 9, 1976. Patented Sept. 7, 1976.

Patent 3,981,258. Waterski Sailboat. Filed July 15, 1975. Patented Sept. 21, 1976.

Patent 3,982,222. Deep Hydrophone String. Filed Oct. 22, 1965. Patented Sept. 21, 1976.

Patent 3,985,080. Two Selector Gate for Active-Passive Radio Proximity Fuzes. Filed Oct. 30, 1967. Patented Oct. 12, 1976.

Patent 3,986,115. Transient Direction Detector. Filed Jan. 20, 1975. Patented Oct. 12, 1976.

Patent 3.986.159. Air Dropped Sonobuoy. Filed Sept. 2, 1975. Patented Oct. 12, 1976.

Patent 3,987,708. Depth Insensitive Accumulator for Undersea Hydraulic Systems. Filed Mar. 10, 1975. Patented Oct. 26, 1976.

Patent 3,990.123. Inflatable Sonar Array. Filed Sept. 22, 1975. Patented Nov. 9, 1976.

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Patent 3,996,794. Differential Depth Indicator. Filed Oct. 17, 1966. Patented Dec. 14, 1976.

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Patent 4,003,083. Digital Data Recording and Decoding. Filed Apr. 15, 1975. Patented Jan. 11, 1977.

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U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 3,948,735. Concentration and Purification of Plutonium or Thorium. Filed June 1, 1973. Patented Apr. 6, 1976.

Patent 3,949,050. Method of Absorbing UF_6 From Gaseous Mixtures in Alkamine Absorbents. Filed Sept. 20, 1948. Patented Apr. 6, 1976.

Patent 3.951,573. Fluid Lubricated Bearing Construction. Filed July 16, 1946. Patented Apr. 20, 1976.

Patent 3.955,753. Gas Centrifuge With Driving Motor. Filed Apr. 13, 1961. Patented May 11, 1976.

Patent 3,957,577. Hydraulic Control Rod. Filed June 23, 1955. Patented May 18, 1976.

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Patent 3,957,956. Closed Cycle Ion Exchange Method for Regenerating Acids, Bases, and Salts. Filed June 20, 1974. Patented May 18, 1976.

Patent 3,958,699. Charging Machine. Filed July 13, 1954. Patented May 25, 1976.

Patent 3.959,069. Method of Preparing Gas Tags for Identification of Single and Multiple Failures of Nuclear Reactor Fuel Assemblies. Filed June 5, 1974. Patented May 25, 1976.

Patent 3.959,070. Method of Operating a Neutronic Reactor. Filed Nov. 18, 19[illegible]2. Patented May 25, 1976.

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Patent 3,963,936. Neutronic Reactor Thermal Shield. Filed Mar. 14, 1955. Patented June 15, 1976.

Patent 3,964,967. Tag Gas Capsule With Magnetic Piercing Device. Filed Feb. 24, 1975. Patented June 22, 1976.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts. NW.
Washington, D.C. 20240

Patent 3,981,962. Decomposition Leach of Sulfide Ores With Chlorine and Oxygen. Filed June 30, 1975. Patented Sept. 21, 1976.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

Patent 3,994,128. Dual Output Variable Pitch Turbofan Actuation System. Patented Nov. 30, 1976.

Patent 3,995,476. Miniature Biaxial Strain Transducer. Patented Dec. 7, 1976.

Patent 3,995,644. Percutaneous Connector Device. Patented Dec. 7, 1976.

Patent 3,995,789. Reel Safety Brake. Patented Dec. 7, 1976.

Patent 3,995,877. Fifth Wheel. Patented Dec. 7, 1976.

Patent 3,996,064. Electrically Rechargeable Redox Flow Cell. Patented Dec. 7, 1976.

Patent 3,996,070. Thermocouple Installation. Patented Dec. 7, 1976.

Patent 3,996,464. Mass Spectrometer With Magnetic Pole Pieces Providing the Magnetic Fields for Both the Magnetic Sector and an Ion-Type Vacuum Pump. Patented Dec. 7, 1976.

Patent 3,996,468. Electron Microscope Aperture System. Patented Dec. 7, 1976.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 4, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	12-19-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides: Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-16-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins: Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	5-1-78
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-29-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes: Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-4-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-16-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-23-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-22-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-01-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	1-14-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-3-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-16-78
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director Amusement and Exercising Devices; Projectors: Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-28-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-31-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—G. M. FORLENZA, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors: Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-24-77

Expiration of patents: The patents within the range of numbers indicated below expire during November 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents........ Numbers 3,007,169 to 3,001,168, inclusive
Plant Patents........ Numbers 2,101 to 2,107, inclusive

REISSUES

DECEMBER 12, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,860

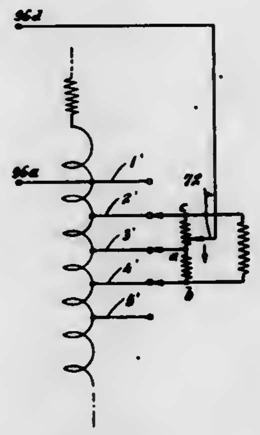
ROTARY POTENTIOMETER WITH SPEED REDUCTION GEARING

Larkin B. Scott, Fort Worth, Tex., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Original No. 3,129,382, dated Apr. 14, 1964, Ser. No. 847,958, Oct. 22, 1959. Application for reissue Oct. 28, 1977, Ser. No. 846,630

Int. Cl.^{2} G05F *1/14*

U.S. Cl. 323—43.5 R **8 Claims**



1. In electrical apparatus having a series of terminals, one of which is a reference terminal, means for maintaining a reference voltage on the reference terminal and voltages of predetermined values relative to the reference voltage on the respective other terminals along the series, means for deriving voltages intermediate those on the terminals including a continuous electrical path in the form of a closed loop of distributed impedance subdivided into sections by taps at at least three substantially equally spaced points thereon, switching means for connecting pairs of adjacent taps in rotation across successive pairs of adjacent terminals along the series, and a contact movable along that section of the impedance loop between the taps on said section connected to a first and second terminal, the improvement comprising switching means having at least three first conductive elements; each connected to one of said taps, a plurality of second conductive elements, each connected to one of said terminals, said first and second [terminals] *conductive elements* comprising at least a portion of the surface of a substantially cylindrical drum; and electrical bridging means movable to interconnect each of said first conductive elements with one of said second conductive elements.

PLANT PATENTS

GRANTED DECEMBER 12, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,342

KALANCHOE PLANT NAMED TOLTEC

Claude Hope, Cartago, Costa Rica, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Feb. 9, 1978, Ser. No. 876,429

Int. Cl.^{2} A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of kalanchoe substantially as herein shown and described, characterized by the intense red coloring of its flowers, its continuous production of flowers over an extended period, and its attractive pot-size growth habit.

4,343

KALANCHOE PLANT NAMED GODDESS

Claude Hope, Cartago, Costa Rica, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Feb. 9, 1978, Ser. No. 876,428

Int. Cl.^{2} A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct kalanchoe cultivar, substantially as herein shown and described, characterized by its upright growth of medium height, its substantially uniform 10-week flowering response under photoperiod control, and its continuous and showy production of rose pink flowers over an extended blooming period.

4,344

KALANCHOE NAMED MONTEZUMA

Claude Hope, Cartago, Costa Rica, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Feb. 9, 1978, Ser. No. 876,461

Int. Cl.^{2} A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of kalanchoe plant, substantially as herein shown and described, characterized by its abundant display of intense orange colored florets appearing on stems of medium height extending from a base of relatively large, glossy green foliage.

4,345

KALANCHOE NAMED TABASCO

Claude Hope, Cartago, Costa Rica, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Feb. 9, 1978, Ser. No. 876,462

Int. Cl.^{2} A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive cultivar of kalanchoe, substantially as herein shown and described, characterized by its upright growth displaying relatively large clusters of intense orange-red flowers of medium size and its base cover of relatively large glossy foliage.

4,346

CHRYSANTHEMUM PLANT

Barrie J. Machin, Littlehampton, England, assignor to Framptons Nurseries Limited, Chichester, England

Filed Jun. 13, 1977, Ser. No. 806,012

Int. Cl.^{2} A01H *5/00*

U.S. Cl. Plt.—80 **1 Claim**

1. A new and distinct variety of *Chrysanthemum morifolium Bailey* of the pink open terminal spray type, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of improved color, especially during high light and temperature periods, a strong uniform spray, a longer growing season, and flowers less prone to bruising and damping than the pink open spray type chrysanthemums heretofore known.

4,347

NON-TOXIC STRAIN OF *FUSARIUM GRAMINEARUM*

Gerald L. Solomons, High Wycombe, and Gerald W. Scammell, Chinnor, both of England, assignors to Ranks Hovis McDougall Limited, London, England

Continuation of Ser. No. 417,190, Jan. 7, 1974, abandoned, which is a continuation of Ser. No. 140,303, May 4, 1971, abandoned. This application Dec. 19, 1975, Ser. No. 642,610

Claims priority, application United Kingdom, May 14, 1970, 23452/70; Jun. 24, 1970, 30584/70

Int. Cl.^{2} A01H *15/00*

U.S. Cl. Plt.—89 **1 Claim**

1. A novel non-toxic fungi *Fusarium graminearum* as shown and described in the foregoing specification and drawings which has been deposited with the Commonwealth Mycological Institute and identified as *Fusarium graminearum* Schwabe I.M.I. 145425.

PATENTS

GRANTED DEC. 12, 1978

ERRATA

For CLASS	See PATENT NO.
264–046.6	4,128,963
405–031	4,129,006
405–261	4,129,007
405–303	4,129,008
405–227	4,129,009
405–169	4,129,010
405–169	4,129,011
073–329	4,129,024
093–033 R	4,129,032
280–628	4,129,245
404–046	4,129,396
422–098	4,129,418
422–064	4,129,419
195–100	4,129,483
528–168	4,129,529
521–079	4,129,530
521–094	4,129,531
526–075	4,129,532
521–117	4,129,533
521–038	4,129,534
528–048	4,129,554
528–097	4,129,556
526–283	4,129,557
528–337	4,129,559
546–142	4,129,565
546–326	4,129,566
546–121	4,129,567
528–128	4,129,570
562–549	4,129,592
562–557	4,129,593
568–593	4,129,601
423–235	4,129,651
260–823	4,129,700
526–017	4,129,721

PATENTS

GRANTED DECEMBER 12, 1978

GENERAL AND MECHANICAL

4,128,902

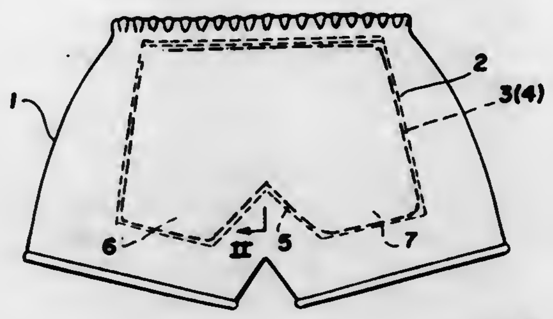
PROTECTIVE GYMNAST PANTS

Gary R. Siebert, Wyomissing, Pa., assignor to Gym-Kin Inc., Sinking Spring, Pa.

Filed Aug. 9, 1977, Ser. No. 823,190

Int. Cl.² A41D *13/00*

U.S. Cl. 2—2 **2 Claims**



1. A pair of gymnast pants having a pouch attached to the inside of the front portion of the pants and having a perimeter encompassing only the pelvic, hip and thigh area of the gymnast, and padding means comprising a plurality of flexible, elastic foam cushions enclosed in said pouch for protecting the gymnast against injury while learning wrapping skills on uneven parallel bars or the like, said pouch including a flap wrapped around the top ends of said cushions for insuring their retention in the pouch while allowing ready withdrawal and reinsertion of selected cushions in said pouch.

4,128,903

TEMPORARY WALKING AID FOR USE AFTER LOWER LEG AMPUTATIONS

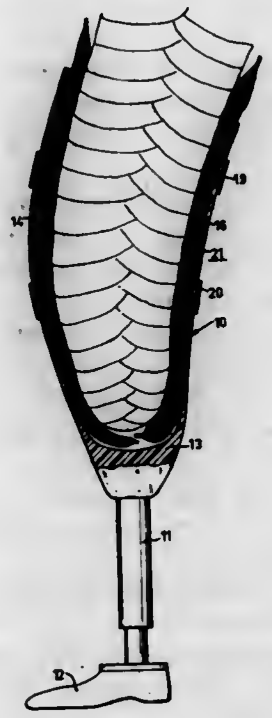
Gunnar Marsh, Karlskrona; Ole Henrikssen, Asarum, and Urban C. S. Sjoblum, Karlskrona, all of Sweden, assignors to Landstingens Inkopscentral Lic, Ekonomisk Forening, Solna, Sweden

Filed Apr. 26, 1977, Ser. No. 790,910

Claims priority, application Sweden, Apr. 28, 1976, 7604885

Int. Cl.² A61F *1/02, 1/08*

U.S. Cl. 3—19 **4 Claims**



1. A prosthesis for an amputated lower leg comprising an upper part attachable to the remaining lower leg stump and a supporting cushion structure, this upper part being attached to an under part provided with an artificial foot, characterized in that the upper part has a cup-shaped bottom portion which at a number of places along its circumference merges into upwardly directed flexible strips of such lengths that, when the leg stump is placed between them, they extend up along the leg stump and thigh, the bottom portion and stips forming a holder adapted to fit, with an approximately predetermined and relatively large play, around the bandaged leg stump itself so that this play can be filled with said supporting structure around the leg stump, said structure taking the form of an envelope or cushion containing a large number of small plastic balls, said cushion being airtight but connectable to the surrounding atmosphere by a closeable hose or the like whereby the cushion, formless in an air-filled condition, can be placed around the leg stump and thigh, and formed to fit in the holder before the cushion is evacuated to form a relatively rigid shell, whereafter it is intended to clamp fast the flexible strips against the rigid shell by at least one tension band which is tightened around the strips, at least in the area about the thigh.

4,128,904

BATH EQUIPMENT FOR DISABLED PERSONS

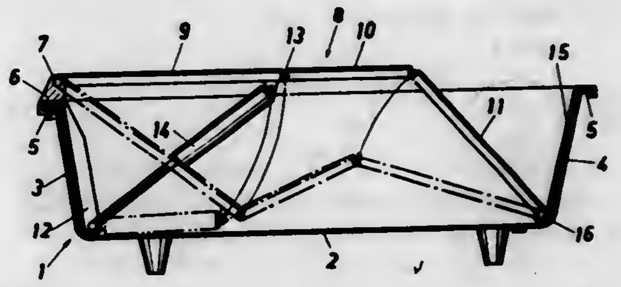
Lars Ekman, Helsingborg, Sweden, and Helge Norman, Lagvagen 41, (Ytterby) Kungalv, Sweden (442 00), assignors to Helge Norman, Kungalv, Sweden

Filed May 31, 1977, Ser. No. 802,190

Claims priority, application Sweden, Feb. 26, 1976, 7602439; Nov. 26, 1976, 7613258

Int. Cl.² A47K *3/12*

U.S. Cl. 4—185 L **8 Claims**



1. In combination a bath tub and a device for lowering a patient into and lifting a patient out of said bath tub, said device comprising a bath plate having two ends, one of said ends being pivotally fixed to one end of said bath tub; a wire secured to the opposite end of said bath plate; and means for tensioning and slackening said wire operatively connected to said wire whereby said bath plate can be lowered in and lifted out of said bath tub.

4,128,905

BASIN RECEPTACLE

Larry W. Mathes, R.R. 5, Box 11, Corydon, Ind. 47112

Filed Jun. 29, 1977, Ser. No. 810,915

Int. Cl.² A47C *19/00*

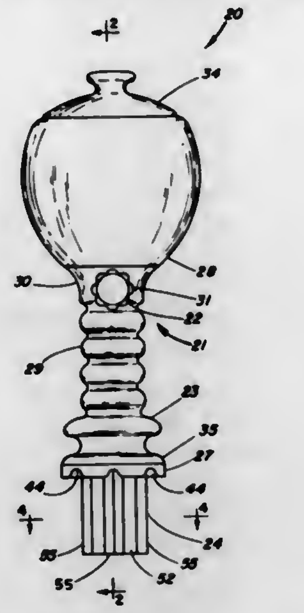
U.S. Cl. 4—187 R **17 Claims**

1. A receptacle for routing fluid from a faucet to a drain opening which comprises:

a body portion having a passageway therethrough, said body portion includes an open bowl member and integral therewith a flexible neck section;

a flange portion joined to said body portion at one end of said passageway, said flange portion including a first hollow region extending therethrough and communicating with said passageway, said neck section extending between the flange and the bowl member;

anchoring means joined to said flange and including a second hollow region extending through said anchoring means and communicating with said first hollow region, said anchoring means being insertable into said drain opening for securing said receptacle in an upright position between said faucet and said drain opening; and

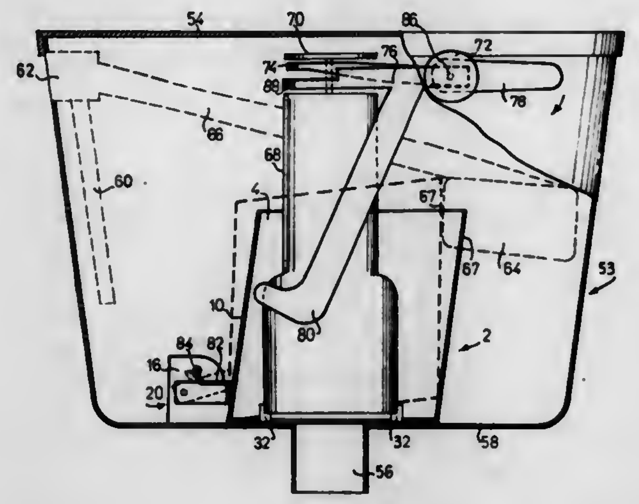


said flange sealingly engageable around said drain opening when said anchoring means are fully inserted into said drain opening.

4,128,906

TOILET-BOWL FLUSH SYSTEM AND DEVICES THEREFOR

Zeev Raz, 17 Keren Hayesod Str., Be'er-Sheva, Israel
Continuation-in-part of Ser. No. 689,055, May 24, 1976, abandoned. This application Jul. 5, 1977, Ser. No. 812,519
Claims priority, application Israel, Jun. 15, 1975, 47481; Feb. 10, 1976, 49011
Int. Cl.² E03D ***1/22, 1/36***
U.S. Cl. 4—325 16 Claims

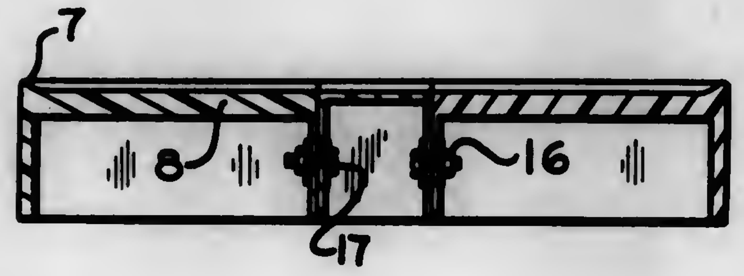


1. A device for converting a single volume cistern into a selective volume cistern adapted to selectively allow both low-volume and high-volume flushes wherein said single volume cistern is of the type having a water inlet, a water outlet, a water level responsive means for controlling the amount of water flowing into the cistern including a valve mechanism operationally linked thereto, a flush actuating means and a flushing mechanism operationally linked to said water outlet, said device comprising a hollow vessel provided with an opening at its upper end for the entry of water therethrough and being adapted to be inserted into the flushing cistern in a first normally closed rest position which surrounds the flushing mechanism and forms an open ended water column extending above and around said water outlet to exclude a portion of the water in said cistern from passing through said water outlet while said vessel is in said first position for low volume flushes, and wherein at least a section of the upwardly extending surface area of said vessel is adapted to be tilted and pivotally displaced from said first rest position to a second displaced open-position to form a multidirectional opening for the rapid passage of water under the lower edge of said tiltable section, and a water level responsive float means which in movement ascribes an arc; a portion of said tiltable section in its displaced position intersecting the arc ascribed by said water level responsive float means and being engaged by said float means in its downward arc upon the emptying of the cistern and being retained in said displaced position during the entire flushing section and until the completion thereof whereafter the rising water in the refilling cistern lifts said float means away from said section and allows said section to automatically return to its initial closed rest position.

4,128,907

MATTRESS FOUNDATION APPARATUS

Bernard Gelbart, 14301 Elgin, Oak Park, Mich. 48237
Filed Nov. 17, 1975, Ser. No. 632,377
Int. Cl.² A47C ***19/00, 19/04***
U.S. Cl. 5—200 R 4 Claims



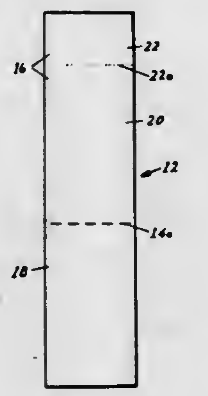
1. A structure, including, in combination, a mattress, and comprising:

a planar continuous upper component;
a pair of end walls which are unitary with and depend downwardly from said planar continuous upper component;
a pair of side walls which are unitary with and depend downwardly from said planar continuous upper component;
a continuous contoured raised edge which is unitary with and projects above the uppermost surface of said planar continuous upper component sloping upwardly and outwardly;
a plurality of solid support members which are unitary with and extend from said pair of side walls, and which are unitary with and depend downwardly from said planar continuous upper component;
said planar continuous upper component, said pair of end walls, said pair of side walls, said continuous raised edge, and said plurality of solid support members comprising an inelastic, downwardly opening, hollow structure;
said continuous contoured raised edge constitutes a rim for retaining said mattress in position on and against said uppermost surface of said planar continuous upper component; and wherein
said inelastic hollow structure is formed by a first section and a second section;
said first section having an outer side wall and an inner side wall, and having a raised edge which terminates adjacent said inner side wall;
said second section having an outer side wall and an inner side wall and having its raised inner edge terminate adjacent its inner side wall;
said inner side walls of said first and second sections being provided with mating apertures therethrough to accommodate the passage therethrough of fastening means for interconnecting said inner side walls of said first and second sections;
said raised edges of said first and second sections being so oriented and aligned when said first and second sections are assembled together that there is formed a continuous raised edge about the upper periphery of said planar continuous upper component.

4,128,908

SLEEPING BAG LINER

Reuben Kerbs, 1460 Laurel St., Coos Bay, Oreg. 97420
Filed Nov. 7, 1977, Ser. No. 849,307
Int. Cl.² A47G ***9/00***
U.S. Cl. 5—334 C 3 Claims

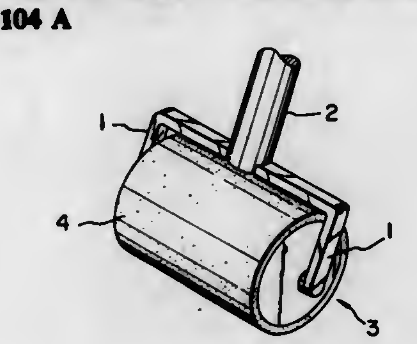


1. A sheet liner for a sleeping bag or the like comprising
an elongate sheet folded crosswise to form top and bottom panels joined at their lower ends by a fold, said bottom panel having a greater length than said top panel, and
seams joining said top and bottom panels along their opposite side edges, said seams extending from said fold along a major portion of said side edges, but terminating short of the upper edge of said top panel.

4,128,909

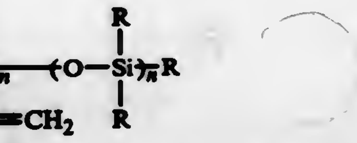
ROLLER FOR CLEANING PHONOGRAPH RECORDS

Hirokazu Kawabe, Tokyo; Kiyoshi Imai, and Masanobu Miyakoshi, both of Annaka, all of Japan, assignors to Nagaoka Co. Ltd. and Shin-Etsu Chemical Co., Ltd., both of Tokyo, Japan
Filed Aug. 5, 1977, Ser. No. 822,276
Claims priority, application Japan, Aug. 11, 1976, 51-107162[U]
Int. Cl.² C08G ***77/04;*** **G11B** ***3/58***
U.S. Cl. 15—104 A 4 Claims



1. An improved Gramophone record cleaner of the roller type wherein at least one roller is rotatably supported by and between a pair of opposed, substantially parallel limbs on a handled bracket, the improvement comprising the roller having an outermost layer made of a rubbery organopolysiloxane elastomer having hardness not exceeding 40 as determined in accordance with Japanese Industrial Standard K 6301, the surface of the layer being sticky, the stickiness of the surface of the layer is in the range of 4 to 30 as determined by J. Dow's rolling ball stick test, and said rubbery organopolysiloxane elastomer has a formulation comprising:

(a) a diorganopolysiloxane with a viscosity in the range from 100 to 500,000 centistokes at 25° C. represented by the general formula



$$R-\underset{R}{\overset{R}{\underset{|}{\overset{|}{Si}}}}\!\left(O-\underset{CH=CH_2}{\overset{R}{\underset{|}{\overset{|}{Si}}}}\right)_m\!\left(O-\underset{R}{\overset{R}{\underset{|}{\overset{|}{Si}}}}\right)_n\!R$$

where R is a monovalent hydrocarbon group free of aliphatic unsaturation, such as methyl and phenyl groups and m and n are each positive integers with the proviso that m/(m+n) is between 0.001 and 0.1,

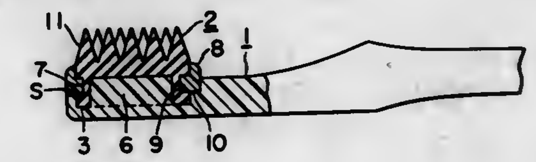
(b) an organopolysiloxane with a viscosity not exceeding 10,000 centistokes at 25° C., having 1.5 to 3 hydrogen atoms bonded directly to the silicon atoms per molecule, in an amount such that from 0.01 to 1.0 of the hydrogen atoms bonded directly to the silicon atoms are provided per vinyl group in component (a), and

(c) a catalytic amount of a platinum compound.

4,128,910

TOOTHBRUSH

Yuichi Nakata, Chigasaki, and Tadayoshi Murakami, Tokyo, both of Japan, assignors to Pigeon Kabushiki Kaisha, Tokyo, Japan
Filed May 4, 1977, Ser. No. 793,804
Claims priority, application Japan, Jul. 7, 1976, 51-89908[U]
Int. Cl.² A47L ***13/14***
U.S. Cl. 15—110 3 Claims



1. A toothbrush for infants and young children, which comprises a rigid handle having one end for attachment of a brush structure thereto and defining a recess to the one end, a brush structure having a plurality of projections extending substantially parallel to one another, made of a soft resilient rubber-like material and attached to one end of the handle with the projections projecting therefrom, and a rigid frame member fixedly located in the recess and defining an opening supporting the periphery of brush structure adjacent the one end of the handle to an extent to provide a desired restraint against bending of the projections, thereby to provide the brush structure with a desired stiffness wherein said brush structure has an anchoring part, and a core groove formed internally of the anchoring part, and said handle is formed on a surface at the forward end thereof with a groove for receiving the anchoring part and a core projection to be inserted into the core groove in the brush structure.

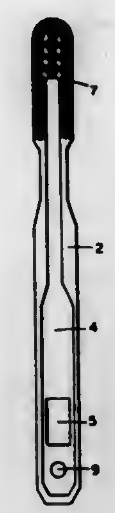
4,128,911

COMPOUND MANUAL TOOTHBRUSH

Africa P. Perez, 199 McAllister Rd., Downsview, Toronto, Ontario, Canada (M3H 2P1)
Filed Jun. 14, 1977, Ser. No. 806,554
Claims priority, application Canada, Jul. 9, 1976, 256724
Int. Cl.² A46B ***9/04***
U.S. Cl. 15—167 R 2 Claims

1. A compound toothbrush comprising first and second toothbrushes, said first and second toothbrushes each having a bristled head portion and a handle portion, the second toothbrush in its entire length, or substantial portion thereof, being adapted to fit in a groove in the first toothbrush in readily assemblable and disassemblable relationship for conjunct or

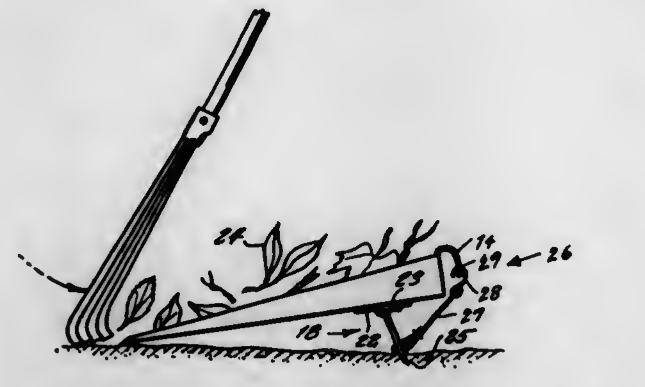
separate use, said groove in the first toothbrush longitudinally extending within the bristled side of its head and handle portion, the length, width and depth of the groove corresponding to the length, width and thickness of the second toothbrush, or to that of its portion adapted to fit in the groove, such that said first and second toothbrushes firmly hold together when assembled, the brush head portion of the second toothbrush being narrow both in shape and bristling pattern such as it may be suitable to users for brushing under the gum line, the brush head portions of the first and second toothbrushes forming a single compound brush head portion when assembled for conjunct use.



4,128,912

GARDEN TRAY WITH PIVOTED HANDLE

Harold E. Conklin, and George Spector, both of 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007
Filed Jun. 2, 1976, Ser. No. 691,998
Int. Cl.^{2} A47L *13/52*
U.S. Cl. 15—257.7 2 Claims

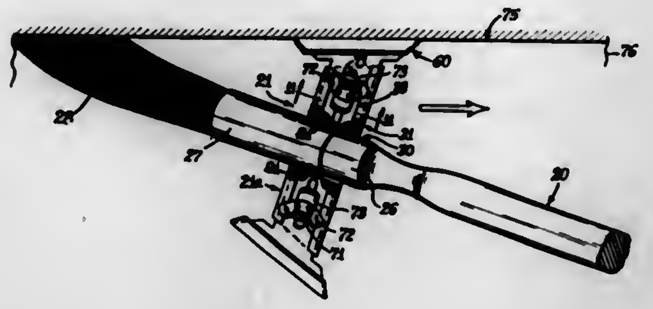


1. A garden tray for removing trash, comprising a flat rectangular bottom, an upstanding back wall, opposite triangular side walls and a front edge provided at the juncture of the bottom and side walls, in combination with a handle pivotally mounted on the bottom wall exterior adapted to support the tray against the ground, said handle including spaced rotatable shafts parallel to the edge, said shafts provided with stops perpendicular to each shaft at one end and a U-shaped extending integrally at right angles from the other end of said shafts and disposed generally transversely relative to the stops, said handle including spaced spurs extending from said bail in a direction remote from said tray, said stops being disposed generally transversely relative to said spurs, whereby rotation of the shafts through a predetermined angle will cause the stops to bear against the bottom of the tray when the spurs and handle are disposed generally transversely to the tray bottom, thereby causing the spurs to transmit external downward pressure and pierce the supporting ground, a tab integral with an upper edge of said back wall rearwardly bent parallel and spaced from said back wall, an opening through said tab, and a strap unit affixed to said W-shaped bail detachably secured to said tab opening.

4,128,913

TRIM GUIDE

Albert S. Scholl, 2706 S. Redvale Ave., Chicago, Ill. 60623
Filed Nov. 3, 1977, Ser. No. 848,270
Int. Cl.^{2} A46B *17/00*; B44D *3/22*
U.S. Cl. 15—246 9 Claims

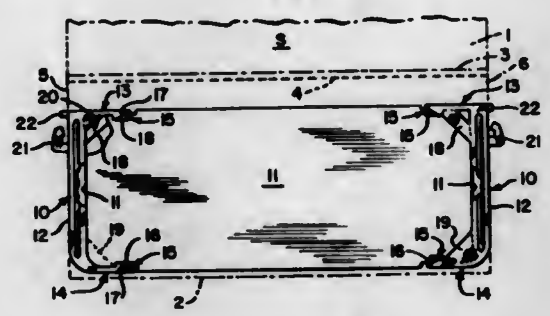


1. A trim guide for a paint brush having bristles extending substantially longitudinally of the handle comprising: attachment means on the base portion of the brush; support means having means for interlocking, detachable connection with said attachment means and comprising an elongated portion extending angularly outwardly and downwardly from the base portion when the brush is operationally positioned over a surface to be painted; and detachable guide means at the outer end of said elongated portion including a planar guide surface disposed in preselected angular intersecting bias relation to the lengthwise axis of said elongated portion for operationally engaging an underlying support at positions remotely in advance of the brush bristles as the same are drawn over a surface to be painted; said guide means serving to maintain the brush in predetermined operating position with the bristles thereof in preselected contact with the surface to be painted.

4,128,914

WEIGHT AND WEIGHT END PIECE FOR VERTICAL SLAT BLIND

Hendrik de Wit, Rotterdam, Netherlands, assignor to Hunter Douglas International N.V., Curacao, Netherlands Antilles
Filed Mar. 29, 1977, Ser. No. 782,315
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1976, 2613749
Int. Cl.^{2} E05F *7/00*
U.S. Cl. 16—1 R 9 Claims

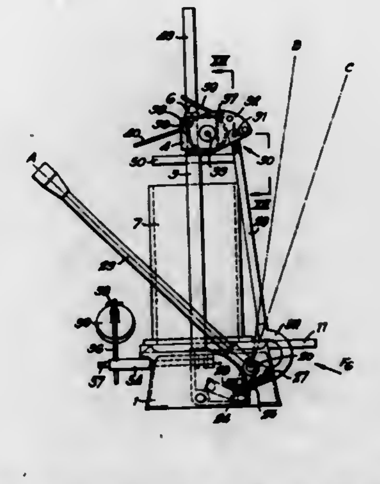


1. An article of the type described comprising a weight element having two oppositely facing substantially planar sides bordered by two opposite side edges and two ends, said planar sides being the major surfaces of said weight, said side edges being relatively narrow with respect to the width of said planar sides, at least one end piece, said end piece being generally "U" shaped, said end piece being dimensioned such that the arms of said "U" fit over and embrace the opposite side edges of said weight with said major surfaces extending between said arms, the arms of said "U" being resiliently springable apart, a catch element on each of said arms of said "U", a second catch element on each of the opposite side edges of said weight, said end piece when in position with its arms embracing said weight having the catch elements of its arms engaged with the catch elements of said weight for retaining said end piece in position on the end of said weight.

4,128,915

MACHINE FOR THE SHAPING OF MEAT DISHES

Victor Brusselle, De Smet deNaeyerlaan 16, 8370 Blankenberge, Belgium
Filed Dec. 9, 1976, Ser. No. 749,043
Claims priority, application Belgium, Dec. 23, 1975, 254732; Nov. 9, 1976, 255431
Int. Cl.^{2} A22C *7/00*
U.S. Cl. 17—32 6 Claims



1. Machine for shaping meat dishes, including a supply container for meat, a displaceable mold plate disposed below said container and having a mold opening therein, a control lever mounted on a first axle, first means for displacing said mold plate, second means for pushing a quantity of meat from said container into said mold opening and assure a proper filling thereof, and third means for pushing said quantity of meat out of said mold opening, said first, second and third means being coupled to said control lever, said first means comprising a first toothed rack connected to said mold plate and cooperating with a sector gear linked via a first lever arrangement with said axle, said second means comprising a vertical second toothed rack provided at one end with a disc forming a piston slidable in said container, the other end of said second rack cooperating with a gear wheel mounted on a horizontal axle, a ratchet wheel and a first lever fixed on one end of said horizontal axle, said ratchet wheel cooperating with a fixedly mounted first ratchet and with a second ratchet fixed on said first lever and said first lever being connected with the axle of said control lever by means of a second lever arrangement, and said first ratchet enabling the rotation of said ratchet wheel in one direction, whereas said second ratchet inhibits the rotation of said ratchet wheel in the other direction, said third means comprising a pin located in the path of said first lever arrangement, said pin being fixed on a second lever on which a second axle is fixed, said second axle carrying a pusher element for pushing said quantity of meat out of said mold opening.

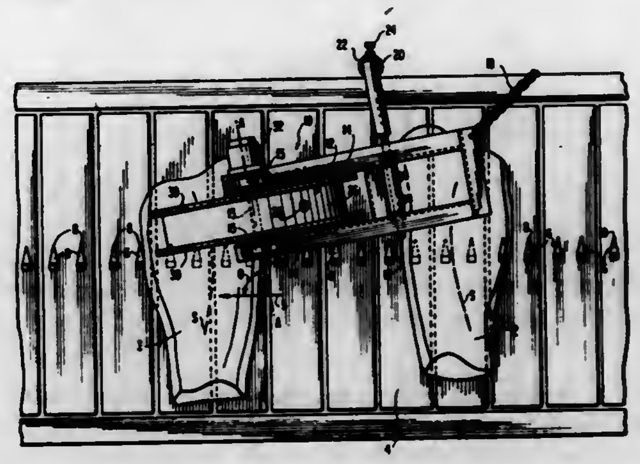
4,128,916

METHOD AND APPARATUS FOR PROCESSING PORK SIDES

Edwin O. Fick, Jr., Norfolk, and Edward L. Bell, Madison, both of Nebr., assignors to Madison Foods, Inc., Madison, Nebr.
Filed Oct. 25, 1977, Ser. No. 844,845
Int. Cl.^{2} A22C *17/02*
U.S. Cl. 17—52 21 Claims

1. Meat processing apparatus, comprising,
a conveyor means for supporting bodies of meat, said conveyor means being driven in a given direction and having lateral hooks provided with impaling ends,
shifting means positioned above the conveyor in the path of bodies of meat on the conveyor for shifting the bodies of meat into impaled engagement on said hooks, said shifting means having a meat-engaging portion guided for movement in a path which is convergent to said given direction of the conveyor, said path having lateral component opposed to said hooks whereby meat on the conveyor engaged by said shifting means is shifted laterally on the conveyor and driven into impaled engagement on said hooks.

17. A method of processing a pork side including a loin on a conveyor having lateral hooks for retaining the pork side on the conveyor, said method comprising the steps of,

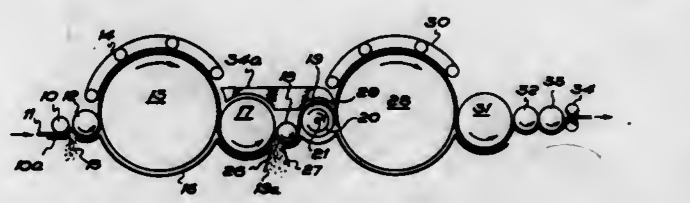


placing the pork side on a conveyor having lateral hooks provided with impaling ends, said pork side overlying said hooks but not penetrated thereby,
moving the conveyor in a forward direction to advance the pork side through an impaling station,
engaging the upper surface of said pork side at said impaling station with a rotary member which has its rotational axis lying at an acute angle to said forward direction,
rotating the rotary member while engaged with said pork side at said impaling station to shift the pork side laterally on the conveyor toward said impaling ends to drive the pork side into impaled engagement on said hooks, and
cutting the pork loin from said side supported on the conveyor and impaled by said hooks.

4,128,917

CARDING ENGINES

John M. J. Varga, Halifax, England, assignor to Carding Specialists (Canada) Limited, Toronto, Canada
Filed Apr. 29, 1977, Ser. No. 792,145
Claims priority, application United Kingdom, May 3, 1976, 17946/76
Int. Cl.^{2} D01G *15/40*
U.S. Cl. 19—105 7 Claims



1. A duo-card engine comprising a breaker card having a breaker carding cylinder, means for feeding staple fibres to the breaker cylinder, a breaker doffer for doffing a web of fibres from the breaker cylinder, a pair of crush rolls downstream of the breaker doffer, a toothed roller downstream of the pair of crush rolls, rotating at a surface speed sufficient to break up the web substantially into individual fibres and fibre groups and free dirt from the same, a partly shrouded, rotatable, perforated vacuum cage adjacent to and downstream of the toothed roller, on the surface of which the fibres are reassembled, means for feeding the fibres from the cage to the cylinder of a

finisher card, and a finisher doffer for doffing the web from the finisher cylinder.

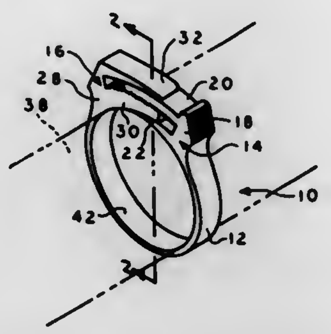
4,128,918
ADJUSTABLE SNAP-ON-CLAMP

Raymond C. Wenk, Crystal Lake, Ill., assignor to Matrix IV, Inc., Woodstock, Ill.

Continuation-in-part of Ser. No. 745,661, Nov. 29, 1976. This application Nov. 8, 1977, Ser. No. 849,684

Int. Cl.² F16L *33/00;* A44B *21/00*

U.S. Cl. 24—16 R **11 Claims**



1. A clamp comprising an open-ended substantially annular band having a pair of opposed, interlockable members disposed at the open ends thereof; each said interlockable member including a support element and an arcuate jaw and resilient biasing means extending from the support element, each said jaw having a plurality of teeth oriented for interlocking engagement with the teeth of the other jaw and said biasing means developing opposing forces against said jaws to maintain said teeth in engagement when said opposed members are interlocked; each said biasing means comprising a cantilevered tongue tapering from a thick base portion proximate said support element to a flexible extremity; the entire inside surface of said clamp being continuously concave and substantially smooth to develop and distribute substantially uniform circumferential pressure about an object secured within said clamp.

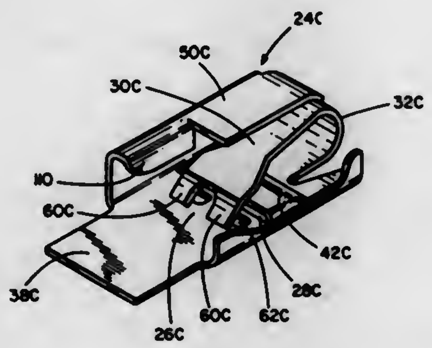
4,128,919
METAL TIE

John J. Bulanda, New Lenox; Casimir M. Guzay, Des Plaines, and Bruce A. Betitschke, Oaklawn, all of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Sep. 26, 1977, Ser. No. 836,272

Int. Cl.² B65D *63/02*

U.S. Cl. 24—20 TT **24 Claims**



1. A tie for forming a plurality of elongate objects into a bundle and for holding two objects together, said tie comprising:

an elongated strap having a plurality of spaced abutments therealong; and

a metal locking head joined to one end of said strap and comprising a floor having a strap-receiving aperture therethrough and further comprising a locking tongue for engaging one of said abutments, said tongue and floor being joined by a resilient neck with said aperture disposed intermediate said one end of the strap and the junction of said neck and floor, said tongue extending from said neck toward said floor to at least partially overlie said aperture whereby threading of said strap causes said tongue to deflect away from said floor and said tongue lockingly engages one of said abutments upon attempted retrograde movement of said strap.

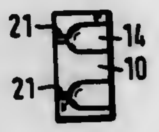
4,128,920
MAGNETIC CLOSURE DEVICE

Ludwig Bourguignon, Bernauerstrasse 75, 8210 Prien a. Ch., Fed. Rep. of Germany

Division of Ser. No. 616,041, Sep. 23, 1975, abandoned. This application Feb. 11, 1977, Ser. No. 767,736

Int. Cl.² A44B *21/00*

U.S. Cl. 24—201 B **7 Claims**



1. A magnetic closure device which employs a magnetic closing force increased by a magnetic instability force, comprising a first closure member made of a permanent magnet and a second closure member made of an unmagnetized, magnetizable material, one of said closure members having a surface with a shaped recess forming a recess locking means therein, the other of said closure members comprising a plurality of correspondingly shaped fitting locking elements adapted to fit into said shaped recess locking means, and securing means operatively interconnecting said plurality of fitting locking elements to form a row of fitting locking elements, whereby the closure device is adjustable and closable by the engagement of a different one of said fitting locking elements with said recess locking means, whereby said magnetic closing force is increased by said magnetic instability force, wherein one of said closure members comprises two recesses arranged side by side, each recess being open toward two adjacent sides of said one closure member, two notches in said one closure member being arranged to reach into the respective recess from a further adjacent side of said one closure member, and wherein a plurality of shaped fitting locking elements of the other closure member are shaped to fit into said recesses, and means interconnecting said fitting locking elements in spaced relationship relative to each other to form a loop both ends of which are connected to the other closure member whereby portions of said interconnecting means extend through said notches when two locking elements are held in said two recesses.

4,128,921
TENSION STRAP WITH MOVABLE TENSION BLOCKS

Horst Heinze, Krailling; Günter Stierle, Unterhaching, and Ernst D. Sach, Garching, all of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

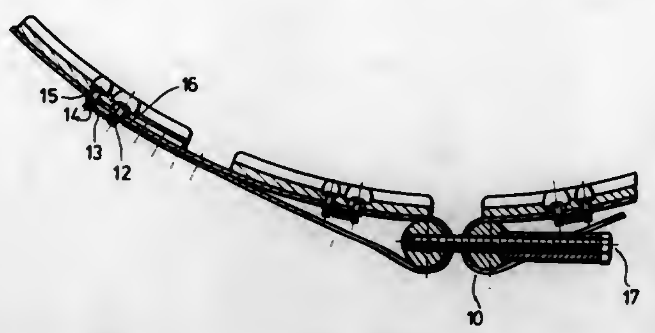
Filed Dec. 2, 1977, Ser. No. 856,976

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1976, 2655772

Int. Cl.² F16L *33/04*

U.S. Cl. 24—279 **10 Claims**

1. A tension strap comprising a strap member to be circumferentially positioned about a body to be tensioned, a plurality of longitudinally movable tension blocks carried on the inside circumferential surface of said strap member for engaging said body, and means for maintaining each said tension block in a predetermined position relative to said strap member, said means including at least a first pin extending through each said tension block and said strap member, said pin being fixedly carried in either said tension block or said strap member and passing through a guideway in the other, and elastic means acting on said pin against longitudinal movement thereof to predetermine the position of said tension block with respect to said strap member.



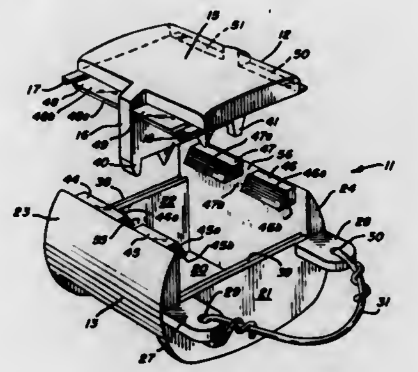
4,128,922
SEALING DEVICE

Charles L. Hutchison, 11 Charleston Rd., Hinsdale, Ill. 60521

Filed Aug. 19, 1977, Ser. No. 825,865

Int. Cl.² B65D *77/10*

U.S. Cl. 24—30.5 R **8 Claims**



1. A sealing device to close the open end of a bag or casing comprising: a first non-metallic member having a top portion and a rigid downwardly extending central portion; a second non-metallic member containing at least two parallel rigid side walls; means for guiding and receiving said central portion of said first non-metallic member within an opening in said second non-metallic member; said central portion received and positioned within said opening between and parallel to said two rigid walls thereby forming a first sealing means wherein said casing is secured and sealed below said central portion and above said side walls; locking means for permanently attaching said first non-metallic member to said second non-metallic member while securing said casing therebetween wherein said locking means comprises a series of tabs formed on said first non-metallic member and a corresponding series of tabs formed on said second non-metallic member; each of said tabs containing an angled surface and an adjacent outwardly extending horizontal surface; said angled surface of each tab on said first non-metallic member being at the same inclination and abutting the angled surface of a corresponding tab on said second non-metallic member while said first and second non-metallic members are in the process of being secured together; and said first non-metallic member and said second non-metallic member being permanently locked together when the horizontal surface of a tab on said first non-metallic member is trapped behind and abutted against the horizontal surface of a corresponding tab on said second non-metallic member.

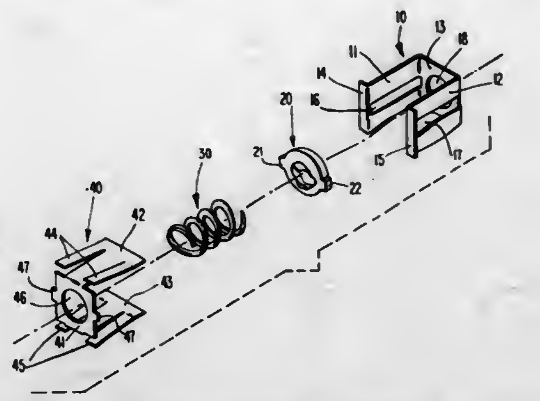
4,128,923
SNAP-IN RECEPTACLE ASSEMBLY FOR FASTENER

Robert H. Bisbing, Springfield, Pa., assignor to Southco, Inc., Concordville, Pa.

Filed Nov. 25, 1977, Ser. No. 854,717

Int. Cl.² A44B *17/00*

U.S. Cl. 24—221 R **8 Claims**



1. Fastening means for quickly detachably fastening together a pair of mutually overlying plate members, said fastening means including:

A. a stud;
B. a receptacle assembly, said receptacle assembly comprising:
  a. a housing member having two parallel side segments connected by a rearward segment, the free end of each of said side segment having an outwardly bent flange portion;
  b. a retainer member having two parallel side segments connected by a forward segment, said side segments having projecting therefrom outwardly extending spring elements; said housing and retainer members being placed in such relative assembled positions as to form a six-sided hollow rectangular prism;
  c. stud-engaging means within said prism;
  d. a spring member within said prism having its forward end bearing against said forward segment of said retainer member and its rearward end applying thrust against said rearward segment of said housing member for urging said forward and rearward segments of said retainer and housing members away from each other.

4,128,924
LAMINATED SEAT BELT BUCKLE

Hermann E. Happel, and James R. Anthony, both of Indianapolis, Ind., assignors to Indiana Mills & Manufacturing Inc., Carmel, Ind.

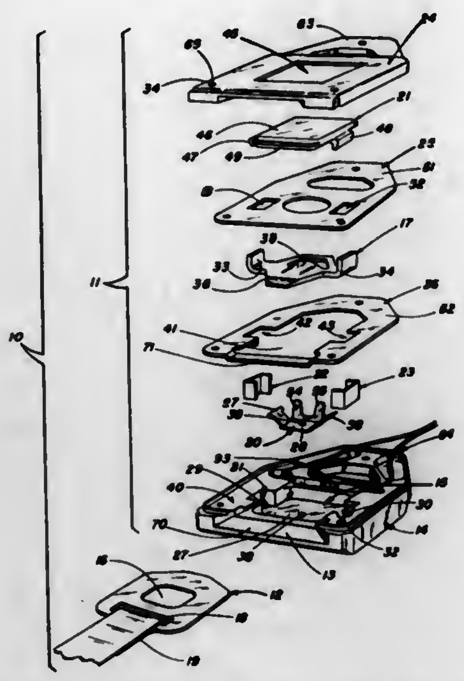
Continuation-in-part of Ser. No. 685,332, May 11, 1976, abandoned. This application Feb. 17, 1977, Ser. No. 769,722

Int. Cl.² A44B *11/26*

U.S. Cl. 24—230 AL **4 Claims**

1. In a laminated seat belt buckle comprising a main body member having a cavity therein and a cover member adapted to overlie said body member also having a cavity therein registering with the body cavity, movable latching means for engaging a seat belt tongue and manual operating means accessible at the exterior of the cover member for actuating said latching means, the improvement wherein the the line of junction of said body member and cover member lies in a single flat plane except for opposed offset portions at adjacent ends of the members forming an entry passage for a seat belt tongue into said body member cavity, a first reinforcing plate recessed in the marginal area of said body member and a second reinforcing plate recessed in the marginal area of said cover, said reinforcing plates being contiguous along the line of junction of the body and cover members and generally coextensive with said members, the end portion of said first plate being offset

adjacent said entry passage to accommodate entry of a seat belt tongue into said body member cavity, and registering apertures in said plates accommodating said latching means and said operating means.



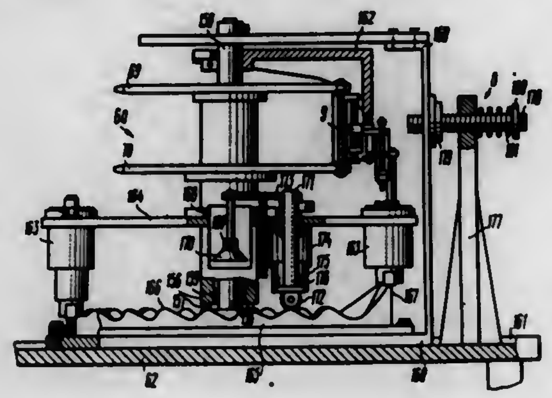
4,128,925
ARRANGEMENT FOR ASSEMBLING VACUUM TUBE BASES

Valery F. Chestnov, ulitsa Vasenko, 15, kv. 18, and Mikhail V. Shibanov, ulitsa Michurina, 26, kv. 3, both of Saransk Mordovskoi ASSR, U.S.S.R.

Continuation of Ser. No. 559,871, Mar. 19, 1975, abandoned. This application Sep. 8, 1977, Ser. No. 832,429

Int. Cl.² H01J *9/06, 9/48*

U.S. Cl. 29—25.2 6 Claims



1. An arrangement for assembling vacuum tube bases comprising: continuously moving chain conveyor means, rotors each provided with a respective group of actuating means, each of said actuating means performing a different one of assembling operations comprising moving bases into clamps, shaping of electrodes and bases, flattening end bending of electrode ends, clamping cathode with electrode bent ends, oxidixing of cathodes; clamp means attached to links of said chain conveyor means in a cantilevered manner for receiving, holding and transporting bases from one rotor to another; stationary former means each arranged in proximity to a respective group of actuating means to cooperate therewith and to actuate said actuating means for performing respective assembling operations in the process of interaction with bases; chain conveyor means for discharging assembled bases, said rotors being in the form of sprockets formed by two rigidly interlinked toothed discs and disposed intermediate of fixed upper and lower plates, groups of actuating means each performing one of assembling operations arranged on rotors and interacting with clamp means holding bases and arranged on the chain conveyor means both on the outer side and inside of a sprocket through holes in said discs, actuating means for cathode oxidixing and containing a vessel for a suspension, mixer means in the form of a cone, spatula means for applying the suspension onto a cathode, and auxiliary former means for imparting reciprocal movement to said mixer means and said spatula means.

4,128,926
METHOD FOR THE PRODUCTION OF AN ELECTRIC STACK CAPACITOR OF METALLIZED SYNTHETIC MATERIAL FILMS

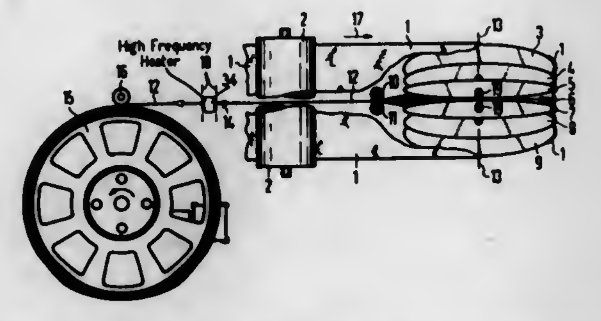
Friedrich J. Gaenge; Ferdinand Utner; Harald Vetter, and Gerhart Vilsmeier, all of Regensburg, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jul. 13, 1977, Ser. No. 815,217

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1976, 2634442

Int. Cl.² H01G *4/30*

U.S. Cl. 29—25.42 7 Claims



1. A method for the production of an electric stack capacitor having synthetic material film with metal coatings forming a stack of superimposed folded layers, the metal coatings being frontal-contacted by a metal layer, comprising the steps of:
- (a) providing a synthetic material band having a metal coating and a width which is a multiple of a width of the capacitor to be produced;
- (b) providing a set of folding wheels, the axes of the folding wheels being inclined towards one another in such manner that at a band inflow position the wheels are spaced approximately double the amount of a desired folded width from each other and at an outflow position are spaced a slight distance from one another relative to the spacing at the inflow position;
- (c) conveying said band to the inflow position of the folding wheels, said band being tangent to the wheels, stretched, and folded by the wheels to create continuous longitudinal folds, said band exiting from the wheels at the outflow position;
- (d) hardening the folded band as it is conveyed from the outflow position to form a fold block;
- (e) frontal contacting the metal coatings; and
- (f) separating the fold block into individual capacitors.

4,128,927
METHOD FOR THE PRODUCTION OF A LAYER CAPACITOR

Georg Dahms, Assenhausen, and Hubert Kraus, Regensburg, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 17, 1977, Ser. No. 825,222

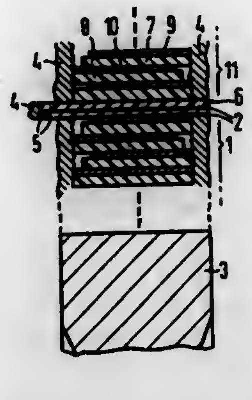
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2643087

Int. Cl.² H01G *4/30*

U.S. Cl. 29—25.42 5 Claims

1. A method for the production of a layer capacitor comprising the steps of: winding sufficient turns of dielectric layers and metal coatings onto a large diameter drum to form a first parent capacitor of a desired number of layers; gluing synthetic material separating layers to the already wound first parent

capacitor, said separating layers projecting beyond the dielectric layers on both sides of the wound first parent capacitor; winding additional dielectric layers and metal coatings onto the separating layers without gluing to the separating layers in order to form a second parent capacitor, in this fashion a plurality of parent capacitors being arranged one above another to form a starting capacitor; end-contacting end sides of the starting capacitor by completely covering them with layers of sprayed metal; grinding off projecting portions of the separating layers projecting beyond the dielectric layers; tempering the starting capacitor; and dividing the starting capacitor into individual parent capacitors along the separating layers and into individual capacitors at right angles to the longitudinal direction of the dielectric layers and coatings.



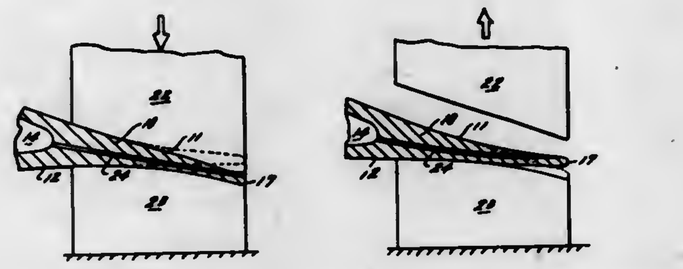
4,128,928
METHOD OF FORMING A CURVED TRAILING EDGE COOLING SLOT

L. D. Shotts, Forest Park; Raymond W. Wisbey, Sharonville, and Albert W. Sears, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 29, 1976, Ser. No. 755,264

Int. Cl.² B23P *15/02*

U.S. Cl. 29—156.8 B 8 Claims



1. An improved method of forming a cooling air slot between an internal cavity of a turbomachinery airfoil and the trailing edge thereof, wherein the improvement comprises the steps of:
- (a) forming an airfoil to a first shape;
- (b) deflecting the trailing edge portion of the airfoil toward the suction side thereof;
- (c) forming a straight slot which extends between the internal cavity and a point in the trailing portion of the airfoil; and
- (d) forming the airfoil to a final shape by reforming the trailing edge portion thereof toward the pressure side of the airfoil such that said straight slot becomes curved.

4,128,929
METHOD OF RESTORING WORN TURBINE COMPONENTS

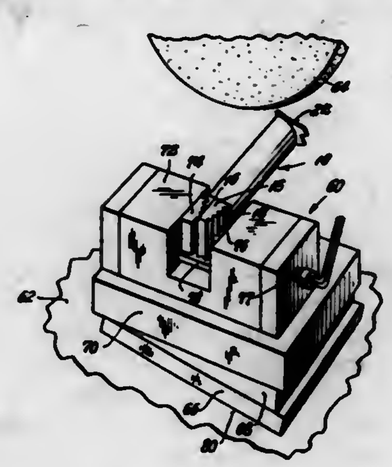
Ralph T. DeMusis, 547 Foxon Rd., North Branford, Conn. 06471

Filed Mar. 15, 1977, Ser. No. 777,674

Int. Cl.² B23P *15/02, 13/02*

U.S. Cl. 29—156.8 B 17 Claims

1. The method of restoring turbine blades of the type having an airfoil portion, having a fir tree at one end of the blade and having at the other end of the blade a worn shroud adapted to be engaged by a sealing ring of the turbine, which includes the steps of:
- (a) building up that particular edge of the shroud of the worn blade which is disposed opposite to the leading edge of the airfoil portion, by fusing metal to the worn portions of said edge,
- (b) mounting the worn blade solely by its fir tree in a fixture which includes a vise, and which includes a reference surface disposed so as to have a predetermined fixed parallel relationship with respect to a corresponding edge of the shroud of a new blade if the latter is similarly mounted in said fixture,
- (c) said step of mounting the worn blade comprising engaging and clamping multiple surfaces of one side of the fir tree with one jaw of said vise and engaging and clamping at least one surface of the opposite side of the fir tree with the other jaw of said vise, and
- (d) removing portions of the added metal from the built-up edge of the shroud of the worn blade mounted in said fixture, until said built-up edge essentially attains the said fixed parallel relationship.



4,128,930
PLUMBING TOOL WITH EXTERNAL SHACKLE

Thomas A. Tomlinson, 348 Manor Rd. East, Toronto 298, Ontario, Canada

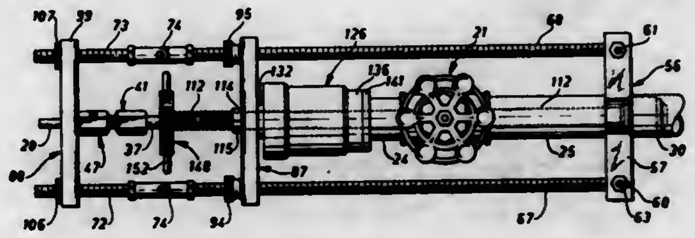
Division of Ser. No. 270,534, Jul. 10, 1972, abandoned. This application Nov. 19, 1973, Ser. No. 417,131

Claims priority, application Canada, Mar. 10, 1972, 136771

The portion of the term of this patent subsequent to Feb. 12, 1992, has been disclaimed.

Int. Cl. B23p *19/04;* F16l *55/18*

U.S. Cl. 29—213 R 25 Claims



1. A plumbing device which comprises:
an elongated axial shaft having front and rear ends;
a radially outwardly resiliently expansible and axially resiliently compressible sealing plug disposed about said shaft in proximity to said front end thereof, said sealing plug being intended to be disposed within a pipe for sealing engagement with an inner surface of such a pipe;
a plug-abutment member on said axial shaft for axial abutment by said sealing plug forwardly thereof;
a jack mechanism comprising first and second jack members adapted to undergo relative axial separation on relative rotation thereof in a first direction and relative axial move-

ment toward each other on relative rotation in the opposite direction, and disposed on said shaft toward said rear end thereof;

an elongated cylinder surrounding said shaft and extending between said sealing plug and said jack mechanism and adapted to transmit axial movement from said jack mechanism to said sealing plug to cause axial compression and consequently radially outward expansion of said sealing plug on relative rotation of said first and second jack members in said first direction;

a pipe-clamping shackle for clamping engagement with an outer-surface of the pipe;

a holding means extending rearwardly from said pipe-clamping shackle;

a rear lock gate plate having a front face, including an open-ended slot, couplable to aid holding means and adapted removably and freely to receive said elongated shaft rearwardly of said jack mechanism in said slot for axial abutment of said jack mechanism against said front face thereby to maintain said sealing plug in a desired axial position within the pipe when said rear lock gate plate is so positioned on said axial shaft, when said rear lock gate plate is coupled to said holding means and when said shackle is secured in clamping engagement with the pipe;

a front lock gate plate having a front face, including an open-ended slot, couplable to said holding means, and adapted removably to receive said elongated cylinder in said slot therein;

an abutment member adapted to be received in said open-ended slot in said front lock gate plate for axial abutment with said front face of said front lock gate plate; and

a rigid bracing member extending between said abutment member and said sealing plug to maintain said sealing plug in a desired axial position within the pipe when said abutment member is so disposed in said slot in said front lock gate plate, when said front lock gate plate is coupled to said holding means, and when said shackle is secured in clamping engagement with the pipe,

whereby said sealing plug can be held in such a desired axial position within the pipe by either of said front and rear lock gate plates thereby to permit both the removal from and the fitting to the end of the pipe of a plumbing element without risk of axial movement of said sealing plug.

4,128,931

TOOL FOR OPENING CABLE FITTINGS

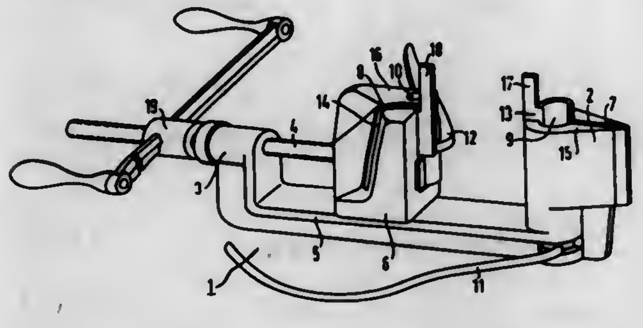
Josef Bauer, Germering; Herbert Krause, Munich, and Hans-Juergen Meltsch, Germering, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jul. 22, 1977, Ser. No. 818,214

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1976, 7623935[U]

Int. Cl.^{2} B23P *19/04*

U.S. Cl. 29—239 **12 Claims**



1. A tool for opening cable fittings comprising: a bracket arm, stationary and movable tension jaws at least one of which is a closable clamping jaw, said jaws carried by said bracket arm having top surfaces and a horizontal dimension, an insert member detachably attachable to each of said tension jaws, each insert member provided with a tab means, said tab means projecting beyond a top surface of each of the tension jaws upon attachment of the insert member to its associated tension jaw, the projecting tab means being of smaller horizontal dimension than the jaws and being movable towards and away from one another upon movement of the movable tension jaw towards and away from the stationary tension jaw and being engageable with portions of a cable fitting to force the cable fitting open.

4,128,932

METHOD FOR TURNING A TRACK BUSHING

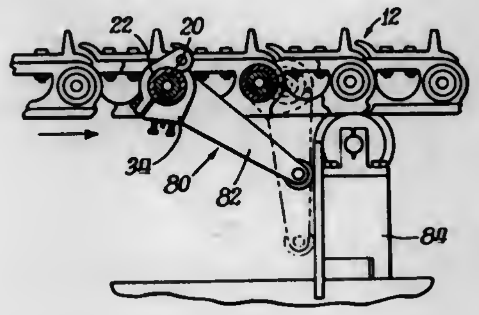
Harold W. Vanlandingham, Washington; Roger L. Boggs; David A. Bullock, both of East Peoria, all of Ill., and James N. Maytum, Waverly, Iowa, assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 617,347, Sep. 29, 1975, Pat. No. 4,002,090, which is a division of Ser. No. 348,886, Apr. 9, 1973, Pat. No. 3,915,036. This application Aug. 25, 1976, Ser. No. 717,717

The portion of the term of this patent subsequent to Sep. 27, 1994, has been disclaimed.

Int. Cl.^{2} B23P *7/00*

U.S. Cl. 29—401 R **1 Claim**



1. A method of rotating a bushing which is one of a plurality thereof associated with a series of track links, with the bushings being arranged for engagement between teeth of a track driving sprocket of a tractor, comprising providing arm means attached to the bushing, operating the tractor and track links to bring the arm means into contact with a body affixed and stationary relative to the tractor, and further operating the tractor and track links causing force to be applied between the body and the arm means thus applying rotative force to the bushing.

4,128,933

PROCESS OF MAKING METALLIC NON-SKID STUDS FOR TIRES

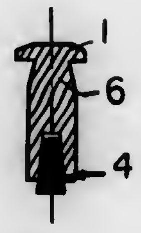
Jean Walrave, Meylan, France, assignor to Eurotungstene, Grenoble, France

Filed Nov. 15, 1977, Ser. No. 851,687

Claims priority, application France, Nov. 17, 1976, 76 35288

Int. Cl.^{2} B22F *5/00*

U.S. Cl. 29—420.5 **5 Claims**



1. The method of making metallic studs for vehicle tires wherein the finished stud is composed of a sintered sheath shaped to provide at least one anchoring collar adjacent one end, an intermediate portion of reduced diameter, and a socket portion of predetermined depth at the opposite end within which an insert of hardened material is partially disposed, comprising the steps of:

(1) forming the socketed sintered sheath in a preliminary configuration;

(2) introducing by cold pressing said hardened insert partially into said socket to define an unoccupied zone in said socket not in excess of 0.5 mm in depth between the inserted end of said insert and the base of said socket;

(3) holding the section of said sheath surrounding said insert, and

(4) shaping at least a portion of said unsupported sheath to final form.

4,128,934

METHOD OF MAKING A THERMALLY INSULATED WINDOW FRAME

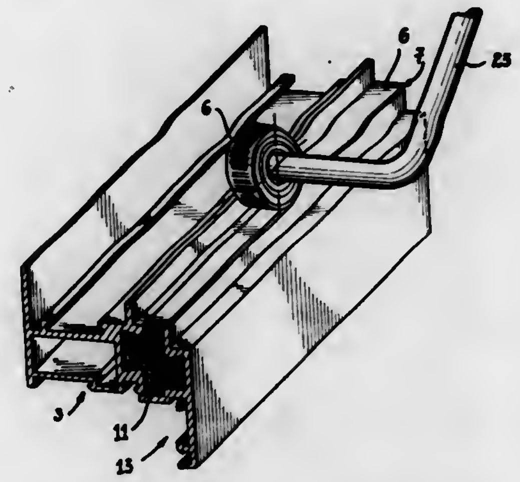
Gerhard Doring, Wuppertal-Ronsdorf, Germany, assignor to Firma Julius & August Erbsloh, Wuppertal-Barmen, Germany

Division of Ser. No. 393,581, Aug. 31, 1973, abandoned, which is a division of Ser. No. 159,629, Jul. 6, 1971, abandoned. This application May 9, 1975, Ser. No. 576,135

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1970, 20 33442

Int. Cl.^{2} B29D *27/04;* B23P *11/00*

U.S. Cl. 29—460 **1 Claim**



1. A method of making a thermally insulated window frame, comprising the steps of:

forming a frame structure from unitarily hollow extruded metallic members with completely closed internal profiles consisting of oppositely directed dovetail channels on opposite sides of each member, said sides of each member being bridged by two opposite metallic strips unitarily attached to said sides and defining separating grooves therewith;

filling by pouring into the interiors of said members of the respective channels a liquid hardenable foamable thermally insulating material;

foaming said insulating material in the interior of said members against said sides and said strips with pressure;

hardening the insulating material in the interior of each member and the respective channels;

tearing both said strips away from each member to separate the sides thereof from one another and expose respective faces of the hardened material flush with edges of said member, each strip being torn away by rolling it up and thereby peeling it away; and

fitting a sealing strip over one of said faces into said sides along the length of the respective member.

4,128,935

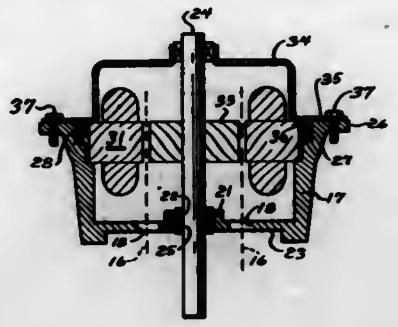
ASSEMBLY METHOD FOR A MOTOR

James I. Czech, Stevensville, and Ernest B. Ruble, South Haven, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 5, 1978, Ser. No. 867,093

Int. Cl.^{2} H02K *15/00*

U.S. Cl. 29—596 **8 Claims**



1. The method of assembling an electric motor, comprising:

providing a rigid first end bell; forming a bearing seat in said first end bell; positioning a bearing in said bearing seat;

fixing said first end bell with said bearing therein in a holding fixture; positioning and securing against axial movement a rotor shaft for said motor in the bearing;

placing a plurality of spaced air gap producing shims adjacent the outer diameter of the rotor core;

placing a stator for said motor over and enclosing the shims with the stator resting on said first end bell;

providing a gap between said stator and first end bell;

placing curable epoxy fluid resin in said gap;

placing a second end bell and second bearing held by said second end bell over the end of the rotor shaft that is opposite to said first end bell and with said shaft extending into said second bearing, said second end bell having been previously provided with projecting tabs arranged to enter said gap, said tabs being located adjacent to an outer peripheral edge portion of said second end bell;

forcing said tabs into said epoxy resin and said peripheral portion of said sheet metal stamping in contact with said first end bell;

curing said epoxy resin while retaining the assembly of end bells, rotor, stator and bearings; and

mechanically securing said end bells together.

4,128,936

METHOD FOR THE MANUFACTURE OF CONTACTS FOR GAS-BLAST CIRCUIT BREAKERS

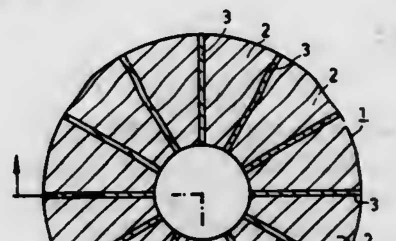
Klaus-Peter Rolff, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 16, 1977, Ser. No. 797,480

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1976, 2626246

Int. Cl.^{2} H01R *9/00*

U.S. Cl. 29—630 R **5 Claims**



1. A method of manufacturing a nozzle-shaped contact, said

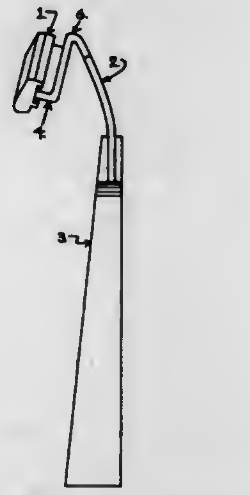
contact being used in a pressurized-gas circuit breaker and having slots in its end face and arc-resistant plastic material inserted in said slots, the method comprising:

forming a plurality of contact members, said contact members each having two outer surfaces;

and cementing each outer surface of each of said members to the outer surface of an adjacent member with an arc-resistant plastic material to form a closed body having a bore therethrough.

4,128,937
SAFETY RAZOR WITH SERPENTINE HANDLE

Charles S. Adorney, 61 Mallard Dr., Greenwich, Conn. 06830
Filed Aug. 6, 1976, Ser. No. 712,398
Int. Cl.² B26C *21/22*
U.S. Cl. 30—47 **7 Claims**

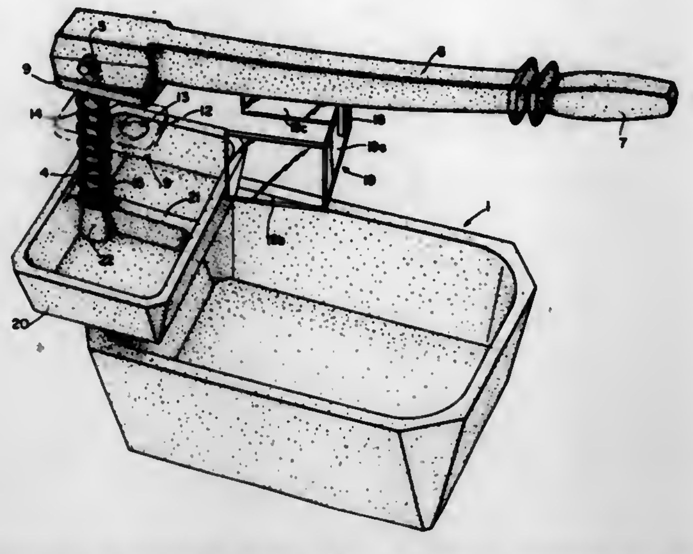


1. A safety razor comprising a handle assembly and a cartridge including at least one blade element mounted on said handle assembly, said handle assembly including an elongated gripping portion which defines one end of the razor and a head connected to said gripping portion and including a surface which extends transversely with respect to the center line of said gripping portion to define the other end of the razor and means for mounting said cartridge so that no part of said cartridge extends beyond said other end and so that the cutting edge of said blade element extends at an acute angle with respect to said transverse surface in a place substantially parallel to said gripping portion and to said transverse surface and its cutting action is in a direction substantially parallel to the center line of said gripping portion, wherein said head has a serpentine-like shape which defines said transverse surface at a first bend, which depends from said first bend to a second bend and which extends from said second bend to said mounting means.

4,128,938
NUT-CRACKING IMPLEMENT

William E. Davis, 762 Lindo La., Port St. Lucie, Fla. 33452
Filed Jul. 25, 1977, Ser. No. 818,569
Int. Cl.² A47J *43/26*
U.S. Cl. 30—120.3 **10 Claims**

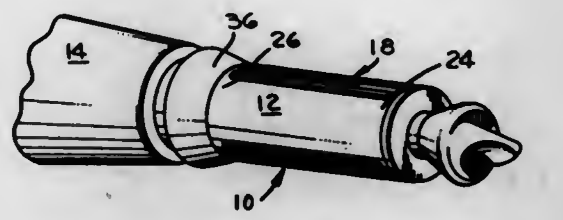
1. A nut-cracking implement comprising, a base, a column journaled at its lower end to said base and rising vertically therefrom, a lever pivoted at its proximal end to the top end of said column, for pivoting about a normally-horizontal axis, an anvil adjustable on and along said column and fixable thereto at any selected position therealong, nut-abutment means fixed with said lever in offset relation with respect to said horizontal axis, a hollow box-like enclosure, of generally parallelepipedal form, and first means mounting said enclosure to said lever for



translation therealong, from a first retracted position to a second position enclosing said anvil.

4,128,939
PEELING CUTTER

Robert L. Schaeffer, Leroy, N.Y., assignor to General Electric Company, Bridgeport, Conn.
Filed Apr. 11, 1977, Ser. No. 786,649
Int. Cl.² B26B *1/00*
U.S. Cl. 30—123 **4 Claims**



1. A cutter mechanism for a vegetable peeler having a cylindrically electrically rotatable body with a longitudinal mounting shaft and a plurality of longitudinally extending slots coextensive with and equally spaced around the body with a cutter blade disposed lengthwise from the body outer to inner end in each slot, an improved slot and blade configuration comprising,

each blade disposed in its slot with its entire cutting edge angled in the direction of rotation and with a height above the body peripheral surface a maximum of 0.030 inches (0.75 mm) and a minimum of 0.008 inches (0.20 mm),

a clearance recess below and coextensive with each blade and extending substantially at a right angle to the blade in the direction of rotation with a peripheral width from substantially 0 to 0.180 inches (4.5 mm) respectively,

the width varying inversely with blade height so clogging of peelings and cutting of the user's skin is a minimum.

4,128,940
GUIDE AND ADAPTOR FOR HAND SAWS

José K. Ong, 3541 University St., Montreal, Quebec, Canada (H3A 2A9)
Filed Oct. 20, 1977, Ser. No. 844,053
Int. Cl.² B27B *9/04*
U.S. Cl. 30—373 **14 Claims**

1. A guide and adaptor for a power hand saw having a blade, said guide and adaptor used for obtaining a straight line cut of a board in different widths, comprising:

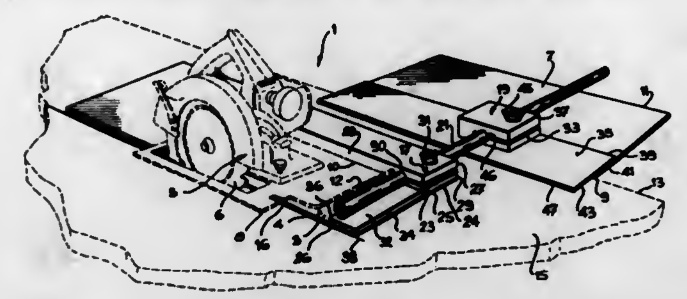
a first member adapted to receive at least a part of said hand saw,

a second member provided with a first edge means and a second opposite edge means, said first edge means being

adapted to rest in a first predetermined position against one edge of said board, and said second edge means being adapted to rest in a second reversed predetermined position against said one edge of said board,

tubular means

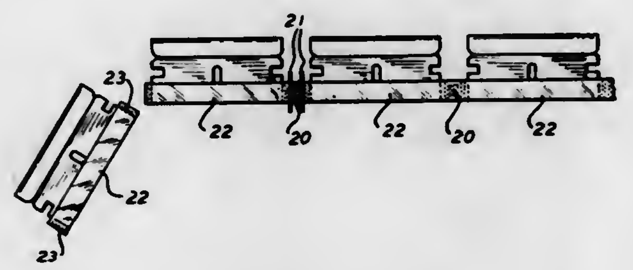
a first adjustment means on said first member and a second adjustment means on said second member for slidably receiving said tubular means, said first and second adjustment means adjustably positioning said second member at a predetermined distance from said first member, thus



fixing the distance between the saw blade and said first edge means of said second member, said first edge means in said first predetermined position resting against said one edge of said board, yet said adjustment means permitting the reversal of said second member such as to permit said second edge means to rest against said one edge of said board at a predetermined distance from said saw blade, in said second predetermined reversed position the distance between said second edge means and said saw blade being adjustable to a smaller value than in said first predetermined position.

4,128,941
SHEATHED RAZOR BLADE

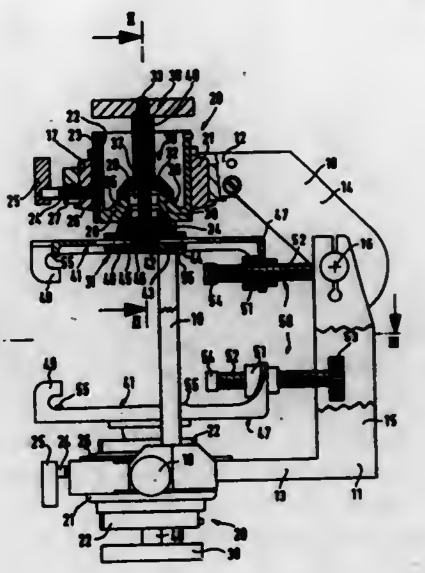
Earle T. Holsapple, III, 758 Springfield Ave., Summit, N.J. 07901
Filed Sep. 22, 1977, Ser. No. 835,577
Int. Cl.² B26B *29/02*
U.S. Cl. 30—151 **4 Claims**



1. A sheathed razor blade comprising:
a. a razor blade having a cutting edge,
b. a folded sheet covering the portion of both sides of the razor blade adjacent to the cutting edge,
c. the fold of the sheath in general registration with the cutting edge of the blade,
d. portions of the sheath extending laterally perpendicular to and beyond sides of the razor blade adjacent to the cutting edge, defining a small perpendicular tab at the sides of the blade, enabling the sheath to be picked off,
e. the portions of the sheath extending beyond the sides of the blade adjacent to the edge overlapped at least in part with each other,
f. the overlapped portions of the sheet at the sides adjacent to the cutting edge adhered to each other.

4,128,942
DENTAL ARTICULATOR

Hans B. Schleich, Nendeln, Liechtenstein, assignor to Etablissement Dentaire Ivoclar, Schaan, Liechtenstein
Filed Dec. 1, 1976, Ser. No. 746,576
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1975, 2554410
Int. Cl.² A61C *11/00*
U.S. Cl. 32—32 **12 Claims**



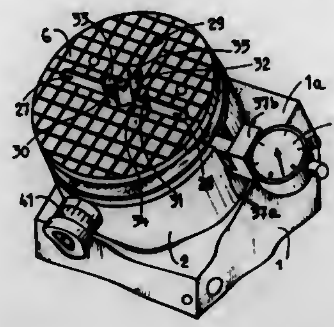
3. A dental articulator having a pair of opposed mountings each of which is itself mounted on arms adjustable and fixable in relationship to the opposed mounting and each of which has a spherical axial bearing for adjustably connecting a support for one of the mandibular and maxillary models wherein each of said mountings comprises said spherical axial bearing at least partially contained within a sliding bushing, said sliding bushing axially adjustably and fixably disposed in a bearing ring, said bearing ring disposed in a bore, said bore provided within each of said arms, wherein each of said model supports is connected to a member a portion of which passes through said sliding bushing and said spherical axial bearing, for the spherical and axial adjustment and fixation of said model support, and wherein within said sliding bushing there is a wall having an upwardly extending spherical bearing surface of said spherical axial bearing and a central bore extending therethrough, through which central bore passes a bolt of said member, to which bolt said model support is attached, said bolt carrying a counter bearing element, said counter bearing element being fixable for the alignment of said model support with respect to said spherical bearing surface.

4,128,943
APPARATUS FOR CONTROLLING INNER AND OUTER SURFACES, OF MEMBERS OF MECHANICS, AND UTILIZATION OF THIS APPARATUS

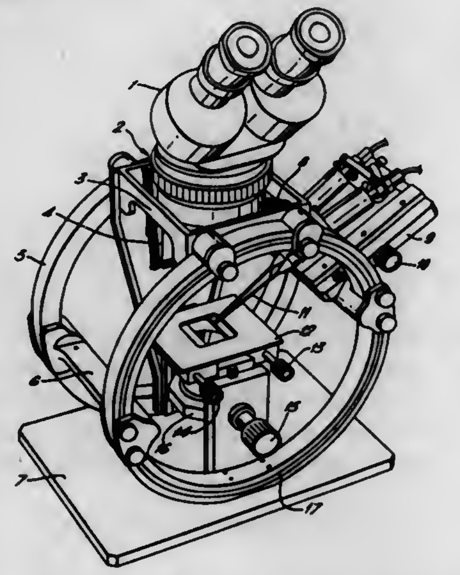
Henri Muhlethaler, Chemin Es-Pierres 2, 1422 Les Tuileries de Grandson Canton of Vaud Lucens, Switzerland, assignor to Henri Muhlethaler S.A., Canton of Vaud, Switzerland
Filed Apr. 11, 1977, Ser. No. 786,099
Claims priority, application Switzerland, Apr. 13, 1976, 4671/76
Int. Cl.² G01B *5/20, 5/28*
U.S. Cl. 33—174 Q **10 Claims**

1. Apparatus for controlling inner and outer surfaces of mechanical members comprising a planar table intended to receive the member to be controlled, the surface to be controlled of this member being perpendicular to the upper surface of the said table, at least three interconnecting elongated apertures provided in said table, three feelers extending through said aperatures and projecting above said table, said feelers being radially adjustable in their position in function of the geometry of the member to be controlled, a return spring connected to one of the said feelers for urging said one of said

feelers against the said surface, a comparator further connected to said one of said feelers for indicating its position, characterized by the fact that the said table is inclined so that, by gravity, the member rests, by its surface to be controlled, on the said three feelers, the said table moreover movable in a direction perpendicular to its upper surface, so as to permit, while moving it along the said direction, to move the member parallel to the surface to be controlled, the possible discrepancies of the said surface being indicated by the variations of the indications furnished by the comparator during this movement, a device of sustentation, the effect of which is adjustable in function of the weight of the member to be controlled, acting on the said table so that the table, together with the said member, be maintained in any axial position in which it is placed.

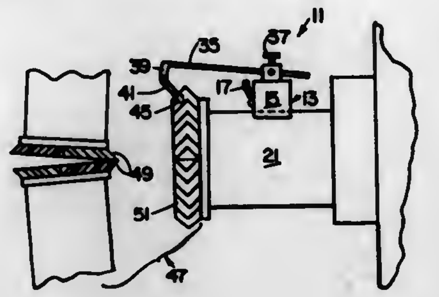


4,128,944
MICROSCOPE ASSEMBLY
Martin G. Stanton, 9 Priestden Park, St. Andrews, Fife, Scotland
Filed Dec. 16, 1976, Ser. No. 751,481
Claims priority, application United Kingdom, Dec. 18, 1975, 51985/75
Int. Cl.² G02B *21/32*
U.S. Cl. 33—180 R **6 Claims**



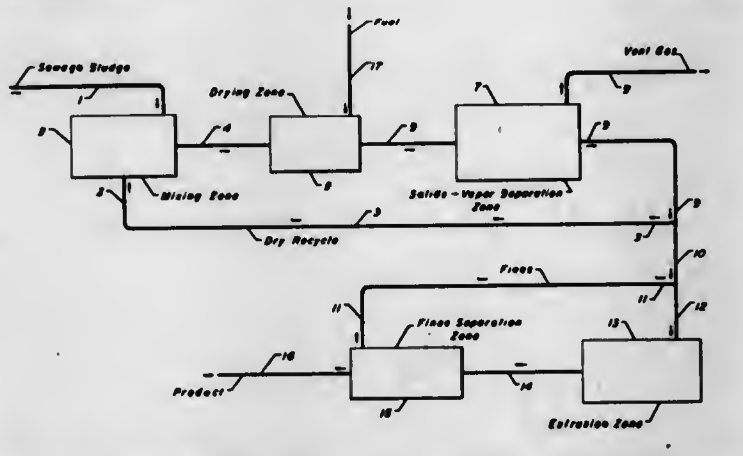
1. An assembly of a microscope which includes a stage and at least one micromanipulator, comprising a base, two rigid parallel spaced apart rings mounted on said base, said base and rings together forming a rigid main frame on which at least said microscope stage and said at least one micromanipulator are rigidly mounted, and means for mounting said microscope stage on said rings whereby said microscope stage can be tilted.

4,128,945
EASILY ATTACHABLE AND DETACHABLE GAUGE FOR RE-LOCATING TESTED BEVEL GEARS ON A GEAR-CUTTING MACHINE
Murrell R. Barritt, 2208 Keokuk Dr., Springfield, Ill. 62702
Filed Mar. 15, 1977, Ser. No. 777,654
Int. Cl.² G01B *5/00;* B23C *3/04*
U.S. Cl. 33—181 R **4 Claims**



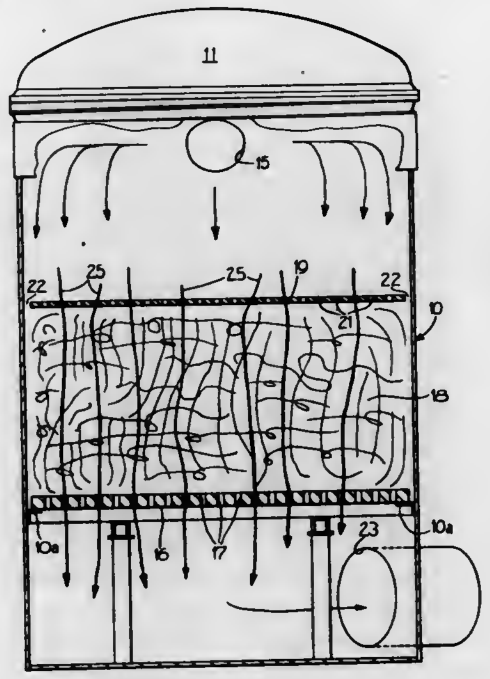
1. A gauge for re-locating imperfectly cut but salvageable bevel gears removed for testing from a gear-cutting machine having a horizontally disposed rotatable gear-supporting mandrel upwardly covered by a co-axial cylindrically curved ferromagnetic sheet, said gauge comprising: a base member partly of magnetic material having an elongated shallow channel, of inverted V-shape in cross-section, in its bottom surface for magnetically firmly attaching said base member to said ferromagnetic sheet; a pair of spaced upright members fixed to the top of said base member; a cylindrically bored body positioned between said upright members; means pivotally and frictionally holding said bored body in positions rotated about a horizontally disposed axis transverse to the bore of said bored body; a cylindrical arm rotatably and axially adjustably received in the bore of said bored body; a probe member connected to an end of said arm and extending downwardly therefrom and having a rounded-body tip for insertion between adjacent teeth of a gear mounted on said mandrel.

4,128,946
ORGANIC WASTE DRYING PROCESS
Vere Maffet, Oak Park, Ill., assignor to UOP Inc., Des Plaines, Ill.
Filed Mar. 8, 1977, Ser. No. 775,673
Int. Cl.² F26B *7/00*
U.S. Cl. 34—12 **7 Claims**



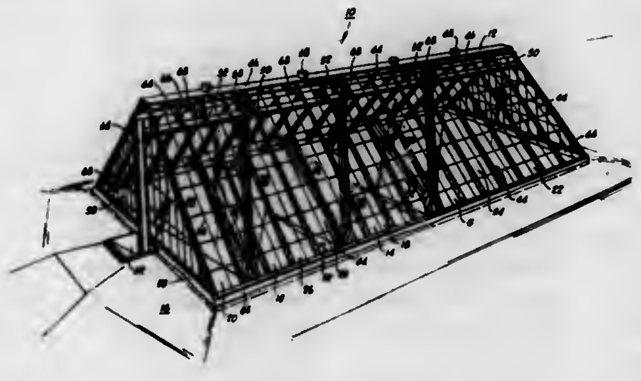
1. In a process for the drying of fibrous sewage sludge wherein a feed stream comprising water and fibrous sewage sludge is passed through a drying zone operated at drying conditions and effecting the evaporation of water contained in the feed stream and the production of a drying zone effluent stream, the drying zone effluent stream is passed into a solids-vapor separation zone wherein fibrous sewage sludge originally contained in the feed stream is concentrated in a dry solids stream, and at least a portion of the dry solids stream is compacted and formed into solid particles having a bulk density within the range of about 30–65 lb/ft^3 the improvement which comprises passing said portion of the dry solids stream which is to be compacted through an extrusion zone wherein said portion is passed through a die plate and formed into pellets of a desired size and density.

4,128,947
PROCESS AND APPARATUS FOR DRYING TEXTILE STOCK AND THE LIKE
Harry C. Jackson, 2120 Country Club Rd., Columbus, Ga. 31906
Filed Jan. 19, 1977, Ser. No. 760,456
Int. Cl.² F26B *7/00, 19/00*
U.S. Cl. 34—12 **3 Claims**



1. The process of drying textile stock and the like which comprises:
- (a) supporting a column of the stock in a closed vessel on a liquid and air permeable base,
- (b) placing a floating, air permeable plate on top of the column of stock to be dried,
- (c) closing the vessel to provide an air space above said plate, and
- (d) supplying said air space with heated air under pressure, whereby the plate is forced downwardly against the base, thus to compress the stock and heated air passes through the plate, stock and base, along a plurality of paths.

4,128,948
METHOD AND APPARATUS FOR GRAIN DRYING AND STORAGE
Gary F. Wood, 615 N. Broadway, Hobart, Okla. 73065
Filed May 21, 1975, Ser. No. 579,454
Int. Cl.² F26B *3/28*
U.S. Cl. 34—33 **12 Claims**



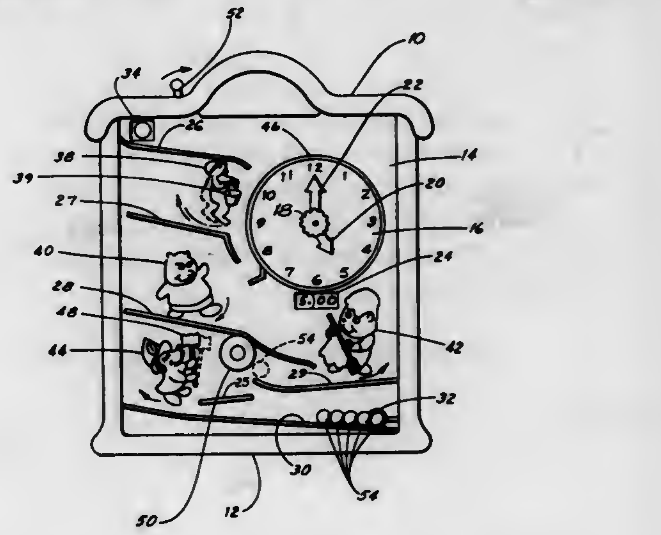
1. A method for effecting storage and drying of grain, comprising:

forming an earth cavity having planar equi-angular polyhedral characteristics wherein the slope angle of the planar surfaces relative to earth horizontal approximates the angle of repose of the grain;

covering said earth cavity containing said grain with a ray transmissive covering to provide sun's heat to the grain; and

gradually moving said grain from the apex of a tetrahedral earth cavity vertically upward and outward along the grain reposition surface for circulation back to the apex.

4,128,949
TOY CLOCK USING MARBLES
Gabriel Marason, Jr., Hawthorne; John M. Melzian, Palos Verdes, and Alan R. Pitkanen, Manhattan Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Mar. 28, 1977, Ser. No. 782,300
Int. Cl.² G09B *19/12*
U.S. Cl. 35—39 **18 Claims**



1. In a toy clock, the combination comprising:

a housing having a viewable surface adapted for vertical positioning;

means on said surface for indicating the time, said means having drive means coupled thereto for varying the time so-indicated;

means coupled adjacent said surface for guiding marbles from the top to the bottom thereof under the force of gravity;

means communicating with said guiding means adjacent the bottom of said surface for conveying said marbles to the top of said surface in response to actuation of said drive means;

means communicating with said conveyor means for retaining said marbles adjacent the top of said surface;

means operable by said drive means for selecting from said retaining means a number of marbles corresponding to the hour of the time so-indicated; and

an escapement mechanism for releasing sequentially the so-selected number of marbles at the top of said surface into communication with said guiding means, said escapement mechanism including a manually operable release lever and means adjacent said guiding means in the path of travel of said marbles thereon, said release lever being operable for releasing the first of the so-selected number of marbles, and subsequent marbles being released in response to impact of each marble traversing said guiding means and impacting with said means adjacent said guiding means.

4,128,950

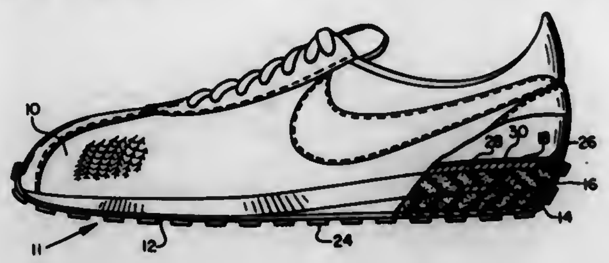
MULTILAYERED SOLE ATHLETIC SHOE WITH IMPROVED FOAM MID-SOLE

William J. Bowerman; Stanley L. James, and Dennis E. Vixie, all of Eugene, Oreg., assignors to BRS, Inc., Beaverton, Oreg.

Filed Feb. 7, 1977, Ser. No. 766,530

Int. Cl.^{2} A43B ***13/12, 13/18, 13/28, 23/28***

U.S. Cl. 36—30 R **24 Claims**



1. An athletic shoe comprising:
a shoe upper;
an outer sole;
an intermediate sole layer provided between said outer sole and said upper, said intermediate sole layer being of greater thickness than said outer sole for resilient cushioning during running and comprising a closed cell synthetic plastic foam material having a density not substantially less than 5 pounds per cubic foot; and
a heel lift sole layer provided between said outer sole and said upper and positioned beneath the heel of a wearer's foot, said heel lift sole layer being of greater thickness than said outer sole for resilient cushioning during running and comprising a closed cell synthetic plastic foam material having a density not substantially less than 5 pounds per cubic foot.

4,128,951

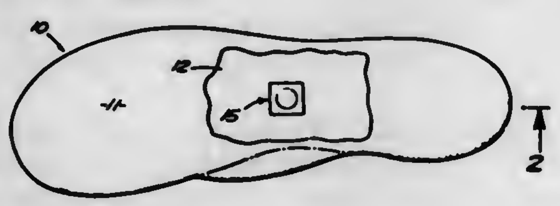
CUSTOM-FORMED INSERT

Horace A. Tansill, Santa Barbara, Calif., assignor to Falk Construction, Inc., Santa Barbara, Calif.

Continuation of Ser. No. 575,416, May 7, 1975, abandoned. This application Mar. 11, 1976, Ser. No. 665,805

Int. Cl.^{2} A43B ***7/14, 13/38, 19/00***

U.S. Cl. 36—44 **4 Claims**



1. A ready-made shoe insert comprising:
an outer container having flexible, generally parallel upper and lower walls;
an inner container whose volume is small compared to the volume of said outer container, disposed within said outer container;
a quantity of curable liquid elastomeric material filling the remaining interior of said outer container;
a quantity of liquid catalyst filling said inner container; and
said inner container being frangible whereby said outer container may be compressed in order to rupture said inner container without rupturing said outer container.

4,128,952

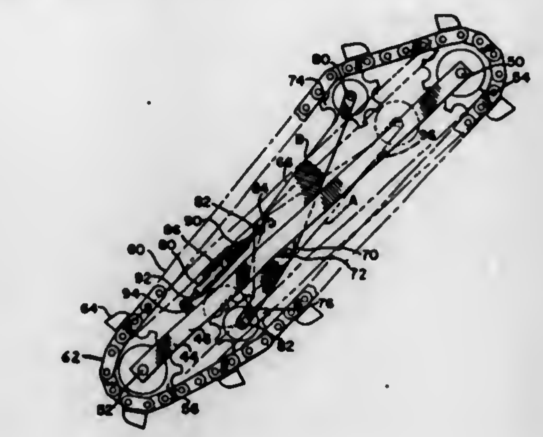
MECHANICAL CHAIN ADJUSTER FOR SCRAPER ELEVATOR CHAINS

Edward D. Duke, Chicago, and Joan M. Riordan, Glenview, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Nov. 14, 1977, Ser. No. 850,880

Int. Cl.^{2} B60P ***1/36;*** **B65G** ***23/44***

U.S. Cl. 37—8 **21 Claims**



1. An elevating scraper vehicle having an elevator including an elevator frame, a driven cross support tube having a sprocket at each end thereof carried on a first end of said elevator frame, a lower shaft having a chain guide at each end thereof mounted to a second end of said elevator frame, a pair of endless elevator chains carried around said sprocket and said chain guide of said cross support tube and said lower shaft respectively and a plurality of paddles transversely mounted to each elevator chain, and a pair of chain tensioners each chain tensioner comprising:
a turnbuckle anchor, fixedly mounted to said elevator frame;
a turnbuckle having a first end attached to said turnbuckle anchor;
a bracket fixedly mounted to said elevator frame between said turnbuckle anchor and said driven cross support tube;
an idler arm pivotally mounted to said bracket on said elevator frame, said idler arm attached to a second end of said turnbuckle;
an idler wheel mounted for rotational movement to said idler arm in the same plane as said endless chain between said frame and said chain whereby adjustment of said turnbuckle resulting in a decreased length thereof urges said idler wheel against said chain urging said chain away from said elevator frame increasing the chain tension.

4,128,953

IRONING MANGLE WITH PNEUMATICALLY PRESSURIZABLE ROLLER COVERING

Friedrich Geiger, Augsburg, Germany, assignor to Firma Kleindienst & Co. Maschinenfabrik, Augsburg, Germany

Filed Jan. 23, 1978, Ser. No. 871,473

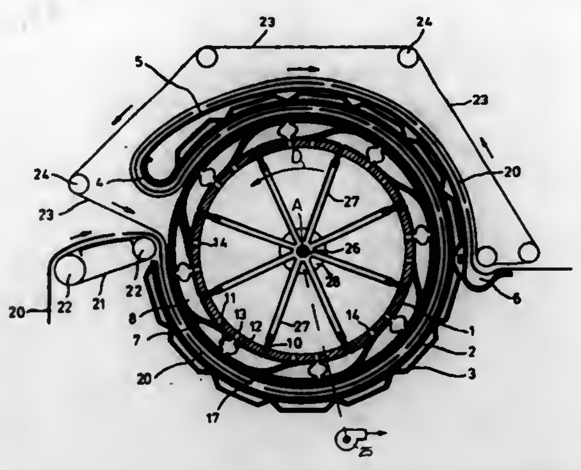
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1977, 2702472

Int. Cl.^{2} D06F ***63/00, 71/36, 83/00***

U.S. Cl. 38—56 **15 Claims**

1. An ironing mangle comprising:
an ironing roller having a generally cylindrical outer surface and rotatable about a roller axis in a predetermined rotational sense;
a sleeve surrounding said roller by more than 180° and having a generally cylindrical inner surface juxtaposed with and radially spaced outwardly from said outer surface of said roller;
a plurality of cushions each having an inner wall lying mainly on said outer surface, an outer wall between said inner wall and said inner surface of said sleeve, and a sealed periphery defining between said walls a pressurizable chamber;

mounting means for securing said cushions to said outer periphery at angularly offset locations for orbiting of said cushions about said axis on rotation of said roller; and



means for feeding a gas under pressure into said chambers and thereby pressing an item to be pressed between said outer wall and said inner surface.

4,128,954

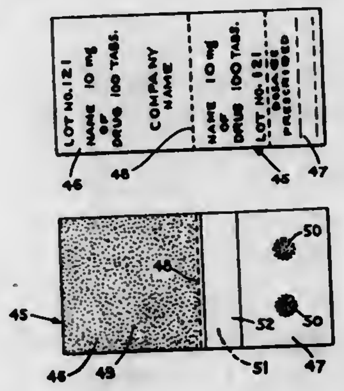
PACKAGE LABEL AND MANUFACTURE OF SAME

Rollin T. White, Westfield, N.J., assignor to NJM, Inc., Hoboken, N.J.

Filed Mar. 11, 1977, Ser. No. 776,534

Int. Cl.^{2} G09F ***3/00;*** **A61F** ***13/02;*** **B32B** ***3/14, 7/06***

U.S. Cl. 40—310 **7 Claims**



1. The article which comprises a container for a product having a label bearing surface portion, and a label proper on such container comprising an unfolded sheet of label paper overlying said container surface portion as a single layer, said sheet being weakened transversely to provide two sections separable from one another, each of said sections having provided on its face side information relating to the particular product packaged in the container, a first of said sections having on its back side an adhesive permanently affixing said first section to the container, the second of said sections having on a first portion of its back side an adhesive removably affixing said second section to the container, whereby both of said sections hold the unfolded label sheet as a whole on the container in a form conforming to the shape of the container surface covered thereby, a pressure sensitive adhesive on a second portion of the back side of said second section and a second layer of material having a release coating thereon and covering said pressure sensitive adhesive to render the latter adhesively inoperative while said second label section is adhered to the container, said second layer being removable when said second label section is detached from the container and said first label section to render the pressure sensitive adhesive operative to adhere the back of the detached second label section to another article.

2. A label having a face side bearing label indicia and having a back side to be adhesively connected to a package but prior to such attachment being adhesively inoperative throughout its entire area, said label comprising a first layer having two sections separably connected together and each bearing on its face side indicia pertinent to a given product, the first of said sections having a back side adapted to be rendered adhesive to affix said first section permanently to a package, the second of said sections having on its back side in a reduced area thereof a pressure sensitive adhesive, the remainder of the back side area of said second section being adapted to be rendered adhesive to removably affix said second section to a package, whereby both sections of the applied label are capable of being simultaneously secured to the package to hold the label, as a whole, in a form conforming to the shape of the package surface covered by the label, the first section permanently and the other removably, a second layer of material having a release coating overlying the back side of said second section and covering only said pressure sensitive adhesive to render the latter adhesively inoperative when the back side of said second label section is adhesively secured to a package, said second layer being removable when said second label section is freed from its attachment to the package to render the reduced area of pressure sensitive adhesive operative to adhere the back of said freed second label section to another article.

4,128,955

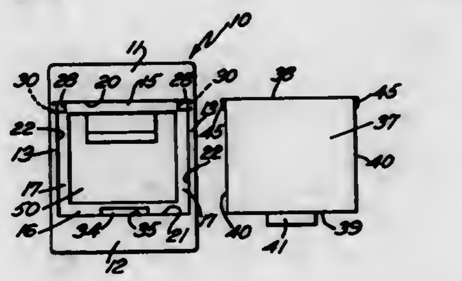
EXHIBITING DEVICE

Michael R. Marra, and Joseph Del Deo, both of Warwick, R.I., assignors to Cowan Plastic Products Corporation, Providence, R.I.

Filed Apr. 22, 1977, Ser. No. 790,074

Int. Cl.^{2} G09F ***11/00***

U.S. Cl. 40—489 **3 Claims**

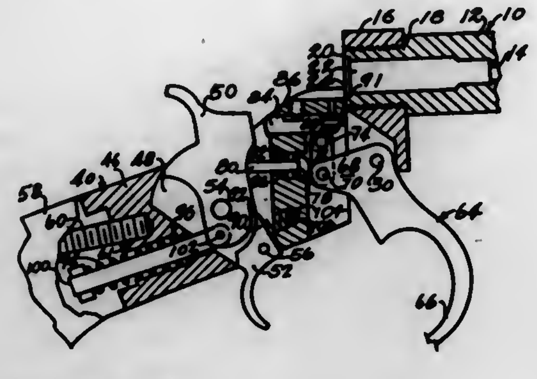


1. An exhibiting device comprising a one-piece frame member having a front surface with a recess of an enclosed geometric figure depressed therefrom providing edges thereabout and a portion of a bottom wall extending along said edges completely about said figure leaving a mid portion open, an insert member of a size and shape to fit said recess and enter said recess from said front surface by engaging an edge thereof and then swinging into position about said edge as a pivotal axis without projecting through said bottom wall and engage said portion of said bottom wall with its edges engaging the edges of said recess for locating its position, a tongue on said insert member along one of its edges and an opening in said bottom wall along the engaged edge of said recess to receive said tongue, a pair of tongues at spaced locations along opposite edges of said insert member and openings in said bottom wall along the edge of said recess at the location of said tongues to receive said tongues, said openings being at the juncture of said recess edges and bottom wall and means to provide a lip along each of said openings by a reduction of the thickness of stock along the portion bordering said recess and each of said tongues after passing through an opening engaging a lip to hold the insert member in place against said bottom wall.

4,128,956

SINGLE SHOT RIFLE HAVING FALLING BREECHBLOCK INTEGRAL WITH STOCK

John P. Foote, 315 Piedmont Rd., Marietta, Ga. 30006
Filed Jul. 22, 1977, Ser. No. 818,460
Int. Cl.² F41C *11/04*
U.S. Cl. 42—23 **13 Claims**

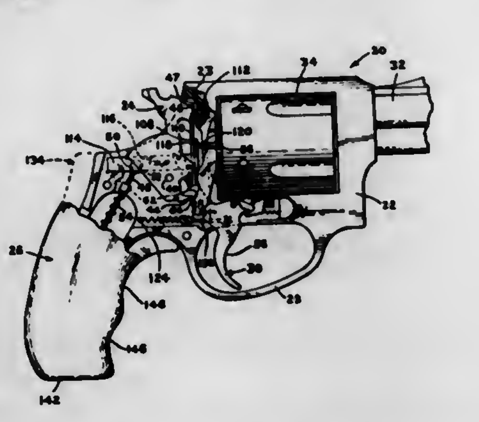


1. In a single shot rifle:
- a barrel having a cartridge chamber therein,
- a breechblock assembled on said barrel for substantial upwardly and downwardly movement thereon to open and close said cartridge chamber for the purpose of inserting or removing a cartridge,
- a stock connected to and movable with said breechblock on said barrel,
- and means on said rifle for moving said breechblock upwardly and downwardly from an upward position to a downward position and vice versa.

4,128,957

REVOLVER-TYPE HAND GUN

Joseph L. Lee, Woodbridge, Conn., assignor to Stephen Andrew Lee, Woodbridge, Conn.
Filed Jan. 6, 1977, Ser. No. 757,212
Int. Cl.² F41C *1/00*
U.S. Cl. 42—65 **14 Claims**

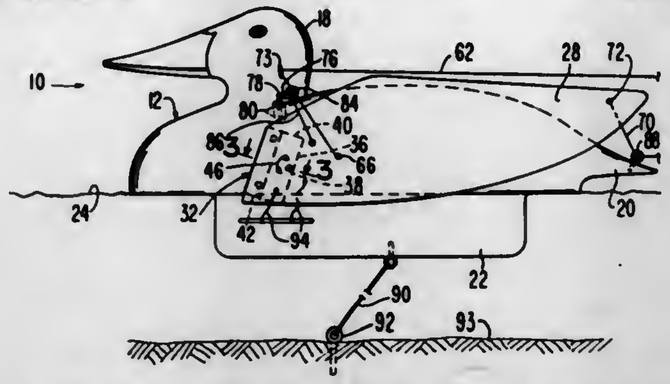


1. In a firearm having a frame, a hammer pivotally mounted in said frame, a trigger pivotally mounted in said frame below said hammer and coacting with said hammer to move said hammer from a cocked position to a firing position upon actuation of said trigger, a cartridge-receiving cylinder rotatably mounted in front of the hammer and hand means connected to said trigger and including a hand coacting with said cartridge-receiving cylinder to rotate said cylinder responsive to actuation of said trigger, and a firing pin resiliently extending from said frame, a improved hammer construction comprising:
- a sear pivot pin fixed to said hammer;
- a sear pivotally mounted on said sear pivot pin to allow one end of said sear to translate toward and away from said cylinder, to coact with said trigger;
- sear stop means fixed to said hammer between said sear pivot pin and said translating end of said sear to limit movement of said sear; and
- resilient means connected to said hammer to urge said translating end of said sear towards said cylinder until stopped by said sear stop means to resiliently position said translating end of said sear.

4,128,958

WATER FOWL DECOY

Marvin Snow, P.O. Box 1014, Paradise, Calif. 95969
Filed Jun. 8, 1977, Ser. No. 804,679
Int. Cl.² A01M *31/06*
U.S. Cl. 43—3 **8 Claims**

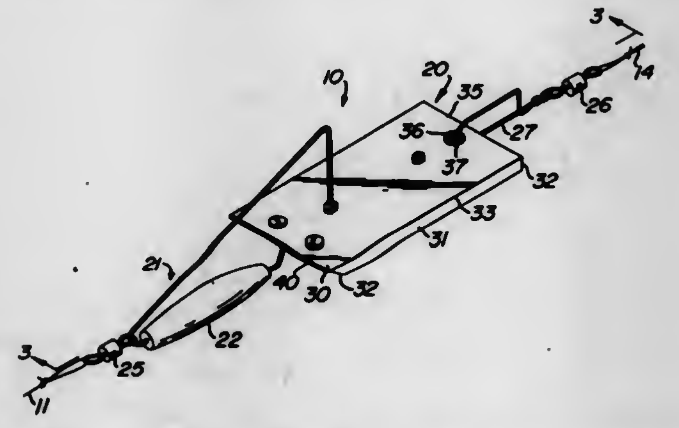


1. A water fowl decoy comprising: a body having a pair of opposed sides and being formed of a material capable of floating on the surface of the water; a pair of wings, there being a wing for each side of the body, respectively; a hinge for each wing, respectively, each hinge being pivotally mounted on the body to permit the corresponding wing to move from a retracted position extending along a respective side of the body to an operative position extending outwardly from the body, each hinge further having means permitting the corresponding wing to move up and down when the wing is in the operative position; a first flexible control member coupled to the wings at locations adjacent to the hinges thereof; and a second flexible control member coupled to the wings near the outer ends thereof, said members extending away from the body to a location remote therefrom for controlling the movements of the wings relative to the body.

4,128,959

FISHING PLANER

Adolf Staaden, 404 Hickory La., Forked River, N.J. 08731
Filed Aug. 5, 1977, Ser. No. 822,063
Int. Cl.² A01K *85/00*
U.S. Cl. 43—43.13 **8 Claims**

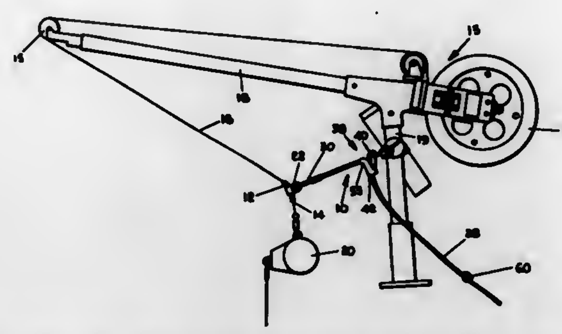


1. A fishing planer comprising a vane, an upstanding bail portion upstanding from said vane to an upper bail region, upper securement means securing said upstanding bail portion to said vane, a declining bail portion declining from said upper bail region forwardly beyond said vane to a forward bail region, a lower bail portion extending rearwardly from said forward region beneath said vane to a rearward bail region, lower securing means securing said rearward bail region to said vane, weight means on said lower bail portion adjacent to said forward bail region, and fastener means fastening an intermediate bail region of said lower bail portion to said vane, to effectively minimize the stress imparted to said upper and lower securing means.

4,128,960

WEIGHT ARRESTOR

Larry L. Marek, 444 Benson, NE., Grand Rapids, Mich. 49503
Filed Apr. 23, 1976, Ser. No. 679,658
Int. Cl.² A01K *87/04*
U.S. Cl. 43—27.4 **9 Claims**

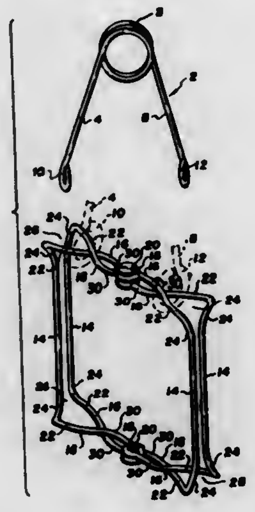


1. A cable arrestor for drawing a downrigger cable in to the back of a boat from a position rearward of the back of the boat, comprising:
- a flexible tubular cable guide surrounding the cable, the cable being easily slidable through the cable guide, the cable guide being fabricated such that the cable guide resiliently defects into a smooth arc and prevents sharp bends in the cable when the cable guide is pulled in to the back of a boat, the radius of said smooth arc being significantly larger than the diameter of the cable; and
- tether line means attached to the cable guide and adapted to extend from the cable guide to the boat for drawing the cable guide and cable in to the back of the boat; and releasable fastening means for securing the tether line to the boat.

4,128,961

ACTUATOR FOR ANIMAL TRAP

Frank Conibear, Victoria, Canada, assignor to Woodstream Corporation, Lititz, Pa.
Filed Jan. 26, 1977, Ser. No. 762,660
Claims priority, application Canada, Feb. 27, 1976, 246769
Int. Cl.² A01M *23/26*
U.S. Cl. 43—88 **6 Claims**

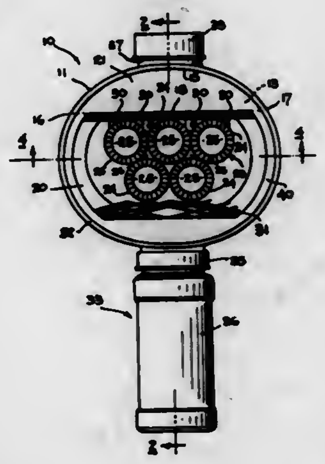


1. An animal trap having two similar frames made of round wire stock, each frame having jaw-forming sides that lie in a common plane and ends extending there-between to support said jaws, said ends each having a central portion in which the frames are pivotally connected through adjacent ends for rotation about a common axis between set and closed positions, and outer portions on each side of the central portion extending to said jaws, and at least one actuator capable of rapidly and forcefully effecting such rotation, said actuator having two arms spring biased at one end so that the other ends, if unobstructed, would move apart to a distance substantially greater than the width of said frame ends, each arm terminating in a ring adapted to encircle adjacent ends of both frames on opposite sides of said axis, each actuator ring being inclined towards the other ring of the other arm in said set position of the trap and said rings having a substantially parallel relationship when said actuator forces said frames into a closed position.

4,128,962

BUBBLE DISCHARGING DEVICE

Paul R. Anderson, 23701 Surf Cove, Laguna Niguel, Calif. 92677
Filed Sep. 16, 1976, Ser. No. 723,806
Int. Cl.² A63H *33/28*
U.S. Cl. 46—7 **7 Claims**

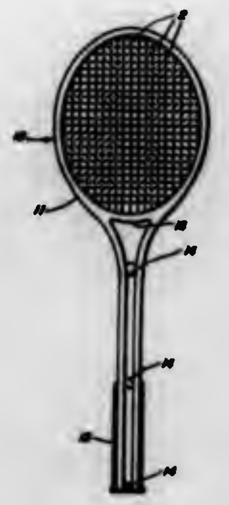


1. A bubble discharging device adapted to be mounted on a vehicle, which comprises:
- a tube having an entrance, an exit end and a bore for receiving a stream of air therethrough,
- a receptacle mounted in the bore of the tube for storing a quantity of soapy bubble forming liquid, the receptacle forming an enclosed chamber having a cross-section defined by a segment of said tube comprising an upper inner wall, a chord-like flat bottom wall connecting the extremities of the arc-like upper wall and opposed verticle end walls connecting the segment with the arc and chord of said tube, said receptacle further including a liquid refill opening in said upper wall to refill said reservoir with said liquid,
- a multiple ring structure having plural openings therethrough supported downwardly from said reservoir, the structure being stationed with the openings placed normal to the direction of the air-stream and adapted to be wetted by a film of the liquid across the opposite sides of said plural openings,
- orifice means incorporated in said receptacle arranged to direct flowing beads of said liquid on both sides of said openings, said structure being adapted to form a bubble from the film stretched across said openings and release a succession of bubbles into said air-stream when said air-stream is passed through said openings and subsequently discharged from the exit end of said tube, and
- a sump connected to a lower wall of said tube having a port extending through the wall adjacent said exit end, the sum being adapted to collect the drips of said liquid not consumed in forming said bubbles, the port being reinforced by an internally threaded sleeve surrounding said port and said sump and further including an elongated cylindrical enclosure having the open end of the enclosure threadedly engaged in the sleeve.

4,128,963
METHOD FOR PREPARING A COMPOSITE HIGH STRENGTH TO WEIGHT STRUCTURE WITH FRAY RESISTANCE

Pol Dano, Camarillo, Calif., assignor to Fansteel, Inc., North Chicago, Ill.

Division of Ser. No. 703,135, Jul. 7, 1976, Pat. No. 4,070,020.
This application Nov. 25, 1977, Ser. No. 854,809
Int. Cl.² B29D *27/00*
U.S. Cl. 264—46.6 12 Claims



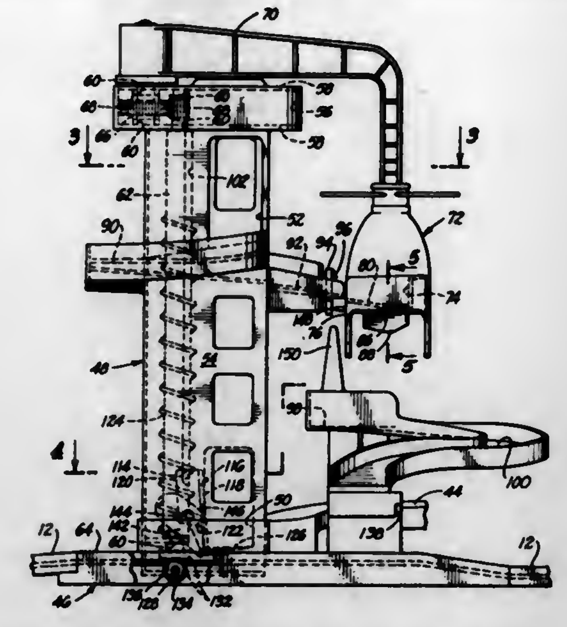
1. A method of producing a structural member of high strength to weight ratio comprising forming an elongated core strip comprising a foamable resin composition, forming a shell about said core strip by wrapping said core strip with a veiling strip and thereafter wrapping at least one elongated sheet of resin-coated unidirectionally oriented graphite fibers about said core with the side edges of said graphite fiber strip running along the length of said core and the trailing edge of said veiling strip covering the leading edge of said graphite fiber strip, placing said wrapped core within a mold cavity, sealing said mold cavity, activating said foamable resin composition to cause expansion thereof and generate pressure within said mold cavity pressing said core against said shell and thereby providing intimate bonding of said core to said shell, and thereafter removing said core and said shell from said mold cavity as an integral composite structure.

4,128,964
TRANSFER MECHANISM INTENDED FOR USE IN TOYS

Toyotsugu Ogasawara, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Jul. 11, 1977, Ser. No. 814,228
Claims priority, application Japan, Jul. 16, 1976, 51/95487
Int. Cl.² A63H *33/00*
U.S. Cl. 46—43 13 Claims

1. A transfer mechanism for use in moving an article from a first location to a second location which comprises:
a base,
an externally threaded shaft rotatably mounted on said base so as to extend upwardly therefrom,
a tower supported on said base so as to extend upwardly therefrom adjacent to said shaft,
a carrier for holding said article and for supporting said article as it is moved from said first location to said second location,
cooperating guide means on said tower and on said carrier for controlling movement so that during rotation of said shaft said carrier can be elevated along the length of said shaft and can be pivoted with respect to said shaft,
said carrier including a thread like projection capable of fitting against the thread on said shaft,
the weight of said carrier being distributed so that said carrier can pivot generally away from said shaft in order to enable said projection to slide downwardly over said thread on said shaft when there is no weight on said carrier and so that said carrier will pivot generally toward said shaft so as to hold said projection in engagement with said shaft when said article is located on said carrier, and

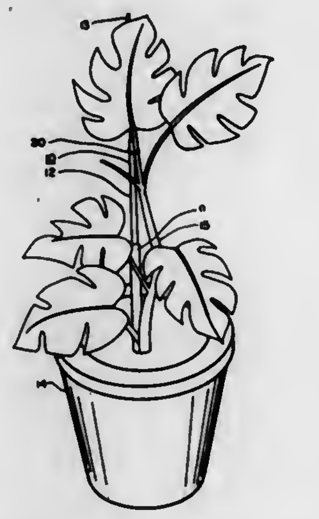


power transmission means for use in rotating said shaft operatively connected to said shaft.

4,128,965
PLANT STAKE

August J. D'Hondt, Rte. 2, Box 385, Sonora, Calif. 95370

Filed Jan. 6, 1977, Ser. No. 803,608
Int. Cl.² A01G *17/06*
U.S. Cl. 47—47 3 Claims

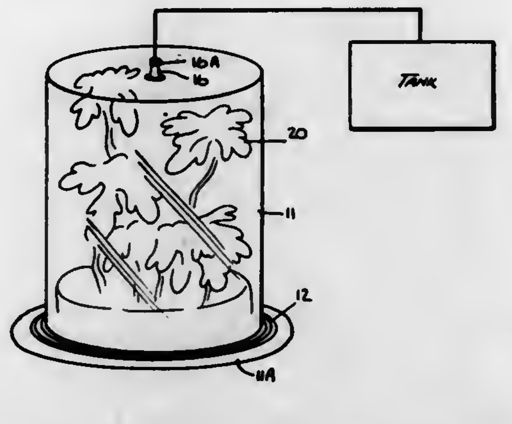


1. A telescoping plant stake comprising at least two telescoping members, the outer of which is tubular;
a plug having a flange on one end and having its other end inserted in the lower end of the inner most of said telescoping members, said flange and said lower end defining an annular groove, a generally annular elastomeric friction member secured in said groove and having an outer periphery which is convex in cross-section said outer periphery having a plurality of outward extending local protuberances;
said protuberances having a height sufficient that when the outer and inner members are assembled, said protuberances are in compressed contact with the inner wall of said outer tube, said protuberances including tapers extending in each direction of telescoping movement of said telescoping members.

4,128,966
INFLATABLE TERRARIUM ASSEMBLY WITH CONTROLLED ENVIRONMENT

Donald Spector, Union City, N.J., assignor to Applied Research Commodities Ind., Inc., Hyattsville, Md.

Continuation-in-part of Ser. No. 632,708, Nov. 17, 1975, Pat. No. 3,995,396, which is a continuation-in-part of Ser. No. 532,518, Dec. 17, 1974, Pat. No. 3,939,607. This application Nov. 10, 1976, Ser. No. 740,664
The portion of the term of this patent subsequent to Dec. 7, 1993, has been disclaimed.
Int. Cl.² A01G *9/02*
U.S. Cl. 47—69 11 Claims



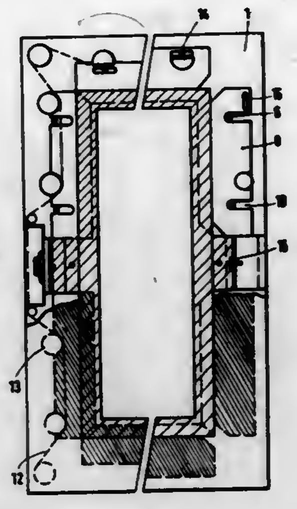
1. A collapsible terrarium assembly for protectively housing an organic product in a controlled environment comprising:
A. a base having a circular ridge formed on the upper face thereof adjacent to and concentric with the periphery of the base;
B. a replaceable dome mountable on the base and constituted by a flexible, non-self-supporting bag fabricated of plastic film material having a circular open mouth from which an annular skirt extends outwardly, the diameter of the mouth being somewhat smaller than the diameter of the ridge, whereby the dome is seated within the ridge and the skirt lies thereover;
C. a removable coupling ring attachable to the ridge to clamp the skirt of the dome therebetween to hermetically seal the dome to define an enclosure; and
D. means to inflate the dome with a gas to cause the dome to assume an erect form, said gas being substantially free of oxygen and providing a controlled environment for said product.

4,128,967
WINDOWS AND DOORS

Bernhard Kirsch, Im Litzelholz 23, 5500 Trier-Biewer, Fed. Rep. of Germany

Filed Apr. 7, 1977, Ser. No. 785,345
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1976, 2616422; May 12, 1976, 2621026; Jun. 21, 1976, 2627727
Int. Cl.² E06B *7/28*
U.S. Cl. 49—318 4 Claims

1. In a closure system including:
a frame including an outer frame part and an inner frame part located inward from the outer frame part, such frame parts forming the sides of a strip-receiving slot therebetween;
connector means connecting the frame parts;
a closure member mounted in the frame for movement relative thereto between closed and open positions, such closure member having a peripheral guide groove opening toward the strip-receiving slot between the frame parts when the closure member is in closed position;
an elongated sealing and locking strip mounted in the strip-receiving slot for movement relative to the frame transversely of the length of such strip; and
means for moving the sealing and locking strip relative to the frame outward of the slot and toward the closure member for engagement of such strip in the peripheral guide groove of the closure member;
the improvement comprising:
the inner frame part being of U-shaped cross section and forming a channel opening at the side of the inner frame

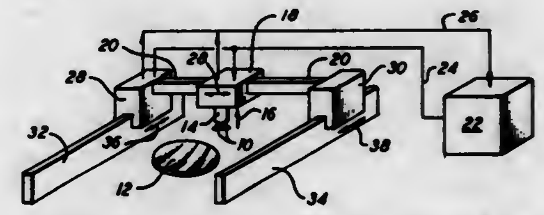


part remote from the outer frame part and remote from the sealing and locking strip;
the moving means being located in said channel; and
a removable cover for closing the channel opening to enclose the moving means in said channel.

4,128,968
OPTICAL SURFACE POLISHER

Robert A. Jones, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sep. 22, 1976, Ser. No. 725,382
Int. Cl.² B24C *7/02*
U.S. Cl. 51—54 21 Claims



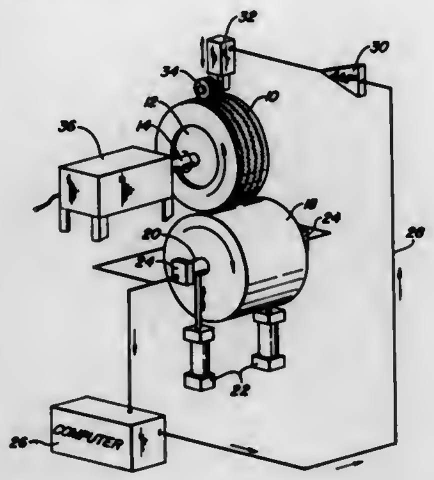
1. An apparatus for polishing or grinding an optical surface comprising, in combination:
at least one polishing pad;
a pad drive means coupled to each said pad for maintaining each said pad in contact with the surface being polished or ground and moving each said pad relative to the surface being polished or ground so that a removal profile is produced having circular symmetry with peak removal at the center of pad movement and minimal removal at the extremes of pad movement; and
a position drive means coupled to said pad drive means to move said pad drive means along a contour path, said contour path having adjacent path segments that intersect any given contour radius extending from the contour center to the contour perimeter at a constant distance from each other.

4,128,969

APPARATUS FOR REDUCING TANGENTIAL FORCE VARIATION IN PNEUMATIC TIRES

Kenneth J. Gormish, Tallmadge, and Clarence Hofelt, Jr., Hudson, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Sep. 18, 1975, Ser. No. 614,381
Int. Cl.^{2} B24B *5/00*
U.S. Cl. 51—106 R **6 Claims**



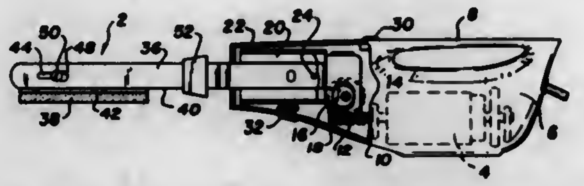
1. Apparatus for reducing tangential force variations in a pneumatic tire, which comprises:
- (a) means for rotating the tire against a predetermined load at a speed of at least 300 rpm;
- (b) means for sensing and measuring the force variations in the tangential direction while the tire is rotating at a speed of at least 300 rpm;
- (c) means for determining the magnitude of the tangential force variations and the location of maximum magnitude of tangential force variations;
- (d) means for comparing said magnitude to a predetermined level to determine if the tangential force variations are within acceptable limits; and
- (e) means for grinding the inner ribs of the tread of the tire in accordance with the magnitude and the location of maximum magnitude of the tangential force variations if the tangential force variations exceed acceptable limits.

4,128,970

HONE

Peter Sawrenko, 5837 Patrick St., Burnaby, B.C., Canada (V5J 3B5)

Filed Feb. 28, 1977, Ser. No. 772,382
Int. Cl.^{2} B24B *23/00, 3/36*
U.S. Cl. 51—170 TL **3 Claims**



1. In an household appliance adapted to slice foodstuffs including an electric motor, a motor compartment housing the motor and having means for holding the compartment, first and second drive attachments disposed within the compartment adjacent and end thereof and accessible from the exterior of the compartment, the drive attachments being mounted for relative reciprocal, linear movement and being further formed to receive a pair of reciprocating knife blades, and drive means operatively coupling the motor and the drive attachments for linearly reciprocating the attachments upon the energization of the motor, the improvement of means for converting the appliance into a blade honing and sharpening tool comprising:

first and second, linear carrying arms, each arm having a first end formed for engaging one of the drive attachments so that the attachments can linearly reciprocate the arms;

first and second hone members directly attached to the first and second arms, respectively, for linear reciprocating movement therewith, each member having an elongate configuration and extending in the direction of the respective carrying arms; and

means formed on the carrying arms for interengaging the arms and permitting them to linearly reciprocate with respect each other, while preventing substantial relative motion between the arms in other directions;

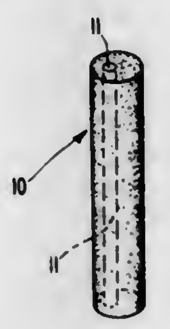
whereby the energization of the motor induces relative linear reciprocating motion between the carrying arms and therewith between the hone members so that an edge of a blade to be honed can be drawn into contact with the linearly reciprocating hone members and the reciprocating members thereby hone and sharpen the edge of the blade.

4,128,971

ABRASIVE DRILL

Bruce W. Dunnington, Lyndell, and William B. Gernert, St. Davids, both of Pa., assignors to Glennel Corporation, Chester Springs, Pa.

Filed Sep. 14, 1976, Ser. No. 723,153
Int. Cl.^{2} B24D *17/00*
U.S. Cl. 51—204 **13 Claims**



1. A cylindrical abrasive drill having an eccentric longitudinal solid, relatively non-abrasive cored portion throughout.

4,128,972

FLEXIBLE POLISHING WHEEL AND METHOD FOR PRODUCING SAME

Vernon K. Charvat, Bay Village, Ohio, assignor to The Osborn Manufacturing Corporation, Cleveland, Ohio

Filed Apr. 14, 1975, Ser. No. 567,775
Int. Cl.^{2} C08G *51/12, 51/14*
U.S. Cl. 51—298 R **9 Claims**

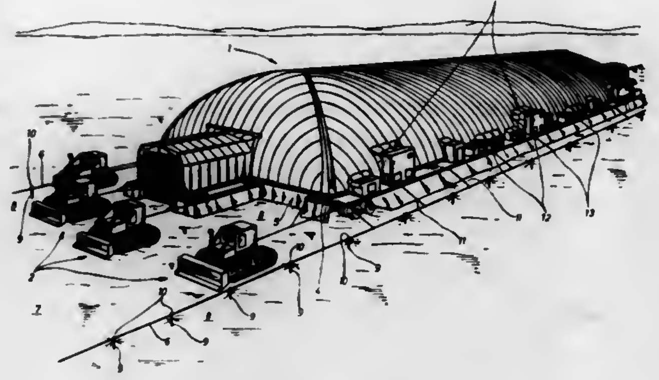
1. An abrasive polishing wheel having a "Shore A" hardness of less than 96 and comprising,
- (a) an abrasive grain in an amount of from about 55 to about 90% of the theoretical weight of grain required to fill the volume occupied by the wheel,
- (b) from about 40% to about 55% by volume of an elastomer bond, said elastomer having an unfilled cured "Shore A" hardness of from about 50 to about 60 and a density of greater than 1 gram/cm^3,
- (c) from zero up to about less than 15% by volume of an inert filler having an average particle diameter of less than 10 microns, and
- (d) less than 10% by volume of voids.

4,128,973

METHOD AND APPARATUS FOR SECURING AND STABILIZING A LIGHTWEIGHT, COLLAPSIBLE STRUCTURE THAT IS MOVING ALONG A MOVING WORK SITE

Charles L. Robinson, 23 Bayou Shadows, Houston, Tex. 77024

Filed Nov. 8, 1977, Ser. No. 849,704
Int. Cl.^{2} E04B *1/34;* **B60V** *3/02*
U.S. Cl. 52—2 **9 Claims**



1. A controlled environment structure for protection of a work area from any hostile effects of the atmospheric environment, said controlled environment structure being movable to selected positions along a moving work site and comprising:

platform means;

anchor tracks secured to the ground adjacent each side of said moving work site;

site engaging means;

said engaging means comprising a plurality of stability lines connected to said controlled environment structure and connected to said anchor tracks;

a lightweight building structure being attached to said platform means and providing a protective enclosure, said enclosure substantially containing said controlled environment, said lightweight building structure being formed of a thin flexible material maintained in erect condition responsive to maintenance of a superatmospheric pressure condition therein;

air supply means provided for in said controlled environment for maintaining a regulated superatmospheric pressure within said lightweight building structure at all times;

motive means being provided for said platform means and causing desired movement of said platform means and said lightweight building structure relative to said moving work site; and

means for controllably adjusting the height-to-width ratio of said lightweight building structure.

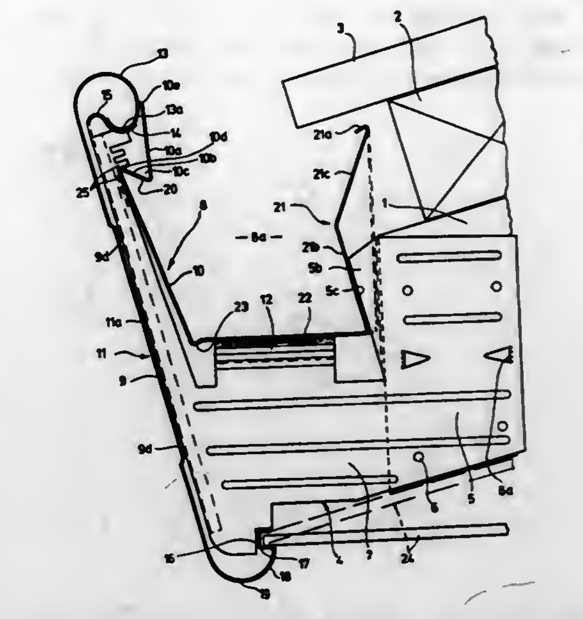
4,128,974

FASCIA AND GUTTER SYSTEMS ON BUILDINGS

Harry E. Taylor, Tauranga, New Zealand, assignor to G. W. Taylor Industries Limited, Taurangan, New Zealand

Filed Aug. 2, 1977, Ser. No. 821,065
Int. Cl.^{2} E04D *13/00*
U.S. Cl. 52—11 **16 Claims**

1. A combination fascia and concealed gutter system comprising a plurality of similar support members arranged for securement in substantially horizontal aligned relationship on a support structure below the periphery of a roof of a building, a metal or plastics fascia member shaped and arranged for engagement with said support members when secured, and a gutter channel member into which water from the building roof can flow shaped and arranged for detachable spring fitment within the support members; each support member being shaped to engage and support inner, outer and base parts of the gutter member and being further provided with a lower outer edge portion about which an inturned and upturned lower longitudinal edge portion of the fascia member can locate, and an inset upper edge portion on which an inwardly disposed returned upper edge portion of the fascia member can bear, and the gutter member having an upper outer longitudinal edge portion shaped and arranged to contact said fascia returned upper edge portion.

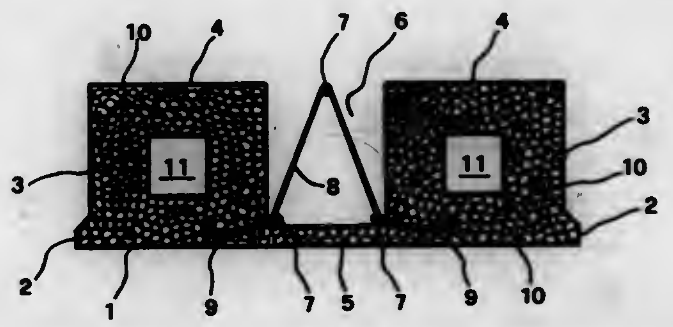


4,128,975

PREFABRICATED BUILDING COMPONENTS OF EXPANDED MATERIAL AND CEMENT

Giorgio Abate, Modena, Italy, assignor to Solai Vignola di Fabiani Orlando e C. - Societa in nome collettivo, Ancona, Italy

Filed Sep. 7, 1976, Ser. No. 720,749
Claims priority, application Italy, Sep. 5, 1975, 40085 A/75; Dec. 18, 1975, 40132 A/75; Dec. 18, 1975, 40133 A/75; Apr. 8, 1976, 40057 A/76
Int. Cl.^{2} E04G *21/00;* **E04B** *5/19*
U.S. Cl. 52—125 **6 Claims**



1. A prefabricated building panel formed of a mixture comprising light-weight expanded material, adhesive and cement, said panel comprising at least two longitudinally extending upstanding ribs separated by a channel adapted to be filled with concrete, longitudinally extending reinforcing elements disposed on the bottom of said channel, said reinforcing elements comprising means to enable said panel to be lifted after only brief curing, said means including upwardly projecting stirrup members and outwardly projecting appendices, said outwardly projecting appendices penetrating into the material of said longitudinally extending ribs adjacent the bottoms thereof.

4,128,976

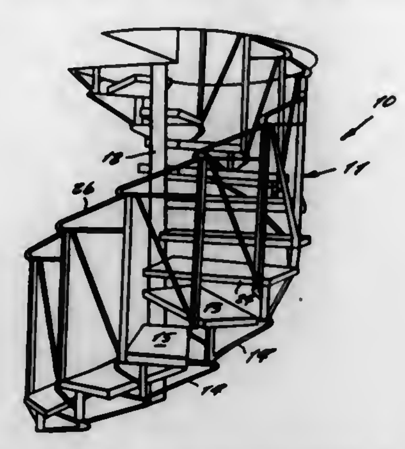
SPIRAL STAIR KIT

Alvin T. Classen, R.R. 4, Andy's Lake, Norfolk, Nebr. 68701

Filed Mar. 8, 1977, Ser. No. 775,680
Int. Cl.^{2} E04F *11/00*
U.S. Cl. 52—187 **1 Claim**

1. A spiral stair kit for constructing a spiral staircase having a plurality of step treads, said kit including a central column, a

set of step-holder brackets adapted to be positioned about said central column and secured to said column, a set of step riser brackets, said step riser brackets adjustable with respect to each other, said step-holder brackets adapted to be secured to one end of said step treads and said step riser brackets adapted to be secured to the other end of said step treads, a set of posts, said posts having an attached portion defining a bannister segment, said posts adapted to be secured to outer ends of front edges of said step treads and said bannister segment joining other segments to form a banister, connecting braces adapted to secure the assembled staircase in a rigid manner and a quantity of hardware including shims for adjusting the height of said risers for securement of said components together.

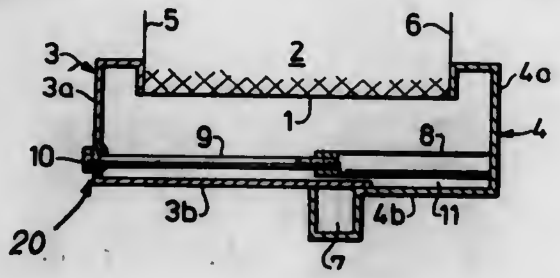


4,128,977

DOOR FRAME, ESPECIALLY FOR FIREPROOF DOORS

Ewald I. E. Schubeis, Tegnergatan 9, S-111-40 Stockholm, Sweden

Continuation-in-part of Ser. No. 412,802, Nov. 5, 1973, abandoned. This application Aug. 28, 1975, Ser. No. 608,715
Int. Cl.^{2} E06B *1/04*
U.S. Cl. 52—212 **10 Claims**



1. A door frame, especially for fireproof doors, comprising

(a) a first frame portion assembled from a plate strip and bent into a substantially L-like profile having a first and a second profile leg, said second profile leg having formed at the end thereof a door abutment portion,

(b) a second frame portion assembled from a plate strip and bent into a substantially L-like profile having a first and second profile leg,

(c) said first and second frame portions being arranged in a door opening in a wall in such a way that the first profile legs of said frame portions engage the opposite outer surfaces of said wall around said door opening, and said second profile legs of said first and second frame portions extend into said door opening substantially parallel with the edge side thereof and overlap each other within the door opening, said door abutment portion also being overlapped said second profile leg of said first frame portion being outermost,

(d) means for interconnecting said first and second frame portions, said means comprising a plurality of threaded joints, each threaded joint including a fixed rod and a rotatable rod having threads cooperating with threads on said fixed rod, said fixed rod connected at one end thereof to the first profile leg of the first frame portion and being spaced therefrom a distance greater than the thickness of said second profile leg of said second frame portion, and

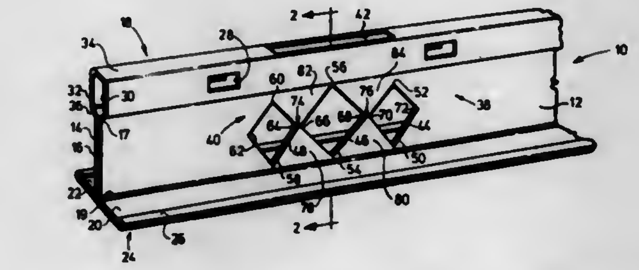
(e) means for allowing continuous adjustability of the door frame to provide for different wall thickness and to provide for deviations of the parallelism of the outer surfaces of said wall upon suitable selective tightening of said threaded joints, said means including (i) said second profile leg of said second frame portion being movable between the overlapping section of said second profile leg of said first frame portion and said fixed rod in the space therebetween and being able to assume an angle with respect to said fixed rod to adapt to deviations in parallelism of the outer surfaces of said wall, and (ii) said second profile leg of said second frame portion overlapping and being guided by said second profile leg of said first frame portion, and (iii) means for universally swingably mounting each of said rotatable rods in said first profile leg of said second frame portion, said universally swingably mounting means comprising cooperating curved portions of the head of each of said rotatable rods and a depression in said first profile leg of said second frame portion.

4,128,978

CONTROLLED EXPANSION SUSPENDED CEILING GRID BEAM

John O. Beynon, Waterloo, Canada, assignor to Ceiling & Drywall Products Limited, Toronto, Canada

Filed Apr. 11, 1977, Ser. No. 786,427
Claims priority, application Canada, Apr. 6, 1977, 275673
Int. Cl.^{2} E04C *3/04;* E04B *5/52*
U.S. Cl. 52—232 **5 Claims**



1. A controlled expansion suspended ceiling grid beam for a suspended panel ceiling, said beam having a web with spaced apart marginal edges, a flange having a panel supporting surface provided along one of said marginal edges, a bead provided along the other marginal edge, and an expansion accommodating portion for accommodating thermal expansion at a pre-determined location in said beam, said bead having substantially flat spaced apart sidewalls which lie on apposite sides of the bead axis and which are continuous at least along the upper and lower bead portions and an interconnecting substantially flat top wall, said sidewalls being essentially unconnected at the bead's base, said expansion accommodating portion comprising an arrangement of cut outs for accommodating thermal expansion in the web and longitudinal slot means cut in the beads topwall for essentially disconnecting at the top the bead sidewalls along the length of the said slot means, said cut outs defining three spaced apart notches extending down at least near to said flange to provide areas of bending for a flange portion on beam expansion, said arrangement of cut outs being so configured as to allow the two web portions attached to said flange portion and located between said three spaced apart notches to move with said flange portion as it bends, a control means for controlling initial movement of said flange portion at the beginning of thermal expansion in said beam, said control means comprising web elements connected to said web portions on each side of the central notch, said web elements being adapted to resist both separation of and upward movement of said web portions at the beginning of thermal expansion in said beam, the arrangement being such that thermal expansion in said beam is accommodated by a downward folding of said flange portion initiated by virtue of the movement restraint

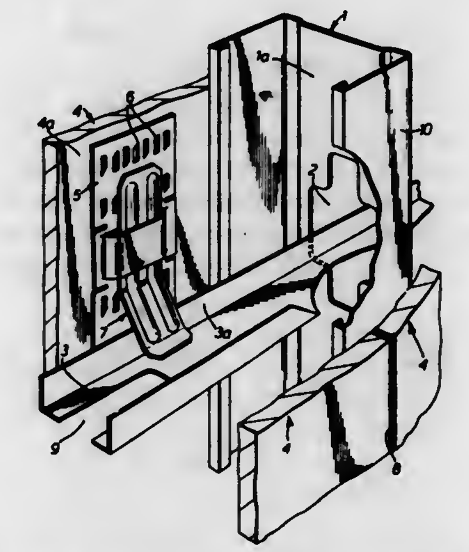
placed on said web portions by said web elements and said spaced apart bead sidewalls by virtue of their being essentially unconnected at the top and bottom and lying on opposite sides of the bead's axis buckling laterally outwardly away from each other without interference from the movement of said web portions, said expansion accommodating portion controlling the direction of folding in said flange portion and controlling movement of the beam portions at opposite ends of the slot means to cause said bead portions to move towards each other while maintaining bead and beam alignment and hence flange alignment apart from the downwardly folding flange portion.

4,128,979

SUSPENSION ASSEMBLY FOR PARTITION PANEL

Reginald S. Price, 3228 - 6th St. SW., Calgary, Alberta, Canada (T2S 2M3)

Filed May 26, 1977, Ser. No. 800,750
Int. Cl.^{2} E04H *1/00;* A43B *23/20*
U.S. Cl. 52—241 **13 Claims**



1. A suspension assembly for suspending a gypsum board panel from a support member of a support structure, said suspension assembly comprising:

a plate having upper and lower portions, means defining a transverse line of weakness between the upper and lower portions so that the plate preferentially bends along the line, and a plurality of panel-piercing members extending outwardly from one face of the plate; and

a suspension clip, said clip having an upper portion attached to the plate above the line of weakness and said clip having a lower portion defining a cam surface arranged to engage over the support member, whereby when the panel is suspended from the structure the load applied between the clip and the plate causes the lower plate portion to bend about said line of weakness in a sense to incline the panel-piercing members of the lower plate portion in an upwards direction.

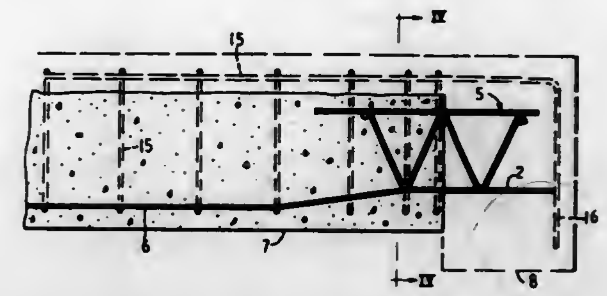
4,128,980

REINFORCED CONCRETE CONSTRUCTION

Nessib Abdallah, Forestville, Australia, assignor to Civil & Civic Pty. Limited, Sidney, Australia

Filed Jun. 7, 1977, Ser. No. 804,276
Claims priority, application Australia, Jun. 11, 1976, 6236/76
Int. Cl.^{2} E04B *1/20*
U.S. Cl. 52—251 **9 Claims**

1. A reinforced concrete member in a concrete construction, said concrete member extending horizontally in said construction and including: metal reinforcing means extending along substantially the length thereof an elongated partially trussed device with one end embedded in one end of said concrete member and encased in the concrete of said member; the other end of said device extending substantially horizontally from said concrete member for inclusion within a substantially vertical portion of concrete construction, said horizontal concrete member abutting said vertical portion abut said concrete member at a vertical surface at the time of casting said portion from concrete, said portion extending horizontally immediately only above said member; said device comprising a pair of spaced rods and a zig-zag truss member with welds interconnecting said rods so as to form a rigid partially trussed framework having at least two triangular panels, each rod having a part thereof forming at least one device side; said rods having sufficient extension beyond one of said panels to provide adequate anchorage in the concrete of said concrete member; said device transferring shear and associated forces from the concrete of said concrete member to vertically abutting concrete of said portion of the concrete construction.

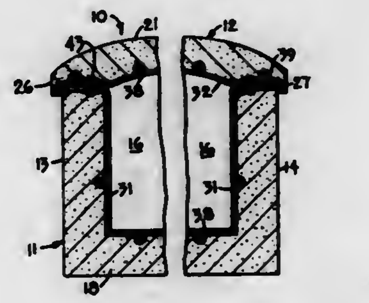


4,128,981

BURIAL VAULT

Bernard T. Juba, White Bear Lake, Minn., assignor to H.B. Fuller Company, St. Paul, Minn.

Filed Feb. 22, 1977, Ser. No. 770,633
Int. Cl.^{2} E04B *13/00*
U.S. Cl. 52—309.3 **12 Claims**



1. A method for preparing a composite wall burial vault member including a plastic resinous liner bonded to concrete wall means, said method comprising: applying a contact adhesive layer to one side of a plastic resinous vault liner, said contact adhesive being a polychloroprene adhesive, drying said adhesive to the touch, disposing said plastic resinous liner in a form retaining mold, said plastic liner being disposed with the contact adhesive layer facing away from said mold; pouring wet settable concrete in said mold, said concrete engaging said adhesives and setting and curing said concrete.

4,128,982

MEANS AND METHOD OF TILED SURFACE CONSTRUCTION

Daniel E. Weaver, 717 Salem Ct., San Diego, Calif. 92109

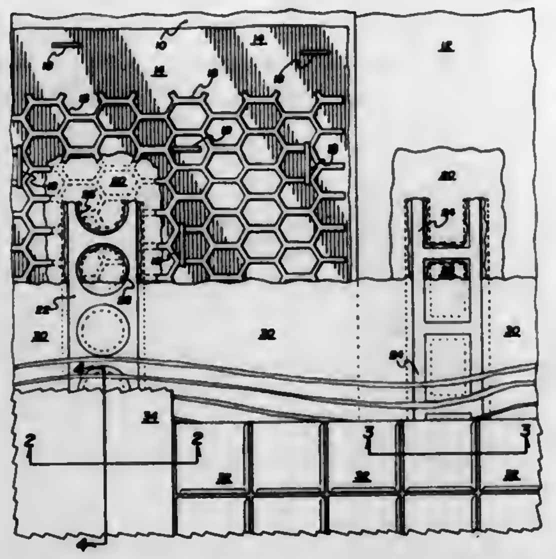
Filed Dec. 9, 1977, Ser. No. 859,038
Int. Cl.^{2} E04F *13/08*
U.S. Cl. 52—367 **11 Claims**

1. A synthetic float strip for floating a setting bed on a structural surface for a tile wall, said strip comprising:

(a) an elongated flat body;

(b) said body having a plurality of openings passing through the thickness to permit exposed surfacedefining mortar in said openings to contact said structural surface;

(c) said body having a substantially smooth, flat front surface to serve as a guide for screeding board; and



(d) at least a portion of the perimeter of said body being bevelled to provide a positive purchase for screeded mortar.

4,128,983

PANEL CONNECTOR ASSEMBLY

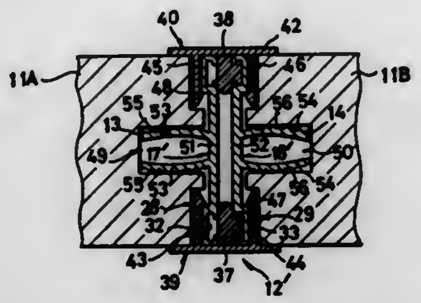
Isamu Matsubara, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 25, 1977, Ser. No. 844,910

Claims priority, application Japan, Oct. 30, 1976, 51-146376[U]

Int. Cl.² E04C *3/06*

U.S. Cl. 52—731 **6 Claims**



1. A connector assembly for connecting two panels edge-to-edge with a joint-opening therebetween, each of the panels having a prefinished groove extending longitudinally along such edge thereof, said connector assembly comprising:

(a) a pair of oppositely disposed, elongated first and second members having first and second plug means adapted to be slidably inserted in and secured to the panels along their respective prefinished panel grooves;

(b) a pair of opposed spaced-apart first and second front arm means adapted to be disposed adjacent to one face of the joint-opening, and carried by said first and second members along their respective front longitudinal edges;

(c) a pair of opposed spaced-apart first and second rear arm means adapted to be disposed adjacent to the opposite face of the joint-opening, and carried by said first and second members along their respective rear longitudinal edges; and

(d) a pair of elongated front and rear third members for covering the joint opening on opposite faces, and each having portions for projecting into said joint opening and holding said pair of front arm means and said pair of rear arm means, respectively, whereby said first and second members are secured to each other in spaced-apart relation.

4,128,984

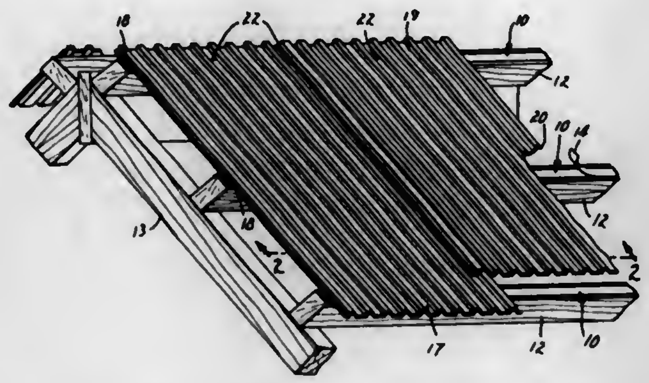
METHOD OF CONSTRUCTING A SLOPED ROOF

Robert R. Charbonneau, Lake Elmo, and Robert M. Spatafore, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 18, 1978, Ser. No. 870,274

Int. Cl.² E04D *3/24*

U.S. Cl. 52—746 **5 Claims**



1. In constructing a building having a sloped roof comprising panels laid on purlins, the method of securing the panels to the purlins comprising the steps of:

(a) priming the surfaces of the purlins to be contacted by the roof panels with an organic solvent solution or stable dispersion of rubbery block copolymer of elastomeric and thermoplastic polymer blocks and compatible tackifier resin,

(b) allowing the solvent to volatilize,

(c) applying onto the primed surfaces a double-coated foam-backed pressure-sensitive adhesive tape, the foam backing of which has a thickness of 1/32 to ¼ inch, a tensile strength of at least 50 pounds per square inch and an elongation of at least 100%, the pressure-sensitive adhesive of the tape comprising rubbery block copolymer of elastomeric and thermoplastic polymer blocks and compatible tackifier resin and having a disposable low-adhesion web protecting the outer surface of the tape,

(d) after the purlins are positioned in the building, peeling away the low-adhesion web and,

(e) laying the roof panels against the exposed surface of the pressure-sensitive adhesive tape.

4,128,985

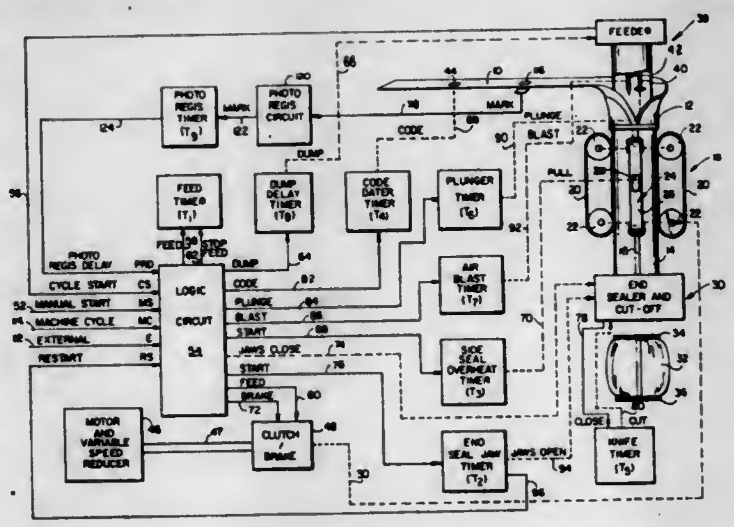
CONTROL SYSTEM FOR PACKAGE MAKING MACHINE

Charles J. Simmons, East Longmeadow, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.

Filed Oct. 31, 1977, Ser. No. 846,820

Int. Cl.² B65B *57/16, 9/10*

U.S. Cl. 53—51 **29 Claims**



1. In a machine for making packages by transversely sealing a tube of packaging material at spaced lines along its length, the combination comprising means providing a tube of packaging material, an end sealer with operative and inoperative conditions for flattening, during the former condition, said tube along a zone extending transversely thereof and for sealing opposite flattened sides to one another along said zone, a tube feeder for moving said tube longitudinally of itself past said end sealer, said feeder having powered and non-powered modes for feeding, during the former mode, said tube from alignment of one transverse seal zone with said end sealer to alignment of the next such transverse seal zone with the end sealer, means for producing time spaced bag making cycle start signals, on demand control circuitry operable in response to each appearance of a cycle start signal irrespective of the time interval between signals to generate a feed signal and a delayed stop feed signal, said control circuitry responsive to said feed signal for controlling the operation of said tube feeder so that at the start of said feed signal said feeder is shifted from its non-powered to its powered mode and on receipt of said stop feed signal said feeder is shifted from its powered to its non-powered mode, said control circuitry also being operable responsive to said stop feed signal to generate a seal signal, and said control circuitry also including an end seal timer operable responsive to said stop feed signal to generate a delayed stop seal signal and having manually operable means for selectively varying the duration of the delay in said stop seal signal, said end sealer thus being shifted from its inoperative condition to its operative condition on receipt of said seal signal and subsequently back to its inoperative condition on receipt of said stop seal signal.

4,128,986

APPARATUS PARTICULARLY FOR THE AUTOMATIC HARVESTING OF FRUIT

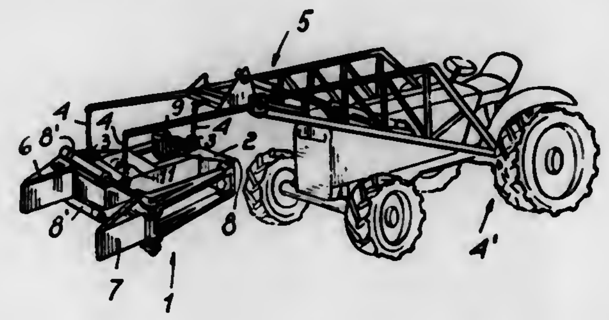
Mario Santarelli, Livorno, Italy, assignor to Harvester Center Italiana S.r.l., Piazzetta Guastalla, Italy

Filed Feb. 25, 1977, Ser. No. 772,175

Claims priority, application Italy, Mar. 29, 1976, 21685 A/76; Apr. 30, 1976, 22859 A/76

Int. Cl.² A01D *46/00*

U.S. Cl. 56—328 TS **10 Claims**



1. A tree shaking apparatus for automatically harvesting fruit including a frame, clamping jaws on said frame, eccentric mass assemblies rotatably mounted on said frame and driving means for imparting rotation to said eccentric mass assemblies, characterized in that it comprises at least one first rotating mass assembly rotatably mounted on said frame, first motor means supported on said frame, first transmission means in said frame for transmitting variable rotatory motor from said first motor means to said first eccentric mass assembly, at least a second eccentric mass assembly rotatably mounted on said frame independently from said first eccentric mass, a second motor means supported on said frame and second transmission means in said frame for transmitting variable rotatory motion from said second motor means to said second eccentric mass assembly independently from the rotation of said first eccentric mass and selectively variable both in direction and intensity.

4,128,987

AGRICULTURAL IMPLEMENTS

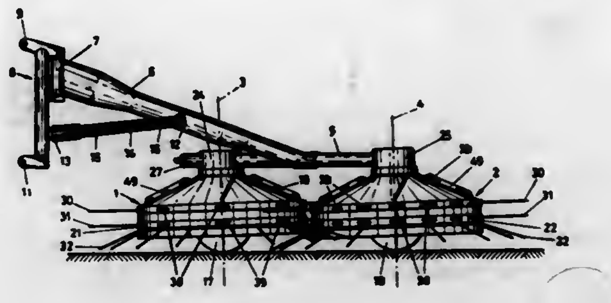
Petrus W. Zweegers, Nieuwendyk 46, Geldrop, Netherlands

Filed Nov. 24, 1976, Ser. No. 744,596

Claims priority, application Austria, Nov. 8, 1976, 8266/76

Int. Cl.² A01D *77/06*

U.S. Cl. 56—377 **23 Claims**



1. A haymaking machine comprising one or more rotors rotatable about upright axes of rotation, a plurality of tine groups distributed about the circumference of each rotor, each tine group comprising a plurality of superposed tines extending outwardly with respect to the axis of rotation of the rotor, said tines in each tine group comprising a first tine having a fixed mounting on the rotor in the working position and a second tine at a level lower than said first tine, and means on said rotor for pivotally mounting said second tine on a pivot axis near the circumference of the rotor and extending substantially tangentially to a circle having its center on the axis of rotation of the rotor.

4,128,988

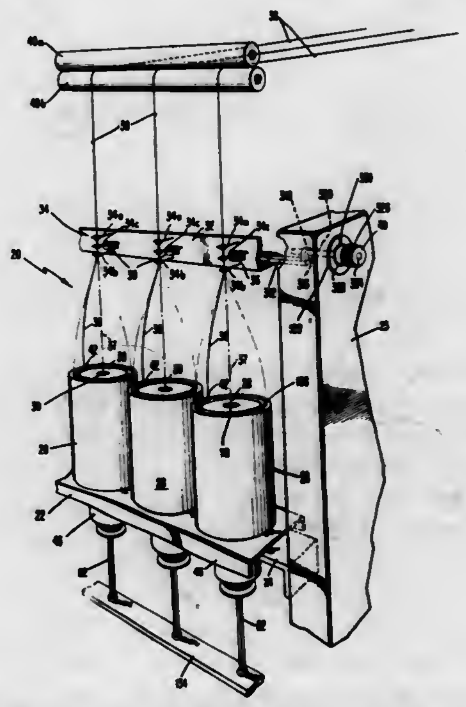
APPARATUS FOR TWISTING AND WINDING STRAND MATERIAL

Ralph L. Ragan, 82 Sheridan Dr., NE., Atlanta, Ga. 30305

Filed Oct. 8, 1976, Ser. No. 731,093

Int. Cl.² D01H *1/26, 1/00, 7/02*

U.S. Cl. 57—66 **25 Claims**



1. An apparatus for twisting and winding strand by feeding the strand substantially axially onto a rotating strand receiver, comprising:

a spindle, said receiver being removably secured to said spindle;

drive means for rotating said receiver;

strand hook means for guiding the strand onto said receiver;

means for rotating said hook means concentrically to said receiver;

means for imparting axial relative movement between said hook means and said receiver during rotation of said receiver;

means for controlling a differential between the speeds of rotation, respectively, of said guide means and said receiver as a function of the tension of the strand being wound onto said receiver;

said strand receiver comprising a bobbin, and said drive means including a drive member rotatably mounted about said spindle, said bobbin being keyed to said drive member for rotation therewith relative to said spindle;

wherein said spindle and said bobbin are mounted within an open-ended pot along a longitudinal axis thereof and said hook means is located on a wall of said pot;

said open-ended pot being coupled to said spindle for rotation therewith; and

means for coupling together said hook means and said pot for common rotation;

said drive member including a hub located beneath said bobbin;

wherein a wall of said pot includes a longitudinal channel, said coupling means including strip means slidably engaged in said channel and carrying said hook means; and

said means for imparting axial relative movement between said strip means and said receiver includes means for moving said strip means within said channel during rotation of said pot.

4,128,989

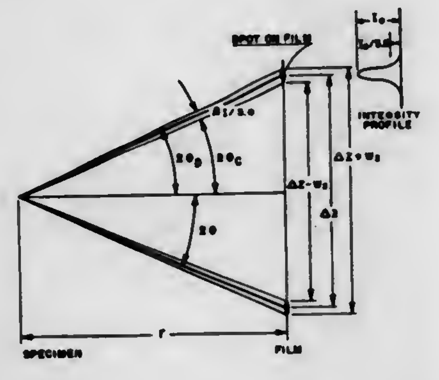
DEEP-DYEING POLYESTER SPINNING PROCESS

James E. Bromley; Wayne T. Mowe, and Frank Stutz, all of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 4, 1977, Ser. No. 784,408

Int. Cl.^{2} D02G *1/02, 3/02*

U.S. Cl. 57—247 **9 Claims**



1. A process for making a deep-dyeing polyester yarn, comprising the steps of:

a. texturing a polyester feed yarn having less than 30% shrinkage, an elongation greater than 10% and less than 80%, and a stress-induced crystalline structure having an average crystallite volume of at least 4 × 10^5 cubic angstroms and an average lateral minimum dimension as determined by X-ray diffraction of more than 45 angstroms, said step of texturing comprising heat-setting of said feed yarn at a temperature above 170° C. and below the melt point of said feed yarn while said feed yarn is deformed into a non-rectilinear configuration, and

b. collecting the resulting textured yarn in an orderly fashion.

4,128,990

MULTIPLE PURPOSE TEACHING DEVICE

Velma L. Phillips, Star Rte. Box 194, Chemult, Oreg. 97731

Filed Jul. 20, 1977, Ser. No. 817,370

Int. Cl.^{2} G04B *45/00*

U.S. Cl. 58—2 **4 Claims**

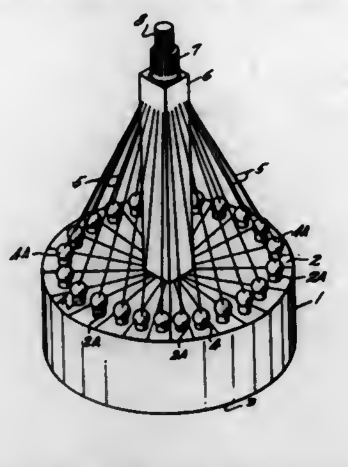
1. A teaching device for instructing individuals in the identification of colors and in telling of time, said device comprising,

a base having an upper surface with different colored areas thereon,

a series of pegs insertable into said base,

a centrally disposed post supported by said base,

means tethering each of said pegs to said post,



said base having a clock face on its underside,

an hour and a minute hand in said base, and

controls rotatably mounted within said post with each control having a clock hand attached to its lower end.

4,128,991

ELECTRONIC DIGITAL WATCH

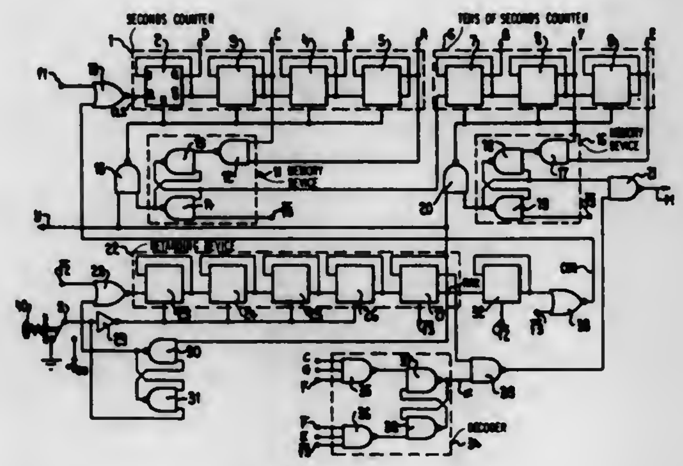
Jean-Claude Robert-Grandpierre, Colombier, Switzerland, assignor to Ebauches SA, Neuchatel, Switzerland

Filed Dec. 20, 1976, Ser. No. 752,430

Claims priority, application Switzerland, Jan. 12, 1976, 263/76

Int. Cl.^{2} G04C *3/00*

U.S. Cl. 58—23 R **4 Claims**



1. An electronic digital watch comprising

a quartz crystal oscillator,

a divider chain,

counters and circuits for displaying hours, minutes and seconds,

and a means for correcting the counters for the minutes and seconds when the difference between the indicated time and the actual time is not more than plus or minus 30 seconds, said correcting means comprising,

a push button,

a first logic circuit,

a time delay circuit which is activated by the operation of said push button and which produces an output signal only if the said push button is actuated until the end of the time delay period, the said output signal being delivered via said first logic circuit to the seconds counters to put said seconds counters into a state corresponding to the actual time at the end of said time delay operation, and

a second logic circuit for determining when the watch is slow and for delivering a correcting pulse to the minutes counter, the outputs of said seconds counters being inputted to said second logic circuit, said second logic circuit delivering said correcting pulse to the minutes counter at the end of the time delay operation.

4,128,992

ROCKING MOTOR FOR LOW COST QUARTZ WATCH

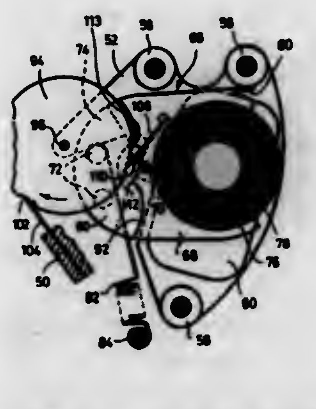
Joseph Egger, Pforzheim; Franz Mayer, Birkenfeld; Herbert Schwartz, Wurmberg; Walter Sodler, Pforzheim-Buchenbronn, all of Fed. Rep. of Germany; Jean Suard, Besancon, France, and Wilhelm Tilse, Birkenfeld, Fed. Rep. of Germany, assignors to Timex Corporation, Waterbury, Conn.

Filed Mar. 21, 1977, Ser. No. 779,652

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1976, 2617077

Int. Cl.^{2} G04C *3/00*

U.S. Cl. 58—23 D **14 Claims**



1. In a quartz controlled analog wrist watch comprising a quartz controlled pulse generator and a driving element for driving a first toothed wheel of a gear train, said driving element being mounted for pivoting about an axis, a coil connected to receive the output pulses of the pulse generator, and a permanent magnet, said coil and said magnet being moveable relative to each other, for deflecting said driving element from a rest position, and further comprising a reset spring for returning the driving element to said rest position, the improvement comprising:

means causing the output pulses from the pulse generator to occur substantially less frequently than once per second, and means for directly indexing the first toothed wheel by said driving element in such a way that when the driving element is deflected, the reset string is tensioned and only when the driving element is returning under tension of said reset spring is the first toothed wheel indexed, said first toothed wheel being disposed to serve as the "center" wheel.

4,128,993

ZERO ADJUSTMENT IN AN ELECTRONIC TIMEPIECE

Hidetoshi Maeda, Tenri; Mitsuo Morihisa, Nara, and Takehiko Sasaki, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 15, 1975, Ser. No. 605,080

Claims priority, application Japan, Aug. 15, 1974, 49-94081

Int. Cl.^{2} G04C *3/00*

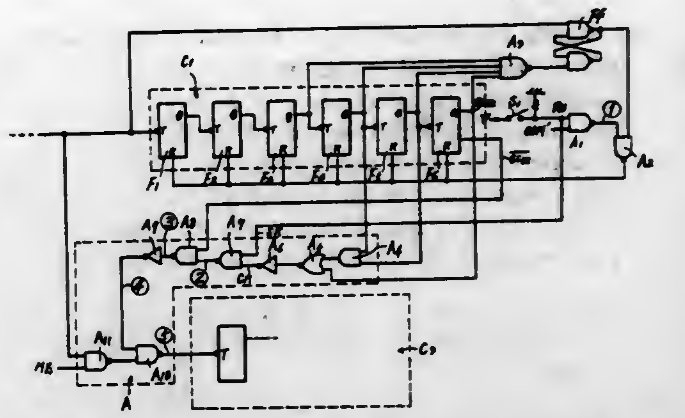
U.S. Cl. 58—23 R **2 Claims**

1. In an electronic time piece which comprises a time information calculation circuit including second and minute counters and a zero adjustment control circuit, the improvement comprising:

a zero adjustment command switch;

a determination circuit responsive to the condition of said second counter of said time information calculation circuit for determining whether in a given 60 second interval of from zero to 59 seconds, the second count has a value between zero seconds and a predetermined value less than 30 second representative of a characteristic boundary between fast and slow error conditions of said timepiece; and

an increment signal generation circuit selectively driving said minute counter to increment by one the count therein



in response to depression of said zero adjustment command switch coincident with a determination by said determination circuit that said second count is between said characteristic boundary value and 59 seconds.

4,128,994

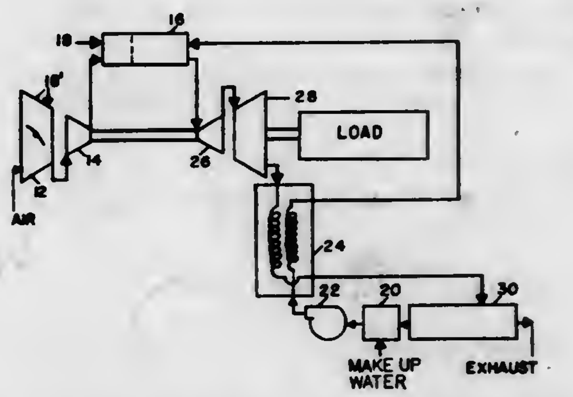
REGENERATIVE PARALLEL COMPOUND DUAL-FLUID HEAT ENGINE

Dah Y. Cheng, Palo Alto, Calif., assignor to International Power Technology, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 534,479, Dec. 19, 1974, Pat. No. 3,978,661. This application Jul. 14, 1976, Ser. No. 705,355

Int. Cl.^{2} F02C *7/00, 7/10*

U.S. Cl. 60—39.05 **23 Claims**



1. A dual working fluid heat engine for operation in a range encompassing from maximum efficiency to maximum throughput comprising:

(a) a combustion chamber;

(b) turbine means for converting the energy of working fluids passing through it to mechanical work;

(c) compressor means for introducing a first reactant comprising air into said combustion chamber, said compressor means having a pressure ratio (CPR) falling within an approximate region of values dependent upon the temperature of the working fluids at the inlet to said turbine means (TIT) according to the following relationship:

$$(\mathrm{CPR})_{mean} \cong -21.25 + 21.14(\mathrm{TIT}/1000) + 3(\mathrm{TIT}/1000)^2 - 1.667(\mathrm{TIT}/1000)^3$$

for 1500° F. ≦ TIT ≦ 3000° F.

The upper bound of this region is:

$$(\mathrm{CPR})_{upper1} \cong (\mathrm{CPR})_{mean} \times 1.5 \text{ for } 1500° \text{ F.} \leqq \mathrm{TIT} < 1600° \text{ F.}$$

$$(\mathrm{CPR})_{upper2} \cong (\mathrm{CPR})_{mean} \times 1.4 \text{ for } 1600° \text{ F.} \leqq \mathrm{TIT} < 2200° \text{ F.}$$

$$(\mathrm{CPR})_{upper3} \cong (\mathrm{CPR})_{mean} \times 1.3 \text{ for } 2200° \text{ F.} \leqq \mathrm{TIT} < 3000° \text{ F.}$$

The lower bound of this region is:
$(CPR)_{lower_1} \cong 4.0$ for 1500° F. $\leqq$ TIT $<2000°$ F.

$(CPR)_{lower_2} \cong (CPR)_{mean}/1.4$ for 2000° F. $\leqq$ TIT $<$ 3000° F.

(d) means for introducing a second reactant comprising a hydrocarbon fuel under pressure into said combustion chamber for combustion with said first reactant wherein the ratio of the first raactant to the second reactant (AFR) is dependent upon the compressor means pressure ratio and temperature of the working fluids at the inlet to said turbine means, and wherein the ratio falls within an approximate range according to the following relationship:

$(AFR)_{mean} \cong 209.96 - 170.90(TIT/1000) + 52.93(TIT/1000)^2 - 5.81(TIT/1000)^3$ for 1500° F. $\leqq$ TIT $\leqq 3000°$ F.

The upper bound of this region is:
$(AFR)_{upper1} \cong (AFR)_{mean} \times 1.4$ for 1500° F. $\leqq$ TIT $\leqq 3000°$ F.

The lower bound of this region is:

$(AFR)_{lower1} \cong (AFR)_{mean}/1.4$ for 1500° F. $\leqq$ TIT $<$ 2000° F.

$(AFR)_{lower2} \cong (AFR)_{mean}/1.5$ for 2000° F. $\leqq$ TIT $\leqq$ 2500° F.

$(AFR)_{lower3} \cong 15.0$ for 2500° F. $\leqq$ TIT $\leqq$ 3000° F.

(e) means of introducing a fluid comprising water in a vapor state into the said heat engine combustion chamber at a ratio of water to the combustion products by weight (XMIX) dependent upon the compressor means pressure ratio, the temperature of the working fluids at the inlet to said turbine means, and the ratio of the first reactant to the second reactant and wherein the ratio falls within an approximate range according to the following relationship: Ti, $(XMIX)_{mean} \cong 0.20 + 0.0643(TIT/1500)$

for 1500° F. TIT 3500° F.
The upper bound for this region is:
$(XMIX)_{upper} \cong 0.3 + .0167(TIT/1500°\text{ F.})$

The lower bound of this region is:

$(XMIX)_{lower1} \cong 0.1$ for 1500° F. $<$ TIT $<$ 3500° F.

whereby the said vapor is further heated by heat transfer through rapid and turbulent mixing with the heated combustion products;

(f) means fo utilizing part of the mechanical work generated by said expander means to power said compressor means;

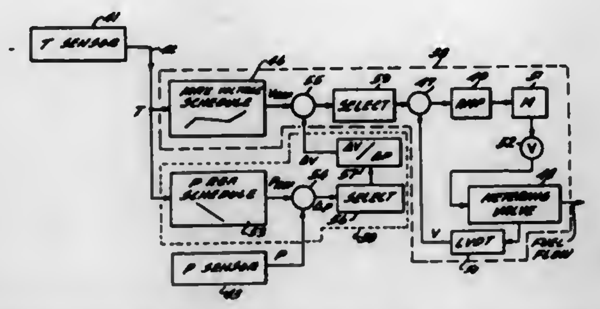
(g) means for extracting useful work from said expander means; and

(h) means for transferring residual thermal energy from said mixture of vapor and combustion products to said water to thereby preheat the same to a super-heated vapor, XMIX being chosen to generally maximize the temperature of the superheated water vapor in degrees of superheat, for a given value of TIT, and wherein the CPR is chosen to generally maximize the transfer of the residual thermal energy to said water for a given value of TIT.

4,128,995
METHOD AND APPARATUS FOR STABILIZING AN AUGMENTER SYSTEM

Peter D. Toot, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed Oct. 18, 1976, Ser. No. 733,093
Int. Cl.^{2} F02K *3/06, 3/08;* F02C *9/08*
U.S. Cl. 60—204 **23 Claims**

8. A method of stabilizing a fuel control system of the type which schedules the fuel/air ratio to a combustion apparatus in response to certain engine operating parameters, comprising the steps of:
a. sensing pressures representative of the air pressure in the combustor;
b. sensing temperatures representative of the air temperatures in said combustor;



c. generating a schedule indicative of the combustor rich stability limit; and
d. maintaining operation of the engine within the rich stability limit by modifying the fuel/air ratio in response to both said sensed pressures and temperatures.

12. A method as set forth in claim 8 wherein said combustion apparatus comprises an engine afterburner.

4,128,996
CHLORITE CONTAINING PYROTECHNIC COMPOSITION AND METHOD OF INFLATING AN INFLATABLE AUTOMOBILE SAFETY RESTRAINT

Eugene F. Garner, and Brian K. Hamilton, both of Canyon Country, Calif., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.
Filed Dec. 5, 1977, Ser. No. 856,958
Int. Cl.^{2} C06D *5/06;* C06B *45/10*
U.S. Cl. 60—205 **10 Claims**

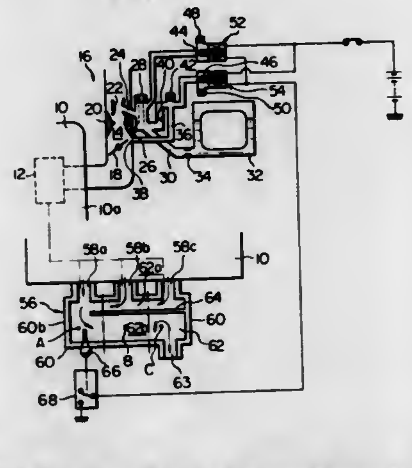
1. A pyrotechnic composition comprising:
from about 1 to 20% by weight of a thermoplastic resin selected from the group consisting of polyacetal resins, polyvinyl acetate resins and mixtures thereof;
from about 30 to 80% by weight of an alkali metal chlorite; and
from about 20 to 60% by weight of a coolant selected from the group consisting of calcium hydroxide, magnesium hydroxide or mixtures thereof.

6. A method of inflating an inflatable automobile safety restraint comprising the step of substantially completely inflating the restraint with the gaseous composition products of combustion of a composition comprising:
about 1 to 20% by weight of a thermoplastic resin selected from the group consisting of polyacetal resins, polyvinyl acetate resins and mixtures thereof;
about 30 to 80% by weight of an alkali metal chlorite; and
about 20 to 60% by weight of a coolant selected from the group consisting of calcium hydroxide, magnesium hydroxide or mixtures thereof.

4,128,997
I.C.E. EQUIPPED WITH MEANS FOR MAINTAINING REACTOR TEMPERATURE ABOUT A SINGLE TEMPERATURE

Suzuo Suzuki, Yokosuka; Masayasu Nakajima, Yokohoma; Ken-ichi Koizumi, Yokosuka, and Yoshio Ookubo, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Japan
Filed Sep. 28, 1976, Ser. No. 727,455
Claims priority, application Japan, Sep. 29, 1975, 50-117556
Int. Cl.^{2} F02B *75/10;* F01N *3/10, 7/10*
U.S. Cl. 60—274 **13 Claims**

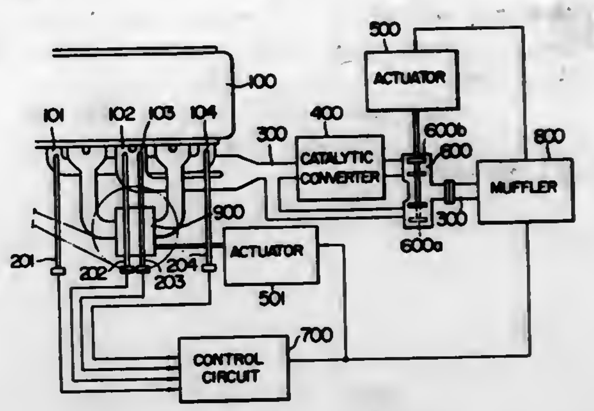
1. A method of controlling the temperature in a reactor for oxidizing the unburned constituents contained in the exhaust gases discharged from an internal combustion engine, said reactor defining therein a reactor chamber including a first portion to which the exhaust gases from the engine are introduced, a second portion downstream of the first portion, and a third portion downstream of the second portion, through which third portion oxidized exhaust gases are discharged out of the reactor, said method comprising the steps of:
sensing a temperature at a location including the first and second portions of the reactor, comparing the sensed temperature with a predetermined temperature which predetermined temperature is obtained when the temperature in the third portion of the reactor is within a first temperature range where the unburned constituents contained in the exhaust gases introduced from the combustion chamber of the engine are effectively thermally oxidized, said predetermined temperature being in close proximity to and higher than a temperature at said location which temperature is obtained immediately before the temperature in the third portion falls below the first temperature range;
supplying the combustion chamber of the engine with a first air-fuel mixture having a first air-fuel ratio which causes the temperature of the exhaust gases throughout the reactor to rise into the first temperature range, when the temperature of said location is below said predetermined temperature; and
supplying the combustion chamber of the engine with a second air-fuel mixture having a second air-fuel ratio which causes the temperature of the exhaust gases throughout the reactor to fall into a second temperature range where the unburned constituents contained in the exhaust gases are not oxidized, when the temperature of said location exceeds said predetermined temperature.



4,128,998
OVERHEAT PREVENTING SYSTEM FOR EXHAUST GAS PURIFIER OF VEHICLES

Tadashi Hattori, Nishio; Takamichi Nakase, Gamagori; Hideo Tsubouchi, and Toshiharu Iwata, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Division of Ser. No. 371,880, Jun. 20, 1973, Pat. No. 4,012,906.
This application Feb. 2, 1977, Ser. No. 764,985
Claims priority, application Japan, Jun. 26, 1972, 47-63896; Jul. 26, 1972, 47-75399; Jul. 26, 1972, 47-75400; Jul. 26, 1972, 47-75401; Jul. 31, 1972, 47-77155
Int. Cl.^{2} F01N *3/15*
U.S. Cl. 60—277 **16 Claims**

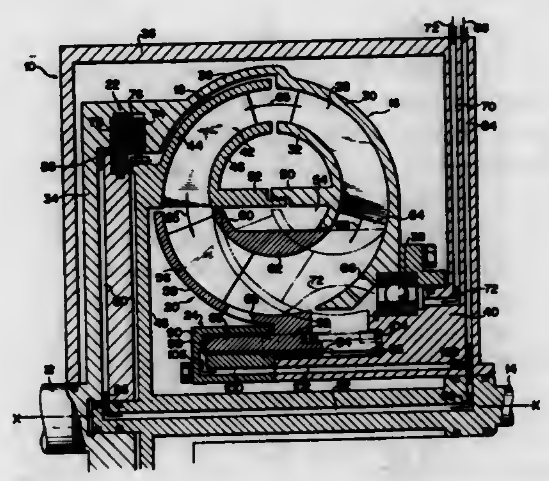
1. An overheat preventing system for exhaust gas purifier of a vehicle comprising:
a temperature detector inserted in the locality of each of a plurality of engine exhaust ports;
an overheat detector means for detecting failure of an engine to fire from signals from said temperature detectors to produce a signal, said overheat detector means detecting the time rate of change of the temperature in the locality of said engine exhaust ports, whereby when said temperature change rate reaches a predetermined value, the occurrence of a misfire is detected to generate an overheat signal; and



means responsive to said signal generated from said overheat detector means to prevent unburned gases from flowing into an exhaust gas purifier.

4,128,999
HYDRAULIC TORQUE CONVERTER WITH A LOCK-UP CLUTCH AND AN AXIALLY RETRACTABLE REACTOR

Akinori Yokoyama, Yokohama, and Iwao Morinaka, Tokyo, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Nov. 23, 1977, Ser. No. 854,100
Claims priority, application Japan, Nov. 24, 1977, 52-156377[U]
Int. Cl.^{2} F16D *33/04*
U.S. Cl. 60—347 **6 Claims**

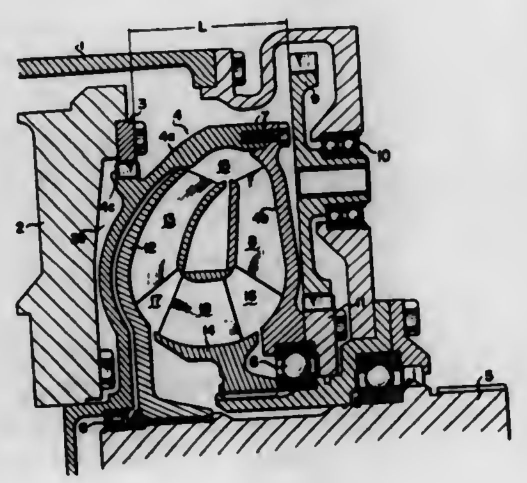


1. A torque converter capable of selectively providing a fluid connection and a rigid mechanical connection between input and output means for power transmission, comprising in combination:
an impeller member connected to and driven by the input means;
a turbine member disposed opposite to the impeller member and adapted to be driven by the latter through the medium of the fluid, the turbine member being connected to the output means;
a reactor member movable axially of the torque converter between a working and a retracted position, the reactor member when in the working position being effective to redirect the fluid flowing out of the turbine member back into the impeller member to boost the action of the latter;
a lock-up clutch for selectively providing the mechanical connection between the input and the output means; and
actuator means for moving the reactor member from the working to the retracted position in order to minimize power loss incurred by the fluid when the input and the output means are coupled by the lock-up clutch.

4,129,000
HYDRAULIC TORQUE CONVERTER

Haruhiko Umeda, Yokohama; Ryuji Ito, Ebina; Akinori Yokoyama, and Mitsuaki Komatsu, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 9, 1977, Ser. No. 805,155
Int. Cl.² F16D *33/20*
U.S. Cl. 60—361 2 Claims



1. A hydraulic torque converter having a torus provided with a bladed impeller, a bladed turbine and a bladed stator, the portions of the torus between the impeller, the turbine and the stator each having no blade formed thereon, the shape of the torus being defined by a series of design points A to J, inclusive, determined by a system of X and Y coodinates starting from the radially outermost design point A and processing in succession through other design points in a direction opposite to that of the toroidal flow, the coordinate system being related to a converter output axis and a reference base line passing through the radially outermost point of the torus and drawn perpendicular to the output axis as X and Y axes, respectively, the outer wall of the torus being determined by interconnecting each adjacent pair of design points with a continuously changing smooth curvature, wherein the coordinates have values for design points A to J as follows:

A (0, 1.000 R)

B [(0.1225 ± 0.0123)R, 0.9335 R]

C [(0.1615 ± 0.0162)R, 0.7225 R]

D [(0.1590 ± 0.0159)R, 0.5065 R]

E [(0.0175 ± 0.0018)R, 0.3650 R]

F [– (0.1100 ± 0.0110)R, 0.3515 R]

G [– (0.2570 ± 0.0257)R, 0.4040 R]

H [– (0.3285 ± 0.0329)R, 0.5060 R]

I [– (0.2990 ± 0.0299)R, 0.7470 R]

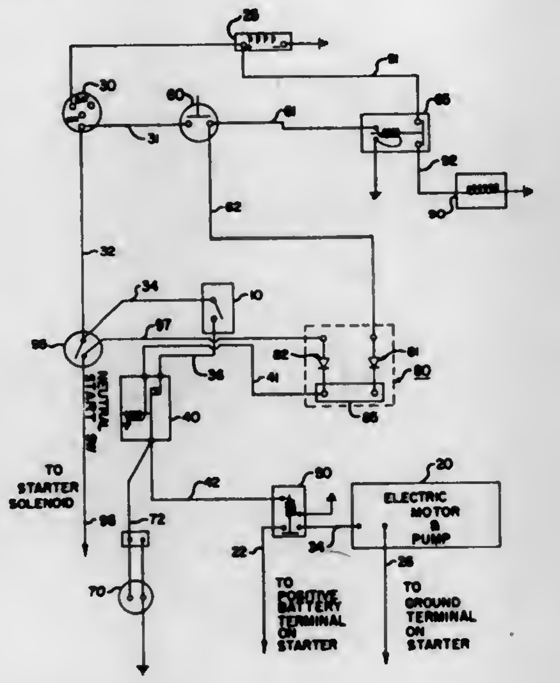
J [– (0.1340 ± 0.0134)R, 0.9385 R]

wherein R is the outermost radius of the torus, positive and negative values being measured in opposite directions, respectively, from the reference base line.

4,129,001
ENGINE AIR HEATER AND STARTING CIRCUITS TO BY-PASS AUXILIARY STEERING CIRCUIT

Carl A. Keyner, Mundelein, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Nov. 25, 1977, Ser. No. 854,806
Int. Cl.² F15B *20/00, 21/08*
U.S. Cl. 60—403 8 Claims



1. In a vehicle having a vehicle engine driven hydraulic pump for supplying hydraulic fluid to a vehicle steering system, a vehicle battery driven auxiliary hydraulic pump for supplying hydraulic fluid to the vehicle steering system upon a predetermined decrease in hydraulic fluid supplied from said vehicle engine driven pump, auxiliary pump actuating means for coupling the vehicle battery driven auxiliary hydraulic pump to the vehicle battery in response to the occurrence of a predetermined decrease in hydraulic fluid supplied from said vehicle engine driven pump, an air heater element for heating intake air prior to vehicle engine starting, and a vehicle ignition system including the auxiliary pump actuating means, a normally open neutral start switch the contacts of which are closed when starting the vehicle and a normally open heater switch for effecting energization of the air heater element for heating the pre-start engine intake air, the improvement comprising

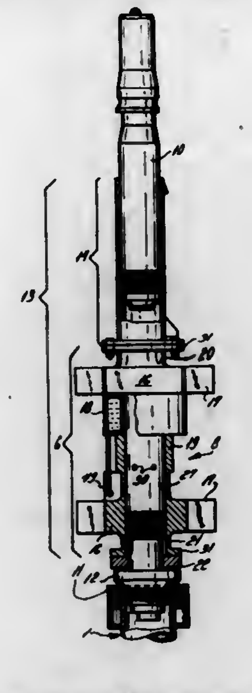
a relay having normally closed relay contacts coupling said vehicle battery driven auxiliary hydraulic pump to the vehicle battery in response to said auxiliary pump actuating means and having a relay winding coupled to said normally open heater switch to open said normally closed relay contacts upon the closing of said normally open heater switch to electrically isolate said vehicle battery driven auxiliary hydraulic pump from the vehicle battery when said heater switch contacts are closed.

4,129,002
CYLINDER PIECE FOR A PILE DRIVING RAM

Hans G. Schnell, Hamburg, Fed. Rep. of Germany, assignor to Van Kooten B.V., Naarden, Netherlands

Filed Nov. 7, 1975, Ser. No. 629,917
Claims priority, application Netherlands, Nov. 20, 1974, 7415152
The portion of the term of this patent subsequent to Jan. 10, 1995, has been disclaimed.
Int. Cl.² F01B *29/08;* B22D *13/02*
U.S. Cl. 60—633 22 Claims

1. In a pile driving device comprising a guide frame having guide stays and a foot for receiving a pile to be driven; a cylinder having interconnected an upper portion and a lower portion; a piston slidable in said cylinder; guide members connected to said cylinder and engaging said guide stays; an impact member slidable in said cylinder; and a bottom ring connected to the lower portion, said bottom ring slidably receiving the impact member; the improvement which comprises

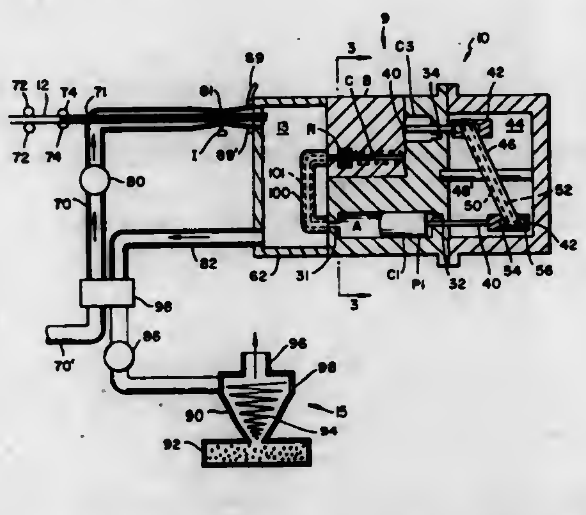


said lower portion of said cylinder being a centrifugally cast alloy steel having end portions adapted to be connected to the upper portion of said cylinder and to the bottom ring, inlet and outlet ports between said end portions, and a plurality of guide girdles for supporting said guide members.

4,129,003
ENGINE OPERATED BY A NON-POLLUTING RECYCLABLE FUEL

E. Quimby Smith, Jr., Camarillo, Calif., assignor to Q Corporation, Troy, Mich.

Filed Mar. 29, 1976, Ser. No. 671,280
Int. Cl.² F02G *1/00;* F23B *7/00*
U.S. Cl. 60—645 16 Claims

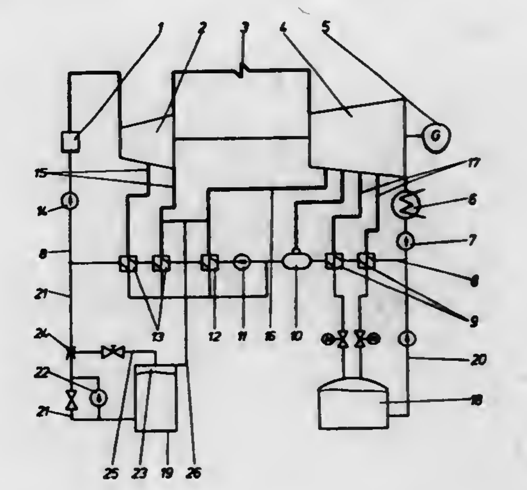


1. A system of operating an external combustion engine which is operated by a heated working fluid of the engine, comprising providing a fuel selected from the group consisting of magnesium, aluminum, magnesium plus aluminum and a magnesium-aluminum alloy, providing a combustion chamber in association with the engine, burning said fuel in said combustion chamber, and subjecting the working fluid of the engine to the heat generated by the burning fuel in said combustion chamber.

4,129,004
METHOD AND APPARATUS FOR THE STORAGE OF ENERGY IN POWER PLANTS

Franz Thelen, and Henning Weber, both of Mülheim, Fed. Rep. of Germany, assignors to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Feb. 4, 1977, Ser. No. 765,983
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1976, 2609622
Int. Cl.² F01K *3/12, 7/34*
U.S. Cl. 60—652 6 Claims

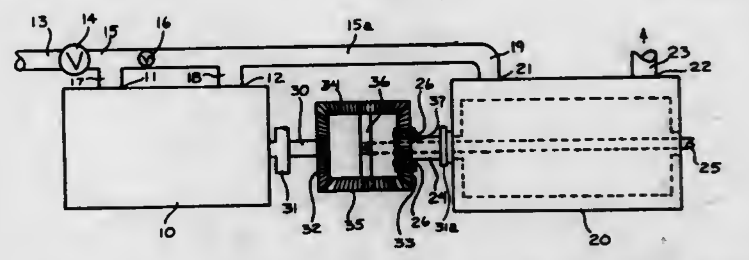


1. A method for the storage of energy in power plants with a boiler for peak-load coverage comprising the steps of: heating hot water in feed water preheaters; storing the heated water in a hot water storage tank; filling and emptying alternately said storage tank and a tank receiving cold water; holding the stored hot water at feed water temperature and maintaining the temperature uniform throughout the storage tank level; feeding the hot water during peak load directly into a feed water line downstream of the high-pressure water heater preheaters; said hot water storage tank and said tank receiving cold water having substantially the same volume; blocking bleeder lines leading to feed water heaters and supplying said boiler exclusively with hot water from said hot water storage tank during peak-load operation.

4,129,005
MOMENTARY TORQUE MAXIMIZING METHOD AND APPARATUS

Clarence K. Greene, 100 N. Arlington Ave., Reno, Nev. 89501

Filed May 27, 1975, Ser. No. 574,568
Int. Cl.² F01B *21/00*
U.S. Cl. 60—715 6 Claims

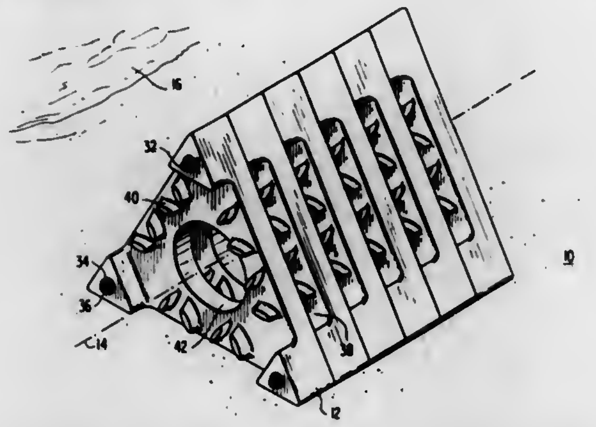


1. The method of utilizing an expansible fluid for extracting the latent energy therein as mechanical power including: (1) providing a primary source of expansible fluid; (2) passing said expansible fluid into a first expander; (3) passing the expanded fluid from the first expander into a secondary expander; (4) exhausting said secondarily expanded fluid from said secondary expander; (5) coupling the output of the first expander to one element of a differential mechanism; (6) coupling the output from the secondary expander to another element of a differential mechanism wherein the outputs from the primary and secondary expanders will be balanced; (7) coupling a third element of the differential mechanism to a final power takeoff;

and, (8) alternately bypassing the primary fluid from the primary expander directly to the secondary expander.

4,129,006
MODULAR EROSION CONTROL SYSTEM

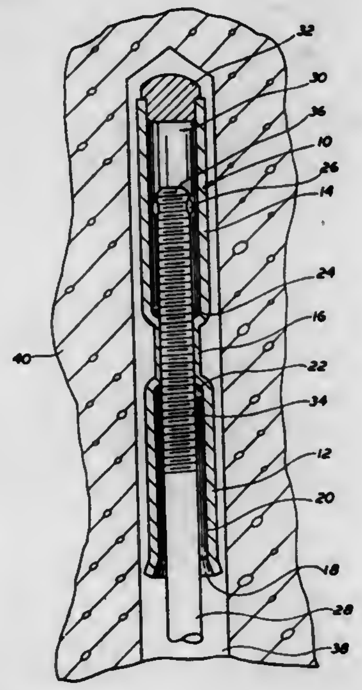
Peter R. Payne, Annapolis, Md., assignor to Sylvia M. Payne, Annapolis, Md., a part interest
Filed May 19, 1977, Ser. No. 798,558
Int. Cl.² E02B *3/06*
U.S. Cl. 405—31 **9 Claims**



1. In a shore erosion system of the type having a series of individual modules joined to form a composite structure, the improvement comprising, each individual module having a substantially symmetrical equilateral triangle outside wall configuration, each module having a wall surface aligned substantially perpendicular to movement of waves, a series of aerodynamically shaped baffles projecting from said wall surface, wherein uniform wave dissipation occurs about any symmetrical outside wall.

4,129,007
ANCHOR DEVICE FOR RESIN ANCHOR SYSTEM

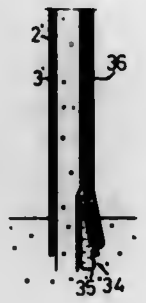
Paul G. Rausch, Parma, Ohio, assignor to Celtite, Inc., Cleveland, Ohio
Filed Aug. 4, 1977, Ser. No. 821,890
Int. Cl.² E21D *21/00*; F16B *13/00*
U.S. Cl. 405—261 **10 Claims**



1. An anchor for use in a hole with a bolt and cartridge containing hardenable resin, said bolt having a threaded shank and having at least one lug means extending from said threaded shank, said anchor being an elongate cylindrical shell and having a central passage to receive said bolt, to form an anchor-bolt unit, said anchor having a first open end and a second closed end, said bolt extending outwardly of said first open end, said anchor also having an internally threaded portion for receiving said bolt, said bolt lug means being located adjacent said closed second end of said anchor, said anchor-bolt unit being inserted in said hole and said cartridge also being inserted in said hole whereby when said bolt is rotated in a first sense to tend to withdraw said bolt from said anchor, said bolt lug means prevents complete withdrawal and instead said anchor is rotated, thereby to expel and mix the contents of said cartridge and thereafter said bolt may be rotated after setting of the resin in a second sense so that said bolt penetrates into said anchor to tension the bolt.

4,129,008
TREMIE TUBE

Yasushi Nakahara, Hackioji; Tadasuke Ohtomo, Hino; Shinichi Yokota, Chofu, and Kazuo Usui, Kamisumachi, all of Japan, assignors to Kajima Kensetsu Kabushiki Kaisha, Tokyo, Japan
Filed May 25, 1976, Ser. No. 689,690
Claims priority, application Japan, May 28, 1975, 50-64688
Int. Cl.² E02D *15/06*
U.S. Cl. 405—303 **1 Claim**

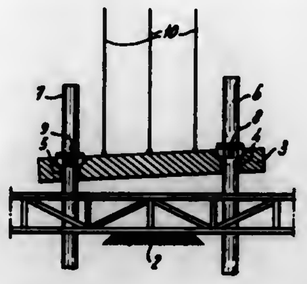


1. A tremie tube comprising: a first rigid outer tube having an enlarged lower end; a second water impervious, pressure yieldable inner tube secured within said outer tube; a pressure responsive closure means secured to the lower end of said inner tube; means to pressure actuate said closure means; said pressure responsive closure means including an expandable bag hydraulic valve means positioned within said enlarged portion of the lower end of said first outer tube; and means for providing ingress and egress of a bag expandable substance into and out of said expandable bag including a third tubular member with one end in communication with said expandable bag hydraulic valve means and with the other end adjacent the upper end of said first rigid outer tube adapted to receive said bag expandable substance for transmission through said third tubular member to and from said expandable bag hydraulic valve means, wherein said expandable bag hydraulic valve means functions as a hydraulic valve to open and close the lower end of said second tube responsive to pressure inducing substance transmitted through said third tubular member.

4,129,009
ANCHORING CONSTRUCTION ON THE SEA BOTTOM

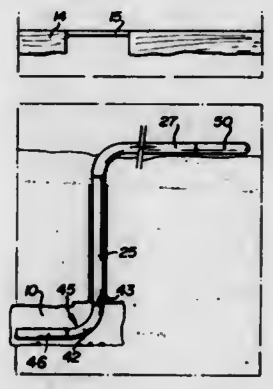
Joost W. Jansz, The Hague, Netherlands, assignor to Hollandsche Beton Groep N.V., Rijswijk, Netherlands
Filed Jun. 29, 1977, Ser. No. 811,360
Claims priority, application Netherlands, Jun. 29, 1976, 7607130
Int. Cl.² E02B *17/00*
U.S. Cl. 405—227 **4 Claims**

1. An anchoring assembly, comprising:
(a) A heavy elongated block member of concrete or the like having substantial negative buoyancy,
(b) at least two spaced vertical holes respectively extending through the block member proximate the opposite ends thereof,
(c) at least two elongated piles each extending through one of the holes in the block member and adapted to be vertically driven into the sea bottom,
(d) the diameter of each hole being greater than that of its associated pile whereby the block member may be raised vertically on the driven piles,
(e) at least two abutment means individually secured to each driven pile at a distance above the block member and having transverse dimensions larger than the diameter of the associated block member hole to thereby limit the vertical raising of the block member on each pile, and
(f) anchor cable means connected to the block member at a position spaced from and between the holes therein and adapted to be coupled to a buoyant load.



4,129,010
TUNNEL

John A. Owen, Beaconsfield, Canada, assignor to Montreal Engineering Company, Limited, Montreal, Canada
Filed Sep. 8, 1977, Ser. No. 831,394
Claims priority, application Canada, Aug. 25, 1977, 285449
Int. Cl.² F16L *1/00*
U.S. Cl. 405—169 **8 Claims**

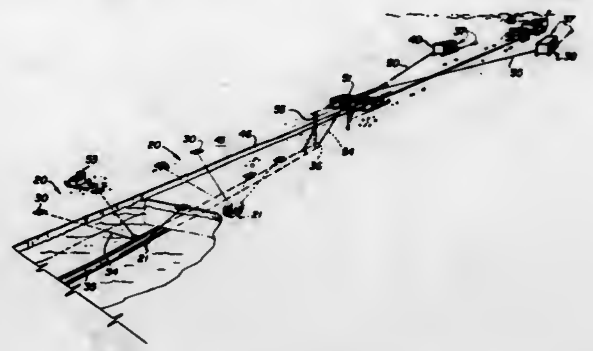


1. A method of making a pipeline connection beneath a body of water comprising the steps of positioning a drilling means at the water surface; drilling a hole downwardly through the water bed; introducing a pipe riser sealed at each end into said hole; grouting said inserted pipe riser in said hole to seal said hole from ingress of water; connecting a tunnel section from a shore with said riser; and joining a pipe passed through said tunnel with said pipe riser in such a manner as to permit fluid to flow from one to the other.

4,129,011
UNDER ICE PIPELAYING

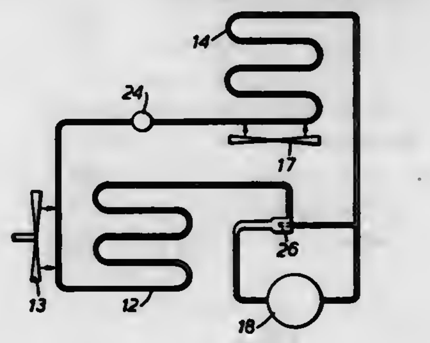
Arthur S. Demers, Mount Royal, and Lloyd A. Hilz, Calgary, both of Canada, assignors to Montreal Engineering Company, Limited, Montreal, Canada
Filed Sep. 8, 1977, Ser. No. 831,395
Claims priority, application Canada, Aug. 25, 1977, 285448
Int. Cl.² F16L *1/04*
U.S. Cl. 405—169 **10 Claims**

1. A method of laying an underwater pipeline under an ice sheet comprising: fabricating a pipe string at a make-up point on shore; forming discrete openings in the ice sheet to provide a plurality of support stations spaced apart along a projected direction of pipe laying; introducing underwater pipe-support cradles through said openings to said support stations; anchoring said cradles to said ice sheet; cutting a trench in the ice from a point of pipe entry into the water which trench follows said direction; towing said pipe string from said make-up point beneath the surface of said ice sheet and through said support cradles; actuating each said support cradle to engage and support said pipe string after the leading end thereof passes each said support station so that said pipe string is supported from said ice sheet and immediately beneath it; continuing to tow and support the pipe string until the required length of pipe is in place; attaching lowering means to said pipe; releasing said cradles seriatim, and lowering said pipe to the water bottom.



4,129,012
HEAT TRANSFER METHOD AND APPARATUS

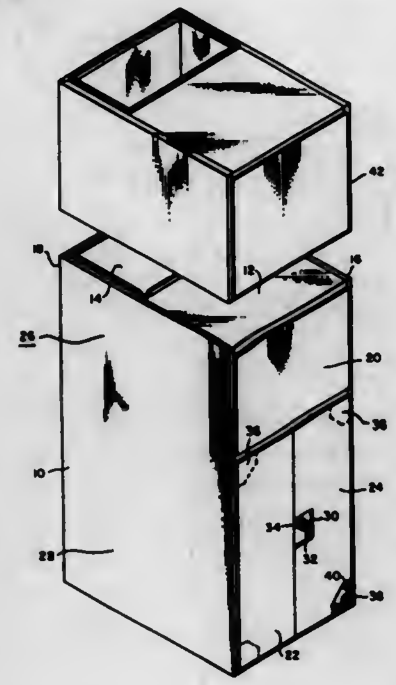
John H. Mairs, Berwick, Australia, assignor to Newton, John, Chadstone, Australia, a part interest
Filed Apr. 18, 1977, Ser. No. 788,132
Claims priority, application Australia, Apr. 20, 1976, PC5652
Int. Cl.² F25B *41/00, 5/00*
U.S. Cl. 62—113 **13 Claims**



1. In method of transferring heat from a substance in which method heat is extracted from the substance in a heat exchange operation and stored in a compressible fluid which is progressively compressed during intermittently spaced periods and subjected to a further heat exchange operation in which the stored heat is dissipated from the fluid, the improvement wherein fluid already compressed is continuously fed back and mixed with fluid not yet compressed at a controlled rate both substantially throughout and immediately after said periods of progressive compression whereby to reduce the rate of said dissipation of heat during said periods of progressive compression.

4,129,013
AIR-CONDITIONING UNIT WITH MULTI-POSITION COIL

Louis P. Hine, Jr., Norman, Okla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 1, 1977, Ser. No. 829,701
Int. Cl.² F25D *21/14;* F25B *27/00;* F28F *7/00, 13/00*
U.S. Cl. 62—285 **8 Claims**

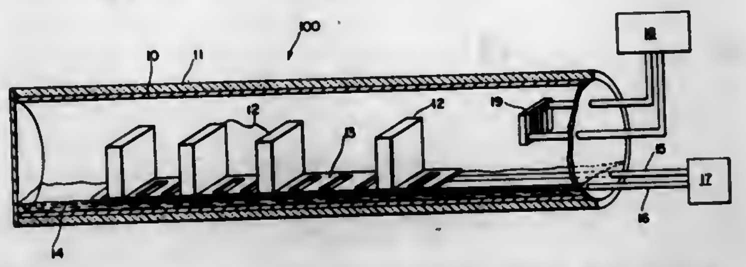


1. An air-conditioning unit comprising:
a cabinet including adjacent blower and coil sections, said coil section being of regular hexahedron shape and having access panel means for the front side of said coil section;
a refrigerant evaporator coil of rectangular outline and of fin and tube construction having a pair of opposite ends at the opposite ends of the fins;
coil frame means including means at both of said opposite ends to permit the drainage of condensate therefrom at a location generally in the plane of the face of the coil which always faces downwardly;
a drain pan freely separable from the cabinet and the coil, and having a diagonally open face to receive whichever opposite end of the coil is lower in any of the diagonal dispositions of the coil in the section;
said coil frame means including means to engage said drain pan at both of said opposite ends of said coil and with said condensate drainage means within the pan; and
means in said cabinet for supporting said drain pan in any of the four front-to-rear extending corners with the coil extending diagonally to an opposite corner, so that said cabinet may be disposed for airflow therethrough in upflow and downflow directions with right- and left-hand air entry options, and in either direction horizontal airflow.

4,129,014
REFRIGERATION STORAGE AND COOLING TANK

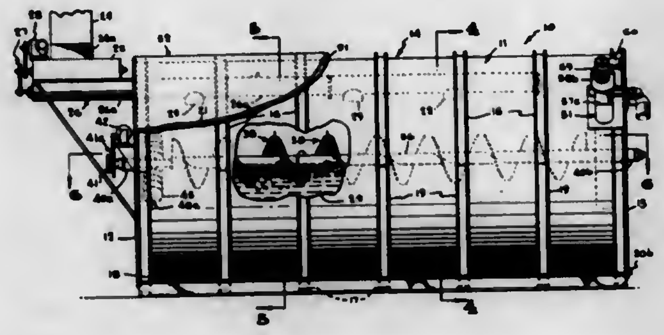
Talbot A. Chubb, 5023 N. 38th St., Arlington, Va. 22207
Filed Jul. 22, 1977, Ser. No. 818,179
Int. Cl.² F24C *15/16*
U.S. Cl. 62—333 **14 Claims**

1. A refrigeration cooling and coolant storage system for heat exchanger operation which comprises:
a gas tight housing;
a plurality of containers assembled within said housing;
a first fluid which freezes at a temperature below room temperature within said containers;
a volume of "heat pipe" liquid within said housing below said containers;
pipe means immersed within said "heat pipe" liquid within said housing for circulating a second fluid having a freeze point less than that of said "heat pipe" liquid;
a condensation pipe assembly within said housing positioned above said volume of "heat pipe" liquid;
a refrigerator-compressor connected with said condensation pipe assembly for cooling said condensation pipe assembly by circulation of a volume of refrigerator fluid through said condensation pipe thereby producing freezing of said first fluid within said containers, and a heat exchanger connected with said pipe means immersed in said "heat pipe" liquid to be cooled by fluid circulating through said volume of "heat pipe" liquid.



4,129,015
ICE STORAGE AND DISPENSING BIN

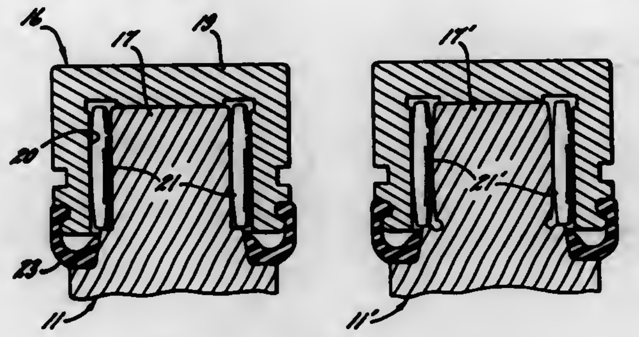
William F. Morris, Jr., P.O. Box 1046, Raleigh, N.C. 27602
Filed Apr. 22, 1977, Ser. No. 790,015
Int. Cl.² F25C *5/18*
U.S. Cl. 62—344 **26 Claims**



10. A cube ice storage and dispensing bin, comprising a large stationary elongated insulated tank defining a closed storage chamber for a large pool of water maintained substantially at water freezing temperature and at a depth such that the water level lies at a suitable level in the tank for storing the ice cubes in floating condition as a large mass of separate ice cubes therein, the tank having opposite feed and discharge transverse ends and longitudinal sides extending therebetween providing an ice storage pool of substantially rectangular plan at the water level, a pair of skeleton screw conveyor flights each having a center shaft journaled in the opposite ends of the tank and a skeleton helical vane member of open network construction extending lengthwise of the tank for moving floating ice cubes in opposite relative directions along first and second longitudinal legs of a circulating loop path inwardly along the sides and ends of the tank, the screw conveyor flights being located at opposite sides of the longitudinal center line of the tank near the sides thereof, transverse ice moving means inwardly adjacent the feed end of the tank for transferring floating ice cubes from an end region of one of said pair of screw conveyor flights to the other, feed means for feeding ice cubes into said tank, discharge conveyor means inwardly adjacent said discharge end for elevating ice cubes from the pool of water at a withdrawal station and conveying them out of the tank to an external discharge station, and means for rotating said screw conveyor flights at a slow speed producing gentle agitation and tumbling of the ice cubes floating in the pool to disrupt tendencies of the ice cubes to form multicube frozen lumps of ice and maintain a fluid slurry of ice cubes and water therein, and said screw conveyor flights and transverse ice moving means being arranged to gently and slowly migrate the floating ice cubes in a predetermined direction along said circulating loop path to pass through said withdrawal station.

4,129,016
UNIVERSAL JOINT CROSS

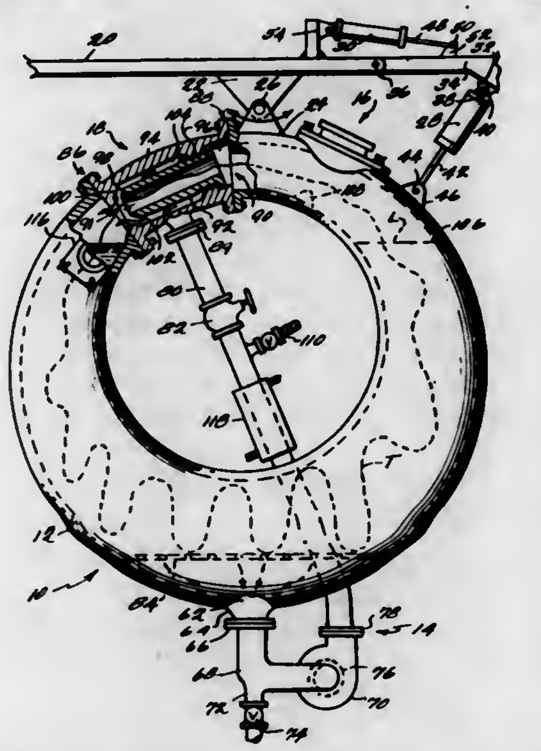
Dean A. Olson, Sr., Rockford, Ill., assignor to Rockford Acromatic Products Co., Rockford, Ill.
Filed Aug. 25, 1977, Ser. No. 827,562
Int. Cl.² F16D *3/30*
U.S. Cl. 64—17 A **3 Claims**



1. A universal joint cross having a central body, four trunnions spaced angularly around and extending outwardly from said body, each of said trunnions being of circular cross-section, a bearing cup telescoped over each trunnion, each of said bearing cups having a cavity of circular cross-section, and an annular row of elongated rollers located within each bearing cup and surrounding each trunnion, each of said rollers being of circular cross-section and each being convexly crowned in a longitudinal direction and symmetrically from its midpoint toward each of its ends.

4,129,017
LAB SAMPLE JET DYEING MACHINE

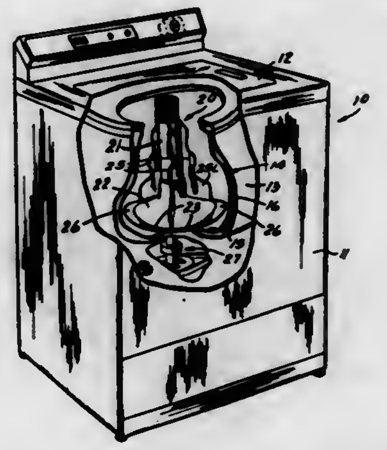
James E. Greer, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed Jan. 27, 1977, Ser. No. 763,152
Int. Cl.² D06B *3/28*
U.S. Cl. 68—15 **20 Claims**



1. A machine for treating textile material in generally rope form with a treating liquid comprising: means defining a closed vessel providing an endless path for circulation of a length of the textile material about a generally horizontal axis through the treating liquid in said vessel; means in said path for forming a generally annular converging jet of liquid surrounding the textile material for at least assisting in circulating the textile material in said path, said jet forming means attached to said vessel; means for withdrawing treating liquid from said vessel means and supplying the liquid under pressure to said jet forming means; and means for mounting said vessel for rotation about said horizontal axis so that the position of said jet forming means is movable along said path.

4,129,018
ONE-PIECE AGITATOR WITH CLOTHES LIFTING CAMS

Clark I. Platt, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Oct. 6, 1977, Ser. No. 839,997
Int. Cl.² D06F *17/10*
U.S. Cl. 68—134 **9 Claims**



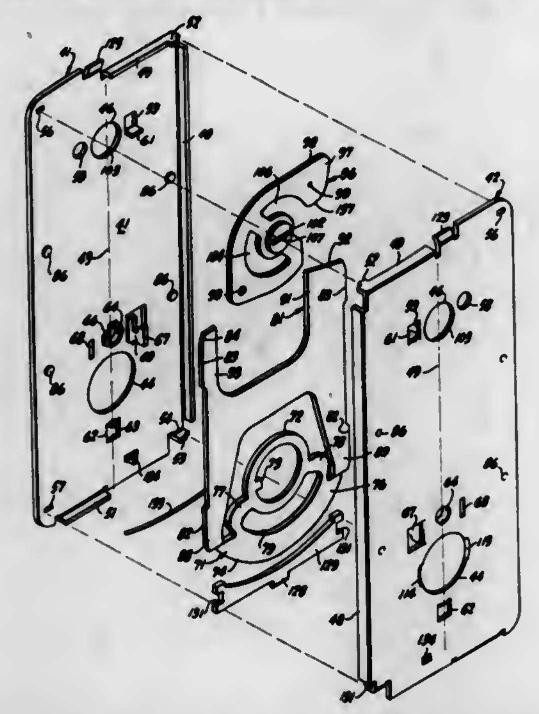
1. In an improved agitator for an automatic clothes washing machine, the agitator having a skirt having a circular outer periphery and a center post extending coaxially upwardly therefrom, the improvement of:
a plurality of agitator vanes extending generally radially of the center post and upwardly of the skirt,
and a corresponding plurality of crescent-shaped cams affixed to the periphery of the skirt,
each cam being located between a pair of said vanes,
each of said agitator vanes having a flat vertically extending lower portion which extends radially outwardly at least to a vertical line superjacent the periphery of the skirt and which is flat and coplanar with the axis of the agitator and extends vertically along said line to a level above said cams to form a low pressure area behind the vane when oscillated through a body of laundry liquid,
said cams being disposed to form portions of the surface of a cone coaxial with the agitator and having concavely shaped walls to prevent liquid entering the low pressure area from below,
each said cam having opposite cusped ends each of which terminates closely circumferentially adjacent one of said vanes, and
each said cam having a free edge extending upwardly and outwardly from the periphery of the skirt at approximately a 33° angle from the horizontal to impel clothes engaged by said edge upwardly and outwardly,
whereby the clothes and fabrics being laundered are drawn downwardly upon oscillation of the agitator in a laundry liquid into a low pressure area behind the lower portions of the agitator vanes and above the skirt and inwardly of the cams and are cammed upwardly and outwardly from the agitator in the machine.

4,129,019
CARTRIDGE FOR A LOCKSET

Jan Urdal, Hayward, Calif., assignor to Schlage Lock Company, San Francisco, Calif.
Filed May 16, 1977, Ser. No. 796,967
Int. Cl.² E05B *59/04, 63/04*
U.S. Cl. 70—107 **6 Claims**

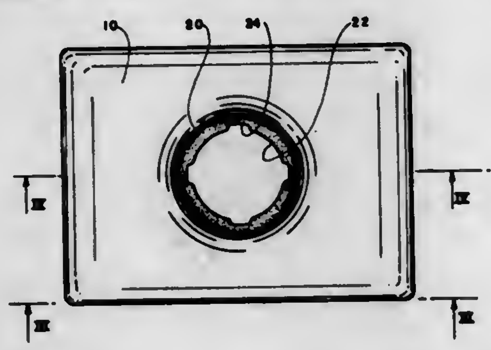
1. A cartridge for a lockset having a lock mechanism with a

primary rotatable spindle and a secondary rotatable spindle comprising a first cartridge plate, a second cartridge plate substantially identical in size and shape to said first cartridge plate, each plate having flange means on only a portion of its periphery extending to and abutting an unflanged edge portion of the other plate, means securing said cartridge plates directly to each other in registry and spaced apart by said flange means to provide a predetermined space therebetween, means defining openings in said first and said second cartridege plates disposed on a common center line for receiving said primary spindle and said secondary spindle, a rocker lever including lever arms adapted to be mounted on and rotatable with said primary spindle and located in said space between said cartridge plates with said lever arms on opposite sides of said center line, a slide including a pair of projecting primary lugs at one end and a projecting secondary lug at the other end, said slide being guided in said space by said flange means between said cartridge plates with said primary lugs in position to be engaged by said lever arms, a rotary lever located in said space between and journalled on said cartridge plates in rotary driving engagement with said secondary spindle, and a lever arm included with said rotary lever and in engagement with said secondary lug.



4,129,020
VEHICULAR TRUNK LOCK REPLACEMENT PLATE

Neil Gonzalez, 46-14 197th St., Flushing, N.Y. 11358
Filed Sep. 9, 1977, Ser. No. 831,742
Int. Cl.² E05B *63/00*
U.S. Cl. 70—417 **3 Claims**

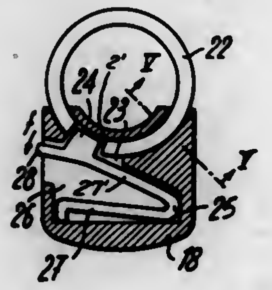


1. A vehicular trunk lock replacement plate for replacing the trunk lock of an automotive vehicle when the original trunk lock is gone and a hole through the body of the vehicle is left in its stead, said vehicular trunk lock replacement plate comprising

an escutcheon plate of generally planar configuration adapted to be affixed to the body of the vehicle for covering the hole through the body of the vehicle, said escutcheon plate having a central circular hole of predetermined diameter formed therethrough and a substantially frusto-conical protrusion around said central hole, said frusto-conical protrusion having a base end spaced from said plate with a slotted circular hole formed therethrough coaxially with said central hole and of smaller diameter than the predetermined diameter, said base end having a plurality of keyway slots formed therein around said slotted hole for accommodating a trunk lock replacement.

4,129,021
CLOSURE DEVICE

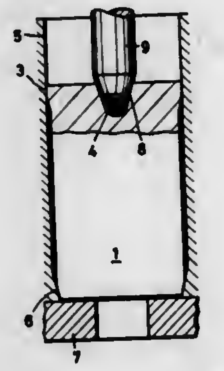
Attilio Brentini, "Le Chateau", Crissier, Vaud, Switzerland (CH-1023)
Filed Jun. 2, 1977, Ser. No. 802,805
Claims priority, application Switzerland, Aug. 30, 1976, 10948/76
Int. Cl.² A44B *15/00*
U.S. Cl. 70—456 R **6 Claims**



1. A closure device including, a ring having an opening, a two-part body provided with a seat and including an arcuate passage therewithin, said passage containing a portion of said ring to permit rotary displacement of said ring about its own axis of rotation, a generally V-shaped retainer part of resilient material disposed within said body, one limb of said retainer part disposed within said seat, the other limb of said retainer part including a laterally projecting locking element biased toward said ring and locking said ring against arcuate displacement when disposed within said ring opening, and said other limb including a free actuating end operable exteriorly of said body whereby, manipulation of said free actuating end causes displacement of said locking element from within said ring opening.

4,129,022
PIERCING A SOLID BILLET

Horst Thönnes, and Joachim Wünsche, both of Remscheid, Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany
Filed Jul. 27, 1977, Ser. No. 819,494
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1976, 2635342
Int. Cl.² B21C *23/32;* B21D *37/18*
U.S. Cl. 72—41 **7 Claims**

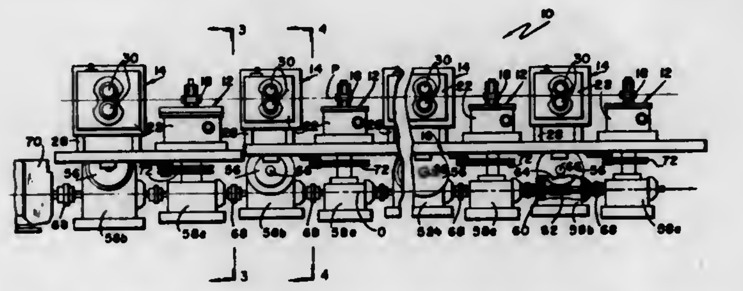


1. Method of completely piercing a solid, unpierced, cylindrical, metal billet, comprising the steps of:

- forming an initial well into one axial front end of the billet, the well having a curved bottom merging with a conical surface;
- filling the well at least partially with lubricant;
- placing the billet into a cylindrical receiver; and
- inserting a piercing mandrel into said well, said mandrel having a configuration of a truncated cone with a flat or slightly convex front end having a lesser curvature than the curved bottom of the well which partially but not completely fills the well upon being inserted into the well and engages the well's conical surface, and piercing the billet by forcing said mandrel completely through the billet by causing the conical configuration of the mandrel to move the conical surface of the well deeper into the billet without direct engagement of the bottom of the well by the mandrel front, thereby leaving a portion of the well filled with lubricant throughout the piercing until completed.

4,129,023
ROLLING MILL

Donald Sieurin, Shrewsbury, Mass., assignor to Morgan Construction Company, Worcester, Mass.
Filed Oct. 11, 1977, Ser. No. 841,166
Int. Cl.² B21B *35/02, 1/18*
U.S. Cl. 72—235 **5 Claims**



1. In a rolling mill having a plurality of roll stands aligned along the mill pass line, each roll stand having parallel roll shafts carrying cooperating pairs of work rolls, with the roll shafts of at least some of said roll stands being offset angularly with respect to the roll shafts of the other of said roll stands in order to eliminate the necessity for twisting the product as it progresses from stand to stand along the mill pass line, apparatus for driving said roll shafts comprising: intermeshed gear means carried by each pair of roll shafts for establishing a drive connection therebetween; a driven wheel connected to one roll shaft of each pair; a gear unit for each roll stand, each gear unit having an input shaft and an output shaft, the output shaft of each gear unit being parallel to the roll shafts of the roll stand associated therewith and having a driving wheel thereon; flexible endless means for connecting said driving and driven wheels, the input shafts of said gear units being interconnected along a single drive line parallel to the mill pass line and being driven by a common power source.

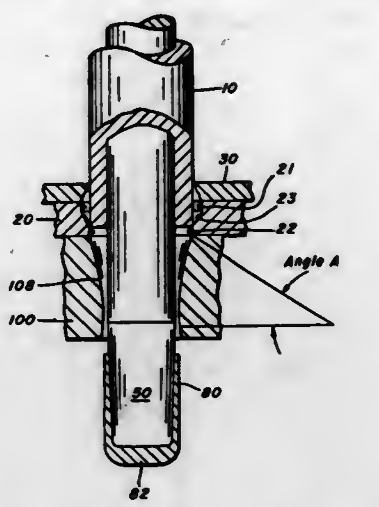
4,129,024
METHOD AND APPARATUS FOR FORMING ELONGATED, TAPERED WALL SHELLS

Charles H. Deveney, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Nov. 9, 1977, Ser. No. 849,996
Int. Cl.² B21D *51/54*
U.S. Cl. 72—329 **12 Claims**

1. A method of forming an elongated, unitary shell having a thin side wall and relatively thick end integral therewith, the shell formed from a substantially circular blank cut from sheet material, the method comprising the steps of:

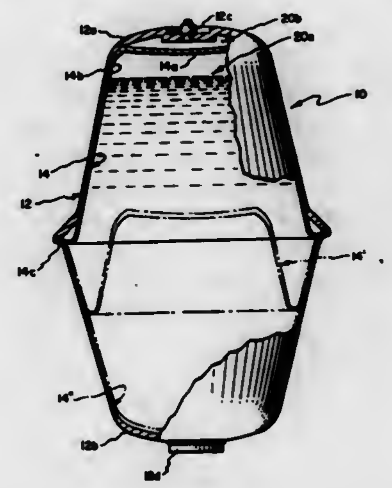
(a) providing a blank in a blank holder on a die having an effective entrance aperture and an effective exit aperture, the entrance aperture having an extent substantially commensurate in size with the size of the blank to be drawn, said die having a cavity, the walls of which converge inwardly from said entrance aperture to said effective exit aperture, said wall defined by an arc of a sector of a circle, said arc passing from the entrance aperture to the exit aperture, said sector having an angle in the range of 12° to 34°, said circle having its center located in substantially the same plane as said effective exit aperture; and

(b) displacing said blank through said die by action of a punch to form said shell.



4,129,025
METHOD OF FABRICATING AN EXPULSION TANK DIAPHRAGM

Lee F. Carey, and Anthony J. Friona, both of North Tonawanda, N.Y., assignors to Textron Inc., Providence, R.I.
Filed Feb. 25, 1977, Ser. No. 772,331
Int. Cl.² B21D *22/24*
U.S. Cl. 72—348 **4 Claims**



1. A method of improving the resistance of a generally cup-shaped article to buckling deformation incident to rolling upon itself into an inverted configuration, said article being formed from a material of the type having its stress characteristics altered by cold rolling deformation, including the steps of fabricating an article preform having a configuration essentially corresponding to said inverted configuration of said article, annealing said preform as required to substantially reduce the presence therein of residual stresses produced by fabrication of said preform and pre-rolling said pre-form upon itself onto a mandrel to define said article and impart directional residual stresses and strains to said article tending to improve the resistance of said article to buckling deformation incident to rolling thereof upon itself into said inverted configuration.

4,129,026

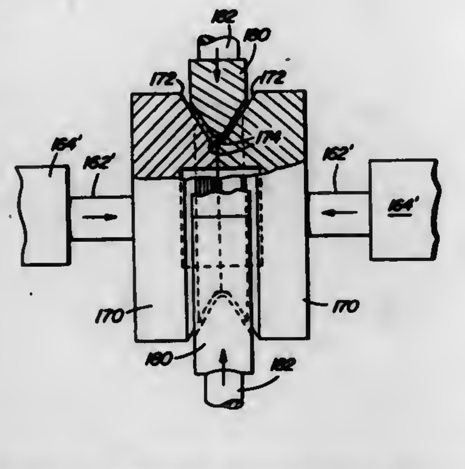
METHOD OF MAKING A PULLEY GROOVE

William C. Pierce; Samuel M. Berry, both of Dallas, and Arthur D. Johnson, Carrollton, all of Tex., assignors to Pitts Industries, Inc., Dallas, Tex.

Division of Ser. No. 732,431, Oct. 14, 1976, Pat. No. 4,067,572, which is a continuation-in-part of Ser. No. 630,886, Nov. 11, 1975, Pat. No. 4,004,335. This application Oct. 19, 1977, Ser. No. 843,662

Int. Cl.² B21D *53/26*

U.S. Cl. 72—367 **1 Claim**



1. The method of manufacturing a pulley groove comprising the steps of:

(a) cutting a short section of tubing from a long piece of tubing;

(b) forming the short section of tubing into a peripherally running, smoothly curved, radially inwardly extending concave shape by axially movable dies;

(c) press forming the tubing by both axial and radial forming operations into a peripherally running shape having a central, inner apical wall defining an inner periphery for mounting on a hub and a pair of radially diverging, substantially flat walls defining a radially outwardly opening pulley groove.

4,129,027

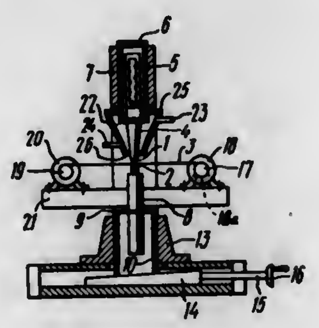
APPARATUS FOR MAKING METAL STRIP

Evgeny P. Ignashev, ulitsa Korzhenevskogo, 13, kv. 85, Minsk, U.S.S.R.; Evmeny G. Konovalov, deceased, late of Minsk, U.S.S.R.; by Georgy E. Konovalov, administrator, ulitsa Akademicheskaya, 13, kv. 20, Minsk, and by Nina E. Zaitseva, administrator, prospekt Kosmonavtov, 92, kv. 92, Leningrad, both of U.S.S.R.

Filed Jul. 14, 1977, Ser. No. 815,782

Int. Cl.² B21J *7/20*

U.S. Cl. 72—429 **3 Claims**



1. An apparatus for making metal tape from wire comprising: working tools - a hammer and an anvil; a metal rod which is vertically adjustable relative to said hammer, said anvil being mounted on an end face of the rod; a source of ultrasonic oscillations having a concentrator in contact with said hammer; the length of said rod being multiple to one quarter of ultrasonic wavelength; feeding and receiving spools for said wire and strip, respectively; a mechanism for tensioning said wire arranged between said spools.

4,129,028

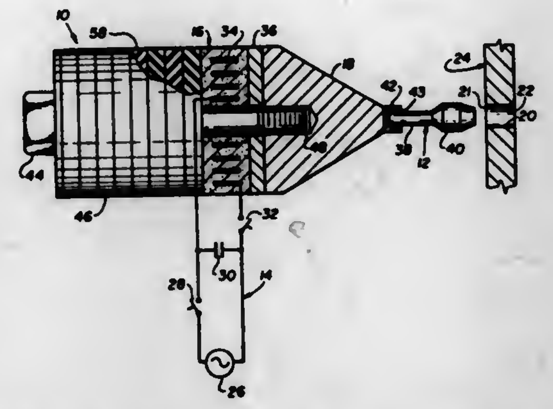
METHOD AND APPARATUS FOR WORKING A HOLE

Basil P. Leftheris; Joseph H. Mainhardt, and Walter Schwenk, all of Huntington, N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Dec. 19, 1977, Ser. No. 862,204

Int. Cl.² B21J *7/30*

U.S. Cl. 72—430 **11 Claims**



1. Apparatus for sizing, working, and finishing a hole in an article comprising:

a mandrel at least a portion of which has a surface having physical characteristics which will impart a desired final size, shape, and finish to said hole;

tool means for maintaining said mandrel surface in contact with at least the end portion of the walls of said hole;

stress wave generating means for producing a stress wave pulse in response to a high-amperage, short duration electrical impulse;

focusing means for propagating said pulse through said tool and said mandrel into the walls of said hole, said pulse having a rise time, intensity, and duration sufficient to set the material in said hole walls into a condition of plastic flow whereby said physical characteristics of said mandrel surfaces are imparted to said hole; and

an energy source for supplying said electrical impulse to said stress wave generating means.

4,129,029

DEVICE FOR MEASURING THE AMOUNT OF GAS DISSOLVED IN A LIQUID

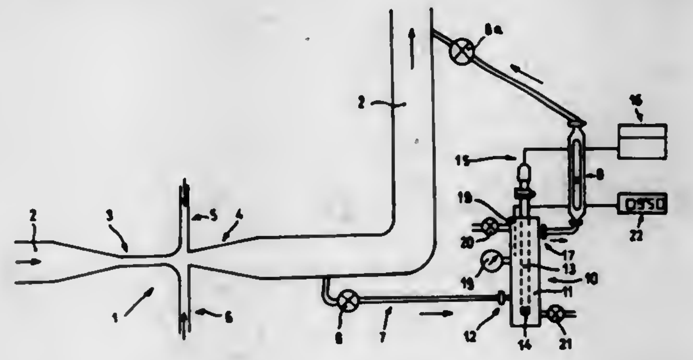
Manfred Moll, Vandoeuvre; Christian D'Hardemare, and Nicolas Midoux, both of Nancy, all of France, assignors to Tepral, France

Filed Feb. 7, 1977, Ser. No. 766,195

Claims priority, application France, Dec. 22, 1976, 76 39349

Int. Cl.² G01N *27/46, 33/14*

U.S. Cl. 73—19 **8 Claims**



1. In combination with beer fermentation apparatus having a main pipe for transporting a water-entrained mixture of wort, yeast and gas to a fermentation tank: a measuring device for measuring the amount of gas dissolved in the water comprising; means defining an elongated measuring chamber having upper and lower ends and having means defining an inlet for charging the water-entrained mixture into said measuring chamber and an outlet for discharging the water-entrained mixture from said measuring chamber, said outlet being located in the vicinity of said chamber upper end and said inlet being located a sufficient distance above said chamber lower end and coacting with said outlet to effect formation of a relatively stagnant flow region substantially free of gas bubbles in said measuring chamber beneath the level of said inlet during flow of the water-entrained mixture through said measuring chamber; conduit means connecting said measuring chamber inlet to an upstream portion of said main pipe and connecting said measuring chamber outlet to a downstream portion of said main pipe to divert flow of a part of the water-entrained mixture from said main pipe through said measuring chamber and then back to said main pipe such that the gas bubbles and lighter mixture particles entrained in the water flow in said inlet upwardly through said measuring chamber and out said outlet while the heavier mixture particles entrained in the water tend to flow downwardly and settle in the stagnant flow region; gas measuring means extending downwardly into said measuring chamber towards said lower end and including a gas-sensitive element disposed in the stagnant flow region of said measuring chamber which is substantially free of gas bubbles for measuring the amount of gas dissolved in the water-entrained mixture and providing a corresponding output signal indicative of the dissolved gas content.

4,129,030

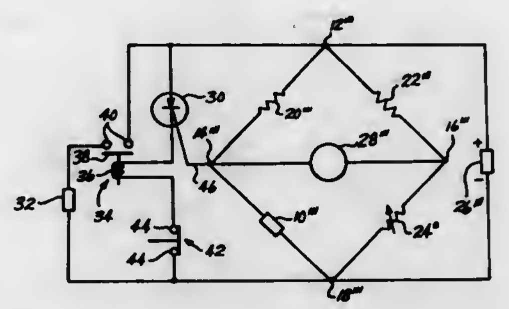
SENSING APPARATUS AND METHOD

James P. Dolan, Seattle, Wash., assignor to ADS Systems, Inc., Seattle, Wash.

Filed Oct. 13, 1977, Ser. No. 841,802

Int. Cl.² G01N *27/04*

U.S. Cl. 73—23 **13 Claims**



1. Sensing apparatus for liquids, vapors and gases comprising:

(a) detection device means of the type comprising a plurality of independently anchored electrically conductive particles, adsorbently sensitive to liquids, vapors or gases, with the particles arranged in sequential contact to form one or more conductive paths between separated points;

(b) voltage supply means, electrically connected to the detection device means and supplying electrical potential across the detection device means sufficient to cause said detection device means to operate in a current saturated condition; and

(c) indicating means electrically connected to the detection device means to indicate when the current saturated detection device means are exposed to the substance being sensed.

4,129,031

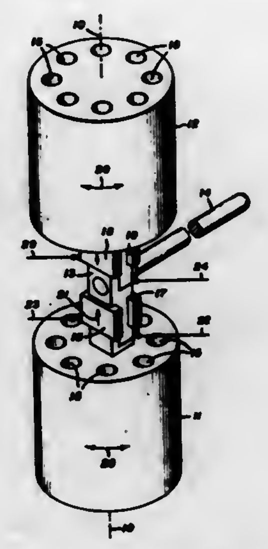
IMMERSIBLE LIQUID DENSITOMETER

Stephen W. Tehon, Clay, and Edward M. Pruski, Liverpool, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Sep. 16, 1977, Ser. No. 833,733

Int. Cl.² G01N *9/00*

U.S. Cl. 73—32 A **12 Claims**



1. An immersible liquid densitometer comprising:

A. a vibrator which vibrates in torsion about a predetermined axis comprising:

  (1) a pair of symmetrical masses having equal rotational moments of inertia and exteriors substantially conforming to a surface of revolution about said axis to permit tangential surface motion and to preclude substantial surface motion normal to the surrounding liquid during torsional vibration to minimize energy coupling to the surrounding liquid, said masses containing self-filling perforations which admit liquid upon immersion, and which are designed to cause said admitted liquid to rotate with the masses to form effective rotational moments of inertia as a function of both the mass and the admitted liquid, said perforations being symmetrical to cause said effective rotational moments of inertia to remain equal,

  (2) a resilient member supporting said masses symmetrically at the respective ends thereof in said torsional vibration mode, said resilient member being itself supported midway between the ends, at the node of said torsional vibration, and

  (3) means for exciting said torsional vibration, and

B. means coupled to said vibrator for measuring the resonant frequency thereof to determine the density of the liquid in which said vibrator is immersed.

4,129,032

RIBBON DECORATION AND METHOD OF MAKING THE SAME

Albert E. Salmi, 9380 Burt Rd., Detroit, Mich. 48228

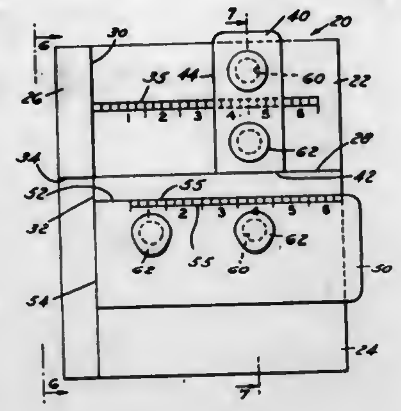
Division of Ser. No. 724,266, Sep. 17, 1976, abandoned. This application Aug. 8, 1977, Ser. No. 822,906

Int. Cl.² B31B *1/14*

U.S. Cl. 93—33 R **7 Claims**

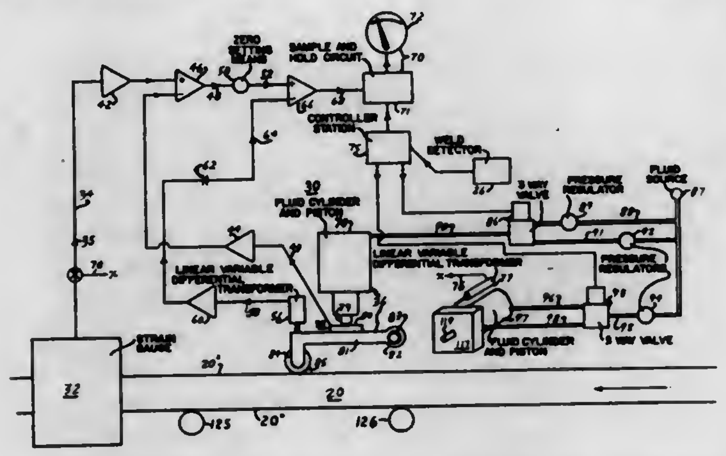
1. A device for forming predetermined transverse slits in a length of ribbon, comprising means providing a slitting surface, first, second and third straight elongated ridges on said surface, said second and third ridges intersecting and abutting and extending transversely of and in opposite directions away from said first ridge and being spaced from one another along the length of said first ridge, said second and third ridges

providing locators for cutters used to transversely slit a length of ribbon on said surface positioned with its longitudinal center line coextensive with said first ridge, said first ridge serving as a cutter abutment to determine the length of cut of the slits.



4,129,033
SYSTEM FOR DETERMINING THE LEVEL OF HEAT TREATMENT

Paul M. Otterbach, 81 E. Coast Dr., Atlantic Beach, Fla. 32233
Filed Nov. 10, 1977, Ser. No. 850,263
Int. Cl.² G01N *3/20, 3/22*
U.S. Cl. 73—772 **25 Claims**

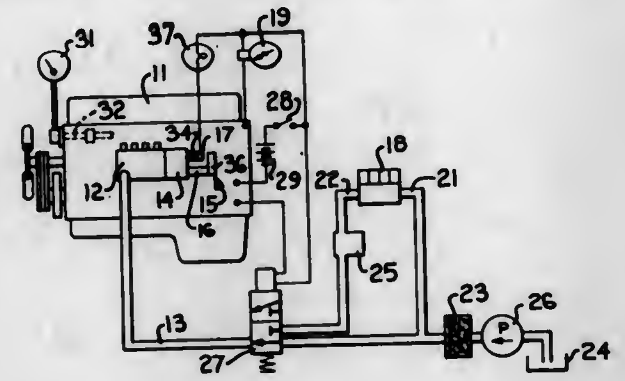


1. In a system for determining the level of heat treatment of a metal strip under tension in a continuous process line comprising a first strain gauge for producing a first voltage proportional to the tension applied longitudinally of said strip, selective means for forceably deflecting said strip in a direction laterally of said strip without materially effecting the tension being applied longitudinally to said strip, a second strain gauge for producing a second voltage proportional to the force applied to said strip by said selective means, means for producing a third voltage proportional to the amount of deflection of said strip produced by said selective means, means for differentiating between a said third voltage produced by a gradual difference in strip size and a said third voltage resulting from a sudden deflection of said strip by said selective means for providing a differentiated signal, means for combining said first and second voltages and said differentiated signal to produce a combined signal indicative of the level of heat treatment of said strip.

4,129,034
METHOD AND APPARATUS FOR CHECKING ENGINE PERFORMANCE

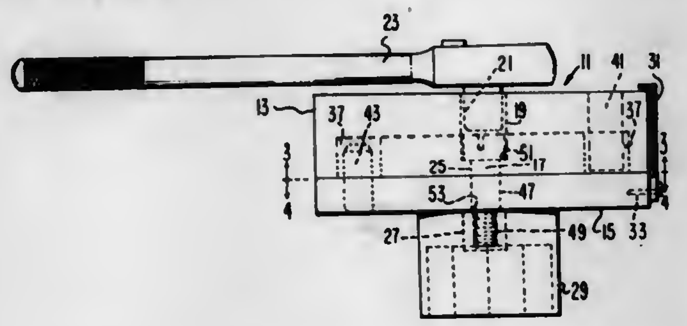
Albert B. Niles, Chillicothe; Larry H. Franzen, Peoria; William J. Gardner, Pekin, and Russel W. Grob, Metamora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 19, 1971, Ser. No. 135,300
Int. Cl.² G01M *15/00*
U.S. Cl. 73—117.3 **2 Claims**

1. In a method of determining the power output of an internal combustion engine which is of a type having a known Specific Fuel Consumption rating at a predetermined speed, the steps comprising measuring the rate of fuel consumption at said engine while operating said engine substantially at said predetermined speed, maintaining said speed of said engine and the load thereon substantially constant while measuring said fuel consumption rate thereof to assure validity of said power output determination, and multiplying said measured fuel consumption rate by said known Specific Fuel Consumption rating to determine power output of said engine, wherein said fuel consumption rate measurement is made with timing means in conjunction with a volume measuring flow meter of the form having rotatable fluid metering means, and including the further steps of determining fuel consumption rate by determining the time required for passage of a predetermined amount of fuel through said meter wherein said predetermined amount of fuel is equal to the amount of fuel which said meter transmits in an integral number of revolutions of said rotatable means, and damping fluid pressure pulsations in the fuel flow passage between said engine and said meter.



4,129,035
BI-DIRECTIONAL, MULTIPLE RANGE TORQUE MEASURING DEVICE

Alvino J. Ango, 1252 Elliott St., Madison Heights, Mich. 48071
Filed Sep. 23, 1977, Ser. No. 836,157
Int. Cl.² G01L *3/14*
U.S. Cl. 73—136 B **7 Claims**



1. A torque measuring device suitable for use in conjunction with a ratchet wrench and a socket and effective for measuring torque applied by the wrench in either direction in tightening a nut and bolt associated with a workpiece, said device comprising:

(a) a pair of complementary circular plates including a first plate couplable to the ratchet wrench and a second plate couplable to the socket, said first plate having a continuous channel groove formed in the lower surface thereof in contiguous relationship to its periphery,

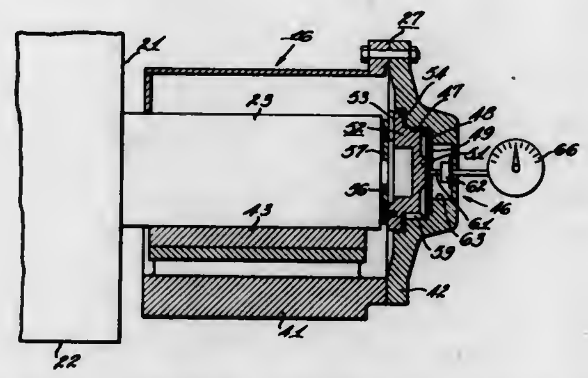
(b) means for detachably coupling said pair of plates for independent rotation,

(c) indicator means associated with said pair of plates and effective for readably measuring the degree of their said independent rotation, and

(d) means for compressibly and variably driving said second plate and said socket upon the application of a rotational force upon said ratchet wrench and said first plate in either direction, whereby the torque applied by said rotational force is designated by said indicator means in response to the rotation of said second plate relative to said first plate, said driving means including a selected pair of arcuately disposed, loose-ended, equally tensioned compression springs operably disposed within said channel groove of said first plate and a pair of dowel pins projectably disposed within said channel groove and separating the loose ends of said pair of compression springs, a first of said dowel pins depending from and being fixed to said first plate and a second of said pins being fixed to and extending upwardly from said second plate, the arrangement being such that upon rotation of the ratchet wrench and first plate in either direction, said first dowel pin depending from said first plate serves to drive said second dowel pin and said second plate by means of the downstream one of said pair of compression springs, said second plate and said socket being driven at a relatively slower rate according to the torque that is applied to said ratchet wrench and the corresponding degree of compression that is applied to said downstream compression spring.

4,129,036
ALIGNMENT INDICATOR FOR ROLLER-TYPE SUPPORT

Robert M. Bliemeister, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Jun. 17, 1977, Ser. No. 807,558
Int. Cl.² G01L *5/12*
U.S. Cl. 73—140 **2 Claims**



1. An alignment indicating roller support assembly for a rotary kiln comprising:

a base;

a housing movably supported on said base;

a roller support having a shaft projecting outwardly therefrom and journaled in said housing, said housing enclosing the free end of said shaft;

a closure plate secured to the end of said housing, said closure plate and said housing defining a chamber;

a force transmitting piston disposed within said chamber in axial alignment with said shaft, said piston being in force receiving relationship with respect to said shaft to move therewith in a direction parallel to the axis of said shaft for transmitting the force executed thereto by said shaft;

a thrust washer between the axial end of said shaft and the adjacent end of said piston; and,

a mechanical force sensing means within said chamber in position to sense the thrust force exerted on said force transmitting piston by said shaft;

indicating means carried externally of the chamber by said closure plate and operably connected to said mechanical sensing means to indicate the relative amount of the force sensed by said mechanical sensing means; and,

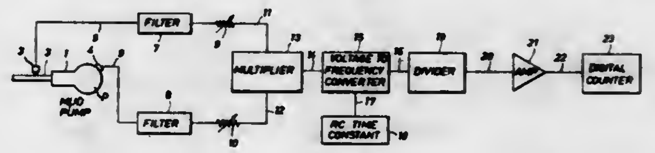
a deflection plate within said chamber and interposed between the opposite end of said piston and said mechanical force sensing means, said deflection plate being operative to deflect when loaded by the end thrust from the roller support shaft as transmitted by said piston to thereby operate said mechanical force sensing means which operates said indicating means to indicate the amount of the force for a visual indication of the degree of misalignment between the axis about which said roller support rotates and the axis about which said kiln rotates;

adjusting means for moving said housing structure on said base to effect a positioning movement of said roller support for positioning the axis about which said roller support rotates in a plane which is substantially parallel to the axis about which said kiln rotates to thereby counteract the axial thrust force exerted by said shaft and reestablish the rolling supporting relationship between the kiln and said supporting roller;

whereby said indicating means will indicate an amount of force which is indicative of the desired supporting relationship between said support and said kiln and the adjustment of the roller support can be effected to reestablish the parallel relationship between the two axes of rotation.

4,129,037
APPARATUS FOR WEAR DETECTION

David C. Toalson, 21119 Park Wick, Katy, Tex. 77450
Filed Mar. 21, 1977, Ser. No. 779,769
Int. Cl.² G01M *15/00*
U.S. Cl. 73—151 **16 Claims**



1. Apparatus for measurement of expected wear of mechanisms that are subjected to a plurality of wear inducing factors, said apparatus comprising:

detecting means for detecting each of said plurality of wear inducing factors during operation of said mechanisms and for converting the condition of said wear inducing factors into a plurality of electrical analog signals;

divider means receiving at least one of said analog signals and selectively dividing said analog signals by preset numbers;

an electrical counter capable of presenting a cumulative display;

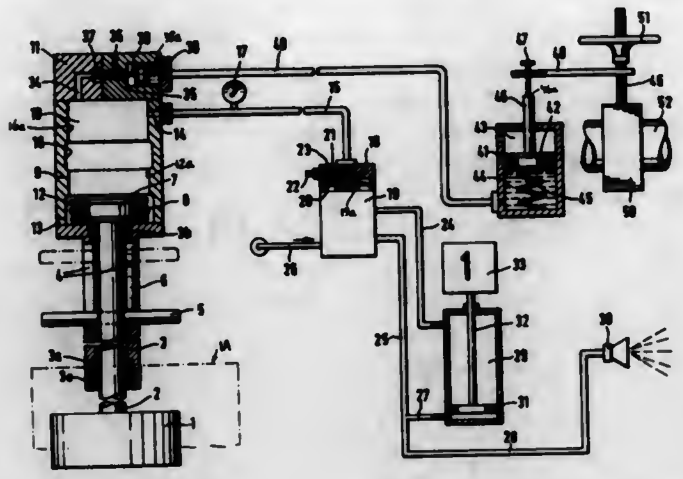
electrical signal processing means for multiplying said plurality of selectively divided electrical analog signals to obtain a product signal and modifying said product signal for operation of said electrical counter, said electrical counter providing a cumulative display responsive to cumulation of said product signals.

4,129,038
APPARATUS FOR INDICATING THE LEVEL OF LIQUIDS IN THE CONTAINERS OR WATERCRAFT

Bernhard Leutenegger, Münchenstein, Switzerland, assignor to Logotronic AG., Basel, Switzerland
Filed Mar. 21, 1977, Ser. No. 779,504
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1976, 2612217
Int. Cl.² F16K *31/18;* **G01F** *23/08*
U.S. Cl. 73—307 **32 Claims**

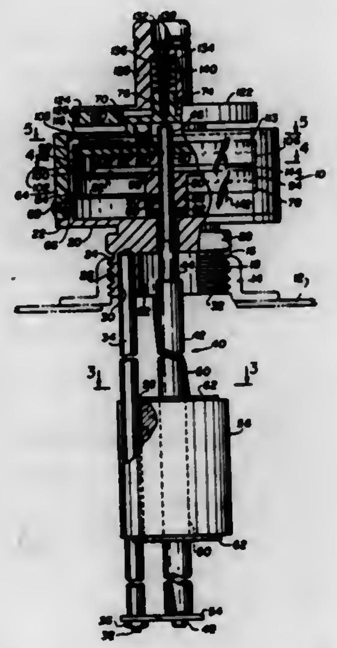
1. Apparatus for indicating the level of liquid which is selectively admitted into at least one container, comprising a float disposed in said container and arranged to rise with the rising level of liquid in the container; an enclosure having a space containing gas, said enclosure including a reciprocable piston connected with said float, located outside of said container and bounding a portion of said space, the volume of said space decreasing, with attendant compression of the gas therein, as a result of movement of said piston in response to upward movement of said float; pneumatic response means pneumatically coupled with the space for sensing gas compression in the space and responding to a predetermined compresson of gas in

the space and signal generating means operatively connected to said pneumatic response means for generating at least one visible and/or audible signal when the response means senses the predetermined compression of gas in said space.



4,129,039
DUAL GAUGE INDICATING DEVICE

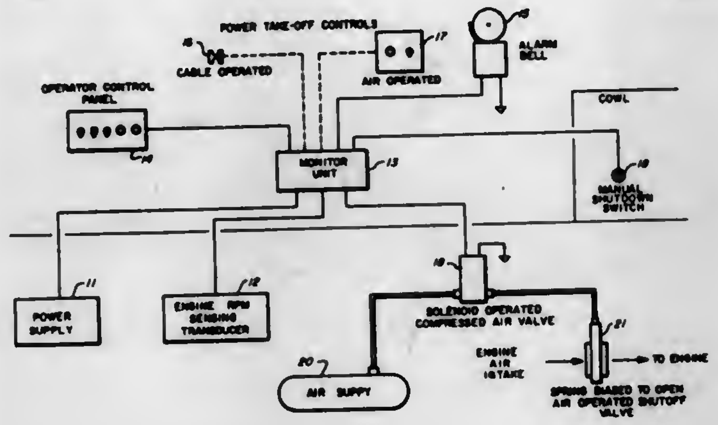
Gaetano Pignato, 214 Douglas Ave., West Islip, N.Y. 11795
Filed Nov. 3, 1977, Ser. No. 848,102
Int. Cl.^{2} G01F *23/08, 23/12*
U.S. Cl. 73—310 **14 Claims**



1. In a device for indicating the level of liquid in a container,
a first dial rotatable in a first direction to indicate an increase in liquid level and in a second direction to indicate a decrease therein so as to provide a continuous indication of the liquid level in the container by means of the relative rotative position of said first dial,
a second dial releasably engaged with said first dial for rotation therewith in said first direction and non-rotatable therewith in said second direction, said second dial registering by its relative rotative position the magnitude of an increase in the container liquid level irrespective of a subsequent decrease in such level,
and means cooperating with one of said dials for disengaging said first and second dials and for rotating said second dial in said second direction to reset the same to an initial registering position whereby only those increases in liquid level occurring subsequent to resetting of the second dial to said initial position will be registered thereby, said disengaging and rotating means including magnetic means for releasable coupling with said second dial to release the same from engagement with said first dial so as to enable the resetting of said second dial to its initial position by rotation of the same in said second direction.

4,129,040
ENGINE OVERSPEED CONTROL SYSTEM

Joseph C. Hayden, Jr., 7902 Captain Dr., Houston, Tex. 77036
Filed Sep. 29, 1977, Ser. No. 837,906
Int. Cl.^{2} G01M *15/00*
U.S. Cl. 73—507 **13 Claims**

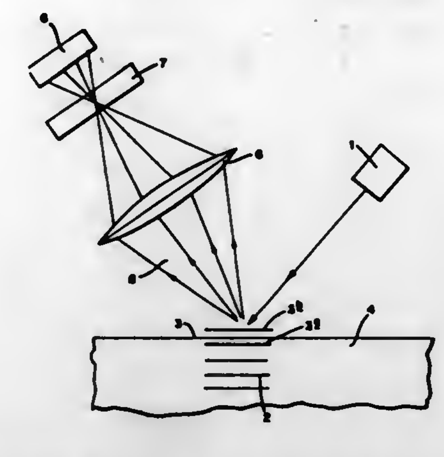


1. A system for monitoring and controlling the speed of an internal combustion engine, comprising:
means for sensing the speed of rotation of the crankshaft of an internal combustion engine and for providing an electrical signal representative thereof;
pneumatically operable valve means spring biased to a normally open condition for controlling the air intake of an internal combustion engine;
means for supplying air under pressure to said pneumatically operable valve means;
means for comparing said representative speed of rotation signal with a predetermined engine overspeed setpoint signal and for providing an output signal only when said representative signal exceeds said predetermined signal; and
means responsive to said output signal for controlling a supply of air under pressure from said means for supplying air to said pneumatically operable valve means, whereby when said output signal is present said pneumatically operable valve means is allowed to receive air under pressure thereby closing off the air intake of an internal combustion engine.

4,129,041
METHOD AND APPARATUS FOR RECEIVING ULTRASONIC WAVES BY OPTICAL MEANS

Wolf Bickel, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Krautkramer-Branson, Incorporated, Stratford, Conn.
Filed Oct. 21, 1977, Ser. No. 844,459
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1977, 2710638
Int. Cl.^{2} G01H *9/00*
U.S. Cl. 73—657 **16 Claims**

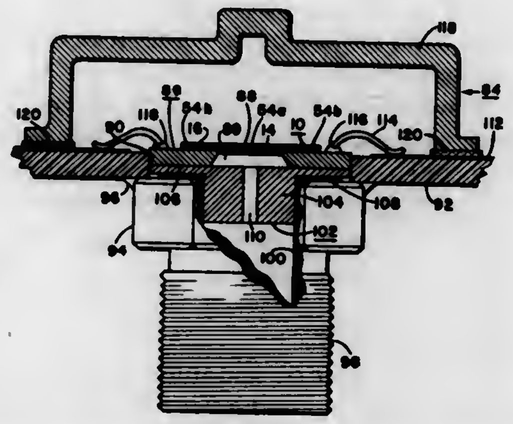
1. The method for receiving an ultrasonic wave from a workpiece surface portion by optical means free of physical contact with such workpiece portion comprising:
transmitting a beam of light from a frequency stabilized single mode laser upon the workpiece surface portion which undergoes deformation responsive to the presence of an ultrasonic wave, thereby causing frequency modulation of the incident light;
collecting the diffused frequency modulated light reflected at said surface portion and transmitting said light through a light filter having at least one steep light absorption line, whereby the frequency of said laser and that of the light filter is selected to cause the nominal frequency of said laser to be disposed along the steep part of the slope of the light absorption line of the filter to thereby provide amplitude modulated light passed through the filter, and



transmitting the amplitude modulated light to photoelectric sensing means adapted to provide an electrical output signal which is responsive to the amplitude modulated light passed through the filter.

4,129,042
SEMICONDUCTOR TRANSDUCER PACKAGED ASSEMBLY

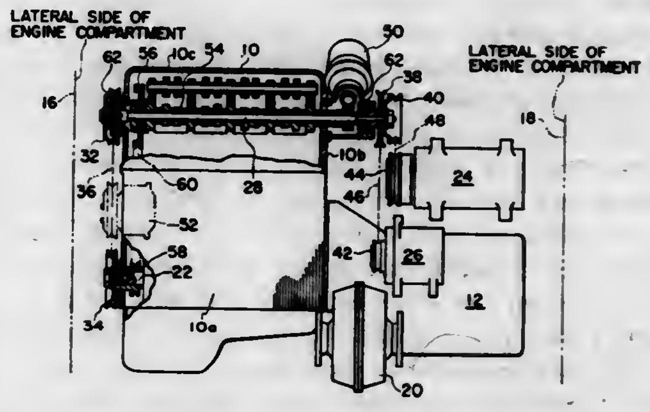
Warren C. Rosvold, Sunnyvale, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.
Filed Nov. 18, 1977, Ser. No. 852,909
Int. Cl.^{2} G01L *9/06*
U.S. Cl. 73—727 **11 Claims**



1. A semiconductor transducer assembly, comprising:
(a) a rigid mounting member;
(b) a transducer member including a relatively thick peripheral frame portion and a relatively thin membrane portion attached to and circumscribed by said frame portion, said membrane portion being slotted to form a folded cantilever spring susceptible to vibratory motion relative to said frame portion, at least said membrane portion being formed of semiconductor material and provided with regions forming piezoresistor elements which change their electrical resistance when subjected to varying degree of mechanical stress;
(c) a rigid interface member of semiconductor material separating said transducer member from said mounting member and having a first side facing said transducer member and an opposing second side facing said mounting member;
(d) means securing said mounting member to surface portions at least of the second side of said interface member;
(e) means securing the frame portion only of said transducer member to the first side of said interface member at a limited number of spaced locations distributed so as to produce an unobstructed finite gap between said membrane portion and said interface member for permitting restrained bending motion of said membrane during application of mechanical force thereto and for effecting squeeze film damping of vibratory motion of said membrane after removal of said mechanical force.

4,129,043
ACCESSORY DRIVE

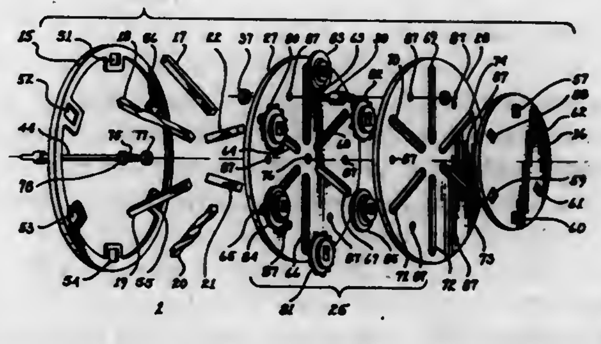
Yoshikazu Ishikawa, Chofu, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Feb. 15, 1977, Ser. No. 768,877
Claims priority, application Japan, Feb. 17, 1976, 51/17948[U]
Int. Cl.^{2} F16H *7/00, 37/00;* F02F *7/00*
U.S. Cl. 74—219 **5 Claims**


LATERAL SIDE OF ENGINE COMPARTMENT
LATERAL SIDE OF ENGINE COMPARTMENT

1. In a motor vehicle having an engine compartment;
an engine in said compartment having a crankshaft extending transversely across the longitudinal axis of the vehicle, said engine having a first end and a second end which are spaced along an axis about which said crankshaft is rotatable;
a transmission mounted within said engine compartment at said second end of said engine;
an accessory disposed in said engine compartment above said transmission and adjacent said second end of said engine;
an accessory drive shaft mounted on said engine, at the upper portion thereof, and having one end projecting beyond said first end of said engine and an opposite end projecting beyond said second end of said engine;
a rotary drive connection between said one end of said accessory drive shaft and said crank shaft; and
a rotary drive connection between said opposite end of said accessory drive shaft and said accessory.

4,129,044
VARIABLE GEAR RATIO CHAIN DRIVE SYSTEM FOR BICYCLES

Marlo W. V. Erickson, 12024 Kling St. # 104, North Hollywood, Calif. 91607, and Stanley W. Volk, 3441 Calle Vistosa, Tucson, Ariz. 85715
Filed May 19, 1977, Ser. No. 798,410
Int. Cl.^{2} F16H *55/12, 55/30, 55/52, 55/54*
U.S. Cl. 74—244 **17 Claims**



1. A finite range infinitely variable gear ratio chain sprocket for transmitting a driving force to a driven sprocket via a chain, said drive sprocket comprising in combination:
a. spaced apart base and end plates mounted on a common

axis of rotation for translating the driving force to said drive sprocket;

b. a plurality of shafts, selected ones of which are twisted about their longitudinal axis for interconnecting said base plate with said end plate, each of said plurality of shafts having one end connected to said base plate closer to the axis of rotation than the other end connected to said end plate, whereby said plurality of shafts en toto resemble a frusto conical section;

c. a plurality of sprocket gears for meshing with the chain, each of said sprocket gears being mounted upon one of said plurality of shafts;

d. twist means for limiting rotation of each of said sprocket gears about the respective one of said plurality of shafts;

e. plate means for maintaining said shaft mounted sprocket gears in a common plane, said plate means including means for accommodating travel of said plate means intermediate said base and end plates; and

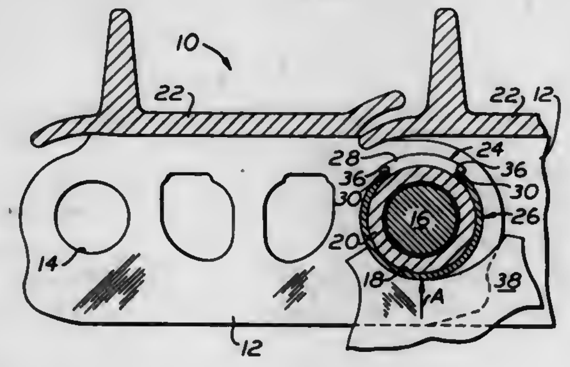
f. linkage means for repositioning said plate means intermediate said base and end plates to relocate said sprocket gears along respective ones of said plurality of shafts;

whereby, the circumference of said drive sprocket is variable by shaft induced radial movement of said sprocket gears with respect to the axis of rotation of said drive sprocket to alter the gear ratio between said drive sprocket and the driven gear and rotation of said sprocket gears relative to one another through said twist means and maintains said sprocket gears in mesh with the links of the engaged chain.

4,129,045
CHAIN WITH BUSHING PROTECTIVE COVER

Keisuke Kishitani, Tokyo, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Sep. 15, 1977, Ser. No. 833,429
Int. Cl.² F16G *13/04, 13/06, 15/02*
U.S. Cl. 74—255 R **14 Claims**

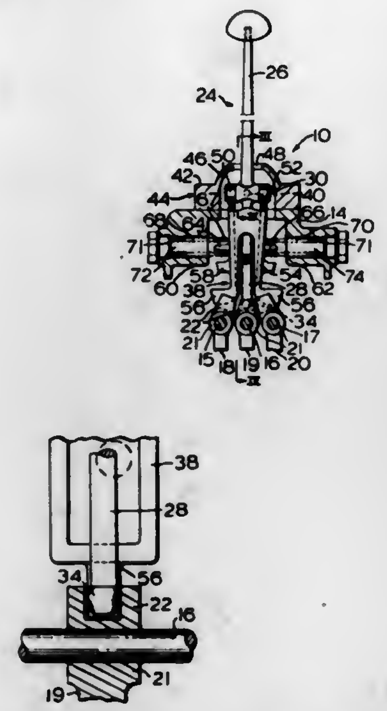


1. A chain comprising:
- a plurality of overlapping links arranged in two longitudinally oriented rows in laterally cooperating pairs;
- pin and bushing means for pivotally coupling said pairs of links together and including a plurality of pins and a plurality of bushings individually encircling said pins;
- replaceable cover means for protecting said bushings from external wear, said cover means including a plurality of releasable covers, each one of said covers being embracingly fitted over a respective one of said bushings; and
- retaining means on one of said links and said bushings for respectively anchoring each one of said covers in place on said respective bushing and preventing relative rotation therebetween.

4,129,046
GEAR SHIFT CONTROL

Howard R. Lemcke, Jr., Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 21, 1977, Ser. No. 779,456
Int. Cl.² B60K *20/04, 20/12*
U.S. Cl. 74—473 P **4 Claims**

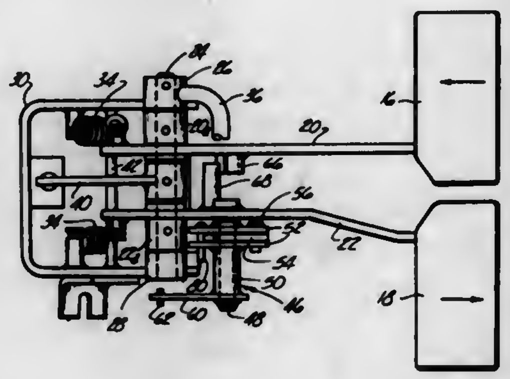


1. A gear shift control for use in transmissions and the like comprising:
- a plurality of shifter rails;
- a plurality of gear shifter forks each slidably mounted on an associated shifter rail, each said shifter fork having a single slot of uniform width;
- a shift lever with a grippable end and an end selectively engageable with each of said slots, said slots and said lever end engageable therewith being of substantially identical dimension in the longitudinal direction of said shifter rails;
- means for mounting said shift lever for substantially universal pivotal movement about a plurality of intersecting pivot axes;
- a gear selector gate; and
- means mounting said gate on said shift lever including means connecting said gate to said lever for pivoting movement on a pivot axis intersecting the pivot axes of said shift lever.

4,129,047
CONTROL ARRANGEMENT

Arthur E. Dornan, Ypsilanti, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Jun. 29, 1977, Ser. No. 811,229
Int. Cl.² B60K *20/00;* **G05G** *5/10*
U.S. Cl. 74—474 **10 Claims**



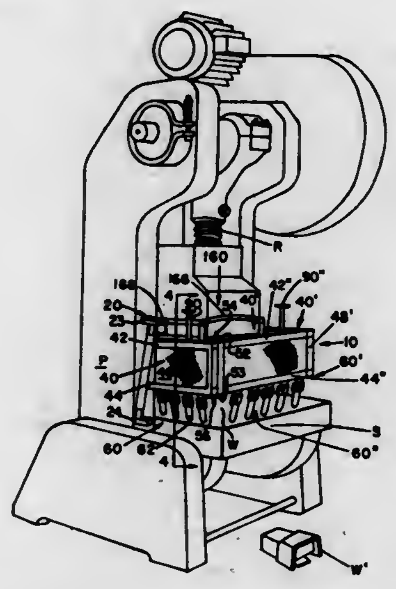
1. A control pedal and linkage arrangement comprising; first and second pedal levers mounted for pivotal movement, a

transmission control means supported for pivotal movement in one direction upon movement of one pedal lever and in another direction upon movement of the other pedal lever, said transmission control means being adapted for connection to a transmission for movement in opposite directions from a neutral position into a forward and reverse driving range, said transmission control means being movable in a first range upon movement of either one of said pedal levers and remaining in a stationary position upon simultaneous movement of both of said pedal levers, a throttle control member adapted for connection to the controls of an engine and being movable to increase speed, said throttle control member being movable upon movement of either or both of said first and second pedal levers beyond said first range and into a second range.

4,129,048
POWER PRESS GUARD

James L. Shocklee, St. Charles, and Edward H. Tayloe, Ferguson, both of Mo., assignors to ACF Industries, Inc., New York, N.Y.

Filed Jul. 26, 1977, Ser. No. 819,271
Int. Cl.² F16P *1/02, 3/10*
U.S. Cl. 74—612 **19 Claims**

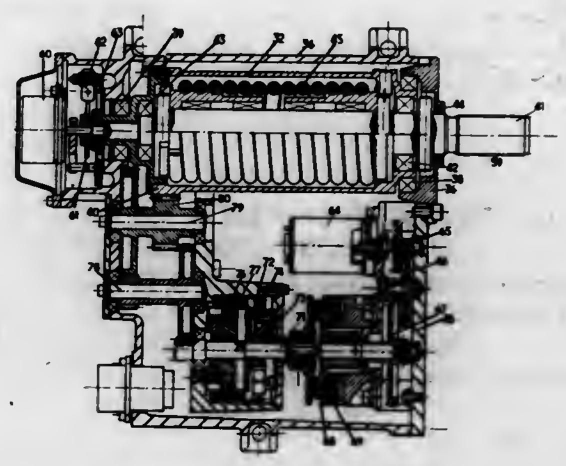


1. A power press or tool guard comprising:
- a generally vertical protective portion made of a material which is at least partly transparent through which the operator may view the operation of the tool or press;
- a second protective portion depending from said first protective portion and extending inwardly toward the press or tool;
- said second protective portion including a plurality of arms or tynes which are pivotably mounted on the lower portion of the first protective portion;
- first hinge means mounting said first and second protective portions on one side of said tool or guard;
- second hinge means pivotably mounting said first and second protective portions about the front of said press or tool;
- said first and second protective portions being pivotable by means of said first and second hinge means between a first position allowing access to the press or tool and a second position covering the exposed operating parts of the press or tool; control means mounted on said first protective portion for varying the inclination of the arms or tynes on a given side of the guard; and fastening means for adjusting the length of individual tynes on a given side of the guard.

4,129,049
POWER JACK INCORPORATING STRESS-RESPONSIVE COMPONENTS

Jean-Claude V. Perard, Velizy, France, assignor to Societe Francaise d'Equipements pour la Navigation Aerienne (S.F.E.N.A.), Velizy-Villacoublay, France

Filed Feb. 3, 1977, Ser. No. 765,286
Int. Cl.² B64C *13/04*
U.S. Cl. 74—625 **8 Claims**

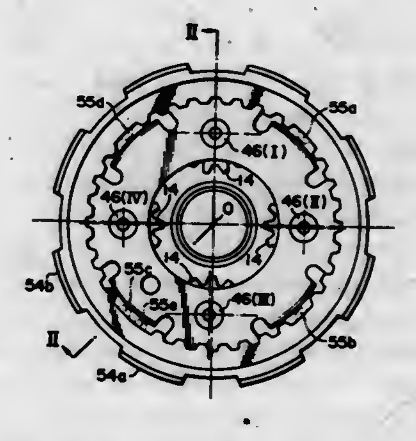


1. A rotatable jack, including a stress means, for a control system for an aerodyne, comprising:
- (a) a stress means having a rotatable anchorage and including a tubular sleeve rotatably mounted relative to a stationary structure; an outwardly projecting shaft coaxially extending within said sleeve and rotatably mounted relative to said sleeve; a helical coil spring located in the space intermediate said projecting shaft and said tubular sleeve, said spring being coupled at each end to a plate which is rotatable relative to said projecting shaft; two radial shoulders fixedly coupled to said sleeve, and two pins fixedly coupled to the outwardly projecting shaft, with said shoulders and said pins being arranged so that each of said plates can come into contact and drive or be driven by a corresponding shoulder or pin; and
- (b) means for rotatably driving said sleeve including a motor having its shaft coupled to the guiding element of a disengaging means, said guiding element being connected to said tubular sleeve by a transmission including a brake means.

4,129,050
GEAR MEANS OF AN AUTOMATIC TRANSMISSION FOR AUTOMOBILES

Teruo Akashi, Okazaki; Kazuaki Watanabe, and Yukio Terakura, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 10, 1977, Ser. No. 823,461
Claims priority, application Japan, Apr. 28, 1977, 52-49445
Int. Cl.² F16H *3/44, 1/28*
U.S. Cl. 74—750 R **6 Claims**



1. A gear means of an automatic transmission for automo-

biles, comprising a housing, a planetary gear means including a sun gear, a ring gear, planetary pinions and a carrier, and friction engaging means having two relatively rotatable elements and adapted to selectively connect said carrier to another element which is either said sun gear or said housing, said carrier and one of said two relatively rotatable elements being integrally connected with each other to form a carrier assembly which in turn provides a planetary assembly by incorporating said planetary pinions therein, wherein the mass balance of said planetary assembly around the central axis thereof is adjusted by removing a part of said one of said two relatively rotatable elements.

4,129,051

OIL PRESSURE CONTROL MEANS FOR AN AUTOMATIC TRANSMISSION

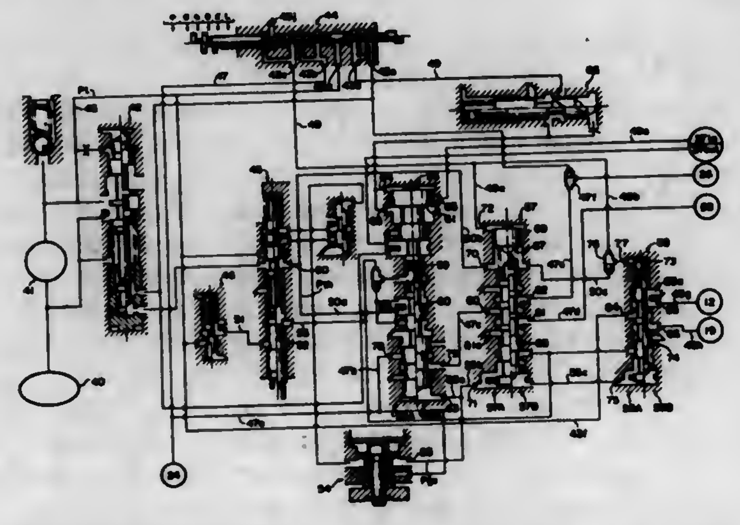
Yoshio Shindo, and Hiroshi Ito, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 27, 1977, Ser. No. 791,575

Claims priority, application Japan, Dec. 27, 1976, 51/159179

Int. Cl.^{2} B60K *41/10*

U.S. Cl. 74—867 **6 Claims**



1. An oil pressure control means for an automatic transmission which comprises a fluid torque converter, an overdrive means of a planetary gear type, said overdrive means comprising a planetary gear mechanism, a plurality of friction engaging means and a one-way clutch and adapted to allow the output shaft thereof to run over the input shaft thereof due to the disengagement of said one-way clutch in the reverse rotational direction thereof when one of said friction engaging means arranged in parallel to said one-way clutch is disengaged, and a reduction gear means including a reduction gear mechanism and a plurality of friction engaging means and adapted to effect various gear stages, said oil pressure control means comprising a source of oil pressure, a line pressure regulating valve which generates a line pressure from the oil pressure of said source, a throttle pressure regulating valve which generates a throttle pressure corresponding to the throttle opening, a governor valve which generates a governor pressure corresponding to the vehicle speed, a manual shift valve for shifting speed ranges, a speed shift valve or valves which change over the supply of oil pressure to said friction engaging means of said reduction gear mechanism depending upon the balance of said throttle pressure and said governor pressure, an overdrive control valve which changes over the supply of oil pressure to said friction engaging means of said overdrive means depending upon the balance of said throttle pressure and said governor pressure, and a change-over valve which intercepts the supply of oil pressure to said one friction engaging means of said overdrive means in response to the supply of oil pressure to one of said friction engaging means of said reduction gear means which accomplishes a low speed stage.

4,129,052

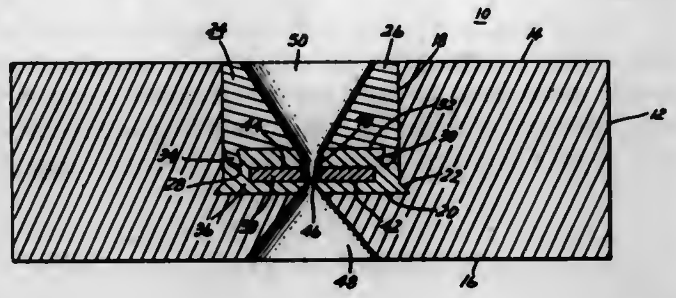
WIRE DRAWING DIE AND METHOD OF MAKING THE SAME

Paul Bieberich, Fort Wayne, Ind., assignor to Fort Wayne Wire Die, Inc., Fort Wayne, Ind.

Filed Oct. 13, 1977, Ser. No. 841,885

Int. Cl.^{2} B21K *5/20*

U.S. Cl. 76—107 A **12 Claims**



8. A wire drawing die comprising: a metal casing having front and back sides, said front casing side having a cylindrical cavity formed therein, said casing cavity having a bottom spaced from said back casing side and having its side wall undercut adjacent said bottom; a cylindrical plug closely fitted in said casing cavity and having opposite ends; one of said plug ends facing and being spaced from said cavity bottom, said one plug end having a cylindrical cavity formed therein, said plug cavity having a bottom spaced from said other plug end, the inside diameter of said plug cavity adjacent said bottom being greater than that at said one end, said plug cavity bottom being spaced from said casing cavity bottom thereby defining another cavity therebetween which includes said undercut; a body of metal solidified filling said other cavity thereby securing said plug in said casing cavity; and a metal blank having a core formed of synthetic hard, wear-resistant material encapsulated in said metal body with said core concentric with said casing cavity; said back side of said casing and said other end of said plug having countersunk openings therein respectively extending therethrough and through said metal body to said core, said core having a die opening therethrough communicating between said countersunk openings.

4,129,053

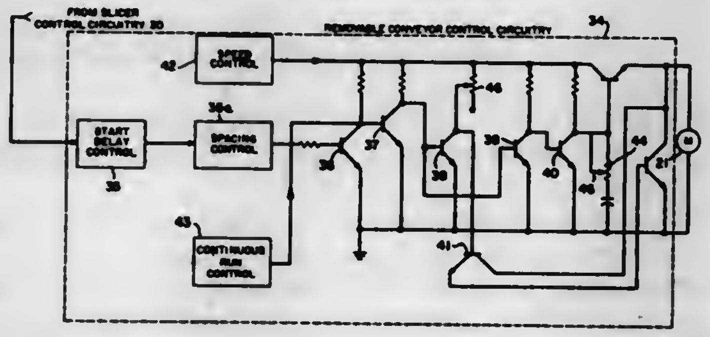
BULK PRODUCT SLICING SYSTEM

David P. Kent, West Chester, Pa., assignor to Control Process, Inc., West Chester, Pa.

Filed Jul. 29, 1977, Ser. No. 820,159

Int. Cl.^{2} B26D *5/20, 4/24*

U.S. Cl. 83—69 **16 Claims**



1. In a bulk product slicing equipment, which includes means for intermittently advancing the bulk product into a rotating slicing blade and conveyor means for intermittently removing accumulations of sliced product from the vicinity of the blade, the conveyor means including a conveyor drive motor which is controllably actuatable between a low and a high speed, the improvement which comprises:

means for controlling the acceleration of the motor from the low to the high speed and the deceleration from the high to the low speed so that the accumulations are not deformed during this removal from the blade vicinity,

said controlling means being adjustable separately from any other controls for the conveyor drive motor.

4,129,054

PUNCHING PRESS

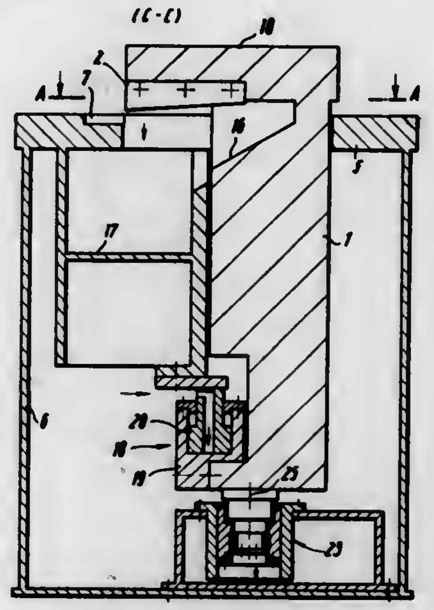
Harald Fazis, Lörrach, Germany, assignor to Ludwig Boschert, Maschinen- und Apparatebau GmbH & Co. KG, Germany

Filed Jan. 6, 1977, Ser. No. 757,200

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1976, 2601858

Int. Cl.^{2} B21D *28/02, 37/12*

U.S. Cl. 83—165 **8 Claims**



1. A notching machine having a vertically reciprocating ram which is guided by an axial guiding system disposed on a machine frame with the ram carrying at its upper end by means of a projecting tool holder an upper blade assembly cooperating with a lower blade assembly in which there is cutting clearance between the blade assemblies comprising

said upper blade assembly forming a forwardly extending apex, said ram forming a rearwardly extending apex at least adjacent said upper blade assembly and at least over an axial length corresponding to the the vertical stroke of said ram, said rearwardly extending apex extending away from said forwardly extending apex for providing substantially maximum notching depth between said apexes,

said axial guiding system including first and second pin and guide bushing assemblies disposed between an upper end of said ram and said machine frame, a third pin and guide bushing assembly secured to a bottom end of said ram.

4,129,055

ELECTRONIC ORGAN WITH CHORD AND TAB SWITCH SETTING PROGRAMMING AND PLAYBACK

Billy J. Whittington, Jasper; Timothy L. Burns, French Lick, and Alan B. Welsh, Jasper, all of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed May 18, 1977, Ser. No. 797,931

Int. Cl.^{2} G10H *1/00*

U.S. Cl. 84—1.01 **14 Claims**

1. In an electronic organ having tone generator means connected to transducer means via keyers, playing keys, and playing key controlled means for developing a respective data signal for each playing key which is actuated, a note sequencer comprising:

a memory having a plurality of storage locations,

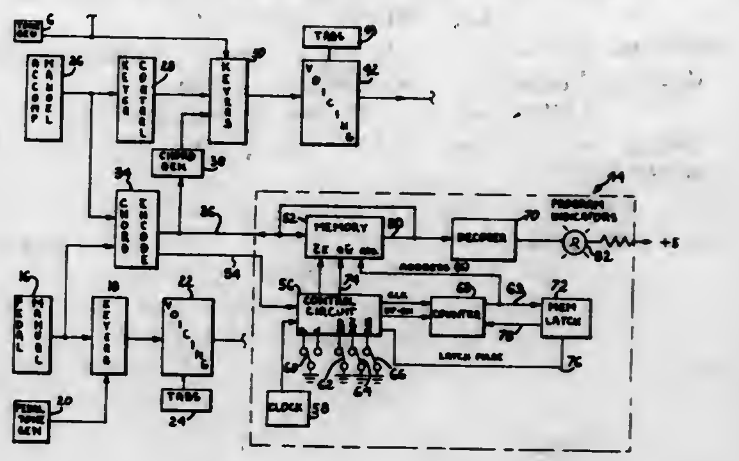
mode switch means for placing said note sequencer alternatively in a playback mode and a program mode,

record means operable when said note sequencer is in the program mode for sequentially writing a plurality of said data signals into said memory for storage therein,

playback means operable when said sequencer is in the playback mode for reading the stored signals from said memory,

control means including a player actuated advance switch for causing said playback means to advance from one signal to the next for reading the respective data signals stored therein in the same order in which the signals were written each time said advance switch is actuated with only one of said signals being read each time said advance switch is actuated, and

means for actuating said keyers in conformity with the data signals read from said memory.



4,129,056

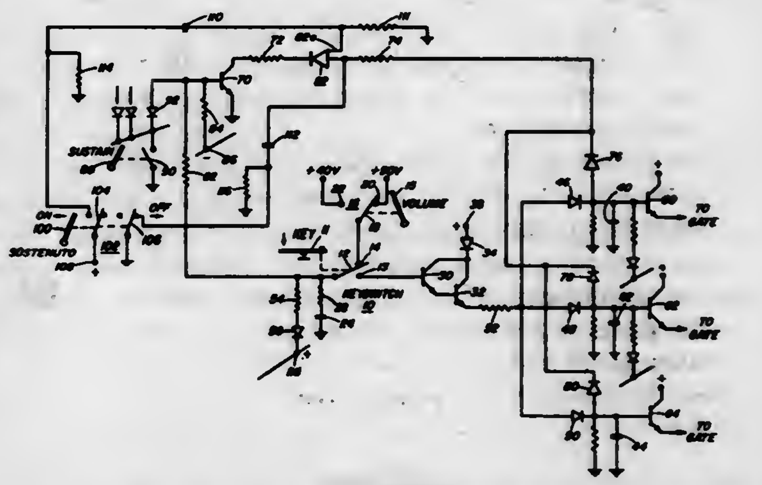
PEDAL CONTROL CIRCUITS FOR ELECTRONIC PIANO

Richard W. Jensen, 583 Fay Ave., Elmhurst, Ill. 60126, and Richard H. Peterson, 11748 Walnut Ridge Dr., Palos Park, Ill. 60464

Filed Dec. 21, 1976, Ser. No. 753,144

Int. Cl.^{2} G10H *1/02*

U.S. Cl. 84—1.26 **4 Claims**



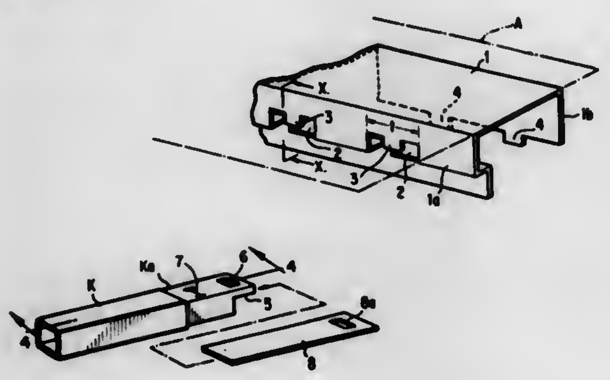
1. In an electronic musical instrument including a plurality of playing keys each adapted to be moved between a normal position and an operated position and wherein the instantaneous intensity of a musical tone generated in response to movement of a playing key to its operated position is determined by the magnitude of a voltage appearing across a capacitor, a damper circuit including an electronic switch in series with an impedance connected to form a discharge path across said capacitor, a sustaining pedal operative when moved from a normal position to an operated position to disable said damper circuit, and means associated with said playing key for rendering said damper circuit operative upon return of said playing key from its operated to its normal position, the improvement comprising:

a sostenuto pedal adapted to be moved between a normal position and an operated position, and

circuit means controlled by said sostenuto pedal for rendering said damper circuit inoperative with respect to musical tones corresponding to those playing keys, and only such keys, as are in the operated position at the moment said sostenuto pedal is moved to its operated position.

4,129,057
KEYBOARD SUPPORT MECHANISM FOR ELECTRONIC ORGANS

Yoshitomo Hoshi, Showa, Japan, assignor to Kabushikigaisha Kawaigakkiseisakusho, Shizuokaken, Japan
Filed Sep. 21, 1977, Ser. No. 835,135
Claims priority, application Japan, Sep. 29, 1976, 51-129853[U]
Int. Cl.² G10C ***3/12***
U.S. Cl. 84—434 **5 Claims**



1. A supporting mechanism for the keyboards of an electronic organ, comprising;

a frame member adapted to be attached to the bottom side of a keyboard chassis, said frame member having a front side plate and a back side plate;

said front side plate of said frame member having at least one opening formed therein and a projecting tab;

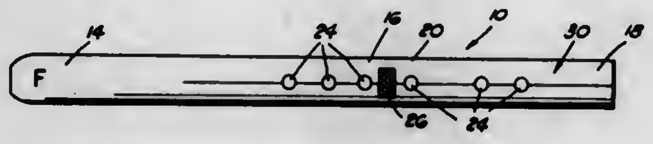
said back side plate having at least one stopper projection being aligned from front to rear with a corresponding projecting tab of said front side plate;

a keyboard lever for each keyboard of said organ, said keyboard lever having an opening formed in one end, adapted to receive said projecting tab of said front side plate of said frame member, and a depending portion formed forwardly thereof; and

a spring plate member for each keyboard lever adapted to be retained therein with one end being supported against said depending portion thereof, and having an opening formed near the other end, said spring plate being adapted to be inserted through one of said openings formed in said front side plate of said frame member until said opening in the other end of said spring plate receives said stopper projection in said back side plate thereof.

4,129,058
MUSICAL INSTRUMENT TEACHING AID

Leah M. Ross, Rte. 1, Box 73, Sedgwick, Kans. 67135
Filed Sep. 19, 1977, Ser. No. 834,674
Int. Cl.² G10B ***15/08***
U.S. Cl. 84—485 R **5 Claims**



1. A musical instrument teaching aid for teaching the fingerings of a recorder, the teaching aid comprising:

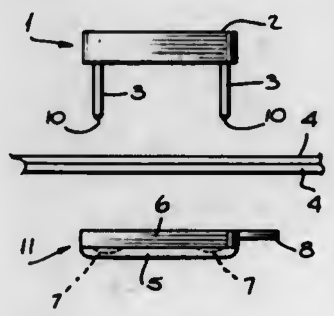
a dowel having the approximate dimensions of a recorder, one end of said dowel being beveled to depict the mouthpiece of said recorder, thereby defining top and bottom portions of said dowel;

a plurality of depressions in said top and bottom portions, said depressions being disposed along the length of said dowel in substantially the same locations as the corresponding holes in said recorder, said depressions being of such number and locations to indicate which of said recorder's holes must be covered by the player's fingers to play only one particular note playable by said recorder; and

indicia marked on said dowel to indicate said one particular note.

4,129,059
STAPLE-TYPE FASTENER

William F. Van Eck, 228 Main St., East Haven, Conn. 06512
Filed Nov. 7, 1974, Ser. No. 521,851
Int. Cl.² F16B ***15/00***
U.S. Cl. 85—49 **26 Claims**



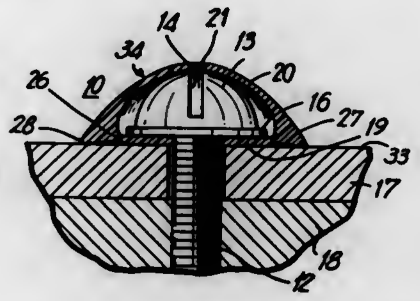
1. In a two element fastener for sheet materials of the type that includes a staple having a cross-member and a pair of parallel, bendable prongs spaced apart at a predetermined distance and fixedly attached to and extending perpendicularly from the cross-member and a receiving member for the free ends of the prongs, the improvement wherein the receiving member comprises: an oblong thin member of predetermined thickness having oppositely disposed substantially flat continuous sides extending parallel to one another and spaced apart by the predetermined thickness, the length of the member being greater than the distance of the spacing of the prongs by an amount equal to a fraction of the spacing of the prongs, the member being formed of material soft enough to be punctured completely through the thickness thereof by the staple without bending the prongs, the side of the member opposite the staple being adapted to receive the free ends of the prongs after the bending of the prongs, the member being strong enough to permit disassembly of the receiving member from the staple subsequent to bending over the prongs after penetration through the receiving member by manually exerting a separating force between the cross-member of the staple and the receiving member sufficient to at least partially straighten and withdraw the prongs from the receiving member without tearing the material thereof.

6. In a two element fastener for sheet materials of the type that includes a staple having an elongated cross-member and a pair of parallel bendable prongs spaced apart from one another at a predetermined interval along the length of the cross-member and fixedly attached to and extending perpendicularly from the cross-member and a receiving member for the free ends of the prongs, the improvement wherein the receiving member comprises:

an elongated thin plate having end portions located at the extremities of the length thereof and oppositely disposed face portions, each of the end portions of the plate being disposed beyond and yet substantially adjacent the different ends of a line extending along the length of the plate and having its ends spaced apart at a distance substantially corresponding to the predetermined interval between the parallel prongs, the plate being formed of material being sufficiently soft to enable the face of the plate directed toward the prongs to be penetrated before bending the prongs to engage the prongs to the plate, the material of the plate being strong enough to permit disassembly of the receiving member from the prongs by manually exerting a separating force between the crossmember of the staple and the receiving member sufficient to withdraw and at least partially straighten the prongs from the receiving member without tearing the material thereof.

4,129,060
SCREW HEAD COVER

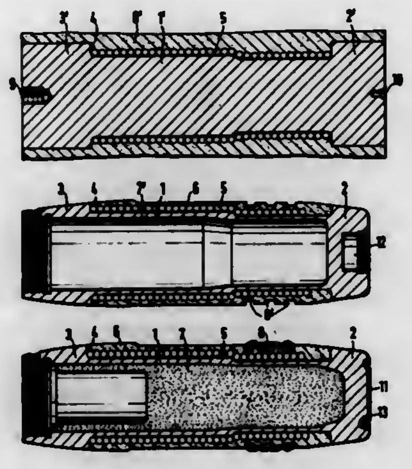
William Gould, Millburn, N.J., assignor to Nyltite Corporation, South Plainfield, N.J.
Filed Nov. 10, 1977, Ser. No. 850,143
Int. Cl.² A47G ***3/00;*** **F16B** ***15/02***
U.S. Cl. 85—53 **9 Claims**



1. A fastener head covering device comprising a body member having top and bottom faces and an opening for the reception of the shank of a fastener, a plurality of peripherally spaced upwardly projecting wing members integrally formed with and hinged to said body member along the peripheral border thereof, said wing members having side-by-side bases and closing means responsive to axial pressure on said body member to swinging said wing members inwardly toward a position forming a substantially closed cap overlying said top face.

4,129,061
FRAGMENTATION CASING FOR SHELLS, WARHEADS AND THE LIKE AND METHOD OF MAKING SAME

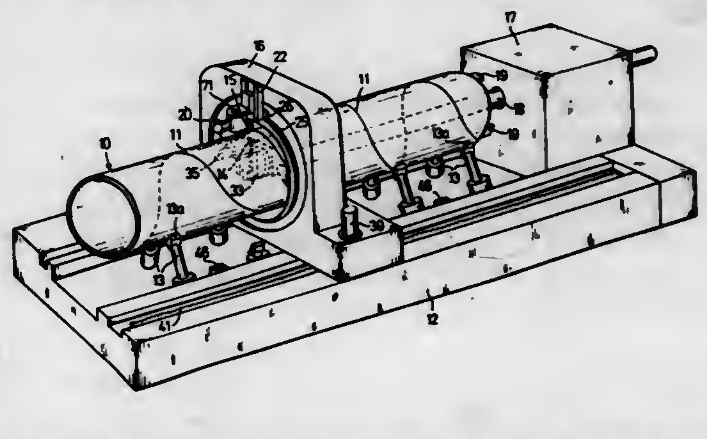
Hans Bedall, Nüremberg, and Max Rentzsch, Rothenbach, both of Fed. Rep. of Germany, assignors to DIEHL, Nuremberg, Fed. Rep. of Germany
Filed Mar. 23, 1977, Ser. No. 780,480
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1976, 2612149; Jul. 31, 1976, 2634570
Int. Cl.² F42B ***13/18, 13/48***
U.S. Cl. 86—20 B **5 Claims**



1. A method of making a fragmentation casing for projectiles, especially shells and warheads, which includes the steps of: providing a solid raw body having a base body with ends as well as a front section and a rear section each having end faces and an intermediate section including an outside therebetween, machining to rated dimensions only the outside of said intermediate section, applying to said machined intermediate section a layer of fragmentations and hardenable sinter material, sintering and pressing said fragmentations and sinter material into said machined intermediate section, and after hardening of said sinter material, machining over the outside thereof to the rated dimensions, providing an axial bore in the thus machined body, and placing an explosive charge in said bore.

4,129,062
MACHINE FOR MACHINING TUBES HAVING HELICAL WELD SEAMS

Klaus W. Bergmann, Spenge; Günther B. H. Steffen, and Herbert Mönkemöller, both of Bielefeld, all of Germany, assignors to Bergmann & Steffen OhG, Salzuflen, Germany
Filed Jan. 30, 1976, Ser. No. 654,043
Claims priority, application Austria, Jan. 30, 1975, 694/75
Int. Cl.² B23C ***1/00, 1/16;*** **B23D** ***1/00***
U.S. Cl. 90—11 R **7 Claims**



1. A machine for machining tubes having a helical weld seam and for simultaneously reducing internal and external weld beads by machining, comprising a machine bed, at least one tube bearing means mounted on the machine bed for supporting a tube having a wall with a helical weld seam in the wall, first and second power driven tools mounted such that said first tool is located within the tube and said second tool located outside the tube, said tools thereby opposing each other on the sides of the wall of the tube, and means for displacing said first and second tools in dependence upon the helical weld seam in the longitudinal extension of the tube and following the weld seam, and further comprising a housing on said bed and gearing in said housing, a chuck on said housing connected to said gearing, said tube is mounted in said chuck, said chuck being axially rotatable and having support rams abutting against the outer tube surface, upper end rollers supporting said tube, said displacing means comprising a first feed spindle which is displaceable in the longitudinal extension of said tube on a slide displaceably mounted in the longitudinal extension of the tube on the machine bed, said first tool fixedly retained in the peripheral extension of said tube on said feed spindle.

4,129,063
BENT AXIS PUMPS AND MOTORS

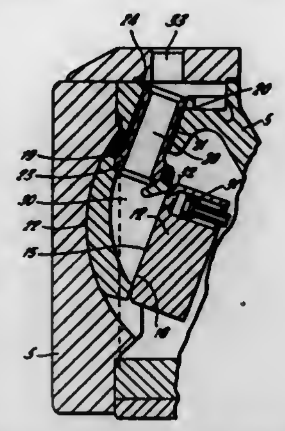
Richard J. Ifield, Beecroft, Australia, assignor to Ifield Engineering Pty. Limited, Dural, Australia
Filed Sep. 17, 1976, Ser. No. 724,100
Claims priority, application Australia, Oct. 1, 1975, PC3394
Int. Cl.² F01B ***13/04***
U.S. Cl. 91—506 **7 Claims**

1. A bent axis pump or motor, comprising:

a stationary housing means defining a fluid inlet and a fluid outlet region, said housing including an arcuate surface therein,

a port block arcuately movable along said surface within said housing to vary the pump or motor displacement and having a plurality of fluid receiving chambers,

a cylinder block housing a plurality of operating cylinders and rotating about a central axis and rotating relative to said port block to present one of said operating cylinders in a fluid intake position to one of said plurality of fluid receiving chambers and to subsequently present said one of said operating cylinders in a fluid discharge position to another of said plurality of fluid receiving chambers, and

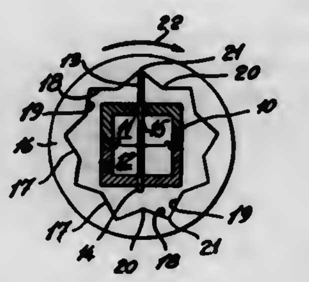


a fluid transfer sleeve serving as an inlet and a fluid transfer sleeve serving as an outlet each slidably mounted within said housing and sealingly extending between each of said fluid receiving chambers and one of said regions, said transfer sleeves extending generally perpindicular to the rotational axis and being located on the same side of the port block, whereby couples imposed upon said port block in operation are minimized.

4,129,064
FLUID OPERATED STEPPING MOTOR

Atef E. F. Fahim, 10124 Place Meilleur, No. 30, and Richard M. H. Cheng, 3452 Rosedale Ave., N.D.G., both of Montreal, Quebec, Canada

Filed Apr. 8, 1976, Ser. No. 675,228
Int. Cl.² F16H *27/02*
U.S. Cl. 92—129 3 Claims

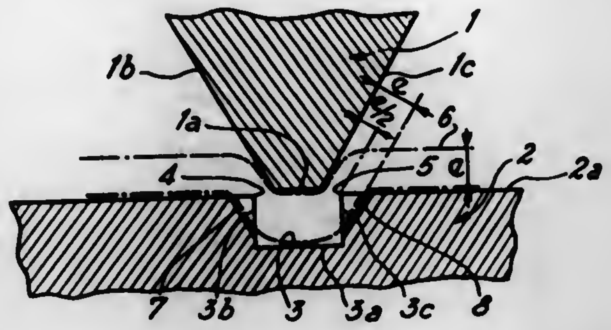


1. A fluid operated stepping motor comprising a double acting cylinder having a working member, a pair of piston rods fixed to said working member, said working member being displaced by pressure from a pressure source applied to said cylinder, a cam in surrounding relationship with respect to said cylinder and in planar alignment with said piston rods and having a plurality of teeth asymetrically disposed on an inner face thereof, each tooth having a power profile surface and an idle profile surface, said piston rods being axially aligned and extending out of opposite cylinder heads to alternately engage said power profile on teeth of said cam disposed in alignment therewith such as to result in relative rotation of the cam with respect to the cylinder as each piston rod end alternately engages teeth oppositely disposed with respect to each other.

4,129,065
APPARATUS FOR GROOVING SHEET MATERIAL

Louis G. Corse, Chaumont-sur-Tharonne, France, assignor to Machines Chambon, Orleans, France

Filed Dec. 29, 1976, Ser. No. 755,164
Claims priority, application France, Jan. 8, 1976, 76 00301
Int. Cl.² B26D *3/08*; B31F *1/00*
U.S. Cl. 93—58 ST 6 Claims

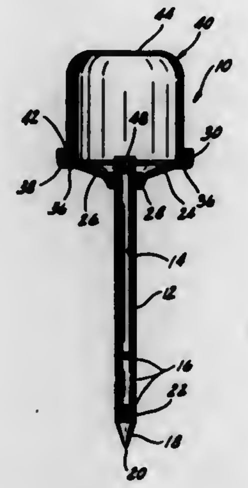


1. Apparatus for grooving a flat thin material of fibrous structure, such as cardboard or paper, along a line about which the material is subsequently to be folded, the apparatus comprising a grooving blade which tapers towards an end face, and a backing member having a recess opposite the end face of the blade, the blade being displacable relative to the backing member so as to move the end face of the blade towards the base of the recess in the backing member, wherein the two edges delimiting the recess in the backing member are provided with a plurality of notches which define bevelled surfaces which match the tapering surfaces of the blade, which are generally parallel to said tapering surfaces and which are spaced from these surfaces by a distance substantially equal to the thickness of the material to be grooved.

4,129,066
BASTING DEVICE

John C. Corley, 10469 Whitebridge, St. Louis, Mo. 63141

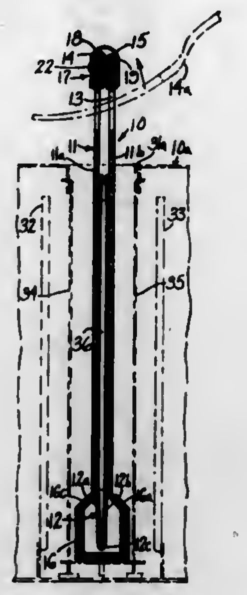
Filed Feb. 3, 1978, Ser. No. 874,853
Int. Cl.² A47J *37/10*
U.S. Cl. 99—345 6 Claims



1. A basting device for injecting fluid material under pressure comprising a hollow elongated member with perforations adjacent a forward end and with an annular flange adjacent a rearward end, a tip having a pointed head for penetrating a food article threadedly attached to the forward end of the hollow elongated member adjacent the perforations, a detachable, rigid bowl threadedly attached to the flange, said flange forming a cover for the bowl and including a plurality of peripherally spaced grooves communicating with the bowl for pressure relief and said elongated member extending through the flange into the bowl and including perforations for straining the basting fluid.

4,129,067
BACON COOKING APPARATUS

Peter M. Relland, 27 Eighth Ave., Milford, Conn. 06460
Continuation of Ser. No. 727,228, Sep. 27, 1977, abandoned. This application Dec. 9, 1977, Ser. No. 859,005
Int. Cl.² A47J *37/08*
U.S. Cl. 99—391 9 Claims



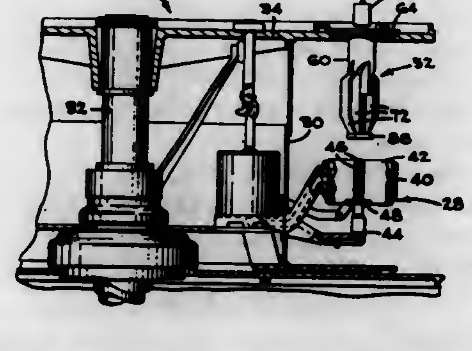
1. Apparatus adapted to removably support a strip of bacon to be cooked in a toaster having spaced heating elements comprising:

means adapted to support said strip in said toaster between said heating elements to be cooked thereby, said support means comprising an inner support means adapted to receive said strip of bacon and to drain the grease away from the bacon, and an outer support means adapted to receive said inner support means;
drain means carried by said support means for receiving the grease drained from the cooking bacon; and
handle means facilitating the insertion of said apparatus into the toaster and the removal of said apparatus from the toaster.

4,129,068
CITRUS SLICING APPARATUS

Elton L. McKenzie, Auburndale, Fla., assignor to FMC Corporation, San Jose, Calif.

Filed May 19, 1977, Ser. No. 798,290
Int. Cl.² A23N *4/12*
U.S. Cl. 99—538 6 Claims

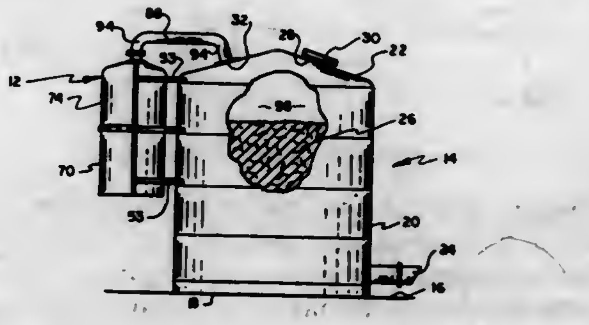


1. Apparatus for slicing a citrus fruit comprising means for supporting a peeled citrus fruit in a fixed position with its axial core in a predetermined spacial orientation, a slicing head comprising a head portion and a plurality of blades uniformly circumferentially spaced about the axis of said head with said axis being coincident with said core of said fruit, means for rigidly and immovably mounting each of said blades to said head portion, each of said blades being flat in a plane which extends parallel to but spaced from said axis of the head, means for moving said head in a straight line path along the axis thereof so that said blades pass through said fruit with none of the planes of the blades passing through said core or directly adjacent thereto whereby a plurality of uniform sections may be cut from said fruit with all of the cuts passing through the radially extending membranes of the fruit at a relatively wide angle.

4,129,069
BREATHER BAG APPARATUS

Andy L. Thompson, Rte. 2, Courtland, Kans. 66939

Filed Aug. 17, 1977, Ser. No. 825,279
Int. Cl.² A23P *1/00*
U.S. Cl. 99—646 S 4 Claims



1. A breather bag apparatus connected to a material storage structure operable to allow for expansion and contraction of gases in the storage structure, comprising:

(a) a bag assembly having a flexible bag member that expands and contracts under gaseous pressures;
(b) a bag mounting assembly secured to the storage structure and surrounding said bag member in a protective manner;
(c) a conduit connector assembly connected at one end to said bag member and at another end to the storage structure to provide free flow of gases therebetween;
(d) said bag mounting assembly including a support connector member and a protector shell member connected to said support connector member;
(e) said support connector member connected to said bag member and said conduit connector assembly for flow of gases therebetween;
(f) said protector shell member encloses said bag member on all sides thereof without a bottom wall; and wherein said bag member acts similar to a diaphragm member to equalize pressures between the atmosphere and interior of the storage structure and prevent air from entering the silo structure and said bag member is protected on all sides and top thereof but said bag member is readily observed from below to monitor condition thereof.

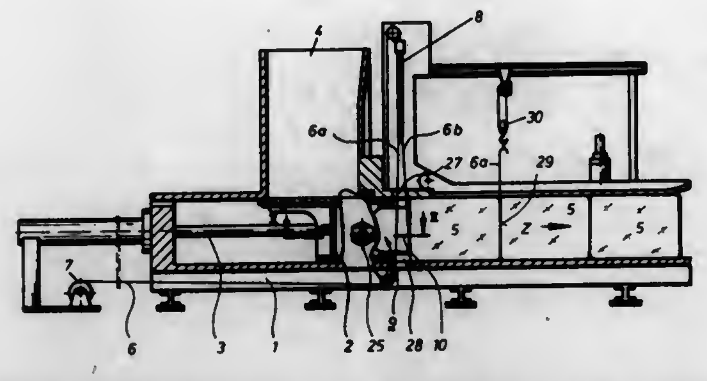
4,129,070
BALING PRESSES FOR THE PRODUCTION OF BOUND BALES

Dietmar Kaffka, Willich, Fed. Rep. of Germany, assignor to Lindemann Maschinenfabrik GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Oct. 19, 1977, Ser. No. 843,543
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1977, 2728203
Int. Cl.² B65B *13/18*
U.S. Cl. 100—17 5 Claims

1. In a baling press for the production of bound bales of predominantly non-metallic waste material, said press comprising a pressing box, a pressing plunger, said plunger including a front wall defining a pressing face of said plunger, means movably mounting said pressing plunger in said pressing box and means for moving said plunger to and fro in said pressing box in a pressing stroke and a retraction stroke, the improvement comprising a binding comb and means mounting said binding comb on said plunger for movement relative to said plunger between a forward position and a retracted position, said binding comb comprising a plurality of plates having front

edges, means mounting said plates parallel to and spaced apart from one another, and means for moving said plates between a forward position corresponding to said forward position of said comb and a retracted position corresponding to said retracted position of said comb, said plates, when in said forward



position, projecting beyond said pressing face of said plunger and defining therebetween a plurality of grooves for the passage of binding wire in front of said plunger and, when in said retracted position, having said front edges forming parts of said pressing face of said plunger.

4,129,071
ANTI-OVERRUN DEVICE FOR THE SLIDE IN A PRESS

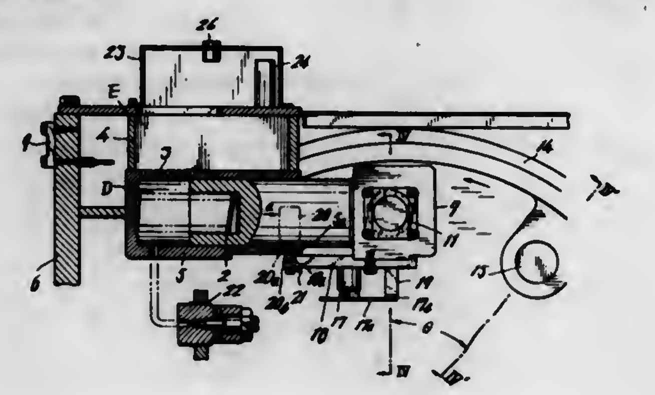
Yoshihiro Oishi, Sagamihara, Japan, assignor to Aida Engineering, Ltd., Kanagawa, Japan

Filed Jan. 10, 1977, Ser. No. 757,889

Claims priority, application Japan, Mar. 8, 1976, 51/90215

Int. Cl.² B30B *1/26, 15/14*

U.S. Cl. 100—53 **2 Claims**



1. An anti-overrun device for a slide in a press comprising: a crankshaft; a rotary member secured to the crankshaft; a projection extending from the side of the rotary member; a cylinder adapted to be secured to a framework of a press; a piston slidably received within the cylinder; a pin supported by the piston for movement into and out of a circle described by the rotation of the projection extending from the rotary member; control means connected to the pin to control movement of the pin into and out of the circle described by the rotation of the projection on the rotary member and to control actuation of the press, whereby the control means prevents reactivation of the press when the projection strikes against the pin; an oil pressure chamber defined in the cylinder to produce an oil pressure therein as the piston slidably moves within the cylinder; and a plurality of orifices formed in the side wall of the oil pressure chamber to be closed in turn as the piston slidably moves within the cylinder.

4,129,072
ELECTROSTATIC PRINTING

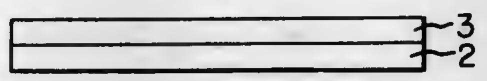
Motoharu Fujii, Tokyo; Takao Muramatsu, Yokohama; Noboru Kounura, Tokyo; Susumu Sugiura, Yamato; Nobuhiro Takekawa, Tokyo, and Syusei Tsukada, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

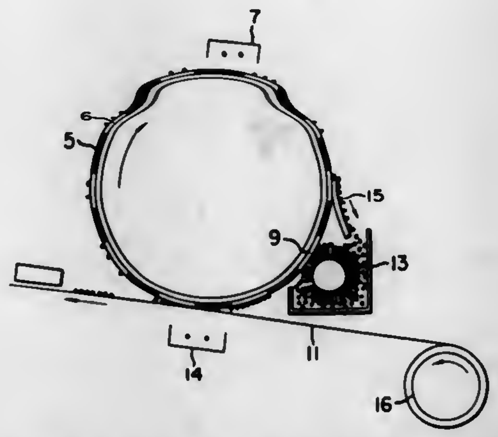
Filed Jan. 21, 1977, Ser. No. 760,941

Claims priority, application Japan, Jan. 26, 1976, 51-7744

Int. Cl.² G01D *15/06*

U.S. Cl. 101—1 **3 Claims**





1. An electrostatic printing apparatus which comprises:
an electrostatic printing image carrier comprising essentially a dielectric medium having an electric resistance sufficient to hold a static charge and a layer composed essentially of silver image carried by the medium;
charging means for charging the dielectric medium with a static charge corresponding to the same;
developing means for developing with developing material the latent image formed on said image carrier corresponding to the static charge;
cleaning means for cleaning the surface of the image carrier after charging and before developing, said cleaning means being provided within said developing means so that the developing material removed from the image carrier by said cleaning means is redeposited in said developing means; and
transferring means for transferring the image developed on the dielectric medium from said image carrier to a transfer material.

4,129,073
DUPLICATOR MACHINE WITH MEANS FOR APPLYING TO THE COPIES DIFFERENT MARKINGS

Gerhard Ritzerfeld, Schorlemer Allee 14, 1000 Berlin 33, Fed. Rep. of Germany

Continuation of Ser. No. 641,019, Dec. 15, 1975, abandoned.

This application Sep. 6, 1977, Ser. No. 830,441

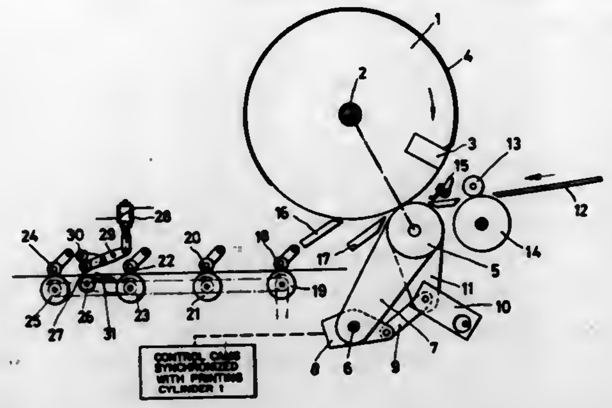
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1974, 2461048

Int. Cl.² B41F *7/00*

U.S. Cl. 101—2 **29 Claims**

1. In a duplicator machine of the type operative for whole-page, paragraphwise or sectionwise copying of printing, and the like, on originals, printing forms, and the like, and operative for producing corresponding copies intended to be differently routed, particularly to different clerical departments and the like, the machine being of the type wherein transport means transports the copies through the machine along a predetermined path in a predetermined direction, controllable marking means operative for providing the copies with differently colored routing markings which can be used for distinguishing among the copies as to their purpose and for properly

routing the copies, the controllable marking means comprising a plurality of printing cylinders, means for applying to respective ones of the printing cylinders inks of different respective colors which when applied to the copies are visible over the copied information on the copies, and means mounting each printing cylinder for rotation and for swinging movement



independently of the other printing cylinders between an inoperative position in which the printing cylinder does not contact the copies and an operative position in which the printing cylinder contacts the copies and rolls upon the surface of the copies producing solid stripes of the respective color extending in said predetermined direction and constituting routing markings.

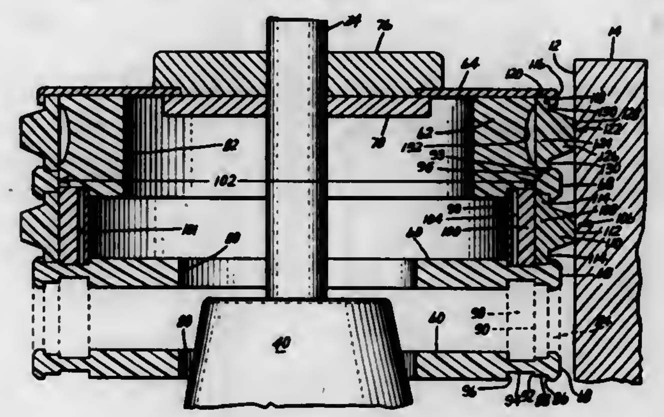
4,129,074
MULTI-LINE IMPRINTING WHEEL APPARATUS

Millard B. Beaver; Leonard L. Johnson; Harry L. Hart, and Tennis Mahoney, all of Fort Wayne, Ind., assignors to Lincoln Logotype Co., Inc., Fort Wayne, Ind.

Filed Jan. 3, 1977, Ser. No. 756,398

Int. Cl.² B41F *17/00, 13/10*

U.S. Cl. 101—35 **19 Claims**



1. A multi-line imprinting wheel comprising: a plurality of longitudinally spaced annular members coaxial with a longitudinally extending shaft, said annular members having peripheral edges and defining at least two annular, radially outwardly facing openings between adjacent pairs thereof; a plurality of type elements formed of rubber-like material each forming a line of type, each said type element including a base portion having opposite edges and an inner surface, and a printing portion joined to said base portion and having a printing face; each said adjacent pair of annular members having first means thereon for removably seating and retaining said opposite edges of said base portion of a said type element with said base portion thereof extending across the respective opening and said printing portion extending radially outwardly therein and with said printing face projecting radially beyond the peripheral edges of the respective pair of annular members; a plurality of annular resilient back-up members each having axially spaced opposite edges and an outer surface, each back-up member being in the form of a single, solid element of resilient material; each said adjacent pair of annular members having second means thereon in the form of facing radial surfaces and annular shoulders radially inwardly from said first means which are abuttable with the opposite edges and portions of the outer surface of a said resilient member for seating the latter with said resilient member extending across the respective opening and with its remaining portion of said outer surface engaging said inner surface of the respective type element; each said resilient member being resiliently radially movable inwardly with said outer surface thereof engaged with said inner surface of said type element being capable of both radial and tilting movement, each said resilient member resiliently resisting inward and tilting movement of the respective type element whereby each line of type is independently capable of limited radial and tilting movement for imprinting in parallel paths on an irregular surface.

4,129,075
LINE PRINTER

Katsuhiko Okabe, Tokorozawa, Japan, assignor to Copal Company Limited, Tokyo, Japan

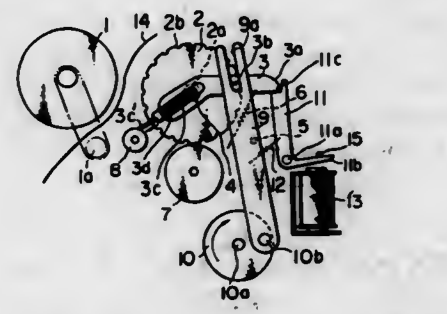
Continuation of Ser. No. 698,204, Jun. 21, 1976, abandoned.

This application Nov. 4, 1977, Ser. No. 849,113

Claims priority, application Japan, Jun. 23, 1975, 50-77372

Int. Cl.² B41J *3/46, 29/26*

U.S. Cl. 101—99 **2 Claims**

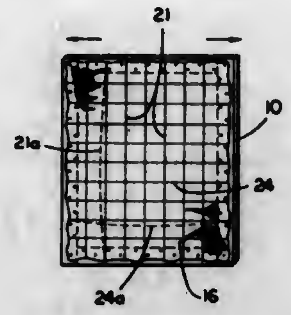


1. In a line printer having a printing mechanism comprising a plurality of coaxially arranged rotatable printing rings each bearing on the periphery thereof a series of characters to selectively effect printing on a paper, a platen movable toward the printing rings to abut thereagainst with the paper interposed therebetween and away therefrom so as to free the paper and permit the paper to be advanced, means for selectively and temporarily arresting each printing ring so as to locate a selected character in a printing position at which the platen abuts against the respective printing rings for simultaneously printing a line of printing on the paper by the selected characters, the improvement comprising additional printing means for selectively and additionally printing a mark adjacent particular characters printed on the paper, the additional printing means being movable from a retracted position to a printing position for effecting the additional printing, and means supporting said additional printing means for pivotal movement along the outer periphery of the printing rings, said additional printing means comprising a printing wire having portions supported by a pair of printing levers each swingably supported adjacent opposite extremities of the coaxially arranged printing rings, spring means for biasing the pair of printing levers so as to urge the printing wire to the printing position, arresting levers means releasably engageable with the pair of printing levers, respectively, so as to arrest the printing wire in the retracted position against the action of the spring means, solenoid means cooperating with the arresting lever means for releasing the arresting lever means from the printing levers, and charging lever means for urging the printing levers, so as to permit the arresting lever means to arrest the printing levers in the retracted position of the printing wire, and rotatable cam means operably coupled with the charging lever means for discharging the charging lever means to to urge the printing levers to retract position so as to be arrested by the arresting lever means.

4,129,076
COLOR-KEYED FABRIC FOR SCREEN PRINTING

Robert F. Gardner, 5505 Hawthorne Dr., Indianapolis, Ind. 46226

Filed Dec. 7, 1977, Ser. No. 858,360
Int. Cl.^{2} B41F *15/36*
U.S. Cl. 101—127 3 Claims

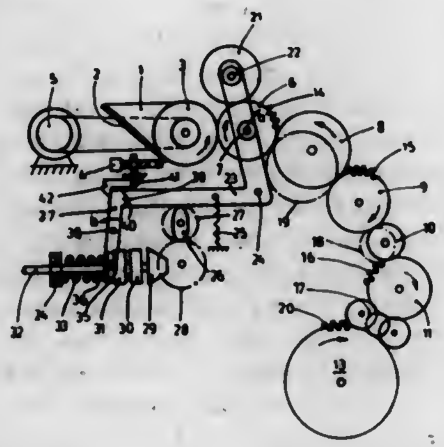


1. A mesh fabric for use in screen printing having threads or fibers uniformly spaced to provide a mesh screen through which printing ink is forced during the printing process, the fabric being secured evenly and drum-tight to a rigid printing frame and means for monitoring and thereby controlling distortion of the fabric as it is tightened over the frame, said means consisting of certain groups of one or more adjacent parallel fibers having a color contrasting with the overall color of the fabric and said colored groups of fibers being uniformly spaced from each other across the surface of the fabric, whereby the spacing between said colored groups of fibers may be visually monitored as the fabric is being secured to its printing frame.

4,129,077
DUAL FEED INKING SYSTEM FOR OFFSET PRINTING MACHINES

Hermann Fischer, Augsburg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft (M.A.N.), Augsburg, Germany

Filed Jan. 27, 1978, Ser. No. 872,891
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2703424
Int. Cl.^{2} B41L *27/16*; B41F *31/14, 31/30*
U.S. Cl. 101—350 10 Claims



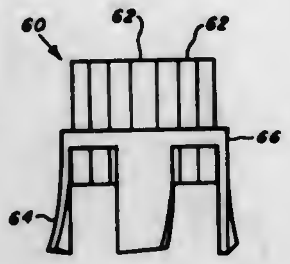
1. Dual-mode inking system for offset printing machines having

a ductor roller (3) with an ink accepting surface;
means (1, 2) applying ink to the ink accepting surface of the ductor roller;
an ink train including a plurality of ink transport and transfer rollers (8, 9, 10, 11) transporting and transferring ink to the plate cylinder (13) of the printing machine,
and comprising, in accordance with the invention,
means to selectively apply ink from the ductor roller (3) to the ink train in either
(a) continuous mode, or
(b) intermittent mode, including
an ink supply roller (6);
an ink transport roller (21);
movable bearing means (7) journalling the ink supply roller (6) for ink transferring surface contact with at least one of the rollers (8) of the ink train and, selectively,
(a) in continuous contact with said ductor roller (3) for operation in continuous inking mode, or
(b) out-of-contact with said ductor roller (3) for operation in intermittent inking mode;
movable bearing holder means (23) and bearings (22) therein journalling the ink transport roller (21), said movable bearing holder means (23) moving the transport roller (22) for selective engagement with the ink supply roller (6) when in a first position (FIG. 2), or with the ductor roller (3) when in a second position (FIG. 3);
selectively engageable operating means (26-36) operably connectable to said movable bearing holder means (23) and moving said bearing holder means betweeen said first and second positions when said ink supply means is operable in intermittent mode (b);
and variable speed drive means (5) connected to the ductor roller (3) to drive the ductor roller, selectively, when
(a) the ink supply means operate in continuous mode, at a speed at which the surface speed of the ductor roller (3) and the surface speed of the plate cylinder (13) are approximately matched; and
(b) the ink supply means operate in intermittent mode, at a speed at which the surface speed of the ductor roller (3) is less than the surface speed of the plate cylinder (13).

4,129,078
DISPERSIVE SUBPROJECTILES FOR CHAFF CARTRIDGES

Clayton J. Schneider, Jr., East Aurora, and Ernest V. Ruda, East Amherst, both of N.Y., assignors to Calspan Corporation, Buffalo, N.Y.

Division of Ser. No. 695,283, Jun. 11, 1976, Pat. No. 4,063,515. This application Jun. 27, 1977, Ser. No. 809,968
Int. Cl.^{2} F42B *13/56*
U.S. Cl. 102—89 CD 6 Claims



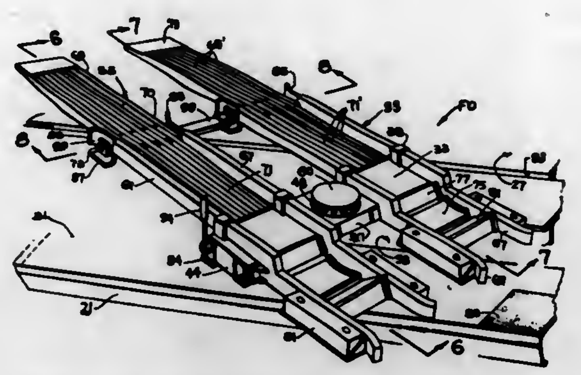
1. In a chaff cartridge of the type having a casing, a primer, a fuse, a propellant charge and a plurality of chaff fibers wherein the improvement comprises a plurality of chaff subprojectiles each of which including:

a plurality of segmented chaff containers containing chaff fibers;
prestressed retainer ring means for receiving and holding together said chaff containers; and
drag producing means for separating said subprojectiles and converting forward motion to rotational motion and for causing said subprojectiles to rotate and thereby produce centrifugal forces which cause said prestressed retainer rings to rupture causing said chaff fibers to be radially dispensed with respect to said subprojectiles upon the firing of said chaff cartridge due solely to centrifugal and inertial forces.

4,129,079
RAILROAD CAR FOR HIGHWAY TRAILERS

Montague W. Shannon, 2121 Bragg St., Lot 1, Chamblee, Ga. 30341

Filed Jul. 7, 1977, Ser. No. 813,484
Int. Cl.^{2} B65G *67/02*
U.S. Cl. 105—368 B 9 Claims



1. In transporting apparatus including a railroad car having frame structure extending lengthwise of the car and highway vehicle means including a semitrailer having load bearing structure and highway wheel means supporting the rearward portion of said load bearing structure, and including a truck-tractor, and means hitching the truck-tractor to said semitrailer; the means for loading the semitrailer onto said car comprising platform means disposed alongside said car, supporting said highway vehicle means, runner means operationally supported on the frame structure of said car, turnable laterally and shiftable longitudinally of the frame structure, means turnably adjusting said runner means laterally of the car frame structure with distal portions thereof disposed contigious said platform means, first means for maneuvering said highway vehicle means, moving said semitrailer backward and said wheel means onto said runner means, means for limiting the movement of said wheel means relative to said runner means, second means for maneuvering said highway vehicle means, maneuvering said truck-tractor backward and progressively angular relative to the semitrailer, actuating said runner means laterally and longitudinally of the car frame structure and moving the forward portion of said semitrailer to a disposition substantially centered transversely of the car, means for transferring the weight of the semitrailer forward portion from said truck-tractor to the frame structure of the car, and means for unhitching and moving the truck-tractor onto the platform means.

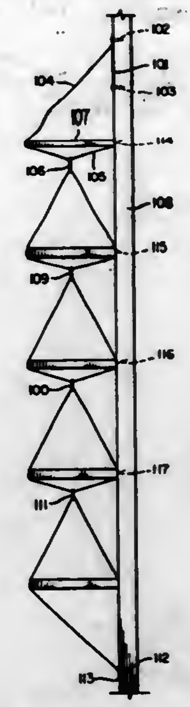
4,129,080
SHELF SUPPORT DEVICE

Seymour Vall, 35 W. 81 St., New York, N.Y. 10024

Filed Mar. 28, 1977, Ser. No. 781,550
Int. Cl.^{2} A47B *5/00*
U.S. Cl. 108—149 7 Claims

1. A shelf support device comprising in combination a plurality of components including:

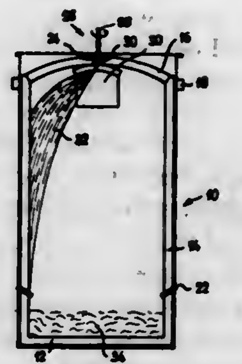
A. a plurality of strap means each arranged in two strands and providing direct support for a plurality of shelves;
B. hanger means anchored to a vertically extending support, said hanger means supporting a first end of each of said strands of said strap means;
C. sling lock means located at spaced intervals along said strands, said sling lock means locking said strands in place to provide support for each said shelves; and,
D. sling lock keeper means so arranged and constructed to anchor the second end of each said strap means to said support; whereby the non-rigid materials comprising said shelf support device are so arranged and constructed to become rigid when stressed.



4,129,081
ROTARY INJECTOR FOR LIQUID RESIDUE INCINERATING FURNACE

Bernard Bandin, Paris, France, assignor to Etablissements P. Ferbeck & Vincent, Velizy-Villacoublay, France

Filed Sep. 22, 1977, Ser. No. 835,612
Claims priority, application France, Oct. 4, 1976, 76 29773
Int. Cl.^{2} F23G *5/12*
U.S. Cl. 10—238 5 Claims



1. In a vertical cylindrical furnace for incinerating liquid residues, a rotary injector for injecting the residues to be dried on the wall of said furnace, comprising, an injection pipe and an injection nozzle; a nozzle-holder and an intermediate elbow between the injection pipe and said nozzle-holder, the nozzle-holder itself being bent and adapted to cooperate with the intermediate elbow with respect to which it is adjustable in rotation, so as to be able to give a determined orientation to the injection nozzle, so that the liquid to be incinerated covers an optimal drying surface on the cylindrical wall for any flow within a given range of variation; a sliding ring adapted to apply the nozzle-holder on the elbow in the extension one of the other, stopped in rotation with respect to the elbow, a shouldered nut adapted to stop the nozzle-holder in rotation with respect to the elbow.

4,129,082

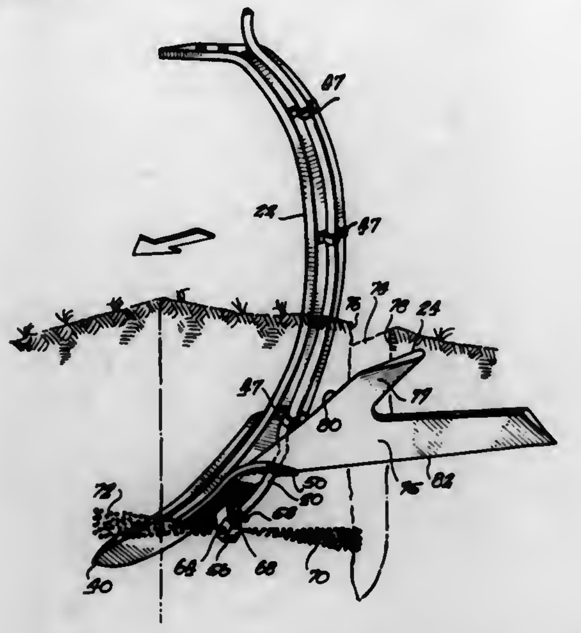
EARTH WORKING AND FLUID DISTRIBUTION APPARATUS

Gilbert E. Betulius, Evansville, Ind., assignor to Chem-Farm Inc., Evansville, Ind.

Filed Jan. 12, 1977, Ser. No. 758,588

Int. Cl.^{2} A01C *23/02*

U.S. Cl. 111—7 **4 Claims**



1. An earth working and fluid distribution apparatus comprising a mobile plow including a rigid frame, soil grooving and fracturing means including shank means attached to said frame and a tool having a leading edge attached to said shank means with a transverse width defined by the horizontal distance between the vertical edges thereof for creating a furrow in communication with the soil as said mobile plow travels thereacross, fluid supply means attached to said frame, fluid distribution means connected to said fluid supply means, said fluid distribution means terminating in fluid discharge means connected to said shank means above and behind the leading edge of said tool, said fluid discharge means having opposed nozzle means for discharging fluid substantially laterally against opposed sidewalls of said furrow created by said soil grooving and fracturing means, rearwardly diverging sweep means connected to said shank means and having a leading portion having a transverse width no greater than said transverse width of said tool disposed substantially directly above the fluid discharge means to prevent positive disturbance of the tool created furrow side walls until after said nozzle means has passed thus facilitating fluid issuing from the nozzle means reaching the tool created furrow side walls, said sweep means diverging to a width greater than the transverse width of said tool behind and only behind said nozzle means and extending above and behind said nozzle means for contacting the sidewalls of said furrow only after said nozzle means has passed and displacing soil from the sidewalls of the furrow downwardly to effect sealing of said fluid in the soil following said discharge of said fluid.

4,129,083

JOINING OF A MULTIPLE-LAYER FABRIC BY INVISIBLE STITCHING

Robert E. Vinner; Max Parisot, and Jacques Parisot, all of 53-55, rue d'Avron, Paris 20, France

Filed Jun. 27, 1977, Ser. No. 810,059

Claims priority, application France, Jul. 22, 1976, 76 22381

Int. Cl.^{2} D05B *1/24*

U.S. Cl. 112—178 **8 Claims**

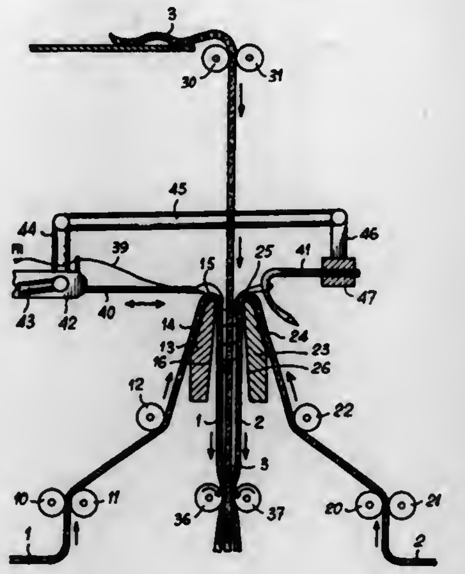
1. In a machine for joining together a plurality of layers of fabric by invisible stitching, of the type comprising:

a sewing station where two acute-angled guides having ridges are disposed side by side to offer two adjacent, rectilinear and parallel ridges,

two fabric dispensing devices, supplying two strips of fabric on either side of the two guides,

a step-by-step drive device adapted to pull the two strips of fabric jointly over the ridges of the guides and thence between the two guides, the combination of:

a needle-holder carriage, holding a plurality of needles movable so that the needles penetrate the thickness of the strips of fabric when said latter rest on said ridges of the guides, as well as a device for supplying the needles with yarn,



a hook-holder bar holding a plurality of hooks and homologous with the needle-holder carriage, pivoting with the movement of the carriage in order to allow a chain-stitch, and

a control allowing alternately the movement of the needle-holder carriage and of the hook-holder bar to make a series of stitches, and the movement of the drive device for advancing the fabric.

4,129,084

NEEDLE BAR DISENGAGING DEVICE FOR SEWING MACHINES

Yoshio Kihara, Sakai, Japan, assignor to Sanwa Industries, Ltd., Osaka, Japan

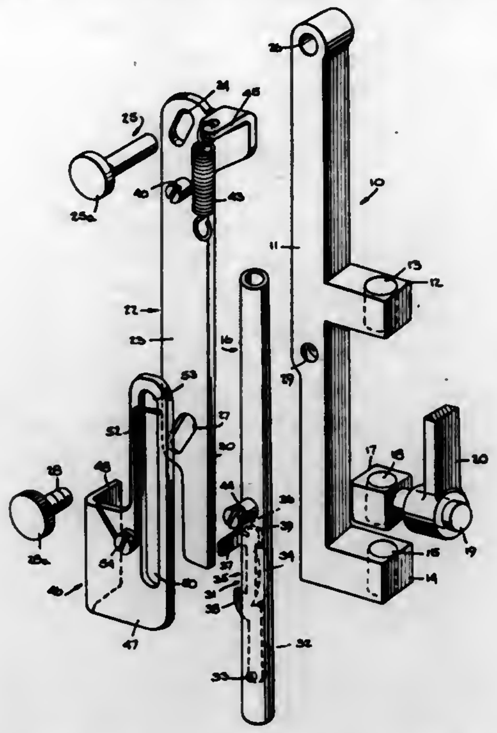
Filed Apr. 4, 1977, Ser. No. 784,141

Claims priority, application Japan, Apr. 12, 1976, 51-40720; Sep. 29, 1976, 51-131083[U]

Int. Cl.^{2} D05B *55/16*

U.S. Cl. 112—221 **17 Claims**

1. In a sewing machine having a frame, a needle bar mounted for endwise reciprocating motion in said frame, a driving mechanism for effecting endwise reciprocation of said needle bar, a latch mechanism for selectively connecting and disconnecting said driving mechanism with and from said needle bar, and a latch release member supported on said frame for movement alternately into and out of a position for releasing said latch mechanism, the improvement wherein said needle bar has a recess therein extending in the direction of the extending transversely to the direction of endwise reciprocation of said needle, and wherein said latch mechanism has a latch element mounted in said recess for movement in said recess from a first position in which it extends outwardly of said needle bar and connects said needle bar to said driving mechanism to a second position disposed in a direction inwardly of said needle bar with respect to said first position in which it disconnects said needle bar from said driving mechanism.



4,129,085

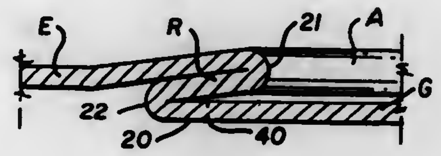
GATED CAN END WITH SHEAR OFFSET DEFINING GATE AND METHOD FOR MANUFACTURE OF THE SAME

Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020

Filed Mar. 7, 1977, Ser. No. 774,596

Int. Cl.^{2} B21D *51/44*

U.S. Cl. 113—121 C **3 Claims**



1. The method of forming a can lid blank having a pushdown gate in a panel portion of the lid below an aperture in the lid, with a narrow spacing rim underfolded about the aperture whose outward edge joins with the panel portion therebelow, and including the steps of: drawing a cup downwardly in the lid blank having a bottom area approximating said panel portion; drawing a ridge upwardly from the lid blank whose inner wall forms the wall of said cup; forming said panel portion in the bottom of the cup; cutting a frangible discontinuity in the formed panel portion adjacent to the ridge to define the outline of the gate therein, said frangible discontinuity being formed by the operations of shifting the gate downwardly from the plane of the panel to form an offset shear extending partially through the panel and returning the gate towards the plane of the panel; and folding the ridge inwardly and downwardly to overlie the frangible discontinuity and form said aperture.

4,129,086

METHOD AND MEANS FOR THE ACOUSTICAL STEERING OF SUBMARINE TORPEDOES

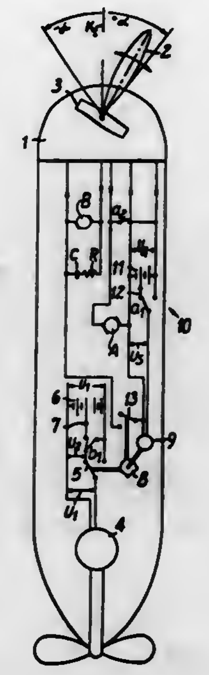
Hans-Dieter Schwarz, Am Querkamp 58, 28 Bremen, Fed. Rep. of Germany

Filed Dec. 4, 1967, Ser. No. 689,748

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1966, 9046565

Int. Cl.^{2} F42B *19/01, 19/10;* G05D *1/00*

U.S. Cl. 114—23 **14 Claims**



1. A method of steering a submarine torpedo towards a target in which the bearing of the target from the torpedo is determined acoustically and the steering connected according to the relative position of the target with respect to the torpedo and the target position thus determined which method includes the steps of,

raising and lowering the speed of said torpedo during alternating mutually exclusive high and low speed intervals respectively,

measuring the distance between said torpedo and a target during each slow speed interval,

shortening the duration of said slow speed intervals in response to sensing a target,

and correcting the steering of said torpedo in response to the distance measurements, thereby to move said torpedo along a collision course with said target.

4,129,087

COMBINATION PURSUIT AND COMPENSATORY DISPLAY SYSTEM

Joseph G. Dimmick; William J. Weingartner, both of Annapolis; Alan S. Fields, Silver Spring; Donald L. Fairhead, Annapolis, and Rosemary Musson, Millersville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 19, 1977, Ser. No. 826,019

Int. Cl.^{2} B63H *25/04*

U.S. Cl. 114—144 E **17 Claims**

1. An automated system for assisting a human operator to adjust a machine control parameter in an optimal manner comprising;

a computing means for repetitively calculating an optimum ordered value of the control parameter;

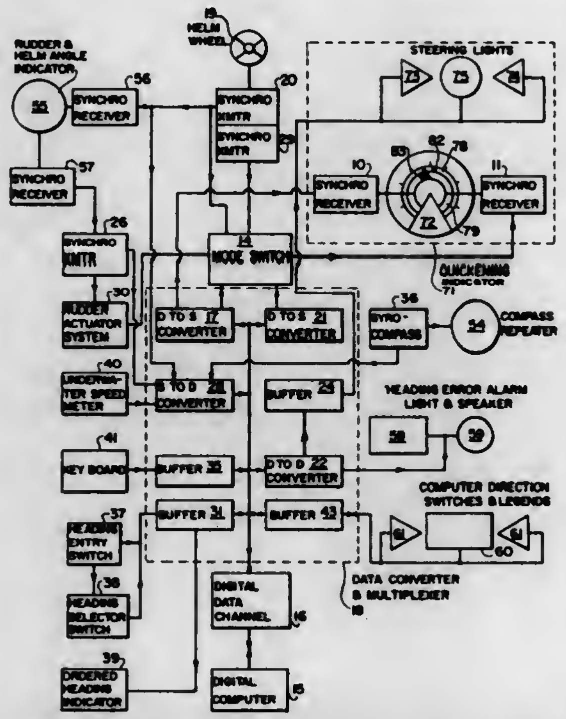
sensor means for providing the computing means with the data needed to calculate the control parameter;

control means adjustable by the operator to directly and continuously set an ordered value of the control parameter;

a display means, including a compensatory display and a pursuit display, for continuously presenting to the operator the most recently calculated optimum ordered value of the control parameter, the ordered value of the control parameter set by the operator, and the direction and significance of the error between the optimum ordered value and the set ordered value of the control parameter;

said compensatory display including three indicators with each of the indicators having an excited state and an off state, an excited state on one indicator indicating that the calculated optimum ordered value of the control parameter is larger than the set ordered value, an excited state on a second indicator indicating that the calculated optimum ordered value of the control parameter is smaller than the set ordered value, and an excited state on the third indicator indicating that the difference between the set ordered and the calculated optimum ordered values of the control parameter is not significant, only one of the three indicators being exited at a time;

said pursuit display including a calibrated dial with two cursors movable along the dial, with the position of one cursor indicating the calculated optimum ordered value of the control parameter and the position of the other cursor indicating the set ordered value of the control parameter.



4,129,088

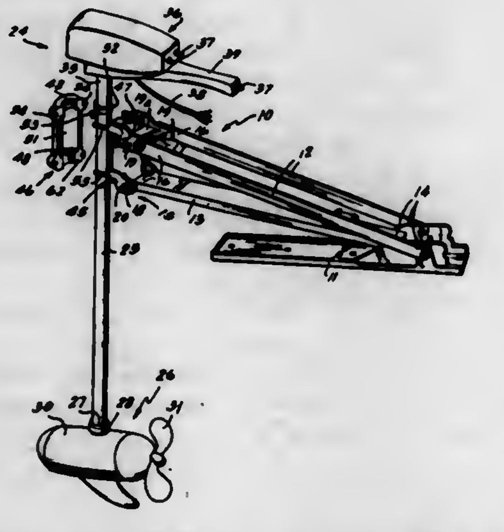
DIVIDED CAP HINGE BRACKET

John D. Foley, Jr., Shreveport, La., assignor to Ram-Trol, Inc., Bossier City, La.

Filed Apr. 27, 1977, Ser. No. 791,171

Int. Cl.² B63H *15/12*

U.S. Cl. 115—18 E **1 Claim**



1. For use with a bow-mounted electric trolling motor unit of the type comprising an elongate cylindrical hinge tube extending downwardly from a control head and through which extends a rotatable pivot tube having an electric motor and propeller assembly carried on a lower end thereof for steering and propelling a boat selectively at low speed, an improved divided cap hinge bracket comprising:

- a bow mounting means having a first cast bracket part, having a semi-cylindrical body portion and spaced apart upper and lower boss portions on said bracket part and projecting therefrom in one direction, each boss portion apertured to receive and support respective upper and lower pivot pins extending transversely between the spaced apart boss portions, a flange extending from said semi-cylindrical body portion and disposed transversely between said upper boss portions and attached to each said upper boss portion, to strengthen said bracket,
- a plurality of lever arms pivotally connected to said boss portions for hingedly swinging said first bracket part between a folded storage position on the bow of said boat and a vertical upright position,
- said first bracket having a second side thereof formed with
  - a pair of upper and lower semi-cylindrical mating surfaces left rough from casting to form serrated abrasive abutment gripping surfaces for engaging the adjoining surfaces of said hinge tube in a non-rotatable firm assembly, and each having a corresponding flat abutment surface at the end thereof,
- studs affixed in said first bracket part and each projecting out of one of said flat abutment surfaces in a direction opposite to said one direction, a second cast bracket part also having corresponding flat abutment surfaces,
- said second bracket part apertured at said corresponding flat abutment surfaces and receiving said studs, nuts received on said studs over said second bracket part for selectively clamping the parts together in assembly about said hinge tube with the respective upper and lower serrated abrasive surfaces defining a cylindric bore for clampingly engaging the hinge tube, said bore having a slightly smaller diameter than said hinge tube such that a small gap exists between said flat abutment surfaces of said first bracket part and said second bracket part when said hinge tube is within said bore and said nuts are fully tightened on said studs,

whereby the pivot tube may be selectively assembled with and removed from the hinge bracket without disassembly of the control head or the electric motor and propeller assembly.

4,129,089

MARINE PROPULSION APPARATUS

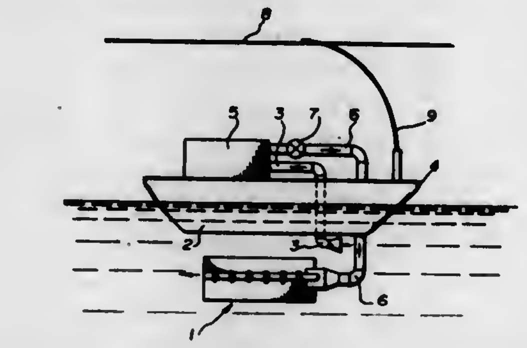
Michael P. Paidoussis, 241 Brookfield Ave., Mount Royal, Canada

Filed Aug. 1, 1977, Ser. No. 820,603

Claims priority, application Canada, Oct. 18, 1976, 263570

Int. Cl.² B63H *1/30*

U.S. Cl. 115—28 A **1 Claim**



1. A marine propulsion apparatus comprising a flexible plate one end of which can be connected to a boat; a flexible tube connected to each side of the plate along substantially the entire length of the plate, the longitudinal axes of the tubes and plate being parallel and defining a plane perpendicular to the sides of the plate; pump means for causing water to flow through the tubes at a sufficiently high velocity to produce undulation of the plate and tube along substantially the entire length thereof for propelling the boat; and coupler means in fluid communication with said pump means and attached to the leading end of said tubes for simultaneously directing substantially equal quantities of water into each of said tubes.

4,129,090

APPARATUS FOR DIFFUSION INTO SEMICONDUCTOR WAFERS

Keizo Inaniwa, and Noboru Ryugo, both of Takasaki, Japan, assignors to Hitachi, Ltd., Japan

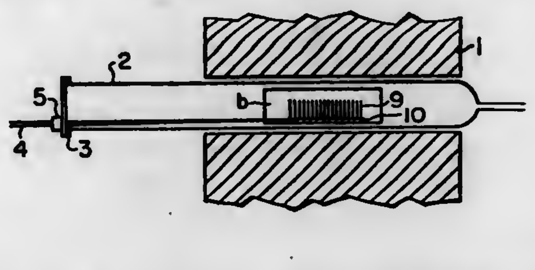
Division of Ser. No. 446,791, Feb. 28, 1974, Pat. No. 3,948,696.

This application Apr. 5, 1976, Ser. No. 673,535

Claims priority, application Japan, Feb. 28, 1973, 48-23208

Int. Cl.² C23C *13/08*

U.S. Cl. 118—49 **19 Claims**



1. An apparatus for treating semiconductor wafers comprising an elongated furnace tube having first and second openings, detachable closure means provided at said first opening for furnace tube having first and second openings, detachable closure means provided at said first opening for sealing said first opening, first supporting means for placing substantially erect semiconductor wafers into said tube to extend serially in a group along the axis of said tube and for arranging at least one boron nitride source substantially vertically relative to said semiconductor wafers in said tube and spaced from, but adjacent to, said semiconductor wafers without contacting the inner surface of said tube, means connected to said second opening for reducing pressure in said tube below atmospheric pressure, and means for heating said semiconductor wafers and boron nitride source so as to deposit boron impurity on surfaces of said semiconductor wafers from the boron nitride source under the pressure-reduced state, wherein said boron nitride source comprises at least one boron nitride wafer.

4,129,091

IMPREGNATION APPARATUS HAVING BIAS-OPENING MEANS

James R. France, 3 Strine Way, Newport, Shropshire; John D. Buchan, Balshaw Fold, under Billinge La., Blackburn, Lancashire; Richard G. Tyrer, 10 North Dunes, Hightown, Liverpool, L38 OBJ, all of England; Adolf De Ceuleneer, Elisabethlaan, 88, 2600 Berchem, Antwerpen, and Robert Van Steenkiste, Eric Jameslaan, 7, B.8370, Blankenberge, both of Belgium

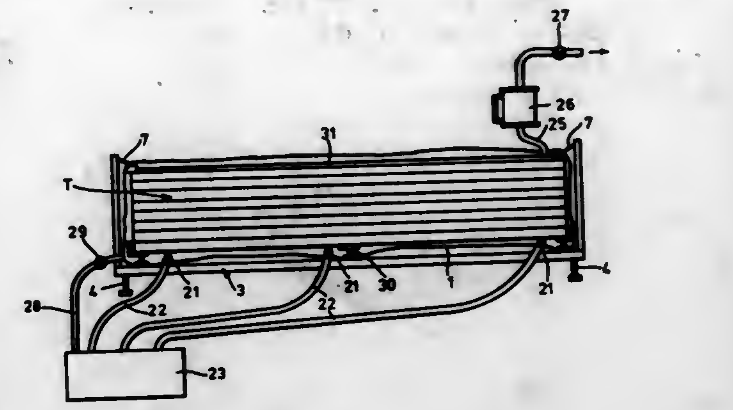
Filed Jan. 9, 1978, Ser. No. 868,210

Claims priority, application United Kingdom, Jan. 10, 1977, 709/77; Nov. 11, 1977, 47987/77

Int. Cl.² B05C *9/10, 11/11*

U.S. Cl. 118—50 **12 Claims**

1. Apparatus for use in impregnating with an impregnant in a liquid or semi-liquid state at least one body made at least in part of organic fluid-permeable material comprising a substantially rigid support structure; a receptacle of flexible fluid-impermeable material supported by the rigid structure, which receptacle has an opening for introduction into the receptacle of said body or bodies, extensible means securing the receptacle to the rigid structure and urging the receptacle opening into the open position for introduction through said opening of said body or bodies, said receptacle including integral means for securing boundary edges of said opening together against the action of said extensible means to effect a substantially fluid-tight seal; at least one outlet in the receptacle through which air and any other fluid can be evacuated from within the receptacle; and at least one inlet in the receptacle through which impregnant in a liquid or semi-liquid state can be introduced in to the receptacle.



4,129,092

APPARATUS FOR SPRAY COATING

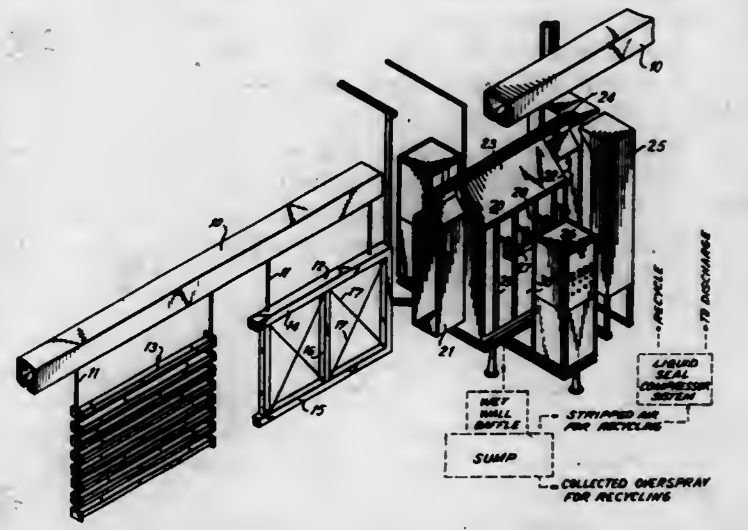
Richard F. Wiggins, Fairfield, Conn., assignor to Gyromat Corporation, Bridgeport, Conn.

Division of Ser. No. 637,019, Dec. 2, 1975, Pat. No. 4,042,734.

This application Apr. 22, 1977, Ser. No. 789,882

Int. Cl.² B05C *5/00, 15/00*

U.S. Cl. 118—323 **4 Claims**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24
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RECYCLE
TO DISCHARGE
LIQUID SEAL COMPRESSOR SYSTEM
WET WALL BAFFLE
STRIPPED AIR FOR RECYCLING
SUMP
COLLECTED OVERSPRAY FOR RECYCLING

1. An apparatus for spray coating of workpieces, which comprises

(a) a spray housing forming a substantially enclosed spray chamber,

(b) means for conveying workpieces through said chamber and along an axis,

(c) means in said chamber for reciprocating a coating material spray nozzle along a first axis at a substantial angle to said axis of conveyance,

(d) means mounting said spray nozzle for at least partial rotation about a second axis which is at a substantial angle to said axis of conveyance and mounting said nozzle at a substantial angle to said second axis, and

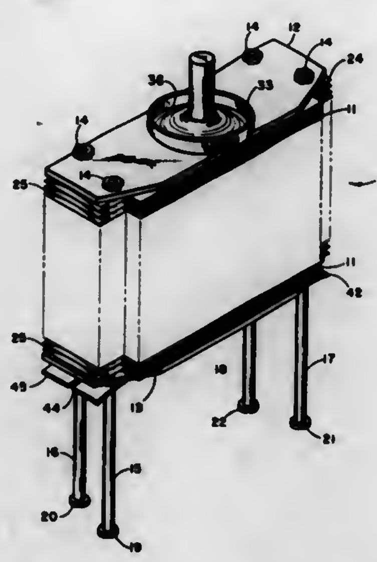
(e) means for rotating said spray nozzle during reciprocation thereof,

(f) said spray nozzle being rotated at a rate, in relation to the speed of reciprocation and speed of conveyance, that coating material spray discharged from said spray nozzle describes tight curtate cycloids in which the effective ratio of rolling circle radius to tracing point radius (a/b) is one to at least about five.

4,129,093
STAINING APPARATUS

Leighton C. Johnson, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 11, 1977, Ser. No. 840,651
Int. Cl.^{2} B05C *13/02*
U.S. Cl. 118—401 **13 Claims**



1. Apparatus for holding a plurality of individual substantially flat objects parallel to each other and separated from each other by a capillary gap, which apparatus comprises:

a top plate member having at least one opening adapted for the introduction of liquid along at least one edge of said substantially flat objects;
a movable bottom plate member;
at least one guide member interconnecting said top plate member with said bottom plate member; and
a series of spacing shims adapted to at least one guide member between said top plate member and said bottom plate member, said shims being adapted to divide a series of individual substantially flat objects and maintain said substantially flat objects in an aligned position parallel to the top and bottom plate members such that the substantially flat objects are kept apart from each other by a capillary gap, the thickness of which is identical to the thickness of one of the shims.

4,129,094
ANIMAL LITTER COMPOSITION

Richard F. Stockel, Bridgewater Township, Middlesex County, N.J., assignor to American Chemical Consulting Corp., New Rochelle, N.Y.

Filed Mar. 9, 1977, Ser. No. 775,730
Int. Cl.^{2} A01K *29/00*
U.S. Cl. 119—1 **11 Claims**

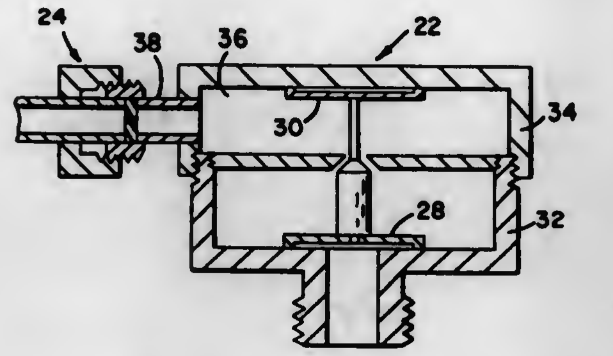
1. A method of deodorizing cat litter which comprises adding an effective quantity of a cat litter composition to said cat litter, said cat litter composition being selected from the group consisting of fly ash, bottom ash, boiler slag and mixtures thereof.

4,129,095
SELF-AERATING CONTAINER

Thomas G. Roberts, 2815 Bentley, Huntsville, Ala. 35801; Charles M. Rust, 6511 Sheri Dr., Huntsville, Ala. 35806, and Norman M. Witriol, 2501 Lancelot Dr., Huntsville, Ala. 35803

Filed Dec. 20, 1976, Ser. No. 752,785
Int. Cl.^{2} A01K *63/00, 97/04*
U.S. Cl. 119—5 **6 Claims**

1. A self-aerating container comprising:
(a) a tank for holding water;
(b) a reservoir for holding air;
(c) control means comprising:
(1) a pressure regulator including an upper and lower housing, said lower housing having an inlet means connected to said reservoir and an upper plate secured therewith having an outlet opening therein, a first flat spring member having openings therethrough secured over said inlet, said upper housing being in threaded relation with said lower housing and having a second flat spring member secured to the inner surface thereof, and an upstanding member secured between said first and second springs and extending through said outlet opening, and

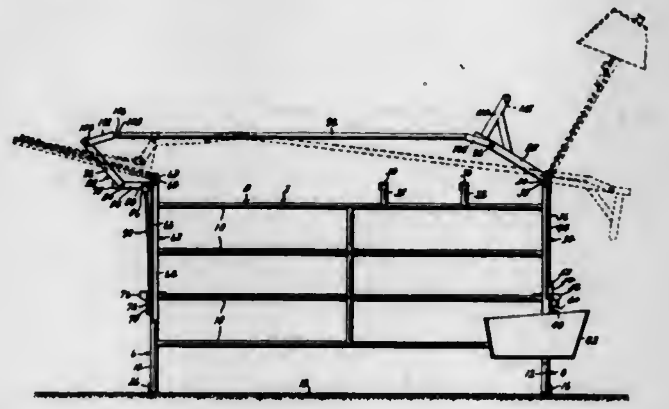


(2) a mass flow regulator connected between an outlet opening means in said upper housing of said pressure regulator and said tank;
(d) means carried by said reservoir for supplying air thereinto.

4,129,096
SOW FEEDING ENCLOSURE

Lonnie L. Nickel, Rte. #1, Tampa, Kans. 67483

Filed Jan. 7, 1977, Ser. No. 757,658
Int. Cl.^{2} A01K *1/02*
U.S. Cl. 119—27 **5 Claims**



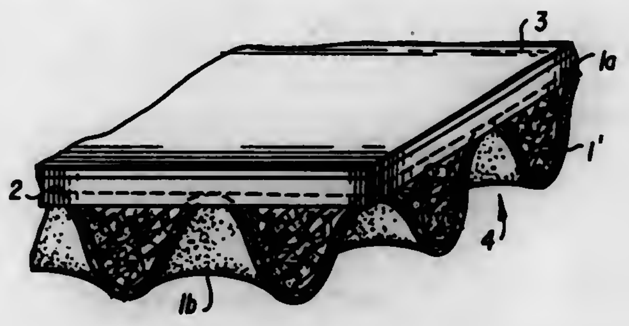
1. A sow feeding enclosure comprising:
a. a frame defining a stall having side walls and being open at both forward and rearward ends,
b. a feed bunker mounted within said stall,
c. front and rear doors pivoted on said frame and adapted when in closed positions to obstruct the front and rear openings of said stall respectively,
d. door locking means operable to lock said doors in their closed positions, and
e. manually operable door operating means operable to lock, unlock, open and close each of said doors independently of the other, said front door being pivoted to said frame at its upper edge on a horizontal transverse axis, and opening outwardly and upwardly said locking and operating means for said front door comprising a horizontally extended lock bar carried for vertical movement by said front door, and projecting laterally from said door to engage said frame to limit closure of said door, keepers fixed to said frame and engageable with said lock bar to lock said door closed, said lock bar being engageable and disengageable from said keepers by vertical movement of said lock bar relative to said door, spring means biasing

said lock bar vertically relative to said door to engage said keepers, and a handle affixed to said lock bar, whereby said lock bar may be disengaged from said keepers by vertical pressure on said handlle, and said door opened by pulling outwardly on said handle.

4,129,097
FLOOR COVERING SHEET FOR STABLES

Udo Schwartzkopff, and Horst Fischer, both of Wuppertal, Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Mar. 3, 1977, Ser. No. 773,932
Int. Cl.^{2} A01J *1/00;* B32B *27/06*
U.S. Cl. 119—28 **7 Claims**

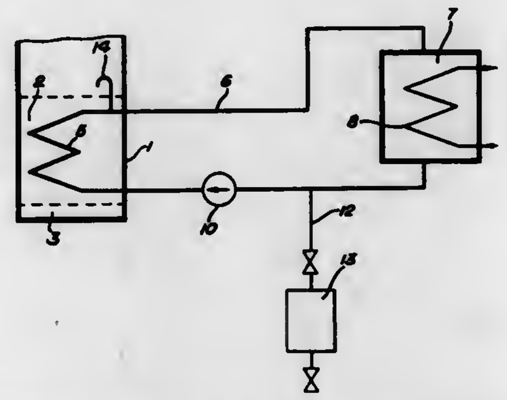


1. In structural combination with a stable floor for animals, a soft and resilient floor covering sheet comprising a highly porous, compressible sublayer in placement on said floor and a polymeric top layer which is impermeable to moisture, said compressible sublayer consisting essentially of a matting sheet composed of continuous, looped synthetic polymeric filaments intersecting one another and fused at their points of intersection, said filaments having a diameter of 0.4 to 2.5 mm, said matting having in its normal non-compressed state a porosity exceeding 90% with its porous structure being sufficiently open to prevent any accumulation of capillary moisture, and the upper face of said matting being at least partly embedded in said impermeable top layer.

4,129,098
FLUIDIZED BEDS

John W. E. Campbell, London, England, assignor to Babcock & Wilcox Limited, London, England

Filed May 20, 1977, Ser. No. 799,004
Claims priority, application United Kingdom, May 21, 1976, 21050/76
Int. Cl.^{2} F23D *19/02;* F22B *1/02*
U.S. Cl. 122—4 D **8 Claims**

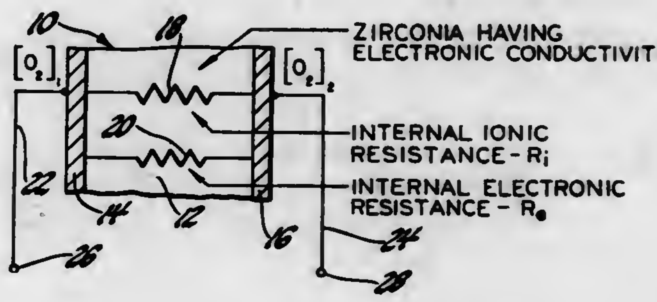


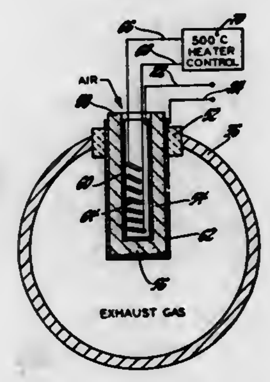
1. Fluid heating apparatus including a fluidized bed furnace, an intermediate heat transfer loop comprising a heat absorption section disposed within the fluidized bed and a further section, a heat exchanger providing two flow paths of which the first is said further section, means by which a fluid to be heated may be passed through the second of said flow paths, means by which a stream of fine solid material may be circulated through the loop in a stream of gas, and a bleed pipe leading from the loop through which fine solid material circulating through the loop may discharge.

4,129,099
GALVANIC EXHAUST GAS SENSOR WITH SOLID ELECTROLYTE

David S. Howarth, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 15, 1977, Ser. No. 787,900
Int. Cl.^{2} G01N *27/46*
U.S. Cl. 123—32 EE **7 Claims**


10
18
ZIRCONIA HAVING ELECTRONIC CONDUCTIVITY
$[O_2]_1$
$[O_2]_2$
20
INTERNAL IONIC RESISTANCE - R_i
INTERNAL ELECTRONIC RESISTANCE - R_e
22
14
12
16
24
26
28



1. An internal combustion engine assembly comprising a spark ignition internal combustion engine, means defining an exhaust passage for directing exhaust gases emitted from said engine, a galvanic-type sensor exposed to said exhaust gases in said passage and responsive to exhaust gas constituents at various temperatures up to 900° C., said sensor having as an active element an oxygen ion conductive solid oxide electrolyte effective to produce an output voltage that is representative of exhaust gas chemical contact, said electrolyte having a fluorite-type crystal matrix doped with at least one electronic conductivity-inducing dopant selected from the group consisting of iron oxide, manganese oxide and cerium oxide that provides a temperature dependent electronic conductivity therein, said dopant induced electronic conductivity in sense and amount to provide a sensor output voltage substantially independent of temperature above a preselected temperature less than about 600° C., heating means for maintaining said sensor between said preselected temperature and 900° C. whereby sensor output voltage is substantially temperature independent, and means having a high internal electronic resistance responsive to the output voltage of said sensor.

4,129,100
INTERNAL COMBUSTION ENGINE WITH AN AUXILIARY CHAMBER

Nobuo Habu, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 6, 1977, Ser. No. 804,164
Claims priority, application Japan, Apr. 6, 1977, 52-38489
Int. Cl.^{2} F02B *3/00*
U.S. Cl. 123—32 L **8 Claims**

1. An internal combustion engine comprising:
a cylinder block having a cylinder bore therein;
a cylinder head having a cavity therein and mounted on said

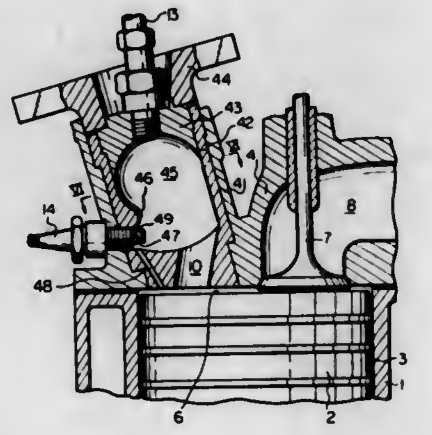
cylinder block, said cavity having an inner wall which defines an auxiliary chamber with an axis;

a piston reciprocally movable in said cylinder bore, said piston and said cylinder head forming a main chamber therebetween;

an intake valve movably mounted on said cylinder head for leading gas into said main chamber;

an exhaust valve movably mounted on said cylinder head for discharging exhaust gas into the atmosphere;

a connecting passage communicating said main chamber with said auxiliary chamber and arranged to be tangentially connected to the inner wall of said auxiliary chamber, the inner wall of said auxiliary chamber having a recess at a position located opposite to the inner wall to which said connecting passage is tangentially connected with respect to the axis of said auxiliary chamber;



a fuel injector having an injecting nozzle disposed in said auxiliary chamber and directed to said recess for forming a rich air-fuel mixture therein at the time of the compression stroke;

a spark having a central electrode and an earthing electrode which define a spark gap therebetween located in said recess for igniting the rich air-fuel mixture therein, said central electrode having a mounting end covered by an insulator, and;

passage means communicating said recess with said main chamber for leading the gas in said main chamber into the gas around said insulator at the time of the compression stroke to dilute a rich air-fuel mixture formed around said insulator.

4,129,101
INTERNAL COMBUSTION ENGINE

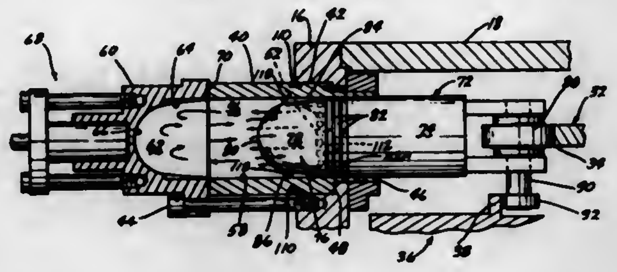
Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Division of Ser. No. 678,389, Apr. 19, 1976, and Ser. No. 576,198, May 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 488,782, Jul. 15, 1974, abandoned, said Ser. No. 678,389, is a continuation-in-part of Ser. No. 488,781, Jul. 15, 1974, Pat. No. 3,967,599, which is a continuation of Ser. No. 351,606, Apr. 16, 1973, Pat. No. 3,828,740, which is a continuation-in-part of Ser. No. 286,189, Sep. 5, 1972, abandoned. This application Mar. 2, 1977, Ser. No. 773,597

Int. Cl.² F01P *1/04*

U.S. Cl. 123—41.56 **4 Claims**

1. The method of protecting the sealing means on the piston of an internal combustion engine from the heat of combustion in an engine comprising an engine block means, a cylinder sleeve mounted in said block, a cylinder head mounted on one end of said sleeve and forming a combustion chamber at said one end of said sleeve, means for supplying a combustible fuel to said combustion chamber, a piston slidably mounted in said sleeve and movable between a compression position adjacent said cylinder head and an expansion position away from said one end of said sleeve; said piston having a top portion, an elongated central side portion and a lower portion and having a narrow annular space around the central side portion; sealing means on the lower portion of said piston which engages the interior wall surface of said sleeve, said elongated central side portion extending proportionately a substantial distance beyond said lower portion in a direction towards said head, the invention comprising, introducing a thin sheet of cooling air directly into said annular space to cool the interior wall surface of said sleeve engaged by said sealing means, and to surround and cool the elongated central side portion of said piston to effect the cooling of said sealing means.



4,129,102
OPPOSED PISTON ENGINE

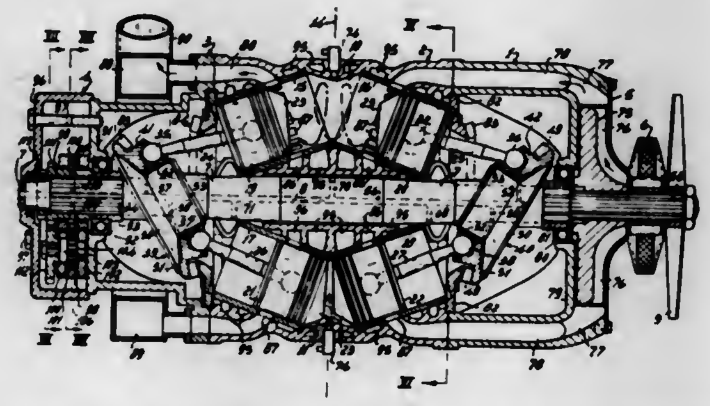
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Filed Feb. 23, 1976, Ser. No. 660,518

Claims priority, application Netherlands, Feb. 21, 1975, 7502062; Feb. 21, 1975, 7502063

Int. Cl.² F02B *25/08, 75/26*

U.S. Cl. 123—51 B **15 Claims**



1. An engine comprising a housing and an elongated straight drive shaft which extends substantially through said housing and is supported in said housing, a plurality of pistons with corresponding rods and cylinders positioned around said drive shaft and mounted to reciprocate in the same general direction as that shaft but non parallel thereto, outer ends of said rods being connected to a swash plate drive on said drive shaft, the prolongation of the longitudinal center line of each said piston rod viewed in a direction at right angles to said drive shaft in its medium stroke position intersecting the longitudinal center line of said drive shaft adjacent said swash plate drive, one end of the walls of each of said cylinders opening into a combustion space and said one end being located a substantial distance from the drive shaft, the opposite end of said walls being positioned adjacent said drive shaft, whereby the distance of said one end of the cylinder walls from the shaft is more than three times the distance between the opposite end and that shaft.

4,129,103
MODULE UNIT

Heinz Pichl, Upsala, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden

Filed Jun. 10, 1977, Ser. No. 805,272

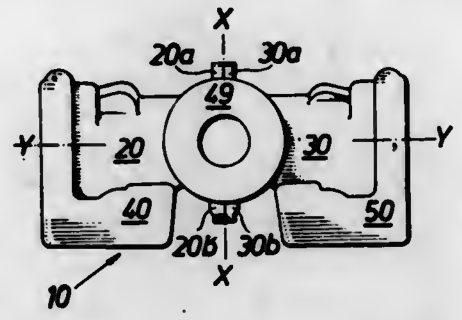
Claims priority, application Sweden, Jun. 16, 1976, 7606826

Int. Cl.² F02B *75/18*

U.S. Cl. 123—52 R **14 Claims**

1. Device concerning cast cylinder blocks for liquid-cooled

two-stroke engines, characterised by the facility for the putting together of engines with various numbers of cylinders and of various types, the cylinder block comprises at least one unit module cast in one piece (20, 30) which comprises at least one cylinder part including cooling jacket (27*a*) and transmission channel or channels (29 *b-d*), and further one through exhaust gas flue (57) with both its end open and communicating within the unit module by means of at least one exhaust gas channel (51) with each cylinder (27–29, 37–39), one through cooling liquid duct (52) communicating within the unit module with each cooling jacket and with both its end open, and one through cooling liquid outlet (53) communicating at least with the cooling jacket in an outer cylinder (27), that the unit module shows plane frontal surfaces (21, 31) on its front and back sides in the axial direction, which are arranged for connection to an identical frontal surface in other corresponding unit modules or to a special end plate (40 — 42, 50—52) and in which the mentioned ducts and the cooling liquid outlet end in identical positions, so that with joining in the axial direction of many unit modules, through passages at least for exhaust gases and fed-in cooling liquid are produced, and that for the closure of the framework's first and last frontal surface two end plates exist which are so arranged that they complement each other in the meaning that when the one closes off one duct, the other produces a port for the same duct, preferably provided with a connection possibility (43*b*) for a pipe or a hose, and vice-versa.



4,129,104
IGNITION TIMING CONTROL DEVICE OF THE NEGATIVE PRESSURE ACTUATION TYPE

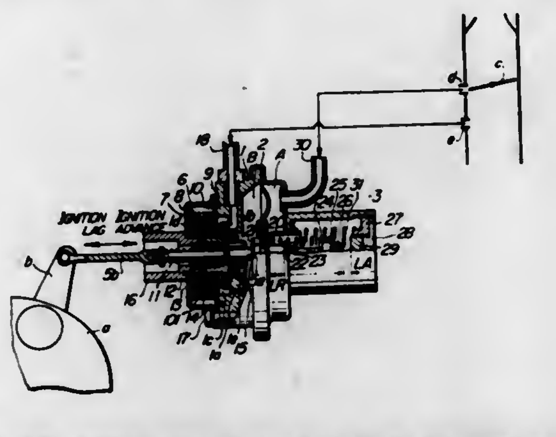
Kazuhiko Kawakami, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed Aug. 17, 1976, Ser. No. 715,155

Claims priority, application Japan, Aug. 25, 1975, 50-102166

Int. Cl.² F02P *5/06*

U.S. Cl. 123—117 A **5 Claims**



1. An ignition timing control device of the negative pressure actuation type comprising a diaphragm, two diaphragm cases holding said diaphragm therebetween to define a first diaphragm chamber and a second diaphragm chamber, a rod secured to the diaphragm at its central portion and extending at its forward end portion through the diaphragm on the first diaphragm chamber side, an ignition timing adjusting plate connected to the forward end of said rod, means for mounting an ignition signal generating means on said timing adjusting plate, a communication opening formed in a portion of one of said diaphragm cases through which the forward end portion of the rod extends, said communication opening being concentric with said rod and communicating with said first diaphragm chamber, an annular empty space formed as an extension of said communication opening and disposed concentric with the rod, a negative pressure introducing port disposed adjacent said empty space to communicate with a negative pressure source, an atmospheric pressure introducing port disposed adjacent said empty space to communicate with the atmosphere, an electromagnetically operated annular valve means arranged in said empty space and disposed concentrically with said rod, a seal member mounted between said valve means and said rod, and means for moving said valve means along the rod axially thereof so as to selectively communicate said negative pressure introducing port and said atmospheric pressure introducing port with said first diaphragm chamber.

4,129,105
AIR-TO-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

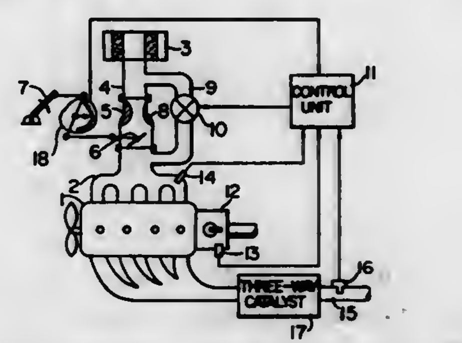
Osamu Ito, Toyota; Nobuhito Hobo, Inuyama; Yutaka Suzuki, Nishio; Itsushi Kawamoto, Chiryu; Takashi Naitou, Kariya; Makoto Shiozaki, Toyota, and Yoshimune Konishi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 22, 1977, Ser. No. 809,043

Claims priority, application Japan, Jun. 29, 1976, 51-77261

Int. Cl.² F02M *7/00*

U.S. Cl. 123—119 EC **9 Claims**



1. An air-to-fuel ratio control system for internal combustion engines comprising:

a carburetor, positioned upstream of an engine of a vehicle and having a throttle valve therein, for supplying said engine with air-fuel mixture corresponding to the opening angle of said throttle valve;

a speed detector for generating a speed voltage indicative of the speed of said vehicle;

a pressure detector, provided in an intake passage connecting said carburetor with said engine, for generating a pressure voltage indicative of the pressure in said intake passage;

an oxygen detector, provided in the exhaust passage of said engine, for generating an oxygen voltage indicative of the air-to-fuel ratio of the mixture supplied to said engine;

a speed function generator, connected to be responsive to said speed voltage, for generating a speed function voltage the level of which is constant while the speed of said vehicle is lower than a lower preset speed and is higher than a higher preset speed;

a pressure function generator, connected to be responsive to said pressure voltage, for generating a pressure function voltage which varies in accordance with the pressure in said intake passage;

an oxygen function generator, connected to be responsive to said oxygen voltage, for generating an oxygen function voltage which varies in accordance with the air-to-fuel ratio of said mixture;

a selection circuit, adapted to select one of said pressure function voltage and said oxygen function voltage in response to the level of said speed function voltage, said selection circuit selecting said oxygen function voltage while the speed of said vehicle is lower than said lower preset speed and said pressure function voltage while the speed of said vehicle is higher than said higher preset speed; and

an air addition passage, positioned to by-pass said carburetor and connected to be responsive to the function voltage selected by said selection circuit, for supplying said engine with air to thereby control the air-to-fuel ratio of said mixture in response to the speed of said vehicle, the amount of said air being controlled by said oxygen function voltage and said pressure function voltage while the speed of said vehicle is lower and higher than said respective lower preset speed and higher preset speed, respectively.

4,129,106

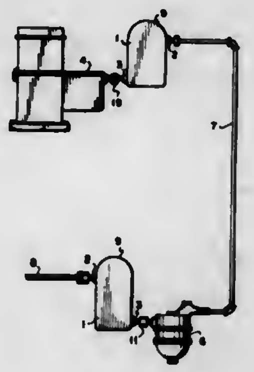
VAPOR LOCK AND FUEL VAPORIZATION CONTROLS

Donald L. Sellman, 407 S. 3rd St., Lincoln, Kans. 67455

Continuation-in-part of Ser. No. 152,786, Jun. 14, 1971, abandoned. This application Jul. 20, 1973, Ser. No. 381,346

Int. Cl.^{2} F02M *59/00*

U.S. Cl. 123—136 **1 Claim**



1. Vapor lock and fuel vaporization controls for gasoline powered internal combustion engines having a downdraft carburetor that has a fuel bowl having a float controlled inlet valve and a diaphragm pump type fuel supply system comprising in combination:

(a) two small one chamber closed auxiliary fuel vessels connected in the fuel conduit, through which all of the fuel flows, which have an inlet on a higher plane than the outlet, said vessels have no obstruction such as a check valve to prevent gravity flow of liquid fuel from the inlet to the outlet of said vessel, said vessels are shaped so as to have a gas cavity at top side;

(b) one small one chamber auxiliary fuel vessel is located on top of the carburetor fuel bowl and whose bottom side substantially form the top side of the fuel bowl, whose outlet is the inlet to the float controlled carburetor fuel bowl inlet valve which is located at the top side of said fuel bowl;

(c) the inlet of this small one chamber vessel is connected by the fuel conduit to the outlet of the fuel pump, there is no obstruction such as a check valve from the outlet of the fuel pump through the fuel conduit and said vessel to the flow of gas and or liquid fuel by suction to said vessel as liquid fuel flows by gravity out the outlet of said vessel;

(d) and the other small one chamber auxiliary fuel vessel is located adjacent and substantially above the fuel pump so as to hold a substantial supply of liquid fuel at a level above the fuel level in the fuel pump for gravity feed to the fuel pump to keep the fuel pump primed and if necessary to arrest perculation in said pump, the outlet of said vessel is connected to the inlet of the fuel pump by a short tubular member through which the liquid fuel is free to flow unhindered by any obstruction such as a check valve from said one chamber vessel to the inlet of the fuel pump.

4,129,107

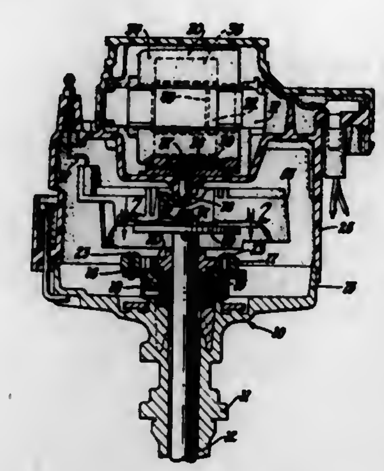
MAGNETIC PICKUP TYPE IGNITION DISTRIBUTOR

James A. Boyer, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 22, 1977, Ser. No. 826,373

Int. Cl.^{2} F02P *7/00*

U.S. Cl. 123—146.5 A **5 Claims**



1. In an internal combustion engine magnetic pickup ignition distributor of the type having an ignition coil located in the distributor cap and a magnetic signal generating assembly including a permanent magnet and a magnetically coupled pickup coil: a magnetic circuit linking said pickup coil for providing a path for magnetic flux developed by said permanent magnet and including rotatable means adapted to be driven by the crankshaft of an associated internal combustion engine which is operative when rotated to vary the intensity of the magnetic flux traversing said magnetic circuit whereby an alternating current wave form related to crankshaft position is induced in said pickup coil when said rotatable means is rotated; and pickup coil magnetic decoupling means for opposing the inducement of voltages in said pickup coil by magnetic flux produced by said ignition coil, said last named means comprising an annular ring member of an electrically conductive material providing a closed current flow path located in a position at which it is magnetically linked by those lines of magnetic flux produced by said ignition coil which also magnetically link said pickup coil for producing a magnetic flux in opposition to that produced by said ignition coil and is not substantially magnetically linked by the magnetic flux produced by said permanent magnet which traverses said magnetic circuit.

4,129,108

PISTON FOR INTERNAL COMBUSTION ENGINES

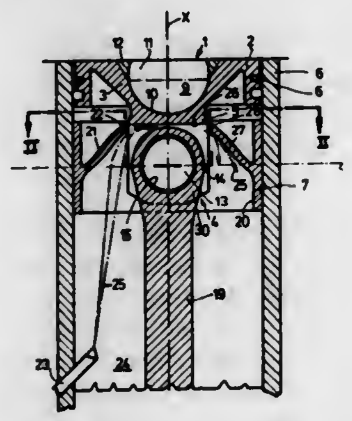
Ludwig Elsbett, and Günter Elsbett, both of Industriestrasse 14, D8543 Hilpoltstein, Fed. Rep. of Germany

Filed Sep. 30, 1976, Ser. No. 728,165

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1975, 2543478

Int. Cl.^{2} F01P *1/04*

U.S. Cl. 123—193 P **10 Claims**



1. A piston for internal combustion engines, especially Diesel engines, which includes in combination: a piston head portion for receiving and supporting piston rings, a gudgeon pin, a mantle connected to said head portion and forming a foot portion with bearing means supporting said gudgeon pin, slide shoe means pivotally supported by said gudgeon pin and provided with at least one guiding surface directed from said slide shoe means inwardly and at an incline with regard to the piston axis and in the direction toward said mantle for directing a coolant and lubricant sprayed into said piston to flow both against said foot portion of said piston and also around the bearing means for said gudgeon pin and against the latter, each of said guiding surfaces having a free edge nearly extend to said bearing means for said gudgeon pin, each of said guiding surfaces being formed by a mantle surface section of said slide shoe means, each guiding surface being connected to an inner wall side of said slide shoe means within the region of a plane passing through the axis of said gudgeon pin and at a right angle to the piston axis.

4,129,109

VARIABLE DISPLACEMENT INTERNAL COMBUSTION ENGINE WITH MEANS FOR SWITCHING DEACTIVATED CYLINDER GROUPS AT APPROPRIATE TIMING

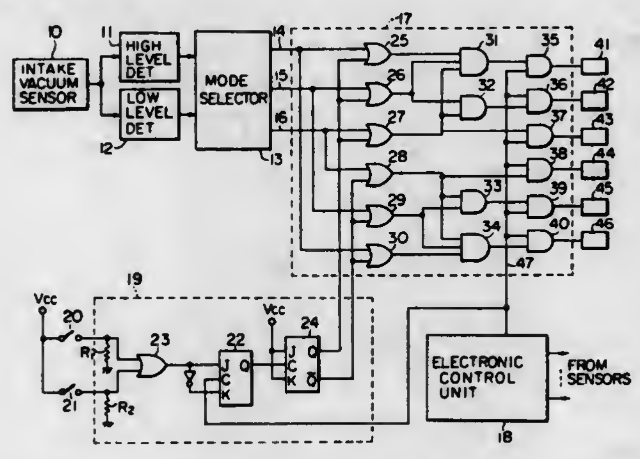
Junichiro Matsumoto, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 11, 1977, Ser. No. 823,746

Claims priority, application Japan, Aug. 12, 1976, 51-95383

Int. Cl.^{2} F02B *3/00;* F02D *13/06*

U.S. Cl. 123—198 F **10 Claims**



1. An internal combustion engine having a throttle valve and a first and a second group of cylinders adapted to be activated and deactivated in response to varying loads of the engine, comprising:

means responsive to said varying engine loads to determine the number of deactivated cylinders such that at maximum load the number of deactivated cylinders is zero and at minimum load the number of deactivated cylinders is at a maximum;

first means for detecting when said throttle valve is nearly wide open;

second means for detecting when said throttle valve is nearly closed;

means for switching between said first and second groups of cylinders in response to said first and second means; and

means for selectively deactivating the cylinders of the determined number in said switched group.

6. An electronic fuel injection system including a source of injection signals for use in an internal combustion engine having a throttle valve and a first and a second group of cylinders each being provided with a fuel injector adapted to be applied with said injection signal in response to varying loads of said engine, comprising:

means responsive to said varying engine loads to determine the number of deactivated cylinders such that at maximum load the number of deactivated cylinders is zero and at minimum load the number of deactivated cylinders is one half of the total number of said cylinders;

first means for detecting when said throttle valve is nearly wide open;

second means for detecting when said throttle valve is nearly closed;

means for switching between said first and second groups of cylinders in response to said first and second means; and

logic gate means selectively inhibiting the application of said signals to injectors associated with the cylinders of the selected group, said inhibited injectors being equal in number to said determined number of deactivated cylinders.

4,129,110

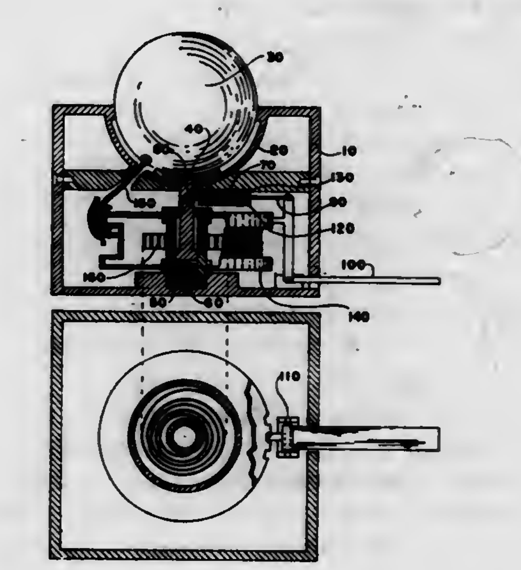
DEVICE FOR LAUNCHING AND RETRIEVING A SPHERICAL BALL

Ronald Kubrak, 7 Beechwood Ct., Hazlet, N.J. 07730

Filed Jan. 6, 1977, Ser. No. 757,443

Int. Cl.^{2} F41B *7/00*

U.S. Cl. 124—16 **1 Claim**



1. A device for launching a spherical ball to enable the ball to be hit by a bat and then retrieved after being hit, comprising;

a spherical ball;

a housing with an open-topped hemispherical recess in its top into which the ball may be placed;

foot-operated ejector means for propelling the ball upwardly out of the recess when the ejector means is actuated, the means cooperating with the ball and recess in a manner that once the ball has been replaced in the recess after the means has been operated, the means will be reset for a subsequent operation, said ejector means including a spring-loaded plunger extending upwardly into said recess;

an elongated flexible cable attached at one end to the ball; and

a spring-loaded retractor means located in the housing and attached to the end of the cable remote from the ball to retract the ball back into the recess after the ball has been ejected out of the recess and hit by a bat, said retractor means comprising a reel rotatably mounted in the housing, said cable being attached at its other end to the reel and a coiled spring within the reel affixed at one end to a fixed point in the housing within the reel and affixed at its other end to the inside of said reel in a manner whereby as the cable unwinds from the reel the spring winds up and when the cable is unwound the wound spring rotates the reel to rewind said cable by unwinding.

4,129,111

BEARING ASSEMBLY FOR BARBECUES

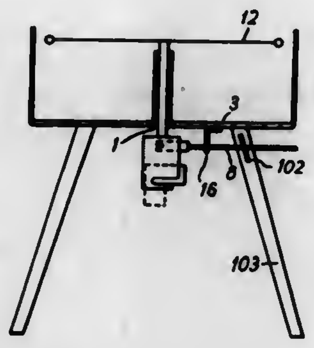
Ritva M. Lehtovaara, 20 S. Close Green, Merstham, Surrey, England

Filed Jul. 15, 1976, Ser. No. 705,420

Claims priority, application United Kingdom, Jul. 18, 1975, 30199/75

Int. Cl.^{2} A47J *37/07;* **F24B** *3/00*

U.S. Cl. 126—25 AA **6 Claims**



1. A barbecue comprising
a body member arranged to contain a bed of burning fuel,
a stand supporting said body member,
a vertical rotatable shaft extending from below to above said body member,
a grid mounted on said shaft,
a motor below said body member connected to said shaft to rotate said shaft continuously,
a bearing assembly suspended below said body member and supporting said motor and said shaft,
support means to support said bearing assembly and allow tilting of said bearing assembly about two perpendicular horizontal axes,
said shaft being a longitudinal tube which is crimped to provide a portion which is expanded in one transverse dimension to provide a surface engaging said bearing assembly and is flattened in another transverse dimension to provide a constricted inner portion of said tube,
and a flexible coupling which is a wire loop having an expanding spring portion inside said tube above said constricted inner portion so that said constricted portion supports said loop and said loop is mounted on the lower end of said shaft to engage a driving shaft of said motor.

4,129,112

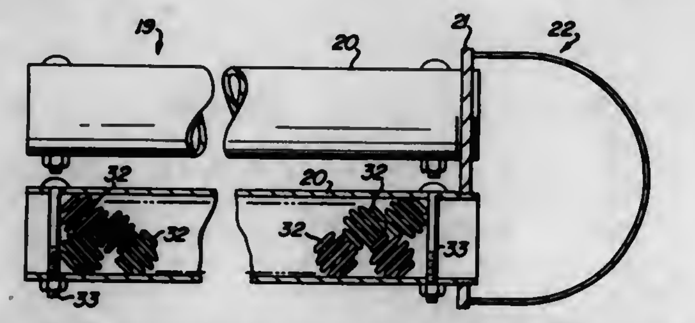
HEAT EXCHANGE APPARATUS

Alan Glasser; Jens P. Schwarz, both of 101 Tenby Rd., Havertown, Pa. 19083, and Lance A. Glasser, Mattapan, Mass., assignors to Alan Glasser and Jens P. Schwarz, both of Havertown, Pa.

Filed Aug. 9, 1976, Ser. No. 712,987

Int. Cl.^{2} F24B *7/00*

U.S. Cl. 126—121 **10 Claims**



10. A subcombination for use in heat exchange apparatus for improving the efficiency of a fireplace comprising a conduit of good heat conductive metal, a plurality of heat transfer elements in said conduit, said elements being of good heat conductive metal, said elements being randomly disposed in contact with each other and the inner peripheral surface of said conduit for providing turbulence to air flow through the conduit, said elements being of uniform size and being hollow, said elements having a plurality of flow passages communicating with their hollow interior, said elements being generally spherical and formed of wire with adjacent turns being spaced from one another by a distance less than the diameter of the wire to prevent the spheres from slipping inside one another, the diameter of the spherical elements being less than the diameter of said conduit.

4,129,113

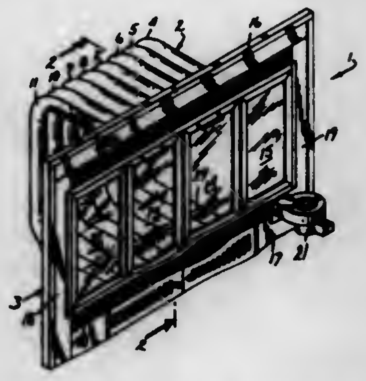
COMBINATION GLASS DOOR AND HEAT-EXCHANGING GRATE FOR FIREPLACES

Theodore R. Bergstrom, St. Paul, Minn., assignor to Thermograte, Inc., St. Paul, Minn.

Filed Mar. 30, 1977, Ser. No. 782,623

Int. Cl.^{2} F24B *7/00*

U.S. Cl. 126—121 **13 Claims**



1. A combination glass door and heat exchanging grate for fireplaces, said combination unit comprising:
(a) A ducted heat exchanger suitable for positioning within a fireplace cavity, said heat exchanger including a plurality of hollow, generally parallel C-shaped heat exchanger members having open upper and lower ends, the open ends of which communicate through a glass door fireplace closure;
(b) a glass door fireplace closure attached to said heat exchanger, at least one end of some of the heat exchanger tubes being attached to said closure through a floating seal so that the tubes can yawn in response to heating or cooling.

4,129,114

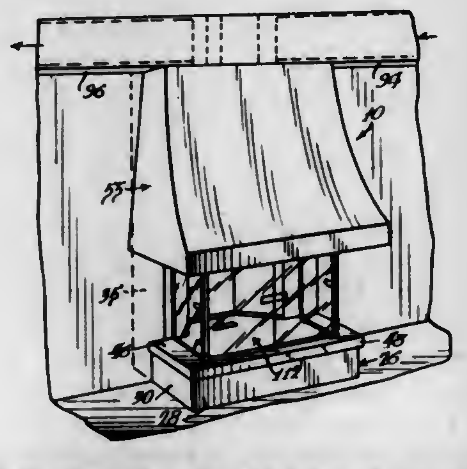
FIREPLACE-FURNACE SYSTEM

William H. Hiser, Bartonville, Ill., assignor to Lighthouse Fireplaces, Inc., Bartonville, Ill.

Filed Oct. 4, 1976, Ser. No. 729,002

Int. Cl.^{2} F24B *7/04*

U.S. Cl. 126—122 **20 Claims**



1. A self-contained modular fireplace and circulating air unit for installation in a building living area comprising:
(a) a plurality of modules defining a combustion system and an air circulating system functionally isolated from said combustion system and including:
(a-1) a sheet metal base member adapted to be supported by a floor in the building living area;
(a-2) a pair of spaced apart vertically extending sheet metal ducts supported by said base member, each of said ducts defining an air column, said air columns rising from the rear corner portions of said base member;

(a-3) a mantel supported between said air columns and extending forwardly therefrom, said mantel being spaced above the upper surface of said base member to define a fire box area therebetween and including an aperture defining an exhaust opening for said fire box;
(a-4) a fire back module disposed between and affixed to said air columns and extending between said support base and said mantel;
(a-5) an external generally planar back member extending between said air columns and spaced rearwardly of said fire back module to define an insulating air space therebetween; and
(a-6) heat exchanger means disposed above and in communication with said exhaust opening to intercept exhaust products of combustion from said fire box for transferring heat from said combustion exhaust to said heat exchanger;
(b) said combustion system including said fire box and said heat exchanger means;
(c) said circulating system including at least a part of said air columns defining circulating air ducts with portions of said circulating air ducts located adjacent to, on either side of, and in communication with said heat exchanger means and extending upwardly from said location adjacent said heat exchanger means for connection to air distribution ducting forming a part of the building in which said unit is disposed; and
(d) blower means for circulating air through said circulating air ducts and through said heat exchanger means for transferring heat between said heat exchanger and the air in said circulating air ducts;
whereby said building may be heated by air passing through said air circulating system through said building duct work.

4,129,115

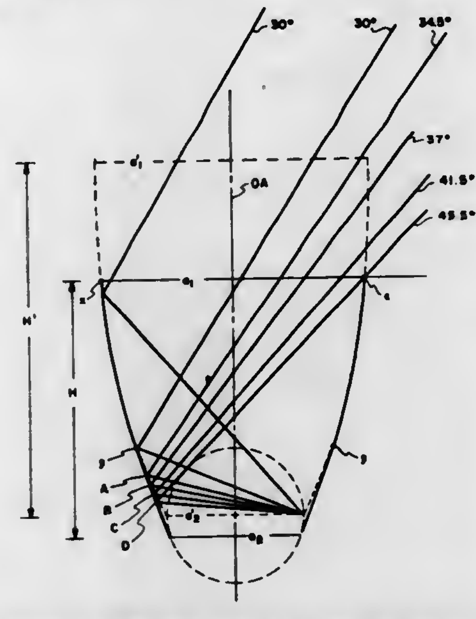
RADIANT ENERGY COLLECTOR

William G. Wyatt, 8366 Garland Rd., Dallas, Tex. 75218

Filed Sep. 27, 1976, Ser. No. 727,125

Int. Cl.^{2} F24J *3/02;* **G02B** *5/10*

U.S. Cl. 126—270 **8 Claims**



1. A non-imaging radiant energy concentrator comprising a trough-shaped body having a pair of longitudinally extending symmetrically opposed side members, the top opposed edges of said side members separated by a transverse distance and defining an entrance aperture and the bottom opposing edges separated by a transverse distance and defining an exit aperture, the internal surface of said side members having a concave portion adjacent the top edge, the concave portion being that portion of a parabola lying between points X and Y on a parabola defined by the walls of an imaginary concentrator comprising a trough-shaped body having a longitudinally extending entrance aperture with first and second opposing edges separated by a transverse distance a_1', a longitudinally extending exit aperture separated by a transverse distance a_2' and a pair of symmetrical concave walls interconnecting laterally corresponding edges of said apertures, a field of acceptance for radiant energy, an angular acceptance for radiant energy within said field of acceptance and determinable at said entrance aperture of said imaginary concentrator, and an optical axis determinable by reference to distances separating entrance and exit aperture opposing edges of said imaginary concentrator, wherein the ratio of distances a_2' to a_1' is no less than the sine of said angular acceptance, the profile curve of each of said side walls of said imaginary concentrator is a parabola having as its parabolic focus the opposing edge of said exit aperture of said imaginary concentrator and as its parabolic axis a line forming an angle with said optical axis of the imaginary concentrator body numerically equal to said angular acceptance, and the field of acceptance of the imaginary concentrator body, when represented in terms of optical direction cosines, is an elipse of semi-minor axis equal to the sine of said angular acceptance and semi-major axis substantially equal to one, wherein Y is a point on said parabola approximately at which a straight line tangent to a circle having the exit aperture of said imaginary concentrator as its diameter is also tangent to said parabola and X is a point on said parabola between point Y and the entrance aperture edge of said side walls of said imaginary concentrator and wherein the profile curve of each side wall member between point Y and the exit aperture edge is a curve lying between and including a straight line parallel with the optical axis of said imaginary concentrator but not including a continuation of said parabola; whereby radiation entering the concentrator at angles greater than the angle of acceptance of said imaginary concentrator and striking the side wall of the concentrator between point Y and the exit aperture may be reflected to the exit aperture and captured.

4,129,116

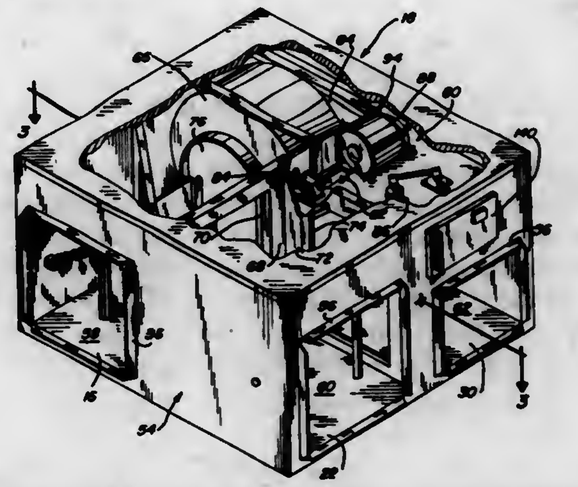
SOLAR AIR FLOW CONTROLLER AND SYSTEM

Thomas B. Kent, Boulder, Colo., assignor to Solar Control Corporation, Boulder, Colo.

Filed Oct. 22, 1976, Ser. No. 735,096

Int. Cl.^{2} F24J *3/02*

U.S. Cl. 126—270 **11 Claims**



1. A unitary flow controller for use in a solar heating system for heating air space within a building comprising:
a blower having an inlet port and an outlet port;
air confining means connected to said inlet and outlet ports of the blower;
said air confining means being in the form of an enclosure for use within a building, said enclosure having walls and provided with first, second, and third air flow ports in said walls for flow communication with first, second, and third air flow ducts;
a plurality of flow control members in the general form of baffles movably connected to the air confining means to control and direct the flow of air through the ports and the blower;
and selectively operable means to adjust the flow control

members to three different relative positions to produce three different flow paths through the controller;

a first relative position defining a flow path from the second air flow port to the inlet port of the blower and from the outlet port of the blower to the third air flow port;

a second relative position defining a flow path from the first air flow port to the inlet port of the blower and from the outlet port of the blower to the third air flow port;

and a third relative position defining a flow path from the first air flow port to the inlet port of the blower and from the outlet port of the blower to the second air flow port.

4,129,117
SOLAR ENERGY COLLECTOR

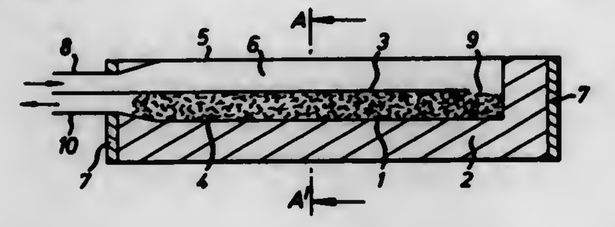
Lawrence Harvey, Coldharbour Nr. Dorking, England, assignor to The British Petroleum Company Limited, London, England

Filed Apr. 21, 1976, Ser. No. 678,958

Claims priority, application United Kingdom, Apr. 21, 1975, 16349/75

Int. Cl.^{2} F24J *3/02*

U.S. Cl. 126—271 17 Claims



1. A solar energy collector comprising means including a pair of solar energy transparent walls in spaced, side-by-side relation and defining between said walls a first fluid passageway for the passage of fluid therebetween and in contact with said walls, said passageway having an inlet and an outlet spaced from said inlet and being free of solar energy obstructing material so that in the absence of said fluid, solar energy passing through one of said walls is permitted to traverse said passageway and pass through the other of said walls; means including a third wall in spaced, and side-by-side relation with said other of said walls and defining, between said third wall and said other wall, a second fluid passageway for the passage of said fluid which is disposed in the path of solar energy which passes through said pair of walls, said second passageway having an inlet connected to said outlet of first passageway and having an outlet spaced from said last-mentioned inlet, whereby fluid supplied to said inlet of said first passageway flows therealong to said outlet of said first passageway and in the path of the solar energy and then flows from said inlet of said second passageway to the outlet of the latter; solar energy absorbent particulate or fibrous material disposed in said second passageway for absorbing solar energy which passes through said pair of walls, said material being permeable by and in the path of fluid flow in said second passageway, whereby said fluid contacts said material and absorbs heat therefrom; and means for restraining said material from flowing out of said second passageway.

4,129,118
METHOD AND APPARATUS FOR PROVIDING DIFFERENTIAL TEMPERATURE THERMOSTAT CONTROL FOR SOLAR HOT WATER SYSTEMS

Kerry O. Banke, La Mesa, Calif., assignor to Samuel G. Dawson, El Cajon, Calif.

Filed Jul. 23, 1976, Ser. No. 707,943

Int. Cl.^{2} F24J *3/02*

U.S. Cl. 126—271 10 Claims

1. A differential temperature control for controlling the moving of water between a solar collector and a hot water storage comprising:

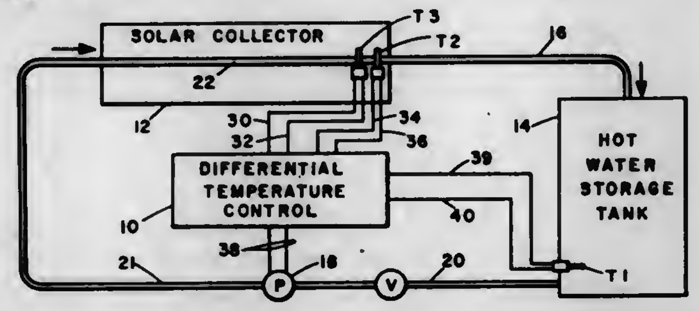
first means for detecting the temperature of the water in the hot water storage and providing a first electrical condition proportional to the storage water temperature,

second means for detecting the temperature of the water leaving the solar collector providing a second electrical condition proportional to the solar water temperature,

first differential means for comparing said first and second electrical conditions and providing an output signal when said solar water temperature exceeds said storage water temperature a first given amount,

reference means for providing at least one reference electrical signal,

second differential means for comparing said output signal and said reference signal and providing a first control signal when the difference between said output signal and said reference signal exceeds a given magnitude and a second control signal when the difference between said output signal and said reference signal is less than a given magnitude,



switch circuit means for being closed in response to one of said control signals and being opened in response to the other of said control signals,

said reference means including means for providing a first reference electrical signal in response to said switch being open and for providing a second reference electrical signal in response to said switch means being closed,

and said second differential means comparing said output signal with said first reference signal and providing a control signal when the difference between said output signal and said first reference signal exceeds a given magnitude, and comparing said output signal with said second reference signal and providing a control signal when the difference between said output signal and said reference signal exceeds a given magnitude.

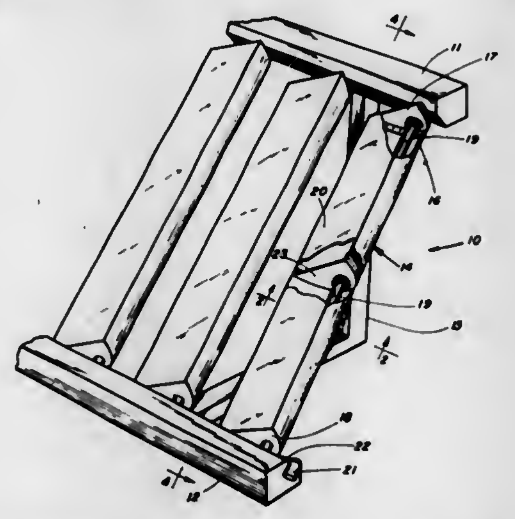
4,129,119
SOLAR ENERGY COLLECTOR

James H. Yoke, Rte. 15, Box 395, Acton, Ind. 46259

Filed May 12, 1977, Ser. No. 796,179

Int. Cl.^{2} F24J *3/02*

U.S. Cl. 126—271 9 Claims



1. A solar energy collector adapted for use with a solar energy system comprising:

a lower header defining an open interior;

a pipe connected to said lower header, said pipe defining a passageway communicating with the interior of said lower header;

an upper header connected with said pipe, said upper header defining an open interior communicating with the passageway of said pipe;

means for supporting said upper header above said lower header; and

a unitary reflector mounted to and supported by said pipe, said reflector oriented to direct rays impinging thereupon at said pipe, said reflector comprising a plurality of rigid panels defining apertures within which said pipe is received, said reflector including two end panels and at least one intermediate panel located therebetween, the panels having formed edges surrounding and displaced from a portion of said pipe, said reflector further comprising a reflective material mounted to the formed edges.

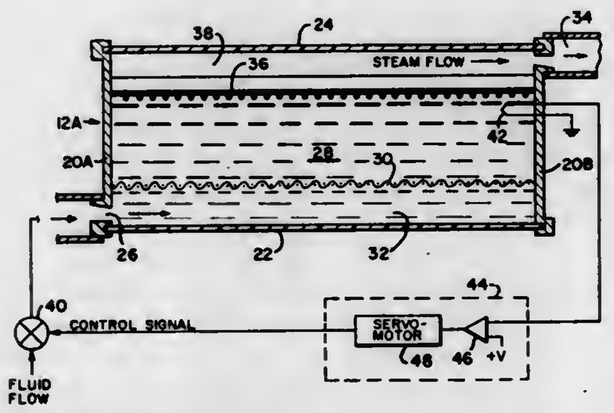
4,129,120
HEATING AND VENTILATION SYSTEM

Norman B. Saunders, 15 Ellis Rd., Weston, Mass. 02193

Continuation-in-part of Ser. No. 607,568, Aug. 25, 1975, abandoned, which is a division of Ser. No. 529,235, Dec. 3, 1974, Pat. No. 3,952,947. This application Aug. 5, 1977, Ser. No. 822,346

Int. Cl.^{2} F24J *3/02*

U.S. Cl. 126—271 13 Claims



1. A heating system comprising:

a container having an internal surface absorptive of solar heat radiation and a transmissive surface transmissive to said solar radiation and disposed so as to transmit solar heat radiation to said internal surface;

means for introducing heat absorbing fluid into said container at a controllable flow rate from one side of said internal surface toward said internal surface; and

means for withdrawing said fluid from said tank from the opposite side of said internal surface;; means adjusting the fluid flow rate into said container so that the flow rate of said fluid toward said internal surface is regulated such that the heat flow from said internal surface in the direction substantially opposite said flow of fluid provide a predetermined temperature gradient.

4,129,121
EXHAUST HOOD CANOPY HAVING A MULTI SLOT VENTURI OUTLET

John O. Dorius, Glendale, Calif., assignor to Elsters, Inc., Hollywood, Calif.

Filed May 23, 1977, Ser. No. 799,389

Int. Cl.^{2} F21C *15/08;* F23J *11/00*

U.S. Cl. 126—299 D 3 Claims

1. A hood for removal of smoke, gases and vapors from a heat surface comprising:

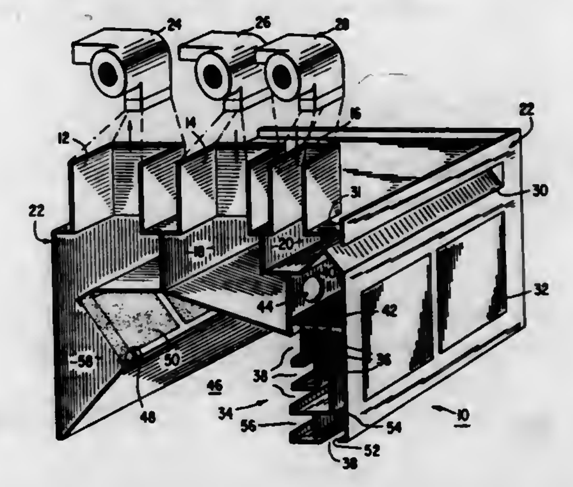
a first plenum communicating with a first source of tempered air;

an exhaust duct communicating with a sink of air;

a housing communicating with said first and second plenums and said exhaust duct, said housing forming a hood cavity, an exhaust chamber, and a first chamber and a second chamber, said first plenum being coupled to said first chamber, said second plenum being coupled to said second chamber;

an outlet having a plurality of slots communicating with one side of said hood cavity and a third chamber divided into a plurality of channels and a mixing subchamber, said first chamber communicating with said mixing subchamber through a plurality of sharp edged apertures, said plurality of channels communicating with said mixing subchamber through a pervious plate;

an inlet having at least one filter disposed thereacross at an angle wherein the lower portion of said filter is closer to said plurality of slots of said outlet than the upper portion of said filter, said hood cavity communicating with said exhaust duct through said inlets; and



a cooking line ventilation slot disposed in said housing and directing air flowing therethrough to regions below said ventilation slot, said ventilation slot communicating with said second chamber,

whereby a hood is devised which provides a substantially streamline, high velocity and uniform pattern of air flow across said hood cavity and a flow of comfort conditioned air along a cooking line with requiring a large volume of air flow.

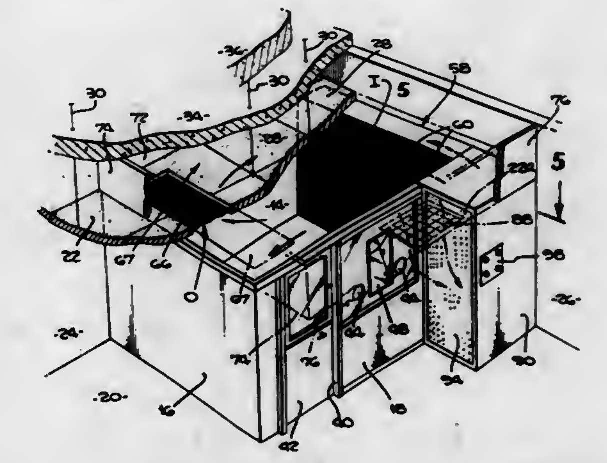
4,129,122
PATIENT ISOLATION ROOM WITH LAMINAR FLOW FEATURE

James A. Dout, Fullerton, and Robert E. Foreman, Santa Ana, Calif., assignors to Sterilaire Medical, Inc., Santa Ana, Calif.

Filed Apr. 27, 1977, Ser. No. 791,419

Int. Cl.^{2} A61B *19/00*

U.S. Cl. 128—1 R 9 Claims



1. A patient isolation room having side, top and bottom wall means surrounding a relatively smaller patient locus adapted to be installed in a normal hospital room, one of said side walls defining a room entry doorway, said top wall having a horizontal continued extent projecting beyond said doorway-defining side wall, a horizontal air outlet formed in said top wall extent adjacent said sidewall and spaced from said doorway, further wall means between said patient isolation room top wall and the hospital room ceiling defining a closed passageway therebetween continuous air flow loop means isolating said locus from airborne contaminants beyond the locus, said loop means including an in-room inlet means and an in-room outlet means relatively sized and oppositely arranged in re-

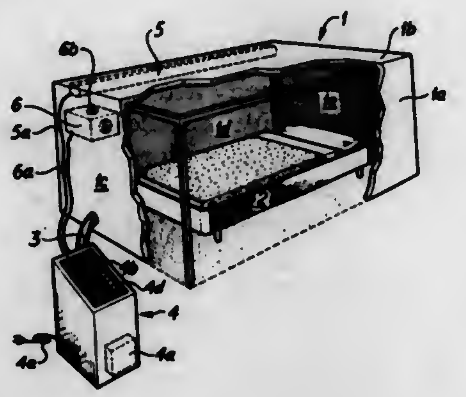
spective walls of said room such that said locus is encompassed on every side with a purified horizontal unidirectional, laminar air stream of uniform velocity throughout its cross-section, said in-room outlet means and said horizontal air outlet communicating with said closed passageway, and means including high efficiency particulate air filters for repurifying air and a blower alongside said doorway defining sidewall adjacent and below said horizontal air outlet thereby, being spaced from said doorway, said blower being in air drawing communication with said horizontal air outlet for recirculating air from said in-room outlet means, through said horizontal air outlet, and to said in-room inlet means, said loop means beyond said room conducting depurified air from said in-room outlet means, through said closed passage above the room top wall, through said horizontal outlet, into said blower therebelow, to and through said filters for repurifying and recirculating and into said in-room inlet means.

4,129,123

DEFINED SPACE HAVING SOUND-INSULATED AND LIGHT-IMPERMEABLE WALLS, PREFERABLY INTENDED TO ENCLOSE A BED

Emil F. Smidak, 14 Chemin Hauts-Crets, 1223 Cologny, Switzerland

Filed Sep. 30, 1977, Ser. No. 838,406
Claims priority, application Sweden, Oct. 1, 1976, 7610896
Int. Cl.² F24F *9/00*; A61B *19/00*
U.S. Cl. 128—1 R **8 Claims**



1. A defined space having sound-insulated and light-impermeable wall members comprising:
- air conditioning means connected to said space for controlling the atmospheric conditions therein;
- means for generating sound in said space, the intensity of the sound being variable over a predetermined duration of time;
- means for controlling the intensity of the sound generated in said space to simulate the decrease in ambient sound intensity occurring during an evening period and the increase in ambient sound intensity occurring during a morning period; and
- a central unit for producing control signals for said air-conditioning means and said sound generating means to simulate the ambient conditions of a predetermined geographic site.

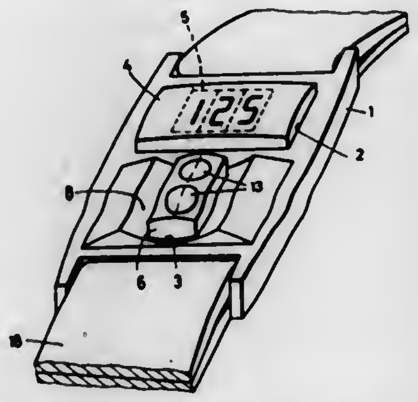
4,129,124

PULSE-RATE INDICATOR

René A. Thalmann, Starrkirch, Switzerland, assignor to Elektro-Apparatebau Olten A.G., Olten, Switzerland

Filed Feb. 10, 1977, Ser. No. 767,623
Claims priority, application Switzerland, Mar. 23, 1976, 3619/76
Int. Cl.² A61B *5/02*
U.S. Cl. 128—2.05 T **2 Claims**

1. A pulse rate indicator of the type having a current supply circuit, means for converting pulse beats into electric measuring pulses, and a pushbutton for operating said indicator, the improvement comprising a casing to which a strap is attached for mounting the casing on the wrist of the wearer, said pushbutton being mounted on said casing, said current supply circuit including a switch that is located in said casing and that is operable in response to depression of said pushbutton to close the circuit thereto, a measuring circuit located in said casing for ascertaining the pulse rate per minute based on a predetermined number of said electric measuring pulses, digital indicating means located in said casing and responsive to said measuring circuit for visually displaying the pulse rate per minute as ascertained by said measuring circuit, electro-optical means located in said pushbutton and being responsive to contact of a human fingertip therewith for generating said electric measuring pulses as a function of the perfusion of blood in said fingertip, said pushbutton having spaced recesses formed therein over which said fingertip is placed during the pulse measuring operation, said electro-optical means including a light source disposed in one of said recesses and a photosensitive element disposed in the other of said recesses, and means for controlling the pressure applied by said fingertip to said pushbutton so that sufficient pressure is applied to said pushbutton to close said switch and so that the pressure of the fingertip is limited in order to obtain a proper measurement of the perfusion of blood therein.

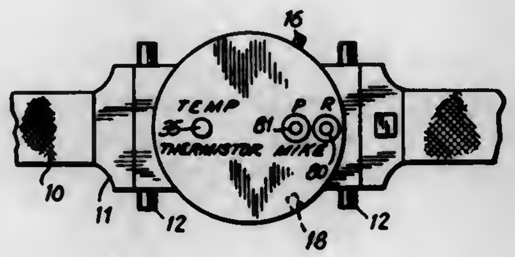


4,129,125

PATIENT MONITORING SYSTEM

Robert W. Lester, Manhasset, and Robert Hotto, New York, both of N.Y., assignors to Camin Research Corp., New York, N.Y.

Filed Dec. 27, 1976, Ser. No. 756,026
Int. Cl.² A61B *5/00*
U.S. Cl. 128—2.05 R **7 Claims**



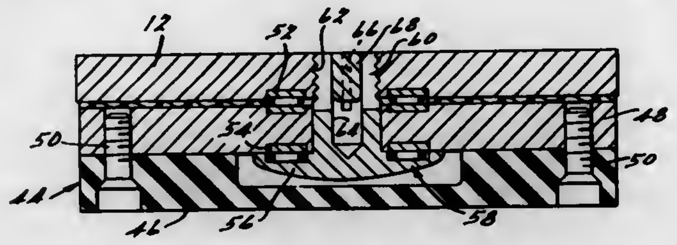
1. A monitoring system for measuring the vital signs such as temperature, respiration and heart beat of a patient comprising:
- a housing designed for body contact with the skin of the patient;
- means for securing said housing on a patient's body;
- clock timing means disposed in said housing for generating time based signals;
- logic means connected to said clock timing means and being responsive to said time based signals for selecting the proper combinations of said time based signals;
- a temperature sensor coupled to sid logic means and disposed on said housing for measuring the body temperature of the human subject;
- microphone means coupled to said logic means and mounted in said housing for detecting respiratory and cardiac sounds;
- solid state memory means having coded information temperature, respiration and cardiac signals and coupled to said logic means for sequencing said logic means to take a plurality of temperature, cardiac and respiratory readings at a preset real time and to compare said measured readings with said coded information signals;
- data storage means for sequentially recording each of the stabilized temperature, respiration and cardiac readings that were measured; and
- display means on said housing responsive to said solid state memory means and said logic means for indicating the magnitude of the temperature, respiration and heart beat of the patient.

4,129,126

ORTHOPEDIC BRACE FOR USE IN TREATMENT OF LEGG PERTHES DISEASE

David Shneider, 4528 S. Hagadorn Rd., East Lansing, Mich. 48823, and Lee D. Boerman, 1441 E. Michigan Ave., Lansing, Mich. 45912

Filed Jul. 20, 1977, Ser. No. 817,141
Int. Cl.² A61F *3/00*
U.S. Cl. 128—80 A **10 Claims**



1. An orthopedic brace comprising, in combination, a pair of angularly disposed support plates, a rigid cross bar extending transversely between said support plates, a rotatable pad rotatably secured to the lower surface of each of said support plates, and fixed pad means secured to the lower surface of each of said support plates in spaced relationship with respect to said rotatable pad.

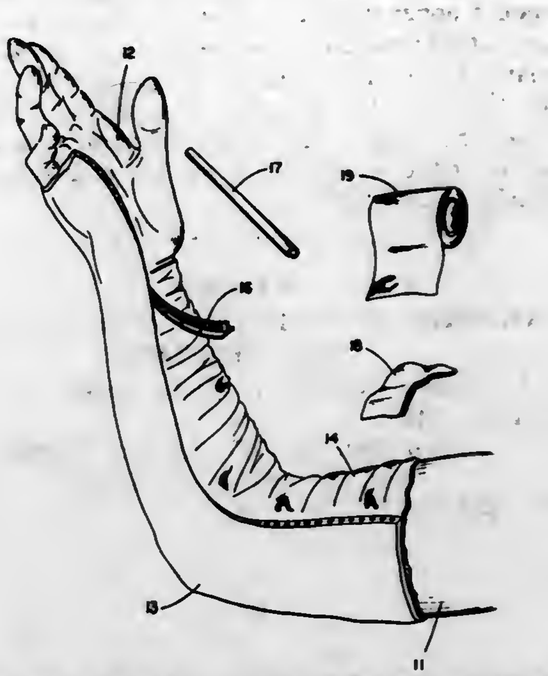
4,129,127

METHOD OF MAKING A SURGICAL CAST

Francis D. Ellison, 5005 E. 10th St., Indianapolis, Ind. 46201

Filed Mar. 24, 1977, Ser. No. 780,709
Int. Cl.² A61F *5/04*
U.S. Cl. 128—89 R **7 Claims**

1. A method of making an immobilizing cast comprising the steps of:
- securing on the body portion to be encased, first and second barriers in circularly spaced relationship;
- applying to a first sector of said body portion between faces of said barriers, a flexible dressing material;
- forming detents in said dressing material at said barriers to provide detented edges on said material;
- rigidizing said dressing material to form a rigid first shell;
- removing said barriers while retaining said first shell in place on said first sector;
- applying to a second sector of said body portion between said edges a flexible dressing material;
- forming at said edges detents in said flexible dressing material on said second sector mating with said detents in said first shell; and
- rigidizing said dressing material to form a rigid second shell.

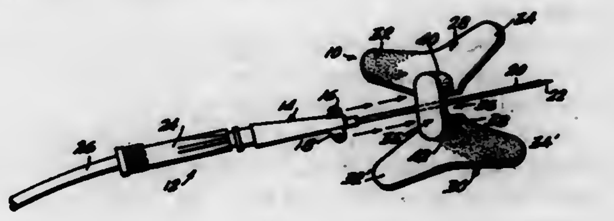


4,129,128

SECURING DEVICE FOR CATHETER PLACEMENT ASSEMBLY

Richard H. McFarlane, 506 Tyler Rd., St. Charles, Ill. 60174

Filed Feb. 23, 1977, Ser. No. 771,187
Int. Cl.² A61M *5/00*
U.S. Cl. 128—133 **5 Claims**



1. A securing device for a catheter placement assembly wherein said assembly defines a flow through passageway and includes:
- a flexible catheter having a pointed distal end which in use extends through a skin puncture site into the vein of a patient after a rigid needle has been withdrawn from the assembly and wherein the catheter includes a proximal end exteriorly of the site adjacent the puncture;
- a catheter body having a proximal supply end including a fitting adapted to be connected to a supply tube and a distal end zone connected to the proximal catheter end at a zone of juncture;
- a pair of oppositely facing ears extending from the body adjacent the zone of juncture, each of said ears and said zone of juncture being of a common predetermined size and shape;
- said securing device comprising a molded body of relatively thin, plastic material of inverted cup-shaped form having a top surface and a depending skirt with a terminal edge spaced from the top surface, said body defining a socket bounded by a proximal and distal portion, each with a cut-out and spaced side portions connecting the proximal and distal portion, and said socket being sized and configured to nestle in mating relation over and above the ears with the distal end zone of the body extending axially through the cut-outs,
- said securing device comprising wings extending laterally

from the terminal edge of each of said side skirt portion and each of said wings including:

a proximal and distally-extending diverging portion having a smooth upper surface, said wing being adapted to overlay the skin of a patient to provide an anchoring surface outboard of the axial centerline of the assembly and puncture site to secure the assembly in position on the skin of a patient by strips of tape extending parallel to the assembly and over the smooth upper surface extending axially and distally therefrom.

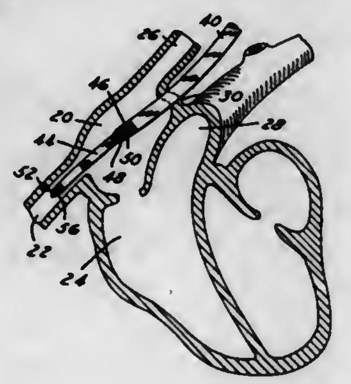
4,129,129
VENOUS RETURN CATHETER AND A METHOD OF USING THE SAME

Bruce A. Amrine, Ann Arbor, Mich., assignor to Sarns, Inc., Ann Arbor, Mich.

Filed Mar. 18, 1977, Ser. No. 779,018

Int. Cl.² A61M *1/03, 25/00*

U.S. Cl. 128—214 R **7 Claims**



1. In a method of by-passing blood flow from the heart during open heart surgery, those steps which comprise:

(a) introducing a venous return catheter into the right atrium of the heart and extending the catheter into the inferior vena cava,

(b) providing first drainage openings in the catheter adjacent the end of the catheter in the inferior vena cava,

(c) providing second drainage openings in the catheter spaced from the end to lie in the right atrium, and

utilizing a single tube in the catheter to carry the blood flow from the inferior vena cava and the right atrium to extracorporeal life support equipment.

4,129,130
VIAL-SYRINGE

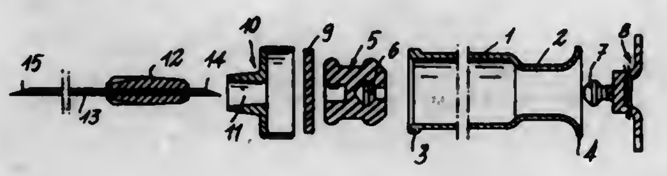
Federico Bigarella, Via S.Carlo, 32-Segrate (Milano), Italy

Filed Feb. 23, 1976, Ser. No. 660,424

Claims priority, application Switzerland, Nov. 5, 1975, 14312/75

Int. Cl.² A61M *5/00*

U.S. Cl. 128—218 P **1 Claim**



1. A syringe, comprising an elongated container having a longitudinal axis, a wall bounding the interior of said container, a leading open end of a predetermined major diameter and a substantially cylindrical trailing open end of a predetermined minor diameter smaller than the major diameter, said trailing end extending substantially parallel to the longitudinal axis of said container and provided at its open end with a rim projecting outwardly and substantially normal to said longitudinal axis of said container, and having an outside diameter substantially equal to the major diameter of the leading end, thereby bounding a circumferential recess on an outside surface of the wall for receiving a user's fingers therein, said recess having a front end face directed towards said leading open end of the predetermined major diameter and rear end face directed towards said rim of the outside diameter substantially equal to the major diameter to thereby eliminate the user's fingers slipping along and from said barrel container in either directions; an elastomeric piston axially slidable in said container and having an outside diameter equal substantially to said major diameter, said piston being formed with a recess open axially toward said other end whereby said piston can be introduced into said container through said one end; an elongated plunger extending axially into said container through said narrow neck and having an end formation snugly engaged in said recess of said piston; a pierceable membrane sealingly covering said one end; a cap force fitted over said membrane at said one end and securing said membrane tightly in place thereon, said cap forming seat open axially away from said container; a hollow needle having a pair of oppositely directed pointed fingers; and a plug surrounding said needle intermediate said tips thereof and snugly receivable in said seat with one of said tips engaging through said membrane into said body portion.

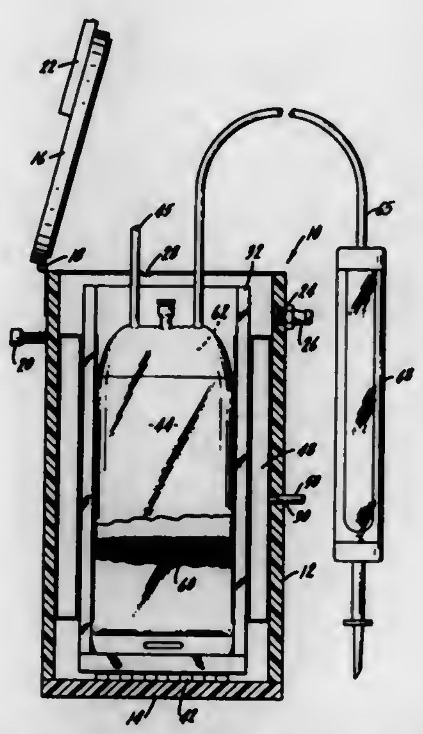
4,129,131
METHOD AND APPARATUS FOR DEFIBRINATION OF BLOOD

Henry Naftulin, 8341 N. Keaton Ave., Skokie, Ill. 60076

Filed Oct. 26, 1976, Ser. No. 735,173

Int. Cl.² A61M *1/03*

U.S. Cl. 128—276 **10 Claims**



1. A method of collecting and defibrinating blood in a flexible container, comprising the steps of:

(a) adding and confining a predetermined quantity of gas and a plurality of small formed elements within the flexible container;

(b) positioning the flexible container within a vacuum chamber;

(c) creating a vacuum within the chamber which in turn causes the confined gas within the flexible container to expand and create a gas pocket therein;

(d) collecting the blood into the flexible container such that the gas pocket and collected blood substantially fill and rigidize the flexible container; and

(e) agitating the flexible container so as to cause the formed elements to move rapidly through the blood and the gas pocket and whip out the fibrin.

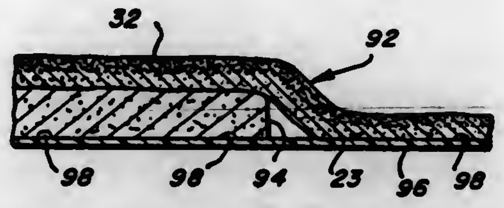
4,129,132
FIBROUS MATERIAL AND METHOD OF MAKING THE SAME

George A. M. Butterworth, Western Springs; Robert T. Elias, Downers Grove, and Wayne D. Miller, Oak Lawn, all of Ill., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 734,208, Oct. 20, 1976, Pat. No. 4,081,582. This application Oct. 3, 1977, Ser. No. 838,611

Int. Cl.² A61F *13/16*

U.S. Cl. 128—287 **17 Claims**



1. In a diaper structure comprising a facing layer, an absorbent batt and an impervious backing layer in which said facing layer and said backing sheet are outermost layers and said batt is positioned between said facing layer and said backing sheet, the improvement wherein said facing layer comprises a high loft, low density, nonwoven fibrous material of good stability and mechanical integrity, excellent resistance to delamination, and good hand and softness, which comprises a first layer of irregularly arranged, intersecting, overlapping, mechanically interengaged, loosely assembled fibers defining interstices therebetween, said fibers including fibers other than thermoplastic synthetic wood pulp fibers, and a second layer of similarly disposed fibers in firm engagement with said first layer at an interface therebetween, said second layer including, at least thermoplastic synthetic wood pulp fibers and optionally, other fibers, said thermoplastic synthetic wood pulp fibers located at least in portions of said second layer adjacent said interface between said two layers, thermoplastic synthetic wood pulp fibers that are mechanically interengaged with other fibers in said second layer being present in the portions of said layer at said interface between the two layers in a quantity sufficient to occupy at least about 10 percent of the area occupied by fiber segments contained in said second layer at said interface, fibers of at least one of said two layers extending across the interface between the two layers with free end portions of said fibers positioned within interstices between fibers in the other of said layers, at least some of the interstices between fibers of said first layer being of a width at least twice as large as the mean diameter of said synthetic wood pulp fibers in said second layer, at least some of the interstices between fibers of said second layer being of a width at least twice as large as the mean diameter of the fibers in said first layer, segments of at least some of the thermoplastic synthetic wood pulp fibers in said second layer being in contact with and heat fused with segments of fibers of said first layer, said thermoplastic synthetic wood pulp fibers in the second layer having a melting point lower than the melting point of degradation temperature of every other type of fibers contained in said two layers.

4,129,133
INTERFERENCE-DETECTING DEMAND HEART PACEMAKER

Werner Irnich, Reimser Str. 48, 51 Aachen, Germany, and Jacques de Bakker, Morettistr. 54, Vaals, Netherlands

Filed Mar. 4, 1977, Ser. No. 774,326

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1976, 2628629

Int. Cl.² A61N *1/36*

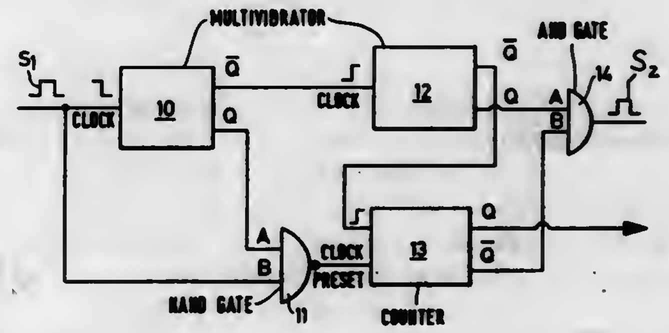
U.S. Cl. 128—419 PG **3 Claims**

1. A heart pacemaker for generating a heart stimulation signal in the apparent absence of any heart stimulation signal during a given duration of time,

comprising, in combination:

interference detecting means operable for sensing intracardiac voltage signals possessing predetermined voltage waveform properties and operable for generating, respectively, first and second signals; said interference detecting means including a retriggerable monostable first multivibrator responsive to a trigger signal and operable for determining a first period of time, a NAND gate coupled to said first multivibrator, coupled to said trigger signal, a second multivibrator coupled to said first multivibrator and operable for initiating a second period of time, a flip flop device coupled to said NAND gate and said multivibrator and responsive thereto, and an AND gate coupled to said second multivibrator and said flip flop and operable for generating one of said second signals, thus inhibiting said heart stimulation signal, said first signal being generated in response to the sensing of one of said intracardiac voltage signals by said detecting means, and one of said second signals being generated whenever one of said voltage signals is not succeeded by another voltage signal during said predetermined first period of time; and

generating means coupled to said detecting means and operable for generating said heart stimulation signal at the completion of said predetermined second period of time subsequent to the occurrence of one of said second signals and operable to have said second period of time interrupted in response to the occurrence of a further one of said second signals.



4,129,134
SMOKING ARTICLE

John D. Hind, and William C. Hopkins, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 567,768, Apr. 14, 1975, abandoned, which is a continuation of Ser. No. 372,488, Jun. 22, 1973, abandoned. This application May 14, 1976, Ser. No. 686,409

Int. Cl.² A24D *1/18*

U.S. Cl. 131—2 **5 Claims**

1. A smoking article comprising tobacco parts and/or parts of a tobacco substitute and a wrapper comprising a film having as its main ingredient a natural polysaccharide selected from the group consisting of methylated pectins, guar gum, hydrolyzed guar gum and locust bean gum and mixtures thereof, said wrapper comprising, in addition to said main ingredient, from about 8 to about 40 parts, by weight, per 100 parts of said main ingredient, of an alkaline earth metal compound selected from the group consisting of calcium salts, magnesium salts and mixtures thereof, said wrapper also containing from about 2 to about 40 parts, by weight, per 100 parts of said main ingredient, of a humectant, said wrapper further having a heat shrinkage of greater than about 1% and less than about 16% and containing substantially no tobacco plant parts.

4,129,135
SMOKER'S TOOL

Michael P. Kaufman; Randal S. Kochenderfer, and Frank A. Crivello, all of 826 Fulton SE., Minneapolis, Minn. 55414

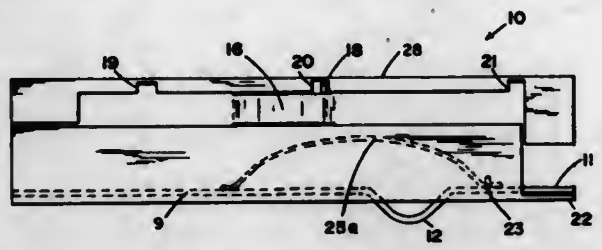
Filed Dec. 15, 1977, Ser. No. 860,950

Int. Cl.² A24F *9/08*

U.S. Cl. 131—243 **9 Claims**

1. A smoker's tool comprising an elongated housing having a surface for supporting the smoker's tool on a table or the like,

said elongated housing having a first implement passage therein, a first smoker's implement slidably mounted in said first implement passage, means resiliently holding said first smoker's implement in slidable engagement in said first implement passage; a second implement passage located in said elongated housing, a second smoker's implement slidably mounted in said second implement passage, said second smoker's implement including a member for engaging a cylindrical object, a lip located on said housing, means holding said second smoker's implement within the housing and resiliently biasing said member against said lip, said lip and said member coacting to support a cylindrical object therebetween.



4,129,136

REJUVENATING ELECTROSTATOGRAPHIC CARRIER PARTICLES

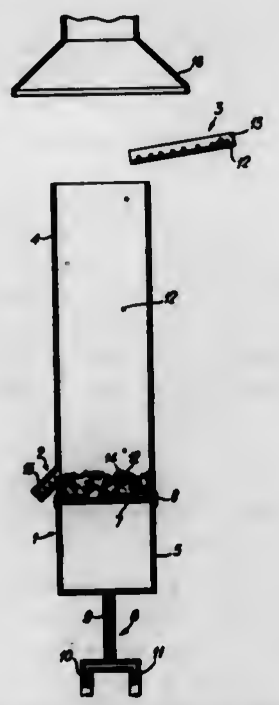
Devinder S. Kapoor, Penfield, N.Y., assignor to Rank Xerox Limited, London, England

Filed Aug. 19, 1977, Ser. No. 825,886

Claims priority, application United Kingdom, Aug. 25, 1976, 35346/76

Int. Cl.² B08B *7/00*

U.S. Cl. 134—2 **13 Claims**



1. A method for rejuvenating electrostatographic carrier particles which have been employed in electrostatographic developer compositions of the kind comprising finely-divided electrostatographic toner particles electrostatically clinging to the carrier particles, said carrier particles comprising a metal core having combustible resinous material on the surface thereof, the method comprising fluidizing said carrier particles by passing a combustible gas and air mixture upwardly through a bed of said carrier particles, and heating said carrier particles in a fluidized condition to a temperature of from between about 420° C. and about 525° C. by burning said combustible gas and air mixture above said bed until said combustible resinous material on the surface of said core is removed, said core metal being selected from the group consisting of iron and steel, and said heating of said carrier particles being performed in the presence of a stoichiometric excess of oxygen with respect to the proportion of oxygen required for complete combustion of said combustible gas.

4,129,137

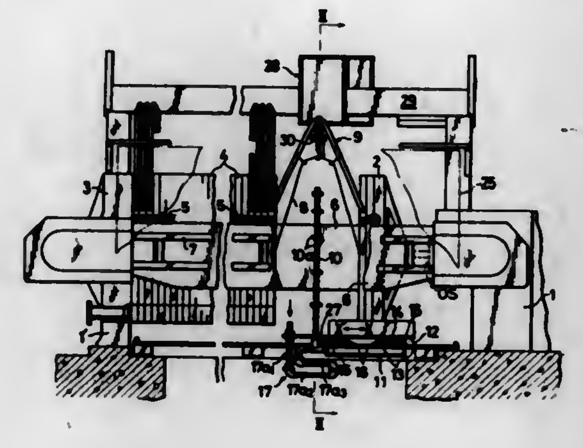
WASHING APPARATUS FOR FILTER PRESS

Tetsuya Kurita, Takarazuka, and Toshifumi Hara, Nishinomiya, both of Japan, assignors to Kurita Machinery Manufacturing Company Limited, Osaka, Japan

Filed Nov. 4, 1977, Ser. No. 848,728

Int. Cl.² B08B *3/02*

U.S. Cl. 134—144 **8 Claims**



1. A washing apparatus for a filter press wherein when the filter plates are transferred one by one toward a movable end plate, a washing liquid spray pipe having a number of nozzles is positioned between the filter plates which are being successively separated as a result of the transfer and filter sheets each spread over adjacent filter plates or the filter surfaces with such filter sheets removed therefrom are washed by the spray pipe moving between adjacent filter plates, said washing apparatus comprising the following features:

a. the spray pipe is disposed outside of the filter plates so as to be parallel to one side of the filter plate and its one end opposed to a corner of the filter plate is pivotally mounted in a movable unit which is movable parallelly to the filter plates,

b. said movable unit is supported by a carriage movable in the direction of movement of the filter plates and is disposed, along with the movable unit, so as to move on said one side of the filter plates to which the spray pipe is installed parallelly and outside the filter plates,

c. means is provided for intermittently moving the carriage to position the spray pipe between separated filter plates in synchronism with the transfer of the filter plates one by one toward the movable end plate,

d. means is provided for forwardly and backwardly moving the movable unit in synchronism with the positioning of the spray pipe between separated filter plates by the carriage followed by the stoppage of the latter at that position, and

e. means is provided for forwardly turning the spray pipe to a position where it is parallel to an adjacent side of the filter plate which is at right angles with the firstmentioned side thereof to which the spray pipe is installed parallelly and for backwardly turning it to its initial position, in synchronism with the initial stage of the forward movement and the final stage of the backward movement of the movable unit.

4,129,138

SYSTEMS FOR SUPPLYING TREATMENT LIQUIDS TO ROTATABLE ELECTROPLATING DRUMS

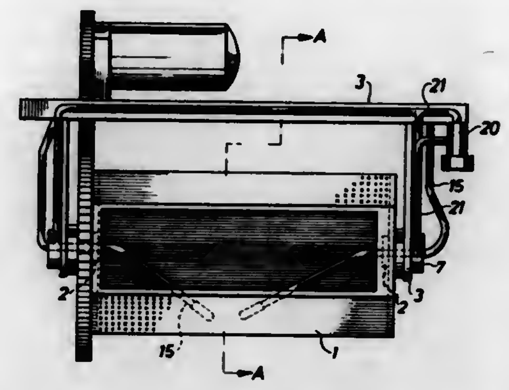
Bror E. Nyström, Rosenvägen 21, S-560 23 Bankeryd, Sweden

Filed Nov. 25, 1977, Ser. No. 855,070

Int. Cl.² B08B *3/02*

U.S. Cl. 134—145 **4 Claims**

1. A system for supplying varying quantities of treatment liquids, comprising an electroplating drum to which said treatment liquids are supplied, a frame, rinsing trunnion bearings defining a plurality of sets of ducts, a removable cleaning tube, and a liquid distribution valve, wherein said rinsing trunnion ducts rotatably mount said electroplating drum in said frame, at least one of said rinsing trunnion bearings defining a central through bore and at least two of said sets of ducts having different sized openings disposed in respective series about said central bore, and said liquid distribution valve is disposed in said frame and operates to select between allowing said at least two sets of ducts to cooperate with each other and to perform separate rinsing functions, said through bore of said at least one rinsing trunnion bearing being defined by an inner surface thereof having axial flutes and said removable cleaning tube being inserted into said central bore, so that removal thereof makes said at least one set of ducts accessible for overhaul purposes, and said cleaning tube having a smooth cylindrical outer surface cooperating with said inner wall of said at least one rinsing trunnion bearing to define said at least one set of ducts.



4,129,139

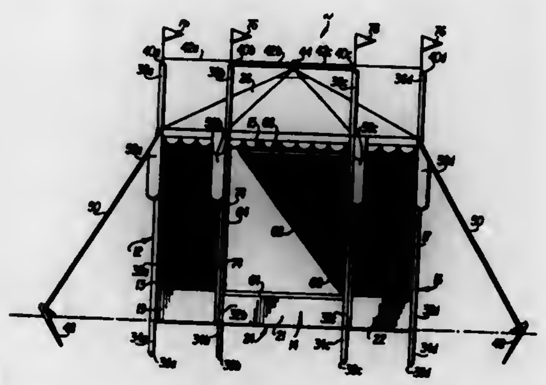
BABY GAZEBO

Betsy K. Powers, 20 South Water St., Lewisburg, Pa. 17837

Filed Jul. 29, 1977, Ser. No. 820,241

Int. Cl.² E04B *1/12*

U.S. Cl. 135—3 E **12 Claims**



1. A portable shelter comprising:

a one-piece fabric assembly forming the roof, floor and sides of said shelter, said one-piece fabric assembly containing a plurality of sleeves running substantially the entire height of the sides of said shelter and located one each at the juncture of two sides of said shelter, at least one of the sides of said shelter having a larger upper portion of its surface area made of flexible netting fabric and a smaller bottom portion made of a solid lightweight flexible fabric, the remaining sides and floor of said shelter being made of said solid lightweight flexible fabric, said roof of said shelter having a first portion thereof made of said flexible netting fabric and a second portion thereof made of said solid lightweight flexible fabric,

a ring attached to said roof,

a plurality of poles each passing through a respective sleeve and having upper and lower ends extending outward of said sleeve, said upper end of each pole forming a tubular opening and said lower end of each pole terminating in a point which is adapted to be secured in the ground,

a plurality of relatively stiff wires,

a plurality of tapered resilient plugs associated one each with the ends of said wires, each end of each of said wires passing through an associated plug and having means for preventing the disengagement of said end from said associated plug, said plurality of plugs being respectively mounted in the tubular openings of said poles such that each of said wires passes through said ring and is attached to the upper end of two of said poles which are diametrically opposed about the center axis of said shelter, said wires serving to support the roof of said shelter.

4,129,140

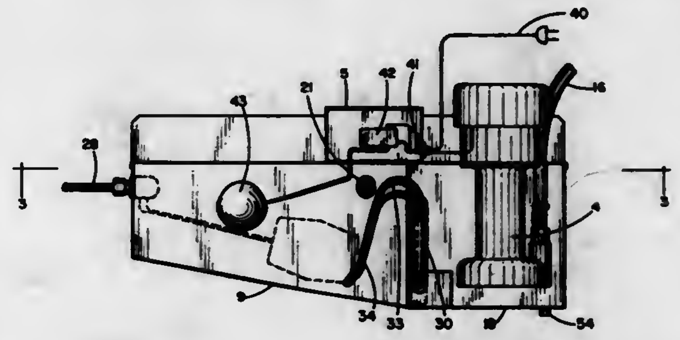
AUTOMATIC FLUSHING DEVICE

Richard D. Carlin, 4799 Primavera La., Las Vegas, Nev. 89122

Filed May 9, 1977, Ser. No. 795,327

Int. Cl.² F04F *10/00*

U.S. Cl. 137—124 **8 Claims**



1. In a circulating water system wherein water is pumped from and returned to a sump, the system including a make-up water supply source, means for maintaining a constant water level in the sump, a circulating pump, and means for returning circulating water to the sump, the improvement therein which comprises a timing reservoir separate from and adjacent to the sump, means for supplying a constant flow of a portion of the circulating water to the timing reservoir, and a siphon drain having inlet means near the bottom of the sump and separate inlet means near the bottom of the timing reservoir, drain outlet means for removing water from the sump, and conduit means connecting the inlet means with the outlet means, such that both the sump and timing reservoir are simultaneously drained when the water level in either reservoir reaches a predetermined level.

4,129,141

SCRAM VALVE

Ernst Vogeli, Wiesendangen, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Mar. 15, 1976, Ser. No. 666,919

Claims priority, application Switzerland, Mar. 20, 1975, 3561/75

Int. Cl.² F16K *17/10*

U.S. Cl. 137—462 **8 Claims**

1. A scram valve comprising

a casing having an inlet spigot, an outlet spigot for a flow of medium and a valve seat between said spigots;

a movable valve body for seating on said valve seat to close said outlet spigot to the flow of medium;

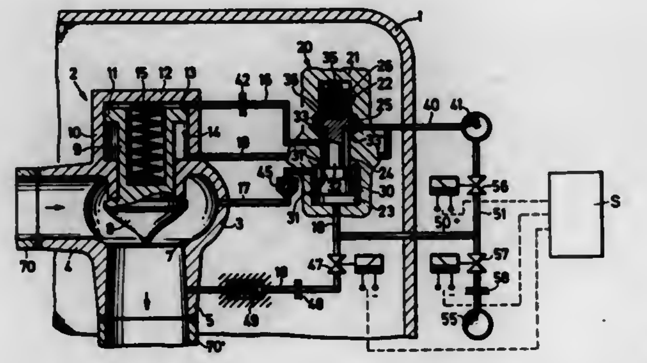
a lid on said casing defining a cylindrical chamber;

a closing piston head slidably mounted in said cylinder chamber to sub-divide said chamber into a pair of sub-chambers;

a rod connecting said piston head to said valve body;

a pressure medium supply line connected between said casing and one of said sub-chambers to deliver a pressure medium thereto from said casing for moving said valve body into closing relation with said outlet spigot;

a low pressure chamber connected to the other of said sub-chambers;
a pilot valve in said pressure medium supply line for selectively opening and closing said supply line to said casing, said pilot valve including a control piston and a line communicating one end of said control piston with the flow of medium in said casing near said outlet spigot whereby said latter piston moves into an opening position in said supply line in response to an abrupt pressure decrease downstream of said valve seat to allow the pressure medium in said supply line to flow into said one sub-chamber to cause said valve body to seat on said valve seat;
a line connected between said outlet spigot and said end of said control piston;



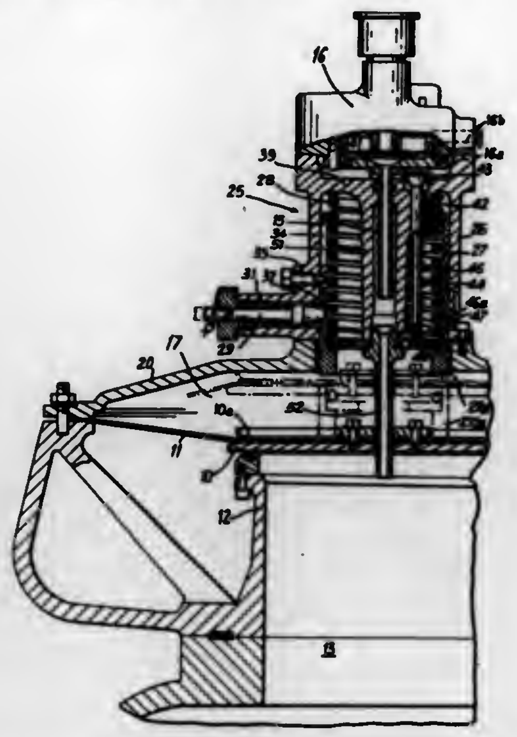
a check valve permitting a flow only towards said outlet spigot in said line between said outlet spigot and said pilot valve;
a second line connected between said low pressure chamber and said first line between said outlet spigot and said control piston, said second line being connected to said first line between said check valve and said control piston;
a third valve in said second line; and
a safety circuit connected to said third valve to operate said third valve in response to a predetermined instruction signal to connect said low pressure chamber to said first line.

4,129,142
SAFETY DEVICE FOR A RELIEF VALVE WITH A CONTROLLED DISK

Jean Solowy, Sens, France, assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 19, 1977, Ser. No. 825,891
Claims priority, application France, Apr. 27, 1976, 76 12451
Int. Cl.² F16K *17/19*
U.S. Cl. 137—492 7 Claims

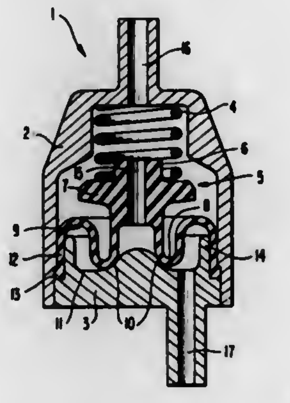
1. A safety device for a relief valve of a pressurized fluid storage tank, of the type comprising a disk closing member carried by a diaphragm forming a wall of a chamber further limited by the valve casing, and a pilot valve forming a three-way cock, a first line being connected to said tank, a second line being connected to said chamber and a third line being connected to open air, so as to enable said chamber to be connected either to the inner space of the tank or to the open air, according to pressure inside said tank, characterized in that it comprises a body provided for being mounted between said valve casing and said pilot valve, a spring biased slidably movable cage inside said body, means being provided for either maintaining said cage in a locked position or allow it to be moved under pressure of said spring, the cage then engaging said valve disk, said body comprising a first communication means for connection of inner space of storage tank to the first line of said pilot valve, and a second communication means for connection of inner space of said chamber to the second line of said pilot valve, said second communication means being closed when said cage is in the unlocked condition.



4,129,143
CHECK VALVE, ESPECIALLY FOR VACUUM-OPERATED INSTALLATIONS IN MOTOR VEHICLES

Rüdiger Hoffmann, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Jun. 22, 1977, Ser. No. 808,953
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1976, 2628314
Int. Cl.² F16K *15/14*
U.S. Cl. 137—496 10 Claims

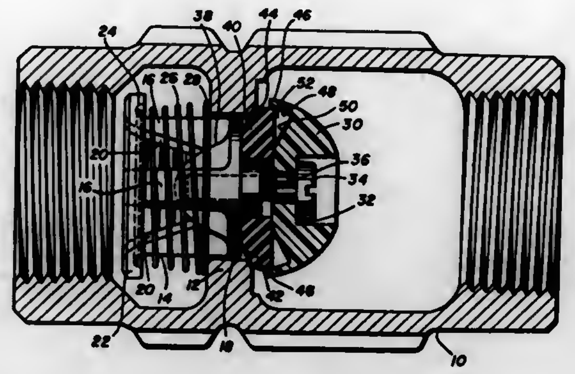


1. A check valve, comprising a two-partite housing means provided with inlet and outlet channel means and a roller diaphragm means pressed by a prestressed spring against its sealing seat means and secured between the housing parts of the two-partite housing means, characterized in that the roller diaphragm means includes an annularly shaped curved portion which as movable sealing part cooperates with the bottom of the one housing part constructed as sealing seat means in such a manner that a central bore provided in the section of the diaphragm means located on the side of the spring connects the inlet channel means terminating outside of the curved diaphragm portion, with the outlet channel means of the other housing part, when, upon exceeding a predetermined pressure difference, the curved diaphragm portion lifts off from the sealing seat means.

4,129,144
STABILIZING CHECK VALVE

Bo Allan Andersson, R.D. No. 2, Cambridge, N.Y. 12816, and Richard P. Callahan, P.O. Box 164, Hoosick Falls, N.Y. 12090

Filed Nov. 16, 1976, Ser. No. 742,271
Int. Cl.² F16K *15/06*
U.S. Cl. 137—541 3 Claims



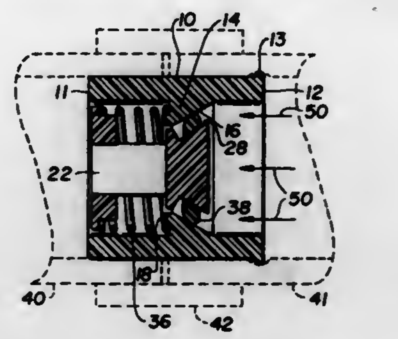
1. A check valve comprising a housing, an annular abutment in the housing forming a central opening, and a check valve assembly mounted on said abutment, said abutment having a valve seat thereon,
said assembly comprising a guide, a spring mounted between portions of the guide and said abutment normally tending to hold the check valve assembly substantially in upstream closed position,
a head on said guide, said head being located at the downstream side of the abutment, said head having a base facing the abutment,
an elastomeric disc between the base of the head and the abutment, said elastomeric disc having a diameter greater than the opening through the abutment, and the base of the head having a recess therein facing the disc and receiving portions of said disc under conditions of retropressure, the disc having a stability normally maintaining it generally free of the recess,
said head being substantially conical and having a flat apex area facing downstream, a fastener having a fastener head located in the flat apex area of said conical head and a part of the fastener passing through said conical head and secured with respect to said guide, said recess in the base of said head comprises an annular groove facing said disc, said groove having a bottom inclined with respect to the axis of the housing and of the check valve assembly, said inclined bottom extending from a central portion of the base of said head outwardly and in a downstream direction, said elastomeric disc having a rounded surface facing said abutment and said valve seat, and means on the guide to anchor said spring at the end thereof opposite said abutment.

4,129,145
CHECK VALVE ASSEMBLY

James M. Wynn, 2203 McLaughlin Ave. #4, San Jose, Calif. 95122

Filed May 26, 1977, Ser. No. 800,661
Int. Cl.² F16K *15/02*
U.S. Cl. 137—541 8 Claims

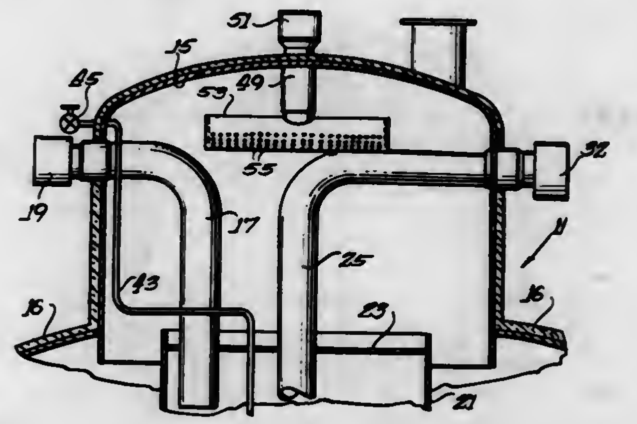
1. A check valve assembly comprising:
a valve body having an upstream end and a downstream end;
a valve seat located on the interior of the valve body and having an annular seating surface directed toward the downstream of the valve body, said seating surface being inclined at an acute angle relative to the centerline of the valve body;
a poppet element having a circumferential surface with a relatively narrow neck located proximate the valve seat, the circumferential surface of the poppet element on the upstream side of the neck and downstream of the valve seat having an outer diameter less than the inner diameter of the valve seat so that the poppet element cannot contact the valve seat on the downstream side thereof upon closure of the valve, the circumferential surface of the poppet element on the downstream side of the neck having a frustoconical configuration inclined at an acute angle relative to the centerline of the valve body substantially equal to said acute angle of the seating surface; and
a deformable resilient O-ring circumscribing the poppet element and located in the narrow neck, the outer diameter of the O-ring being greater than the inner diameter of the annular seating surface of the valve seat so that the flow of a fluid through the sleeve from the downstream end to the upstream end thereof presses the O-ring against the seating surface of the valve seat, the inclination of the seating surface and the frustoconical portion of the circumferential surface of the poppet element being sufficient to allow the O-ring to roll up the frustoconical portion of the circumferential surface of the poppet element so that upon relaxation of pressure of the O-ring against the seating surface, the O-ring readily releases from the seating surface without sticking thereto.



4,129,146
LIQUEFIED GAS TANK AND METHOD OF FILLING

Alan L. Schuler, Hingham, Mass., assignor to General Dynamics Corporation, St. Louis, Mo.

Filed May 13, 1977, Ser. No. 796,550
Int. Cl.² F17C *5/02*
U.S. Cl. 137—587 11 Claims



1. A tank for holding liquefied gas designed for filling without problem of thermal roll-over, which tank comprises
a fluidtight body which defines a liquid storage vessel,
thermal insulation means in association with said body to provide a thermal barrier between the low temperature environment inside said vessel and ambient,
a liquid supply line into said vessel for filling said vessel with liquefied gas and terminating at a location within the upper half of said vessel,
means for connecting said supply line to a source of liquefied gas,
draft-tube means within said vessel extending generally vertically from a location within the upper-quarter thereof to a location within the lower-quarter thereof,
discharge pipe means in addition to the supply line for emp-

tying liquefied gas and extending from a location near the bottom of said vessel,

said supply line being located so as to discharge the liquefied gas being supplied within the confines of said draft-tube,

said draft tube having a cross sectional area at least about ten times the cross sectional area of supply line, and

the upper end of said draft-tube being in fluid communication with the ullage portion of said vessel and the lower end of said draft-tube being in liquid communication with said liquid-holding portion of said vessel whereby the possibility of thermal roll-over during filling is substantially eliminated.

4,129,147
CONTROL VALVE

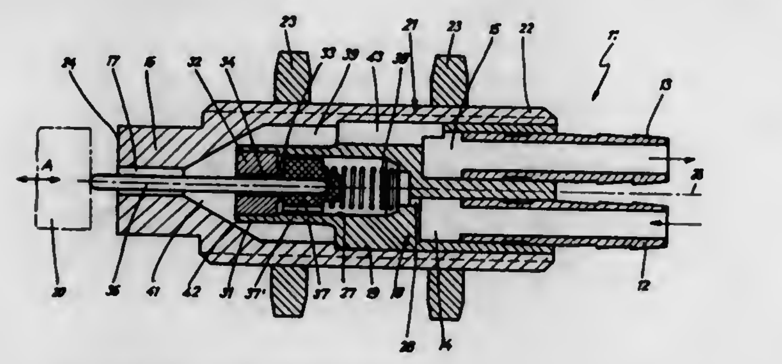
Kurt Stoll, Lenzhalde 72, D-7300 Esslingen, and Ulrich Kees, Im Pfeifferwald, D-6670 St. Ingbert, both of Fed. Rep. of Germany

Filed Feb. 1, 1977, Ser. No. 764,560

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1976, 2606177

Int. Cl.² F15B ***13/04***

U.S. Cl. 137—596.1 **6 Claims**



1. A control valve comprising:

a generally hollow main body which is generally open at one end and at the opposite end has a nozzle integrally connected thereto, the nozzle having a central bore therethrough and a flat external annular sealing surface;

a valve part positioned inside of the main body, the valve part having at one end adjacent the generally open end of said main body two separate means for connection to two separate hoses for control medium, one means for connection to a pressure medium supply and one for pressure medium discharge, and at the other end thereof a hollow portion with an open end facing said nozzle, the interior of said hollow portion being in fluid communication with said one means for connection to a pressure medium supply;

a spring in the interior of said hollow portion of said valve part, a valve piston in said hollow portion, and a valve ring having a central bore therethrough, said spring biasing said valve piston aginst said valve ring and closing off the open end of said bore therein; and

a movable tappet extending at one end through said bore in said nozzle, said tappet having a thickness so as to leave an annular space for fluid flow between said tappet and said nozzle bore, and extending so as to abut against an external sealing element, said tappet extending at its opposite end through the bore in said valve ring and abutting against said valve piston, an annular space for fluid flow being left between said tappet and said bore in said valve ring, said annular space for fluid flow between said tappet and the wall of said valve ring forming the bore therethrough through which said tappet being smaller than said annular space for fluid flow between said tappet and said bore in said nozzle;

the hollow interior wall of said main body forming a bottleneck zone together with the open end of said portion of said valve part such that upon movement of said tappet against the bias of said spring so as to open said central bore of said valve ring, pressure medium from said one means for connection to a pressure medium supply will flow through said annular space in said nozzle, whereas when said bore in said nozzle is closed off by said sealing element, pressure medium will be caused to flow through said one means for pressure medium discharge.

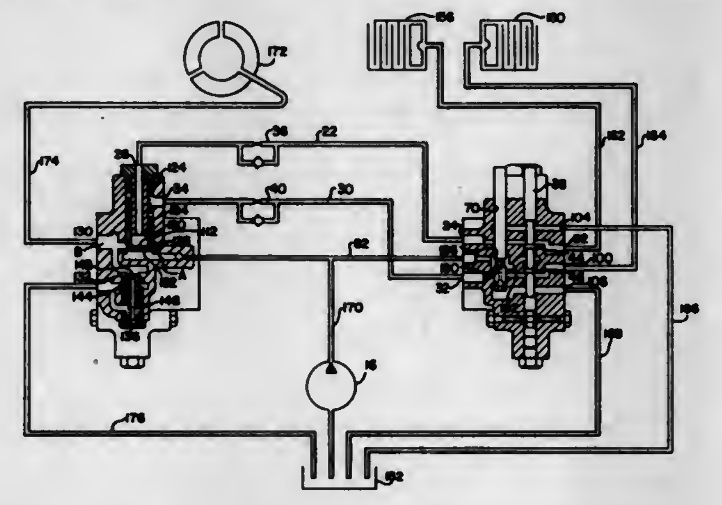
4,129,148
CLUTCH MODULATOR

Richard J. Lech, Lockport, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Jun. 30, 1977, Ser. No. 811,497

Int. Cl.² B60K ***41/00***

U.S. Cl. 137—596 **9 Claims**



1. A modulator valve assembly comprising:

a modulator valve body having a plurality of spool receiving bores and a plurality of internal passages;

said spool receiving bores including a direction selector spool bore, a dump valve bore, a modulator spool bore terminating in a seat and a poppet bore terminating in a seat;

said plurality of internal passages including a first drain passage 104, a forward modulator fluid source passage 24, a forward clutch supply passage 90, a supply port passage 82, a distributor passage 192, a reverse clutch supply passage 96, a reverse modulator fluid source passage 32, a second drain passage 106, a forward modulator control passage 26, a reverse modulator control passage 34, a torque converter supply passage 130, a regulator passage 150 and a regulator drain passage 154;

a direction selector spool slideably carried in said direction selector spool bore movable between a forward neutral and reverse positions, having a shaft equipped with a first and second land and a detent portion at one end of said direction selector spool;

a dump valve spool slideably carried in said dump valve bore having an upper and lower dump valve lands and further provided with an internal passage made up of a first radial passage connected to a second radial passage via a longitudinal passage therebetween;

a modulator spool slideably carried in said modulator spool bore having a tapered nose urged toward said modulator spool bore seat by a spring;

a regulator poppet slideably carried in a poppet bore, said regulator poppet having an apertured nose allowing fluid communication to an internal bore of the poppet, said regulator poppet urged to said poppet bore seat by a spring.

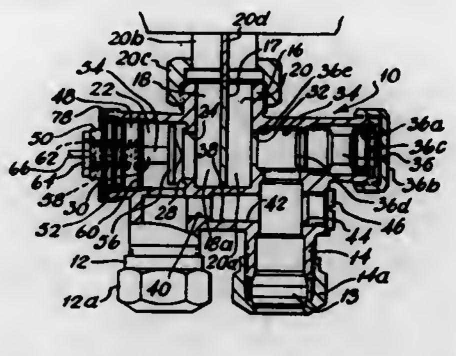
4,129,149
CONTROL VALVE MEANS

Roland Brehmer, Fellingsbro, and Bengt Sörberg, Kungsör, both of Sweden, assignors to Aktiebolaget Fellingsbro Verkstader, Fellingsbro and Erik Sorberg Armaturfabrik Aktiebolag, Kungsör, both of, Sweden

Continuation of Ser. No. 616,850, Sep. 25, 1975, abandoned. This application Feb. 7, 1978, Ser. No. 875,899

Int. Cl.² F17D ***3/00;*** **F16K** ***43/00***

U.S. Cl. 137—599.1 **8 Claims**



1. A central heating radiator control valve comprising (a) a valve housing having:

- (i) an inlet, a main outlet and a branch outlet arranged for flow of heating fluid from the inlet to the branch outlet and return flow through the branch outlet to the main outlet;
- (ii) a fixed planar longitudinal partition dividing the branch outlet into side-by-side relatively isolated flow and return passages;
- (iii) a first valve passageway axially transverse to the branch outlet and communicating the inlet to the flow passage, the first valve passageway and flow passage defining a first valve port therebetween;
- (iv) a second valve passageway axially transverse to the branch outlet and communicating the return passage to the main outlet, the return passage and second valve passageway defining a port therebetween;
- (v) a first valve seating in the first valve passageway around the first valve port;
- (vi) a second valve seating in the second valve passageway around the second valve port; and
- (vii) (a) a bypass conduit with its axis parallel to the axes of the first and second valve passageways for bypass flow direct from the inlet to the main outlet; (b) a main control valve member mounted in the first valve passageway for linear movement axially of the passageway towards and away from the first valve seating to vary the flow through the branch outlet in the normal operation of the valve; and (c) a second, settable, valve member mounted in the second valve passageway for linear movement axially of the passageway and independent of the main control valve member to limit the flow through the branch outlet; the cross-sectional flow area of the bypass conduit being independent of the positions of the main and second valve members in the normal operation of the valve, the bypass conduit remaining open in all operative positions of the main control valve member, and the valve ports being closable by the respective valve members to isolate the branch outlet.

4,129,150
FLUID DISTRIBUTOR AND FLUID DISTRIBUTOR CELL

Marc Boisserand, "Le Placyre", Voiron, France (F-38500)

Filed Mar. 31, 1977, Ser. No. 783,228

Claims priority, application France, Apr. 5, 1976, 76 09868

Int. Cl.² F16K ***27/00***

U.S. Cl. 137—872 **8 Claims**

1. A fluid distributor cell comprising:

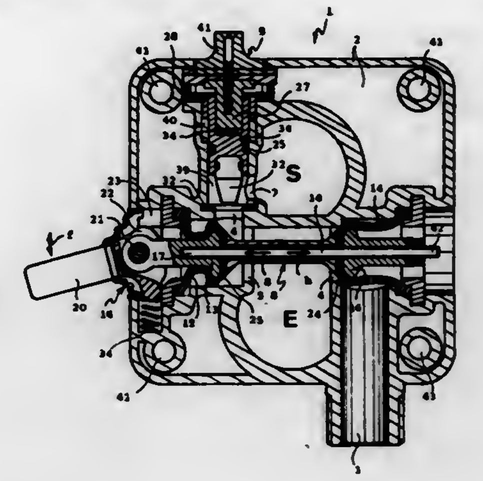
a block of rigid material, said block being pierced in the direction of its thickness by at least one intake orifice and one evacuation orifice;

a fluid discharge conduit;

an intake port in fluid communication between said intake orifice and said discharge conduit;

an evacuation conduit in fluid communication between said intake orifice and said evacuation orifice;

means for alternatively obturating the flow of liquid from said intake orifice to said discharge conduit and to said evacuation conduit;



valve means for regulation of the rate of flow of liquid through said evacuation conduit such that, when said discharge conduit is obturated, the flow through said evacuation conduit is at a value equal to that through said discharge conduit when said evacuation conduit is obturated;

whereby, by actuating said obturating means, a fluid flow introduced into said intake orifice can be carried either to said discharge conduit or, at the same flow rate, to said evacuation orifice.

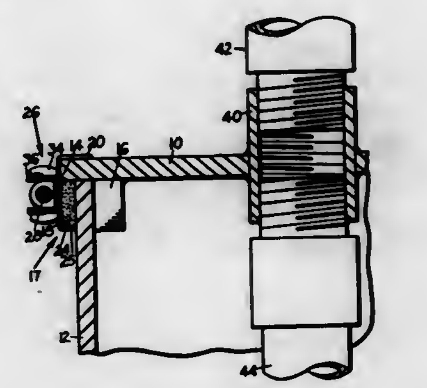
4,129,151
CAP FOR RELEASABLY COVERING WELL CASINGS

F. Gene Henson, 806 SE. 8th St., Grants Pass, Oreg. 97526

Filed Apr. 27, 1978, Ser. No. 900,471

Int. Cl.² F16L ***55/10***

U.S. Cl. 138—89 **5 Claims**



1. A cap for covering the open top of a tubular cylindrical well casing and for supporting a submersible pump, comprising:

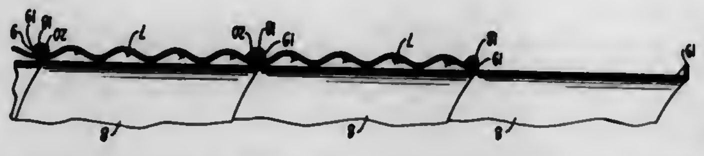
- (a) a thin planar circular cross-sectioned cover plate having a diameter which is slightly greater than the outside diameter of said well casing so as to form an overhanging lip;
- (b) an expandable, semicircular clamp ring having a nominal diameter which is substantially equal to the diameter of said cover plate;
- (c) said clamp ring having an inwardly extending upper rim which is arranged to fit over said lip of said cover plate;
- (d) a compressible annular gasket having a thickness which is greater than the depth of said overhanging lip;
- (e) said gasket being attached to said clamp ring a spaced distance below said upper rim in a manner to snugly receive said overhanging lip therebetween; and

(f) fastener means asssociated with the respective ends of said clamp ring for urging said ends together upon tightening of said fastener means so as to squeeze said gasket between said clamp ring and said well casing.

4,129,152

DOUBLE WALL HELICAL PIPE AND STRIP CONFIGURATION FOR FORMING SAME

Paul K. Davis, Alameda, Calif., assignor to Pacific Roller Die Co., Inc., Hayward, Calif.
Division of Ser. No. 401,167, Sep. 27, 1973, Pat. No. 3,857,159. This application Oct. 21, 1974, Ser. No. 516,225
Int. Cl.² F16L *9/16*
U.S. Cl. 138—154 9 Claims



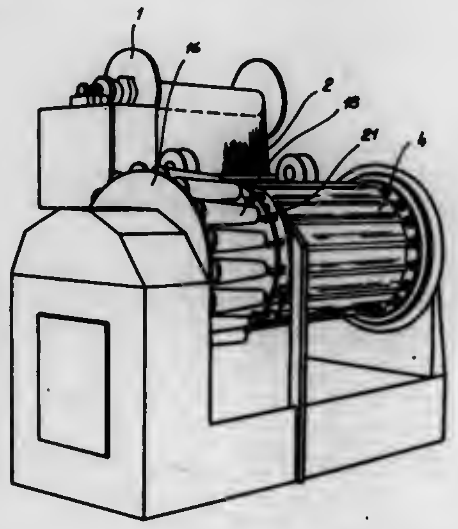
1. A configuration of strip for forming double wall helical seam pipe by curling a single workpiece, comprising in uniform cross-section:

a. a right angle flange formed along one side edge portion of said strip and projecting to a side of the plane of said strip and defining a first pipe seam element;
b. a U-shaped portion formed along the side edge portion opposite said one side edge portion and projecting to the same side of the plane of said strip as said flange for defining a second pipe seam element;
c. a U-shaped portion formed longitudinally of said strip midway between and to the same side of the plane of said strip as said first and second seam elements and defining a third seam element;
d. said third seam element being proportional for receipt of said first seam element and said second seam element being proportioned for receipt of said third seam element; and
e. strip portions respectively extending between said first seam element and said third seam element and between said second seam element and said third seam element.

4,129,153

LOOM FOR WEAVING

Danillo Bonetti, Jerago con Orago (Varese), Italy, assignor to Bentley Engineering Group, Ltd., United Kingdom
Filed Feb. 4, 1977, Ser. No. 765,616
Claims priority, application Italy, Feb. 10, 1976, 20024 A/76
Int. Cl.² D03D *47/00*
U.S. Cl. 139—28 7 Claims

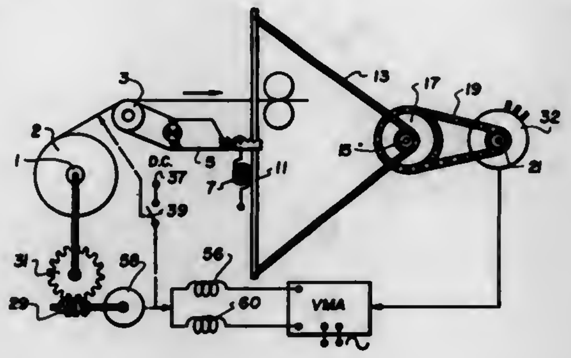


1. A loom comprising a drum rotating on a rotary shaft, means for feeding the warp threads on the drum, means for inserting weft threads into sheds formed by the warp threads, peripheral weft bobbins and means for collecting the woven cloth, said drum consisting of two first coaxial discs spaced one from the other at a predetermined distance along said shaft, a plurality of second discs arranged in rows and mounted between said two first discs, each of said second discs having a first pulley portion and a second pulley portion, the first pulley portion being of greater diameter and the second pulley portion being of smaller diameter, one of the warp threads alternately going over the pulley portion of smaller diameter and then the pulley portion of larger diameter while another warp thread alternately goes over the pulley portion of larger diameter and then the pulley portion of smaller diameter to form a crossed pattern, said second discs are carried by spindles arranged axially at equal distance from said shaft and forming a cylindrical surface coaxial with said shaft, a pair of third discs mounted on said shaft and carrying means supporting the peripheral bobbins and means for guiding and tensioning the weft threads; and means for inserting weft threads into the crossed patterns formed by said warp threads.

4,129,154

ELECTRONIC DEVICE FOR CONTROLLING THE WINDING OFF OF MATERIAL WOUND UP ON A CORE BY TENSIOMETRIC CONTROL

Dore D. Bennelli, Via Goletti 3, Borgo Ticino (Novaro), Italy (28040)
Continuation-in-part of Ser. No. 707,502, Jul. 22, 1976, abandoned. This application Jan. 5, 1978, Ser. No. 866,952
Claims priority, application Italy, Aug. 8, 1975, 26225 A/75
Int. Cl.² D03D *49/06*
U.S. Cl. 139—110 7 Claims

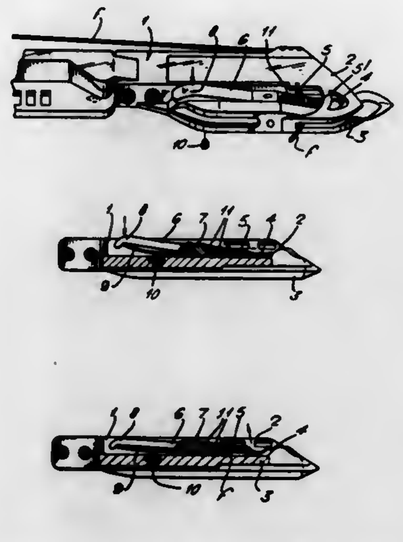


1. A low inertia control device, for the continuous electromechanical control of the winding-off of a warp yarn wound up on a warp beam by sensing the tension of the wound-off yarn, said device comprising, in combination, an induction motor; reduction gearing, with a high reduction ratio and a substantial irreversibility, drivingly connecting said induction motor to said warp beam; yarn tension detecting means engaging the wound-off warp yarn; an electronic speed control connected between a source of potential and said induction motor and operable to infinitely vary the speed of said motor and to brake said motor substantially instantaneously; and a tension-potential transducer connected to said yarn tension detecting means and forming part of said electronic speed control, and operable to control said electronic speed control to continuously modulate the potential applied to said motor in accordance with the detected tension of the wound-off warp yarn to continuously modulate the speed of said motor to maintain constant the tension of the wound-off warp yarn.

4,129,155

WEFT CARRYING GRIPPER FOR SHUTTLELESS LOOMS WITH STATIONARY WEFT SUPPLY

Alberto Merisio, Colzate (Bergamo), Italy, assignor to Somet Societa' Meccanica Tessile S.p.A., Gazzaniga (Bergamo), Italy
Filed Oct. 4, 1976, Ser. No. 729,367
Claims priority, application Italy, Oct. 3, 1975, 27927 A/75
Int. Cl.² D03D *47/20*
U.S. Cl. 139—448 2 Claims

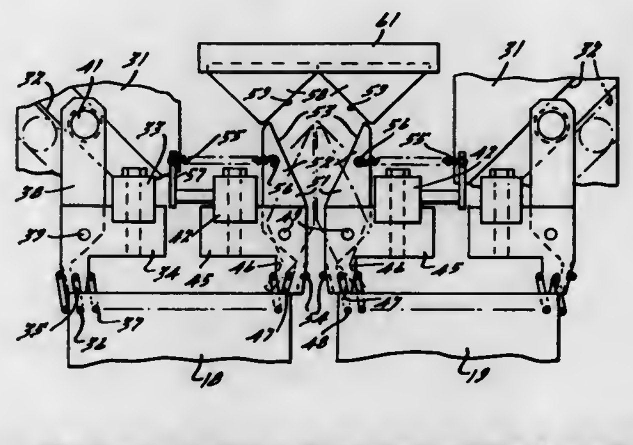


1. A weft carrying gripper for shuttleless looms with stationary weft supply, comprising a jaw stationary relative to the gripper, a rigid elongated lever pivoted intermediate its length on the gripper, a metallic lamina carried by one end of the rigid lever, a leaf spring carried by the same end of the lever and urging the lamina toward said jaw, and means acting on the other end of the lever yieldably to urge the lever in a direction in which said lamina moves toward said jaw, said lamina and said leaf spring being secured to opposite sides of the same said end of said lever.

4,129,156

METHOD AND CONSTRUCTION FOR SPIRAL WIRE BINDING OF PADS

Ernst Pfaffle, Neuffen, Germany, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Aug. 11, 1977, Ser. No. 823,634
Int. Cl.² B21F *11/00*
U.S. Cl. 140—92.4 6 Claims

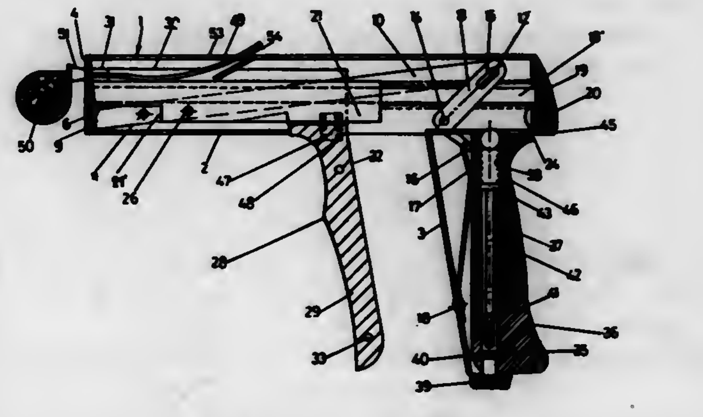


1. In a coil binding machine of the type having a carriage, means on said carriage for supporting a pair of perforated sheet groups in closely spaced side-by-side relation, and means for moving said carriagé to successive stations for aligning, coil feeding, and trim-cutting and bending said coils, the improvement comprising a trim-cutting and bending assembly for the adjacent ends of said side-by-side sheet groups, said assembly comprising a pair of fixed cutter members engageable with said adjacent coil ends, a cutter blade pivotally mounted on each cutter member and movable between a retracted position and a cutting position, spring means urging each cutter blade to its retracted position, the blades having cutting portions at one end and cam followers extending therefrom, at the other end, the pivots being located between these ends whereby the ends will swing in opposite directions, and a V-shaped cam having side surfaces simultaneously engageable with said followers to urge said blades toward their cutting positions against the action of said spring means.

4,129,157

TOOL FOR TENSIONING AND CUTTING SELF-LOCKING STRAPS

Alessandro Sciolotto, Turin, Italy, assignor to ITW Fastex Italia, Sp.A, Turin, Italy
Filed Nov. 1, 1977, Ser. No. 847,628
Claims priority, application Italy, Nov. 25, 1976, 29737 A/76
Int. Cl.² B21F *9/02*
U.S. Cl. 140—123.6 11 Claims

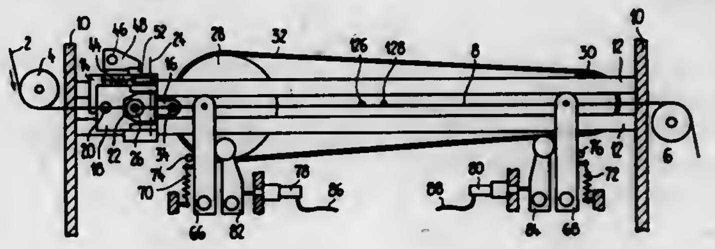


1. A tool for tightening and cutting self-locking straps, of the type comprising two jaws intended to restrain and tension the tail of the self-locking strap, a lever for actuating said jaws, a lever for actuating a blade intended to cut the exceeding portion of said strap, and a device for locking said blade actuating lever which unlocks said lever only when the tension exerted on said strap has reached a predetermined value, characterized in that one of said jaws is integral with said jaw actuating lever and the other jaw is integral with a slide adapted to slide on a guide parallel to the direction in which said strap is tensioned against the reaction of a spring interposed between said slide and a tool body, said jaw actuating lever being pivotally mounted on said slide.

4,129,158

APPARATUS FOR THE REINFORCEMENT OF LENGTHS OF COIL WIRE

Hans Schmid, Ruschlikon, Switzerland, assignor to Meteor AG, Ruschlikon, Switzerland
Filed Jun. 7, 1977, Ser. No. 804,240
Claims priority, application Switzerland, Jun. 9, 1976, 7241/76
Int. Cl.² B21F *7/00*
U.S. Cl. 140—149 9 Claims



1. Apparatus for reinforcing a length of wire by forming the wire into loops and twisting the formed loops together comprising:

first and second means for passing a continuous length of wire along a path, said first and second passing means being spaced apart a selected distance to define a substantially straight line for said path,

first and second guide means each spaced apart a selected distance from each other along said path with said first guide means being located near said first means for passing and said second guide means being located near said second means for passing,

wire transport means for engaging and carrying the wire, means for moving said wire transport means along a predetermined route including means for linearly reciprocating said transport means over said selected distance to bring consecutive lengths of wire into contact alternately with said first guide means and then with said second guide means so that said lengths of wire become supported on said guide means and extend in loops therebetween, the number of said loops corresponding to the number of traversals of said predetermined route by said wire transport means,

twisting means disposed intermediate said first and second guide means and movable into engagement with the loops for twisting the loops together.

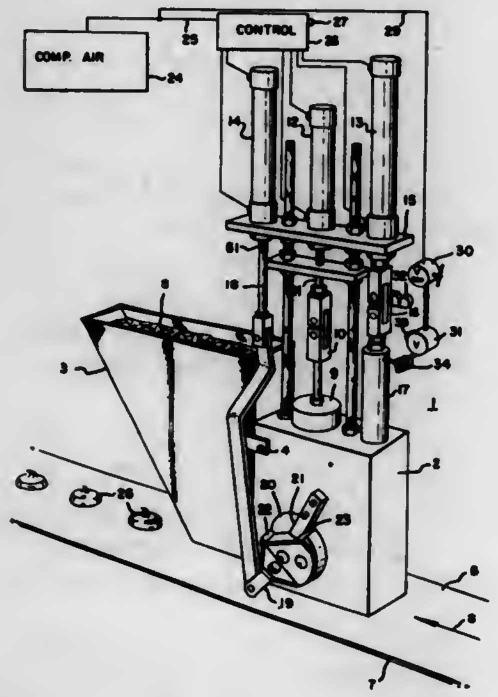
4,129,159
CHARGE FORMING AND DEPOSITING METHOD

Henry M. Whetstone, 282 St. George St., St. Augustine, Fla. 32084

Division of Ser. No. 663,901, Mar. 4, 1976. This application Jul. 27, 1977, Ser. No. 819,396

Int. Cl.^{2} B65B *3/04*

U.S. Cl. 141—1 **7 Claims**



1. In the manufacture of candy patties, the method of depositing a measured charge of sticky semi-liquid candy or the like mixture on a generally horizontal surface disposed spacedly below the open lower end of an upright cylinder in which a reciprocable piston is disposed, comprising injecting a measured charge of such semi-liquid mixture through a side opening located above said lower end into said upright cylinder under the lower end face of said piston in retracted position in said cylinder, moving said piston downwardly sufficiently to move said lower end face past said side opening and therebeyond to carry such measured charge on its said face downwardly beyond said lower end of said cylinder and continuing such downward movement until such charge comes in contact with such surface, and thereafter raising said piston away from the charge so deposited on said surface and into said retracted position with its said end face above said side opening.

4,129,160
NOZZLE FOR BLOWING MOLDS OR CORES FOR SAND CASTING

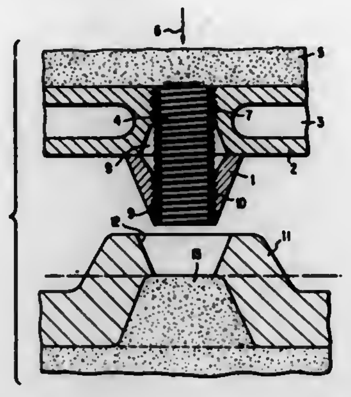
Henry Lenglet, Les Clayes sous Bois, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Oct. 21, 1977, Ser. No. 844,172

Claims priority, application France, Nov. 9, 1976, 76 33686

Int. Cl.^{2} B65D *25/40;* B22C *15/24*

U.S. Cl. 141—388 **7 Claims**



1. A nozzle for blowing molds for sand casting in sand core boxes which comprises:

a filling plate, including a threaded passage of predetermined pitch and diameter provided therein, for injecting sand into such sand core boxes, said nozzle being secured to said filling plate and also including a threaded passage provided therein having the same pitch and diameter as said threaded passage of said filling plate; and,

a helical spring, with contacting turns of diameter and pitch corresponding to that of said threaded passage of said filling plate and said nozzle, screwed into said threaded passage of said filling plate and said nozzle so as to form a flexible coupling therebetween.

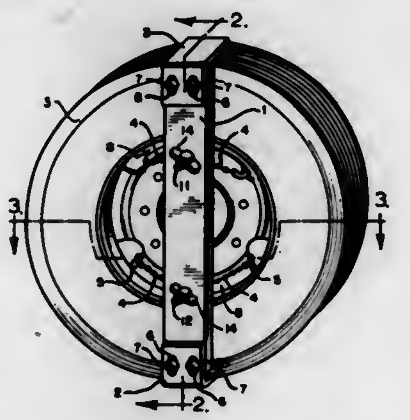
4,129,161
TRACTION DEVICE FOR TIRES

Roberto Quintana, 1904 N. 74th Ct., Elmwood Park, Ill. 60635

Filed Oct. 13, 1977, Ser. No. 841,744

Int. Cl.^{2} B60C *27/20, 27/04*

U.S. Cl. 152—225 R **4 Claims**



1. A tire traction device for use primarily with wheels of the type having symmetrically opposed pressed metal rim support members which comprises:

a mounting bar for traversing the outside of a wheel with the center of the bar positionable approximately next to the center of the wheel and the ends of the bar extending approximately to the tread of the tire;

a traction shoe connected to each end of the mounting bar at right angles to the bar so as to overlie the tire tread;

a first and a second flexible line segment;

a hook attached to the end of each of the first and second line segments, one hook being capable of engaging with the edge of a first rim support member of the pressed metal type and disposed to the left of said mounting bar, and the other hook being capable of engaging with the edge of the first rim support member and disposed to the right of said mounting bar;

a third and a fourth flexible line segment;

a hook attached to the end of each of the third and fourth line segments, one hook being capable of engaging with the edge of a second rim support member symmetrically opposed to the first rim support member and disposed at the left side of said mounting bar, and the other hook being capable of engaging with the edge of the second rim support member and disposed at the right side of said mounting bar; and

means mounted on the mounting bar and attached to the ends of the flexible line segments opposite the hooks for tensioning the segments between the wheel and the mounting bar, whereby the traction device is secured to the wheel.

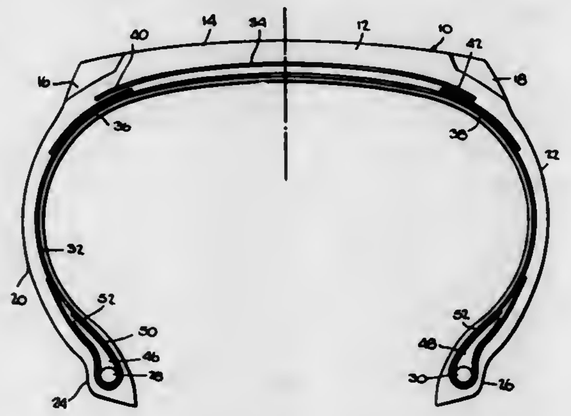
4,129,162
PNEUMATIC TIRE

Marion A. DeWitt, North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 12, 1976, Ser. No. 704,635

Int. Cl.^{2} B60C *9/06*

U.S. Cl. 152—354 RB **5 Claims**



1. A pneumatic tire comprising a ground contacting tread portion, a pair of sidewall portions extending radially inwardly from the axial outer edges of said tread portion and terminating at each radial inner extremity in a bead portion, a single carcass ply of tire cord fabric extending circumferentially about the tire with the cords in said carcass ply extending continuously from bead to bead in a generally radial direction in the sidewall portions and at an angle no greater than 45° with respect to the mid-circumferential centerplane of the tire, said carcass ply being further characterized in that each end thereof is wrapped around the respective bead portions with a turn-up of said carcass ply extending approximately 1.5 inches above the centerline of said bead portion, a flipper section wrapped around each of said bead portions and which extends to a height approximately 1.5 inches above the centerline of said bead portion, a single belt ply of tire cord fabric extending circumferentially about the tire and terminating in the axial direction adjacent the axial outer edges of the tread portion, said belt ply having continuous cords extending from one side of the belt to the other side, and a pair of shoulder strips extending circumferentially about the tire at each axial outer edge of said belt ply and having a portion thereof overlapping with said belt ply and wherein the angle formed by the cords of said shoulder strips with respect to the mid-circumferential centerplane is at least 5° greater than the angle formed by the cords of said belt ply with respect to the mid-circumferential centerplane.

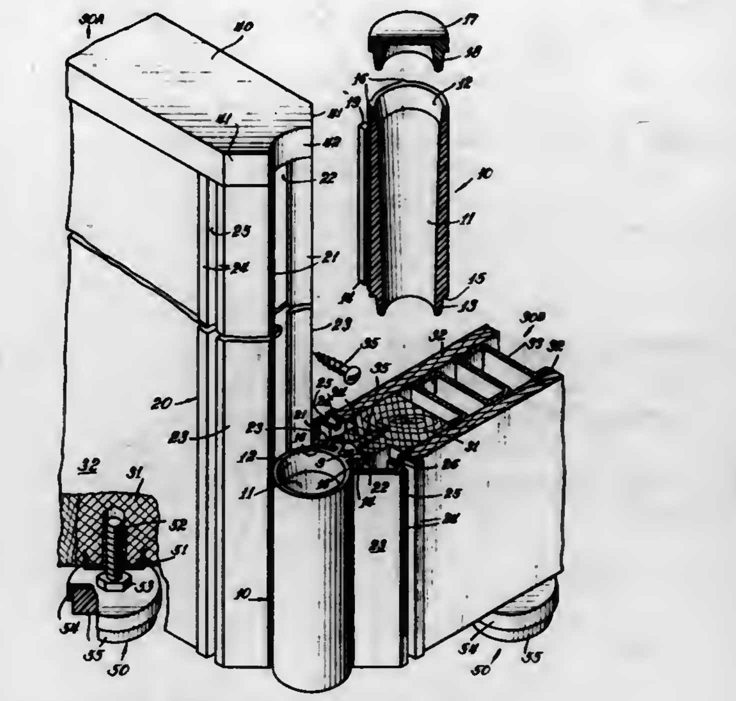
4,129,163
PANEL ASSEMBLY AND COMPONENTS THEREOF

Bernard L. Johnson, Bellevue, Wash., assignor to The Haws Corporation, Elkhart, Ind.

Filed Sep. 17, 1975, Ser. No. 614,262

Int. Cl.^{2} A47G *5/00*

U.S. Cl. 160—135 **44 Claims**



1. A panel assembly which comprises

(1) panels;

(2) a segmented cylindrical column the segments of which are individually rotatable;

(3) panel connecting means on each segment;

(4) segment connecting means on each panel;

(5) said panels being connected to different segments; and

(6) said segment connecting means having an arcuate portion conforming to the curvature of said column, which subtends an angle of 360/X° wherein X is a small integer of at least 2, and side portions extending out radially from the sides of said arcuate portion and forming an angle between them of 360/X°, whereby up to X panels can be attached to said column and when only two panels are attached, one can be rotated with respect to the other through an angle of 360 (1−2/X) degrees.

4,129,164
VACUUM FORMING OR REDUCED-PRESSURE MOULDING

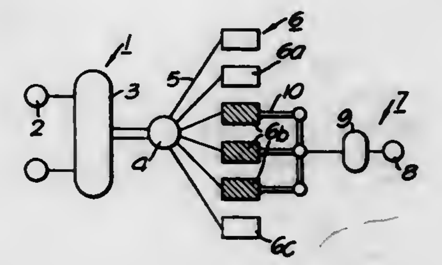
Kiyoshige Torikai, Mihara, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1977, Ser. No. 762,184

Claims priority, application Japan, Mar. 15, 1976, 51-29891[U]

Int. Cl.^{2} B22C *15/22;* B22D *27/16, 47/02*

U.S. Cl. 164—7 **4 Claims**



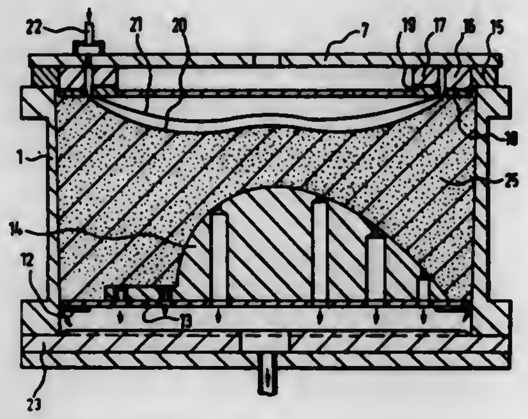
1. In a method of reduced-pressure molding of the type wherein a plurality of mold flasks are sequentially moved along a path through a mold shaping position whereat a mold is formed within each flask, a mold pouring position whereat

molten metal is poured into the mold formed within each flask to form a casting, a mold disintegration station whereat the mold in each flask is removed from the casting formed therein, and back to said mold shaping position, and wherein the interiors of said plurality of flasks are subjected to a reduced pressure during movement along said path, the improvement wherein said reduced pressure is applied by the steps comprising:

subjecting the interior of each said flask, during periods of movement thereof along said path through positions other than said mold pouring position, to a first reduced pressure operation of a first, weaker evacuation means; and

subjecting the interior of each said flask, only during the period of movement thereof along said path through said mold pouring position, to a second, more reduced pressure by operation of a second, stronger evacuation means.

4,129,165
PREPARATION OF FOUNDRY MOULDS AND CORES
Albert Edwards, Peterborough, England, assignor to Baker Perkins Holdings Limited, Peterborough, England
Filed Nov. 2, 1977, Ser. No. 847,931
Claims priority, application United Kingdom, Nov. 2, 1976, 45469/76
Int. Cl.^{2} B22C *9/00*
U.S. Cl. 164—7 12 Claims



1. A method of preparing a foundry form by a cold-set process, comprising:

introducing a mixture of foundry sand and a binder into a form box;

covering an open end of the form box with sealing means comprising a first, fluid-pervious, flexible diaphragm backed by a second, impervious, flexible diaphragm;

applying suction to the form box to draw the second diaphragm against the first diaphragm and the first diaphragm against the surface of the mixture in the form box to compact the mixture; and

subsequently introducing a fluid hardening medium between the first and second diaphragms so that it passes through the first diaphragm, permeates the mixture within the form box, and causes the binder to harden the mixture.

4. Apparatus for preparing a foundry form, comprising:

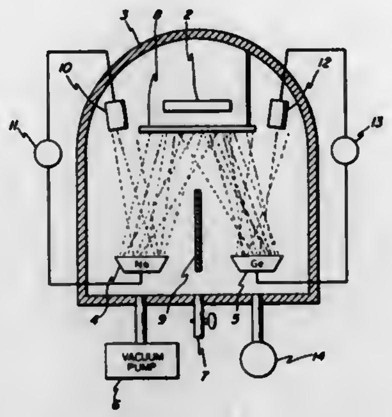
a form box a pair of opposed sealing means for sealing against opposite ends of the form box, the first sealing means covering an open end of the form box and comprising a first, fluid-pervious, flexible diaphragm backed by a second, impervious, flexible diaphragm, and the second sealing means sealing against at least one aperture in the opposite end of the form box;

means adjacent to the top of the form box for retaining the first and second sealing means against the respective ends of the form box;

means associated with the form box for applying suction to the second sealing means to draw the second diaphragm against the first diaphragm and the first diaphragm against the surface of the mixture in the form box to compact the mixture; and

means associated with the form box for subsequently introducing a fluid hardening medium between the first and second diaphragms so that it passes through the first diaphragm, penetrates the mixture within the form box, and causes the binder to harden the mixture.

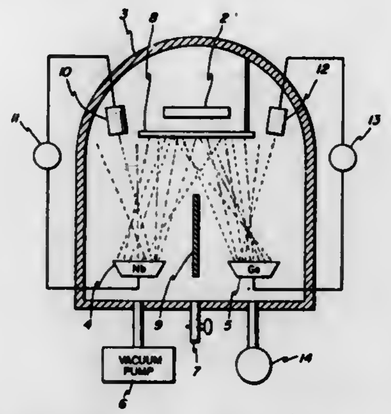
4,129,166
NB$_3$GE SUPERCONDUCTIVE FILMS GROWN WITH AIR
Raymond A. Sigsbee, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Jul. 18, 1977, Ser. No. 816,482
Int. Cl.^{2} B23P *3/00;* C23C *27/02*
U.S. Cl. 164—46 3 Claims



1. A control method of preparing a superconducting film having a critical temperature T_c of at least about 19° K. which comprises providing a vacuum chamber with a substrate having at least one substantially smooth surface on which said film is to be deposited, said substrate being at least substantially inert under the conditions of deposition, providing said chamber with a source of niobium and germanium, means for monitoring of niobium flux and germanium flux individually, providing said chamber with a source of air, protecting said substrate surface with a movable protective means which prevents niobium and germanium flux from contacting it, reducing the pressure in said chamber to produce an evacuated chamber with a residual pressure no greater than about 10^{-5} mm Hg, heating said substrate to a temperature ranging from 750° C. to 1100° C., vaporizing said niobium and germanium to produce an impinging flux composition ranging from about 1 part to about 3 parts of niobium to about 1 part of germanium, allowing said residual pressure to stabilize at a level no greater than about 10^{-5} mm Hg, introducing by a controlled leak of air into said evacuated chamber an incremental air pressure which raises said stabilized pressure in said chamber at least about 0.1×10^{-5} mm Hg, removing said protective means from said substrate, and impinging said substrate with said niobium and germanium composition forming an adherent superconductive Nb$_3$Ge film thereon ranging in composition up to about 2 atomic % from stoichiometric composition, for a constant rate of impingement of said niobium and said germanium on said substrate with increasing substrate temperature from 750° C. to 1100° C. said incremental air pressure increasing up to 5×10^{-4} mm Hg and said amount of niobium decreasing down to about 1 part, said film having at least a thickness sufficient to form a continuous film.

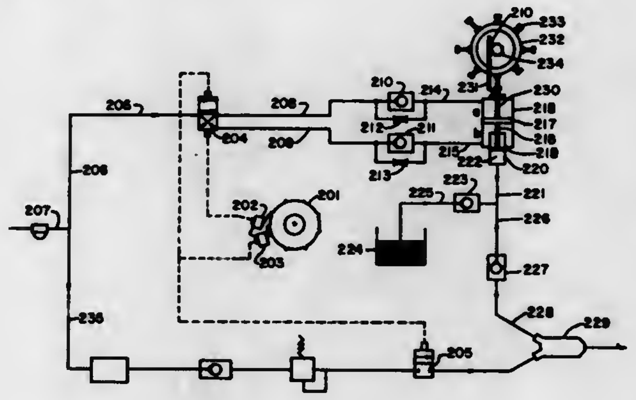
4,129,167
NB$_3$GE SUPERCONDUCTIVE FILMS GROWN WITH NITROGEN
Raymond A. Sigsbee, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Jul. 18, 1977, Ser. No. 816,483
Int. Cl.^{2} B23P *3/00;* C23C *27/02*
U.S. Cl. 164—46 3 Claims

1. A control method of preparing a superconducting film having a critical temperature T_c of at least 17.5° K. which comprises providing a vacuum chamber with a substrate having at least one substantially smooth surface on which said film is to be deposited, said substrate being at least substantially inert under the conditions of deposition, providing said chamber with a source of niobium and germanium, means for monitoring of niobium flux and germanium flux individually, providing said chamber with a source of nitrogen, protecting said substrate surface with a movable protective means which prevents niobium and germanium flux from contacting it, reducing the pressure in said chamber to produce an evacuated chamber with a residual pressure no greater than about 10^{-5} mm Hg, heating said substrate to a temperature ranging from 750° C. to 1100° C., vaporizing said niobium and germanium to produce an impinging flux composition ranging from about 1 part to about 3 parts of niobium to about 1 part of germanium, allowing said residual pressure to stabilize at a level no greater



than about 10^{-5} mm Hg, introducing by a controlled leak of nitrogen into said evacuated chamber an incremental nitrogen pressure which raises said stabilized pressure in said chamber at least about 0.1×10^{-5} mm Hg, removing said protective means from said substrate, and impinging said substrate with said niobium and germanium composition forming an adherent superconductive Nb$_3$Ge film thereon ranging in composition up to about 2 atomic % from stoichiometric composition, for a constant rate of impingement of said niobium and said germanium on said substrate with increasing substrate temperature from 750° C. to 1100° C. said incremental nitrogen pressure increasing up to 5×10^{-4} mm Hg and said amount of niobium decreasing down to about 1 part, said film having at least a thickness sufficient to form a continuous film.

4,129,168
CATALYST GAS GENERATING CIRCUIT FOR ROTARY CORE MAKING MACHINE
Anatol Michelson, Sarasota, Fla., assignor to Ashland Oil, Inc., Ashland, Ky.
Division of Ser. No. 784,939, Apr. 5, 1977, Pat. No. 4,083,396. This application Jan. 20, 1978, Ser. No. 871,131
Int. Cl.^{2} B22C *9/14*
U.S. Cl. 164—159 2 Claims



1. Apparatus for supplying predetermined varied quantities of a gaseous curing agent to a rotary core making machine having a plurality of core boxes comprising:

(a) a first cylinder;

(b) a first piston adapted to reciprocate within said first cylinder;

(c) a source of compressed non-reactive gas;

(d) means for controlling the flow of said non-reactive gas from said source to either side of said first piston and for exhausting gas simultaneously from the other side of said piston in synchronization with the rotation of said core making machine, said means being connected to said source of compressed gas and to each end of said first cylinder;

(e) first valve means having an inlet and an outlet each adapted to be controlled electrically;

(f) a second cylinder aligned coaxially with said first cylinder;

(g) a first piston rod connecting at one end to one side of said first piston and extending into the end of said second cylinder;

(h) a second piston adapted to reciprocate within said second cylinder, attached on one side to the other end of said first piston rod and defining with its other side a chamber in said second cylinder;

(i) a rotatable wheel positioned with its axis normal to the axis of said first and second cylinder;

(j) a plurality of stops corresponding in number to said plurality of core boxes mounted radially on the periphery of said wheel, said stops adaptable to be varied in length and adapted to be aligned coaxially with said seond piston rod;

(k) a sprocket wheel attached coaxially to said rotatable wheel;

(l) a second piston rod connected at one end to the other end of said first piston;

(m) a pawl rod fixed to the other end of said second piston rod, extending in the same plane as, and tangentially to, said sprocket wheel and adapted at its free end to engage said sprocket wheel when moved axially toward said first cylinder;

(n) a first conduit connected between the chamber in said second cylinder and a reservoir of liquid catalyst;

(o) a first check valve intermediate the ends of said first conduit;

(p) a vaporizer nozzle;

(q) a second conduit connected at one end to said first conduit intermediate said first check valve and said chamber in said second cylinder and connected at its other end to said vaporizer nozzle;

(r) a third conduit connecting said source of compressed non-reactive gas and the inlet of said first valve means;

(s) and a fourth conduit connecting the outlet of said second valve means and the inlet of said vaporizer nozzle; and

(t) a fifth conduit connecting the outlet of said vaporizer nozzle to said core making machine.

4,129,169
APPARATUS FOR MAKING SHELLS FROM THERMOSETTING LIQUID COMPOUNDS
Roman Biedacha; Wladyslaw Kurdziel; Janusz Kaczor, all of Cracow; Adam Smeder, Wegrace; Jacek Kolaczkowski, Cracow; Tadeusz Olszowski, Cracow; Adam Nawrocki, Cracow, and Janina Rzeszut, Cracow, all of Poland, assignors to Przedsiebiorstwo Projektowania I Realizacji Inwestycji przemyslu Maszynowego "Bipromasz", Instytut Odlewnictwa, Cracow, Poland
Division of Ser. No. 739,535, Nov. 3, 1976. This application Jul. 6, 1977, Ser. No. 813,428
Claims priority, application Poland, Nov. 10, 1975, 184620
Int. Cl.^{2} B22C *13/08*
U.S. Cl. 164—166 2 Claims

1. Apparatus for making shells from liquid thermosetting compounds comprising:

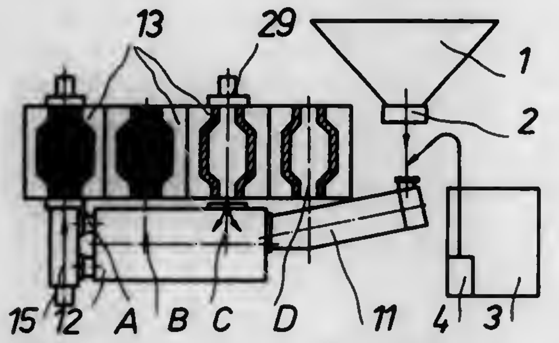
(a) a mould;

(b) a sand container;

(c) a liquid constituent container for a liquid constituent which includes a thermosetting compound;

(d) means operatively coupled with said sand container and said liquid constituent container for forming a molding composition from the sand and the liquid constituent in said containers, said means including a first mixing unit receiving sand and liquid constituent from said containers, a second mixing unit connected with an outlet end of said first mixing unit and arranged to receive excess thermosetting compound from said mould, a sand feeder for feeding sand from said sand container into said mixing unit, and a proportioner unit for proportioning the liquid constituent to be combined with the sand in said first mixing unit, said proportioner unit comprising a movable container body in said liquid constituent container for dispensing a quantity of the liquid constituent into said first mixing unit in response to displacement of said container body, and a fixedly mounted cover having an aperture which communicates with said first mixing unit arranged to cooperate with said container body in dispensing the liquid constituent into said first mixing unit, the liquid constituent being forced through said aperture and into said first mixing unit in response to displacement of said container body towards said cover, and the quantity of the liquid constituent dispensed into said first mixing unit being dependent upon the initial spacing between said container body and said cover; and

(e) a delivery unit positioned for introducing the molding composition into said mould, said delivery unit comprising a housing having a first passage which communicates with said second mixing unit to permit introduction of the molding composition into said housing and a second passage which also communicates with said second mixing unit to permit return of excess molding composition into said second mixing unit, said delivery unit including a conical member interiorly of said housing and a delivery head for the introduction of the casting composition into said mould, said delivery unit further comprising a movable container member having an open end which faces said conical member, said container member being movable from a first position in which said open end is spaced from said conical member to a second position in which said open end abuts said conical member, said container member having a sliding bottom movable from a position adjacent said open end to a position remote therefrom, said delivery unit also comprising a motor unit for displacing said container member and said sliding bottom thereof, a first damper movable between an open position in which said delivery head communicates with said open end of said container member and a closed position in which said delivery head is closed off from said open end of said container member, and a second damper having an open position in which said second passage communicates with said open end of said container member and a closed position in which said second passage is closed off from said open end of said container member, said second damper having a shaft, said delivery unit comprising a cam secured to said shaft, and a biasing element interposed between said cam and said delivery head and operative for biasing said delivery head into engagement with said mould, said container member being filled with the molding composition when said container member is in said first position and said sliding bottom is remote from said open end of said container member, and the molding composition being delivered into said mould via said delivery head by moving said container member to said second position, moving said first damper to said open position thereof and displacing said sliding bottom to a position adjacent said open end of said container member.



4,129,170

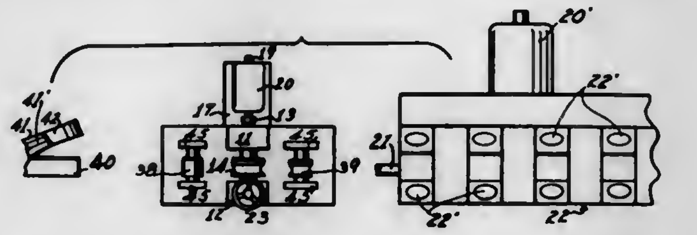
APPARATUS FOR PRODUCING A HOT-FORMED PRODUCT

Daniel B. Cofer; George C. Ward, and Dale D. Proctor, all of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Continuation of Ser. No. 323,471, Jan. 15, 1973, abandoned, which is a continuation of Ser. No. 816,127, Apr. 14, 1969, abandoned, which is a division of Ser. No. 390,666, Aug. 19, 1964, Pat. No. 3,317,994, which is a continuation of Ser. No. 613,245, Feb. 1, 1957, abandoned. This application May 24, 1977, Ser. No. 800,070

Int. Cl.^{2} B22D *11/12*

U.S. Cl. 164—270 14 Claims



1. Apparatus for continuously casting and hot-forming a non-homogenized copper bar comprising:

casting means for continuously casting a cast bar of copper that is within the range of copper's hot-forming temperatures and which possesses a columnar dendritic structure,

means remote from said casting means for initially substantially reducing the cross-sectional area of the cast bar of copper by a single compression and of a degree sufficient to substantially completely destroy the columnar dendritic structure in the cast bar of copper,

said means for reducing comprising one roll stand having a substantially elliptical rolling channel for restricting lateral movement of the cast bar and for providing a linear velocity gradient thereacross which tend to substantially prevent cracking or splitting of the cast bar during said reduction, and

hot-forming means for subsequently hot-forming the reduced cross-section cast copper bar while it is still within the range of copper's hot-forming temperatures, said cast bar temperatures having been established in said casting means.

7. Apparatus for continuously casting and hot-forming a non-homogenized copper bar comprising:

casting means for continuously casting a cast bar of copper that is within the range of copper's hot-forming temperatures and which posseses an as-cast grain structure,

means remote from said casting means for initially substantially reducing the cross-sectional area of the cast bar of copper by at least 36% in a single compression, said compression being sufficient to substantially completely destroy the as-cast grain structure in the cast bar of copper,

said means for reducing comprising one roll stand having a rolling channel including means for restricting lateral movement of the cast bar and for providing a linear velocity gradient thereacross which tend to substantially prevent cracking or splitting of the cast bar during said reduction, and

hot-forming means for subsequently hot-forming the reduced cross-section cast copper bar while it is still within the range of copper's hot-forming temperatures, said cast bar temperatures having been established in said casting means.

4,129,171

INSTALLATION FOR HANDLING SOCKET CORES FOR A CENTRIFUGAL CASTING MACHINE

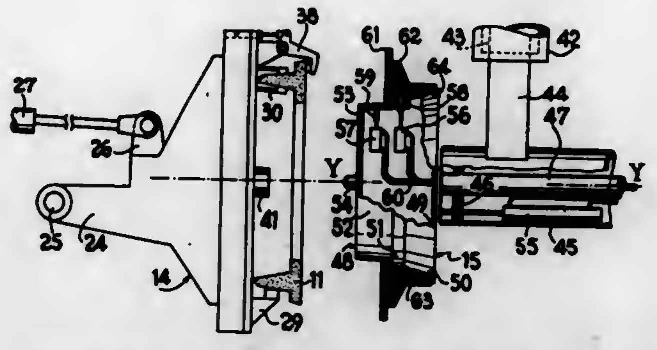
Michel Pierrel, and Roger Malivoir, both of Pont-a-Mousson, France, assignors to Pont-a-Mousson S.A., Nancy, France

Continuation of Ser. No. 689,412, May 24, 1976, abandoned. This application Nov. 14, 1977, Ser. No. 851,318

Claims priority, application France, Jun. 27, 1975, 75 20238

Int. Cl.^{2} B22D *13/00, 33/04*

U.S. Cl. 164—292 20 Claims



1. An installation for the mechanical handling of a socket core which is of revolution about an axis and intended to be fixed in a socket end of a centrifugal casting mold which is rotatable about an axis, the installation comprising, in combination with said mold, a first support having an axis for carrying the core in a position coaxial with the first support and pivotable about a fixed pivot axis between a horizontal first position in which first position the axis of the first support is vertical and a vertical second position in which second position the axis of the first support is horizontal, means for positioning the core coaxially with the first support in said horizontal first position of the first support and releasable means for maintaining the core on the first support in said coaxial position, mechanical core carrying means for conveying the core along from a core producing station to the first support and placing the core on the first support to engage said means for positioning the core, annular core-backing means for mounting on the socket end of the mold and retaining the core in position on the socket end during casting, releasable holding means combined with the socket end of the mold for engagement with and holding the core-backing means on the socket end during casting, transferring means for combining the core and the core-backing means and transferring the core combined with the core-backing means from the first support to the socket end of the mold for mounting the core and core-backing means on the socket end by the action of said holding means and leaving the core-backing means on the socket end during casting, returning to the core-backing means after casting and transferring the core-backing means to a position for receiving a new core alone from the first support, said transferring means consisting essentially of a second support having a horizontal axis for supporting the core and the core-backing means in a removable manner in positions substantially coaxial with the second support, means guidingly carrying the second support and allowing the second support to the movable between a first position in which the second support is adjacent and coaxial with the first support in said second position of the first support to permit transferring the core alone from the first support to the second support and putting it in abutment with the core-backing means on the second support and a second position in which the second support is adjacent said socket end and the axis of the second support is in axial alignment with said axis of rotation of the mold for transferring the core and the core-backing means to said socket end, first releasable gripping means carried by the second support for retaining the core on said second support and second releasable gripping means carried by the second support for retaining the core-backing means on the second support during the movement of the second support between said first and second positions of the second support, the two supports being provided with interengageable centering means operative independently of the core in said first position of the second support and said second position of the first support, said means carrying the second support allowing the second support to be movable transversely of said axis of rotation of the mold.

4,129,172

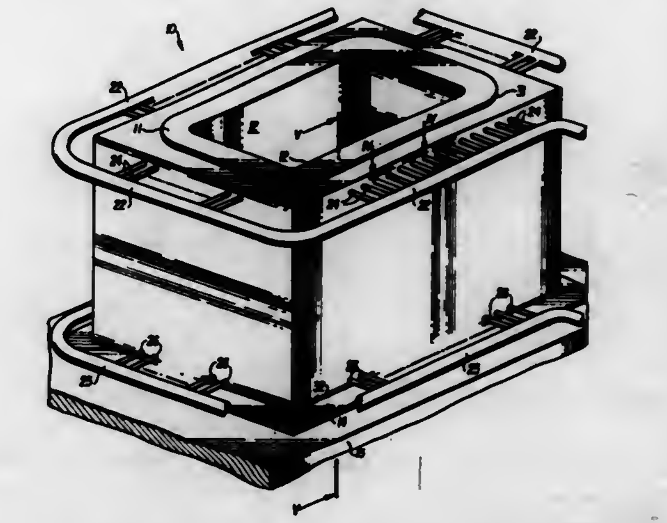
MOLD FOR ELECTROSLAG REMELTING PROCESS

William F. Snee, Jr., Coatesville, Pa., assignor to Lukens Steel Company, Coatesville, Pa.

Filed Oct. 27, 1976, Ser. No. 736,239

Int. Cl.^{2} B22D *27/04, 11/124*

U.S. Cl. 164—348 13 Claims



1. A monolithic mold for use in the electroslag remelting process, the mold comprising a copper liner having walls for forming an ingot of substantially uniform chemistry and physical characteristics throughout, said walls having planar-shaped inboard surfaces and vertical heat exchanging conduits provided along their outboard surfaces, said vertical conduits being defined by spaced ribs for substantially the vertical height of said walls, said ribs having a width of 1.5 to 6.0 times the width of the adjacent said conduit, fluid intake and discharge means operatively associated with said conduits to provide a vertical disposed flow of cooling fluid through said conduits, the spacing of the ribs together with their thickness and depth being such whereby a substantial portion of each said rib is maintained at a sufficiently low temperature by said cooling fluid to sustain the rigidity of said liner and to prevent substantial distortion from taking place by said walls during the electroslag refining process.

4,129,173

CONTINUOUS CASTING PLANT

Werner Scheurecker, Linz, and Reinhard Hargassner, Leonding, both of Austria, assignors to Vereinigte Osterreichische Eisen-und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Jun. 24, 1977, Ser. No. 809,693

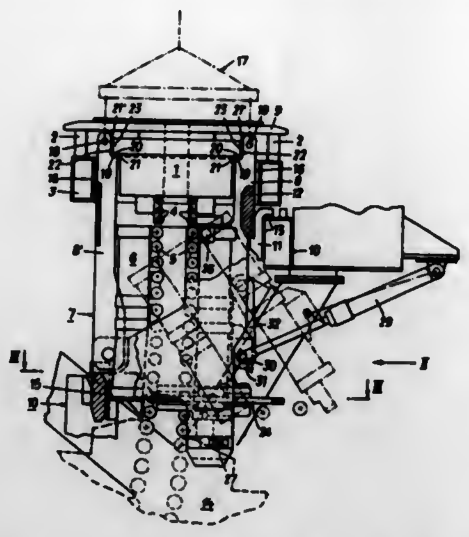
Claims priority, application Austria, Jul. 8, 1976, 4999/76

Int. Cl.^{2} B22D *11/14*

U.S. Cl. 164—442 7 Claims

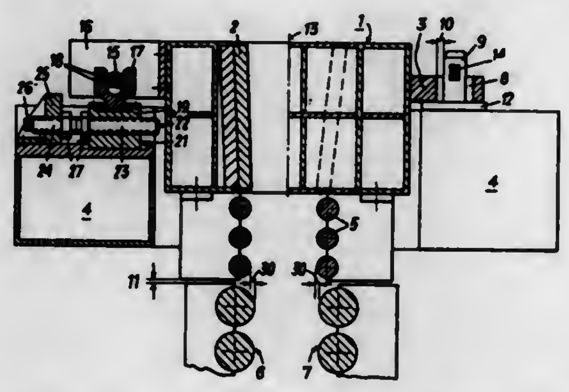
1. In a continuous casting plant of the type including a frame-shaped lifting table, a mould insertable in said lifting table and reciprocated by said lifting table, a strand guide means comprised of strand guide parts following the mould in the extraction direction and a carrying frame surrounding the strand guide part following the mould for removing the strand guide part from the plant, the improvement which is characterized in that the carrying frame, the strand guide part following the mould and the mould as a unit are installable in and removable from the continuous casting plant independent of the lifting table because said carrying frame is arranged with play within said frame-shaped lifting table and is vertically movable through the frame-shaped lifting table together with said strand guide part following the mould, and supporting faces

are provided on said mould and on said carrying frame opposite each other with play, which supporting faces engage each other when the carrying frame is lifted so as to lift the mould along with the carrying frame.



4,129,174
ARRANGEMENT FOR ADJUSTING AND SECURING A BOTTOMLESS MOULD

Günter Holleis, Linz, and Reinhard Hargassner, Leonding, both of Austria, assignors to Vereinigte Österreichische Eisen-und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria
Filed Jan. 7, 1977, Ser. No. 757,461
Claims priority, application Austria, Jan. 16, 1976, 265/76
Int. Cl.² B22D *11/124, 11/00*
U.S. Cl. 164—443 **16 Claims**

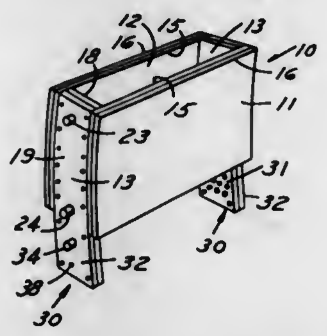


1. In an arrangement for adjusting and securing a bottomless mould, including a water box, on a mould lifting table in a continuous casting plant for strand including supporting and guiding paths arranged to follow said mould to support the strand at opposite sides thereof, and sets of interacting centering means provided on the mould lifting table and on the mould for centering them with respect to each other, the improvement comprising:
displacement means for displacing one centering means of each set in a straight line direction perpendicular to the supporting and guiding paths so as to displace the mould perpendicular to the supporting and guiding path;
mounting means for mounting the mould with lateral play relative to the mould lifting table; and
bracing means for fixing the mould on the mould lifting table.

4,129,175
CONTINUOUS SLAB CASTING MOLD

Floyd R. Gladwin, 21000 E. River Rd., Grosse Ile, Mich. 48138
Filed Aug. 1, 1977, Ser. No. 820,462
Int. Cl.² B22D *11/124, 27/04*
U.S. Cl. 164—444 **4 Claims**

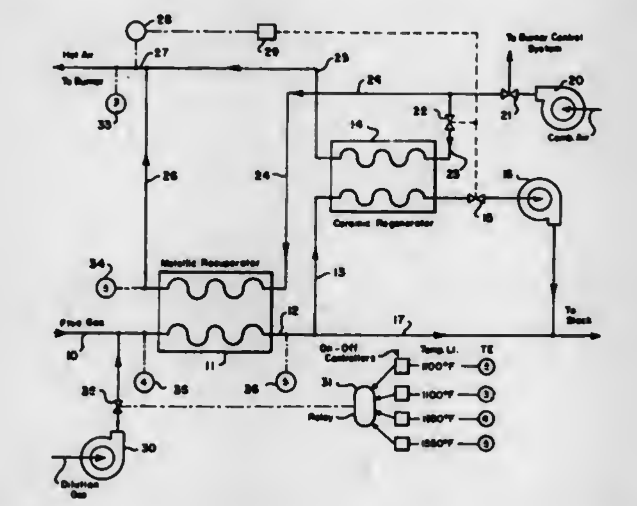
1. In a continuous slab casting mold formed of a pair of spaced apart mold front and rear plate members and a pair of mold side plate members secured together to form an open top and bottom, roughly rectangular shaped in cross-section, mold for receiving molten metal through the open top and continuously casting metal slab through the mold and downwardly out through the open bottom thereof, and each of said mold side plate members including an interior plate for contacting and molding the metal slab side edges, and an exterior backing plate for the interior plate, the improvement comprising:
an extension plate formed on the lower edge of and depending downwardly a considerable distance from each of the side plate members;
and said extension plates each including a face plate having an interior face which faces toward the slab side edge extending beneath the mold bottom and which is substantially co-planar with and forms a depending extension of the interior surface of the mold side member interior plate;



and said extension plates each including an exterior back plate secured to and backing its respective face plate;
a hollow chamber within each of said extension plates and formed by a hollowed out portion in the backing plate which is covered by its respective face plate, and holes communicating said chamber with said interior surface, and a cooling fluid inlet connected to said hollow chamber for continuously flowing coolant through the chamber and holes to the adjacent slab edge surface;
and including a horizontal groove near the bottom edge of the mold extending the width of and formed in the interior surface of each extension plate for forming a barrier against coolant rising upwardly into the mold from the extension plates.

4,129,176
HEAT RECOVERY SYSTEMS

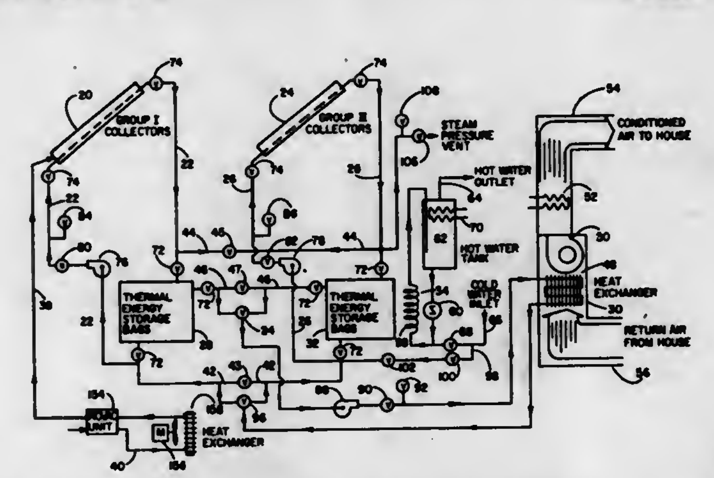
Fred M. Heyn, Export; Ching-Feng Yin, Pittsburgh; Gordon L. Hanson, Bethel Park, and Robert C. Schreck, Monroeville, all of Pa., assignors to Thermal Transfer, division of Kleinewefers, Monroeville, Pa.
Filed Jun. 9, 1977, Ser. No. 805,187
Int. Cl.² F28F *27/02*
U.S. Cl. 165—7 **8 Claims**



1. A heat recovery system comprising a flue gas conduit receiving hot flue gas from a furnace or the like, a metallic recuperator having means for receiving hot flue gas from said flue gas conduit, a ceramic regenerator having means for selectively receiving at least a part of the hot flue gas leaving the metallic recuperator, by-pass means in parallel with the ceramic regenerator receiving any of the flue gas leaving the metallic recuperator which does not go through the ceramic regenerator, stack means receiving the flue gas from the by-pass means and the ceramic regenerator means for discharge to the atmosphere, means delivering air to be heated in parallel to the ceramic regenerator and the metallic recuperator, and conduit means receiving and combining heated air from the ceramic regenerator and the metallic for delivery to a point of use.

4,129,177
SOLAR HEATING AND COOLING SYSTEM

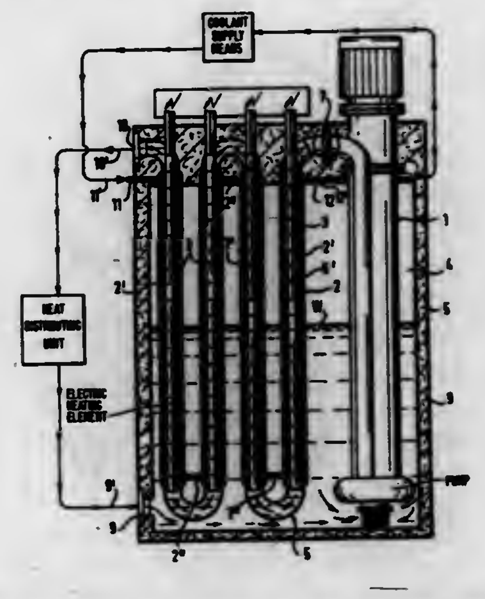
Thomas P. Adcock, 300 Meadowbrook Dr., Huntsville, Ala. 35803
Filed Jun. 6, 1977, Ser. No. 804,022
Int. Cl.² F25B *29/00*
U.S. Cl. 165—48 S **12 Claims**



1. A solar heating and cooling system comprising:
a. a primary piping system for containing and pumping a primary heat exchange media, the system including a first piping network and a first pump therefor, a second piping network and a second pump therefor, and first valve means for selectively interconnecting said first and second piping networks;
b. a first primary heat exchanger in heat exchange relationship with the primary media transmitted through said first piping network;
c. a second primary heat exchanger in heat exchange relationship with the primary media transmitted through said second piping network;
d. a first media storage reservoir connected to said first piping network and isolatable from said second piping network;
e. a second media storage reservoir connected to said second piping network and isolatable from said first piping network;
f. a first solar heat collector means thermally coupled in heat exchange relationship to said first piping network such that heat from the sum can be transferred to the primary media therein;
g. a cooling subsystem for chilling a secondary media, said cooling subsystem including a cooling unit for cooling the secondary media, a secondary piping system connected to said cooling unit, a secondary heat exchanger having a primary section connectable to said first piping network and a secondary section in heat exchange relationship to said secondary piping system, and means for causing the secondary coolant to flow through said second piping system from said cooling unit to and through said secondary section of said heat exchanger; and
h. a second solar heat collector means thermally coupled in heat exchange relationship to said second piping network such that heat from the sun can be transferred to the primary media therein.

4,129,178
HEAT EXCHANGE INSTALLATION FOR HEATING AND COOLING A LIQUID HEAT CARRIER MEDIUM

Hans Hucke, Essigweg 6, CH-4133, Pratteln-Basel, Switzerland
Filed Jul. 19, 1976, Ser. No. 706,841
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1975, 2532978
Int. Cl.² F25B *29/00;* F28D *15/00;* H05B *3/82;* B67D *5/62*
U.S. Cl. 165—61 **5 Claims**



1. A heat transfer arrangement for heating and cooling a liquid heat carrier medium comprising: a tank for receiving a quantity of liquid heat carrier medium, said tank having an intake and outlet; a plurality of straight parallel pipes within said tank; said pipes being connected in series; said series-connected pipes forming a flow path for said heat carrier medium; heating means within each of said straight pipes in spaced relation to the inner surface thereof for supplying heat to said heat carrier medium; cooling means including a cooling jacket substantially surrounding each of said straight pipes for circulating a cooling medium in heat exchange relation with the exterior surface of the pipe; circulating pump means having an inlet and a pressure outlet; said series-connected pipes having an intake end connected to said pressure outlet of said pump means; said tank outlet being connected to the other end of said series-connected pipes, said other end being an outlet end of said series-connected pipes; said pump means comprising an immersion pump and being located together with said series-connected pipes in said tank; said pump means inlet being located in a lower portion of said tank for receiving said liquid heat carrier medium therefrom; said tank being partially filled with said heat storage medium to a level above said pump means inlet and serving as a collector of heat carrier medium entering said tank through said intake of said tank; said tank also serving as an expansion tank for pressure differences arising in said pipes; said heat carrier medium being delivered to a heat distributing unit through said outlet of said tank; said heat carrier medium being returned to said tank from the heat distributing unit through said intake of said tank, the arrangement of said heating means within and said cooling jacket around each of said straight pipes being such that said heat carrier medium and said cooling medium flow in separate flow-through spaces, said flow-through spaces being shaped for predetermined flow conditions so that said heat carrier medium flows at substantially uniform speed in a relatively thin layer on walls of said pipes for predetermined transfer of heat from or to said heat carrier medium.

4,129,179

APPARATUS FOR UTILIZATION OF WASTE ENERGY

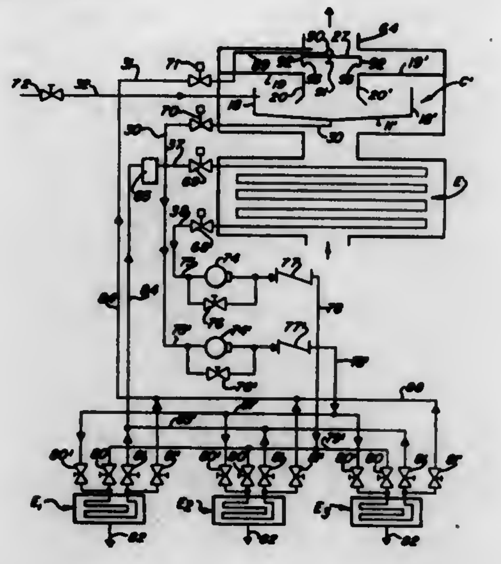
Victor D. Molitor, Denver, Colo., assignor to Stainless Equipment Company, Englewood, Colo.

Continuation-in-part of Ser. No. 647,205, Jan. 7, 1976, abandoned, and a continuation-in-part of Ser. No. 789,938, Apr. 22, 1977, which is a continuation-in-part of Ser. No. 647,205,.

This application Nov. 21, 1977, Ser. No. 853,571

Int. Cl.² F23J ***11/00;*** **F24C** ***15/20;*** **F25B** ***29/00;*** **F28F** ***27/02***

U.S. Cl. 165—101 **17 Claims**



1. In apparatus for recovering waste energy, the combination of:

a gaseous source of waste energy, including heat;

a gas to liquid heat exchanger;

means for moving a heat transfer liquid through said heat exchanger to heat said liquid;

means for causing the gas from said gaseous source of waste energy to pass through said heat exchanger to heat said heat transfer liquid;

heat exchange means, including a path for a heated or chilled liquid to heat or cool, alternatively, makeup air for a room and the like;

means for passing makeup air through said heat exchange means;

means for circulating said heated heat transfer liquid through said heat exchange means;

a chiller having walls and baffle means for directing air toward a water bath for agitating the bath and producing evaporation of water for cooling said water and said air;

means for supplying water to said chiller to form a water bath;

means for flowing said waste energy gas through said chiller from said heat exchanger for agitating said water bath to chill said water; and

means for alternatively circulating said chilled water from said chiller through said heat exchange means.

4,129,180

VAPOR CONDENSING APPARATUS

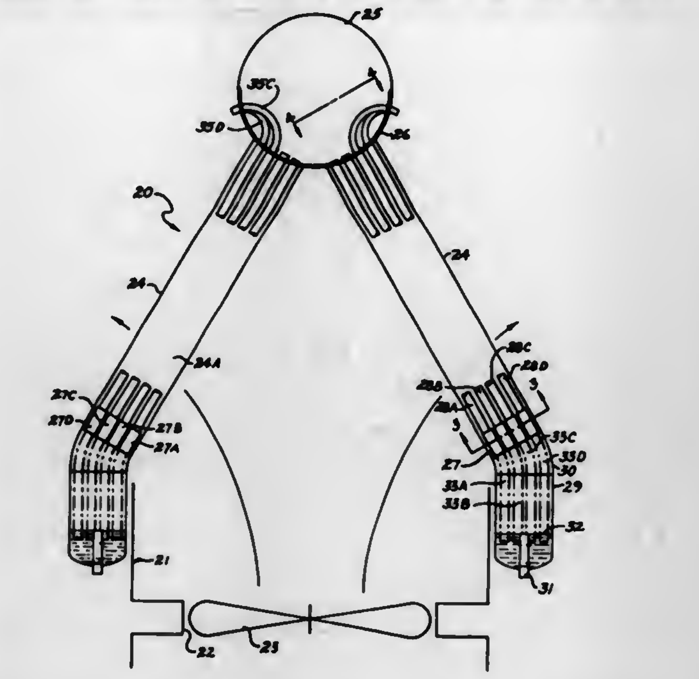
Michael W. Larinoff, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Filed Dec. 6, 1976, Ser. No. 747,808

Int. Cl.² F28B ***9/10***

U.S. Cl. 165—113 **29 Claims**

1. Apparatus for condensing steam or other vapor which contain non-condensibles such as air at a pressure near or below atmospheric, comprising a condenser having a main portion including a pair of parallel rows of tubes over which air is caused to pass successively, an inlet header for introducing steam into one end of the tubes of the main condenser portion, a vent portion having a pair of parallel rows of tubes over which air is caused to pass successively, one end of the tubes of the vent condenser portion being connected to the opposite ends of the tubes of the main condenser portion so as to receive uncondensed steam and non-condensibles therefrom, an outlet header including a pair of sections each connecting with the tubes of only one row of the vent condenser portion, means for draining condensate from the outlet header while isolating the pressure within each section thereof from that within the other, and means for removing uncondensed steam and non-condensibles from the opposite ends of the tubes of the vent condenser portion, including a separate pipe connecting at one end with only the tubes of each row of said vent condenser portion, and means for discharging fluid from the other end of each pipe at a pressure which prevents backflow into the pipes.



4,129,181

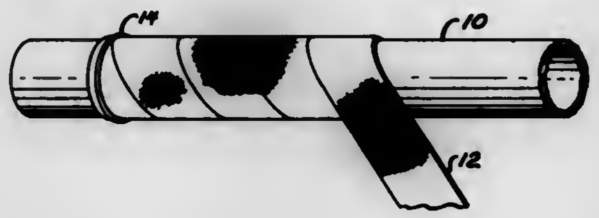
HEAT TRANSFER SURFACE

Kenneth R. Janowski, Wheaton; Ming S. Shum, Des Plaines, and Steven A. Bradley, Northbrook, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Feb. 16, 1977, Ser. No. 769,623

Int. Cl.² F28F ***13/02***

U.S. Cl. 165—133 **5 Claims**



1. A metal heat transfer member having at least one nucleate boiling surface which is adapted to be exposed to a boiling medium, said at least one surface being coated with a layer of a non-particulate reticulated metal structure which is in intimately bonded thermally conducting relationship to said at least one surface, said reticulated metal structure being shell-like and skeletal with all the metal therein surrounding a complementary reticulated non-metallic core portion contained within said layer.

4,129,182

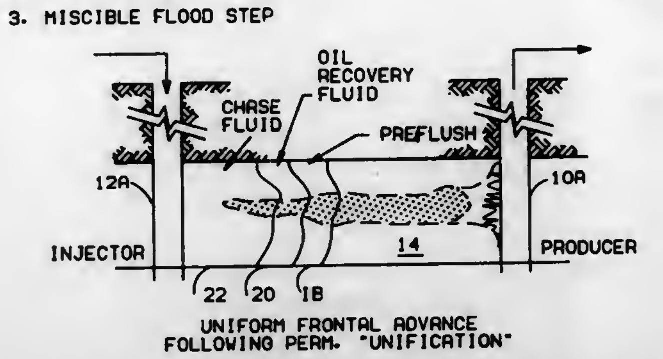
MISCIBLE DRIVE IN HETEROGENEOUS RESERVOIRS

Mahmoud K. Dabbous, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 28, 1977, Ser. No. 772,888

Int. Cl.² E21B ***33/138, 43/22***

U.S. Cl. 166—263 **1 Claim**



1. A method of recovering oil from an underground reservoir in which a first well has been drilled which comprises:

(a) drilling a second well into said underground reservoir;

(b) injecting a permeability-reducing foam through said first well into said reservoir in sufficient quatity to extend into an interwell area but short of breaking through at said second well when displaced by chase fluid to improved volumetric sweep;

(c) at all times restricting the fluid injected through said second well to a non-permeability reducing fluid so as not to impair the injectivity of said second well;

(d) thereafter injecting an oil recovery fluid into said reservoir through said second well spaced from said first well to drive oil through said reservoir toward said first well, there being no permeability-reducing fluid injected through said second well;

(e) then producing driven oil through said first well.

4,129,183

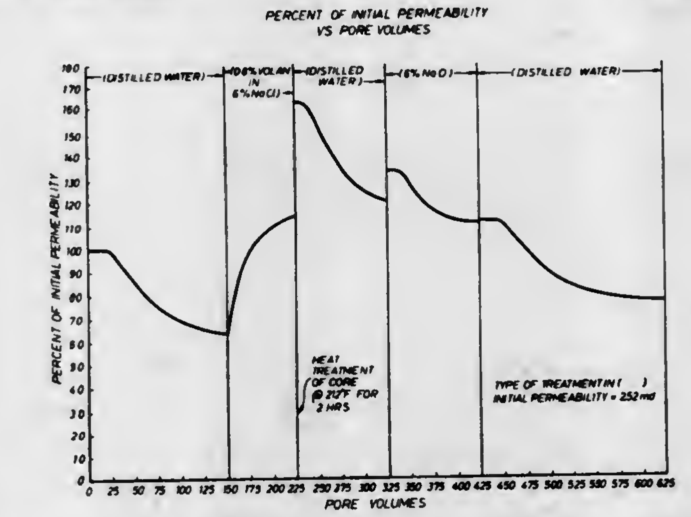
USE OF ORGANIC ACID CHROME COMPLEXES TO TREAT CLAY CONTAINING FORMATIONS

George Kalfoglou, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,804

Int. Cl.² E21B ***43/22, 43/24***

U.S. Cl. 166—300 **7 Claims**



1. A method of treating a subterranean formation containing hydratable clay to stabilize said formation against clay-swelling and particle migration comprising:

contacting said clay within the formation with an aqueous solution of a chrome complex of the Werner-type in which trivalent chromium atoms are coordinated with a carboxylic acido ligand having a hydrocarbon radical containing two to eight carbon atoms to form a polynucleated chrome complex on the surface of the clay particles.

4,129,184

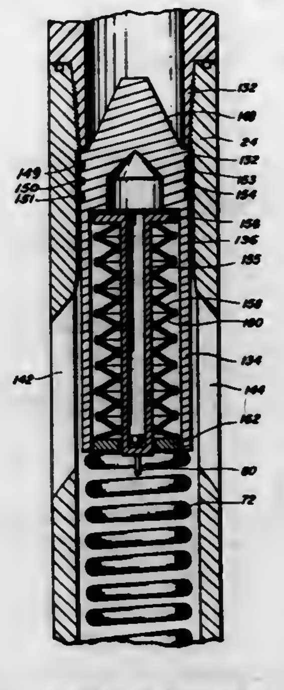
DOWNHOLE VALVE WHICH MAY BE INSTALLED OR REMOVED BY A WIRELINE RUNNING TOOL

William H. Parker, Hurst, Tex., assignor to Del Norte Technology, Inc., Euless, Tex.

Filed Jun. 27, 1977, Ser. No. 810,201

Int. Cl.² E21B ***43/12***

U.S. Cl. 166—315 **23 Claims**



1. A downhole valve which is free of wireline connections with the surface, said valve comprising an elongated unitary housing having a wireline running tool connector means at one end and a control package means at the other end, valve means near the center of the housing mounted for undertaking an excursion in a first direction to an open position at a discrete distance within said housing, spring means for normally urging said valve to move in an opposite direction over said discrete distance to a closed position, and means controlled by said control package means responsive to signals transmitted downhole for moving said valve in said first direction againist the urging of said spring means and over said discrete distance to said open position, said valve thereafter remaining in said open position without requiring a continuous energy drain at said valve.

4,129,185

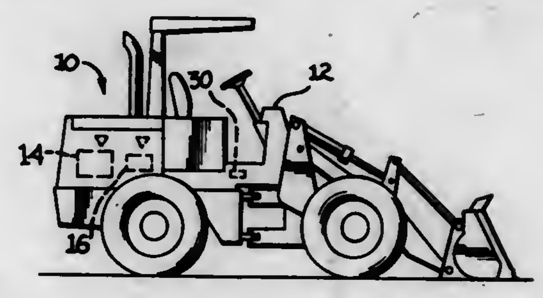
FIRE SUPPRESSION SYSTEM

Roland E. Hasselbacher, Brimfield, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 15, 1977, Ser. No. 815,954

Int. Cl.² A62C ***3/00***

U.S. Cl. 169—62 **9 Claims**



9. A fire suppression system for a machine having an engine with a governor comprising:

a source of pressurized fire extinguishing fluid;

means for controllably directing said fluid to preselected areas of said machine;

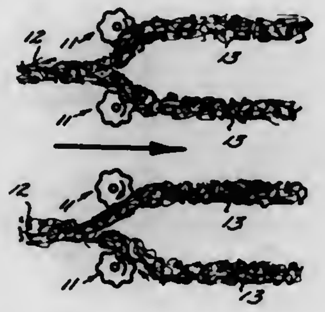
means for controllably releasing said fluid; and

means for automatically stopping said machine in response to controlled release of said fluid and maintaining said machine stopped, said machine remaining stopped until said fire suppression system is readied for operation;

said stopping means including a solenoid operably connected to the governor, said solenoid being energized in response to the closing of a pressurized switch which closes in response to controlled release to the fluid and controllably manipulating the governor to stop the engine and machine.

4,129,186
BEAN PULLER

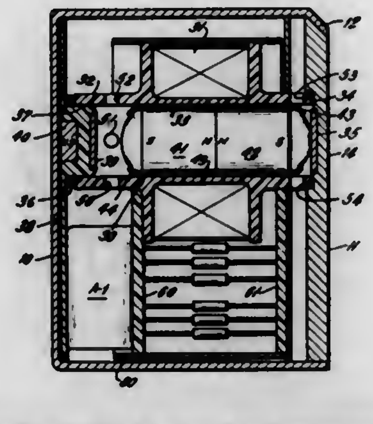
Dorwin J. Sheathelm, 1336 Dietz Rd., Dansville, Mich. 48819
Filed Oct. 21, 1976, Ser. No. 734,733
Int. Cl.² A01D *31/00, 55/00*
U.S. Cl. 171—83 **8 Claims**



1. A powered bean puller drive element for propulsion by a prime mover such as a tractor comprising:
a horizontal rotating disc;
a drive shaft drivably secured to said disc;
top and bottom bearings in aligned support of said shaft;
a motor drivably connected to said shaft;
an elongate drive frame supporting said motor, said bearings and said shaft and for selectively tilting said disc, said drive frame is movable vertically in a parallelogram inner box frame and an outer parallelogram box frame, each having four pivot points and each having one side in fixed relatively vertical relation;
a gage wheel adjustably supported by said drive frame and vertically establishing the running depth of said horizontal disc; and
framing means connectable to a prime mover and independent of said gage wheel and connected to said drive frame for elevation of said drive frame and disc.

4,129,187
ELECTRO-MECHANICAL VIBRATOR

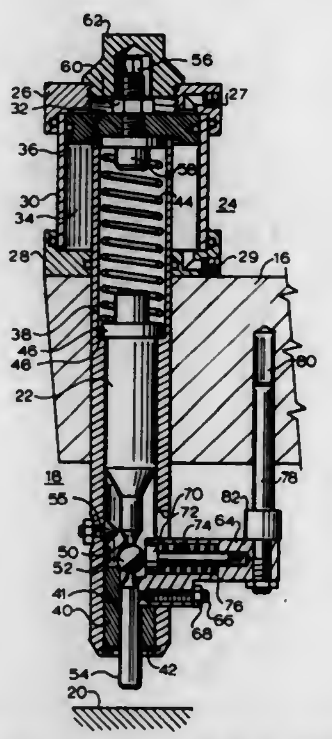
Michael Wengryn, Nashua, and Alexander Khazan, Manchester, both of N.H., assignors to Sun Chemical Corporation, New York, N.Y.
Filed Dec. 27, 1977, Ser. No. 864,273
Int. Cl.² B25D *9/00*
U.S. Cl. 173—117 **11 Claims**



1. An electro-mechanical vibrator for decreasing the friction of a mechanical movement comprising, in combination:
a non-magnetic support spool having a central axial opening;
a winding wound around said spool;
first and second permanent magnets disposed within said central axial opening and being closely fitted within said opening to be freely movable therein and being guided by said central opening, said first and second permanent magnets being permanently magnetized in the direction of the axis of said central axial opening and being held together with like poles facing one another;
said central axial opening having an axial length which is greater than the combined axial length of said first and second permanent magnets;
impact means disposed at at least one of the opposite ends of said central axial opening, the free end of said first permanent magnet being movable to a position to strike the surface of said impact means to induce a mechanical shock;
electrical circuit means connected to said winding to cause current flow therein which causes said first and second permanent magnets to move at least toward said impact means and toward a first of said opposite ends of said central opening;
and return means connected in said central opening for causing said first and second permanent magnets to move away from said first end of said central opening and toward the opposite end of said central opening, after said first permanent magnet strikes said impact means.

4,129,188
IMPACT DEVICE FOR MARKING, PUNCHING, STAMPING, FORMING, RIVETING AND OTHER RELATED OPERATIONS

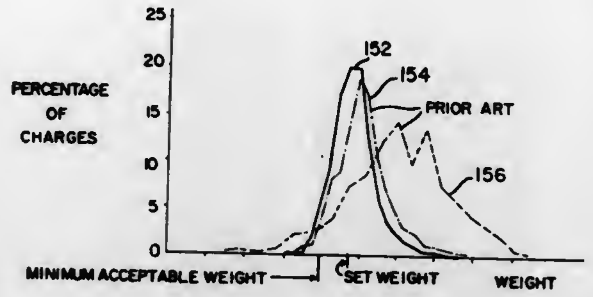
Monti El-Souéssi, 632 Stoops Ferry Rd., Coraopolis, Pa. 15108; Gilbert Laffay, II Rue des Glycines, Meyzieu, Rhone, France, and Jean-Christian Neuschwander, 34 Rue de la Claire, Lyon 9éme, Rhone, France
Filed Mar. 7, 1977, Ser. No. 775,382
Claims priority, application France, Mar. 10, 1976, 76 07589
Int. Cl.² B25D *9/00*
U.S. Cl. 173—120 **8 Claims**



1. An impact device having a hollow walled elongated spindle, said spindle having an opening through said wall, and a hammer and tool each having longitudinal axes aligned with one another disposed for sliding movement within said spindle upon a force applied by a compressible member and axial motion of said spindle, comprising:
a. a spherical member positionable between the ends of said hammer and tool along said aligned axes and ejectable from said position upon pressure applied to said member by said hammer and tool; and
b. a receptable disposed through said opening in said spindle wall, moveable with respect to said spindle, having means for receiving and subsequently discharging said spherical member upon said ejectment of said spherical member.

4,129,189
WEIGHT CONTROL SYSTEM

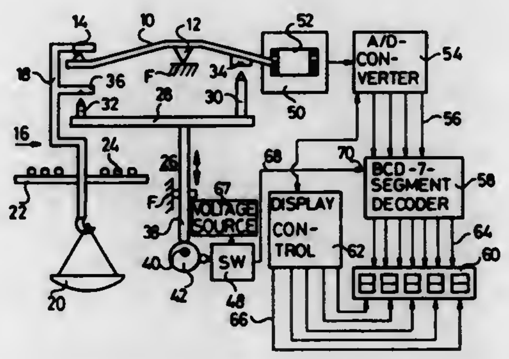
Steve C. Maglecic, 620 Ash, Walla Walla, Wash. 99362, and Larry W. Oberholtzer, Walla Walla, Wash., assignors to Steve C. Maglecic, Walla Walla, Wash.
Filed May 7, 1976, Ser. No. 684,255
Int. Cl.² G01G *13/02, 3/14*
U.S. Cl. 177—123 **26 Claims**



1. A weight control system for a bulk-dribble packaging machine wherein individual charges of product are successively accumulated for packaging at a substantially constant bulk flow rate and, upon cessation of bulk flow, at a substantially constant dribble flow rate until a total charge weight approximating a desired set weight is accumulated, which system comprises: bulk weight adjusting means, responsive to the time taken during dribble flow to accumulate sufficient product to complete a charge, for controlling shut-off of bulk flow to increase or decrease the bulk weight of product accumulated for a subsequent charge at the bulk flow rate when dribble flow time was, respectively, greater or less than a predetermined period for the charge completed; and dribble weight adjusting means, responsive to the total static charge weight of product accumulated, for controlling shut-off of dribble flow to increase or decrease the dribble weight of product accumulated for a subsequent charge at the dribble flow rate when the total static charge weight of the charge completed was, respectively, less or greater than the desired set weight.

4,129,190
WEIGHING APPARATUS INCLUDING DISPLAY CONTROL MEANS

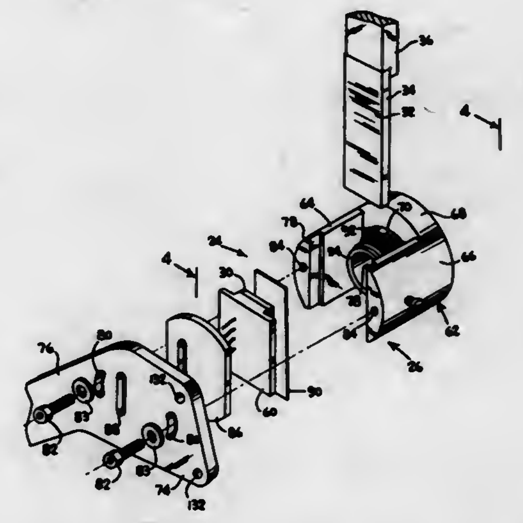
Hanspeter Lechner, Wetzikon, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland
Filed Aug. 3, 1977, Ser. No. 821,417
Claims priority, application Switzerland, Aug. 19, 1976, 10556/76
Int. Cl.² G01G *23/02, 19/52*
U.S. Cl. 177—155 **5 Claims**



1. Weighing apparatus for measuring the mass of a load, comprising
(a) a scale frame (F);
(b) a weighing assembly (10, 16) connected with said frame for movement between no-load and load-responsive positions;
(c) weighing assembly arresting means (26) connected with said frame for movement between arresting and non-arresting positions relative to said weighing assembly, respectively;
(d) multi-segment display means (60) for displaying weight indicia corresponding to the mass of a load applied to said weighing assembly, said display means including normally deactivated means (70, 59) for illuminating all of the segments of said display means; and
(e) operating means for displacing said arresting means to a given position and for simultaneously activating said illuminating means to illuminate all of the segments of the display means.

4,129,191
OPTICAL DETECTOR WHICH COMPENSATES FOR NONLINEARITIES IN A WEIGHT MEASURING SYSTEM

L. Neil Kanning, Darien, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.
Filed Sep. 26, 1977, Ser. No. 836,744
Int. Cl.² G01G *3/14*
U.S. Cl. 177—210 R **14 Claims**



1. A weight measuring system adapted to indicate the weight of an article, the system comprising a spring scale, the scale including a frame link and a load support link, a scale assembly linkage interconnecting the frame link and the load support link, means providing displacement of the load support link with respect to the frame link in proportion to the weight of the article, the scale assembly linkage causing the load support link to deflect along a path having components other than in a vertical direction, an optical detector for indicating the weight of the article by measurement of the load support link displacement, the detector including a first optical grating, means fixing the first grating relative to the frame link, a second optical grating, means fixing the second grating relative to the load support link for unitary movement therewith, each grating comprising a plurality of spaced parallel rulings, a light source adapted to generate a light beam, photodetector means positioned at the end of the light beam, the gratings being positioned between the light source and the photodetector means so as to modulate the light beam, movement of the load support link in response to the weight of the article causing the second grating to move with respect to the first grating and modulating the light beam to provide a cyclic optical signal indicative of the load support link displacement, and compensation means operatively associated with the gratings for optically compensating the cyclic optical signal to provide correction for the other than vertical components of the load support link deflection.

4,129,192
HYDROSTATIC TRANSMISSIONS

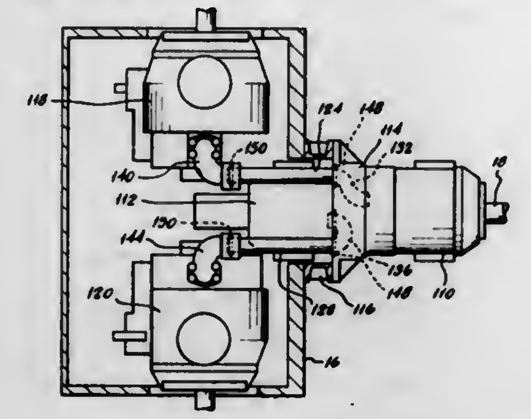
Eugenio Todeschini, Latina, and Gian P. Riganti, Anzio, both of Italy, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed May 17, 1977, Ser. No. 797,727

Claims priority, application United Kingdom, May 20, 1976, 20825/76

Int. Cl.² B62D *11/04*

U.S. Cl. 180—6.48 **3 Claims**



1. A vehicle having a pair of ground engaging drive means, a prime mover, a hydrostatic transmission interconnecting said prime mover and each said ground engaging drive means, a housing supporting said transmission, said transmission comprising a pair of pumps having aligned longitudinal axes and mounted on opposite faces of a manifold, a pair of motors, and conduit means hydraulically connecting said pumps and said motors and including passageways in said manifold, a face on said manifold providing a flange connection mounting said manifold on said housing which has an aperture through which one of said pumps passes and over a portion of which said manifold face overlaps for the flange connection, said manifold providing the support on said housing for said pumps and said motors being mounted within said housing.

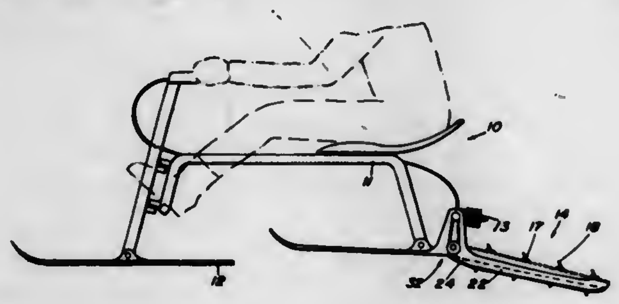
4,129,193
PROPULSION SYSTEM FOR A SNOW GOING DEVICE

Royce H. Husted, Wheaton, Ill., assignor to Saroy Engineering, Wheaton, Ill.

Filed May 4, 1977, Ser. No. 793,728

Int. Cl.² B62M *27/00*

U.S. Cl. 180—5 R **6 Claims**



1. A propulsion system for a snow going device, comprising in combination a propulsion tread circulateably supported around an elongated body, and skirt means, on each side and extending below side elongated body, said skirt means adapted to serve as protective rails for said tread and for slidingly supporting said propulsion system over hard terrain.

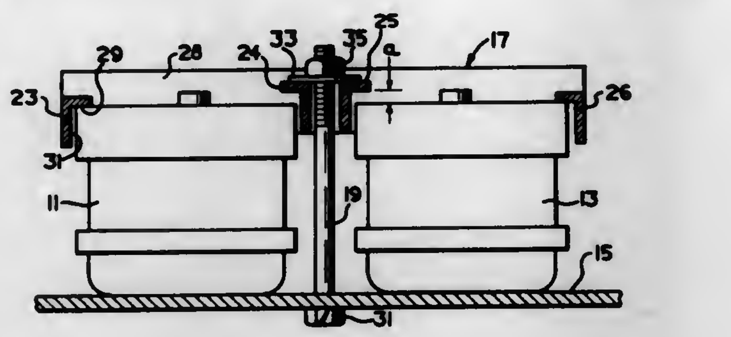
4,129,194
HOLD-DOWN DEVICE FOR STORAGE BATTERIES

Howard A. Hammond, Alexander, and John F. Sardina, Williamsville, both of N.Y., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 28, 1977, Ser. No. 819,743

Int. Cl.² B60R *18/02*

U.S. Cl. 180—68.5 **6 Claims**



1. A hold-down device for use with a pair of storage batteries supported in juxtaposed position on a base, including a frame, said frame comprising a first hold-down member engageable with an outside top edge of one of said juxtaposed batteries, a second hold-down member engageable with an inside top edge of said one battery, a third hold-down member engageable with the adjacent inside top edge of the other of said juxtaposed batteries, a fourth hold-down member engageable with an outside top edge of said other battery, and first and second substantially parallel end members attached to and connecting the ends of said first, second, third and fourth hold-down members; and fastener means engageable with said frame and with said base to apply a clamping force on said batteries between said frame and said base; the improvement wherein said second and third hold-down members are attached to said end members offset upwardly in relation to said first and fourth hold-down members, whereby said second and third hold-down members will remain out of contact with the inner top edges of said juxtaposed batteries when less than a predetermined clamping force is applied by said fastener means.

4,129,195
DIAPHRAGM FOR SPEAKER

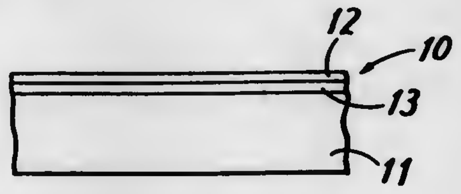
Yasuhiro Ishii; Shintaro Hirose, both of Gifu, and Ryoichi Kawasaki, Sakai, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi and Tokyo Sanyo Electric Co., Ltd., Gunma, both of, Japan

Continuation-in-part of Ser. No. 752,480, Dec. 20, 1976. This application Oct. 25, 1977, Ser. No. 844,904

Claims priority, application Japan, Dec. 24, 1975, 50-155394

Int. Cl.² H04R *7/12;* G10K *13/00;* B32B *3/10*

U.S. Cl. 181—167 **10 Claims**



7. A speaker diaphragm in a laminar form comprising a three-dimensional mesh-structured porous metal made of a heavy metal selected from the group consisting of nickel, iron or copper, and a layer of air-impermeable material applied to a surface of said porous metal to block the pores of said porous metal to air flow and to increase the rigidity of said porous metal.

9. A speaker diaphragm as set forth in claim 7, wherein said porous metal is produced by a method comprising the step of preparing defilmed foam urethane, the step of plating the foam urethane with said heavy metal and the step of removing the foam urethane by heat treatment.

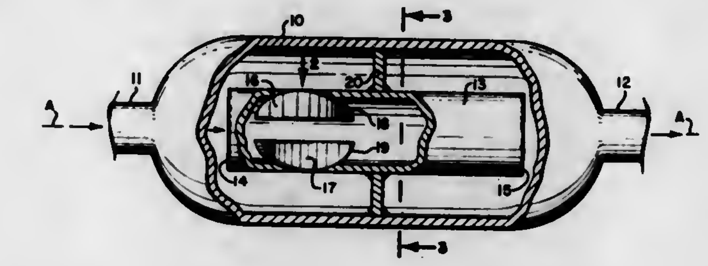
4,129,196
FLUID ACOUSTIC SILENCER

Wilhelm S. Everett, 3098 Solimar Beach, Ventura, Calif. 93001

Filed Sep. 29, 1977, Ser. No. 837,812

Int. Cl.² F01N *1/12*

U.S. Cl. 181—280 **7 Claims**



3. A fluid acoustic silencer including, in combination:

(a) an outer casing having inlet and outlet openings;

(b) a cylindrical tube having an inlet port and an outlet port, at least a major portion of said tube including its inlet port being supported within said casing; and

(c) vane means consisting solely of first and second vanes in the form of flat plates having arcuate edges secured to diametrically opposite internal wall portions of said tube, said edges extending in like axial directions and opposite circumferential directions to define segments of a spiral, the circumferential extent of each vane being no greater than 180° and the plane of each vane forming an acute angle with the axis of said tube of from 30° to 45°, the remaining portion of said tube beyond said plates to said outlet port being free of all obstructions whereby fluid passing into the inlet opening of said casing also passes through said inlet port and out said outlet port, said first and second vanes imparting a rotational component to the fluid flow through said tube.

4,129,197
SAFETY-CATCH SCAFFOLDING SYSTEM

John C. Preston, 18 Dunlop St., North Parramatta, N.S.W., 2151, Australia

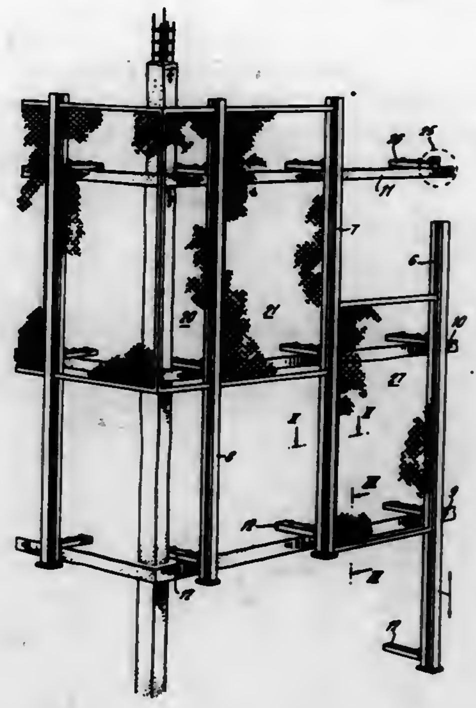
Filed Feb. 3, 1977, Ser. No. 765,391

Claims priority, application Australia, Aug. 13, 1975, 16852/75

Int. Cl.² E04G *3/14, 5/04*

U.S. Cl. 182—82 **7 Claims**

1. A scaffolding system comprising, in combination, a plurality of frames, a series of spaced upright standards each having a plurality of vertically disposed slots or open faces therein communicating with the interior of the standard, two such outwardly and oppositely directed slots in each said standard being adapted for the sliding engagement therein of the edges of said frames which extend between the standards, and a third such slot being adapted for the sliding engagement therein of fastening means near the end of a cantilever protruding beyond the edge of a floor slab of a building to be protected by the interposing of said frames in the spaces between adjacent standards, so as to extend above and beyond a formed floor, quick detachable means connecting said frames to said standards at vertically spaced intervals.



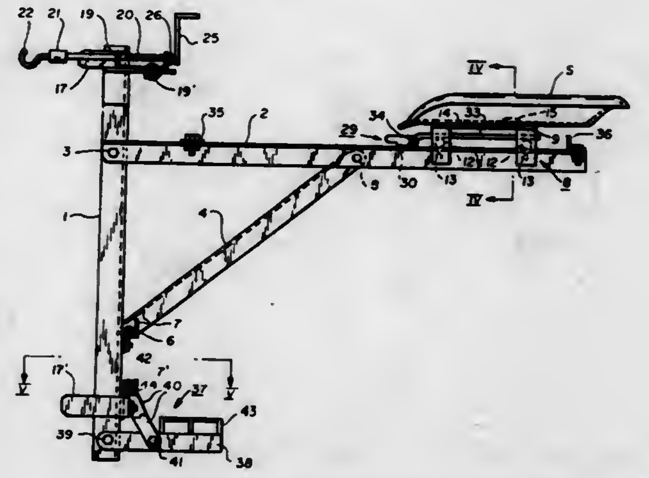
4,129,198
POLE SEAT AND LADDER

Alex E. Hunter, 817 Chartiers Ave., Pittsburgh, Pa. 15220

Filed Aug. 31, 1977, Ser. No. 829,263

Int. Cl.² A47C *9/10*

U.S. Cl. 182—187 **2 Claims**



1. A collapsible seat assembly for mounting on a pole comprising an upright post, a horizontal frame having one end pivotally connected to the post, a brace having one end pivotally connected to said horizontal frame and the other end detachably connected to said post, a seat mounted on a carriage which is movable on said horizontal frame, said carriage comprising inverted U-shaped members having depending legs forming pivotal supports for axles and inwardly extending pins at the lower extremities of said inverted U-shaped members for engagement with the undersurface of said horizontal frame to prevent lateral or upward movement of the carriage, a connecting element rigidly secured to said axles, attaching means for selectively attaching said carriage to different longitudinal positions, said attaching means comprising a latch pivotally connected to said carriage, and a plurality of holes on the top of said horizontal frame into which a pin of said latch is selectively inserted to adjustably position the seat towards or away from said pole, chain means attached to said upright posts for encircling a pole, crank means for tightening said chain means

to enable suspension from said pole, and cleat means on said post for penetrating the outer surface of said pole.

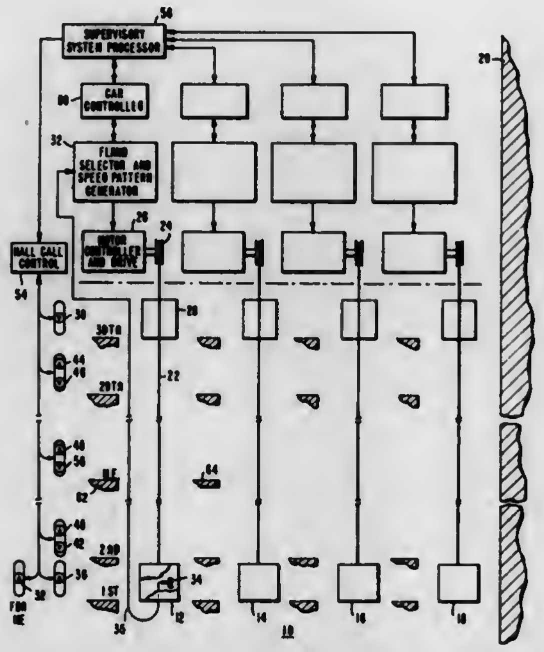
4,129,199
ELEVATOR SYSTEM

Robert C. MacDonald, West Caldwell, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 29, 1977, Ser. No. 792,289

Int. Cl.^{2} B66B *1/20*

U.S. Cl. 187—29 R **10 Claims**


SUPERVISORY SYSTEM PROCESSOR
CAR CONTROLLER
FLOOR SELECTOR AND SPEED PATTERN GENERATOR
HALL CALL CONTROL
54
30
32
20

1. A method of providing elevator service for a special floor of a building, which special floor is located between the top and bottom floors, comprising the steps of:

providing means for registering up and down hall calls from the special floor,

determining when registered up and down hall calls coexist from the special floor;

and giving a predetermined one of such coexisting hall calls priority over the other, according to the location of the special floor in the building,

said step of giving priority to a predetermined one of coexisting hall calls at the special floor including the steps of giving the up hall call priority over the down hall call when the special floor is located in the upper one-half of the building, and giving the down hall call priority over the up hall call when the special floor is located in the lower one-half of the building.

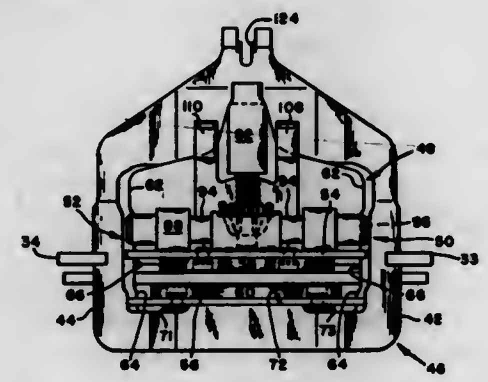
4,129,200
DISC BRAKE AND MOUNTING THEREFOR

Donald D. Johannesen, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 720,015, Sep. 2, 1976, abandoned. This application Sep. 22, 1977, Ser. No. 835,621

Int. Cl.^{2} F16D *65/02*

U.S. Cl. 188—71.1 **1 Claim**



1. In a disc brake having a rotatable rotor, a support adjacent the rotor, a pair of friction elements engageable with the rotor and a frame slidably supporting the pair of friction elements on opposite sides of the rotor, the frame pivoting relative to the support to urge the pair of friction elements into engagement with the rotor and the pair of friction elements pivoting relative to the frame, the improvement wherein said frame includes an opening defining guides for carrying a cylindrical push bar which engages one of said pair of friction elements, said guides also carrying said pair of friction elements, said cylindrical push bar pivoting with said frame when the latter pivots relative to said support in order to directly urge the one of said pair of friction elements into engagement with said rotor, said cylindrical push bar being adjustable axially relative to said frame to dispose the one of said pair of friction elements adjacent said rotor, said pair of friction elements and said cylindrical push bar pivoting with said frame relative to said support upon actuation of the disc brake to urge said pair of friction elements into engagement with said rotor, thereby retarding the rotation of said rotor, and said cylindrical push bar including a longitudinal axis substantially parallel to said rotor at the engagement with said pair of friction elements.

4,129,201
BRAKE FOR VEHICLES

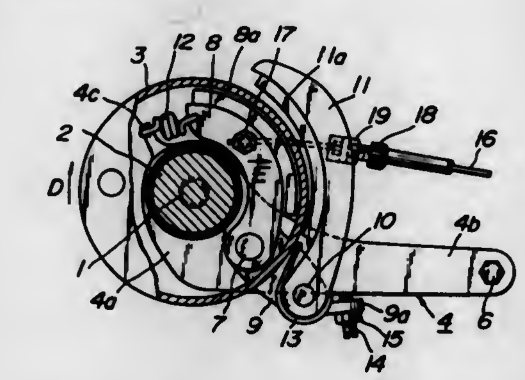
Yoshitaka Tamura, Ohtone, Japan, assignor to Bridgestone Cycle Co., Ltd., Japan

Filed Aug. 1, 1977, Ser. No. 820,896

Claims priority, application Japan, Oct. 29, 1976, 51-129340

Int. Cl.^{2} F16D *49/16*

U.S. Cl. 188—76 **10 Claims**



1. A brake for vehicles comprising a brake drum rotating in unison with a wheel of the vehicle, an inner pin fixed to a vehicle body within said brake drum, an inner shoe whose end is rotatably pivotally supported by said inner pin within said brake drum, a first arm formed integrally with said inner shoe and extending outwardly beyond said brake drum, an outer pin extending from an end of said first arm, an outer shoe rotatably pivotally supported by said outer pin for being brought into contact with an outer periphery of said brake drum, and actuating means for urging said inner and outer shoes toward and away from the brake drum, wherein said actuating means consists of an actuating wire having its one end connected to said inner shoe and an outer adapter connected to said outer shoe and springs for urging said inner and outer shoes away from said brake drum.

4,129,202
AIRCRAFT BRAKE TORQUE LIMITER

Harry K. Winters, and Warren D. Chambers, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 22, 1977, Ser. No. 826,799

Int. Cl.^{2} B60T *8/12*

U.S. Cl. 188—181 T **12 Claims**

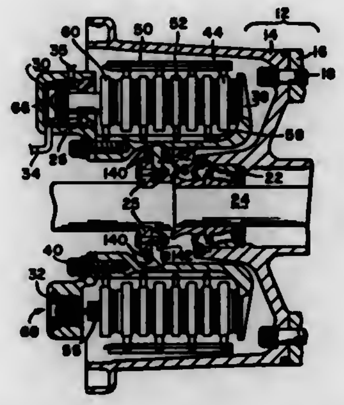
10. In a aircraft having a wheel rotatable about an axis, a multiple disc brake assembly for controlling said wheel comprising:

a torque-absorbing member mounted on said aircraft;

a set of rotors mounted for rotation with said wheel;

a set of stators mounted on said torque-absorbing member and adapted to frictionally engage said rotors;

fluid pressure responsive means carried by said torque-absorbing member to urge the rotors and stators into frictional engagement with one another when a brake application is effected, said fluid pressure responsive means including a housing defining a bore therewithin, a piston slidably mounted in said bore for effectuating said frictional engagement of said rotors and stators and cooperating with opposite ends of said bore to define a pair of variable volume, fluid pressure receiving chambers between fluid pressure responsive areas on opposite ends of the piston and corresponding ends of the bore; and means for communicating fluid pressure into one of said chambers to urge said piston in a brake application effecting direction;



sensor means operably connected to said brake for generating a signal when the brake torque generated by said brake reaches a predetermined level; and

valve means responsive to the signal generated by the sensor to communicate fluid pressure to the other chamber to oppose the fluid pressure force generated in said one chamber and thereby limit the brake torque to a predetermined maximum.

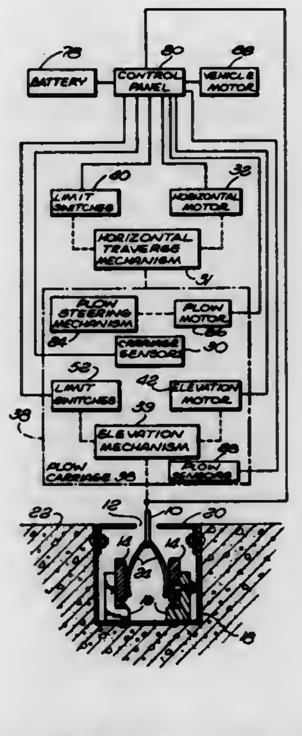
4,129,203
ROADWAY VEHICLE

Nelson Berman, 1006 Iliff St., Pacific Palisades, Calif. 90272

Filed Jun. 13, 1977, Ser. No. 805,962

Int. Cl.^{2} B60L *5/40*

U.S. Cl. 191—48 **10 Claims**



10. A roadway vehicle having a plow with elements for conducting energy to the vehicle and for contacting an external source of propulsion energy located in a slotted conduit below the surface of the roadway, which vehicle is not mechanically guided by elements associated with the roadway while contacting the external source.

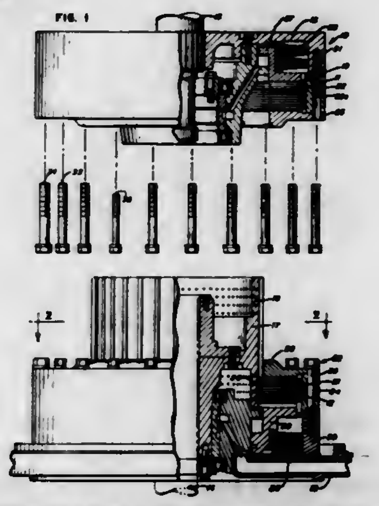
4,129,204
SPRING OPERATED CLUTCH WITH SMALL AND LARGE BOLTS

Richard L. Hedgcock, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 29, 1977, Ser. No. 820,174

Int. Cl.^{2} F16D *13/44, 13/72*

U.S. Cl. 192—89 B **12 Claims**



1. In a power drive assembly having a first wall member, a second wall member, a pack including a plurality of facially engageable plates, and a biasing spring acting between said first wall member and said pack for biasing said plates, improved means for securing said second wall member to said first wall member in an assembled arrangement with said pack and spring disposed therebetween, comprising:

a plurality of first bolts removably securing the second wall member to the first wall member, said first bolts individually having a strength less than that required to hold the wall members in the assembled arrangement against the biasing action of said spring; and

a second bolt removably securing said second wall member to said first wall member, said second bolt having a strength substantially greater than that of said first bolts individually and being sufficient to hold the wall members in the assembled arrangement against the biasing action of said spring.

4,129,205
METHOD AND ASSEMBLY FOR FEEDING ARTICLES

Andrew W. Anderson, West Caldwell, and Milan Mateyka, Union, both of N.J., assignors to Scandia Packaging Machinery Company, Clifton, N.J.

Filed May 25, 1977, Ser. No. 800,398

Int. Cl.^{2} B65G *43/00*

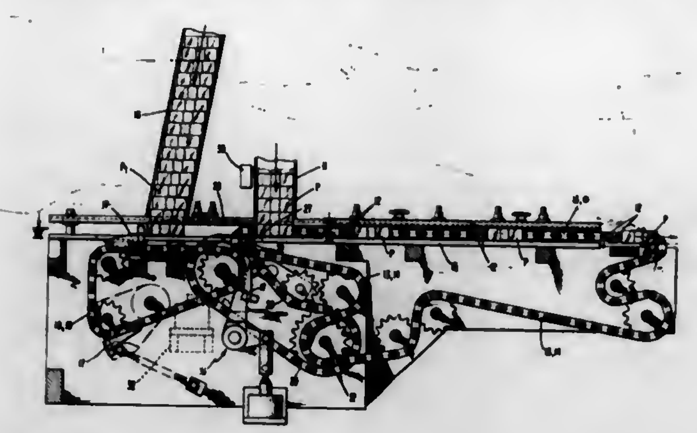
U.S. Cl. 198—358 **19 Claims**

1. An assembly for providing a continuous supply of articles, said assembly comprising:

(a) first supply means to gravity feed articles from a stack to an article introducing position located below the stack.

(b) first conveying means for moving articles from the article introducing position to a subsequent working position, and

(c) second conveying means for moving articles into the article introducing position immediately behind said first conveying means to insert an article beneath said stack while maintaining the total number of articles in said stack.



4,129,206

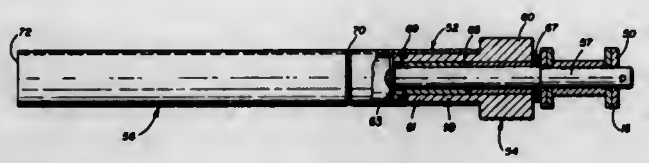
CONTAINER ROTATING MEANS IN APPARATUS FOR CURING INKS AND DECORATIVE COATINGS

Roblee L. Talbott, Golden, Colo., assignor to Coors Container Company, Golden, Colo.

Continuation-in-part of Ser. No. 689,072, May 24, 1976, abandoned, which is a continuation of Ser. No. 567,604, Apr. 14, 1975, abandoned. This application Mar. 24, 1977, Ser. No. 780,604

Int. Cl.² B65G *15/00*

U.S. Cl. 198—377 **2 Claims**



1. An improved peg structure for use in container rotating apparatus of the kind having a moving conveyor chain carrying a plurality of pegs, each having a center pin mounted at an inner end as a chain pin on the conveyor and having a sleeve rotatably carried by the pin for being received in and carrying a cylindrical container of substantially larger diameter than the sleeve, and having frictional sleeve rotating means associated with the container rotating apparatus, wherein the improvement comprises:

(a) a hub roller rotatably mounted on said pin, terminating axially outwardly near the outer end of the pin, and having an exterior groove near the outer end thereof transverse to the hub roller axis;

(b) wherein said sleeve is engaged over a portion of the hub roller including said hub roller groove, which portion is relatively short relative to the length of the sleeve for supporting the sleeve;

(c) said sleeve having a frangible annular score line located axially outwardly from the outward end of the hub roller for allowing the sleeve to break in response to unusual bending stress without damaging the hub roller, and having an inner sleeve groove adapted to overlie said hub roller groove; and

(d) a resilient member mutually engaged in said hub roller groove and said inner sleeve groove for preventing unauthorized relative axial motion between the hub roller and sleeve.

4,129,207

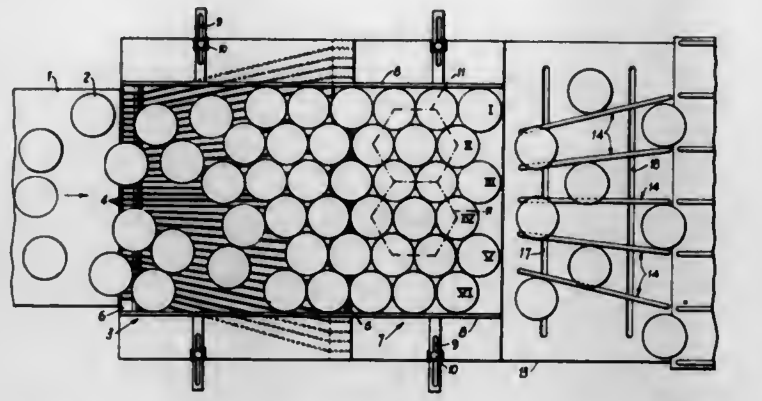
PRODUCT ALIGNMENT MECHANISM

William A. Cupp, Sandston, Va., assignor to AMF Incorporated, White Plains, N.Y.

Continuation-in-part of Ser. No. 671,777, Mar. 30, 1976, abandoned. This application Jan. 5, 1977, Ser. No. 757,114

Int. Cl.² B65G *47/12*

U.S. Cl. 198—445 **12 Claims**



1. A product alignment apparatus employing a series of continuous conveyors integrally formed to act upon product advancing in a forward direction, including: first conveying means for receiving product at random from a source of supply, said first conveying means being formed of a plurality of spaced apart separating members for lateral distribution of product and simultaneously urging product forward at a predetermined speed; accumulating means disposed in proximity to said first conveying means laying in a plane coincidental thereto, for receiving product advancing from said first conveying means; guide means disposed at the respective lateral portions of said first conveying means and said accumulating means, for defining the maximum lateral travel of said product; and with said first conveying and accumulating means causing product to assume a tight pack hexagonal pattern; and second conveying means, being in proximity to and disposed at an angle with respect to said accumulating means, and being formed with a series of product orientators for receiving and urging product to travel in a downward and lateral direction in a predefined pattern of side by side longitudinal columns.

4,129,208

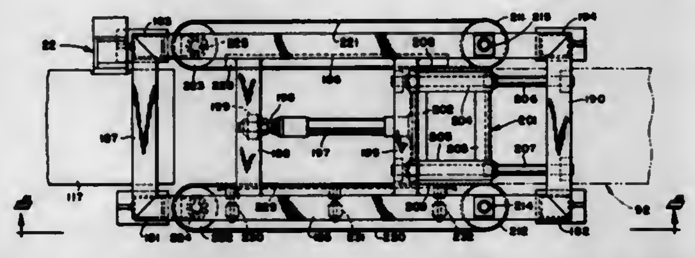
HORIZONTAL STACK MOLDING MACHINE AND METHOD

Edmond K. Hatch, Brecksville, Ohio, assignor to The Osborn Manufacturing Company, Cleveland, Ohio

Continuation of Ser. No. 659,376, Feb. 19, 1976, which is a division of Ser. No. 296,162, Oct. 10, 1972. This application Sep. 12, 1977, Ser. No. 832,408

Int. Cl.² B65G *15/14*

U.S. Cl. 198—626 **8 Claims**



1. A mold traction device for moving a stack of juxtaposed molds in limited pressure contact with each other along a surface comprising drive belts operative frictionally to grip each side of such stack for movement of such stack along said surface, and unidirectional drive means for said belts, said unidirectional drive means including a piston-cylinder assembly, a longitudinally movable frame driven by said piston-cylinder assembly including racks on opposite sides thereof, and one-way clutch means interconnecting said racks and said drive belts.

4,129,209

BUCKET ELEVATOR

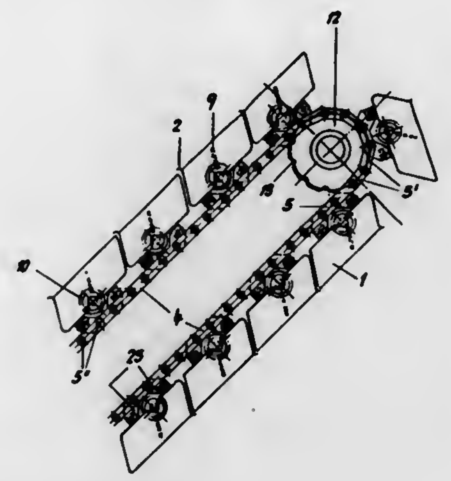
Friedrich Mayfeld, Kirschbaumweg 10, Westhofen, Westf., Fed. Rep. of Germany (5842)

Filed Nov. 29, 1976, Ser. No. 745,644

Claims priority, application France, Jan. 27, 1976, 76 02182

Int. Cl.² B65G *17/42*

U.S. Cl. 198—712 **7 Claims**



1. A bucket elevator comprising:

(a) an elongated link chain including a plurality of longitudinally consecutive link members,

  (1) each link member being secured to two other link members for relative angular movement about respective pivot axes, whereby two pivot axes are associated with each link member;

(b) a plurality of buckets, each bucket including a bottom wall bounding a loading space in said bucket;

(c) connecting means fastening the bottom wall of each bucket to two portions of a selected link member,

  (1) said two portions being spaced in the direction of chain elongation a distance greater than the corresponding spacing of the two pivot axes associated with said selected link member and the connecting means being articulatedly fastened to the two portions with sufficient lateral clearance to permit stress-free thermal expansion of the bottom wall of the bucket and play transverse to the direction of chain elongation between the connecting means and the two link member portions; and

(d) drive sprockets for longitudinally moving said chain in a closed loop.

4,129,210

DOLL DISPLAY RECEPTACLE

David A. Brown, 1611 31st St., NW., Washington, D.C. 20007, and E. A. Carmean, Jr., 3308 Legation St., NW., Washington, D.C. 20015

Filed Jun. 10, 1977, Ser. No. 805,541

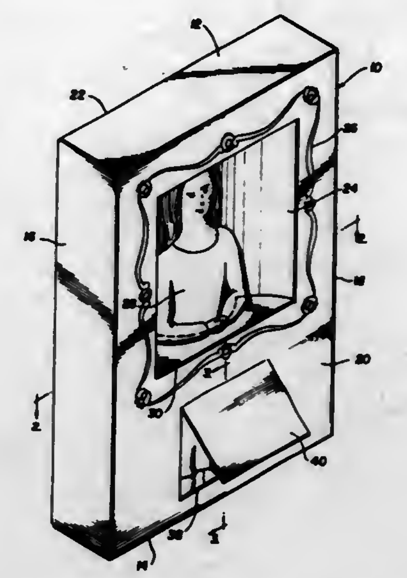
Int. Cl.² B65D *5/44, 25/54*

U.S. Cl. 206—45.31 **3 Claims**

1. In combination, a doll and a display receptacle within which the doll is retained and supported for shipment and display, the receptacle comprising,

a folded blank box having interlocking top, bottom, side walls and front and rear panels, said front panel including a cut out portion serving as a window with a surrounding frame in the upper area thereof for display of the trunk portion of the doll within the box, and an integrally formed flap having a free end defining a notched edge,

said flap extending into the box through the cut out portion at substantially right angles to the front panel with the notched edge in engagement with the doll for retaining the doll within the box in engagement with at least the rear panel and in a spatial orientation relative to the box panels so that the front part of the displayed trunk portion of the doll faces a plane which intersects the plane of the front panel.



4,129,211

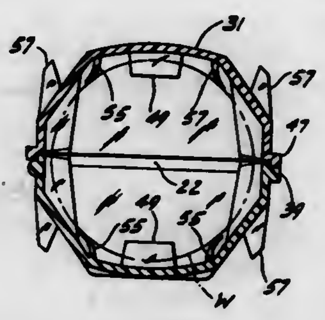
WAFER PACKAGING SYSTEM

Carl J. Clement, Los Altos Hills; Fred H. Stengel, Palo Alto, and Kenneth S. Campbell, Mountain View, all of Calif., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 7, 1976, Ser. No. 721,014

Int. Cl.² B65D *1/34, 85/30*

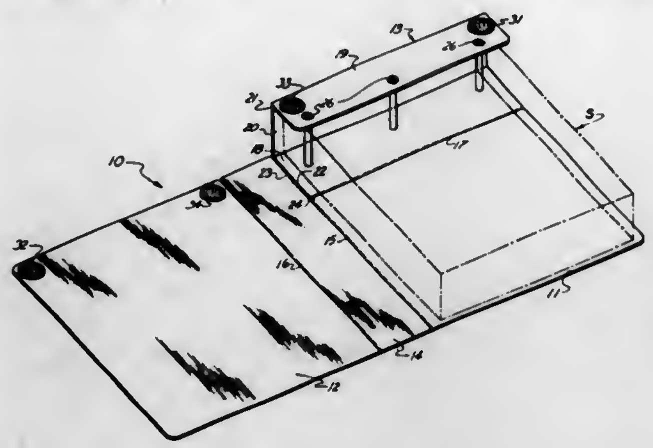
U.S. Cl. 206—213.1 **23 Claims**



1. In a wafer packaging system for clean packaging and damage-free transporting of semiconductor wafers, said system, including a tubular, outer container, and a tubular, inner container, adapted to be contained by the outer container, the longitudinal axes of the inner and outer containers extending in the same axial direction, the improvement comprising means within the inner container for supporting a plurality of said wafers formed of a plurality of resilient projections extending toward the interior of the inner container from interior surface of the inner container, said resilient projections being spaced around and adapted for contacting the peripheral of each of the wafers, said wafers in spaced face-to-face relationship within the inner container, and resiliently supported solely by said resilient projections, axial shock-absorbing means for providing shock-absorbing coupling axially between the inner and outer containers along said longitudinal axes, and radial shock-absorbing means for providing shock-absorbing coupling radially between the inner and outer containers radially to said longitudinal axes.

4,129,212
CARRIER AND STORAGE BINDER FOR FABRIC SAMPLES

Jack M. Hopkins, 4310 Lyon Dr., Columbus, Ohio 43220
Filed Apr. 14, 1977, Ser. No. 787,547
Int. Cl.² B65D *85/48*
U.S. Cl. 206—450 **29 Claims**



1. A carrier and storage binder for samples of sheet-form material disposed in stacked relationship comprising

a structurally rigid rear panel having a bottom edge, a top edge and a side edge extending therebetween,

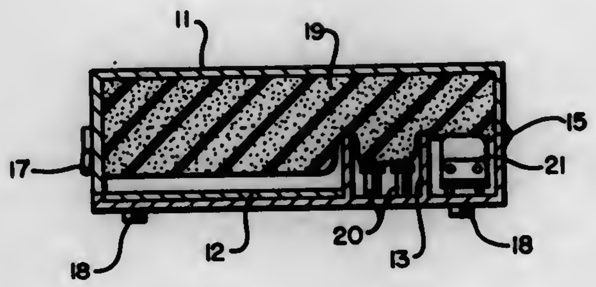
a header secured by hinge means to said rear panel at the top edge thereof in upwardly projecting relationship, for relative pivoting of said header on said rear panel said header adapted to receive fabric sample sheets in retained relationship with the samples extending therefrom in superposed relationship to said rear panel,

a structurally rigid front panel having a side edge with said front panel hingedly interconnected with said rear panel at said side edges thereof for selective swinging movement relative to that edge between a closed position disposed in superposed relationship to said rear panel and said header with the sample sheets interposed therebetween and an open position wherein said front panel is disposed to permit visual inspection of the samples, said front panel having a vertical extent substantially equal to the combined vertical extent of said rear panel and said header, and

securing means adapted to selectively interconnect with said header and said front panel for maintaining said header in rigidly fixed relationship to said rear panel and maintaining said front panel in closed relationship to said rear panel.

4,129,213
PORTABLE CRAFT AND HOBBY UNIT

William C. Fleig, 5664 Kingship Loop, Columbus, Ohio 43229
Filed Jun. 6, 1977, Ser. No. 803,669
Int. Cl.² B65D *69/00*
U.S. Cl. 206—575 **7 Claims**



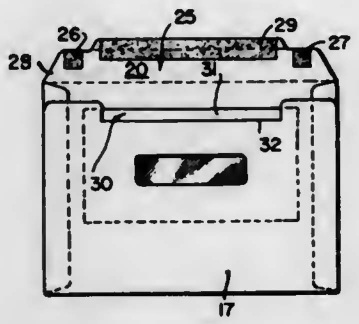
1. A portable craft or hobby case-like unit having in combination a base, a removable cover for the base, means for attaching the removable cover to the base and means for hand carrying the case, wherein:

the base is comprised of a horizontal bottom, vertical side walls, interior walls forming compartments within said side walls for storage of tools or materials, a flat working surface adjacent to one or more of said interior walls forming one or more of said compartments and adjacent to the front wall, whereby the working surface is removable without removing any interior walls and whereby the front wall is substantially shorter than the other side walls and is substantially the same height as the top of said working surface; and

the cover is comprised of a horizontal top, vertical side walls, means for preventing tools or materials from being displaced from said compartments when the case is being carried, the vertical side walls being adapted to engage said vertical side walls of the base whereby the case is enclosed when the base and cover are attached and closed, the means preventing tools or materials from being displaced from said compartments being adapted to engage the top of said compartments.

4,129,214
TWO COMPARTMENTED ENVELOPE

Wilfred H. Gendron, Wilbraham, Mass., assignor to Westvaco Corporation, New York, N.Y.
Filed Mar. 1, 1978, Ser. No. 882,072
Int. Cl.² B65D *27/34, 27/08*
U.S. Cl. 206—629 **3 Claims**



1. A two compartment envelope comprising, in combination, a first generally rectangular blank defined by a rear panel and a front panel foldably attached to one another along a transverse fold line, a pair of side closure flaps foldably attached to the side edges of said rear panel and a top closure flap foldably attached to the upper transverse edge of said rear panel, and a second blank in the form of a patch adhered to the inside surface of said front panel, the improvement comprising:

(a) a recess along the transverse edge of said front panel remote from the fold line connecting said front and rear panels;

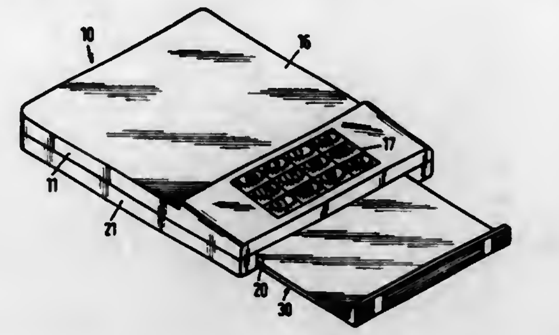
(b) a contoured extension along the transverse edge of said top closure flap for simultaneously sealing the first envelope compartment formed between said front panel and said patch and the second compartment formed between said rear panel and said patch;

(c) a perforated line in said top closure flap located so as to separate the contoured extension of said top closure flap from the main portion thereof for permitting independent access to said first compartment without disturbing the contents of said second compartment; and,

(d) a pattern of adhesive applied to said top closure flap in the form of a centrally located strip that overlaps said perforated line and a pair of separate patches outboard of said centrally located strip whereby said centrally located adhesive strip simultaneously seals the first compartment and the central portion of said second compartment while said adhesive patches seal the outboard portions of said second compartment.

4,129,215
DATA REGISTER

Hans Halm, Herne, Germany, assignor to Firma Confon AG, St. Gall, Switzerland
Filed Oct. 19, 1977, Ser. No. 843,592
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1977, 2741138
Int. Cl.² B07C *3/20*
U.S. Cl. 209—610 **3 Claims**



1. A data register with a register card selection mechanism comprising a housing which has a cover and a base with a plurality of selector keys which are juxtaposed and superimposed in rows and a drawer which is under the action of a compression spring and which is closable by means of a locking mechanism, whereby a large number of register cards are stacked in said drawer with selection tongues having openings formed in the rear edge portions thereof, said tongues increasing in size in step-like manner by, in each case, one opening-containing selection tongue from one side to the other of the register card with the first opening disposed opposite the first opening of the preceding register card, whereby each selection key is fixed to a swivel arm constructed as a lever which at its free end carries a card restraining pin, whereby the card restraining pins of the swivel levers are arranged in a row and cooperate with the register cards in such a way that, on depressing a selector key, all register cards located above the register card associated with this selector key are held back on extending the drawer by inserting the card restraining pins into the openings of the selection tongues of the register cards, while the selected register card and all the cards located below it are moved out with the drawer, as well as a device operable by the swivel levers of the selector keys for unlocking the drawer and releasing the register cards selected by a selector key by forcing out the unlocked drawer by means of the compression spring and provided with a cam for engaging with cam perforations on the register card,

(a) wherein the selector keys of the swivel levers comrise plate-like, square or rectangular blanks fixed to the ends thereof, with selector keys arranged one behind the other in any one row having a width which corresponds to the width of the particular swivel lever which carries three selector keys and are connected therewith in such a way that the selector key facing the card restraining pins at the rear ends of the swivel lever projects over the two adjacent swivel levers to the right and,the front selector key projects over the two adjacent swivel levers to the left and the central selector key projects to the right and left over the swivel lever adjacent to said key on either side,

(b) wherein the card restraining pin of each swivel lever comprises an approximately U-shaped portion shaped onto the end of the swivel lever with a leg leading to the selector keys onto whose end is shaped a vertically upwardly directed rod which on operating a swivel lever engages from below into the register card opening or recesses.

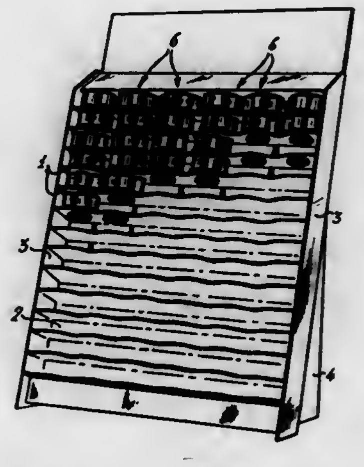
(c) wherein the drawer comprises a plate-shaped drawer bottom with a front terminal strip which seals a drawer extension opening in the housing front wall when the drawer is inserted, said drawer being open at the back and on either side and in its rear edge area having a plurality of slot-shaped recesses corresponding to the number of card restraining pins and having a length corresponding to the length of the U-shaped portion on the ends of the swivel levers, while two lateral drawer limiting walls are formed by two boundary walls shaped onto the inner wall surface of the housing cover and arranged on either side of the plate-shaped drawer bottom,

(d) wherein for guiding the swivel levers each swivel lever is provided on the end carrying the card restraining pin with a vertical slot-shaped opening into which engages a cam shaped onto the inner wall surface of the housing cover and is guided in the opening,

(e) wherein the mechanism for unlocking the drawer comprises a U-shaped shackle articulated to the cover of the housing and whose web which is at right angles to the longitudinal direction of the swivel lever rests on the top of the swivel arms and is subject to the action thereof, whilst each shackle member has a locking cam on its bottom face facing the drawer which cooperates with a counter-cam shaped onto the drawer in such a way that on raising the shackle on operating a selector key the locking cam is disengaged from the counter cam so that the drawer is extended outwards.

4,129,216
DISPLAY STAND FOR SEWING-THREAD SPOOLS AND LIKE ARTICLES

Henri Schick, Paris, France, assignor to Promotion Etude Conditionnement d'Articles de Mercerie - PECAM Internat., Orly, France
Filed Jun. 3, 1977, Ser. No. 803,417
Claims priority, application France, Jun. 11, 1976, 76 17739
Int. Cl.² A47F *7/16*
U.S. Cl. 211—13 **10 Claims**



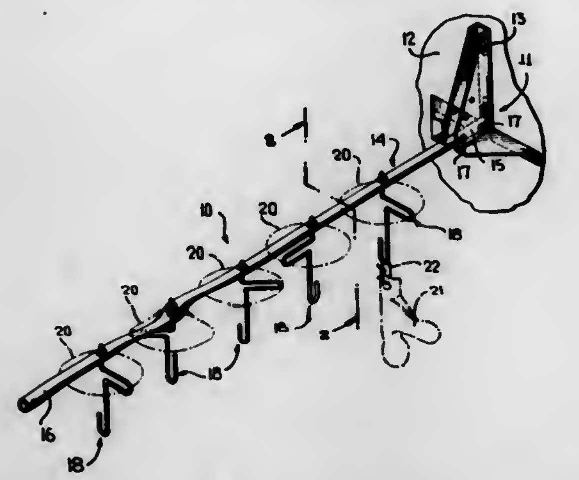
1. A stand, particularly a display stand, comprising a housing having at least two elongated shelves parallel to each other and spaced from each other in direction normal to the elongation of said shelves and thereby defining a space between each other; a plurality of supports rotatably and detachably received in the space between the shelves for rotation about respective first axes normal to the elongation of said shelves; a plurality of members rotatably and detachably mounted on each of said supports, for rotation about respective second axes parallel to said first axes and normal to said elongation of said shelves; first means for detachably installing each of said supports in the space between the shelves; and second means for detachably installing each of said members on said supports.

4,129,217
PORTABLE SPRAY PAINTING STATION

Talmage D. Campbell, 706 E. Silver Springs Blvd., Ocala, Fla. 32670
Filed Oct. 17, 1977, Ser. No. 842,990
Int. Cl.² A47F *5/08;* F16B *45/00*
U.S. Cl. 211—95 **6 Claims**

1. An apparatus for providing a portable station where an article may be suspended or removed therefrom after being coated, said apparatus including a support base capable of

being suspended from a generally vertical surface, a beam connected to and extending generally longitudinally horizontally from said support base, at least two first hangers rotatably depended from said beam, said first hangers being positioned in spaced relationship relative to each other and from said support base, a second hanger corresponding to each of said first hangers and being suspended therefrom, each of said second hangers being engagably detachable from a respective said first hanger, each of said first hangers having a plurality of interconnected sections, a first section of said first hanger being a swivel depending vertically from said beam and being pivotally connected thereto, a second section of said first hanger being a handle horizontally depending from said first section of said first hanger, said second section of said first hanger being capable of being rotated thereby moving said first section of said first hanger pivotally relative to said beam, a third section of said first hanger being a hook vertically depending from said second section of said first hanger wherein said third section of said first hanger is suitably arranged to engagably receive said second hanger.



4,129,218
MULTIPLE HANGER

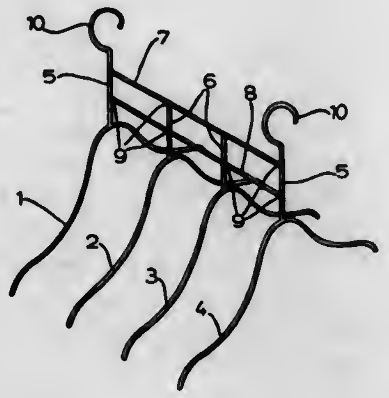
Guido Koellner, Leyher Strasse 9, 8500 Nuremberg, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 844,862

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1976, 2651261

Int. Cl.² A47F ***5/08***

U.S. Cl. 211—116 **8 Claims**



1. A multiple hanger for garments such as blouses, shirts and the like, comprising at least three generally parallel hanger elements on which said garments are hung, a connecting rod pivotally connected to each of said hanger elements, and a guiding rod pivotally connected to each of said hanger elements, said guiding rod being parallel to and spaced from said connecting rod, said pivotally connected guiding rod, connecting rod, and hanger elements forming a parallelogrammatic linkage such that all of said hanger elements pivot simultaneously in parallel array, whereby when in use the multiple hanger is pivotal to a first position wherein the connecting rod and guiding rod are horizontally disposed and the hanger elements are all disposed at the same elevation, and to a second position wherein the connecting rod and guiding rod are substantially vertically disposed and the hanger elements are disposed at different elevations substantially one above the other.

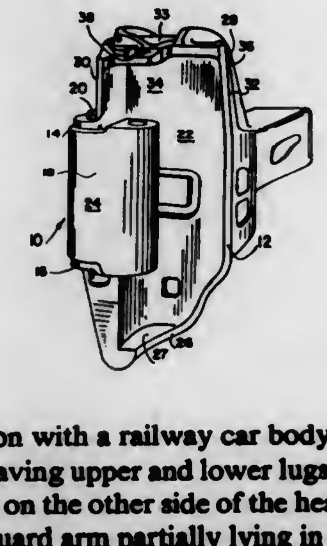
4,129,219
RAILWAY CAR COUPLER

Walter R. Polanin, Hazelcrest, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jun. 9, 1975, Ser. No. 584,875

Int. Cl.² B61G ***3/04***

U.S. Cl. 213—100 R **2 Claims**



1. In combination with a railway car body having a coupler head of the type having upper and lower lugs on one side of the head, a guard arm on the other side of the head, a face between the lugs and the guard arm partially lying in a vertical plane, a knuckle pivotally supported by the lugs and partially lying in a vertical plane, the knuckle and face being spaced from one another when the knuckle is in a closed position to define an opening, the knuckle having an upper and a lower surface,

a lower shelf on the head having a surface spaced from and located downwardly below the lower surface of the knuckle, and

an upper shelf on the head having a top wall spaced from and located upwardly above the upper surface of the knuckle and having a forward leading edge, the improvement wherein,

said leading edge of said upper shelf being divided into a lower vertical surface portion and an upper segment with said upper segment being inclined upwardly and rearwardly toward the railway car at an angle of at least 4°–43′ to the vertical,

said upper shelf having a forward rib formed on said top wall, and said upper segment of said leading edge extending upwardly above said top wall onto said forward rib.

4,129,220
BAR STOCK FEED APPARATUS

Anders A. Peterson, Elmira, and Francis D. Catlin, Horseheads, both of N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Nov. 1, 1976, Ser. No. 737,914

Int. Cl.² B65H ***5/16***

U.S. Cl. 214—1.4 **23 Claims**

1. Bar stock feed apparatus comprising:

(a) an elongated tubular member adapted to receive a length of bar stock therein,

(b) standard means for supporting said tubular member in an operative position for feeding the bar stock and in an inoperative position wherein bar stock can be loaded into said tubular member,

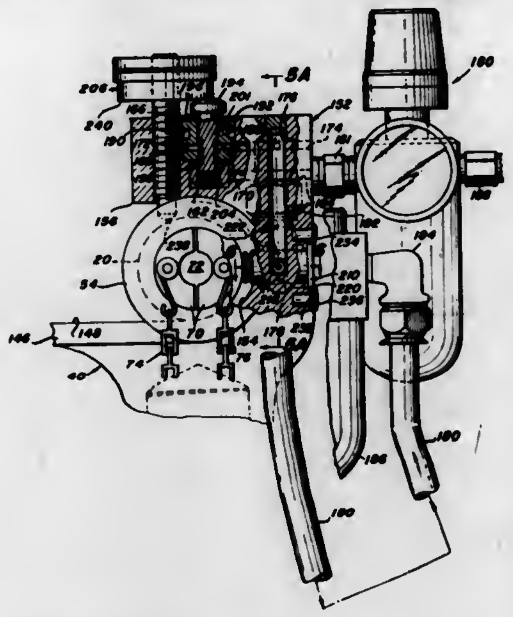
(c) a fluid actuated plunger received in said tubular member for longitudinal movement therein,

(d) means for supplying fluid under pressure to said tubular member behind said plunger to thereby cause said plunger to advance longitudinally within said tubular member,

(e) a locking mechanism associated with said standard means including means for mechanically constraining said tubular member in said operative position,

(f) pressure responsive safety valve means associated with said standard means adapted to be connected to said fluid supply means responsive to the presence of said tubular member when in operative position to automatically permit a supply of fluid to said plunger and responsive to the absence of said tubular member from said operative position to automatically interrupt or reduce the supply of fluid to said plunger,

(g) said plunger comprising at least two coaxial sections connected for unitary axial movement and for a relative rotational movement about their axis and wherein the forward one of said two sections includes means for receiving one end of a length of bar stock.



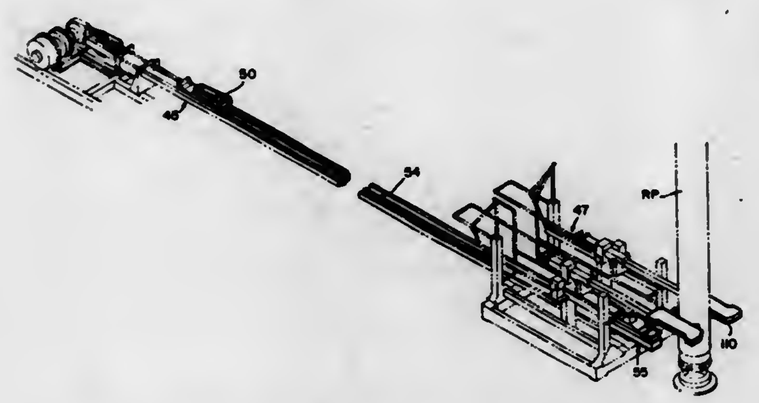
4,129,221
PIPE HANDLING APPARATUS

Walter H. Moller, Bellevue, Wash., assignor to Western Gear Corporation, Everett, Wash.

Filed Apr. 30, 1976, Ser. No. 682,052

Int. Cl.² E21B ***19/14***

U.S. Cl. 214—2.5 **6 Claims**



3. A riser/casing pipe adapter for handling large diameter pipe each having a stabber end and a skate end in a smaller diameter pipe transporting system for moving axially and lifting lengths of pipe of a first diameter to and from a drill rig floor in conjunction with a pipe elevating device, said transporting system including a first skate, a first skate track for guiding the first skate and first skate driving means for moving the first skate along the first skate track, the improvement comprising an elongated skate adapter for pipe of a larger second diameter having a first end supported for movement along said first skate track and a second end supported by and coupled to said first skate whereby movement of said first skate will move said skate adapter, said skate adapter having a second track along the length of the adapter for supporting the skate end of the larger diameter pipe as it is moved along said adapter responsive to raising or lowering of the stabber end of the large diameter pipe by the pipe elevating device.

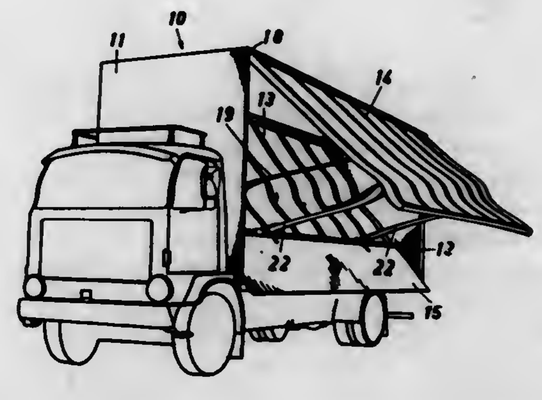
4,129,222
DEVICE FOR EMPTYING CONTAINERS OR SIMILAR

Dan Richardsson, Södra Kyrkogatan 5, Lidköping, Sweden (531 00)

Filed Sep. 15, 1977, Ser. No. 833,696

Int. Cl.² B60P ***1/28***

U.S. Cl. 214—17 D **3 Claims**



1. A device for emptying a container, said container comprising a pair of side walls which are situated opposite each other and which are pivotally mounted at their upper edges about upper hinges, a bottom wall including a fixed bottom plate and a movable bottom plate pivotally connected by a lower hinge to the lower edge of one of said side walls, and a fixed bottom construction, said device comprising means for pivoting the side walls about the upper hinges and displacing the movable bottom plate in relation to the fixed bottom plate, wherein said means comprises at least one jacking means having two members movable relative to each other, a first of said members having an end pivotally attached to a side edges of the bottom construction of the container, and the second member being pivotally attached to said one of said side walls and the device further includes at least one elongated member connecting the side walls to each other.

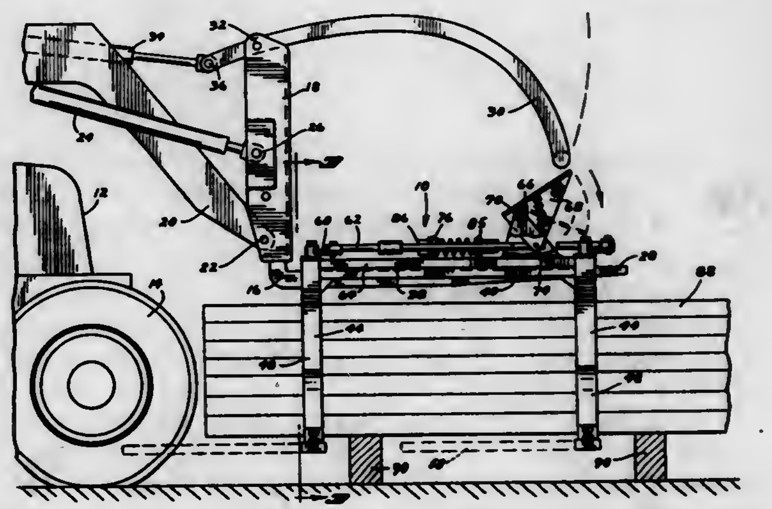
4,129,223
BUNDLE CARRIER ATTACHMENT FOR FORK LIFT TRUCKS

Wallace P. Probst, Marcell, Minn., assignor to Robil Company, Minneapolis, Minn.

Filed Sep. 22, 1977, Ser. No. 835,688

Int. Cl.² B66F ***9/06, 9/14***

U.S. Cl. 214—620 **10 Claims**



1. A bundle carrier attachment for use with a fork lift truck

having at least two power operated, vertically movable, fork lift truck tine means extending substantially horizontally ahead of the truck in direction longitudinally of the axis of movement of the truck, said bundle carrier attachment including:

A. An upper framework including a longitudinally extending fork lift truck tine receptacle for each fork lift truck tine means, each said receptacle having a central longitudinal axis said framework having at least a first longitudinally extending framework member adjacent and parallel to a first of said fork lift truck tine receptacles, said first framework member forming a first longitudinal edge portion of the upper framework;

B. at least two vertical, spaced apart, load support legs integral with said framework and extending downwardly from positions adjacent opposite end portions of said first framework member, said load support legs both lying in a single vertical plane parallel to and spaced from the central longitudinal axis of each said tine receptacle;

C. at least two bundle carrier tine control shafts each rotatably mounted with respect to said upper framework and with respect to one of said support legs;

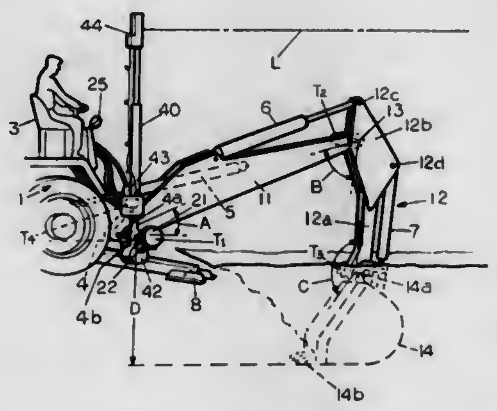
D. at least two bundle carrier tines each supported at one end with respect to a bottom portion of one of said vertical load support legs for rotation about a vertical axis and operably associated with lower portions of said shafts to be rotatable upon rotation of said shafts between a first position wherein said bundle carrier tines are in mutually parallel relation to each other and in transverse relation to said first longitudinally extending framework member and a second position wherein said bundle carrier tines are in mutually aligned relation with each other and in parallel and substantially vertically aligned relation below said framework member; and

E. means mounted with respect to said framework for rotating said shafts to move said bundle carrier tines between said first and said second positions.

4,129,224
AUTOMATIC CONTROL OF BACKHOE DIGGING DEPTH

Ted L. Teach, Dayton, Ohio, assignor to Laserplane Corporation, Dayton, Ohio

Filed Sep. 15, 1977, Ser. No. 833,432
Int. Cl.^{2} E02F *9/20*
U.S. Cl. 214—763 6 Claims



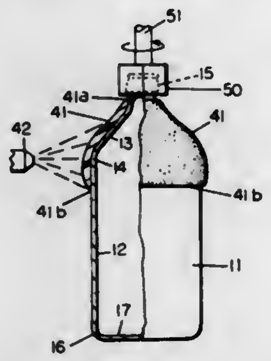
1. The method of operating a backhoe to move the digging edge of the bucket thereof along a path parallel to the desired slope of the bottom of the excavation and with the digging angle of the bucket being substantially constant with respect to said desired slope, said backhoe having an outreach boom vertically pivotal about a horizontal axis defining an Angle A with respect to the horizontal, a downreach boom pivotally secured to the free end of the outreach boom to define an Angle B therebetween, and a digging bucket pivotally secured to the other end of the downreach boom to define Angle C between the digging edge of the bucket and its pivotal axis on the downreach boom, there being three power-actuating means respectively operating on said outreach boom, said downreach boom, and said digging bucket to vary said Angles A, B and C, comprising the steps of:

(1) manually controlling the power-actuating means determining Angle B to move said bucket through a digging stroke;
(2) generating a first electrical signal continuously proportional to Angle B;
(3) controlling one of the two remaining power-actuating means as a trigonometric function of Angle B, the length of the outreach boom, and the length of the downreach boom, thereby determining either Angle A or Angle C;
(4) generating a second electrical signal continuously proportional to the Angle determined by step (3); and
(5) controlling the remaining power-actuating means as a linear function of the sum of the electrical signals generated in steps (2) and (4).

4,129,225
VARIABLE STRENGTH PLASTIC WRAP ON GLASS BOTTLES

Edward L. Bailey, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 585,226, Jun. 9, 1975, Pat. No. 4,007,246. This application Jun. 3, 1976, Ser. No. 692,266
Int. Cl.^{2} B65D *11/16*
U.S. Cl. 215—12 R 11 Claims



1. A bottle comprised of an integral annular glass wall encircling a longitudinal axis of the bottle and including a neck and an upper rim defining a mouth opening, the rim being adapted for sealingly connecting a closure thereon, the combination with an exterior cover member encircling the wall of said bottle including said neck comprised of a film formed in situ from a powdered polymeric material that is in a conforming snug encircling engagement on the exterior surface of said bottle wall, said cover member being of variable strength along the axis of said bottle and having an encircling region of a maximum strength disposed in overlying relation to the said neck region of the bottle, said cover member varying in thickness axially along the bottle, the upper portion of said cover member that overlies the neck being in the range of 0.005 to 0.010 inch in thickness and the remaining axial lower portion of said cover member being in the range of 0.003 to 0.005 inch in thickness, the ratio of thickness of said upper portion to said lower portion being in the range of 1.2 to 1 to 1.4 to 1.

4,129,226
HINGED CLOSURES FOR CONTAINERS

Stephen J. Percival, Mardstone, England, assignor to Johnsen & Jorgensen (Plastics) Ltd., London, England

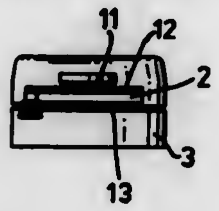
Filed Sep. 19, 1975, Ser. No. 615,066
Claims priority, application United Kingdom, Sep. 20, 1974, 41159/74
Int. Cl.^{2} B65D *41/60*
U.S. Cl. 215—235 1 Claim

1. A hinged closure for closing the mouth of a container comprising:

an annular anchor band attachable to the container around the mouth thereof, and

a cap portion joined to said anchor band around the entire circumference thereof by means of a first weakened portion defining a first tear line extending around substantially the entire circumference, said cap having a thumb tab extending radially outwardly therefrom,

a second weakened portion defining a second tear line spaced axially from said first tear line and extending partially around the circumference of said closure a predetermined distance on each side of said thumb tab, said first and second tear lines defining a tear band extending along the length of said second tear line, and



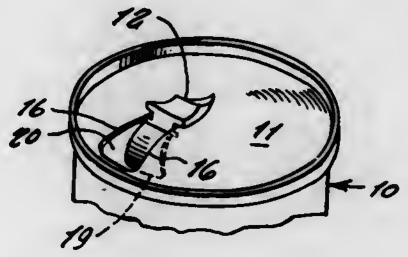
means for grasping said tear band at one end thereof, whereby said closure is opened by pulling said tear band open and then removing said cap portion by pulling said thumb tab axially to cause said cap portion to be severed along said first tear line,

a pair of thickened portions extending across said first tear line and located on opposite sides of said thumb tab, whereby said cap portion flexes about said thickened posts during the tearing away of said cap portion by the action of said thumb tab until said thickened portions tear to permit the remainder of said first tear line to be broken.

4,129,227
ECOLOGY POP-IN CONTAINER TOP

Theodore K. O'Neil, and George Spector, both c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Mar. 17, 1978, Ser. No. 887,875
Int. Cl.^{2} B65D *41/32*
U.S. Cl. 220—267 4 Claims



1. An ecology pop-in container, comprising in combination a beverage can having an upward rounded top end wall, a slide mounted externally of said top end wall, said slide being carried on a downward rivet riveted through said top end wall, said slide having a pair of lock-in-legs attached thereto, and means on said slide for rolling down side edges of a beverage pouring opening made by said slide.

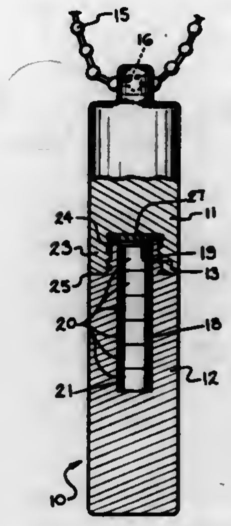
4,129,228
MEDICATION CONTAINER WITH QUICK RELEASE CLOSURE

John W. Stoneback, 328 East 262 St., Cleveland, Ohio 44132

Filed Apr. 5, 1976, Ser. No. 673,684
Int. Cl.^{2} B65D *41/04*
U.S. Cl. 220—293 14 Claims

1. A medicine container comprising:

(a) a pair of members defining complemental male and female portions each having pilot and threaded sections;
(b) the pilot section of one portion being axially shorter than the pilot section of the other portion;
(c) the thread of the other portion threaded section having a first crest surface of a diameter different than the one pilot section by a first amount to provide a first pilot action as the portions are brought into telescopic relationship;
(d) the thread of the one portion threaded section having a second crest surface of a diameter different than the other pilot section by a second amount less than the first to provide a second and more precise pilot action as the portions are brought into telescopic relationship;

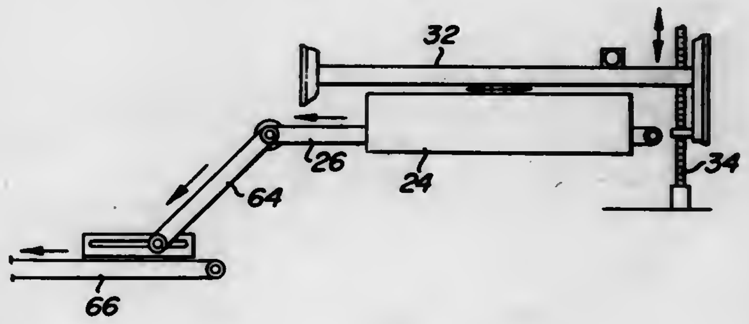


(e) whereby to bring the threads into axial alignment prior to connecting relative rotation of the portions to connect the members.

4,129,229
ARTICLE DISPENSING APPARATUS

William L. Brown, Easton, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Jan. 31, 1977, Ser. No. 763,785
Int. Cl.^{2} B65B *47/02*
U.S. Cl. 221—129 15 Claims



12. Apparatus comprising:

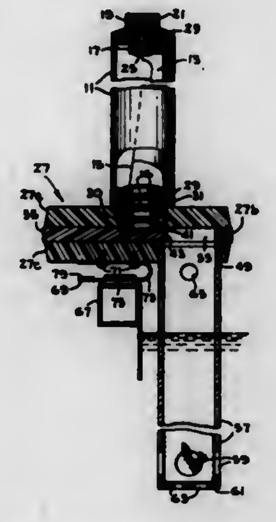
(a) means supporting a plurality of horizontally disposed shelves one above the other, means dividing said shelves into a plurality of lanes,
(b) a discrete pusher associated with each lane for pushing articles toward the edge end of its associated shelf, a separate actuator for each pusher,
(c) a conveyor along the front edge of said shelves for receiving goods from said lanes, motor means for selectively elevating said conveyor so that it may receive goods from each of said shelves, said conveyor being an endless con-

veyor having a length approximately equal to the length of the front edge of the shelves,

(d) a picking head for controlling each pusher actuator, said picking head being supported for vertical movement with said conveyor and for independent movement horizontally along said conveyor, said picking head being supported above the elevation of said conveyor and having a sloping member movable therewith for receiving articles from a shelf lane and transferring the same to said conveyor, the picking head supporting a gear for movement toward and away from a vertical plane containing the front edge of said shelves for driving any preselected one of said pusher actuators, said picking head gear being supported for pivotable movement about an axis which is horizontally disposed, and cam means for selectively shifting said gear toward said plane.

4,129,230
TABLET DISPENSER

Ronald J. Billett, Sunnyvale, and Bruce M. Harper, San Jose, both of Calif., assignors to FMC Corporation, San Jose, Calif.
Filed Jan. 6, 1975, Ser. No. 538,987
Int. Cl.^{2} B65G *1/08*
U.S. Cl. 221—268 3 Claims



1. A tablet dispenser for association with a liquid container comprising a base having an elongated passageway therein,

a tablet magazine secured to said base communicating with said passageway and extending vertically therefrom for holding a stack of tablets for gravital movement thereof toward and into said passageway,

a pusher mounted for sliding movement in said passageway along a rectilinear path between tablet-receiving and tablet-rejecting positions,

said pusher having its upper surface adjacent the forward end thereof cut away to define an elongated recess extending rearwardly therefrom defining a flat tablet support surface parallel to said rectilinear path,

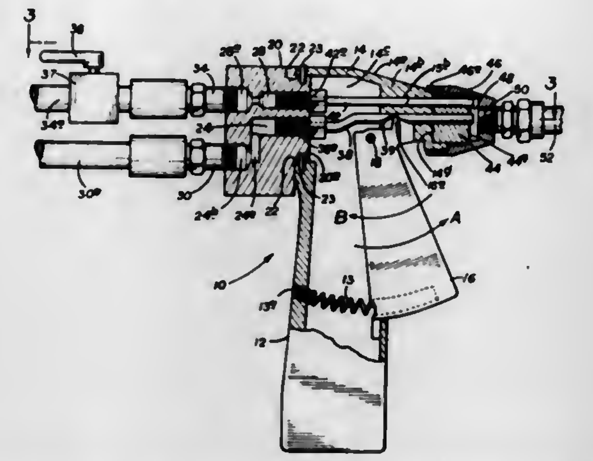
said pusher when in said tablet-receiving position being disposed along said path in said passageway with its said forward end adjacent said tablet magazine in unobstructing relation thereto, thereby to permit a lowermost tablet to gravitate into said passageway in front of said pusher,

said pusher when advanced along said path toward said tablet-ejecting position being disposed in said passageway with said elongate recess underlying said tablet magazine thereby to receive and continuously support the next lowermost tablet without vertical movement thereof as the lowermost tablet is pushed to a discharge position,

the height of said pusher forward end below said recess being less than the height of a tablet with the height of said passageway being greater than tablet height whereby said pusher forward and engages only the lowermost tablet in the stack.

4,129,231
PORTABLE, HAND-HELD GUN FOR DISPENSING MULTIPLE FLUIDIC COMPONENTS TO A MIXER

Charles L. Larson, Grants Pass, Oreg., assignor to Jeddeloh Bros. Sweed Mills, Inc., Gold Hill, Oreg.
Filed Nov. 13, 1975, Ser. No. 631,714
Int. Cl.^{2} B05B *7/04*
U.S. Cl. 222—145 3 Claims



1. A portable, hand-held, readily disassemblable fluid dispensing gun for introducing fluidic materials from a supply source to a mixing conduit or the like comprising:

a handle including a barrel;

a head assembly detachably connected to a rear end of said barrel, said head assembly having plural fluid conducting passages extending therethrough;

a plurality of flexible, fluid conducting tubes each being detachably connected to said head assembly and communicating with an associated one of said passages, said tubes extending from said head assembly through said barrel and outwardly from a front end of said barrel, said tubes being detachable from said head assembly when said assembly is separated from said barrel;

a trigger lever having a member extending from one end thereof, said lever being mounted on said handle and normally biased to a position in which said member deforms said tubes, said lever also being selectively movable to a position in which said tubes are nondeformed by said member;

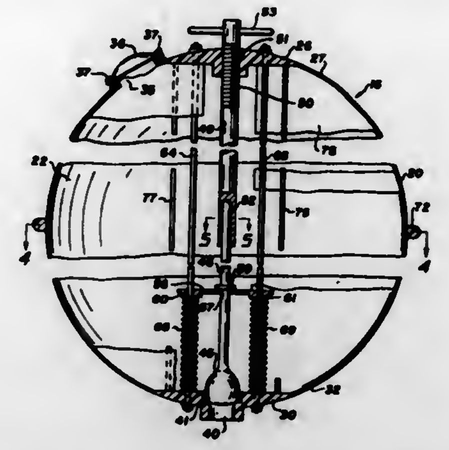
A removable orienting plug mounted against said front end of said barrel including passages for receiving said fluid conducting tubes which extend therethrough; and

cap means detachably connected to said front end including an outlet, said cap means urging said orienting plug against said front end and providing an internal wall of an initial mixing chamber adjacent said front end, said cap means also providing a mounting for said mixing conduit extending outwardly therefrom.

4,129,232
FLUID SUBSTANCE TRANSPORTING AND STORAGE TANKS

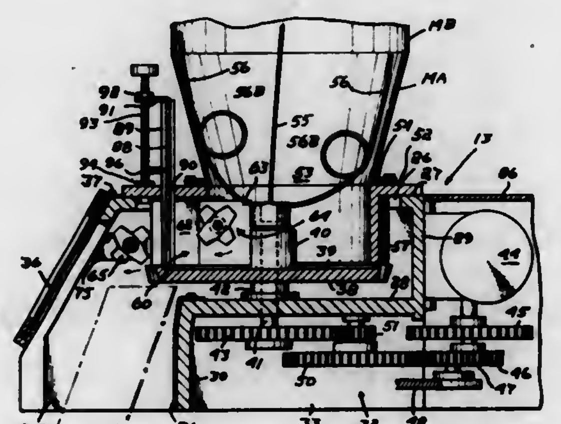
Robert B. Coupar, 4447 Narvaez Crescent, Victoria, British Columbia, Canada (V8N 2S7)
Filed Aug. 12, 1977, Ser. No. 824,115
Int. Cl.^{2} B65D *47/30*
U.S. Cl. 222—173 6 Claims

1. A tank for holding and transporting fluid substances, comprising: a spherical wall enclosing a storage chamber for a fluid substance; a discharge opening in a portion of the wall constituting the bottom of the spherical wall; a seat in the chamber and surrounding the discharge opening; an inlet opening in a portion of the wall forming the top thereof; a cover for the inlet opening; a plug in the chamber positioned to engage the seat and thereby close the discharge opening; and operating means connected to the plug and operable selectively to move said plug onto and off the seat respectively to close and open the discharge opening to retain said fluid substance in the chamber and to allow said substance to flow out of the chamber, said operating means comprising spring means connected to the plug and normally urging the latter away from the seat, nut means near the top portion of the wall and a shaft threaded through said nut means and extending out through said wall, said shaft having an inner end connected to the plug, whereby rotation of the shaft in one direction causes the shaft to move the plug onto the seat against the action of said spring means and rotation of the shaft in the opposite direction permits the spring means to move the plug off the seat.



4,129,233
METERING APPARATUS FOR FLOUR AND OTHER MATERIALS THAT TEND TO BRIDGE

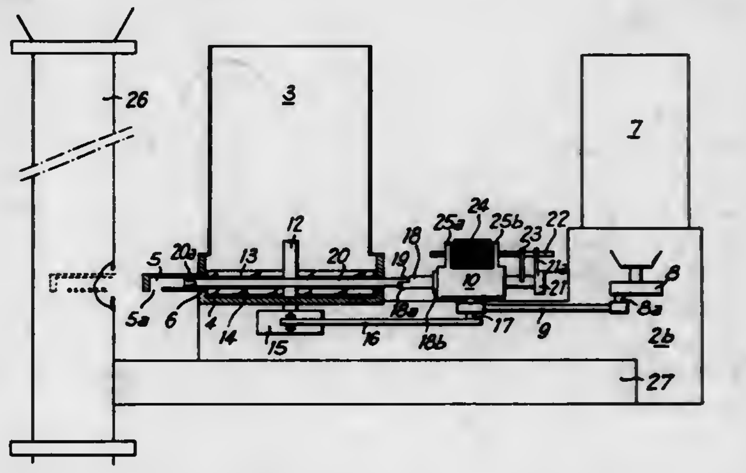
Richard W. Schmader, 50 Myopia Rd., Winchester, Mass. 01890
Filed Nov. 11, 1976, Ser. No. 740,888
Int. Cl.^{2} G01F *11/00*
U.S. Cl. 222—227 4 Claims



1. Apparatus for dispensing from a container having a downwardly opening outlet of a reduced cross sectional area, flour, flour mixes and other dry materials that tend to bridge and thus prevent a uniform and constant flow through the outlet by gravity, said apparatus including a housing having a shelf, a turntable of a diameter greater than said outlet and rotatably supported by said shelf with a portion protruding therefrom to provide a segment from which material is to be discharged, a cover including a depending wall overlying with a working clearance marginal portions of said turntable except said segment and including ends defining an outlet passage leading thereto, said turntable, cover and said depending wall defining a chamber for the material and said cover having a port opening into the chamber over the axis of the turntable to permit entry of material from the container, the inlet end of said passage disposed to receive material as the turntable turns, a drive connected to said turntable and operable to effect its turning at a slow rate, probe means carried by said turntable and extending upwardly through said port and into the container when the container is positioned to discharge material into said chamber, then to break up any bridging of the material, means extending transversely of the direction of flow in said passage and operable to ensure the discharge of a predetermined volume of material at a selected rate from the protruding segment, said means including means to remove material from the margin of said segment, means adjacent the infeed end of the outlet passage operable to pass material to the first named means, and an adjustable gate between the first and last named means.

4,129,234
MICRO-PROPORTIONER APPARATUS FOR DIVIDED PRODUCTS

Gilbert G. Conca, Cabries, France, assignor to Transitube Project, Aix-En-Provence, France
Filed Jan. 7, 1977, Ser. No. 757,500
Claims priority, application France, Jan. 16, 1976, 76 01925
Int. Cl.^{2} G01F *11/06*
U.S. Cl. 222—235 11 Claims



1. A micro-proportioner apparatus for dispensing divided or powdery products including:

a vertical hopper which contains said products, which hopper includes a bottom, a cylindrical side channel for outlet of the products, said channel having a mouth which opens slightly above the bottom of the hopper,

a cylindrical sliding rod located inside said vertical hopper, coaxial with said channel and having a front end,

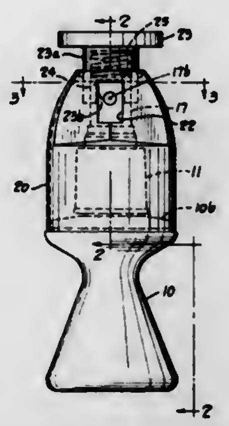
two groups of rotating paddles located in said hopper, above said bottom in two horizontal planes with one of said groups located above and the other of said groups below said sliding rod; and means for driving said sliding rod periodically in reciprocating translation parallel with the axis of said channel, so that said front end of the sliding rod is alternatively inside said channel and outside said channel in spaced relation to the mouth of the channel to form a gap therebetween; and means for adjusting the gap between said front end of the sliding rod and said mouth of the channel to vary the amount of products dispensed at each sliding rod stroke.

4,129,235
MANUALLY ACTUATED SPRAY HEAD WITH COMFORT HOLD AND ACTUATOR

Edwin J. Haas, 17004 Pearldale Ave., Cleveland, Ohio 44135
Filed May 26, 1977, Ser. No. 800,931
Int. Cl.^{2} B05B *11/00;* G01F *11/12*
U.S. Cl. 222—321 6 Claims

2. A manually actuated spray container consisting of an imperforate liquid reservoir of a size to be held in the hand of a user, said reservoir having a neck and a dispenser opening at the top, a closure for said opening including a manually operated pump for moving liquid in said reservoir out through said dispenser opening, an actuator at the top of said closure operatively associated with said pump when moved up and down, said reservoir having a top of greater diameter than said closure, a comfort hold enclosing said top and said closure and

said actuator, said comfort hold being generally cylindrical and hollow and having a bottom edge of a diameter to snap on said reservoir top diameter, said hold being of a diameter to be comfortably held in the hand of a user, said hold having a top opening, a circular button having a diameter greater than said opening, said button having a central downwardly extending projection adapted to pass through said top opening, said projection having a portion positioned to engage said actuator and having another portion adapted to encase the top of said actuator, said dispenser opening extending laterally outwardly, there being an opening on one side only of said projection portion encasing said actuator, and means for maintaining said hold in position relative to said actuator with said dispenser opening opposite said opening in said projection portion encasing said actuator, whereby a user may grasp said hold and use a finger on said button to dispense the liquid content of said reservoir.



4,129,236
CONTAINER WITH SPOUT CONNECTION

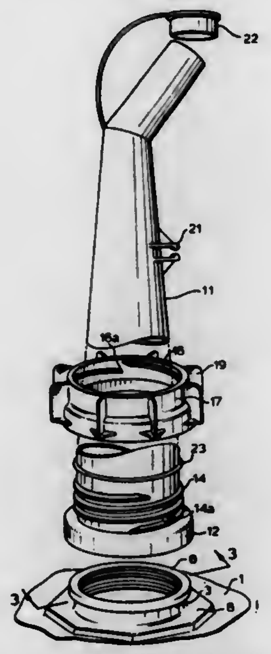
Norman E. Wrycraft, Malton, and Alistair K. Collins, Willowdale, both of Canada, assignors to Vulcan Industrial Packaging Limited, Rexdale, Canada

Filed Jun. 23, 1977, Ser. No. 809,301

Claims priority, application United Kingdom, Jun. 29, 1976, 26989/76

Int. Cl.^{2} B65D *25/40*

U.S. Cl. 222—570 **4 Claims**



1. A container having in its top a pouring aperture bounded by a raised metal neck with an outwardly turned bead, a spout releasably retained on the neck comprising a one-piece moulding of stiffly bendable plastics material comprising at one end a flared skirt with a circumferentially-continuous internal groove in tight snap-fitting connection on said bead, said skirt having a generally cylindrical exterior surface extending from the bottom edge of the spout upward to an inwardly stepped shoulder portion that engages sealingly on the top of the metal neck, an externally threaded intermediate portion above the stepped portion, and an elongated upper portion tapering from the threaded portion to a relatively slender elongated pouring outlet portion at the end remote from the skirt, said groove levering off from and disconnecting from said snap-fitting connection with the bead by application of normal hand pressure to the upper and outlet portions, and a locking collar moulded from plastics stiffer than the plastics material of the spout and comprising an upper end part threaded on said threaded portion, and a lower sleeve having an inner cylindrical surface extending over the skirt in tightly abutting engagement with the entire exterior cylindrical surface of the skirt and resisting outward flexure of the skirt so as to prevent said levering disconnection until the collar is rotated to retract the sleeve upwardly from said cylindrical surface.

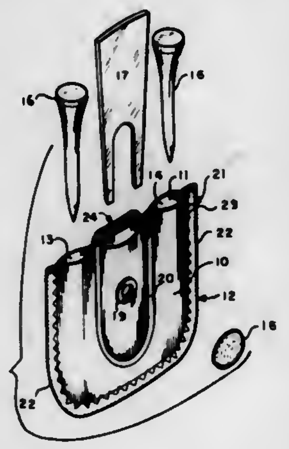
4,129,237
GOLFER'S AID

Charles E. Grinder, 9366 Schaefer Rd., Converse, Tex. 78109

Filed Feb. 11, 1977, Ser. No. 767,780

Int. Cl.^{2} A45C *11/00;* **A63B** *57/00*

U.S. Cl. 224—5 C **5 Claims**



1. A golfing aid comprising:

a. a pouch-like container having a first edge and a second edge,

b. a first pocket formed in said pouch adjacent said first edge,

c. a first golf tee inserted in said first pocket,

d. a second pocket formed in said pouch adjacent said second edge,

e. a second golf tee inserted in said second pocket,

f. a central pocket constructed intermediate said first pocket and said second pocket,

g. a divot repair tool inserted in said central pocket,

h. a snap fastener attached to a first side of said central pocket for securing a ball marker to said central pocket,

i. a spring clip secured to a second side of said central pocket, said clip having a configuration suitable for clipping to an item of golfer's apparel, and

j. a flexible covering encasing said spring clip.

4,129,238
APPARATUS FOR FEEDING A WEB IN REGISTRY BETWEEN WEB PASSES THROUGH A PROCESSING MACHINE

Josef Herd, Münster b. Dieburg, Fed. Rep. of Germany, assignor to Maschinenfabrik GOEBEL GmbH, Fed. Rep. of Germany

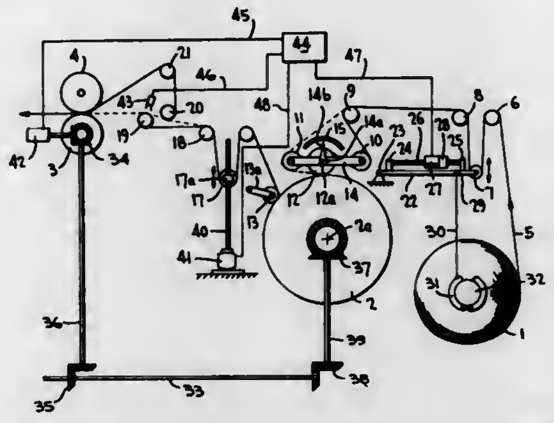
Filed Sep. 13, 1977, Ser. No. 832,983

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1976, 2642381

Int. Cl.^{2} B65H *23/18*

U.S. Cl. 226—29 **4 Claims**

1. Apparatus for use with a machine processing a continuous moving web having markings representing repeat lengths applied thereto during a prior web pass through the machine, a draw mechanism for unwinding the web from a wound roll, an adjustable guide roll for applying a maintained tension to the web downstream of the draw mechanism relative to web movement, the apparatus comprising: a braking device coupled to the wound roll for braking the web upon unwinding by the draw mechanism; an adjustable dancer roll for applying a maintained tension to the web upstream of the draw mechanism; the dancer roll being connected to the braking device for establishing a direct relationship between a decrease and increase in web tension, upstream of the draw mechanism, and an increase and decrease in braking effect on the web being unwound by the draw mechanism; drive means for operating the machine as well as the draw mechanism; means for scanning the speed of the web movement and for scanning the web markings between the adjustable guide roll and the machine for measuring any elongation of the web by the relative positions of the markings; first and second remotely controllable and independent means for respectively varying the adjustment of the guide roll and of the dancer roll for varying the maintained tension respectively applied downstream and upstream of the draw mechanism; and means responsive to the scanning means for operating the first and second remotely controllable means for varying the maintained tension to the web both downstream and upstream of the draw mechanism in an appropriate direction to maintain registry of the web during passes thereof through the machine.



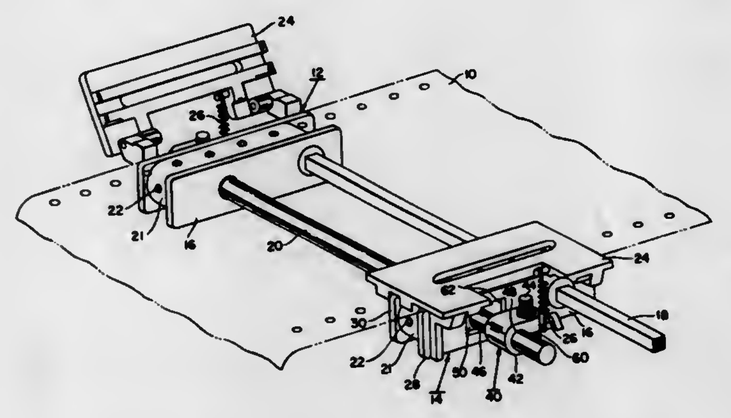
4,129,239
CLAMPING DEVICES FOR DOCUMENT TRACTORS

Leo J. Hubbard, Somerset, Mass., assignor to Precision Handling Devices, Inc., Assonet, Mass.

Filed Aug. 10, 1977, Ser. No. 823,370

Int. Cl.^{2} B65H *17/34*

U.S. Cl. 226—75 **16 Claims**



1. In a web feeding device having a frame and endless belt carrying drive elements engageable with perforations in the web, said belt being mounted on the frame, a sprocket also mounted in the frame driving in engagement with said belt and around which the belt is driven, said sprocket having an axle for receiving a drive shaft and said frame having an opening for receiving a support shaft which is parallel to said drive shaft, said frame being movable axially of said shafts to adjust the position of said belt to bring said drive elements into registry with the web perforation, a mechanism which enables said frame to be adjustably positioned on said shafts and which clamps said frame in position, said mechanism comprising only a pair of operational parts, a first of said parts having a split ring portion which encompasses said support shaft, means in said frame encompassing the opening which receives said support shaft for receiving said first part and providing a floating connection between said first part and said frame, and a second of said parts being mounted on said first part rotatable within said split ring portion for closing said split ring and bringing said split ring into clamping engagement with said support shaft.

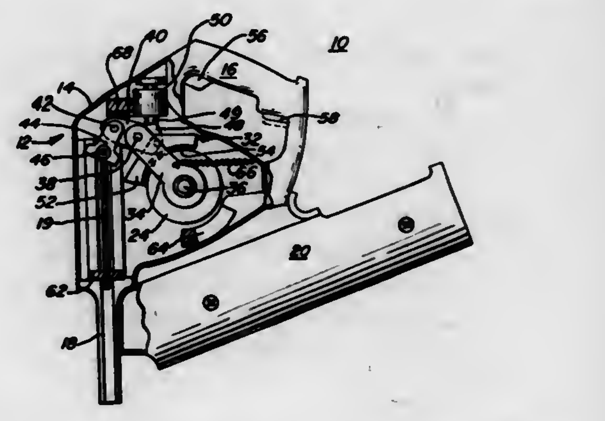
4,129,240
ELECTRIC NAILER

Bernard W. Geist, Melrose Park, Ill., assignor to Duo-Fast Corporation, Franklin Park, Ill.

Filed Jul. 5, 1977, Ser. No. 813,080

Int. Cl.^{2} B25C *1/06*

U.S. Cl. 227—8 **27 Claims**



1. An impact tool for applying a driving force to a fastener for driving said fastener into a workpiece, said tool comprising:

a tool housing;

a driver reciprocally mounted in said housing for driving said fastener;

at least one high speed, rotational energy device rotatably mounted in said housing and spaced from said driver;

means for rotating said energy device;

means for transferring said rotational energy of said energy device to said driver, said transferring means including a toggle mounted in said housing and movable from a first nonenergy transferring position to a second position coupling said energy device with said driver for transferring said energy to said driver thereby moving said driver into driving engagement with said fastener; and

means for moving said toggle into said first and second positions.

4,129,241
INERTIA WELDING PROCESS FOR MAKING AN ANODE ASSEMBLY

Thomas M. Devine, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 18, 1977, Ser. No. 788,247

Int. Cl.^{2} B23K *21/00*

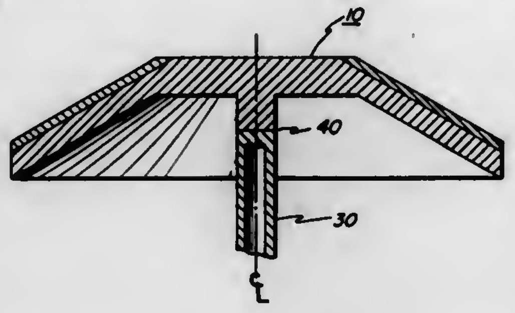
U.S. Cl. 228—113 **12 Claims**

1. A method for affixing a stem to a disc which includes an x-ray target affixed to a selected surface area of a substrate to make an anode assembly for a rotating x-ray anode tube comprising

(a) placing the disc, wherein the substrate comprises a material which is one selected from the group consisting of molybdenum and molybdenum-based alloys, and the stem, which comprises a material which is one selected from the group consisting of columbium, columbium 291, columbium 103, and columbium-1Zr, to be joined together in inertia welding apparatus whereby the respective surface areas thereof to be inertia welded together are in abutting relationship with each other;

(b) subjecting the positioned disc and stem to a first predetermined flywheel moment of inertia of from about 9.0 lb-ft^2 to about 19 lb-ft^2, a predetermined first axial force of from 3,100 pounds to about 4,500 pounds and a predetermined first spindle speed of from about 4,000 RPM to 4,800 RPM to cause the abutting surface to rub against each other;

(c) heating at least the substrate of the disc to a predetermined elevated temperature by the frictional energy generated by the rubbing together of the abutting surface areas;



(d) joining the stem to the disc by a weld joint formed at the interface of the abutting surface areas by inertia welding by subjecting the positioned disc and stem to a second predetermined flywheel moment of inertia of from about 9.0 lb-ft^2 to about 19.0 lb-ft^2, a second predetermined axial force of from about 11,000 pounds to about 13,250 pounds and a second predetermined spindle speed of from about 250 RPM to about 500 RPM.

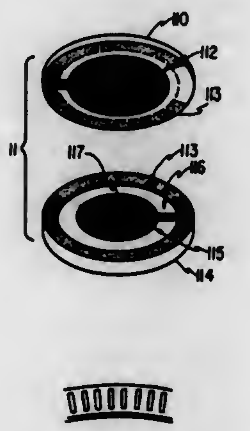
4,129,242
HIGH FIDELITY PRESSURE TRANSDUCER

J. Fleming Dias; Henry E. Karrer, both of Palo Alto, Calif., and Alexander Tykulsky, Carlisle, Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 668,760, Mar. 22, 1976, Pat. No. 4,064,550. This application May 18, 1977, Ser. No. 797,978

Int. Cl.^{2} B23K *1/04*

U.S. Cl. 228—121 8 Claims



1. A method for brazing the quartz parts of a structure comprising the steps of:

disposing a segmented band of eutectic alloy on one surface of the first part;
disposing a correspondingly segmented band of eutectic alloy on one surface of the second part;
mating the bands of alloy of the first and second parts to form the structure;
applying a mating force along a line corresponding to the mated bands of alloy;
heating the structure to approximately 200° C. for less than an hour;
gradually increasing the heat applied to the structure approximately 260° C. for less than one additional hour; and
gradually cooling the structure to room temperature.

5. A brazed quartz structure comprising:

a first part having a segmented band of eutectic alloy disposed on one surface; and
a second part having a correspondingly segmented band of eutectic alloy disposed on one surface for mating with the band of alloy on one surface of the first part;
said segmented bands of alloy being fused together for effecting a substantially uniform clamping of the first part to the second part and for reducing thermal stresses in the first and second parts.

4,129,243
DOUBLE SIDE COOLED, PRESSURE MOUNTED SEMICONDUCTOR PACKAGE AND PROCESS FOR THE MANUFACTURE THEREOF

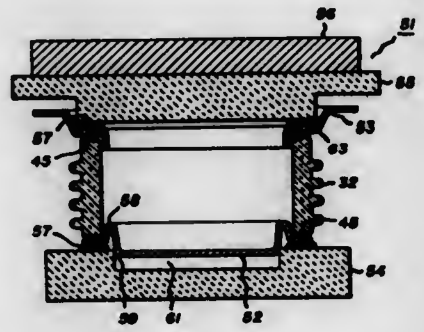
Dominic A. Cusano, Schenectady; James A. Loughran, Scotia, and Yen S. E. Sun, Liverpool, all of N.Y., assignors to General Electric Company, Auburn, N.Y.

Continuation-in-part of Ser. No. 600,300, Jul. 30, 1975, Pat. No. 3,994,430. This application Jun. 17, 1976, Ser. No. 696,899

The portion of the term of this patent subsequent to Nov. 30, 1993, has been disclaimed.

Int. Cl.^{2} H01L *23/02*

U.S. Cl. 228—122 18 Claims



1. A method of manufacturing a double side cooled pressure mounted semiconductor package comprising the steps of:

providing an annular ceramic housing;
providing a metal lower contact disc and a metal upper contact flange;
direct bonding said lower metal contact disc to the lower end of said housing and direct bonding said upper contact flange to the upper end of said housing, said direct bonding process being carried out by exposing the interface of the metal and the ceramics to a bonding agent that forms a eutectic alloy with the metal, said eutectic alloy consisting predominately of said metal and having a melting point lower than the melting point of said metal, heating the combination to a temperature between the eutectic temperature and the melting point of the metal for at least a few seconds in an inert atmosphere to form a melt at the interfaces between said metal contact disc, the metal contact flange and said ceramic housing, wherein said steps of exposing and heating are carried out such that said melt is at least ultimately hypoeutectic, and cooling the combination;
positioning a semiconductor pellet subassembly in said housing;
positioning an upper metal contact disc on said flange so as to close said package; and
welding said upper contact disc and said flange around their peripheries so as to seal said package.

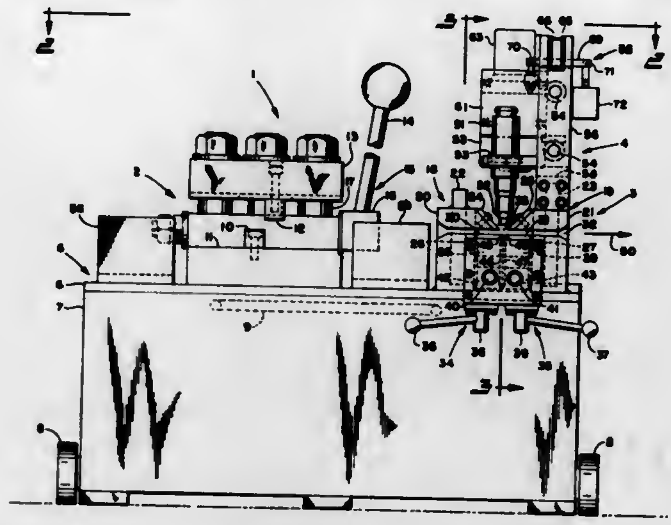
4,129,244
STRIP SHEARING AND JOINING METHOD AND APPARATUS

Terrence P. Morris, Bedford Heights, Ohio, assignor to Guild International, Inc., Ohio

Continuation of Ser. No. 630,263, Nov. 10, 1975, abandoned. This application Apr. 6, 1977, Ser. No. 785,237

Int. Cl.^{2} B23K *9/02*

U.S. Cl. 228—170 6 Claims



1. A strip clamping and joining apparatus, comprising:

a frame bed for passage of strip material thereover,
joining means mounted with respect to said frame bed for joining the trailing end of one strip to the leading end of another strip,
first and second clamping means mounted on said frame bed, respectively, for clamping the strips in relative fixed position,
and means for automatically moving said joining means during operation of the latter to join such strip ends, said means for automatically moving comprising motor means for producing a mechanical output, drive means driven by said motor means for providing linear motion in a direction substantially parallel to the linear extent of the aligned clamped strip ends, carriage means for moving said joining means relative to such aligned clamped strip ends to join the same, and means for coupling said drive means and said carriage means, whereby said drive means may move said carriage means upon being connected thereto by said means for coupling, said drive means comprising a belt continuously driven by said motor means, and said means for coupling said drive means and said carriage means comprising a clamping arm on said carriage means, and means for moving said clamping arm into and out of clamping engagement with said belt.

4,129,245
ACCELERATION COMPENSATED DEVICE FOR SKI BINDINGS

Duane J. Bonvallet, 605 S. Hickory Ridge Rd., Milford, Mich. 48042

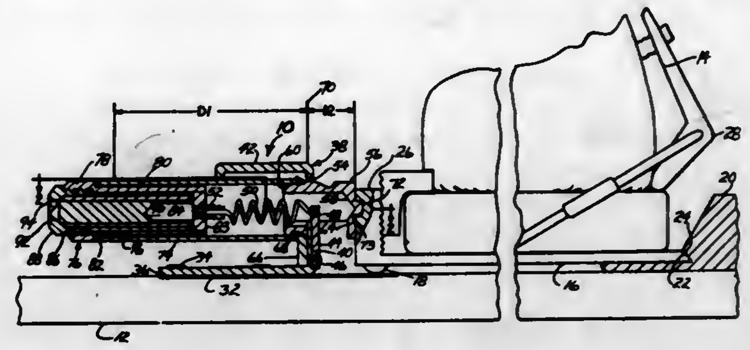
Filed Jun. 30, 1977, Ser. No. 811,552

Int. Cl.^{2} A63C *9/08*

U.S. Cl. 280—628 7 Claims

1. An acceleration compensated ski boot release device for a safety ski binding, said device comprising:

a support member adapted to be mounted to a ski;
a pivot member having a first portion adapted to engage a portion of said ski boot, said pivot member being pivotally carried by said support member for movement about a pivot point such that said first portion is disposed on one side of said pivot point;
a mass;
means connecting said mass to said pivot member such that said mass and said pivot member pivots about said pivot point as a rigid unit and such that the center of gravity of said mass is disposed on the other side of said pivot point, said mass being so sized and located as to generate a moment at the pivot point equal to and opposite to a moment generated by the boot mass during acceleration of said boot to cancel the internal acceleration forces generated by said boot mass.



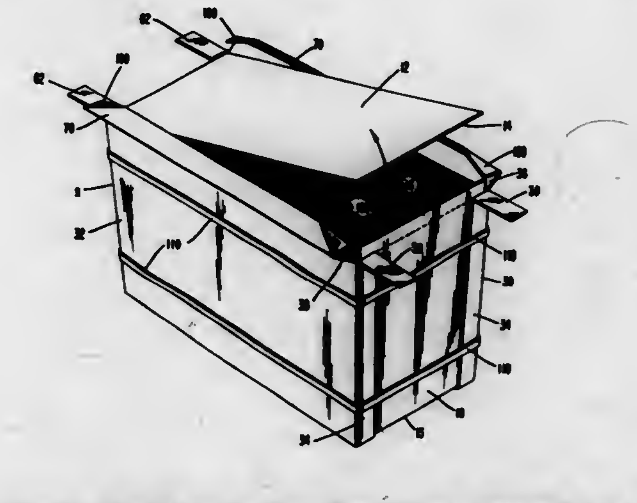
4,129,246
SHIPPING CARTON

Rudolph B. Rustin, Jr., Wilson's Mills, and O. Sherman Bales, Smithfield, both of N.C., assignors to Overton Company, Kenly, N.C.

Filed Oct. 28, 1977, Ser. No. 846,342

Int. Cl.^{2} B65D *13/00*

U.S. Cl. 229—23 R 12 Claims



1. A regular hexahedron shipping carton formed by six panels having recloseable means for access to said carton by at least one of said panels, comprising:

(a) four panels forming the regular hexahedron with open sides, at least one of said four panels having one unattached end forming an access panel;
(b) two side panels for closing the open sides; and
(c) means integral with each side panel at the perimeter thereof for engaging the adjacent surfaces of said four panels, said engaging means including tucking means for frictionally and releasably securing said access panel and for permitting opening and reclosing said access panel without disassembly of said carton, said engaging and tucking means being the sole means necessary for securing said access panel in closed position.

4,129,247
DIE-CUT CARTON WITH BUILT-IN FILLERS

Richard J. McCall, 1515 N. Sedgwick St., Chicago, Ill. 60610

Filed Sep. 30, 1977, Ser. No. 838,245

Int. Cl.^{2} B65D *5/22, 5/24*

U.S. Cl. 229—36 1 Claim

1. A carton die-cut and -scored from a one-piece corrugated sheet stock having a thickness, the carton comprising:

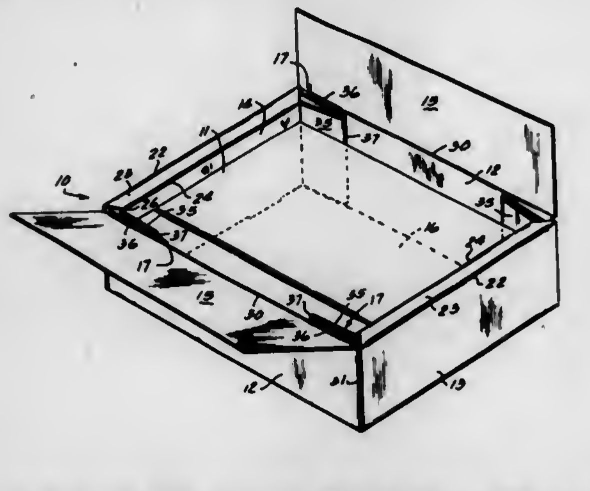
a rectangular bottom panel having a length and width defined by pairs of side and end edges;
a pair of up-standing side walls having a height and each

having opposite end edges and foldably connected to each of the side edges of the bottom panel;

a pair of up-standing outer end walls each connected to one of the end edges of the bottom panel and having a top edge;

a pair of cover members having opposite sides, one of said opposite sides of each cover member being foldably connected along the entire top edge of a corresponding one of said outer end walls;

a pair of up-standing inner end walls each foldably connected at a top edge thereof to the other of said opposite sides of said cover member along its entire length, and each having a bottom edge engaging against the bottom panel opposite the top edge of said inner end wall and having opposite side edges thereby forming a rectangular plane normal to said bottom panel which is defined by said width of said bottom panel and the height of said side walls such that a dimension measured perpendicular to and between said pair of inner end walls remains constant along the entire height of said side walls;



a pair of side wall end locking flaps foldably affixed at right angles to each of the side walls at the end edges thereof and received between the inner and outer end walls;

a pair of inner corner filler flaps affixed to each of the inner end walls at the side edges thereof and extending in generally parallel spaced relation to the adjacent side walls;

an outer corner filler flap affixed to each of the inner corner flaps and folded generally parallel thereto, facially engaging between the inner flap and adjacent side wall, and having an opposite side edge; and

four inner end wall locking flaps each affixed at substantially a right angle to the opposite side edge of one of the outer corner flaps and received between the adjacent side wall end locking flap and the inner end wall,

whereby to provide an integral filler at each corner of the carton which is properly placed and erected and remains in place adjacent a side wall without need of extrinsic fastening means upon assembly of the carton.

4,129,248
FOLDING BOX FOR CONTAINING AND DISPLAYING ARTICLES SUCH AS FRUITS AND VEGETABLES

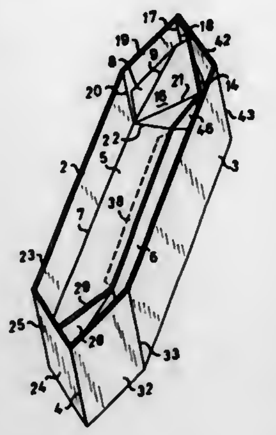
Toni Casutt, Kirchweg 46, 8102 Oberengstringen, Switzerland
Filed Jun. 28, 1977, Ser. No. 810,740
Claims priority, application Switzerland, Jul. 6, 1976, 8664/76
Int. Cl.² B65D *5/36*
U.S. Cl. 229—41 B **8 Claims**

1. A folding box useful for holding and displaying articles such as fruits and vegetables, comprising in combination:

two first sidewalls (2,3) each having a bottom part (5,6) connected thereto through hinge-like bending lines (7);

two second sidewalls (24,32; 19,42) each having approximately in the middle thereof a hinge-like folding line for enabling the sides to be folded together, and

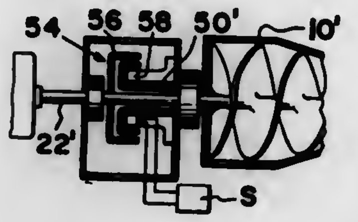
foldable connection flaps (8,16; 10,28; 12,34; 14,46) provided between at least one of the bottom parts (5,6) with which the flap is integral, and said second sidewalls (24,32; 19,42) in each case connected with the bottom part and a sidewall through hinge-like bending or folding lines (9,21; 11,28; 13,49; 15,48) and having an ear beyond one of said folding lines (9, 11, 13, 15) by which the flap is fastened in place,



said bottom parts being fastened to each other along the area of an edge strip of one of said bottom parts hinged thereto along a folding line.

4,129,249
CENTRIFUGE FOR SEPARATING SOLIDS AND LIQUIDS

David B. Todd, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.
Filed Aug. 17, 1977, Ser. No. 825,258
Int. Cl.² B04B *1/20, 9/10*
U.S. Cl. 233—7 **4 Claims**

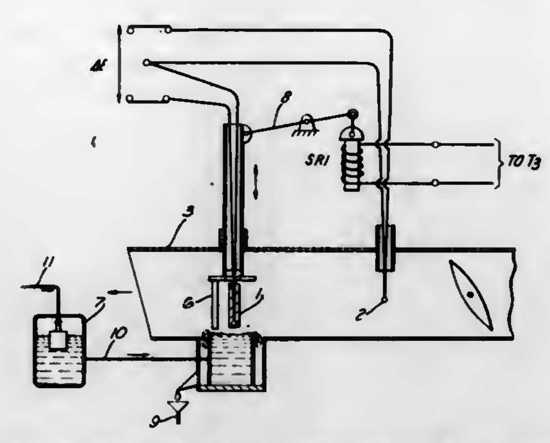


1. In a centrifuge for separating the liquid and solid components of a liquid-solid mixture, said centrifuge having a centrifuge bowl mounted for rotation about its axis, a helical conveying scroll mounted within said bowl for coaxial rotation relative to said bowl, and drive means for driving said bowl and said scroll in rotation at a speed differential relative to each other such that solids in said bowl are conveyed by said scroll to one end of said bowl; the improvement wherein said drive means comprises a power driven input shaft directly connected to said scroll for driving said scroll in rotation and for imparting rotation to said bowl via the frictional drag exerted on said bowl by the liquid-solid mixture in said bowl driven in rotation by said scroll, and control means for transmitting a selected component of the rotary torque of said shaft to said bowl to adjust the rotary speed of said bowl relative to said scroll.

4,129,250
RELATIVE HUMIDITY CONTROL

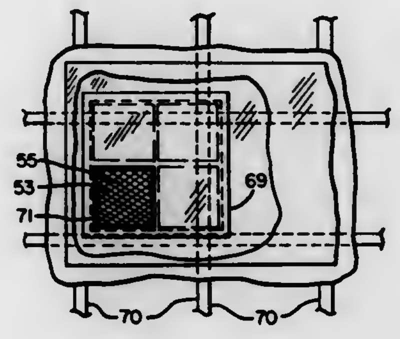
Malcolm Chaikin, Centennial Park, and Mstislav S. Nossar, Peakhurst, both of Australia, assignors to Unisearch Limited, Australia
Filed Mar. 3, 1977, Ser. No. 774,014
Claims priority, application Australia, Mar. 2, 1976, PC5071
Int. Cl.² G05D *22/02*
U.S. Cl. 236—44 A **4 Claims**

1. Apparatus for measuring and controlling the relative humidity of exhaust air from an industrial drier including means for passing a sample of exhaust air from said drier past a dry bulb and a wet bulb thermocouple electric circuit means for deriving a voltage providing a measure of the relative humidity of air in said sample from the said thermocouples, control means responsive to said voltage arranged to control the amount of exhaust air discharged from the drier to atmosphere, means to dip said wet bulb thermocouple cyclically in a container of water, a continuously cycling timer system controlling the dipping of said wet bulb thermocouple and acting to delay the application of said voltage to the said control means whereby said control means responds to said voltage only after the wet bulb thermocouple has equilibrated with the exhaust air sample after dipping and to control the duration of operation of said control means.



4,129,251
HEAT EXTRACTOR FOR STOVES

Claude W. Goldsby, P.O. Box 7646, Salem, Oreg. 97303, and Roray J. Sandau, Rte. 1, Box 729, Salem, Oreg. 97304
Division of Ser. No. 676,138, Apr. 12, 1976, Pat. No. 4,060,196. This application Oct. 20, 1977, Ser. No. 843,854
Int. Cl.² F24B *7/00*
U.S. Cl. 237—51 **3 Claims**

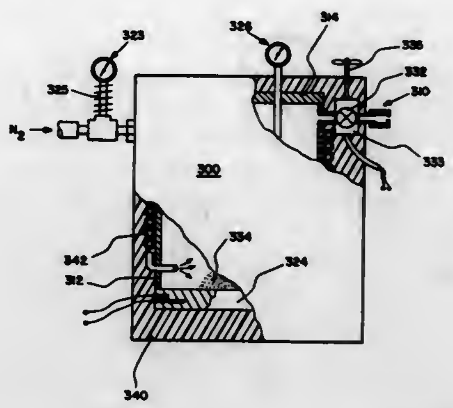


1. In combination, a stove within a room having a floor supported by spaced-apart joists, the stove including a combustion chamber with an opening, an air intake manifold operatively connected to the combustion chamber, a combustion air supply duct which defines a hollow conduit having a top surface and an underside with an air intake opening therein, the conduit connected to a source of combustion air external to the room, wherein the improvement comprises:

an air intake port in the opening in the underside of the conduit, the port including a downwardly depending tubular mouth, the tubular mouth protruding downwardly through and below the underside of the conduit and through the room floor and upwardly through the underside of and within the conduit so that the upward projection of the mouth defines a sparkguard lip within the conduit, the air intake port is mounted on a substantially rectangular plate adjacent one corner thereof, the plate operatively connected to the underside of the conduit, the plate movable relative to the conduit's underside so that said port can be positioned to avoid the support joists in the room floor.

4,129,252
METHOD AND APPARATUS FOR PRODUCTION OF SEEDING MATERIALS

Andrew A. Pouring, U.S. Naval Academy, Annapolis, Md. 21402
Filed May 23, 1975, Ser. No. 580,372
Int. Cl.² A01G *15/00*
U.S. Cl. 239—2 R **5 Claims**



1. A method of generating ice nuclei comprising the steps of:

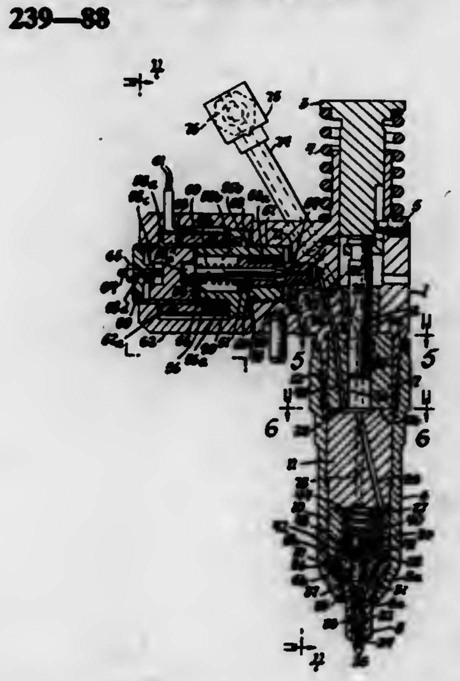
heating a vaporizable chemical compound in a closed insulated chamber to a point of vaporization;

pressurizing said chamber with an inert pressurization gas consisting essentially of N_2; and

controllably releasing the resulting gaseous mixture from said chamber through a hole in a thin metal sheet at supersonic flow into a moist atmosphere.

4,129,253
ELECTROMAGNETIC UNIT FUEL INJECTOR

Ernest Bader, Jr.; John I. Deckard, and Dan B. Kuiper, all of Grand Rapids, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sep. 12, 1977, Ser. No. 832,075
Int. Cl.² F02M *47/00*
U.S. Cl. 239—88 **5 Claims**



1. An electromagnetic unit fuel injector including a housing means having a fuel inlet and a fuel drain outlet at one end thereof and including a spray tip valve body means terminating in a spray outlet at its other end, a pump cylinder in said housing means, a plunger reciprocable in said cylinder, said cylinder being open at one end for the ingress and egress of fuel during reciprocation of said plunger, a valve controlled inlet passage means in said housing means connecting said inlet to said open end of said cylinder, discharge passage means in communication with said open end of said cylinder, said discharge passage means including an injection fuel delivery passage that terminates at said spray outlet, an injection valve movably positioned in said delivery passage and having one

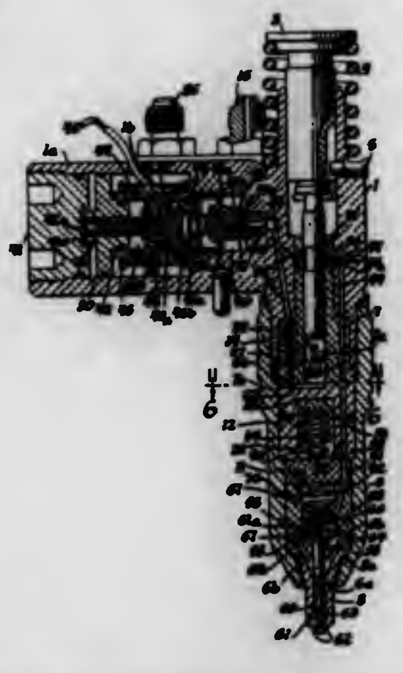
end thereof normally positioned to close said spray outlet and, conduit means including a metering orifice passage means in fluid flow communication at one end with said discharge passage means and said open end of said cylinder and at its opposite end with said fuel drain outlet and, a normally open solenoid valve operatively positioned to control flow through said metering orifice passage means to said fuel drain outlet whereby, during a pump stroke of said plunger, fuel discharged under pressure thereby is directed to said spray outlet as controlled by said injection valve and is throttled through said metering orifice passage means to said fuel drain outlet and, when said solenoid actuated valve is closed to block fluid flow through said metering orifice passage means to said drain outlet, the pressure of fuel delivered during the continued pump stroke of said plunger is intensified sufficiently so as to build up sufficient fuel pressure in said injection fuel delivery passage to effect unseating of said injection valve.

4,129,254

ELECTROMAGNETIC UNIT FUEL INJECTOR

Ernest Bader, Jr.; John I. Deckard, and Dan B. Kuiper, all of Grand Rapids, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 12, 1977, Ser. No. 832,073
Int. Cl.^{2} F02M *47/02, 55/00*
U.S. Cl. 239—96 5 Claims



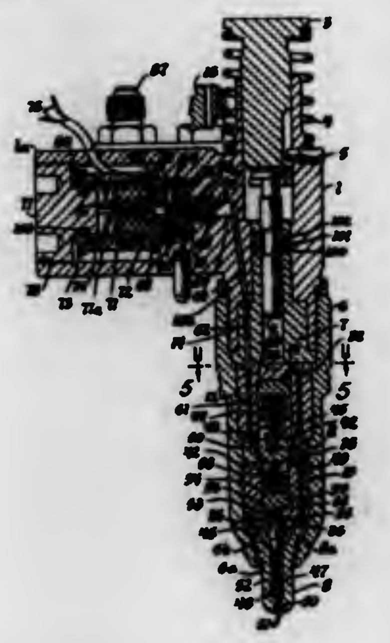
1. An electromagnetic unit fuel injector including a housing means having a fuel inlet and a fuel drain outlet adjacent one end thereof, said housing means including a valve body terminating in a spray outlet at its other end, a pump cylinder in said housing means, a plunger reciprocable in said cylinder, said cylinder being open at one end for the ingress and egress of fuel during reciprocation of said plunger, a valve controlled inlet passage means in said housing means connecting said inlet to said open end of said cylinder, discharge passage means including a one-way valve connected at one end to said open end of said cylinder, a control pressure passage means in said housing means terminating at one end at said spray outlet, an injection valve slidably positioned in said valve body in position to close said spray outlet, a pressure control chamber in said housing means, said pressure control chamber having a control orifice inlet port connected to said discharge passage means downstream of said one-way valve, an outlet in communication with said control pressure passage means and, a bleed return passage means, including a bleed orifice positioned opposite and in line with said control orifice inlet port, in communication with said fuel drain outlet, a pressure accumulator chamber in said housing means, a piston reciprocable in said pressure accumulator chamber, passage means connecting said discharge passage means, downstream of said one-way valve, to one end of said pressure accumulator chamber, drain passage means connecting the opposite end of said pressure accumulator chamber to said fuel drain outlet, a spring positioned in said pressure accumulator chamber to normally bias said piston toward the end of said pressure accumulator chamber in communication with said discharge passage means, a spring cage chamber in said housing means in fluid communication with said opposite end of said pressure accumulator chamber, spring means in said spring cage chamber operatively abutting against said injection valve to normally bias said injection valve into closing engagement relative to said spray outlet and, a solenoid actuated valve means positioned in said housing and including a valve means positioned in said control chamber for movement between a first position to control the flow of fluid from said discharge passage means through said control orifice inlet port into said pressure control chamber for flow to said control pressure passage means while blocking flow of fluid from said pressure control chamber through said bleed return passage means and a second position blocking flow of fluid through said control orifice inlet port while permitting flow of fluid from said control chamber out through said bleed return passage means.

4,129,255

ELECTROMAGNETIC UNIT FUEL INJECTOR

Ernest Bader, Jr.; John I. Deckard, and Dan B. Kuiper, all of Grand Rapids, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 12, 1977, Ser. No. 832,085
Int. Cl.^{2} F02M *47/02, 55/00*
U.S. Cl. 239—96 5 Claims



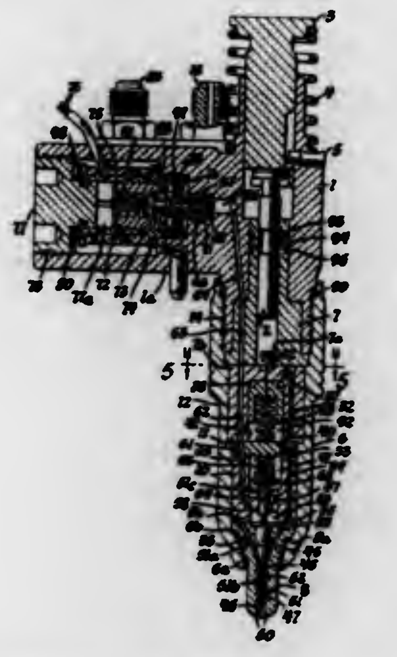
1. An electromagnetic unit fuel injector-pump assembly including a housing means having a fuel inlet and a fuel drain outlet at one end thereof and including a valve body terminating in a spray outlet at its other end, a pump cylinder in said housing means, a plunger reciprocable in said cylinder, said cylinder being open at one end for the ingress and egress of fuel during reciprocation of said plunger, a valve controlled inlet passage means in said housing means connecting said inlet to said open end of said cylinder, discharge passage means connected at one end to said open end of said cylinder, a one-way valve in said discharge passage means adjacent said one end thereof, an injection fuel delivery passage connected at one end to said valve controlled discharge passage means and terminating at its other end at said spray outlet, an injection valve in said delivery passage having one end thereof in position to close said spray outlet, a pressure accumulator chamber in said housing means, a first piston reciprocal in said pressure accumulator chamber, conduit means connecting said discharge passage means to one end of said pressure accumulator chamber, drain passage means in said housing means connected at one end to said drain outlet, drain conduit means connecting the opposite end of said pressure accumulator chamber to said drain passage means, spring means in said pressure accumulator chamber normally biasing said first piston toward said end of said pressure accumulator chamber in communication with said outlet passage means, a pressure chamber in said housing means, said injection valve having its other end thereof projecting into said pressure chamber, a second piston reciprocable in said pressure chamber, a rate spring means in said pressure chamber normally biasing said second piston into engagement with said injection valve to move said injection valve in a direction to normally close said spray outlet, a throttling orifice passage connecting said discharge passage means to said pressure chamber on the side thereof containing said rate spring means, said drain passage means being in communication with the opposite end of said pressure chamber and, conduit means including a solenoid actuated valve controlled metering orifice connected to said pressure chamber downstream of said throttling orifice and at its other end in fluid communication with said drain outlet.

4,129,256

ELECTROMAGNETIC UNIT FUEL INJECTOR

Ernest Bader, Jr.; John I. Deckard, and Dan B. Kuiper, all of Grand Rapids, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 12, 1977, Ser. No. 832,074
Int. Cl.^{2} F02M *47/02, 55/00*
U.S. Cl. 239—96 5 Claims

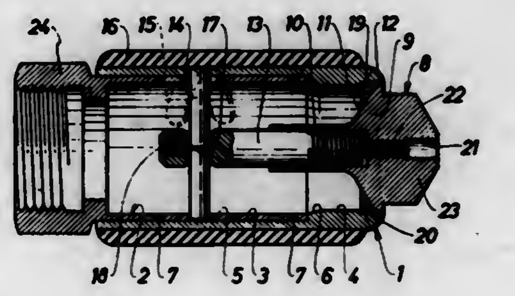


1. An electromagnetic unit fuel injector - pump assembly including a housing means having a fuel inlet and a fuel drain outlet at one end thereof, said housing means at its other end including a valve body having a spray outlet at its free end, a pump bushing in said housing means, a plunger reciprocable in said bushing, said bushing being open at one end for the ingress and egress of fuel during reciprocation of said plunger, a valve controlled inlet passage means in said housing means connecting said inlet to said open end of said bushing, discharge passage means including a one-way valve connected at one end to said open end of said bushing and in communication at its other end with said spray outlet, an injection valve slidably journaled in said housing means to control flow out through said spray outlet, a pressure accumulator chamber in said housing means, an accumulator piston reciprocably positioned in said pressure accumulator chamber, passage means connecting said discharge passage means to one end of said pressure accumulator chamber, drain passage means in said housing means connected at one end to said drain outlet and at its other end to the opposite end of said pressure accumulator chamber, a spring in said pressure accumulator chamber normally biasing said accumulator piston toward said end of said pressure accumulator chamber in communication with said discharge passage means, a spring cage chamber in said housing means in fluid communication at one end with said discharge passage means, a modulation pressure control chamber in said housing means positioned between said spring cage chamber and said spray outlet, a guide bore in said housing means extending between said spring cage chamber and said modulation pressure chamber, said injection valve having a piston portion reciprocally journaled in said guide bore with one end thereof extending into said modulation pressure chamber and a reduced diameter extension portion thereof extending into said spring cage chamber, spring means in said spring cage chamber abutting against said extension portion of said injection valve whereby to bias said injection valve into closing engagement relative to said spray outlet, a throttling orifice passage in said housing means connecting said spring chamber in fluid communication with said modulating pressure control chamber, a modulated pressure passage means in said housing means connected at one end to said modulation pressure control chamber, a drain chamber in said housing means, said modulated pressure passage means including a metering orifice opening into said drain chamber, solenoid actuated valve means including a valve positioned to control the flow of fluid through said metering orifice into said drain chamber and, drain passage means connecting said drain chamber to said fuel drain outlet.

4,129,257

JET MOUTH PIECE

Uwe Eggert, Fyrkloveragatan 68, 417 21 Goteborg, Sweden
Continuation of Ser. No. 515,609, Oct. 17, 1974, abandoned.
This application Dec. 2, 1976, Ser. No. 746,895
Claims priority, application Sweden, Oct. 23, 1973, 7314346
Int. Cl.^{2} B05B *1/32*
U.S. Cl. 239—458 2 Claims

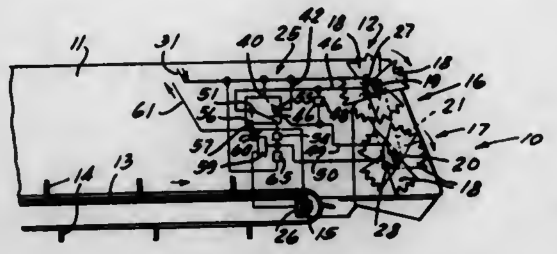


1. A nozzle intended for a jet-pipe working with a pressurized liquid, said nozzle comprising a throttle valve head, a longitudinal shaft extending in a countercurrent direction, having a lateral opening and being adjustably connected to said valve head, a pair of sleeves being rotatably journalled on each other, one of said sleeves being an orifice sleeve surrounding said valve head and having a guide slot, the other of said sleeves having a pair of opposed openings with one of said opening communicating with said guide slot, a transverse shaft extending through said longitudinal shaft lateral lateral opening, means for pivotally supporting said longitudinal shaft on said transverse shaft for swingable movement in any direction, said transverse shaft also extending through said other sleeve openings into said orifice sleeve guide slot, and said guide slot having a pitch such as to give said orifice sleeve a positively controlled axial movement upon the rotation of said orifice sleeve.

4,129,258
AUTOMATIC HYDRAULIC SERIES-PARALLEL SHIFT DEVICE FOR IMPLEMENT

Richard H. Mott, and Clyde L. Pritchard, both of Sioux Falls, S. Dak., assignors to Du-Al Manufacturing Company, Sioux Falls, S. Dak.

Filed Jan. 31, 1977, Ser. No. 764,444
Int. Cl.² A01C *3/06*
U.S. Cl. 239—650 **17 Claims**



1. An hydraulically operated manure spreader comprising:

a hopper having a rearward end;

an upper and a lower flinger assembly each journalled in and extending horizontally across said rearward end of the hopper and having transversely-extending arm means for shredding and throwing piled material rearwardly and outwardly of the hopper;

first and second hydraulic motors each arranged for each rotatably driving one of said upper and lower flinger assemblies and each having a fluid inlet and a fluid outlet;

a source of pressurized fluid; and

hydraulic circuit means on said hopper for selectively driving each of said first and second hydraulic motors in series at high speed or in parallel at lower speed and higher torque from said source of pressurized fluid, said hydraulic circuit means comprising

a valve having first through fourth ports and an actuatable internal means for selectively blocking said ports and for connecting said first and second ports together and said third and fourth ports together depending on fluid pressure at said first port,

a first fluid line communicating the source of pressurized fluid to said first port of said valve and to said inlet of said first motor,

a second fluid line communicating the outlet of the first motor through a first check valve to a third fluid line and directly to said third port of said valve;

said third fluid line communicating said second port of the valve to the inlet of the second motor,

a fourth fluid line communicating the outlet of said second motor selectively to a load and through a second check valve to said second line and said third port, and

a fifth fluid line communicating said fourth port of said valve to drain.

4,129,259
APPARATUS FOR PULPING WASTE PAPER MATERIALS

Robert F. Vokes, Whispering Pines, N.C., assignor to The Black Clawson Company, Middletown, Ohio

Filed Sep. 15, 1977, Ser. No. 833,483
Int. Cl.² B02C *23/36*
U.S. Cl. 241—20 **10 Claims**

8. The method of operating apparatus for recovering paper making fiber from waste paper products including substantial quantities of plastic film and other lightweight non-paper contaminants which comprises:

(a) a tub for receiving such waste paper products and water to at least a predetermined minimum level,

(b) a rotor mounted for rotation in said tub to pulp such waste paper products to aqueous slurry form,

(c) means for extracting from said tub a liquid suspension of small particles of less than a predetermined maximum size,

(d) an outlet in said tub bottom separate from said extracting means,

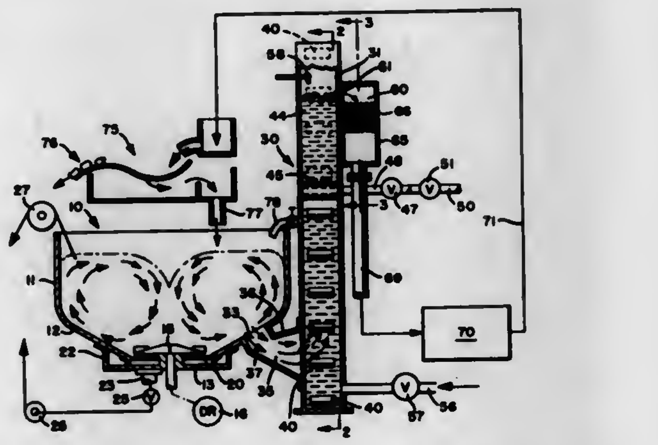
(e) junk removing means including a casing adjacent said tub and of at least the same height,

(f) a chute connecting said outlet with said casing and providing for liquid flow between said tub and said casing,

(g) an open tank supported in said casing above said maximum liquid level,

(h) means providing an overflow weir from said tank lower than the other walls of said tank and leading exteriorly of said casing, and

(i) conveyor means in said casing for collecting liquid and waste materials and depositing the same in said tank, which method comprises the steps of



(i) operating said conveyor means at a rate sufficient to maintain said tank sufficiently full to overflow along said weir together with lightweight reject materials floating adjacent the top of the liquid in said tank and thereby to carry said floating materials exteriorly of said casing while minimizing flow of liquid over other walls of said tank into said casing and thereby reducing the liquid level in said casing with respect to the liquid level in said tub,

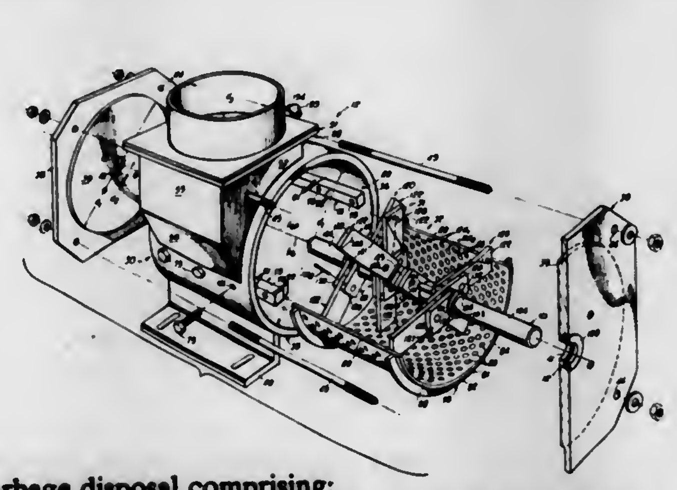
(ii) coarsely screening said overflowing slurry to deflect large pieces of waste material laterally therefrom while passing the liquid and waste materials smaller than a predetermined maximum size, and

(iii) recycling the resulting slurry of smaller waste materials to said pulper tub for further defibering.

4,129,260
GARBAGE DISPOSAL

Marlin J. Baker, 1039 Meadowbrook La., Conyers, Ga. 30207

Continuation-in-part of Ser. No. 716,582, Aug. 23, 1976, abandoned. This application Jun. 13, 1977, Ser. No. 805,820
Int. Cl.² B02C *13/04, 13/286*
U.S. Cl. 241—46 A **7 Claims**



1. A garbage disposal comprising:

a housing defining a generally cylindrical grinding chamber therein defining a central grinding axis therethrough, an inlet to said grinding chamber through which garbage can be introduced into said grinding chamber, and an outlet from said grinding chamber from which the comminuted garbage is discharged from said grinding chamber;

a hammer assembly rotatably mounted by said housing within said grinding chamber about a rotational axis coinciding with the grinding axis, said hammer assembly including a drive shaft assembly rotatable about the grinding axis and a plurality of hammer cutters pivotally mounted on said drive shaft assembly about cutter pivot axes generally parallel to and spaced outboard of the grinding axis, said hammer cutters rotated with said drive shaft assembly in cutting planes generally normal to the grinding axis, each of said hammer cutters rotating in a separate cutting plane axially spaced along said support shaft assembly from the cutting planes of the other of said hammer cutters, each of said hammer cutters having a longitudinal centerline, an outboard end surface opposite the pivotal connection between said hammer cutter and said drive shaft assembly oriented normal to the longitudinal centerline, and opposed leading and trailing side edge surfaces joining opposite ends of the end surface and defining outboard leading and trailing sharp corners at the junction of the end surface and side edge surfaces of said hammer cutter, each of said hammer cutters pivotal with respect to said drive shaft assembly about the cutter pivot axis so that the centrifugal force on said hammer cutter keeps it generally radial with respect to the grinding axis so that the outboard leading and trailing sharp corners of said hammer cutter is located a first prescribed radial distance from the grinding axis;

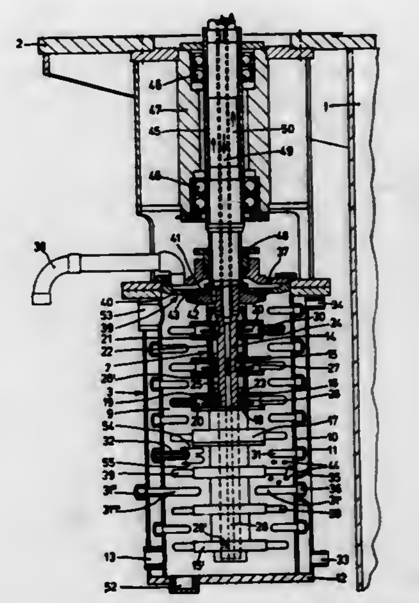
a screen assembly carried by said housing within said grinding chamber, separating said inlet from said outlet in said grinding chamber, and cooperating with said hammer assembly to comminute the garbage, said screen assembly including, an arcuate screen plate and screen positioning means for locating said screen plate in said grinding chamber, said arcuate screen plate defining a plurality of grinding holes therethrough of a diameter at least as small as the largest piece of comminuted garbage to pass from said outlet from said grinding chamber and further defining a sharp corner about each of said grinding holes at the inside surface of said screen plate, said screen plate having a prescribed inside radius slightly greater than said first prescribed radial distance of the sharp corners on said hammer cutter, said screen positioning means locating the inside surface of said screen plate so that its radius of curvature coincides with the grinding axis and the inside surface is concentric about the grinding axis, said screen positioning means further locating the inside surface of said screen plate sufficiently close to the sharp corners of said hammer cutters so that the leading sharp corner of each of said hammer cutters forces the garbage into the grinding holes in said screen plate and shears the garbage between the leading corner of said hammer cutter and the grinding holes in said screen plate to comminute the garbage and so that the outboard end surface of said hammer cutter allows the garbage to expand after passage of the leading corner of said hammer cutter while maintaining cutting contact of the garbage immediately outboard of the outboard end surface of said hammer cutter and the grinding holes in said screen plate to prevent wedging; and,

a leading breaker bar mounted inside said grinding chamber at the leading end of said screen plate and longitudinally oriented generally parallel to the grinding axis, said leading breaker bar located to cooperate with said hammer cutter to preliminarily break large pieces of the garbage into smaller pieces so that these smaller pieces can be comminuted between said hammer cutters and said screen plate.

4,129,261
AGITATING MILL

Kaspar Engels, Mannheim, and Karlheinz Wilhelm, Bobstadt, both of Germany, assignors to Draiswerke GmbH, Mannheim-Waldhof, Germany

Filed Jun. 29, 1977, Ser. No. 811,184
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1976, 2629251
Int. Cl.² B02C *17/16*
U.S. Cl. 241—46.11 **10 Claims**

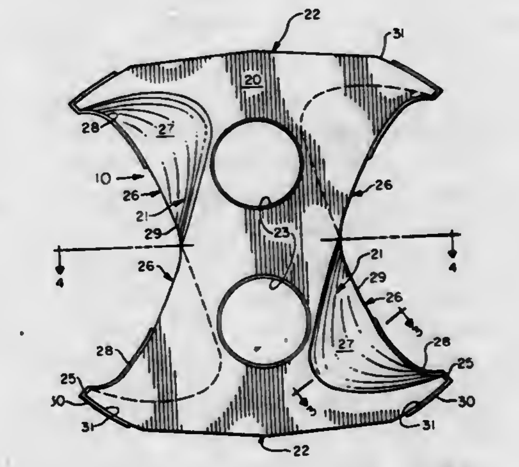


1. In an agitating mill with a cylindrical grinding container defining a grinding space, and with a rotatable drivable mixer mounted concentrically therein, the mixer including a hollow mixing shaft having an axis and mixing bars projecting substantially radially with respect to said axis into said grinding space, the container having a grinding stock inlet means and ground-stock outlet means, the improvement comprising radially projecting discs mounted on said hollow mixing shaft, said mixing bars being fastened to said discs; and a grinding media partially filling said grinding space.

4,129,262
PULVERIZER HAMMER FOR COMMINUTATING APPARATUS

John A. Lowry, Columbus, Ohio, assignor to E & I Corporation, Columbus, Ohio

Filed Aug. 12, 1977, Ser. No. 823,958
Int. Cl.² B02C *13/28*
U.S. Cl. 241—197 **17 Claims**



1. A pulverizer hammer comprising

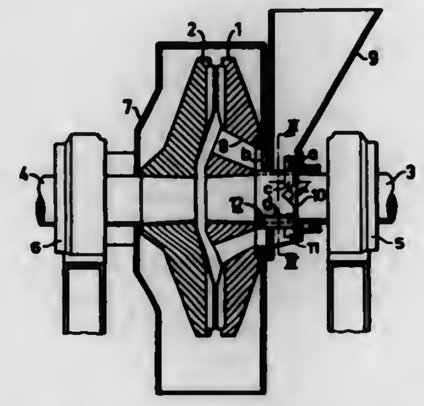
(A) an elongated body portion having a longitudinal axis and a shaft receiving bearing extending transversely therethrough at one end, and

(B) a head portion formed with said body portion in relatively remote relationship to said bearing and including
  (1) an elongated, transversely extending tearing edge projecting in a generally lateral direction to said longitudinal axis,
  (2) a longitudinally extending shearing edge extending in receding relationship to said tearing edge in a direction inwardly relative to said tearing edge, and
  (3) a material guide surface extending in receding relationship from said tearing edge in a direction inwardly thereof toward said body portion and in receding relationship laterally from said shearing edge for inducing displacement of material longitudinally outward toward said tearing edge, said guide surface receding from said tearing and shearing edges along a path having a maximum angle of inclination with respect to a plane passing through the axis of said bearing at a point displaced radially inward from said tearing edge toward said bearing.

4,129,263
DEVICE FOR REFINING FIBROUS MATERIAL

Axel H. Sjobom, Njurunda, Sweden, assignor to Sunds Aktiebolag, Sundsvall, Sweden

Filed Aug. 31, 1977, Ser. No. 829,452
Claims priority, application Sweden, Sep. 9, 1976, 7609973
Int. Cl.² B02C *7/11*
U.S. Cl. 241—248 14 Claims

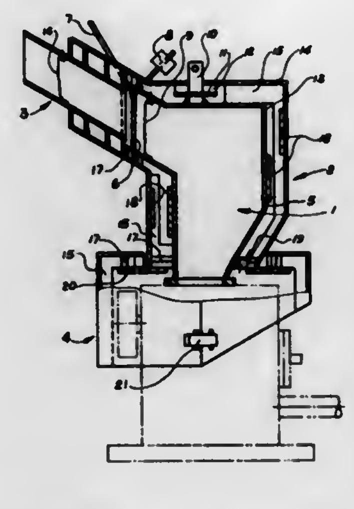


1. Apparatus for refining fibrous material which comprises first and second refining discs, said refining discs including an inner refining surface and an outer surface, said refining discs mounted on shafts for rotation relative to each other with said inner refining surfaces opposite each other during said relative rotation so as to define a refining space therebetween, so that said fibrous material can be refined by passing radially outward within said refining space, means for feeding said fibrous material to said refining space comprising passage means extending from the outer surface of said first refining disc to said refining space, said passage means being located at a point adjacent to said shaft on which said first refining disc is mounted, feed means for feeding said fibrous material to said outer surface of said first refining disc at a first rate, said feed means including a discharge end, and means mounted on said shaft on which said first refining disc is mounted for rotation therewith for injecting said fibrous material into said passage means at an increased velocity as compared to said first rate, said means mounted on said shaft on which said first refining disc is mounted being located at a point spaced from said outer surface of said first refining disc and said discharge end of said feed means being located between said means mounted on said shaft and said passage means.

4,129,264
SOUNDPROOF HOPPER

Semyon Lanin, 330 Wadsworth Ave., Apt. 6F, New York, N.Y. 10040, and Jackob Lanin, 288 Dunhams Corner Rd., East Brunswick, N.J. 08816

Filed Sep. 14, 1977, Ser. No. 833,310
Int. Cl.² B02C *23/00;* G10K *11/04*
U.S. Cl. 241—285 R 8 Claims

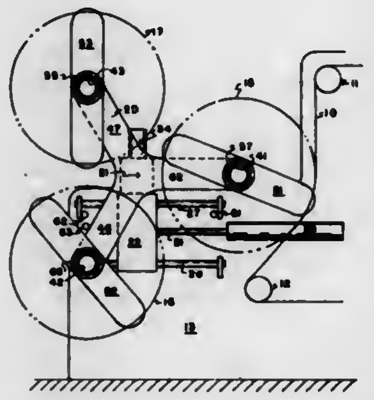


1. A soundproof hooper for a machine for comminuting material comprising an inner hopper mounted on said comminuting machine, an outer hopper enclosing said inner hopper, means for loosely supporting said outer hopper on said inner hopper so that said outer hopper is free to move with respect to said inner hopper and said comminuting machine, said means for loosely supporting said outer hopper including resilient material on which said outer hopper rests on said inner hopper and means for soundproofing said inner hopper located between said inner hopper and said outer hopper.

4,129,265
REELED WEB UNWIND STAND

Clarence L. Bandy, Jr., Fayetteville, W. Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Apr. 14, 1978, Ser. No. 896,171
Int. Cl.² B65H *19/12*
U.S. Cl. 242—58.2 7 Claims

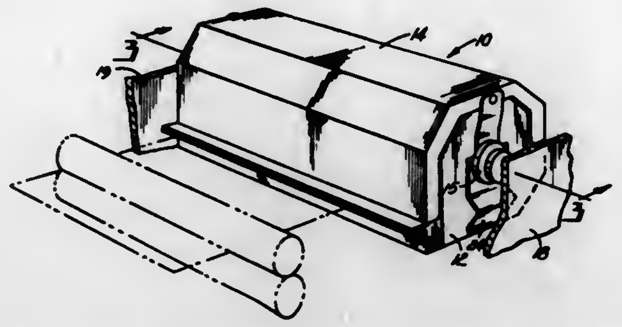


2. A reeled web material unwind stand having spider wheel means mounted for rotation about a spider axis, said wheel means comprising a plurality of spider arm means radiating from said axis, each of said arm means having axially elongated reel mandrels secured to distal ends thereof parallel with said spider axis, the improvement comprising shift carriage means supporting said spider wheel means for reciprocable planar movement of said spider axis.

4,129,266
PAPER CASSETTE

Felix R. Masiello, Parsippany, N.J., assignor to Addressograph-Multigraph Corporation, Los Angeles, Calif.

Filed Jul. 21, 1977, Ser. No. 817,891
Int. Cl.² B65H *17/02*
U.S. Cl. 242—68.4 1 Claim



1. A supply cassette for precise alignment of a paper roll supply in a process machine; comprising:

a housing defined by walls including parallel end walls having external, axially aligned, hub means extending from said end walls for mounting the housing between support walls of the process machine, said hub means establishing an axis for the supported roll, and yieldable means positionable between one housing end wall and one support wall for urging the housing into a gauging relationship with the opposite support wall;

a central core axially aligned with said hub means for support of a supply roll;

the core having a first and second section:

said first core section having two portions, the first beginning at one end of the core and having an external surface dimensioned to support a supply roll, said first portion being of a length shorter than the minimum width roll to be supported, and the second portion being smaller in section configuration and extending to a plunger hub end piece, said hub end piece mounted by guide means to reciprocate along said axis, and a yieldable means urging the end piece to its extended limit, the length of said first core section being greater than the distance between said end walls when fully extended and shorter when fully retracted;

said second section being tubular and carried coaxially with said second portion of the first section in slidable relationship therewith;

yieldable means urging said second section toward the first portion of said first section of said core;

a shield for establishing a retaining space between one housing wall and the shield to confine a supply roll, and

means for securing said shield to the second section in any one of a plurality of possible longitudinal positions corresponding to s supply roll to be serviced;

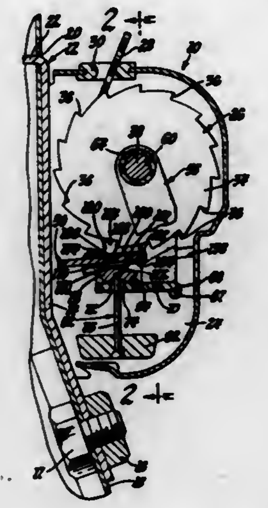
whereby, said housing and the supply roll therein are gauged from one side of the machine being serviced.

4,129,267
ADJUSTING METHOD AND CLIP FOR RETRACTOR LOCK BAR

James C. Degras, St. Clair Shores, and David N. Lee, Almont, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 23, 1977, Ser. No. 809,193
Int. Cl.² A62B *35/02;* B65H *75/48*
U.S. Cl. 242—107.4 A 5 Claims

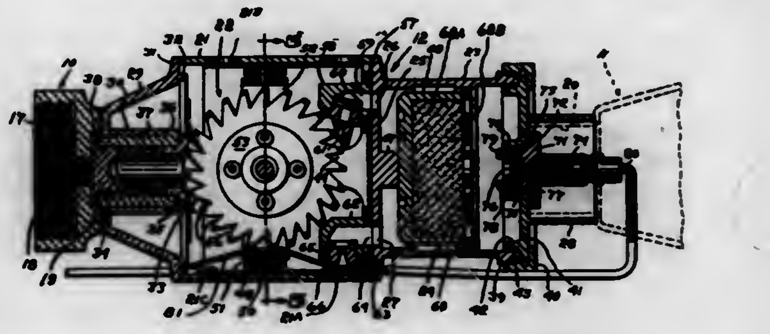
1. In a vehicle inertia responsive seat belt retractor having a housing, a belt reel rotatably mounted on the housing for winding and unwinding a seat belt, a lock bar for locking the reel against belt unwinding rotation and being pivotally mounted for movement between a locking position and an unlocking position, and an inertia responsive member mounted for movement in response to a predetermined level of inertia stimulus to operate the lock bar from the unlocking position to the locking position, the improvement comprising: an adjusting clip providing the operating connection between the inertia responsive member and the lock bar, said clip means being generally U-shaped with spaced apart legs defining a slot which receives the lock bar to retain the clip means on the lock bar, one of the legs of the clip means being disposed adjacent the inertia responsive member and having an integral nonyieldable protuberance extending therefrom and adapted to operatively engage the inertia sensing means, said integral protuberance of the clip means projecting from the leg a selected distance to poise the lock bar at an unlocking position at a selected distance from the reel to control the distance through which the lock bar must be moved from the unlocking position to the locking position.



4,129,268
ROCKETS INCLUDING TRAJECTORY CONTROLS

Willis F. Tibbetts, Reading, Mass., assignor to Norris Industries, Inc., Los Angeles, Calif.

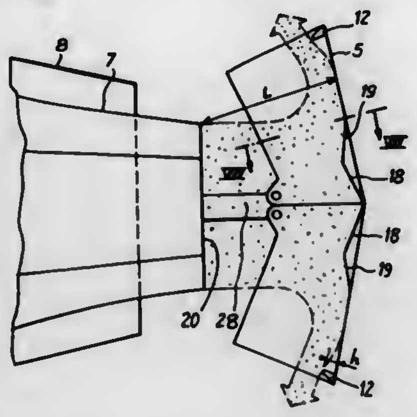
Filed Oct. 23, 1965, Ser. No. 503,838
Int. Cl.² F42B *13/30*
U.S. Cl. 244—3.22 10 Claims



1. A rocket comprising a rear section including a motor, a forward war head section, an intermediate trajectory control section, and a rotatable connection between said control and motor sections, a gyroscope and a gas generator mounted within said control section, the generator ahead of the gyroscope, said gas generator including ignition means, a first nozzle operable to deliver a wheel-driving gas stream to the wheel of said gyroscope, and a second nozzle operable to deliver an upward thrust in assistance of the flight of said rocket, the thrust being applied approximately in the zone of the center of gravity of said rocket, means operable in response to a predetermined set-back force exerted on said rocket during its launch to engage and support said wheel against said force only during the existence of said force, gyroscope caging means, and means to release said caging means in response to the operation of said generator.

4,129,269
SINGLE-SKIN THRUST REVERSER FOR AIRCRAFT JET ENGINES

Etienne Fage, Jouy en Josas, France, assignor to Astech, Meudon la Foret, France
Filed Apr. 4, 1977, Ser. No. 784,562
Claims priority, application France, Apr. 14, 1976, 76 10968
Int. Cl.² B64C *15/06;* **B64D** *33/04*
U.S. Cl. 244—110 B **6 Claims**



1. A thrust reverser adapted for use with an aircraft jet engine having a jet exhaust pipe from which a jet of gaseous products emerges, said reverser comprising two symmetrical doors, each of which is at least substantially hemi-truncated in form, having opposed arcuate leading and trailing edges and opposed rectilinear side edges,

said doors being mounted to pivot about an axis adjacent said trailing edges, said axis being transverse and substantially diametrical with respect to the jet of said engine, and which is disposed downstream of the jet exhaust pipe thereof,

each of said doors comprising a thin wall having a concave inner face and a convex outer face, and

elongated reinforcing members attached to said concave face adjacent the arcuate leading and trailing edges and the rectilinear side edges thereof, said reinforcing members projecting inwardly from said concave face, at least half of said inner concave face being exposed to contact with said jet,

said wall having a crescent-shaped section at its rearward end, defined by the trailing edge of said wall and said reinforcing member adjacent thereto, said section having an inner concave and an outer convex face which form continuations of the concave and convex faces of said wall,

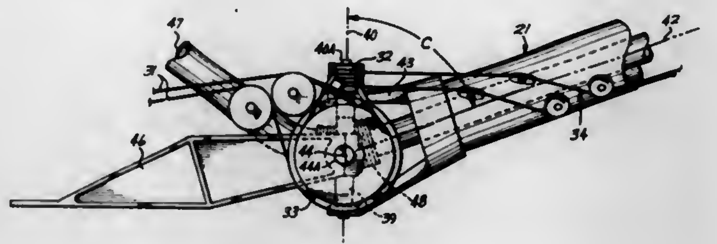
an arcuate lining having two faces which intersect to form a trough having an approximately V-shaped cross-section, said lining spanning the reinforcing member adjacent the trailing edge of said door with said reinforcing member in the trough of said lining, said lining faces comprising a rearward face covering substantially all of the concave face of said crescent-shaped section and a forward face covering less than half of the concave face of said wall,

each door being movable between a first, folded position in which said outer face forms an extension of a section of said aircraft, and a second, unfolded position in which said outer face is disposed transversely with respect to said jet.

4,129,270
AIR REFUELING BOOM PIVOT GIMBAL ARRANGEMENTS

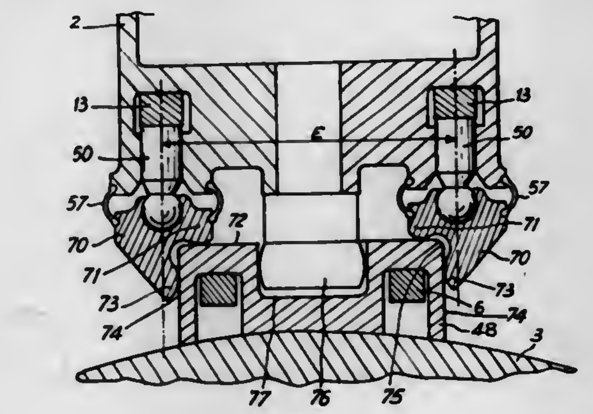
Ronald H. Robinson, Bellevue, and Richard H. Weiland, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Jun. 13, 1977, Ser. No. 806,029
Int. Cl.² B64D *39/00*
U.S. Cl. 244—135 A **20 Claims**

1. Apparatus for attaching a boom to a supply airplane for the aerial transfer of material to a receiver airplane, comprising: a gimbal member mounted to support structure of the supply airplane for rotation about a transverse horizontal axis approximately parallel to the lateral axis of the supply airplane; said gimbal member connectably supporting the boom for lateral movement relative to the supply airplane about an azimuth axis, said azimuth axis being fixed at a predetermined angle less than 90° to the lengthwise axis of the boom; said boom gimballing arrangement providing a geometrical disconnect envelope from said receiver airplane as determined by $W=2\cdot L\cdot \text{sine}(A+B)\cdot \text{sine } Y$, wherein W is the geometrical width of said disconnect envelope, L is the length of said boom, A is the angle of inclination of said boom aximuth axis above a horizontal reference plane, B is the angle of elevation of said boom below said horizontal reference plane, and Y is the yaw angle of the boom about said azimuth axis; and means for moving the boom in elevation and canting the azimuth axis towards the horizontal from a vertical orientation with respect to the supply airplane to provide a boom rolling motion coupled with sideward movement thereof.



4,129,271
AUTOMATIC HANGING AND WEDGING DEVICE FOR AIRCRAFT LOADS

Jean H. Hasquenoph, Lagny-sur-Marne, and Pierre F. Coutin, Paris, both of France, assignors to R. Alkan & Cie, Valenton, France
Filed Apr. 14, 1977, Ser. No. 787,663
Claims priority, application France, Mar. 9, 1977, 77 06917
Int. Cl.² B64D *1/02*
U.S. Cl. 244—137 R **2 Claims**



1. In a device, for suspending a load from an aircraft having a support to be secured to the aircraft, a bridge member to be secured to the load, said bridge member having an abutment at an end thereof and an upper face and two opposed side faces, and a suspension hook pivotably mounted on the support and movable into a first position in which said hook is disengaged from the abutment of the bridge member, and a second position in which said hook is engaged under the abutment of the bridge member for suspension of the load from the support, the improvement for preventing lateral oscillation of the load when suspended from the support, said improvement comprising:

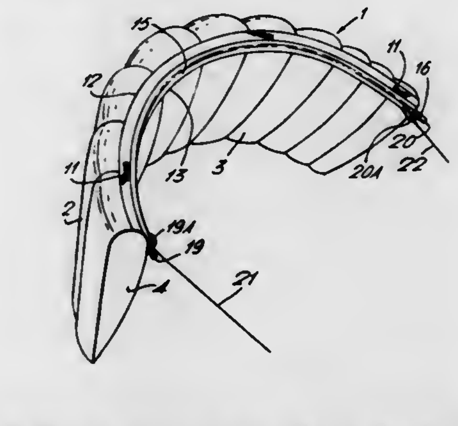
(i) first and second push members each having a first end and a second end, said push members being longitudinally slidable in said support towards and away from the upper face of the bridge member,

(ii) first and second sockets, the first socket being engaged by a ball and socket formation with a first end of the first push member, the second socket being engaged by a ball and socket formation with a first end of the second push member, each socket including a first arm portion depending below the center of the ball and socket formation and a second arm extending laterally from said center towards the other push member, the push members and the sockets being positioned in relation to the bridge member such that, upon movement of each push member towards the upper face of the bridge member the second arm of each socket contacts said upper face and, with continued movement of the push member in that direction, causes pivoting of the socket about said center to move the first arm of the socket into abutment with the respective adjacent side face of the bridge member,

(iii) wedging means movable in said support and contacting the second end of each push member for shifting each push member in the direction towards the upper face of the bridge member.

4,129,272
AEROFOIL STRUCTURE

Andrew W. Jones, 1 Cottage, Thriplow Farm, Thriplow, Near Royston, Herfordshire, and Raymond Merry, 29 Osborne Sq., Dagenham, Essex, both of England
Filed Aug. 19, 1977, Ser. No. 826,256
Claims priority, application United Kingdom, Aug. 23, 1976, 35024/76
Int. Cl.² B64C *31/06;* **B64D** *17/02*
U.S. Cl. 244—153 R **5 Claims**



1. An aerofoil structure arranged for airborne flight under the influence of an air stream comprising an envelope of flexible light-weight material having leading and trailing edges with respect to air flow, the leading edge facing upstream in flight, said envelope having upper and lower surface members, a plurality of separator members between and joined to the surface members to divide the interior of the envelope into a plurality of elongate chambers, and an elongate opening along the leading edge between the surface members to permit the ingress of ram air to inflate the chambers, the separator members being shaped to cause the upper and lower surface members to assume an aerofoil section in the direction of flow of the air stream; an elongate spar positioned along the leading edge of the bottom surface member transverse the direction of air flow, the ends of the bottom surface member leading edge and the ends of the spar being arranged to form anchor points respectively and a pair of control lines, one secured respectively to each of said anchor points, the spar being sufficiently flexible to assume a degree of curvature when the structure is in flight.

4,129,273
KITE CONTROL MECHANISM

Donald R. Hill, 334 Huntington La., Elmhurst, Ill. 60126
Filed Aug. 9, 1977, Ser. No. 823,022
Int. Cl.² B64C *31/06;* **B65H** *75/40*
U.S. Cl. 244—155 A **15 Claims**

1. A kite steering mechanism for controlling a plurality of kite-flying lines, said mechanism comprising:

a frame having spaced apart wall portions provided with coaxial journals;

handle means on the frame;

a control shaft rotatably and axially movably carried coaxially in said journals;

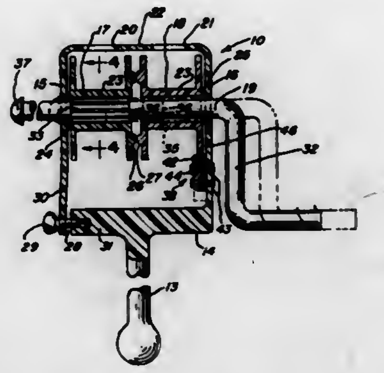
a crank arm connected to said shaft for manual rotation of the shaft in said journals;

first and second spools rotatably mounted on said shaft between said wall portions; and

releasable means including a driver portion on said shaft, a first driven portion on said first spool and a second driven portion on said second spool, said driver portion being selectively drivingly engageable with

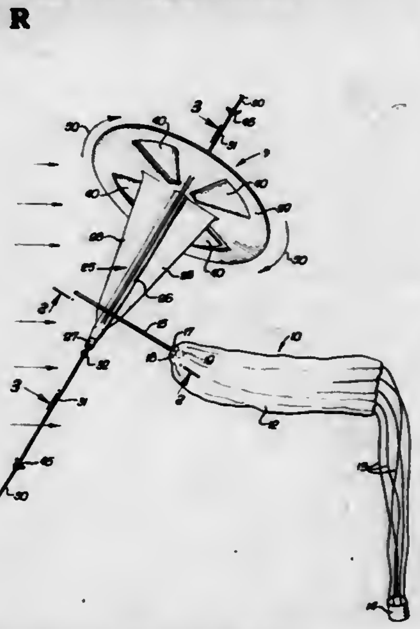
(a) both said driven portions, and

(b) said first driven portion only as an incident of axial positioning of the control shaft, said releasable means including friction drive means on said spools for causing said second spool to be driven releasably with said first spool means when said driver portion is arranged to drive only said first driven portion on the first spool, and means for adjusting said friction drive means to provide an effective frictional interlock between said spools.



4,129,274
KITE PARACHUTE LAUNCHER

Joseph Baker, 1174 Bonita Dr., Colton, Calif. 92324
Filed Dec. 27, 1977, Ser. No. 864,877
Int. Cl.² A63H *27/08*
U.S. Cl. 244—155 R **2 Claims**



2. A kite parachute launcher comprising:

a hollow stem adapted to be axially penetrated by and rotate freely about a section of a kite string and thus be supported close to the kite while the kite is being flown;

a series of at least four radial ribs approximately co-extensive in length and integrally united with said stem and being equally spaced circumferentially from each other and tapering from a minimum radial width at their lower ends to a maximum radial width at their upper ends;

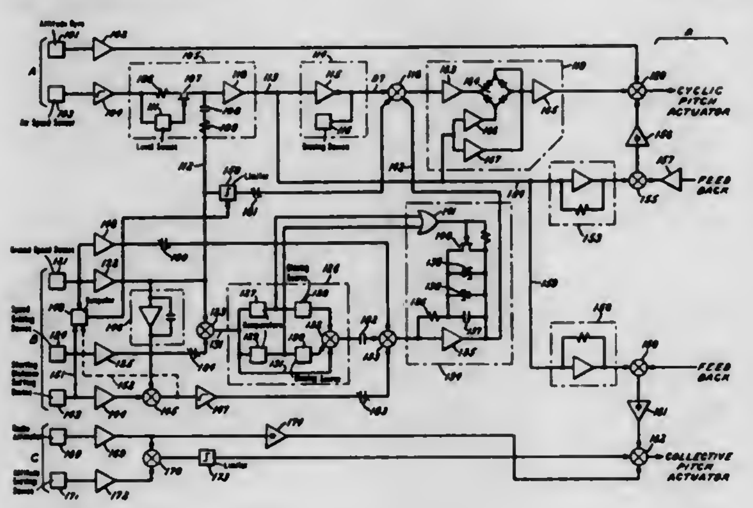
a windmill disc co-axially abutting against and being integral with the upper ends of said stem and said ribs to form a circumferential series of at least four radial wind trapping pockets; and

a circumferential series of at least four windmill blades outstruck helically from said disc to provide for the helically directed escape of air compressed by the wind in said pockets and thereby generating a substantial torque operating to constantly rotate said launcher rapidly.

4,129,275
AUTOMATIC FLIGHT CONTROL APPARATUS FOR AIRCRAFT

Milton I. Gerstine, Wilmington, Del.; Joshua I. Goldberg, Ridgefield, Conn.; Setsuo Futatsugi, Kagamigahara, Japan; Kazuo Ueda, Kagamigahara, Japan; Ryozo Seo, Kagamigahara, Japan; Koji Iwasaki, Kagamigahara, Japan, and Makoto Uemura, Kagamigahara, Japan, assignors to The Boeing Company, Seattle, Wash. and Kawasaki Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 634,385, Nov. 24, 1975, abandoned.
This application Jun. 1, 1977, Ser. No. 802,333
Claims priority, application Japan, Nov. 22, 1974, 49-134513
Int. Cl.² G05D *1/08*
U.S. Cl. 244—181 7 Claims

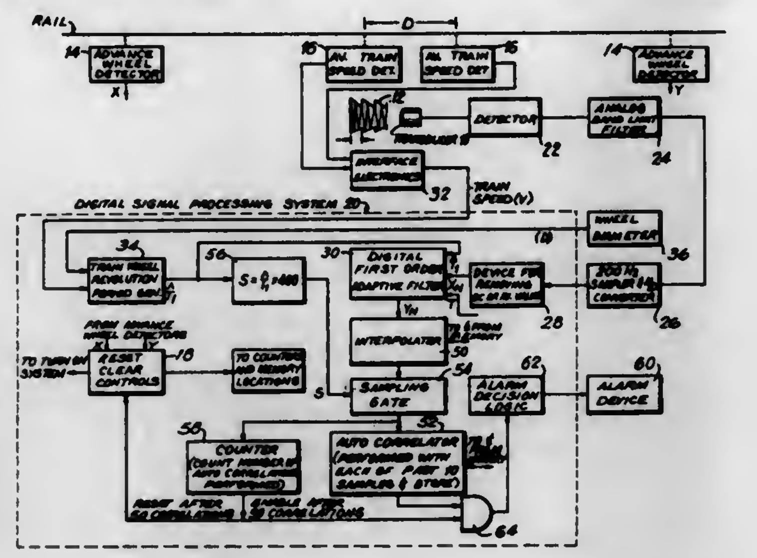


1. Automatic flight control apparatus for aircraft comprising: air speed detecting means for generating an air speed signal; means, connected to said air speed detecting means, for generating a signal representating the desired attitude of the aircraft in balanced relation to the air speed of the aircraft at any instant, said attitude signal serving as a reference signal; means for generating a signal representing the actual attitude of the aircraft; a limiter circuit, connected to said means for generating the signal representing the desired attitude of the aircraft and to said air speed detecting means, said limiter circuit including a pair of amplifiers, a diode bridge connected between the amplifiers, a lower limit setting device and an upper limit setting decive connected to opposed terminals of the diode bridge and to the air speed detecting means, said limiter circuit producing a substantially constant signal limiting width and a signal limiting range which changes with the air speed in response to changes in said reference signal; and means for comparing the signal representing the actual attitude of the aircraft and the reference signal and producing a difference signal between said signals, which is used as at least one control parameter for the aircraft.

4,129,276
TECHNIQUE FOR THE DETECTION OF FLAT WHEELS ON RAILROAD CARS BY ACOUSTICAL MEASURING MEANS

Frank A. Svet, Churchville, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Jan. 30, 1978, Ser. No. 873,566
Int. Cl.² B61L *1/06*
U.S. Cl. 246—169 S 11 Claims



1. Apparatus for acoustically detecting the presence of flat wheels on railroad cars, comprising

an electro-acoustic transducer located on the track wayside so as to pick up vibrations generated by a passing train, and to provide a spectrum of electrical signals corresponding to the vibrations;

means for demodulating and band limiting said spectrum of electrical signals from said transducer;

a sampling analog-to-digital converter connected to said first named means so as to sample signals from the first named means at a predetermined frequency or period;

means for providing a signal indicative of train speed;

a digital first order adaptive filter for receiving sample signals from said converter and a signal from said means for providing a signal indicative of train speed, said adaptive filter having a cutoff frequency which is a function of train speed so as to enhance the signal-to-noise ratio of the signals processed thereby;

an autocorrelator for receiving signals from said adaptive filter and for performing autocorrelation with respect to each of the predetermined signal samples and of the ten signal samples preceding each of the predetermined samples;

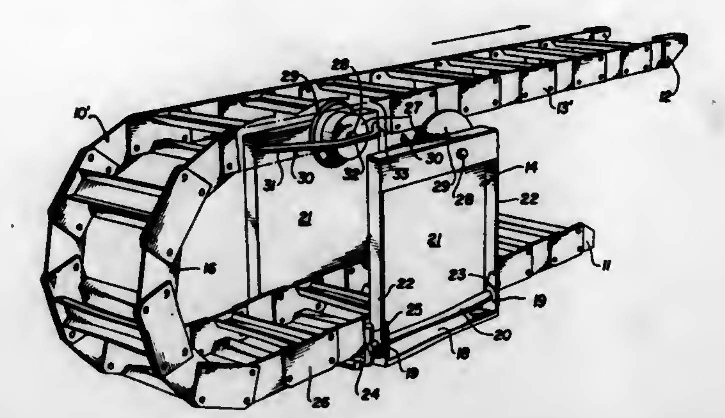
a sampling gate, including means for permitting signals from said adaptive filter to be transmitted to said autocorrelator is dependence on the train speed.

4,129,277
RETRACTABLE ROLLER SUPPORT FOR USE WITH FLEXIBLE ROLLING SUPPORT FOR CONDUCTORS OR CONDUITS

David M. Tenniswood, Troy, Mich., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Feb. 7, 1977, Ser. No. 765,934
Int. Cl.² H02G *11/00*
U.S. Cl. 248—51 17 Claims

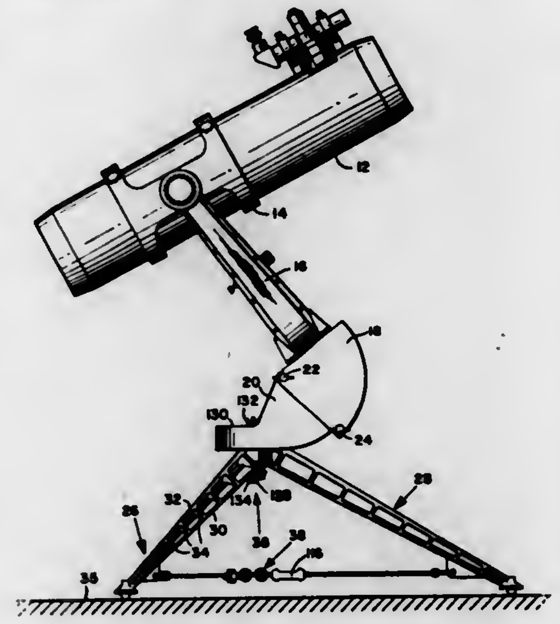
8. A retractable roller support for use with a flexible rolling support for electrical conductors, fluid conduits and the like, comprising a mounting base, spaced opposed upstanding sides rising from the mounting base and pivoted to the mounting base adjacent opposite sides thereof on substantially parallel pivot axes, support rollers mounted on said opposed sides adjacent the tops thereof, camming means on said sides disposed above the mounting base for spreading said sides and rollers by pivoting them on said pivot axes upon engagement by a rolling support passing between said sides and oppositely extending return arms fixedly secured to said sides and being bodily movable therewith, said arms extending transverse to said pivot axes.



4,129,278
TRIPOD

Peter W. Bressler, Philadelphia, Pa., assignor to Edmund Scientific Company, Barrington, N.J.

Filed Sep. 2, 1977, Ser. No. 830,088
Int. Cl.² F16M *11/32*
U.S. Cl. 248—165 23 Claims



1. A stable multilegged support comprising:

a head having inwardly facing side wall means;

a plurality of legs, each leg having shoe means located at the upper end adapted to engage and push outwardly against said wall means, and having a lower end for engaging a surface upon which the support rests;

means cooperating with said legs and providing a pivot whereby motion of the lower ends of said legs in an inward direction results in outward motion of said shoe means against said wall means; and

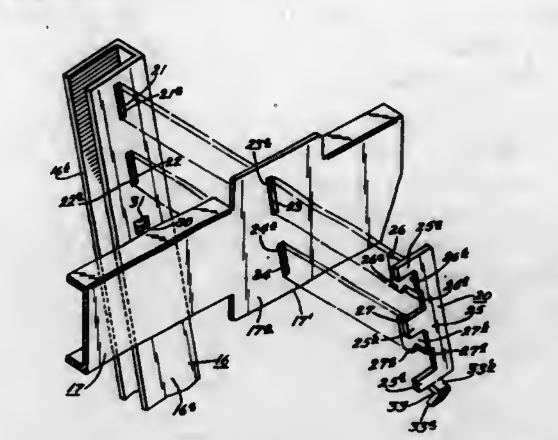
tensionable connecting means secured to the lower ends of said legs for releasably urging the lower ends of said legs inwardly in order to urge said shoe means outwardly against said wall means with a force sufficient to prevent removal of said head from said shoes;

said pivot being so located with respect to the shoes and the connecting means as to provide a mechanical advantage, whereby a relatively small tightening force in said connecting means results in large forces acting between said shoes and said wall means.

4,129,279
TRUSS CLIP

Harvey Z. Burkholder, Ephrata, Pa., assignor to Favorite Manufacturing, Inc., New Holland, Pa.

Filed Jan. 9, 1978, Ser. No. 868,223
Int. Cl.² A47F *5/00*
U.S. Cl. 248—165 7 Claims

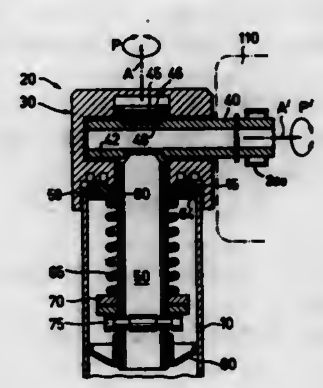


1. In a truss assembly adapted to be assembled with a like truss assembly to provide supports for animal cages, said truss assembly including a pair of legs and at least one cross member extending across the legs, said legs and cross member each having web portions engaging flush against one another and having aperture means in said engaging web portions, the improvement comprising clip means for connecting said cross member to each leg, said clip means having a flange engaging the web portion of said cross member, lug means extending from said flange and rearwardly through said aperture means, said lug means having hook means disposed behind said leg below its aperture means after said cross member and clip have been assembled and slid downwardly relative to said leg, means on each leg providing an edge adjacent the aperture means therein, said edge being located relative to said cross member so as to be exposed after said cross member and clip have been slid downwardly and said hook means disposed below the lower edge of the aperture means in the legs, and deformable tab means carried on said clip flange and adapted to be engaged with said edge to limit upward movement of said cross member and clip relative to the leg for preventing inadvertent disengagement of the cross member from the leg.

4,129,280
PIVOT MECHANISM

André Ruegg, Zürich, and Wilfried Beck, Winterthur, both of Switzerland, assignors to Contraves AG, Zürich, Switzerland

Filed Dec. 27, 1977, Ser. No. 864,484
Claims priority, application Switzerland, Feb. 7, 1977, 1447/77
Int. Cl.² F16M *13/12*
U.S. Cl. 248—183 9 Claims



9. A pivot mechanism for pivotably laterally securing a housing at a stand, comprising:

a first body;

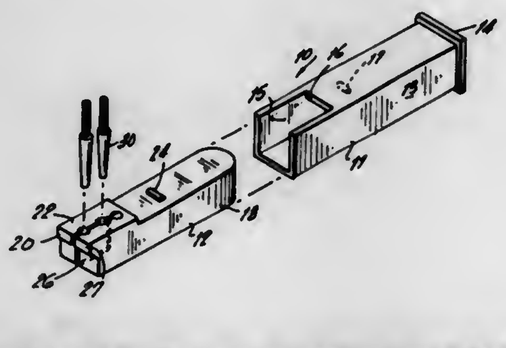
a second body;

said second body being rotatably mounted at one end in the first body;
said second body being capable of being operatively connected at its other end with the housing;
a headpiece;
means for mounting the first body and the second axle body in said headpiece such that the housing can be horizontally rotated about an essentially vertical axis of the first body and vertically pivotable about an essentially horizontal axis of the second body;
means providing at least one friction surface for the headpiece for horizontal rotational movement of the housing about said vertical lengthwise axis;
means providing further friction surfaces for the headpiece for vertical pivotal movement of the housing about said horizontal lengthwise axis; and
a single resilient means for braking said movements of the housing.

4,129,281

DOWEL RECEIVING CORE FOR CASTING DENTAL RESTORATIONS

Abraham J. Cooper, P.O. Box 321, Pomona, N.Y. 10970
Filed Jul. 22, 1977, Ser. No. 818,053
Int. Cl.^{2} A61C *13/12;* B28B *1/14*
U.S. Cl. 249—54 **5 Claims**



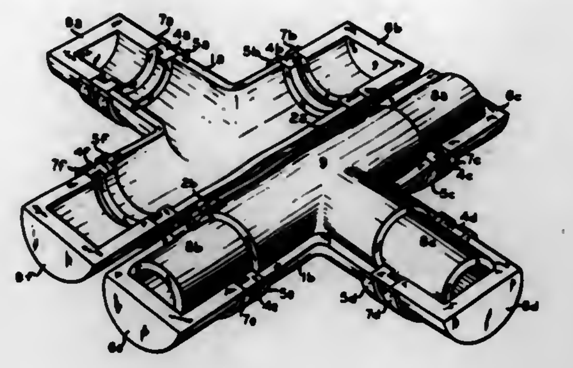
1. A core assembly for use in casting models for dental restorations in which dowels are incorporated within the cast material beneath individual tooth members comprising a resilient sleeve having an elongated hollow body of rectangular cross-section, an elongated resilient dowel receiving member telescopically received within the sleeve; a longitudinal slot in the free end of the dowel receiving member, dividing the said dowel receiving member into spaced jaws, a plurality of transverse dowel receiving bores in the free end of the dowel receiving member extending parallel to the plane of the slot at least one of which is in communication with the said slot, and means carried by the sleeve and dowel receiving member to exclude casting material from the interior of the sleeve.

4,129,282

MOLD APPARATUS

John N. Scott, Jr., and Guy E. Carrow, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 699,829, Jun. 25, 1976, Pat. No. 4,076,282, which is a division of Ser. No. 599,738, Jul. 28, 1975, Pat. No. 3,989,787. This application Nov. 8, 1977, Ser. No. 849,682
Int. Cl.^{2} B29C *5/00*
U.S. Cl. 249—137 **4 Claims**

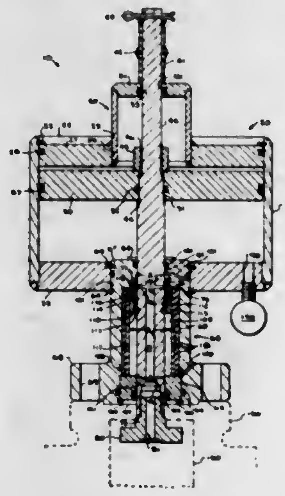
1. A mold useful for rotational molding of thermoplastic articles comprising:
(a) a mold body section which can be rotated and heated such as to fuse thermoplastic material contacting the inside surface of the mold body section and which mold body section has at least one opening, and
(b) means for attaching at least one conduit to said mold body section at said one opening and for heat-insulating a first portion of said conduit so that a second portion of said conduit of material attached by said means to said mold body section reaches into said heated mold body section and the first portion of said conduit is not sufficiently heated during a rotational molding process to deform said conduit.



4,129,283

ACTUATOR

Joseph W. Taylor, P.O. Box 40509, Houston, Tex. 77040
Continuation of Ser. No. 598,355, Jul. 23, 1975, abandoned, which is a continuation of Ser. No. 511,983, Oct. 4, 1974, abandoned. This application Nov. 3, 1976, Ser. No. 738,564
Int. Cl.^{2} F16K *31/122*
U.S. Cl. 251—62 **4 Claims**

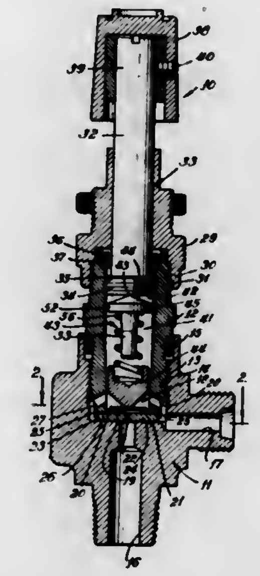


1. In a pressure imbalanced gate valve actuator, the combination of:
a housing having a piston chamber therein;
a stem reciprocatably positioned centrally of said housing;
said stem having one end adapted to be affixed to a valve gate for controlling the flow of liquid in a line;
a first piston, having a pressure receiving surface, affixed to said stem within said first piston chamber;
means for directing a pilot fluid against said first piston pressure receiving surface in a direction tending to cause said gate to open said valve;
a bonnet member linked to said housing, said bonnet having a further piston chamber therein bounded by upper and lower walls as well as by the interior diameter of said bonnet said upper and lower bonnet walls each having apertured means and fluid tight seals for reciprocatingly receiving a portion of said stem intermediate said first piston and said stem's one end;
a further piston affixed to said stem within said further piston chamber, said further piston also including a pressure receiving surface;
means for causing said actuator to be imbalanced when said valve is both open and closed, said causing means including a line fluid passageway through said stem from said one end to a stem exit opening adjacent said further piston pressure receiving surface; and
said further piston is of sufficient diameter such that the biasing force exerted against it by said line fluid tending to close said gate, it at all times, including when said gate is open and closed, greater than the force exerted by said fluid tending to cause said stem to move said gate to an open position.

4,129,284

METERING VALVE

John N. Scapes, Schaumburg, and Donald R. Speckmann, Mount Prospect, both of Ill., assignors to Gould Inc., Rolling Meadows, Ill.
Filed Feb. 23, 1977, Ser. No. 771,164
Int. Cl.^{2} F16K *1/52*
U.S. Cl. 251—205 **17 Claims**



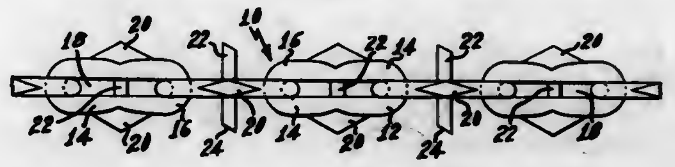
1. In a metering valve having wall means defining a flow chamber, an inlet for conducting fluid to said chamber, and an outlet for conducting fluid from said chamber, a deflectible beam in said chamber, and adjustable means for adjustably deflecting said beam, the improvement comprising:
a selected orifice disc comprising any one of a plurality of orifice discs having different size orifices;
means associated with said wall means for securing the selected orifice disc in overlying relationship to said wall means at said inlet with the orifice thereof aligned with said inlet; and
annular support means carried on said selected orifice for supporting said beam in accurate closely spaced relationship to said orifice, said adjustable means adjustably deflecting said beam toward said orifice to provide accurate metering of fluid flow from said inlet and orifice about said beam and through said chamber to said outlet, said wall means defining an annular recess coaxially of said inlet receiving the periphery of the selected disc in accurate coaxial relationship to said inlet, and an annular portion coaxially inwardly of said recess and defining the inlet portion of said chamber snugly receiving said annular support means in accurate alignment with said inlet.

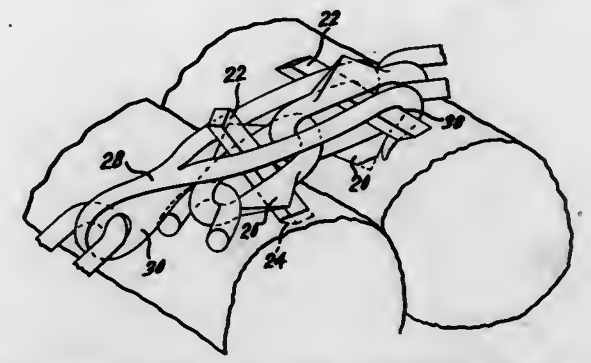
4,129,285

CHAIN AND TIGHTENING BINDER ASSEMBLY

John P. Graham, P.O. Box 37, Fort Gaines, Ga. 31751
Filed Mar. 18, 1977, Ser. No. 779,274
Int. Cl.^{2} B60P *7/06;* B61D *47/00;* B66F *3/00;* F16G *13/04*
U.S. Cl. 254—78 **8 Claims**

1. A chain for binding logs on a transport platform comprising a plurality of sequentially connected links, each said link comprising:
a. a generally planar loop having two opposed end portions adapted to interconnect other links and two continuous, spaced apart opposed side leg portions integral with said end portions and defining a central opening therebetween;
b. two rigid extensions, one said extension being integral with each respective said leg portion of said loop and extending laterally outwardly therefrom in the plane of said loop, each said extension having a sharpened outwardly terminal and;
c. an elongated bar member extending through said central opening and welded to said legs, said bar member being oriented to extend in a direction normal to the plane of said loop and having straight body portions extending equidistantly above and below said plane outwardly beyond the upper and lower edges of said leg portions.

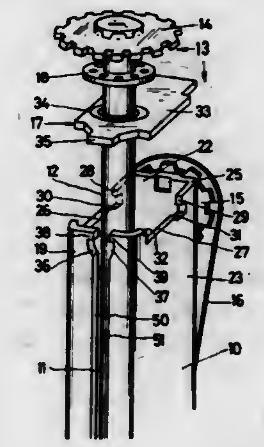




4,129,286

LIFTING JACK FOR VEHICLES

Wolfgang Anell, Zerf, Fed. Rep. of Germany, assignor to Firma August Bilstein, Wuppertal-Barmen, Fed. Rep. of Germany
Filed Feb. 3, 1977, Ser. No. 765,124
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1976, 7603865[U]; Oct. 25, 1976, 2648196
Int. Cl.^{2} B66F *3/18*
U.S. Cl. 254—103 **6 Claims**

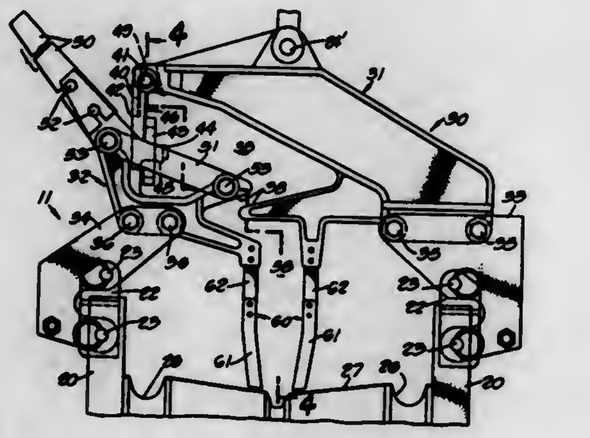


1. A lifting jack for vehicles, comprising an axially slotted support leg, a load bearing member projecting outwardly from said support leg, a rotatable screw-threaded spindle, means mounting the load bearing member for nonrotatable movement along the length of said support leg in response to rotation of said spindle; means for transmitting rotary movement to said spindle mounted at an upper end of said support leg; the transmitting means comprising a driving pinion and gear means meshing therewith; said support leg having upwardly extending distal edges disposed adjacent said gear means; said gear means being rigidly secured to said spindle for rotatable movement therewith; a bearing for supporting said gear means engaging the undersurface thereof; a bearing plate supporting said bearing; portions of said distal edges of said support leg being slotted so as to define supporting edge surfaces on which said bearing plate is received; means locking said bearing plate to said support leg, said support edge surfaces supporting said bearing plate below said distal edges a distance which is less than the thickness of said bearing extending between said

bearing plate and said gear means whereby said gear means is spaced from said support leg upper end and may rotate exteriorly of said support leg.

4,129,287
STRINGING BLOCK ASSEMBLY ADAPTED TO BE THREADED BY HELICOPTER

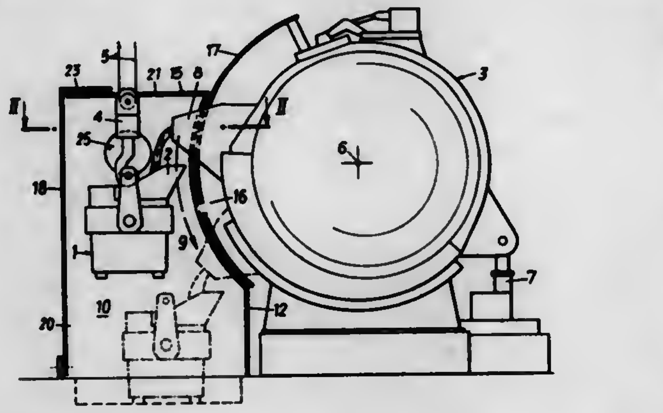
Keith E. Lindsey, 110 El Nido, Pasadena, Calif. 91107, and L. E. Lindsey, 2262 E. Mountain, Pasadena, Calif. 91104
Continuation of Ser. No. 282,430, Aug. 21, 1972, abandoned. This application Oct. 4, 1974, Ser. No. 512,005
Int. Cl.² B66D *1/36*
U.S. Cl. 254—134.3 PA **68 Claims**



50. A stringing block assembly having an open ended conductor hauling line threading passage adapted to be threaded by a hauling line dispensed from an aircraft, load transfer means movably supported crosswise of said threading passage and movable by a hauling line as the latter moves along said threading passage to effect movement of said load transfer means to a position blocking escape of the hauling line backwardly through said passage, and operable to transfer load stresses across said threading passage.

4,129,288
HOOD TO BE USED IN A METAL PRODUCTION PLANT

Friedrich Laimer, Perg, and Peter Moser, Linz, both of Austria, assignors to Vereinigte Österreichische Eisen-und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria
Filed Feb. 13, 1978, Ser. No. 877,242
Claims priority, application Austria, Feb. 28, 1977, 1313/77
Int. Cl.² C21C *5/40*
U.S. Cl. 266—158 **7 Claims**



1. In a hood to be used in a metal production plant of the type including a crane, carrying means arranged on said crane, a ladle having a mouth and being hung from and guided by said carrying means, and a tiltable metallurgical vessel having a lip for pouring out molten metal, said hood having an interior surrounded by a ceiling and side walls and being used for diverting flue gas and smoke emerging while pouring said molten metal from said tiltable metallurgical vessel into said ladle, the improvement comprising

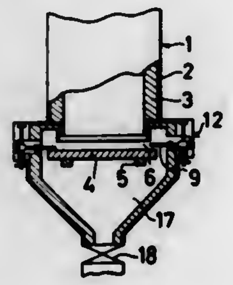
an arrangement of the ceiling and side walls such that said hood covers the mouth of said ladle and said carrying means on all sides thereof,

said hood being provided, on a first one of said side walls which is adjacent said metallurgical vessel, with an opening, said lip of said tiltable metallurgical vessel projecting into the interior of said hood through said opening, and

said hood being provided on one of said side walls and part of said ceiling with a closeable recess, said carrying means with said ladle being movable into and out of said closeable recess.

4,129,289
SHAFT FURNACE WITH BOTTOM DISCHARGE DEVICE

Satoru Miyasita; Masahiko Taniguchi, both of Himeji, and Katsuyoshi Kobayashi, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Mar. 22, 1977, Ser. No. 780,014
Claims priority, application Japan, Mar. 26, 1976, 51/33242
Int. Cl.² C21B *7/14*
U.S. Cl. 266—195 **8 Claims**



1. A shaft furnace comprising an upper portion adapted to have a furnace feed charged thereinto, a furnace wall lower end adapted to have a furnace product discharged therefrom, said furnace wall lower end being configured with a given circumferential dimension, and a furnace bottom located directly beneath said furnace wall lower end and spaced therefrom a sufficient distance to provide therebetween an opening large enough to permit the furnace product to pass therethrough, said furnace bottom having a circumferential dimension larger than said given circumferential dimension of said furnace wall lower end, and a discharging device including at least one raking arm swingable over the circumferential portion of said furnace bottom, said shaft furnace further comprising driving means for driving a plurality of said discharging devices, said driving means being adapted to drive said plurality of discharge devices both synchronously and sequentially in a timed sequence.

4,129,290
COMPRESSION AND TENSION SPRING

Jakhin B. Popper, Kyriat Motzkin, Israel, assignor to Popper Engineering Ltd., Kyriat Motzkin, Israel
Filed May 16, 1977, Ser. No. 797,111
Claims priority, application Israel, May 14, 1976, 49583
Int. Cl.² F16F *3/02*
U.S. Cl. 267—160 **14 Claims**

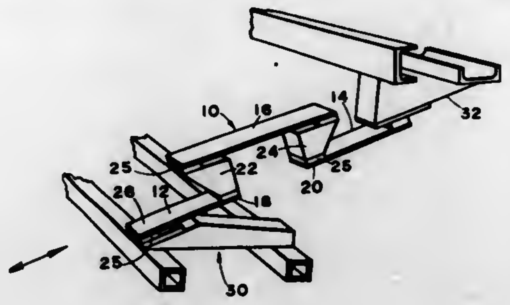
2. A spring comprising:

a first flexible member having a first inner end and a first outer end and extending linearly along a first longitudinal axis at rest;

a second flexible member having a second inner end and a second outer end and extending linearly along a second longitudinal axis at rest; and

spacer means connecting said first flexible member adjacent said first inner end to said second flexible member adjacent said second inner end in spaced generally parallel disposition at rest;

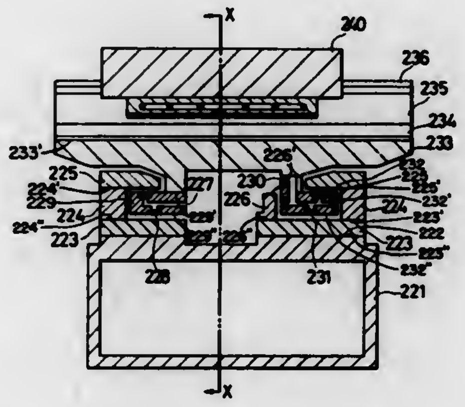
and wherein said first flexible member bows outwardly in a direction opposite that facing said second longitudinal axis and said second member bows outwardly in a direction opposite that facing said first longitudinal axis in response to the application of a compression force on said respective first and second flexible members along an axis parallel to said first and second longitudinal axes; and



said first flexible member bows inwardly in a direction towards said second longitudinal axis and said second member bows inwardly in a direction towards said first longitudinal axis in response to the application of a tension force on said respective first and second flexible members along an axis parallel to said first and second longitudinal axes.

4,129,291
TWO-DIMENSIONAL PRECISION TABLE

Shigeo Kato, Mitaka; Osamu Morita, Hachioji, and Sadao Matuoka, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Japan
Filed Jul. 25, 1977, Ser. No. 818,743
Claims priority, application Japan, Jul. 23, 1976, 51/87294
Int. Cl.² B23Q *1/02*
U.S. Cl. 269—73 **27 Claims**



1. A table arrangement for precision working of a workpiece, the arrangement comprising:

a rigid support means,

means for accommodating a workpiece, and

means for mounting said accommodating means at said rigid support means so as to permit said accommodating means to be selectively displaceable in two directions,

said mounting means including an externally supplied pressurized gas bearing means for providing a gas film between portions of said rigid support means and said accommodating means,

said gas bearing means includes at least one guide means arranged on said rigid support means, said guide means having a plurality of spaced internal guide surfaces arranged so as to define a substantially J-shaped guide opening, and

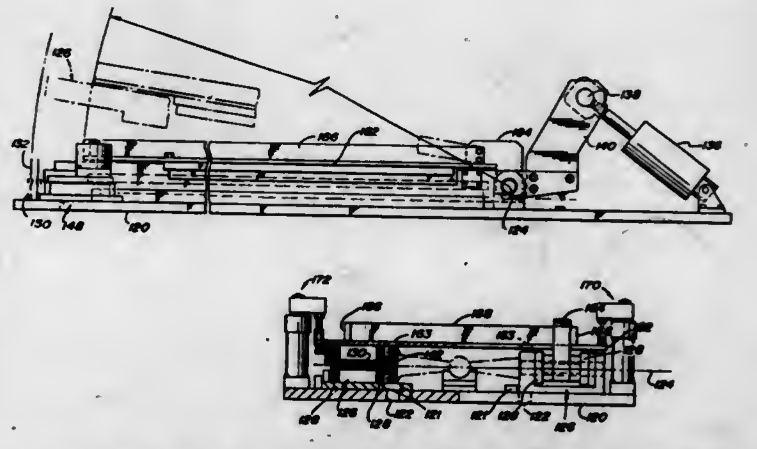
gas jet means arranged within said guide means for directing at least one jet of a gas toward at least one internal guide surface of said guide means,

said gas jet means being dimensioned such that a clearance is provided between an outer surface thereof and the internal guide surfaces of said guide means,

the at least one jet of gas from said gas jet means forming the gas film in the clearance between the gas jet means and said guide means.

4,129,292
ELECTRODE SHEET ASSEMBLY APPARATUS

Gerald R. Pohto, Mentor, and Richard O. Olson, Parma, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio
Division of Ser. No. 576,014, May 9, 1975, Pat. No. 4,033,849. This application Apr. 28, 1977, Ser. No. 791,725
Int. Cl.² B25B *1/04, 5/04, 11/02*
U.S. Cl. 269—126 **1 Claim**



1. Apparatus for assembling a pair of planar electrode sheets to an electrode riser subassembly of the type comprising a cylindrical riser with a pair of generally V-shaped connector members joined at their bight portions to the riser and extending longitudinally thereof on diametrically opposite sides with their legs extending radially, comprising:

an elongated base including a spaced pair of parallel elongated grooves opening therethrough and longitudinally extending bars for supporting a first electrode sheet to extend generally horizontally and spaced upward slightly;

support saddles midway between the base grooves for supporting a cylindrical riser on said base;

two arm members carried by said base and mounted for pivotal movement about a first axis parallel to said base, said arm members including conductor bars having a vertical height generally equal to the spacing between the connector portions of each of the connector members on the electrode riser such that the riser and connector members as attached can be slid onto said conductor bars for supporting said electrode riser subassembly for movement from a first position spaced from said base to a second position wherein said cylindrical riser extends parallel to said base and the end portions of one leg of each said member can be brought into engagement with the first electrode sheet;

actuating cylinder pivotally connected to said base and said arm members for selectively tilting movement of said arm members;

an upper platen member carried by said base and superposed relative to said arm members, said upper platen member mounted for movement from a first position spaced from said arm members to a second position wherein a second electrode sheet can be held in engagement with the end portions of the other leg of said conductor member, said upper platen member including a pair of elongated grooves formed thereto in alignment with the grooves in said base;

clamp means for rigidly clamping said arm members and said upper platen member to said base while in their second positions; and

wherein said conductor bars are of non-uniform height throughout their length such that said conductor bars have a greater height at the center and taper uniformly toward each end, thus to apply a prestress to the assembly which results in a more nearly flat and parallel relationship between the electrode sheets.

4,129,293

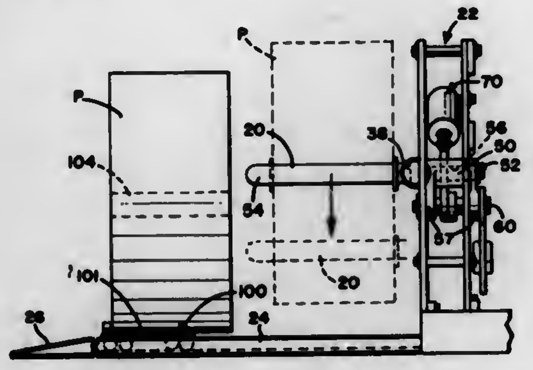
COLLATING MACHINE WITH LARGE ROLL SUPPLY

Louis Schriber, and Robert E. Stephens, both of Dayton, Ohio, assignors to Harris Corporation, Cleveland, Ohio

Filed Aug. 19, 1975, Ser. No. 605,903

Int. Cl.^{2} B65H *39/00*

U.S. Cl. 270—52 **5 Claims**



1. In a collating machine for assembling a plurality of rolls of pre-printed web material into overlapping registered relationship, including a machine frame and plural rotatable arbor shafts for supporting the rolls spaced apart in cantilever fashion, and means for withdrawing the web material from each of said rolls and combining the webs as a multi-layer unit, the improvement comprising:

- a roll supporting work surface extending to one side of said frame beneath said arbor shafts and arranged to permit rolling of heavy full rolls into loading position on said work surface,
- a plurality of support arms each rotatably carrying one of said arbor shafts and each pivoted on said frame for moving said arbor shafts between a lower loading position wherein rolls can be pushed from said working surface onto said arbor shafts and a supply position raised above said surface at which the web material can be unwound from the rolls,
- independently operable motor means connected to move each said support arms between the loading and supply positions, and
- roll carrying dollies movably mounted on said surface to transport rolls onto those arbor shafts located in loading position and supporting the weight of the rolls until the rolls are fully mounted onto said arbor shafts.

4,129,294

SHEET-FEEDING MECHANISM ACTING ON FRONT CORNER REGIONS OF A SHEET

Josef Marass, Seehausen, Germany, assignor to Georg Spiess GmbH, Gersthofen, Germany

Filed Aug. 11, 1977, Ser. No. 823,753

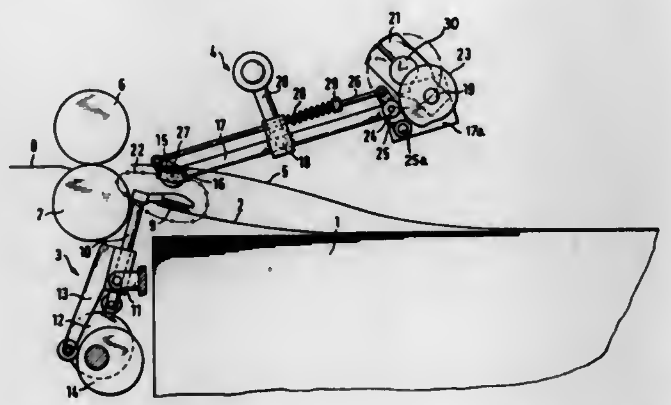
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1976, 2637218

Int. Cl.^{2} B65H *3/40*

U.S. Cl. 271—93 **18 Claims**

1. A sheet-feeding mechanism provided with apparatus for repetitively separating a top sheet of a stack of sheets of material having at least the stiffness of paper and transferring said sheet to apparatus for transporting the said sheet to other apparatus capable of accepting said sheet, comprising in combination:

- top sheet separator means (3) located adjacent to front edge of a stack (1) of sheets that is in position for sheet-feeding and having suction lift heads (9) located above the respective front corner regions of the top sheet of said stack, for lifting at least the front edge of said top sheet (2) off the top of the stack;
- first and second swing rod means (17) mounted so as to be able to swing near the respective sides of said stack for producing motion of their respective front ends in the respective regions of each of the front corners of said top sheet, in each case suspended on two crank arms (20,21) both located above said stack;
- an inwardly directed carrier arm (16) mounted rotatably with respect to its length axis on each of said swinging rod means (17) at the front end thereof;



- a suction sheet-pulling device (15) on each of said carrier arms (16); and
- control means including a cam (23) mounted on one of said crank arms (20,21) for rotating each of said carrier arms (16) about its length axis;
- whereby said suction sheet-pulling devices (15) are caused to be moved in a closed curve in the feed direction and back, moving below the lifted top sheet to grasp it on its underside beneath the respective most lifted portions thereof to lead it to a succeeding transport mechanism.

4,129,295

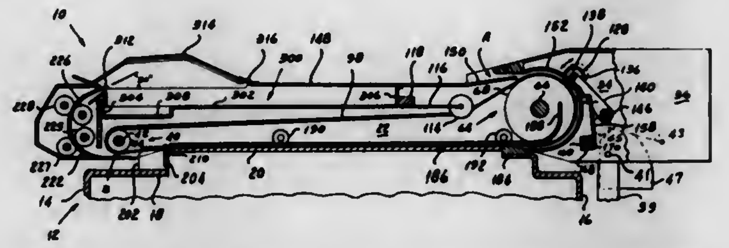
SEMIAUTOMATIC DOCUMENT FEEDER

Tatsu Hori, Los Altos; Kenneth W. Gardiner, Menlo Park, and Norman F. Mangal, Palo Alto, all of Calif., assignors to Savin Business Machines Corporation, Valhalla, N.Y.

Filed Dec. 29, 1976, Ser. No. 755,181

Int. Cl.^{2} B65H *29/00*

U.S. Cl. 271—186 **20 Claims**



1. In a document feeder for a photocopying machine having a generally horizontal imaging platen adapted to receive a document to be copied, said feeder including a stacking tray disposed above said imaging platen, apparatus comprising first guide means adjacent to one end of said platen for guiding a document moving off said one end of said platen along a curved path having an exit portion extending generally upwardly and in the direction of said tray and second guide means spaced above said tray for engagement by the leading edge of said document and for guiding said document into said tray, at least part of said second guide means comprising a transparent member formed with spaced longitudinal ribs on the underside thereof.

4,129,296

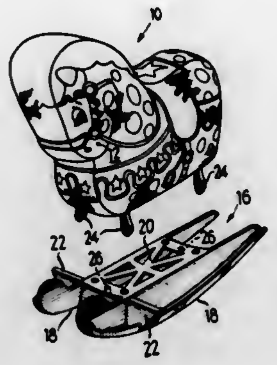
RIDING TOY WITH REMOVABLE BODY PORTION

Burton C. Meyer, Downers Grove, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 14, 1977, Ser. No. 767,399

Int. Cl.^{2} A63G *17/00*

U.S. Cl. 272—52 **7 Claims**



1. A riding toy, comprising:

- a separate rigid base in the form of a rocker;
- a body supported on said base, said body being fabricated of substantially soft cushion-like material on which a child may comfortably sit; and
- means removably mounting said body on said base, and means comprising a pair of flexible straps on said body and bosses on said base about which said flexible straps can be wrapped, whereby the body can be removably mounted on the base.

4,129,297

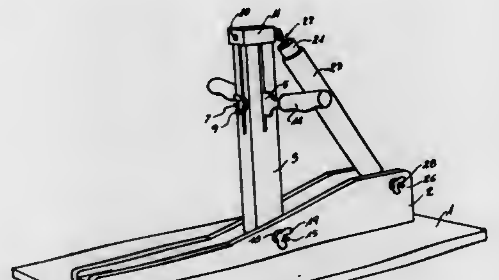
ARM WRESTLING DEVICE

John W. Dolan, 194 Rustic Rd., Lake Ronkonkoma, N.Y. 11779

Filed Jun. 14, 1976, Ser. No. 658,721

Int. Cl.^{2} A63B *5/00*

U.S. Cl. 272—67 **3 Claims**



1. An arm wrestling device comprising a base, a channel mounted to the base, wherein the channel is sized so as to receive an arm in the pivoting of the arm, and guide the arm therein, the arm pivotally mounted to and within said channel, and a hand grip transversely disposed to and attached to said arm, and spring means disposed in said channel and mounted at one end to the upper portion of the arm and pivotally mounted at the other end adjacent the base, said spring means being mounted in a retractably extensible cylinder, and said cylinder further comprising air brake means, to counter the retraction of the spring upon release of the hand grip, whereby the user grips and pulls the hand grip causing pivoting of the arm and pivoting and extension of the spring means.

4,129,298

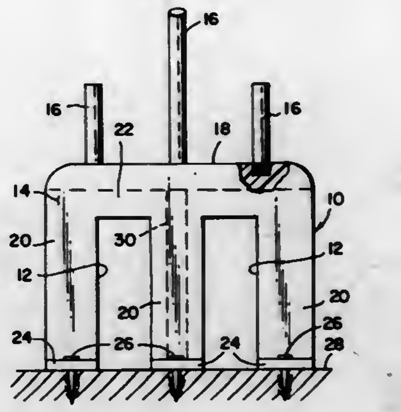
GAME APPARATUS

Dwight Richardson, and Jerome Richardson, both of 2011 Old Elm Rd., Lindenhurst, Ill. 60046

Filed Feb. 17, 1977, Ser. No. 769,445

Int. Cl.^{2} A63B *67/06*

U.S. Cl. 273—100 **7 Claims**



1. A game apparatus comprising:

a. a game base having a planar first portion, a second planar portion perpendicular to the first planar portion, a plurality of spaced apart parallel vertical elongated arms, one horizontal elongated arm interconnecting said plurality of vertical arms at the top ends thereof, wherein one common face of the arm corresponds to said first planar portion, the top of said horizontal arm corresponds to said second planar portion, means defining a plurality of elongated apertures through said first portion each having an open side, wherein the spaces between the horizontal arms corresponds to said elongated apertures, and a plurality of pegs each connected at one end thereof to said second portion and projecting outwardly therefrom;

b. means for mounting the game base on a given plane to dispose the first portion perpendicular to the given plane with the open side of the apertures adjacent thereto and the second portion parallel thereto and at the top of the game base, wherein said means mounting the game base includes a plurality of planar mounting members each perpendicularly connected to the bottom end of one of said vertical arms and each having an aperture therethrough for effecting the connecting thereof to said given plane, a brace, said brace connected to one of said plurality of vertical arms on the side thereof opposite to said first planar portion and having an aperture at a lower portion thereof for effecting connecting to the given plane; and

c. at least one game ring having an outer diameter and thickness configured to pass through any of the apertures and an inside diameter configured to encircle any of the pegs, whereby each ring can be either rolled through the apertures or thrown around the pegs.

4,129,299

APPARATUS FOR HIT SCORING TARGETS

Theodore N. Busch, Minneapolis, Minn., assignor to Caswell Equipment Company, Minneapolis, Minn.

Filed Feb. 11, 1977, Ser. No. 767,841

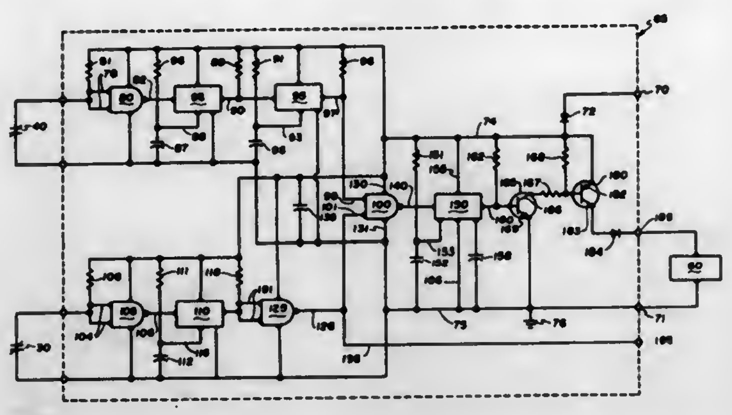
Int. Cl.^{2} A63B *63/02, 69/00*

U.S. Cl. 273—102.2 S **12 Claims**

12. A system for scoring hits on a frame mounted target comprising:

- first impact sensing means mounted to respond to impacts on said target and said frame;
- second impact responsive means mounted to respond only to hits on said frame; and
- hit recording means connected to said first impact sensing

means and said second impact sensing means for registering hits only when said first impact sensing means senses



an impact and said second impact sensing means does not sense an impact.

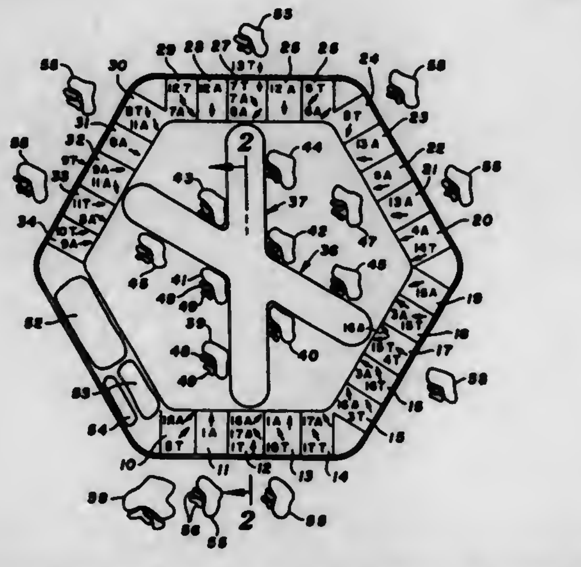
4,129,300
COMPACT GOLF COURSE

Arthur P. Magnuson, 1012 W. Burnsville Crosstown, Burnsville, Minn. 55357

Filed Nov. 18, 1976, Ser. No. 742,768

Int. Cl.^{2} A63B *69/36*

U.S. Cl. 273—176 A 8 Claims



1. A compact golf course in which there are two sets of playing areas, one of said sets being in the form of ball hitting areas and the other in the form of elongated target fairway areas, said ball hitting areas extending generally around the target fairway areas, said target fairway areas being in the form of no more than two relatively well defined elongated areas extending substantially across the area between said ball hitting areas and intersecting each other at intermediate portions thereof at an angle with respect to each other, said number of target fairway areas being substantially less than the holes of golf to be played and substantially less than the number of ball hitting areas, and a plurality of target greens along said target fairway areas and spaced varying distances along each fairway area from said ball playing areas.

4,129,301
GOLF PUTTING TRAINING DEVICE

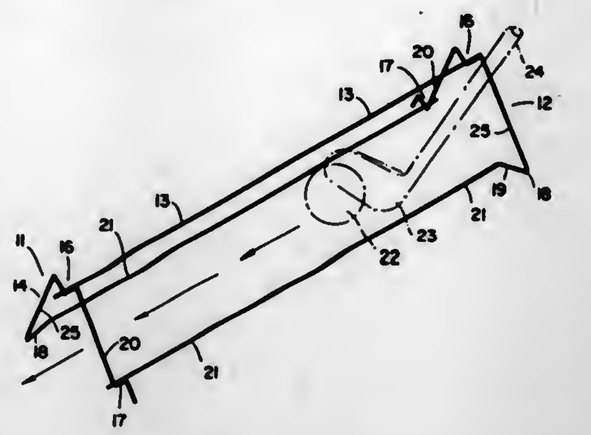
Jerald R. Kenney, P.O. Box 1817, Crystal Bay, Nev. 89402

Filed Aug. 29, 1977, Ser. No. 828,839

Int. Cl.^{2} A63B *69/36*

U.S. Cl. 273—186 R 3 Claims

1. A golf putting training device comprising a pair of end members each formed to define an inverted U-portion with an integral leg extending generally orthogonally from one end of each of said inverted U-portions, a first detent formed in the other end of each of said U-portions; said end members disposed in parallel, spaced relationship with said leg of each resting in said first detent of the other and disposed for selective dislogement therefrom by an imperfect putting stroke carried out between said legs and said inverted U-portions.



4,129,302
GAME OF SKILL

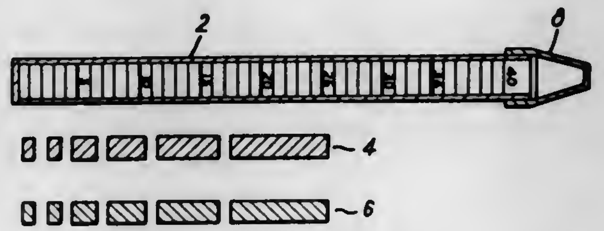
Gregory B. Stone, 48 Rue Jacob, Paris, France (75006)

Filed Apr. 11, 1977, Ser. No. 786,618

Claims priority, application United Kingdom, Apr. 13, 1976, 15089/76

Int. Cl.^{2} A63F *3/00*

U.S. Cl. 273—236 10 Claims



1. A game of skill including two sets of playing pieces each having the same number of pieces, the pieces being of regular cross-section, the sets being distinguished from each other by a characteristic, and each set comprising pieces of various lengths to represent consecutive values in the Fibonacci series; and a measure which comprises a hollow tube which is transparent or translucent about at least a part of its circumference and along the length and is adapted to receive the playing pieces as a loose sliding fit in end-to-end relationship extending along the axis of the tube inside the tube the measure having a marked length corresponding to another value in the Fibonacci series, this value being less than the total obtained by summing together the values of the pieces of the two sets but greater than half that total.

4,129,303
CUBIC GAME BOARD

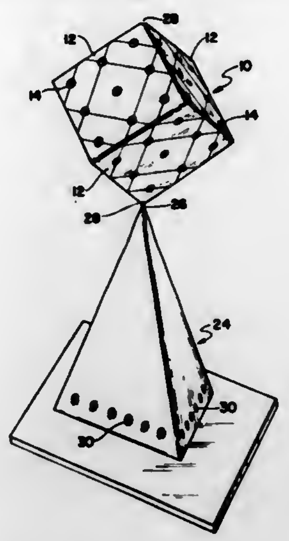
John G. Flagg, 19 E. Shore Dr., Babylon, N.Y. 11702

Filed Mar. 31, 1977, Ser. No. 783,149

Int. Cl.^{2} A63F *3/00*

U.S. Cl. 273—241 2 Claims

1. A game board for adversary and countermove type games comprising
- a cube presenting six planar playing surfaces of uniform character,
- each of said planar surfaces including a plurality of bores arranged in a rectangular matrix pattern of not less than three by three nor more than five by five bores therein,
- a plurality of pin members each releasably retainable in a bore,
- visually sensible indicia on said planar playing surfaces for selectively identifying each of said planar playing surfaces,
- a bore disposed at a corner of said cube, and
- a supporting standard upwardly terminating in an extending pin member receivable within the bore located at a corner of said cube for positioning said cube in space with each planar playing surface being readily visable and physically accessible for pin displacement relative thereto and further having bores therein for receiving the pin members for storage during game play.



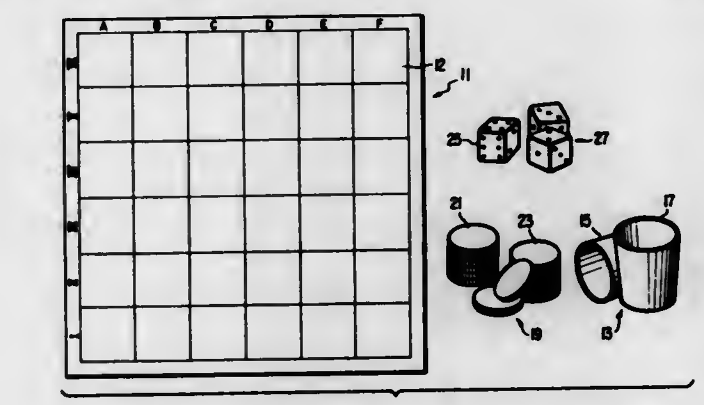
4,129,304
SELF-LIMITING BOARD GAME COMBINING CHANCE AND SKILL

Eric L. Mager, 22 Columbus Ave., Beverly, Mass. 01915

Filed Jul. 25, 1977, Ser. No. 818,766

Int. Cl.^{2} A63F *3/00*

U.S. Cl. 273—243 9 Claims



1. A self-limiting board game combining chance and skill comprising:
- a plurality of stake means associated with each player of the board game for wagering during play;
- a game board including a plurality of locations arranged thereon forming a game movement area, the locations allowing the stake means to be located thereon;
- means for setting a quantity of the stake means to be wagered;
- means for randomly choosing a location on the game board for the quantity of stake means; and
- a plurality of playing pieces representing the individual players for movement around the locations of the game movement area to capture the stake means.

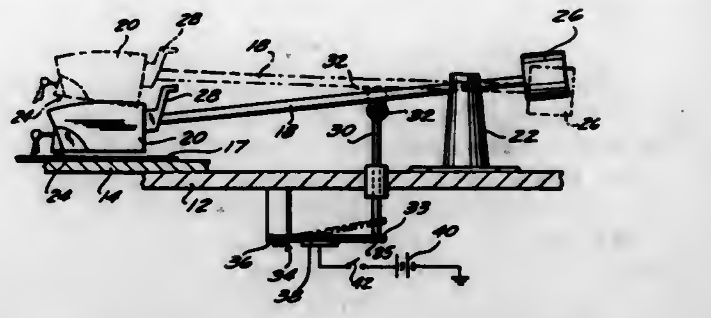
4,129,305
PHONOGRAPH TURNTABLE ELECTRO-THERMAL CUEING CONTROL

Roland C. Wittenberg, New Hyde Park, N.Y., assignor to Pickering & Company, Inc., Plainview, N.Y.

Continuation of Ser. No. 662,223, Feb. 27, 1976, abandoned. This application Jul. 28, 1977, Ser. No. 819,694

Int. Cl.^{2} G11B *3/10*

U.S. Cl. 274—23 R 3 Claims



1. In a phonograph turntable of the type comprising: a frame; a record supporting disc defining a generally horizontal plane affixed to said frame and mounted for rotation about a central axis; a tone arm having a first end carrying a cartridge assembly and a second end pivotally mounted to said frame for arcuate movement of said first end toward and away from said central axis and vertical movement toward and away from the plane of said disc; the improvement comprising: a post mounted to said frame for vertical movement beneath said tone arm, said post includes a top end and a horizontal cradle mounted to said top end, said cradle being dimensioned so that portions underlie said tone arm point as said tone arm first end moves from a first position off said record disc to a second position substantially adjacent said central axis, a bimetallic element for directly moving said post vertically having one end fixedly connected to said frame and a free end abutting said post, a heating element positioned adjacent to said bimetallic element, and means for connecting said heating element to a power source whereby upon heating of said element said bimetallic element deflects causing said post to shift vertically at a controlled rate in response to the change of temperature of said element.

4,129,306
SEALING MEANS FOR TANK MIXER

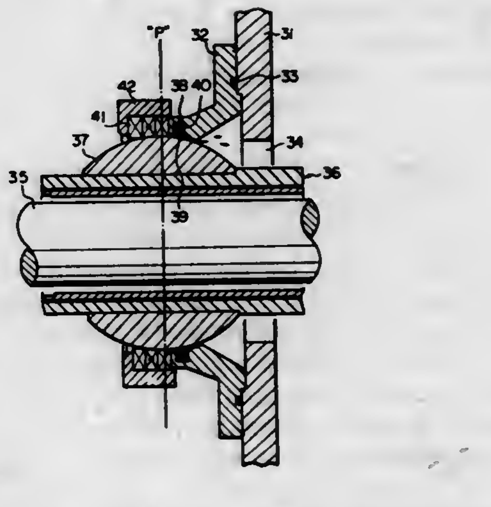
Daisuke Konno, Yokohama, and Tetsuo Tanaka, Machida, both of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Nov. 17, 1977, Ser. No. 852,495

Claims priority, application Japan, Nov. 29, 1976, 51-158510[U]

Int. Cl.^{2} F16J *15/24*

U.S. Cl. 277—30 9 Claims



1. A sealing means for use with a swivel ball member dis-

posed adjacent the wall of a tank adapted to contain liquid comprising:

- an annular sealing element, the inner diameter of which is smaller than the diameter of said ball member; and
- a supporting member for supporting said ball member to allow swivelling movement thereof, said supporting member being provided with an annular groove for receiving said element therein, the position of said groove being arranged closer to the tank than the diametrical section of the ball member.

4,129,307
SEALING DEVICE FOR COKE OVEN DOORS

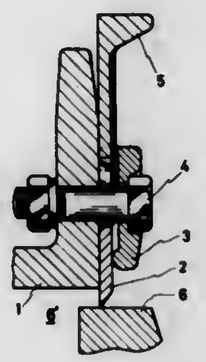
Taiji Nishiura, 2-35-1-1017, Minamirokugou, Ohta-ku, Tokyo-to, and Kazutomi Shimamura, 2-11-17, Sakuramoto, Kawasaki-ku, Kawasaki-shi, Kanagawa-ken, both of Japan

Filed Aug. 9, 1977, Ser. No. 823,201

Claims priority, application Japan, Aug. 23, 1976, 51-11260[U]; Jan. 27, 1977, 52-8742[U]; Feb. 4, 1977, 52-12768[U]

Int. Cl.² C10B *25/06;* **F16J** *15/46*

U.S. Cl. 277—34.3 **2 Claims**



1. A device for sealing a steel door of a coke oven comprising

- elastic sealing means disposed on the door and including at least one spring member and an elastic covering tubular member of thin metal being outwardly inflated when a pressure is applied to said elastic sealing means to compress said spring member, said spring member covered by said covering tubular member and disposed to bias the covering member to extend the length thereof in one direction; and
- a sealing element having a seal lip, the sealing element being secured to the sealing means in confronting relation to the body of the coke oven, the seal lip engaging surface portions of said coke oven body on closure of the door and being resiliently biased thereagainst by the elastic sealing means.

4,129,308
PACKER CUP ASSEMBLY

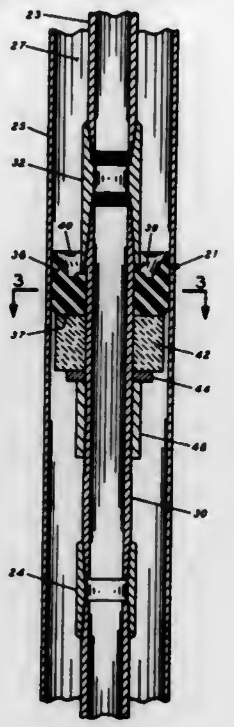
Stanley O. Hutchison, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 714,941, Aug. 16, 1976, abandoned. This application Mar. 31, 1977, Ser. No. 783,132

Int. Cl.² F16J *15/10*

U.S. Cl. 277—188 R **6 Claims**

1. A packer cup assembly comprising a mandrel section connectable into a tubing string, a sealing element having a central opening in snug engagement over said mandrel section, said sealing element having a base portion and a face portion including an annularly extending inner lip engaged against said mandrel section and an annularly extending outer lip engageable against a casing string, said inner lip and said outer lip being separated by an annularly extending groove portion, a frangible annularly extending backup ring having an outer diameter of less than the outer diameter of said sealing element and a central opening slidably engageable over said mandrel section, said backup ring having a face portion engaged against the base portion of said sealing element and having a relatively flat base portion and stop means on said mandrel section abutting against the flat base portion of said frangible backup ring to maintain said backup ring in a predetermined position on said mandrel section, said stop means having a maximum radial extension less than said backup ring and small enough to permit washover if the assembly becomes stuck in a well.



4,129,309
AUSTENITIC CAST IRON

Hans J. Köhnert, Esslingen, and Herbert Smetan, Schorndorf, both of Germany, assignors to Mahle GmbH, Stuttgart, Germany

Filed Jun. 1, 1977, Ser. No. 802,550

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1976, 2627329

Int. Cl.² B65D *53/00;* **F16J** *9/22;* **C22C** *37/10*

U.S. Cl. 277—189.5 **3 Claims**

1. Austenitic cast iron consisting of the following composition:

2.0 to 6.0% Ni,
1.8 to 4.0% C,
1.0 to 3.0% Si,
6.0 to 12.0% Mn,
5.0 to 7.0% Cu,
less than 0.08% Cr,
0.3 to 2.0% Al,
0.05 to 0.3% Ti,

the rest consisting of Fe with the impurities caused by the manufacturing process.

4,129,310
HYDRAULIC HEELING STABILIZERS

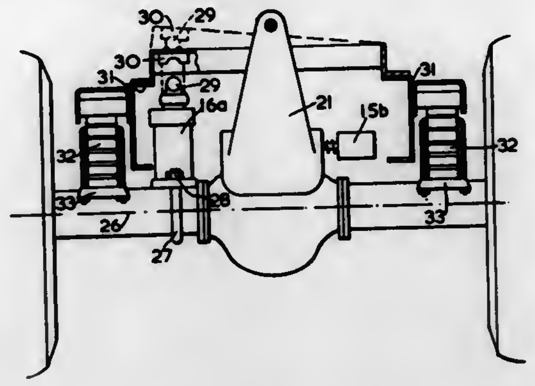
Mikal Nordmark, 4062 Klepp stasjon, Norway

Filed May 2, 1977, Ser. No. 792,627

Int. Cl.² B60G *17/04*

U.S. Cl. 280—6 H **4 Claims**

1. In a hydraulic heeling stabiliser for a vehicle having a wheel shaft, a vehicle frame, and leaf springs mounted on the wheel shaft and having the vehicle frame supported thereon, said stabiliser comprising two individual pressure medium cylinders adapted to be mounted one on each side of a longitudinal central plane through said vehicle, valve means for controlling the supply of pressure medium to said cylinders and a swinging pendulum for actuating said valve means, the improvement which consists in said valve means being in the form of two separate control valves each associated with a respective one of the pressure medium cylinders and serving to couple said cylinders in parallel in a common pressure medium circuit, each control valve having pressure-loaded actuating means adapted to be actuated separately by pivoting the swinging pendulum, whereby only one control valve can be actuated at a time, said cylinders being adapted to extend between the vehicle frame and the wheel shaft to permit in the unactivated condition springing of the vehicle via respective leaf springs independently of the cylinders, activation of the one cylinder leaving the other cylinder unactivated and causing a portion of that one cylinder to form a support between said frame and said shaft.



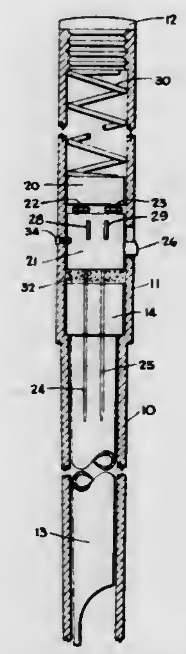
4,129,311
ILLUMINATED SKI POLE

David A. Hodgson, Hamburg, and James S. Grey, East Otto, both of N.Y., assignors to International Power Pole, Ltd., Hamburg, N.Y.

Filed Jan. 10, 1977, Ser. No. 758,071

Int. Cl.² A63C *11/22*

U.S. Cl. 280—11.37 E **4 Claims**



1. An illuminated ski pole comprising a pole body having a tubular upper portion, a removable cap at the upper end of said tubular portion, an elongate cylindrical chemiluminescent member inserted in said tubular upper portion, and an opening in the wall of said upper portion of the ski pole in registry with said chemiluminescent member whereby light from said member is emitted radially outwardly of said ski pole, a dry cell battery overlying said chemiluminescent member and probe elements projecting from the terminals thereof downwardly through the upper end of said chemiluminescent member to energize the latter.

4,129,312
SKI POLE

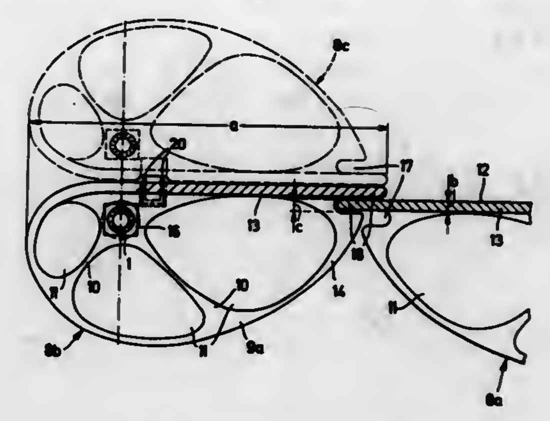
Eberhard Löffelholz, Thurgauerstrasse 13a, D-77 Singen, Germany

Filed Apr. 11, 1977, Ser. No. 786,254

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1976, 2616431

Int. Cl.² A63C *11/02, 11/18*

U.S. Cl. 280—11.37 Z **29 Claims**



1. A pair of ski poles, each comprising a pole member having a hand-engaging end and a ground-engaging end, a disk having a peripheral edge, mounted on said pole member adjacent to the ground-engaging end such that a tip of the pole extends beyond said disk, for engaging the ground; scraper means on said disk for cleaning ski boot soles and other flat objects, and means on said periphery of said disk for coupling the disk with a disk of the other of said pair of ski poles to form an assembly having said poles spaced from one another, said scraper means of each disk being located proximate said coupling means and between the poles when the disks are coupled, thus providing a firm frame enabling support of a skier while the boot of the skier can be cleaned on said scraper means.

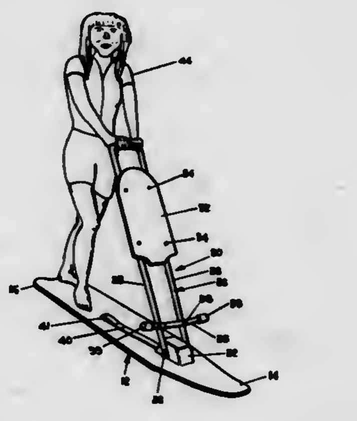
4,129,313
SKI DEVICE

James L. Benson, 4376 Okemos Rd., Apt. C-101, Okemos, Mich. 48864

Filed Sep. 6, 1977, Ser. No. 830,689

Int. Cl.² B62B *13/16*

U.S. Cl. 280—12 H **7 Claims**



1. A ski device comprising a ski with a combination handle and seat member pivotably mounted on a forward portion of the ski, the handle and seat member being substantially rigid and being pivotably mounted to the ski at a forward end of the member and extending rearwardly therefrom, the member forming a handle for a skier standing upright on a rear portion of the ski when the member is pivoted upwardly from the ski and the member forming a seat for a skier sitting on the member and the ski when the member is pivoted downwardly into contact with the ski, the seat including a seating portion formed on the side of the handle and seat member so as to present a reasonable seating surface on the upper surface of the

handle and seat member when the member is pivoted downwardly into contact with the ski.

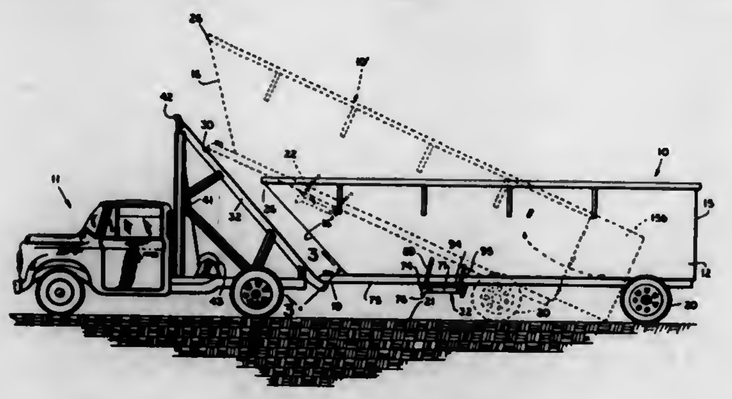
4,129,314
TOWING VEHICLE WITH ELEVATED RAMP

Ronald L. Bond, Valdosta; E. Chris Daughdrill, Lake Park; Henry T. Brice, Valdosta, all of Ga., and Phineas E. Horton, III, Portsmouth, Va., assignors to Swacars, Inc., Valdosta, Ga.

Division of Ser. No. 611,133, Sep. 9, 1975, Pat. No. 4,054,301, which is a continuation-in-part of Ser. No. 480,606, Jun. 19, 1974, abandoned, which is a continuation of Ser. No. 377,752, Jul. 9, 1973, Pat. No. 3,858,939. This application Oct. 13, 1977, Ser. No. 841,720

Int. Cl.² B62D *53/06*

U.S. Cl. 280—425 R **3 Claims**



1. A towing vehicle for towing a trailing vehicle;
- said vehicle having a rear axle and having an elongate track means extending diagonally from a rearward lower elevation to a forward upper elevation with respect to said rear axle;
- said track means having a floor and defining an elongate channel including an upper wall having an elongate aperture extending substantially the length of said elongate channel;
- hitch carrier means retained within said elongate channel for selective reciprocal movement along said channel;
- said hitch carrier means including wheel carrier means and wheel means rotatably connected to said wheel carrier means, said wheel means having a diameter less than the spacing between said lower support surface and said upper wall;
- said wheel means being disposed to roll along said floor and being unimpeded from movement upwardly into contact with said upper wall;
- a hitch supporting means supported by said wheel carrier means and extending through said elongate aperture so as to be on the outside of said upper wall for reciprocal movement therealong, in response to said reciprocal movement of said hitch carrier means;
- hitch means mounted on said hitch supporting means for selective interconnection with and disconnection from a trailing vehicle; and
- motive means connected to said hitch carrier means and selectively operative to move the hitch support means along said elongate channel.

4,129,315
PLAY VEHICLE

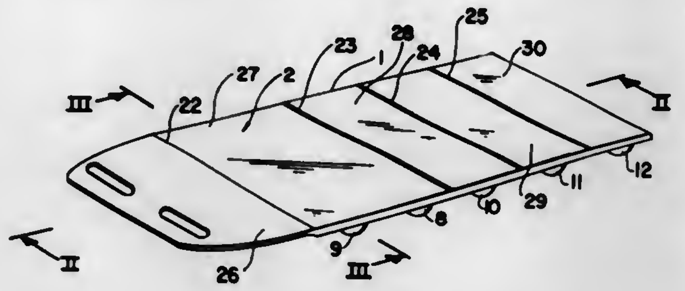
David F. McCallum, #D 10330 114th St., Edmonton, Alberta, Canada

Filed Apr. 15, 1977, Ser. No. 787,773

Int. Cl.² B62B *11/00*

U.S. Cl. 280—87.01 **1 Claim**

1. A play vehicle, comprising
- a plate member having a top surface, a bottom surface, a length and a width, said member supporting a rider on its top surface, said plate member being divided by widthwise extending cuts into a plurality of parts;
- a plurality of shafts each mounted a predetermined distance beneath the bottom surface of the member and each extending widthwise of the member in spaced parallel relation with the other shafts, corresponding ones of the parts having corresponding ones of the shafts mounted thereon;



- a plurality of groups of wheels, each group having an equal number of wheels and each group of wheels being rotatably mounted on a corresponding one of the shafts spaced from the bottom surface of the member in a manner whereby the vehicle is movable on different types of terrain; and
- a plurality of hinge means hingedly affixing the parts to each other in a manner whereby the plate member is flexible along its length from part to part.

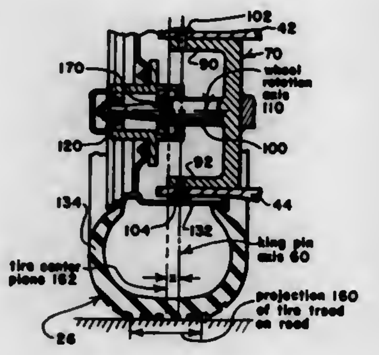
4,129,316
STEERABLE WHEEL VEHICLE SUSPENSION SYSTEM

LeRoy W. Ebbert, 20676 Fairmount Blvd., Shaker Heights, Ohio 44118

Filed Sep. 6, 1977, Ser. No. 830,798

Int. Cl.² B62D *7/08*

U.S. Cl. 280—96.1 **2 Claims**



1. In combination with a vehicle chassis having forward and rearward ends and spaced sides, a steering gear comprising:
- (a) first structure on one side of the chassis defining a first pair of spaced upper and lower mounting locations aligned along a common first axis;
- (b) second structure on the other side of the chassis defining a second pair of spaced upper and lower mounting locations aligned along a common second axis;
- (c) the mounting locations being arranged such that the first and second axes are inclined at equal degrees from the vertical and such that the upper mounting location of each pair is positioned rearwardly with respect to the vehicle chassis from its associated lower mounting location, whereby the first and second axes defined by the mounting locations are inclined forwardly downwardly;
- (d) first and second spindle members positioned respectively between the mounting locations of the first and second structures;
- (e) a first pair of king pins extending along the first axis and pivotally connecting the first spindle member to the first structure in the vicinities of the first pair of mounting locations;
- (f) a second pair of king pins extending along the second axis and pivotally connecting the second spindle member to the second structure in the vicinities of the second pair of mounting locations;
- (g) the first and second spindle members, respectively, defining first and second wheel mounting axes, the first wheel mounting axis extending perpendicular to the first axis, and the second wheel mounting axis extending perpendicular to the second axis;
- (h) first and second wheels journaled respectively on the first and second spindle members and each having a tire mounted on a rim;
- (i) the rim of the first wheel intersecting and overhanging the first axis sufficiently to locate the tread of its associated tire at a location intersecting and overhanging the first axis;
- (j) the rim of the second wheel intersecting and overhanging the second axis sufficiently to locate the tread of its associated tire at a location intersecting and overhanging the second axis;
- (k) steering means interconnecting the first and second spindle members for pivoting the spindle members in unison about the first and second axes to steer the wheels;
- (l) the first and second axes extending in a common plane inclined from the vertical, and each of these axes also extending in a separate vertical plane, the separate vertical planes being parallel and paralleling the forward-rearward dimension of the chassis;
- (m) the chassis including first and second yoke structures, the first yoke structure having a pair of arms which define the first pair of mounting locations, and the second yoke structure having a second pair of arms which define the second pair of mounting locations;
- (n) the spindle members each including an upper portion located near the upper arm of the associated yoke structure, a lower portion located near the lower arm of the associated yoke structure, and a connecting portion extending between and connecting the upper and lower portions, and a stub shaft supported at a central location on the connecting portion between the upper and lower portions, the associated wheel being journaled on the stub shaft;
- (o) each of the tires having a center plane, and each of the king pin axes being located inwardly with respect to the chassis from the juncture of its associated tire center plane and its associated wheel rotation axis by a dimension of about 20 percent of the tread projection width of the associated tire;
- (p) the king pin axes being inclined from the vertical within the range of about 5 to 15°; and,
- (q) whereby, when the spindle members are turned to steer the wheels, the inclined orientation of the first and second axes causes the wheels to tilt into the turn to equal degrees and the inward spacing of the king pin axes causes the center of one of the tires to swing forwardly while causing the center of the other of the tires to swing rearwardly to a desired degree to improve vehicle turning performance.

4,129,317
BICYCLE

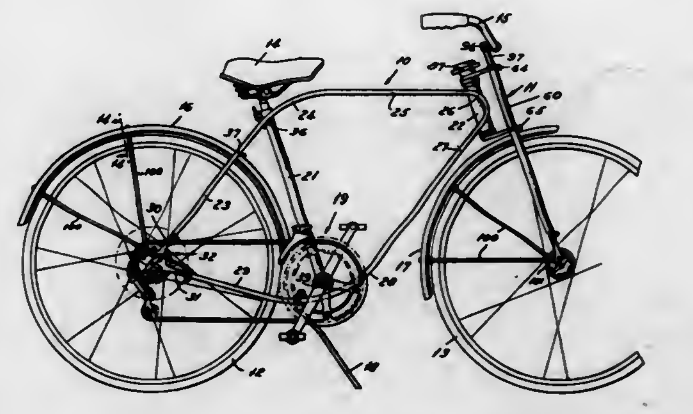
Theodore F. Bell, 400 Featress Blvd., Daytona Beach, Fla. 32015

Filed Mar. 5, 1976, Ser. No. 664,238

Int. Cl.² B62K *3/04*

U.S. Cl. 280—281 R **16 Claims**

1. The method of making a bicycle frame comprising
- forming a pair of substantially identical side frames which are mirror images of one another from a pair of lengths of tubular material of substantially constant cross section throughout by bending each said side length to form a first downwardly and rearwardly inclined straight portion, a second curved portion connected to said first portion and extending upwardly and forwardly and having a substantially constant radius, a third straight horizontal portion extending from said second portion forwardly, a fourth portion of substantially constant radius connected to the forward end of said third portion and extending forwardly and then downwardly and rearwardly, a fifth straight portion connected to said fourth portion and extending downwardly and rearwardly, a sixth curved portion connected to said fifth portion and having a substantially constant radius, and a seventh substantially straight portion connected to said sixth portion and extending upwardly and rearwardly to a free end, such that the free end of said first portion and the free end of said seventh portion are vertically spaced from one another,
- connecting a crank housing tube to the lower end of a seat mast,



- joining the upper end of said seat mast to said second portions of the pair of frames by brazing the seat mast to a bracket and the bracket to said frames without deforming the seat mast or second portions of the pair of frames,
- joining the crank housing to the sixth portion of said pair of frames by brazing a bracket to said housing and said frames without deforming said bracket, said housing or said frames,
- brazing a fork tube of substantially constant diameter between said fourth portions of said side frames without deforming said fork tube and said fourth portions.

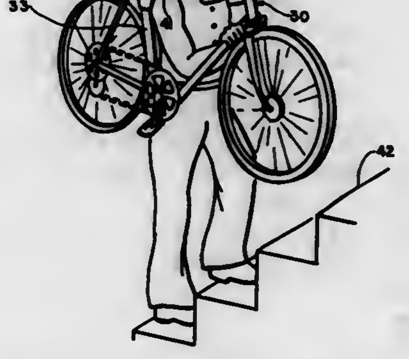
4,129,318
BICYCLE CARRY AID

Charles A. Cahill, 567 Commonwealth Ave., Newton Center, Mass. 02159

Filed May 31, 1977, Ser. No. 802,044

Int. Cl.² B62J *39/00*

U.S. Cl. 280—289 A **7 Claims**

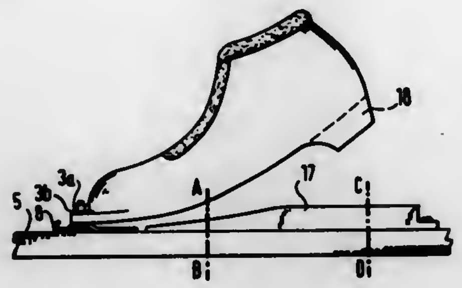


1. A carry aid for a bicycle which has a frame including a top tubular member and an adjoining seat tube, said aid comprising;
- a cushion of resilient material adapted to be mounted upon the frame in the corner between the top tubular member and the seat tube, said cushion including on the outside thereof a first channel extending within said cushion and along the length thereof and arranged to engage said top tubular member and also on the outside thereof, a second channel extending within said cushion along the length thereof and angularly arranged with reference to said first channel, said cushion further including a yoke on its inside, shaped so as to enable a person to carry the bicycle on the shoulder.

4,129,319
SKI BINDINGS

Helmut Strohmeier, Kapfenberg, Austria, assignor to Hermann Kastinger, Austria

Filed Jul. 20, 1976, Ser. No. 706,943
Int. Cl.^{2} A63C *9/16, 11/16*
U.S. Cl. 280—615 19 Claims

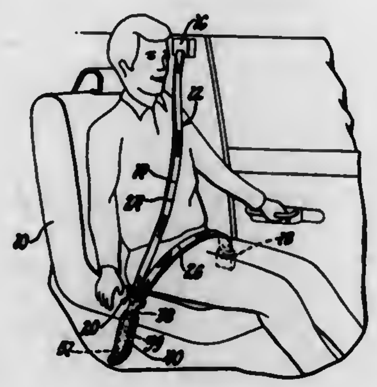


1. For use with a cross country ski boot and a ski, the improvement comprising a cross country ski binding for coupling the ski boot to the ski and comprising a first clip for attachment to a leading projecting tip of the boot, the first clip having a hook at its forwardmost end to be positioned forward of said boot tip and having a rearward end extending beneath the boot sole rearwardly of said boot tip, means for securing the first clip to the boot with said means being located rearwardly of said hook, said first clip having generally converging side edges with said edges converging in a direction extending towards the boot tip but underlying the boot, said securing means attaching said first clip to the boot only at the projecting tip of the boot, a second clip, means for rigidly securing the second clip to the ski, said second clip comprising a relatively flat piece of metal having opposite edges converging in a direction towards a forward tip end of the ski and claws extending upwardly from the edges away from the ski and inwardly in overlying retaining engagement with said converging side edges of said first clip and in slidable assembly relative to said claws, and a tensioning device mounted on said ski generally forward of both of said clips and engageable with said hooked end of said first clip and exerting a pull upon the first clip in a direction of the ski tip so that said first clip is pulled in between the claws of the second clip thus insuring a rigid connection between the first and second clips, the interengagement between the clips and the interengagement between said first clip and said boot tip being such as to permit the boot to pivot on said boot securing means free of said first and second clips whereby the heel of the boot can be lifted free of the clips and the ski while the forward boot tip is securely held to the ski.

4,129,320
SEAT BELT SECURING DEVICE

Richard E. Fancy, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 22, 1977, Ser. No. 826,642
Int. Cl.^{2} B60R *21/10*
U.S. Cl. 280—744 3 Claims

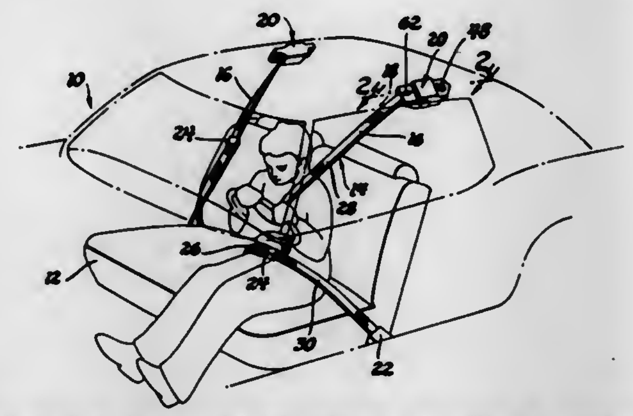


1. In combination with a vehicle body adapted to support a seated occupant, a seat belt system having a belt and a securing device for releasably capturing the belt in a restraining position about the seated occupant, said securing device comprising: a mounting bracket mounted on the vehicle body; a C-shaped hook member having upper and lower legs spaced apart to define a belt receiving slot having a forward facing open end; pivot means acting between the mounting bracket and the hook member to mount the hook member for pivotal movement about an axis extending transversely of the vehicle body and between a belt capturing position wherein the legs and the slot extend in a downwardly direction and an open position wherein the legs and the slot extend in an upwardly direction to receive and release the belt; and spring means acting between the mounting bracket and the hook member and going overcenter upon movement of the hook member between the belt capturing position and the open position to selectively and alternately bias the hook member to the selected position.

4,129,321
SEAT BELT UTILIZATION RECORDER

Louis P. Garvey, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 9, 1977, Ser. No. 831,948
Int. Cl.^{2} B62B *35/00*
U.S. Cl. 280—744 1 Claim



1. An anchorage device for attaching a seat belt on a vehicle body structural member and for providing a record of imposition of a predetermined occupant restraint load on the seat belt, said anchorage device comprising: a seat belt mounting member having the seat belt attached thereto; said mounting member having a generally planar surface having an aperture adapted to receive a fastener for attaching the mounting member on the structural member; said mounting member having a slot adjacent the aperture at a spaced relation therefrom to define a land surrounding the aperture, a load bearing wall spaced from the land, and an isthmus integral with the land and the generally planar surface and extending generally normal to the direction of seat belt load imposition on the mounting member; said isthmus having a predetermined limited load sustaining capability and being permanently deformed upon imposition of an occupant restraint seat belt load greater than the predetermined load sustaining capability of the isthmus to provide a permanent record of imposition of an occupant restraining load on the anchorage device and permit limited bodily shifting movement of the mounting member whereby the load bearing wall is carried into engagement with the land to block further movement of the mounting member and thereby anchor the seat belt for restraint of the occupant.

4,129,322
SUPPORT DEVICE FOR A TRAILER

Martin Kuntz, Jr., 800 - 7th St. NW., Austin, Minn. 55912

Continuation of Ser. No. 698,118, Jun. 21, 1976, abandoned.
This application Feb. 23, 1978, Ser. No. 880,574
Int. Cl.^{2} B60S *9/12*
U.S. Cl. 280—766 1 Claim

1. A retractable and extensible type support device in combination with a mobile house type trailer having ground engaging wheels and having a compartment in the front portion thereof forwardly of the ground-engaging wheels, said com-

partment having an upper wall, a lower wall, and a removable front panel,

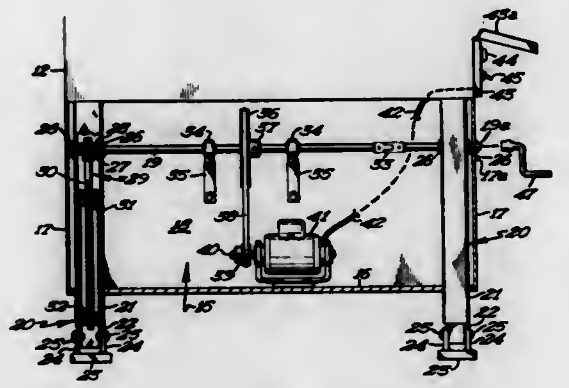
a pair of laterally spaced apart vertical leg structures disposed in said compartments, each leg structure including an elongate outer affixed tubular leg member positioned within said compartment and fixedly secured to the upper wall of the latter and each having an opened lower end, the lower end portion of each outer leg member projecting through the lower wall of the compartment, each leg structure including an elongate inner tubular leg member mounted within an outer leg member and being telescopically extensible and retractable relative to the latter, said lower leg members when extended engaging the ground to support the front end portion of the trailer,

a pair of internally threaded nut elements each being fixedly mounted in one of said inner leg members adjacent the upper end thereof,

a pair of bearings each being positioned within one of said inner leg members adjacent the lower end thereof,

a pair of vertically disposed elongate threaded rods each being journaled in bearing of one of said inner leg members and each threadedly engaging one of said nut elements, said rods when rotated in one direction causing said inner leg members to be extended, and when rotated in an opposite direction causing said inner leg members to be retracted,

an elongate horizontal shaft extending transversely through and journaled in the side walls of said compartment, said shaft having a universal joint intermediate its ends,



worm gears on the outer ends of said shaft,

gear means on the upper ends of each of said rods meshing with said worm means,

a large driven pulley keyed to said shaft intermediate the ends thereof,

a reversible electric motor mounted within said compartment on the lower wall thereof and being connected to a source of electric energy, a drive pulley mounted on the output shaft of said electric motor and having a diameter smaller than said driven pulley,

an endless belt trained bout said drive and driven pulleys,

a pair of pillow bearings mounted within said compartment and being positioned closely adjacent said driven pulley on opposite sides thereof to revolvably support said shaft,

a control panel mounted on a side wall of the trailer adjacent said compartment, a cover for said control panel,

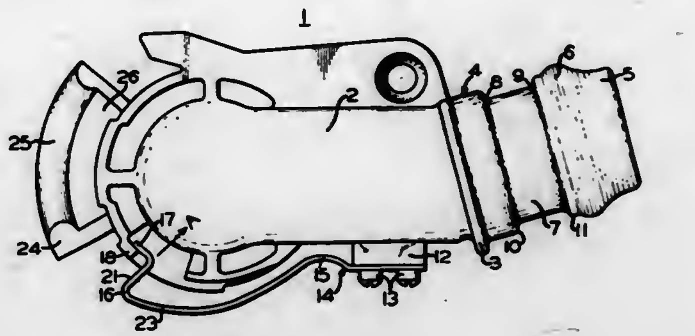
a directional control switch mounted on said control panel and being disposed in controlling relation with respect to said motor and controlling the direction of drive of the latter,

a master switch mounted on said control panel and being disposed in controlling relation with said electric motor and with said directional switch and being shiftable between on and off positions, said master switch when shifted to the on position energizing said motor to thereby cause said rods and associated inner leg members to be extended or retracted.

4,129,323
LOCKABLE HOSE COUPLING

Richard L. Wilson, Monroeville, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Jul. 14, 1977, Ser. No. 815,618
Int. Cl.^{2} B60D *1/08;* B61G *5/08;* F16L *37/12*
U.S. Cl. 285—69 5 Claims



1. A hollow hose coupling comprising:

(a) a hollow body having integral therewith an arcuate lip with a lip bead on which is formed a lip bearing surface and a first guard arm having a guard arm groove for receiving therein the lip bead of a second one of a pair of coupled hose couplings, wherein the improvement comprises:

(b) a mounting boss fixed to the outside of said hollow body, and

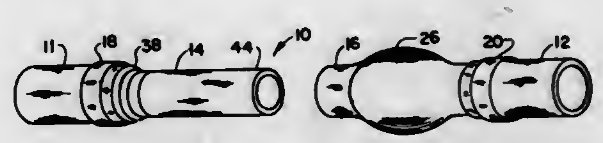
(c) a leaf spring locking member mounted by one end thereof on said mounting boss and having formed intermediate the ends thereof a substantially S-shaped portion normally disposed generally parallel to the side of and out of contact with said body, said leaf spring locking member having formed on the other end thereof a stop that is shiftable by a second guard arm of said second one of said pair of hose couplings out of the pathway of said second guard arm as said second guard arm is rotated toward the fully coupled position of the pair of hose couplings, the configuration of said stop being such and responsive to the resiliency of said leaf spring locking member that, upon attainment of said fully coupled position, in which said second guard arm moves out of contact with said stop, said stop is moved into the pathway of said second guard to inhibit relative rotation of the hose couplings and consequent undesirable uncoupling thereof,

(d) said S-shaped portion and stop being yieldingly movable, upon application of manual force thereon, toward said body and an unlocking position in which said stop is moved out of the pathway of said second guard arm so that said hose couplings may be relativey rotated to an uncoupled disposition.

4,129,324
TUBE COUPLING

Earl O. Jones, Jr., 1424 S. Evergreen Ave., Clearwater, Fla. 33516

Filed Jun. 3, 1977, Ser. No. 803,215
Int. Cl.^{2} F16L *17/00*
U.S. Cl. 285—107 8 Claims



1. A fluid coupling apparatus adapted for connecting and disconnecting a first and a second fluid carrying member, comprising in combination:

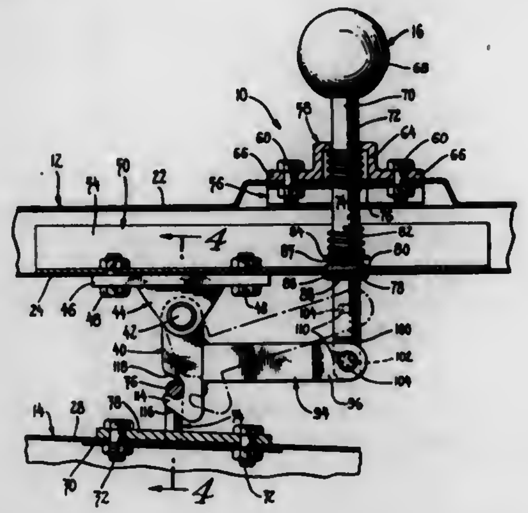
a male and a female coupling member adapted for connec-

tion to the first and the second fluid carrying member respectively;
said female coupling member comprising a first and a second conduit portion having a first and second cross-sectional area respectively;
a female radially enlarged portion including a bulge interposed between said first and second conduit portions;
said second conduit portion of said female coupling member being receivable within an internal orifice of said second fluid carrying member;
said male coupling member comprising a rigid base section having a portion thereof receivable within an internal orifice of said first fluid carrying member;
said base section having a recess for receiving a flexible conduit means;
said flexible conduit means radially expanding into said female radially enlarged portion upon application of fluid pressure to connect said male coupling member to said female coupling member;
said flexible conduit means comprising resilient wall means being movable between a contracted and a radially expanded position; and
said resilient wall means being normally biased in the contracted position to radially expand only upon application of fluid pressure and to radially contract from said radially expanded position within said female radially enlarged portion upon termination of fluid pressure to enable disconnection of said male coupling member from said female coupling member.

4,129,325
DOOR LATCH

John F. Hern, Southfield, and Joseph L. Buccellato, Warren, both of Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.

Filed Jul. 8, 1977, Ser. No. 813,906
Int. Cl.^{2} E05C *3/30*
U.S. Cl. 292—127 2 Claims

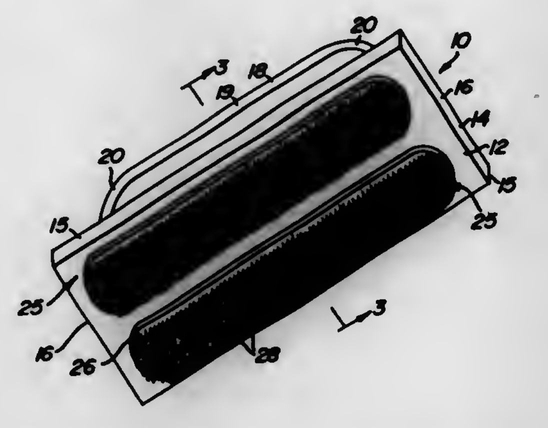


1. A latch device comprising: a handle, inner and outer panels of an enclosure wall for supporting said handle, first and second spaced apart ends on said handle straddling said wall, said handle including a rod portion intermediate said handle ends and slidable relative to said panels, a spring attached to said handle rod portion biasing said handle relative to said panels and located therebetween, a collar on said inner panel covering a recess therein, said spring passing through said recess and abutting said collar, a pawl pivotal on said outer panel exterior, an arm attached to said pawl for movement therewith and to said handle first end, said arm having a slot therein to permit linear motion of said handle in said mounting means operative to actuate pivotal movement of said pawl to engage and disengage a detent, said handle second end manually operative from one side of said wall on said pawl located on the opposite side of said wall to cause engagement of the detent by said pawl and a seal located between said handle rod portion and said outer panel to prevent passage of dirt and noise therepast while still permitting said handle to slide within said outer panel.

4,129,326
CARPET LIFTING METHOD AND APPARATUS

Frederick Weck, III, 316 Chestnut Dr., Lanoka Harbor, N.J. 08734

Filed Sep. 8, 1977, Ser. No. 831,375
Int. Cl.^{2} E04F *21/20*
U.S. Cl. 294—8.6 6 Claims

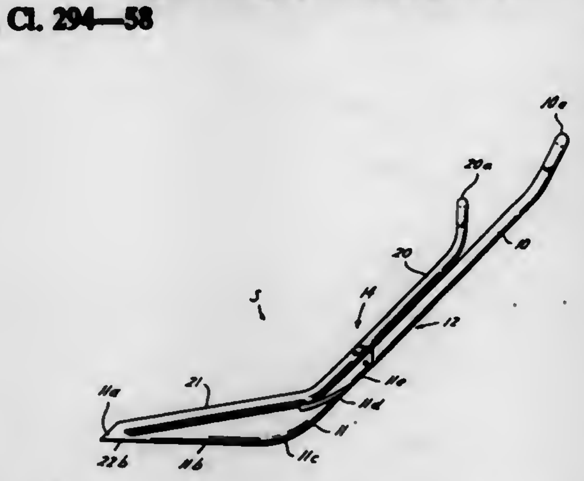


1. A carpet lifter comprising a generally planar backing member having opposite faces, a hook type fastener fabric secured on one face of said backing member with the hooks away from said backing member and having their concave sides facing toward the backing member, for releasable holding action of said fabric with a loop type carpet when the backing member is placed on the carpet with said one face downwardly, and hand grip means on the other face and extending generally longitudinally of said backing member for raising the latter generally horizontally with a carpet being held thereby.

4,129,327
SHOVEL

Claud T. Moore, Jr., 3803 Botany La., Houston, Tex. 77047

Filed Jul. 18, 1977, Ser. No. 816,297
Int. Cl.^{2} A01B *1/22;* B25G *3/00*
U.S. Cl. 294—58 4 Claims

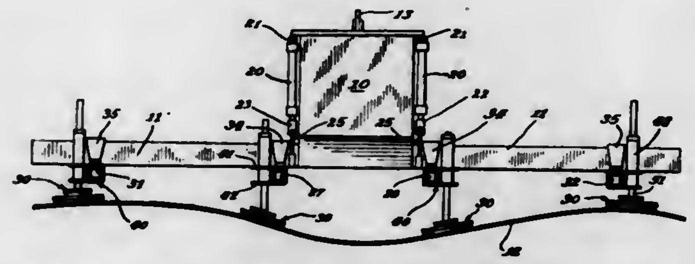


1. A new and improved shovel, comprising:
a main handle member;
a shovel blade connected on one end to said main handle member and having an opposite, open end for initially engaging the ground to scoop up dirt or the like; and
an auxiliary handle assembly attached to said shovel blade at said opposite, open end thereof and extending adjacent to and along said main handle member and terminating in an auxiliary handle end portion unconnected to said main handle member for cooperating with said main handle member through said attachment at said shovel blade open end to lift and maneuver a load of dirt or the like in said shovel blade;
a shovel connector means and an auxiliary handle member attached to said shovel connector means, said shovel connector means connecting said auxiliary handle to said shovel blade at said opposite, open end thereof in a non-pivotal connection;
said shovel blade being substantially rectangular in configuration and including raised side edges in a U-shape extending from the said one end of said shovel blade to said opposite, open end; and
said shovel connector means being positioned above and extending along said raised side edges of said shovel blade into connection with said shovel blade at said opposite, open end thereof.

4,129,328
PLATE HANDLING APPARATUS WITH LOAD DEFLECTION COMPENSATION

Edmund R. Littell, 1626 W. North Shore, Chicago, Ill. 60626

Filed Jun. 20, 1977, Ser. No. 807,978
Int. Cl.^{2} B66C *1/02*
U.S. Cl. 294—65 2 Claims



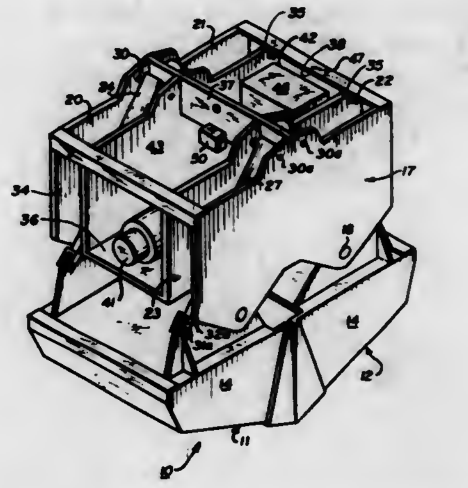
1. In a vacuum plate lifter, the combination with a power body portion adapted to be suspended from a crane or the like, a load beam pivotally supported by the body portion, an hydraulic power cylinder carried by the body portion and having a depending piston rod which is operatively connected to the load beam for bodily rotating the load beam around its pivot axis, a plurality of cross arms carried by the load beam by being disposed below the same and extending transversely of the load beam, respective bracket means connecting each cross arm with the load beam, certain of said bracket means having slidable movement along the length of the load beam, whereby the cross arm supported thereby is also slidable, a power cylinder of the hydraulic type at each end of each cross arm, additional bracket means for adjustably supporting each last mentioned power cylinder on its cross arm in a manner whereby the last mentioned power cylinder is disposed at right angles and has a piston rod depending from its downwardly directed end, and a suction cup having a ball and socket connection with the depending end of the piston rod of each such power cylinder.

4,129,329
SELF-POWERED BUCKET ARRANGEMENT

Joseph F. Longo, Wilton, Conn., assignor to International Dynetics Corporation, South Norwalk, Conn.

Filed Mar. 7, 1977, Ser. No. 775,207
Int. Cl.^{2} B66C *3/02*
U.S. Cl. 294—70 9 Claims

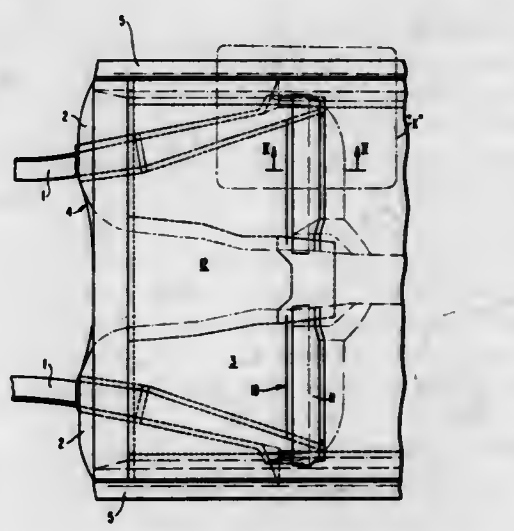
1. A self-powered bucket arrangement comprising a first bucket bowl and a second bucket bowl, and a power head frame pivotally mounting said first and second bowls for pivoting to an open position for the reception of material therein and to a closed position for transporting the material to a desired site, said power head frame having a first and a second exterior parallel side walls, a first and a second intermediate side walls parallel to and spaced from said exterior side walls, a bottom wall integrally connecting said intermediate side walls, and a transversely extending center plate integrally connected to each of said exterior and intermediate side walls along the upper edge thereof, said center plate dividing said power head frame into a first and second longitudinal half, said first and second bucket bowls being pivotally connected respectively to the first and second longitudinal halves, each of said longitudinal halves having a plurality of compartments at least one compartment being defined by said first exterior side wall, said center plate and said first intermediate side wall, at least one compartment being defined by said second exterior side wall, said center plate and second intermediate side wall and at least one compartment being defined by said first and second intermediate side walls, said bottom wall and said center plate, a first and a second pair of hydraulic rams positioned respectively in said first and second longitudinal halves one hydraulic ram of each of said pairs being located in the compartment formed between the first exterior and intermediate side walls and the other hydraulic ram of each of said pairs being located between the second exterior and intermediate side walls, each of said first pair of hydraulic rams having a first end pivotally connected to said center plate and a second end pivotally connected to said first bucket bowl, each of said second pair of hydraulic rams having a first end pivotally connected to said center plate and a second end pivotally connected to said second bucket bowl, and a plurality of power components housed in the remaining compartments of said power head frame.



4,129,330
UNDERSTRUCTURE OF A SELF-SUPPORTING MOTOR VEHICLE BODY

Norbert Schwuchow, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

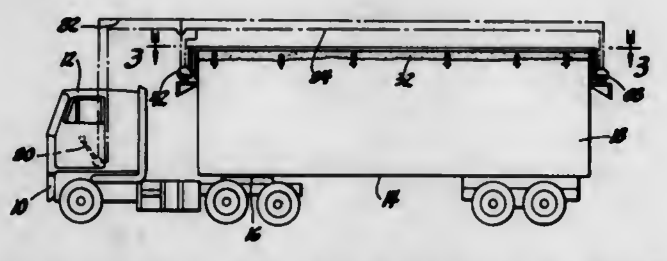
Filed Jun. 16, 1976, Ser. No. 696,690
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1975, 2527385
Int. Cl.^{2} B62D *27/02*
U.S. Cl. 296—28 F 10 Claims



1. An understructure of a self-supporting motor vehicle body, which comprises two longitudinal bearer means initially extending approximately parallel to the vehicle longitudinal

direction at a distance from one another, said longitudinal bearer means being connected with the outside of an end wall of said vehicle body, said longitudinal bearer means extending at their inner ends outwardly in the direction toward two outer longitudinal bearers and being directly connected to said outer longitudinal bearers, characterized in that a wall section of the longitudinal bearer means forms a wall section of the periphery of the outer longitudinal bearer as viewed in transverse cross-section within the area of the connection of the longitudinal bearer means and of the outer longitudinal bearer.

4,129,331
RETRACTABLE COVER FOR OPEN TOP CONTAINER
Herman L. Lawson, 664 Coolidge, Plymouth, Mich. 48170, and Norbert D. Lang, 4640 Hunt, Wayne, Mich. 48184
Continuation of Ser. No. 732,960, Oct. 15, 1976. This application Aug. 17, 1977, Ser. No. 825,217
Int. Cl.^{2} B60P *7/04*
U.S. Cl. 296—100 **3 Claims**



1. In combination with a vehicular container having a first sidewall, a second sidewall spaced with respect to the first sidewall, and a pair of end walls cooperating with the sidewalls to define an open top, cover means comprising:

a cover of flexible material having a width accomodating the distance between said container sidewalls, and a length accomodating the distance between the container end walls, and means connecting one side of the cover to the first sidewall;

an elongated substantially rigid support member connected to the opposite side of the cover so as to be movable therewith between an open position adjacent the first sidewall, and a closed position adjacent the second sidewall, the support being mounted on the container in a position parallel to the first sidewall;

power means connected to the support for moving it between said open position and said closed position;

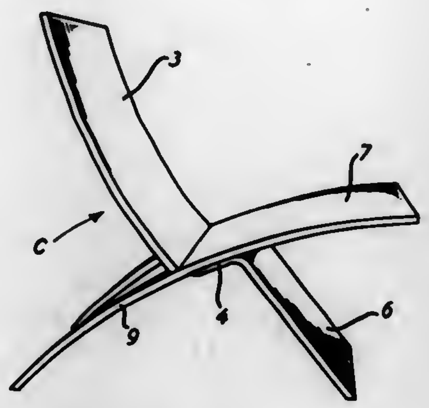
a plurality of parallel first resilient ropes disposed at spaced positions along said support, each rope having one end connected to the first sidewall so as to be fixed against motion thereto and its opposite end connected to the support so as to form an acute angle therewith at such times as the support is disposed in said closed position;

a plurality of parallel second resilient ropes disposed at spaced positions along said support, each rope having one end connected to the first sidewall so as to be fixed against motion thereto and its opposite end connected to the support, each of said second ropes being disposed to form an acute angle with respect to the support so as to cross the first ropes at such times as the support is in said closed position;

said first resilient ropes and said second resilient ropes each being in a state of tension whereby as the support is being moved from the second sidewall toward the first sidewall, the tension of said first and second resilient ropes is reduced as the distance between the support and the first sidewall; and

eye means mounted on the cover between the support and the first sidewall, the eye means receiving the plurality of first ropes and the plurality of second ropes such that as the support is being moved by the power means from said closed position toward said open position, the flexible cover is moved from a substantially planar position toward a substantially pleated position.

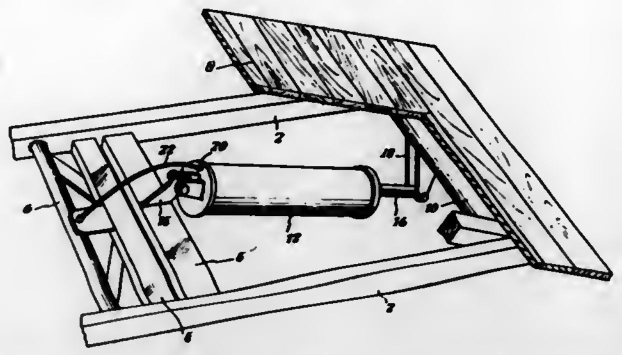
4,129,332
CHAIR MADE OF TWO PLATE-LIKE ELEMENTS
Steffen Hoeholt, Vordingborg, Denmark, assignor to Dehn Holding A/S, Alslev, Denmark
Filed Aug. 15, 1977, Ser. No. 824,545
Int. Cl.^{2} A47C *7/00*
U.S. Cl. 297—440 **7 Claims**



1. A chair assembly comprising:
first and second elongated plate-like elements;
said first elongated plate-like element including
a back member,
a first leg member laterally offset from said back member, and a support member for supporting said second plate-like element, said support member being integrally formed with and interconnecting with said back member and said first leg member,
said back member at its interconnection with said support member being wider than said support member to thereby define at the lower edge of said back member at opposite sides and at the outer extremities thereof shoulder means to provide bearing points for portions of said second plate-like element in the chair assembly;
said second plate-like element including
a seat member,
a pair of leg members integrally formed with and as an extension of said seat member, said pair of leg members closely embracing said support member at each end of said support member, each of said leg members in the assembly bearing against said shoulder means,
the rear portion of said seat member resting on said support member in the chair assembly; and locking means interengaging said first and second plate-like elements for locking said plate-like elements together in the assembly, said locking means comprising means formed on one of said first and second plate-like elements for engaging the other of said plate-like elements.

4,129,333
TIP-UP VEHICLES
Archibald W. Kidd, Seend Close Seend, Melksham, Wiltshire, England
Filed Jan. 20, 1976, Ser. No. 650,608
Claims priority, application United Kingdom, Jan. 29, 1975, 3999/75
Int. Cl.^{2} B60P *1/04*
U.S. Cl. 298—22 R **6 Claims**

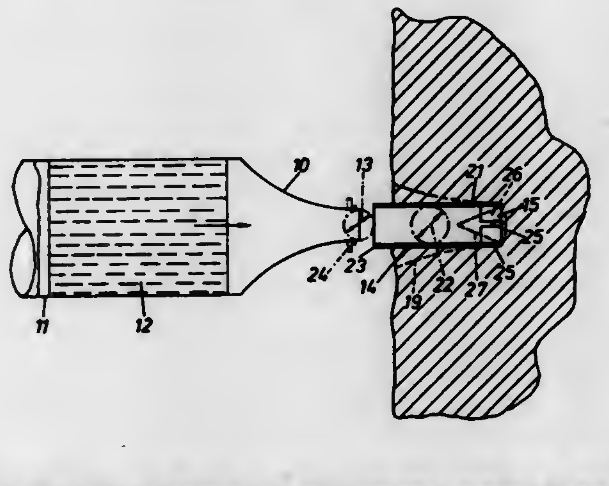
1. Tip-up dumping trailer having a chassis, a tipping body, a ram for raising and lowering said body, a pivotally mounted hydraulic cylinder the interior of which is divided into first and second compartments by a piston working therein and coupled to operate the ram, the first compartment on one side of the piston being filled with fluid to act directly on the piston to operate the ram in the body raising direction, the second compartment on the other side of the piston being closed to the atmosphere and containing a quantity of air or other gas which is continuously compressed and expanded by the piston throughout the movement of the piston and the attendant movement of the tipping body, and provides a pneumatic force to act directly on the piston to assist the lowering of said body.



4,129,334
METHOD FOR LOCATING THE REMAINING RECOVERABLE MINERAL RESERVES DURING SOLUTION MINING
Dennis E. Stover, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.; NM Uranium, Inc., Houston, Tex. and The United States Steel Corporation, Pittsburgh, Pa.
Filed Dec. 27, 1977, Ser. No. 864,352
Int. Cl.^{2} E21B *43/28*
U.S. Cl. 299—4 **8 Claims**

1. A method for locating the remaining mineral reserves recoverable via solution mining from a subterranean formation containing said mineral in which an injection and production well are drilled and completed within said formation, leach solution and an oxidant are injected through said injection well into said formation to dissolve said mineral, and said dissolved mineral is recovered via said production well, which comprises temporarily ceasing said injection of oxidant and measuring the change in mineral concentration in the solution recovered via said production well.

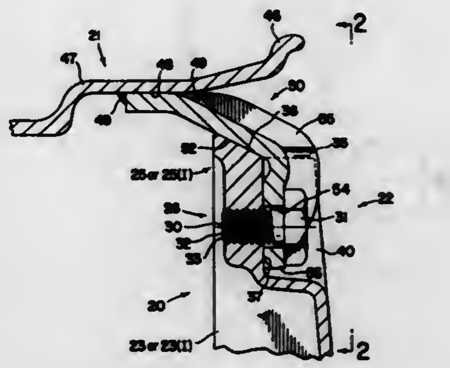
4,129,335
FLUID JET METHOD AND DEVICE FOR BREAKING HARD MATERIAL
Erik V. Lavon, Saltsjö-Boo, Sweden; Bo Lemcke, Lausanne, Switzerland, and Levi J. Karlfors, Nacka, Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Aug. 27, 1976, Ser. No. 718,421
Claims priority, application Sweden, Sep. 19, 1975, 7510560
Int. Cl.^{2} E21C *37/12*
U.S. Cl. 299—17 **22 Claims**



1. A method of breaking a hard compact material, such as rock comprising:
mechanically drilling a substantially cyclindrical blind hole in the material to be broken, said material having free surfaces adjacent said hole;
extending a tubular member into said hole from outside said hole, said tubular member having an open forward end which faces the bottom of said hole;
generating a high velocity jet of substantially incompressible fluid through a nozzle having an internal cavity which has a converging contour leading to a nozzle exit area, the smallest cross sectional dimension of said jet being between 30–100% of the free cross sectional diameter of said tubular member; and
directing said jet from said nozzle exit area and through said tubular member toward the bottom of said hole so as to be suddenly arrested upon impact with said hole bottom after having traversed said tubular member to create a jet stagnation pressure in said hole, stemmed by said tubular member, to break said material toward said adjacent free surfaces of said material.

12. Apparatus for breaking a hard compact material, such as rock, having a substantially cylindrical blind hole formed therein, comprising
a nozzle having an internal cavity which has a converging contour leading to a nozzle exit area;
means operatively associated with said nozzle to emit a massive high velocity jet of substantially incompressible fluid from said nozzle exit area; and
a tubular fluid directing and stemming member operatively associated with said nozzle to receive said jet from said nozzle exit area, said tubular member being in alignment with said nozzle and said hole, said tubular member at least partially extending into said hole from outside said hole and extending further into said hole than said nozzle exit area, and having an open forward end facing the bottom of said hole, said tubular member having interior surface means for receiving and directing said jet from said nozzle exit area toward said bottom of said hole upon said jet having traversed said tubular member.

4,129,336
BASE FLANGED TIRE CARRYING RIM AND WHEEL
William D. Walther, Kettering, Ohio, assignor to Dayton-Walther Corporation, Dayton, Ohio
Continuation-in-part of Ser. No. 592,502, Jul. 9, 1975, abandoned. This application Dec. 13, 1976, Ser. No. 749,243
Int. Cl.^{2} B60B *23/10*
U.S. Cl. 301—12 R **4 Claims**



1. A combination of dual inner and outer tire carrying rims seated and locked by fastening means and assemblies on a vehicle wheel,
said wheel having a plurality of inner and outer spoke members, each of said inner spoke members having a felloe comprising axially oriented and radially inclined surfaces and a radially directed surface extending inwardly from each of said axially oriented surfaces substantially perpendicular to the rotational axis of said wheel and providing a mounting location for an axially projecting component of said inner rim fastening means, each of said outer spoke members having a felloe comprising spaced-apart axially projecting wing portions providing outwardly facing dual axially oriented surfaces and a radially directed surface oriented transversely between said axially oriented surfaces substantially perpendicular to the rotational axis of

said wheel and providing a mounting location for an axially projecting component of said outer rim fastening assemblies,

each of said rims having radially outwardly directed bead flanges and radially inwardly projecting mounting flanges, each of said mounting flanges having a radially outer portion, a medial portion, a transitional portion and a radially inner terminal portion, said radially outer flange portion being integrally attached to and mounted beneath a conforming annular surface on a base portion of said rim at a predetermined axial location between said bead flanges, said medial portion of said mounting flange being connected to said radially outer portion and directed inwardly away from said rim and comprising a radially inclined surface, said transitional portion of said mounting flange being functionally connected between said medial and terminal portions, said terminal portion of said mounting flange being radially directed,

said terminal portion of a mounting flange on said inner rim having a bore therein for receiving said axially projecting component of said inner rim fastening means, said terminal portion of a mounting flange on said outer rim having a bore therein for receiving said axially projecting component of said outer rim fastening assemblies,

each of said outer rim fastening assembly comprising a threaded fastener and a clamp element supported by said threaded fastener, each said clamp element having lateral wing portions providing downwardly facing dual axially oriented surfaces, an axially inwardly directed member and a radially outer portion comprising a radially inclined surface,

whereby, said inner rim is seated on, and thereafter locked on, said inner spoke members by tightening of said inner rim fastening means and the mating engagement of said radially inclined surface on each said inner spoke felloe with said radially inclined surface on each said inner rim mounting flange and by the mating engagement of said radially directed surface on each said inner spoke felloe with said terminal portion of each said inner rim mounting flange, and,

whereby, said outer rim is seated on, and thereafter locked on, said outer spoke members by tightening of said outer rim fastening assemblies and the mating engagement of said radially directed surface on each said outer spoke felloe with said terminal portion of each said outer rim mounting flange, and by the mating engagement of said radially inclined surface on each said outer rim mounting flange with said radially inclined surface on said radially outer portion of each said clamp element of each said fastening assembly, said downwardly facing dual axially oriented surfaces on said lateral wing portions of each said clamp element being in mating engagement with said outwardly facing dual axially oriented surfaces on each said outer spoke felloe and said axially inwardly directed member of each said clamp element being in mating engagement with said terminal portion of each said outer rim mounting flange.

4,129,337

METHOD FOR PREVENTING EROSION-CORROSION OF HYDRAULIC CAPSULE TRANSPORTATION APPARATUS

Nobuyoshi Hosaka; Yuichi Ishikawa, both of Ibaraki; Osamu Nishida, Saitama, and Masakatsu Sakamoto, Matsudo, all of Japan, assignors to Hitachi, Ltd., Japan

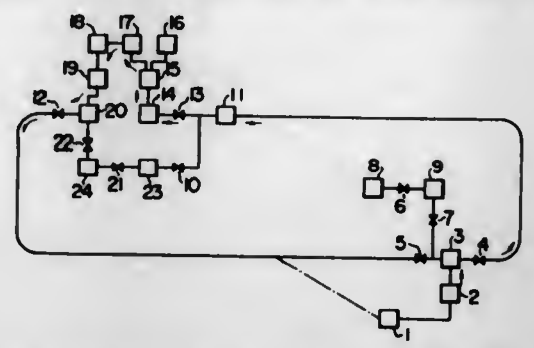
Filed Jul. 7, 1976, Ser. No. 703,236

Claims priority, application Japan, Jul. 9, 1975, 50-83482

Int. Cl.² B65G *51/04*

U.S. Cl. 302—2 R **11 Claims**

1. A method for preventing erosion-corrosion of a hydraulic metallic capsule transportation apparatus, which comprises depositing straight chain, macromolecular polyethylene oxide having a molecular weight larger than 10^4 directly onto surfaces of metallic capsules to be introduced into a fluid in a pipe line, thereby reducing a fluid resistance of the metallic capsules and reducing damages due to contact of the metallic capsules with inner walls of the pipe line, adding a corrosion inhibitor to the fluid in the pipe line, said corrosion inhibitor containing an inorganic nitrite and a compound selected from the group consisting of dicyclohexylammonium nitrite and hexamethylene tetramine, thereby protecting the inside walls of the pipe line and the surfaces of the metallic capsules from corrosion, and depositing the corrosion inhibitor at a higher concentration onto the surfaces of the metallic capsules after a material to be transferred is discharged from the metallic capsules but before the metallic capsules are exposed to the atmosphere, thereby protecting the metallic capsules from corrosion in the atmosphere.



4,129,338

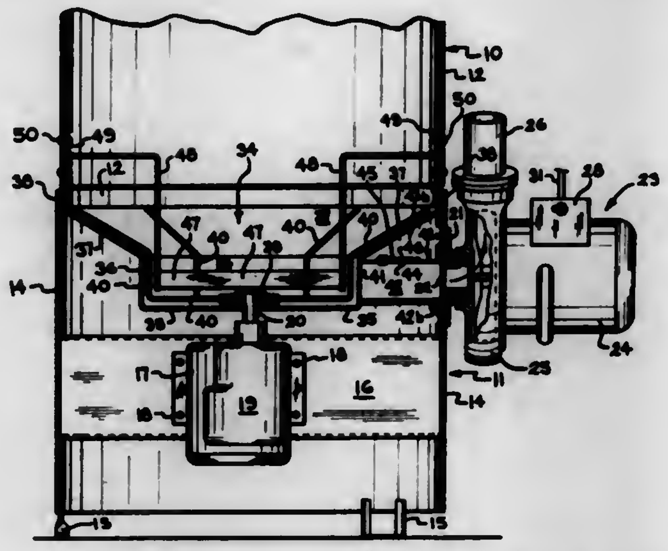
CELLULOSIC INSULATION BLOWING MACHINE

Donald F. Mudgett, St. Marys, Ohio, assignor to U.S. Fiber Corporation, Delphos, Ohio

Filed Aug. 4, 1977, Ser. No. 821,693

Int. Cl.² B65D *83/06*

U.S. Cl. 302—2 A **14 Claims**



9. A material feed assembly for use with a cellulosic insulation blowing machine or the like having a base assembly, a blower assembly connected thereto and an upper hopper assembly removably mounted on said base assembly, said material feed assembly comprising

a floor plate assembly including an outer, annular, generally vertical wall, and an interconnected central generally horizontal wall adjacent a lower portion of said vertical wall,

a material feed opening in said vertical wall adapted for connection with said blower assembly,

an agitator assembly having rotatable, shaped radial means supported centrally of said floor plate assembly and in spaced overlying relationship thereto, said radial means being contoured correspondingly to the cross-section of said floor plate assembly and generally parallel thereto in operating position, and

an anti-spin bar member in overlying and inwardly spaced relationship with said radial means of the agitator assembly, said anti-spin member when in its operating position being stationary with respect to said radial means, and adjacent said material feed opening of the floor plate assembly.

4,129,339

TRASH REMOVAL APPARATUS FOR SUGAR CANE HARVESTERS

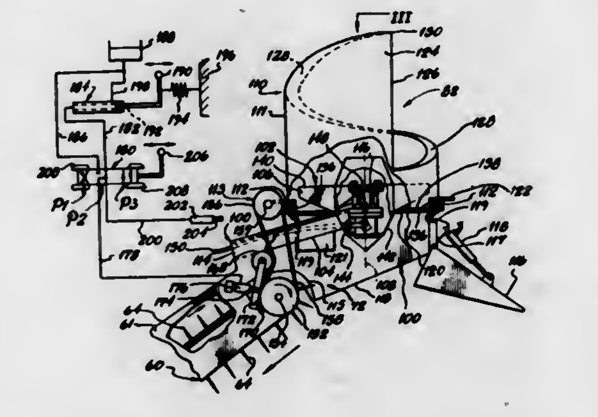
Donald J. Quick, Bundaberg, Australia, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Mar. 24, 1977, Ser. No. 780,746

Claims priority, application United Kingdom, Mar. 30, 1976, 12819/76

Int. Cl.² B65G *53/14*

U.S. Cl. 302—21 **13 Claims**



1. Trash removal apparatus for harvesters of sugar cane or similar crops comprising:

a support structure; and

an axial flow fan mounted on said support structure the fan having fan blades rotatable about a fan axis;

characterized by

a helical trash guide member located on the pressure side of said axial flow fan said helical trash guide member comprising a smoothly curved wall leading to a trash discharge edge, said wall extending round the fan axis, and a helical flange carried by said smoothly curved wall and projecting inwardly therefrom; and by

said helical trash guide member being mounted on said support structure for pivotal movement about a pivot axis close to or coaxial with the fan axis; and by

thrust means connected to said helical trash guide member and capable of effecting pivotal movement about said pivot axis.

4,129,340

CONTROL DEVICE FOR A PNEUMATIC BRAKING SYSTEM

Ramon B. Trenc, Barcelona, Spain, assignor to Bendiberica, S.A., Barcelona, Spain

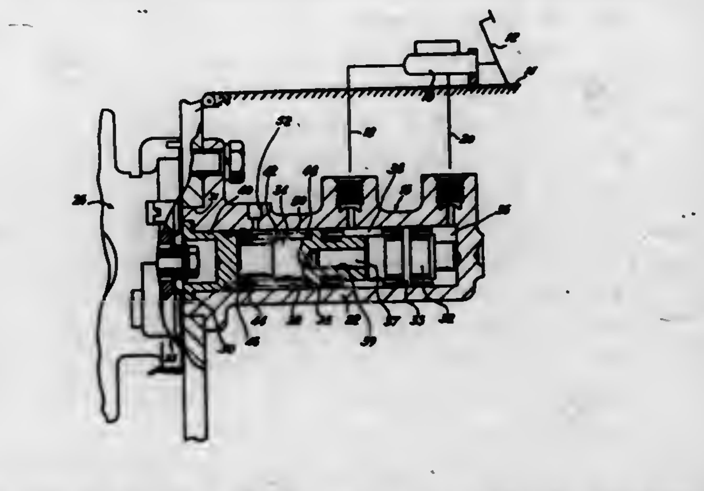
Continuation of Ser. No. 665,368, Mar. 10, 1976, abandoned. This application Jun. 2, 1977, Ser. No. 802,932

Claims priority, application Spain, Mar. 13, 1975, 435576

Int. Cl.² B60T *13/00*

U.S. Cl. 303—6 R **6 Claims**

2. In a vehicle having a chassis and a cab pivotally mounted on said chassis, a braking system including a pneumatic pressure source, brake actuators responsive to fluid pressure from said pressure source to effect a brake application, a control valve mounted on said chassis for controlling communication between said pneumatic pressure source and said brake actuators, and means for actuating said control valve including a hydraulic master cylinder mounted on said cab, a hydraulic receiver cylinder mounted on said chassis and operatively connected to said control valve, said receiver cylinder including a housing defining a bore therewithin, piston means slidably mounted in said bore, said piston means cooperating with the wall of said bore to define a fluid-receiving chamber therebetween, means interconnecting the piston means and the control valve to transmit movement of the piston means to the control valve so that movement of the piston means actuates the control valve, and flexible conduit means communicating said master cylinder with said chamber, said flexible conduit means accommodating the pivotal movement between the cab and the chassis, said master cylinder being a tandem unit generating first and second hydraulic pressures, said piston means including first and second pistons dividing said chamber into a first compartment defined between said first and second pistons and a second compartment defined between an end of said second piston and an end of said bore, said flexible conduit means including a pair of flexible hoses, each of said hoses communicating one of the first and second fluid pressures generated by the master cylinder to a corresponding one of said first and second compartments, said interconnecting means including a bell slidable in said bore and located between said first piston and said control valve, and a venting port in the wall of said bore venting the cavity defined between the bell and said first piston.



4,129,341

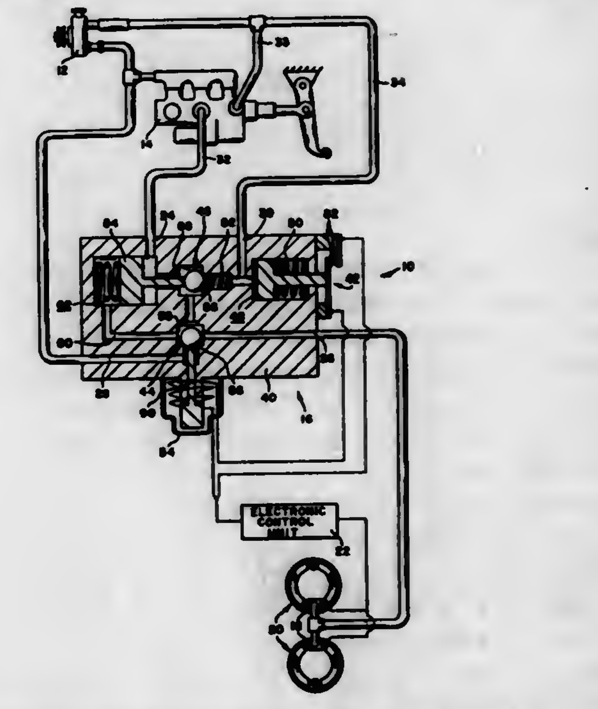
MODULATOR VALVE ASSEMBLY FOR A FLUID BRAKING SYSTEM

Edward M. Pauwels, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 28, 1977, Ser. No. 781,914

Int. Cl.² B60T *13/18*

U.S. Cl. 303—6 R **5 Claims**



1. A modulator valve having an inlet port for fluid communication with a brake booster, an outlet port for fluid communication with a wheel cylinder, a secondary port for fluid communication with a pressure source, and a return port for fluid communication with a reservoir, said modulator valve comprising:

a housing defining the inlet port, the outlet port, the secondary port, and the return port therein;

a control valve cooperating with said housing in a first position to provide fluid communication between the inlet port and the outlet port, said control valve being movable to a second position closing fluid communication between said inlet port and said outlet port and providing fluid communication between the outlet port and the return port; and

a pressure sensitive valve cooperating with said housing to provide fluid communication between the inlet port and said control valve when said control valve is in the first position, said pressure sensitive valve also cooperating with said control valve to close fluid communication between the inlet port and said control valve when the latter is in the second position, said pressure sensitive valve communicating with the secondary port and cooperating with said control valve to provide fluid communication between the secondary port and said control valve when the latter is in the second position and to provide fluid communication between the secondary port and the outlet port as said control valve is being moved from the second position to the first position.

4,129,342
ANTI-SKID BRAKE CONTROL DEVICE

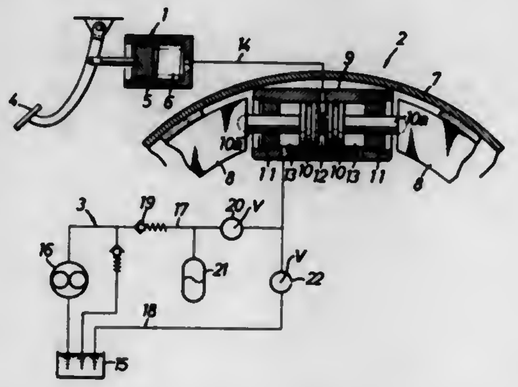
Makoto Sato, Kamifukuoka; Hiroshi Takamatsu, Ohimachi; Yoshitaka Miyagawa, Kawagoe, and Etsuo Fujii, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1977, Ser. No. 762,782

Claims priority, application Japan, Jan. 29, 1976, 51-8682; Feb. 2, 1976, 51-10195; Feb. 16, 1976, 51-15607

Int. Cl.² B60T *8/08*

U.S. Cl. 303—105 **2 Claims**



1. An improved anti-skid brake control system for use with wheeled vehicles including, a brake fluid pressure producing unit; a wheel cylinder associated with a vehicle wheel and being hydraulically connected to said unit for application of a brake force, said wheel cylinder having a piston slidable therein with a brake applying element connected thereto, fluid control valve means connected to high and low pressure lines; means connected to said fluid control valve means for sensing locking of said wheel, to thereupon produce an output signal actuating said fluid control valve means, the improvement comprising: a first hydraulic chamber formed in said wheel cylinder with a piston member disposed on one side thereof and being directly connected to said unit for applying a hydraulic pressure to said piston member for brake application; a second hydraulic chamber formed in said wheel cylinder by said piston member on the opposite side thereof, being connected with said high and low pressure lines through said fluid control valve means, for applying a regulated hydraulic pressure to said piston member for counteracting hydraulic pressure applied thereto.

4,129,343
UNITARY SELF-ALIGNING BEARING ASSEMBLY

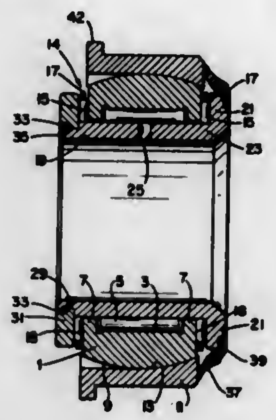
Pierre A. Janssen, Grisy Les Platres, France, assignor to Nadella, Rueil Malmaison, France

Filed Oct. 12, 1977, Ser. No. 841,392

Claims priority, application France, Oct. 22, 1976, 76 31880

Int. Cl.² F16C *23/00*

U.S. Cl. 308—35 **8 Claims**



1. A self-aligning bearing assembly comprising a casing having an internal concave spherical surface adjacent one end on one side of a central medial plane, an outer radial bearing ring mounted in said casing and having an outer convex spherical surface complementary to and fitting said internal concave surface on said casing, an inner radial bearing ring within said outer radial bearing ring, and roller type bearings between said rings, said outer radial bearing ring having radial end faces and said inner radial bearing ring having radial back plates fixed on its ends opposed to and axially spaced from said radial end faces on said outer radial bearing ring so that each end face of said outer radial bearing ring and the corresponding radial back plate on said inner radial bearing ring form bearing races, and thrust bearings between the bearing races, each of said thrust bearings having a bearing cage carried by a radial end face, and a seal fixed on one of the back plates of said inner bearing ring and extending to and engaging said one end of said casing to form a seal for the thrust bearing engaging said one of said back plates.

4,129,344
BEARING RACE RING WITH LUBRICANT AND COOLING CHANNELS

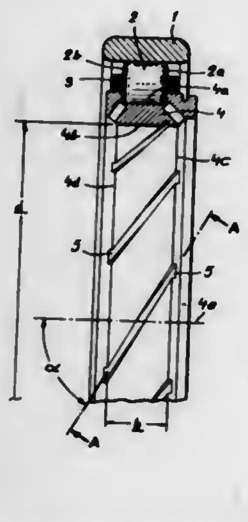
Karl Hörmann, Dittelbrunn, and Hans Weigand, Schweinfurt, both of Germany, assignors to Kugelfischer Georg Schäfer & Co., Schweinfurt, Germany

Filed Sep. 30, 1976, Ser. No. 728,191

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1975, 2555923

Int. Cl.² F16C *1/24*

U.S. Cl. 308—187 **5 Claims**



1. A bearing ring comprising a circular body having a pair of axial ends, an inner surface and an outer surface opposite said inner surface, one of said surfaces having a configuration constituting a race for rolling elements of a bearing, the other of said surfaces being formed with a multiplicity of spaced-apart grooves inclined to the axis of said ring and running substantially from one end to the other end thereof, each groove terminates at a level substantially identical to that at which a successive one begins, said grooves are inclined at an angle α to the axis of said ring, said angle α being defined by the formula:

$$\tan \alpha = \frac{d \cdot \pi}{n \cdot b}$$

wherein d is the diameter of said other surface, n is the number of grooves circumferentially spaced therearound and b is the axial width of the ring across which said grooves extend, each of said grooves having a greater depth at a region intermediate said ends than at said ends, said body being bipartite and consisting of two halves adjoining along a median plane of the ring perpendicular to said axis, the grooves in said halves being inclined in opposite directions.

4,129,345
BEARING ASSEMBLY FOR A MOTOR VEHICLE WHEEL

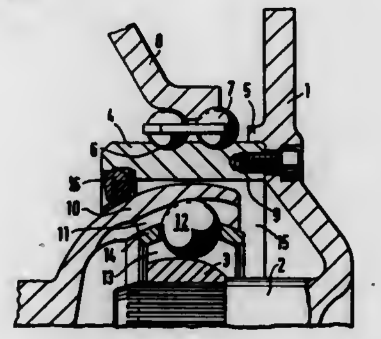
Werner Krude, Meisenweg, Fed. Rep. of Germany, assignor to Uni-Cardan AG, Lohmar, Rheinland, Fed. Rep. of Germany

Filed Dec. 13, 1976, Ser. No. 750,167

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1975, 2556244

Int. Cl.² B60B *27/00*; B60K *17/22*

U.S. Cl. 308—191 **9 Claims**



1. A bearing assembly for a motor vehicle wheel comprising an outer bearing ring attached to a wheel support and an inner bearing ring, said inner and outer bearing rings being spaced radially and having bearing elements therebetween to define a bearing assembly, a wheel hub attached to said inner bearing ring, a constant velocity universal joint having outer and inner joint members, said inner bearing ring having an outer peripheral surface and a bore therethrough with a diameter at least equal to the outer diameter of said outer joint member, said outer joint member being disposed within said bore of said inner bearing ring, a shaft extending from said wheel hub and connected to said inner joint member so that said wheel hub and inner bearing ring are rigidly connected to said inner joint member, and an annular flange on said wheel hub engaging one of said outer peripheral surface and bore of said inner bearing ring to center said hub with respect to said inner bearing ring.

4,129,346
PAINT AND TOOL CASE

Bernard L. Hofman, 340 Galena Pines Rd., Reno, Nev. 89511

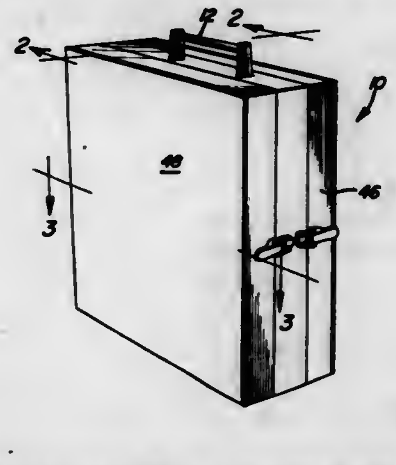
Filed Dec. 13, 1977, Ser. No. 861,021

Int. Cl.² A47B *43/00*

U.S. Cl. 312—324 **6 Claims**

1. A portable storage case particularly useful for containing and displaying for use containers of materials and articles normally referred to as art supplies, the apparatus comprising:

an interior frame portion comprising spaced upper and lower perimetric walls joined at the ends thereof respectively by closed and open side walls, an inner partition member extending between the side walls and at least partially between the upper and lower perimetric walls to divide the interior frame portion with separate storage areas, vertically spaced first shelf members disposed on one side of the inner partition member, the first shelf members extending between and being mounted by the side walls of the interior frame portion, at least one retaining rod being spaced vertically from each first shelf member, rod members extending between and being mounted by the side walls to retain containers on the first shelf members, box-like dividers disposed on the other side of the inner partition member, the dividers being open at the upper ends thereof to receive articles, particularly elongated articles, a second shelf member disposed in surmounting relation to the inner partition member, the second shelf member extending between and being mounted by the side walls of said interior frame portion, and at least one second retaining rod member spaced vertically from each side of the second shelf member, the second retaining rod member extending between and being mounted by the side walls of the interior frame portion to retain containers on the second shelf member;



said frame portions disposed on either side of the interior frame portion, the side frame portion comprising spaced upper and lower perimetric walls joined at the ends thereof respectively by closed and open side walls, vertically spaced third shelf members extending between and mounted by the side walls for receiving the containers thereon, and at least one retaining rod member spaced vertically from each shelf member, the rod member extending between and being mounted by the side walls to retain the containers on the third shelf members; hinge means disposed on the closed side walls of the interior frame portion and the side frame portions respectively for holding the frame portions in pivotal relation to each other; and,

latch means disposed on the open side walls of the interior frame portion and the side frame portion respectively for releasably holding the frame portions in a closed, volumetrically compact configuration for storage or manual transport of said case.

4,129,347
STRUCTURE FOR SUPPORTING AND GUIDING A DRAWER

Lucien J. Godtschalck, Orsay, France, assignor to Krieg & Zivy Industries, Le Plessis-Robinson, France

Filed Jan. 10, 1977, Ser. No. 758,182

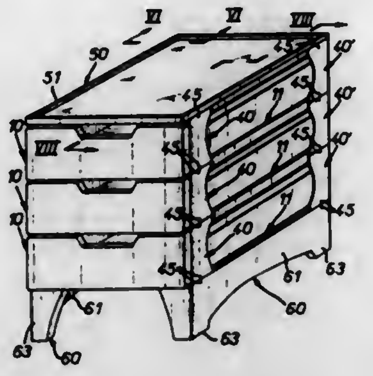
Claims priority, application France, Jan. 16, 1976, 76 01061

Int. Cl.² A47B *88/00*

U.S. Cl. 312—330 R **11 Claims**

1. A frame structure comprising a plurality of unitary structural elements arranged in spaced superimposed relation for supporting and guiding sliding drawers therebetween, each said structural elements including a rectangular support member having lateral sides, a plurality of runner inserts disposed in

said rectangular support member along said lateral sides thereof and extending through said lateral sides to project both above and below said lateral sides, said runner inserts having upper surfaces arranged coplanar for supporting and facilitating sliding of a respective overlying drawer and lower surfaces arranged coplanar for guiding an upper part of an underlying drawer, and a shallow upstanding flange integral with and extending along each of said lateral sides of said support member for guiding a drawer for sliding movement, the flanges of each of said structural elements having spaced preformed recesses for receiving means for fixedly securing said structural elements to other supports to retain said structural elements in said superimposed spaced relation.



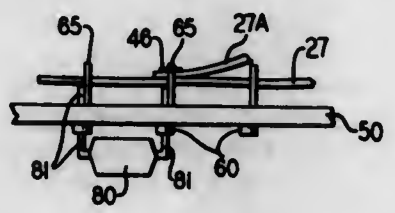
4,129,348
METHOD OF MANUFACTURING TUNGSTEN HALOGEN LAMP

Robert J. Karlotski, Londonderry, N.H., assignor to GTE Sylvania Incorporated, Danvers, Mass.
Filed Nov. 17, 1977, Ser. No. 852,464
Int. Cl.² H01J *9/395*
U.S. Cl. 316—20 **3 Claims**

1. In the manufacturing of a tungsten halogen lamp containing a fill including an organic halide, the steps which comprise exhausting the lamp, adding said fill to the lamp, sealing the lamp and then heating the lamp in a nonoxidizing atmosphere to a temperature sufficient to dissociate the organic halide.

4,129,349
QUICK-CONNECT BREADBOARDING SYSTEM

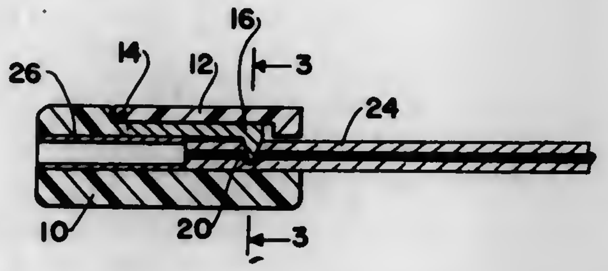
Charles A. von Roesgen, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 10, 1975, Ser. No. 630,183
Int. Cl.² H01R *9/08*
U.S. Cl. 339—17 C **5 Claims**



1. Apparatus for mounting electrical circuitry consisting of components having pin terminals, comprising:
a board having first and second sides and a planar array of cylindrical holes therebetween for receiving said pin terminals inserted from said first side;
and a wire and pin terminal receiving element said element characterized by:
an elongate hollow metallic cylindrical body having a gap extending the full wall length, thereby rendering said body expandable;
an outwardly-protruding rim disposed along the exterior surface of said body adjacent to a first end thereof;
a metallic wire connector having a first end comprising a bifurcated slotted wire-receiving beam and a second end comprising a substantially flat edge, said connector second end being integrally attached to the second end of said body;
the spacing between the flat edge of said connector and the protruding rim of said body equaling substantially the thickness of said board
said body being compressably received in one of said holes in said board with said rim and said flat edge gripping said board between them thereby to rigidly but releasably mount said element on said board.

4,129,350
ELECTRIC CORD RECEPTACLE

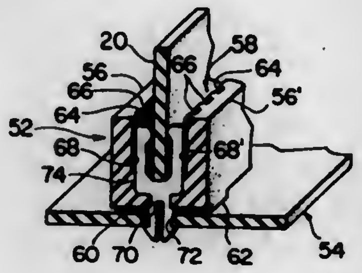
Donald L. Winn, 8641 La Paenda Way, Orangevale, Calif. 95662
Filed Aug. 29, 1977, Ser. No. 828,653
Int. Cl.² H01R *13/38*
U.S. Cl. 339—99 R **4 Claims**



1. An electric cord receptacle for an electric cord having a free end, said electric cord receptacle comprising
a housing;
a cover hingedly affixed to the housing via a pin, said cover having an inner surface in the housing when said cover is closed;
a female plug ferrule mounted in the housing; and
connecting means for connecting the free end of the electric cord to said plug ferrule, said connecting means comprising an electrically conductive contact strip affixed to the inner surface of said cover, said contact strip having one end positioned to electrically contact said plug ferrule and a spaced opposite second end having a cutting contact extending therefrom positioned to electrically contact the electric cord adjacent the free end thereof.

4,129,351
CONNECTOR ASSEMBLY FOR PRINTED CIRCUIT BOARD

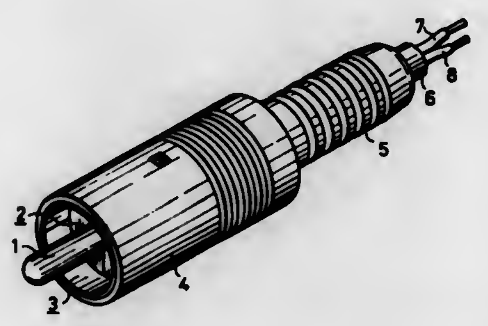
Kazuyasu Sugimoto; Hiroshi Yamaya, and Kameki Ishimoto, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Company, Limited, Japan
Division of Ser. No. 588,194, Jun. 19, 1975, abandoned. This application Jul. 5, 1977, Ser. No. 813,097
Claims priority, application Japan, Jun. 20, 1974, 49-71123; Jun. 20, 1974, 49-71124; Jun. 20, 1974, 49-71155; Jun. 20, 1974, 49-73070; Jun. 20, 1974, 49-73071
Int. Cl.² H01R *13/50*
U.S. Cl. 339—176 MP **13 Claims**



1. A connector assembly for a printed circuit board having a contact-carrying edge portion having a plurality of electrical contacts on at least one face of the contact-carrying edge portion, comprising: an electrically non-conductive housing structure having a pair of spaced parallel side wall portions forming therebetween an elongated groove which is open at its top, and a bottom wall portion having an inner face at the bottom of said groove; a plurality of electrical contact elements mounted on the inner face of at least one of said side wall portions; a mother board in contact with the outer face of the bottom wall portion of said housing structure; and at least one retaining member consisting of an elastic metal wire element and in elasticity pressing contact in part with the inner face of at least one of said side wall portions of the housing structure and in part with at least one of the opposite faces of said contact-carrying edge portion of the printed circuit board for thereby holding the printed circuit board in a predetermined fixed position having said contacts respectively in contact with said contact elements on the housing structure, said retaining member being electrically isolated from all of said contacts and said contact elements and having at least one end portion projecting outwardly from said bottom wall portion of the housing structure, said end portion being laterally curved and being at least partially in elastically pressing contact with the outer face of said mother board for holding said mother board against the outer face of said bottom wall portion of said housing.

4,129,352
PIN PLUG

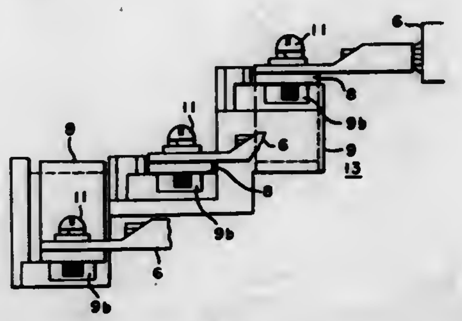
Akichika Iizuka, Kanra, Japan, assignor to Iizuka Electric Industry Company Limited, Tomioka, Japan
Filed Oct. 3, 1977, Ser. No. 839,073
Int. Cl.² H01R *17/06*
U.S. Cl. 339—177 R **10 Claims**



1. A pin plug comprising an inner contact member in the form of pin made of conductive material;
an inner insulating member consisting of two semi-cylindrical halves made of insulating material, said two halves forming in a coupled state with their inner surfaces a hollow cylindrical space extending in an axial direction and receiving said pin;
means formed in said pin and the inner surface of said inner insulating member for fixing said pin in position in said cylindrical space in a separable manner;
means formed in said two halves of the inner insulating member for coupling them together in a separable manner;
an outer contact member consisting of two semi-cylindrical halves and surrounding an outer surface of said inner insulating member;
means formed in said inner insulating member and outer contact member for fixing the outer contact member in position on the outer surface of the inner insulating member in a separable manner;
and an outer insulating member consisting of a hollow cylindrical body made of relatively resilient insulating material and enclosing in a separable manner an assembly of the pin, the inner insulating member surrounding the pin and the outer contact member surrounding the inner insulating member so as to hold the assembly in position;
said two fixing means being formed at such positions that the contact surface of the inner insulating member halves and the contact surface of the outer contact member halves intersect with each other at an angle viewed in the axial direction;
whereby said pin is connected to one of two conductors of an electric wire, the other conductor of which is connected to said outer contact member and said electric wire is slidably passed through said outer insulating member.

4,129,353
TERMINAL BLOCK

Yasuhide Tabuchi, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Nagoya, Japan
Continuation of Ser. No. 728,018, Sep. 29, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 843,023
Int. Cl.² H01R *9/10*
U.S. Cl. 339—242 **4 Claims**



1. A terminal block for connecting the terminals of an electric apparatus to a plurality of load cables, said terminals disposed in a horizontal plane and separated by phase barriers, comprising:
a plurality of auxiliary connectors, each of said connectors having a first end for making connection with said terminals of said electric apparatus, and a second end for making connection to one of said load cables, said first ends of said connectors disposed in a common horizontal plane, said second ends of said connectors disposed in a common vertical plane perpendicular to said horizontal plane and forming transverse steps in said vertical plane; and
an insulation base fixed to the auxiliary connectors to provide insulation therebetween and between said auxiliary connectors and said load cables,
whereby said load cables are connected to said terminals of said electric apparatus in said vertical plane perpendicular to said horizontal plane formed by said terminals
said terminal block having a cable access side from which said load cables are connected to said auxiliary connectors, the second end of said auxiliary connector adjacent said cable access side disposed vertically above all others of said second ends, with all others of said second ends disposed stepwise in said vertical plane with respect to said second end of said auxiliary connector adjacent said cable access sides;
whereby all connections of said load cables to said second ends of said auxiliary cables are unobstructed by said load cables.

4,129,354
BUS BAR CLAMP

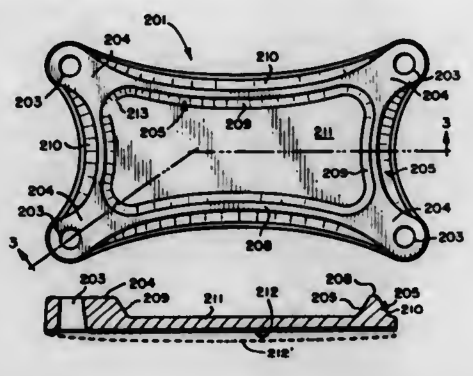
Robert F. Polimine, Lynbrook, N.Y., assignor to General Signal Corporation, Rochester, N.Y.
Filed Aug. 1, 1977, Ser. No. 820,653
Int. Cl.² H01R *7/08, 7/18*
U.S. Cl. 339—265 F **6 Claims**

1. A bus bar clamping structure for clamping together a plurality of bus bars, having planar and parallel surfaces, to provide electrical continuity between said bus bars and comprising in combination:
(a) first and second complementary plates each having a generally rectangular configuration, perimetric ribs and fabricated of material subject to deformation in response to stress;

(b) each plate having a web joining said perimetric ribs thereof and extending over the entire area enclosed by said perimetric ribs;

(c) one surface of said web of each plate forming a common surface with one surface of said ribs thereof;

(d) said common surface having a curvature such that if said common surface of one of said plates is placed on a planar horizontal surface, the plate contacts the horizontal surface at a single point with said single point being at the approximate geometric center of said plate;



(e) coupling means for coupling said first and second plates in complementary relationship on opposite sides of a plurality of bus bars, and with said common surfaces facing each other, and

(f) said coupling means including tensioning means for increasing the stress between said common surfaces whereby said common surface are deformed and pressure is applied to said common surfaces starting from said single point and radiating outward towards the limits of said common surfaces.

4,129,355

LIGHT BEAM SCANNER WITH PARALLELISM ERROR CORRECTION

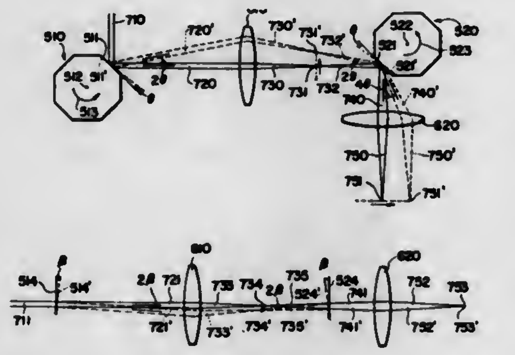
Masaru Noguchi, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 30, 1977, Ser. No. 811,927

Claims priority, application Japan, Jul. 2, 1976, 51-79313

Int. Cl.^{2} G02B *27/17*

U.S. Cl. 350—6.7 **1 Claim**



1. A light beam scanner, comprising:

(a) a first rotary multi-surfaced mirror for reflecting and deflecting a light beam, said first mirror having a plurality of first reflective surfaces;

(b) a second rotary multi-surfaced mirror for reflecting and deflecting the light beam reflected from said first mirror, said second mirror having a plurality of second reflective surfaces, each of said second reflective surfaces being paired with a corresponding one of said first reflective surfaces;

(c) means for synchronously rotating said first and second mirrors such that said light beam reflected and deflected from a first reflective surface on said first rotary mirror is always reflected and deflected by the corresponding second reflective surface on said second rotary mirror;

(d) the angular deviation between each of said second reflective surfaces and the second rotational axis being the same as the angular deviation between the corresponding first reflective surface and the first rotational axis; and

(e) a relay lens disposed in the optical path between the two mirrors;

(f) the two mirrors being positioned in the conjugate planes of the relay lens to thereby provide a magnification factor of 1, whereby an angular beam deflection error resulting from said angular deviation of a first reflective surface will be corrected by an equal and opposite angular beam deflection error resulting from said angular deviation of the corresponding second reflective surface.

4,129,356

OPTICAL TRANSMISSION ELEMENT HAVING PROTECTIVE JACKET TO REDUCE ATTENUATION

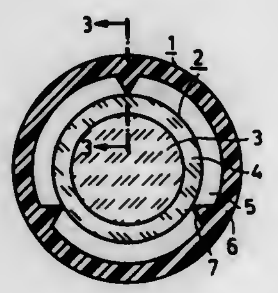
Ulrich Oestreich, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 29, 1976, Ser. No. 653,352

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1975, 2504553

Int. Cl.^{2} G02B *5/14*

U.S. Cl. 350—96.23 **8 Claims**



1. In an optical transmission element of the type which is built up as a multi-layer fiber consisting of a core with a sheath surrounded by a protective jacket, the material of the sheath having a lower index of refraction than that of the core, the improvement comprising:

(a) the inside diameter of the protective jacket being about twice the diameter of the fiber but in no case less than 50 μm larger than the latter;

(b) the protective jacket comprising a hard plastic material which is not crack prone and has a high modulus of elasticity whereby a smooth inside surface of the protective jacket is possible; and

(c) said protective jacket having a defined, preferably very small, absorption coefficient and a low index of refraction in the range of light wave length used.

4,129,357

PARTIAL POLARIZER FILTER

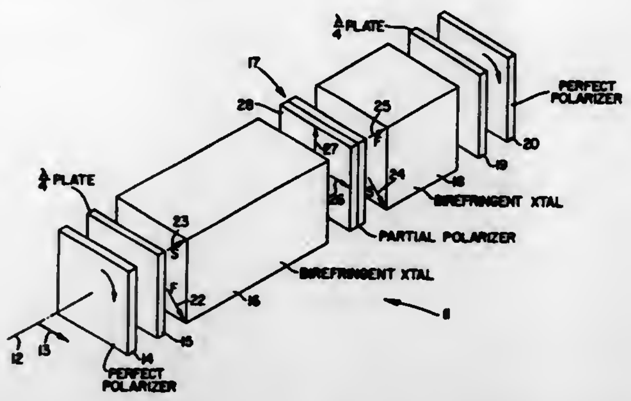
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Alan M. Title, Palo Alto, Calif.

Filed Aug. 11, 1977, Ser. No. 823,566

Int. Cl.^{2} G02B *1/02, 5/20*

U.S. Cl. 350—157 **20 Claims**

1. A birefringent filter module for optical energypropagating along an optical axis comprising an entrance polarizer, said entrance polarizer being polarized in a plane normal to the optical axis, a first birefringent crystal responsive to optical energy exiting the entrance polarizer, said first crystal having a fast axis displaced 45° from a first polarization direction in the plane normal, a partial polarizer responsive to optical energy exiting the first crystal, said partial polarizer having orthogonal high and low transmitivity directions, the high transmitivity direction being in the first direction, a second birefringent crystal responsive to optical energy exiting the partial polarizer, said second crystal having a fast axis displaced 90° from the fast axis of the first crystal in the normal plane, and an exit polarizer, said exit polarizer being polarized in the normal plane, the lengths of the first and second crystals differing from each other.



4,129,358

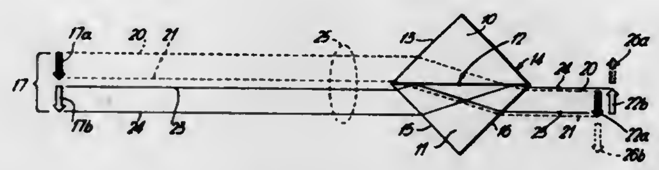
OPTICAL SYSTEM FOR IMAGING AN ELONGATE OBJECT IN REARRANGED SECTIONS

John S. S. Wei, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed May 27, 1977, Ser. No. 801,105

Int. Cl.^{2} G02B *27/14*

U.S. Cl. 350—173 **7 Claims**



1. An optical system for imaging an elongate object in rearranged sections extending side-by-side, comprising:

a pair of prisms, each prism having a base surface and two side surfaces inclined at an acute angle to said base surface, the two prisms in abutting relationship and having a common interface formed by said base surfaces, one of said base surfaces having a 50% reflective coating thereon, the plane of said interface aligned with the centre of the object and extending normal to the longitudinal axis of the object, a light path passing from the object through both prisms, a part through each prism;

an imaging device spaced from and optically aligned with said pair of prisms;

a lens structure positioned between said prisms and said imaging device, to produce an image of said sections on said imaging device; and

means for displacing the part of the light path from said object passing through one of said prisms to said imager, said part displaced in a direction normal to the longitudinal axis of the object, the part of the light path passing through the other prisms undisplaced in said direction;

whereby a first image is formed by said displaced part of said light path and a second image is formed by the undisplaced part of the light path, said images displaced longitudinally and laterally relative to each other.

4,129,359

EXTENDING ATTACHMENT LENS

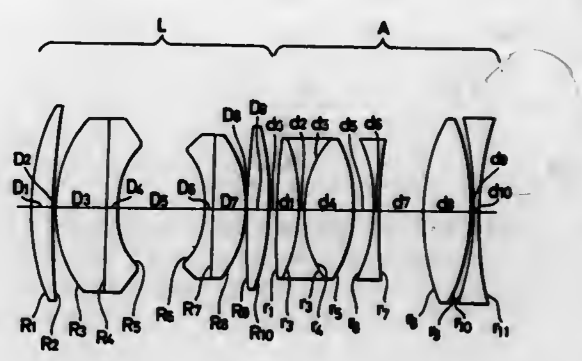
Kikuo Momiyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 27, 1977, Ser. No. 801,355

Claims priority, application Japan, Jun. 1, 1976, 51-63905

Int. Cl.^{2} G02B *9/34, 9/60*

U.S. Cl. 350—183 **4 Claims**



1. An extending attachment lens comprising:

a first lens having a positive power, with the radius of curvature of a rear surface thereof being smaller than that of a front surface thereof;

a second lens which is a biconcave lens cemented together with the first lens;

a third lens which is a biconvex lens positioned adjacent the second lens;

a fourth lens having a negative power with its front surface concave toward the front and with the radius of curvature of the front surface being smaller than that of a rear surface thereof;

a fifth lens which is a biconvex lens; and

a sixth lens which is a biconcave lens,

the combined power of the first lens, the second lens, the third lens, the fourth lens and the fifth lens being negative, and characterized by the following relationships:

$$1 < \frac{|f_A|}{|f_{1,2,3,4}|} < 1.5 \; (f_A < 0, f_{1,2,3,4} < 0) \tag{1}$$

$$-0.2 < \frac{e}{|f_A|} < 0.1 \tag{2}$$

$$4.5 < |f_A| \times (\frac{1}{f_1} + \frac{1}{f_3} + \frac{1}{f_5}) < 7 \tag{3}$$

$$0.18 < \overline{NC} - \overline{NV} \tag{4}$$

$$0.45 < \frac{r_2}{|f_A|} < 0.9 \quad (r_2 < 0) \tag{5}$$

$$0.3 < \frac{r_3 + r_4}{2|f_A|} < 0.5 \tag{6}$$

$$0.7 < \frac{r_5}{r_6} < 1 \quad (r_5 < 0, r_6 < 0) \tag{7}$$

$$0.45 < \frac{r_9}{r_{10}} < 0.8 \quad (r_9 < 0, r_{10} < 0) \tag{8}$$

$$0.01 < \frac{d_5}{|f_A|} < 0.075 \tag{9}$$

$$-0.04 < |f_A| \times (\frac{1}{f_1V_1} + \frac{1}{f_2V_2} + \frac{1}{f_3V_3} + \frac{1}{f_4V_4}) < 0.01 \tag{10}$$

$$-0.02 < |f_A| \times (\frac{1}{f_5V_5} + \frac{1}{f_6V_6}) < 0.01 \tag{11}$$

wherein f_A is the focal length of the overall attachment lens system; $f_{1,2,3,4}$ is the combined focal length of the first, the second, the third and the fourth lenses; e is the axial separation between the combined principal point of the first, the second, the third, and the fourth lenses and the combined principal point of the fifth and the sixth lenses; f_1, f_2, f_3, f_4 and f_5 are the focal lengths of the first lens, the second lens, the third lens, the fourth lens and the fifth lens respectively; r_2, r_3, r_4, r_5, r_6, r_9 and r_{10} are the radii of curvature of the second surface, the third surface, the fourth surface, the fifth surface, sixth surface, the ninth surface and the tenth surface respectively; d_5 is the axial separation between the third and fourth lenses; NV is the average value of the refractive indices of all the positive lenses in the attachment; NC is the average value of the refractive indices of all the negative lenses in the attachment; and V_1, V_2, V_3, V_4, V_5 and V_6 are the Abbe numbers of the first, second, third, fourth, fifth and sixth lenses respectively.

4,129,360
HELIOSTATS

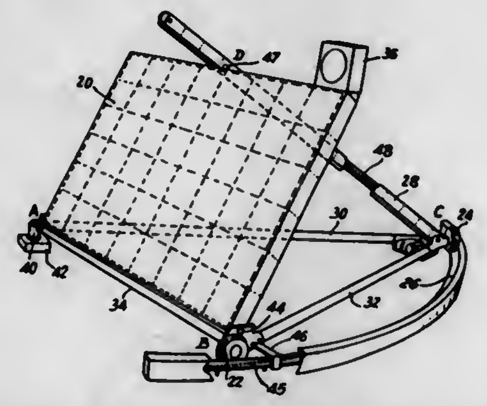
Jean Deflandre; Pierre Matarasso, and Jean-Pierre Traisnel, all of Paris, France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Seine, France

Filed Jan. 31, 1977, Ser. No. 764,423

Claims priority, application France, Feb. 9, 1976, 76 03447

Int. Cl.² G02B *5/08*

U.S. Cl. 350—289 **5 Claims**



1. A heliostat comprising a chassis having a horizontal triangular base and a reflecting panel mounted on the chassis, said triangular base being mounted for pivotal movement about a substantially vertical axis and having wheels for supporting said base in said movement, an oblique support pivotably attached at one apex of said triangular base so that it can pivot about a horizontal axis parallel to a side of the triangular base which is opposite to said apex, slidable securing means slidable along said oblique support for fixing said panel to said support at a variable distance along said support, means for pivotably attaching one side of said panel to said side of said triangular base so that it can pivot about said triangular base side, means for controlling the rotation of said triangular base, and means for controlling the movement of said slidable securing means whereby said panel can be oriented in altitude as well as in azimuth.

4,129,361
EYE TESTING DEVICE FOR PRESCRIBING EYEGLASSES

Peter A. Bacotti, 53 Eighth Ave., Brooklyn, N.Y. 11217, and Frederick M. Kraft, 25 Central Park West, New York, N.Y. 10023

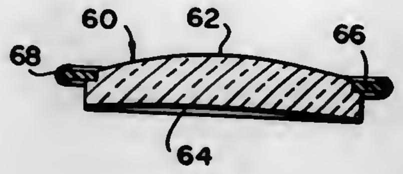
Filed Mar. 10, 1977, Ser. No. 776,182

Int. Cl.² A61B *3/04, 3/02;* G02C *7/02, 5/00*

U.S. Cl. 351—22 **3 Claims**

1. Device for prescribing refraction lenses for eyeglasses to be used by highly hyperopic patients comprising

a frame means:
a testing lens mounted within said frame means:
said lens having a first surface with a predetermined concave spherical curvature;
said lens having a second surface spaced from said first surface and formed with an aspherical convex curvature, the curvature of said convex surface being greater than the curvature of said concave surface;
said frame means comprising an outer circular frame having an inner circular surface and an inner circular washer having an outer circular surface that abuts said inner circular frame surface and formed to be held therein, said washer having an inner peripheral surface which includes an innermost edge having part thereof formed with an outwardly directed beveled area; and



said lens having a first circular part which includes said concave spherical surface, said first circular part having a diameter greater than the diameter of said innermost edge of said washer, and said lens having a second circular part which includes said convex aspherical surface, said second circular part having a diameter formed to correspond with and snugly fit against said innermost edge.

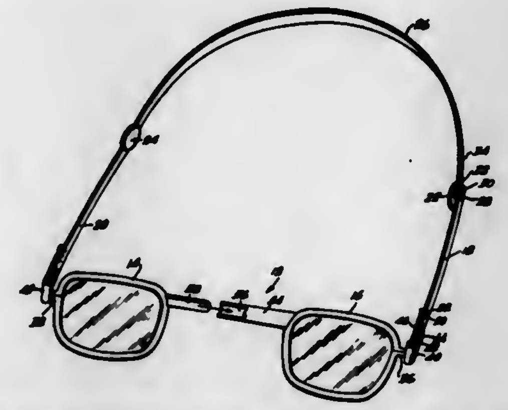
4,129,362
EYEGLASSES

Francisco Lorenzo, 1164 SW. First St., Miami, Fla. 33130

Filed Dec. 29, 1976, Ser. No. 755,143

Int. Cl.² G02C *5/14*

U.S. Cl. 351—123 **5 Claims**



1. Eyeglass structure including a first and a second lens holding ring and a lens in each ring, said lens holding rings each including a portion extending toward the other lens holding ring and comprising mutually intercooperating means for interconnection in male and female relationship above the nose level of a wearer, and a pair of temple pieces, each temple piece being pivotally connected to the lens holding rings and each terminating at a distal end zone and a band segment of spring material having a first end connected to the distal end zone of one of the temple pieces and a second end connected to the distal end zone of the other of the temple pieces at a pivotal connection, said band segment being sized to fit snugly about the head of a wearer to distribute the entire weight of the eyeglass structure to the head and not to the ears and nose, and cushions connected at the juncture of the band segment and temple pieces and confronting one another for distributing tension loads by the band segment.

4,129,363
SOUND MOTION PICTURE CAMERA

Yoshio Komine, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1977, Ser. No. 790,497

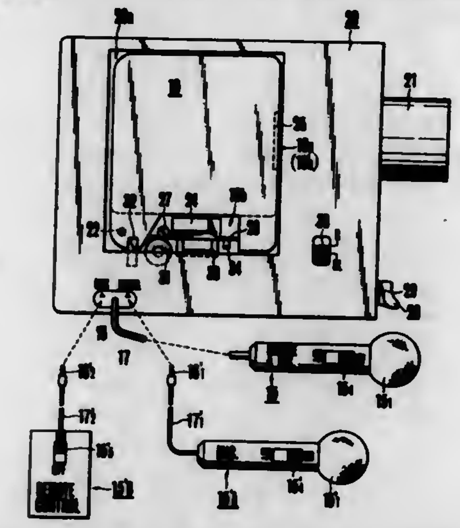
Claims priority, application Japan, Apr. 26, 1976, 51-47514

Int. Cl.² G03B *31/02*

U.S. Cl. 352—29 **28 Claims**

1. A motion picture camera capable of simultaneous sound recording on a sound film in a sound film cartridge containing a sound film, comprising:

(A) a cartridge loading chamber for loading a sound film cartridge;
(B) a manually operable camera release means,
(C) a sound recording means for recording sound signals on the sound film, said recording means being operatively associated with the camera release means and changeable in response to the operation of the release means between a first state in which the recording means is disengaged from the sound film for enabling the retracting of the sound film cartridge from the cartridge loading chamber and a second state in which the recording means is operatively engaged with the sound film for sound recording,



(C') a manually operable locking means couplable to said release means for locking said camera release means at a position at which said sound recording means is set into said second state, and
(D) a preventive means for preventing the retracting of the sound film cartridge from the cartridge loading chamber when the sound recording means is set in the second state, said preventive means being arranged in operative association with the camera release means so as to enable the retracting of the film cartridge when the operation of the release means is released and the sound recording means moves into the first state.

4,129,364
FILM PROJECTOR

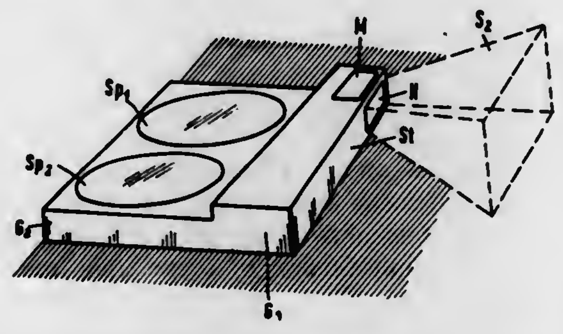
Bernhard Dietz, Cologne, Germany, assignor to Bruno Albrecht KG, Duesseldorf, Germany

Filed Apr. 21, 1977, Ser. No. 789,664

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1976, 2617799

Int. Cl.² G03B *21/28*

U.S. Cl. 353—99 **5 Claims**



1. Arrangement for projecting film pictures comprising the following: a light source, a window, means for moving a film containing pictures through the window, a system of lenses on the side of the window opposite the light source, a first mirror in the light beam projected by the lens system, said first mirror forming an angle with the axis of the light beam, means for rotating the first mirror about the axis of the light beam, a second mirror which at a first rotated position of the first mirror is located in the light beam deflected by the first mirror and whose plane makes an angle of substantially 45° with the plane of the first mirror located in the first rotated position, a third mirror located in the light beam projected by the first mirror when the first mirror is turned in a second rotated position, the plane of the third mirror forming an angle of substantially 45° with the plane of the first mirror.

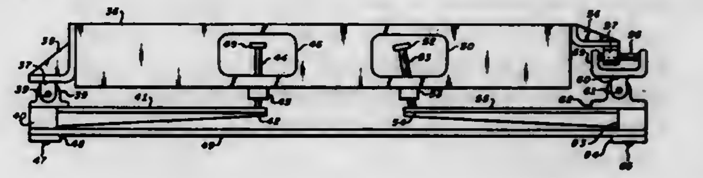
4,129,365
WIDE ANGLE ANAMORPHIC DISPLAY PROJECTION SYSTEM

Frank J. Aversano, Hicksville; Leon Carver, Woodbury, and Ludwik I. Seifert, Port Washington, all of N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Filed May 13, 1977, Ser. No. 796,778

Int. Cl.² G03B *21/28*

U.S. Cl. 353—99 **10 Claims**



1. Optical image projector means including at least one mirror, said mirror comprising:

flexible reflector means,
frame means having first and second opposed edge means,
  means at said first and second edge means for applying bending moments to said flexible reflector means, thereby causing said flexible reflector means selectively to assume a shape in the form of a sector of a circular cylinder,
said means for applying bending moments including: first pivot means for adjustably coupling said flexible reflector means to said frame means adjacent said first edge means, and
  second pivot means spaced from said first pivot means for adjustably coupling said reflector means to said frame means adjacent said second edge means,
said means for applying bending moments cooperating with said first and second pivot means for applying said bending moments to said flexible reflector means.

4,129,366
PHOTOMETRIC DEVICE FOR A CAMERA

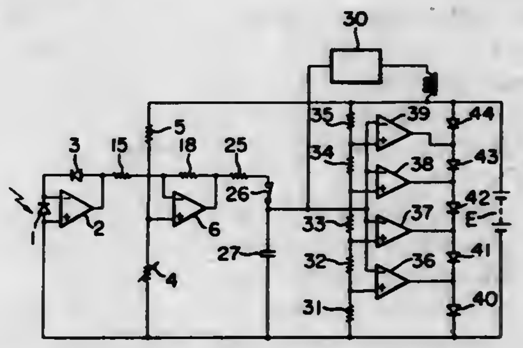
Sakuji Watanabe, Yono, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 1, 1976, Ser. No. 672,770

Claims priority, application Japan, Apr. 30, 1975, 50-57767[U]

Int. Cl.² G03B *7/08*

U.S. Cl. 354—24 **2 Claims**



2. In a photometric device for cameras which comprises:

a photometric circuit including an operational amplifier, a photo-diode connected between two input terminals of the operational amplifier to receive light coming from an object to be photographed and passed through an objective of the camera, and a logarithmic conversion element connected between one of the input terminals of the operational amplifier and an output terminal thereof to produce an output proportional to the logarithm of the output current from the photo-diode;

a plurality of indicating elements for indicating exposure conditions measured by the photometric circuit;

a control circuit for controlling the indicating elements in accordance with the output from the photometric circuit;

means for interrupting said light passed through the objective from impinging on the photo-diode in response to the shutter release operation;

a memory capacitor for memorizing the output of the photometric circuit produced prior to said interruption;

the improvement comprising resistance means connected to said capacitor, the resistance means and the capacitor cooperating to attenuate the amplitude of the alternating current component included in the output from the photometric circuit and having a frequency an integral number of times as high as the frequency of a commercial power source, and a time constant determined by the capacitor and the resistance means being greater than the period of the alternating current component in the output from said photometric circuit, whereby said indicating elements can display without being influenced by said alternating current component.

4,129,367

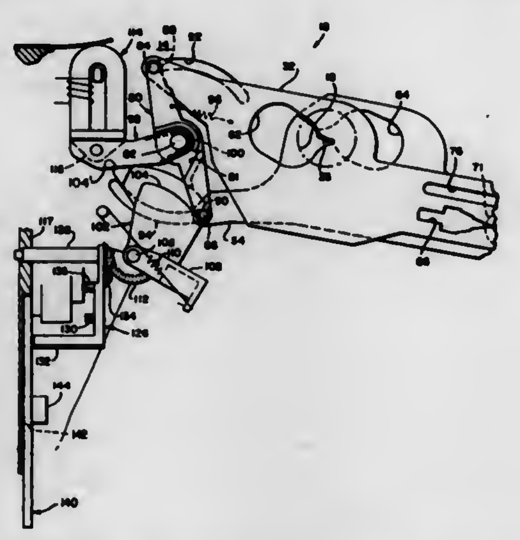
EXPOSURE CONTROL SYSTEM

George D. Whiteside, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1977, Ser. No. 830,019

Int. Cl.² G03B *17/50, 9/08, 9/40*

U.S. Cl. 354—83 27 Claims



1. A photographic camera apparatus having means for mounting photographic film material at a given focal plane, said camera comprising:

a blade mechanism;

means for mounting said blade mechanism for displacement between at least one blocking arrangement precluding transmission of scene light to the focal plane and an unblocking arrangement defining at least one aperture value structured for transmission of scene light to the focal plane;

first selectively actuable drive means for urging displacement of said blade mechanism from said blocking arrangement toward said unblocking arrangement;

second actuable drive means for urging displacement of said blade mechanism from said unblocking arrangement toward said blocking arrangement;

first latch means for restraining said blade mechanism and said second drive means, said first latch means including a movable member disposed for displacement between first and second positions and structured and configured for restraining said blade mechanism in said blocking arrangement against the urging of said first drive means while simultaneously restraining said second drive means from urging displacement of said blade mechanism while said first latch means movable member is in said first position, said first latch means being selectively actuable to move said movable member from its said first position to its said second position to effect the release of said blade mechanism and said second drive means, said blade mechanism thereafter moving under the influence of said first drive means from said blocking position toward said unblocking position to commence an exposure cycle;

second latch means for restraining said second drive means from urging displacement of said blade mechanism upon the release of said second drive means by said movable member said second latch means being thereafter actuable to cause the release of said second drive means and effect the displacement of said blade mechanism from said unblocking arrangement toward said blocking arrangement under the influence of said second drive means thereby completing said exposure cycle; and

means for moving said movable member from said second position back to said first position, said movable member being operative during said movement from said second position toward said first position to maintain said blade mechanism in said blocking arrangement against the urging of said first drive means while simultaneously restraining said second drive means from urging displacement of said blade mechanism.

4,129,368

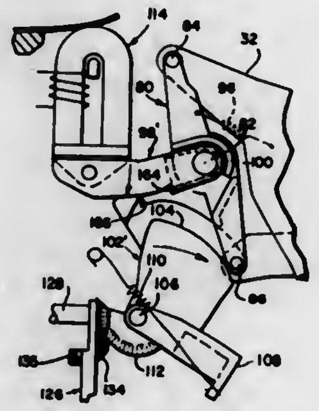
LAST FLASH INHIBIT FOR MAGNET ACTUATED SCANNING SHUTTER BLADE ARRANGEMENT

George D. Whiteside, Lexington, and Bruce K. Johnson, Andover, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1977, Ser. No. 830,024

Int. Cl.² G03B *15/04*

U.S. Cl. 354—128 5 Claims



1. A photographic camera apparatus having means for mounting photographic film material at a given focal plane, said camera comprising:

a blade mechanism;

means for mounting said blade mechanism for displacement between at least one blocking arrangement precluding transmission of scene light to the focal plane and an unblocking arrangement defining at least one aperture value structured for transmission of scene light to the focal plane;

first selectively actuable drive means for urging displacement of said blade mechanism from said blocking arrangement toward said unblocking arrangement;

second actuable drive means for urging displacement of said blade mechanism from said unblocking arrangement toward said blocking arrangement;

first latch means for restraining said blade mechanism and said second drive means, said first latch means including a movable member disposed for displacement between first and second positions and structured and configured for restraining said blade mechanism in said blocking arrangement against the urging of said first drive means while simultaneously restraining said second drive means from urging displacement of said blade mechanism while said first latch means movable member is in said first position, said first latch means being selectively actuable to move said movable member from its said first position to its said second position to effect the release of said blade mechanism and said second drive means, said blade mechanism thereafter moving under the influence of said first drive means from said blocking position toward said unblocking position to commence an exposure cycle;

second latch means for restraining said second drive means from urging displacement of said blade mechanism upon the release of said second drive means by said movable member said second latch means being thereafter actuable to cause the release of said second drive means and effect the displacement of said blade mechanism from said unblocking arrangement toward said blocking arrangement under the influence of said second drive means thereby completing said exposure cycle;

means for moving said movable member from said second position back to said first position, said movable member being operative during said movement from said second position toward said first position to maintain said blade mechanism in said blocking arrangement against the urging of said first drive means while simultaneously restraining said second drive means from urging displacement of said blade mechanism;

means for releasably connecting to at least one conventional flash lamp together with means for providing a first signal to fire the connected flash lamp at the appropriate time during said exposure cycle; and

means for sensing the operative condition of at least one connected flash lamp at said connecting means and providing a second signal indicative of an inoperative or missing flash lamp, said second signal being effective to actuate said second latch means to release said second drive means, said photographic apparatus additionally including means for ultimately restraining movement of said first latch means movable member from its said first position to its said second position upon the release of said second drive means, while accommodating movement of said first latch means movable from its said second position back to its said first position.

4,129,369

PARALLAX COMPENSATING DEVICE FOR THE VIEW FINDER IN A CAMERA

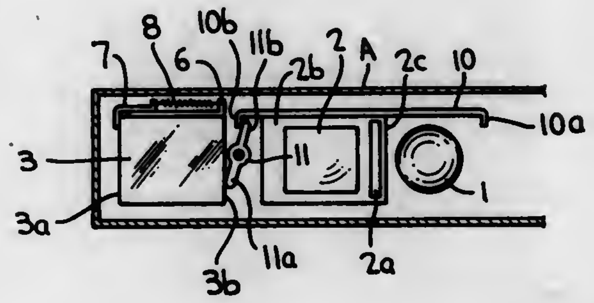
Haruo Kobayashi, and Toshinori Imura, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 1, 1977, Ser. No. 783,948

Claims priority, application Japan, Apr. 8, 1976, 51-44168[U]

Int. Cl.² G03B *3/00, 13/14*

U.S. Cl. 354—197 6 Claims



1. A camera which comprises sides which together form a small size body having a flat rectangular paralleopiped form and a photographic optical system having a photographic optical axis oriented perpendicular to a plane delineated by a side of said camera with the longest and shortest dimensions of the paralleopiped form, said camera also comprising:

a view finder optical system having a view finder optical axis oriented in parallel with said photographic optical axis;

close-up lens means for changing the focal length of said photographic optical system to that for close-up photography, said close-up lens means being movable between an operating position in alignment with said photographic optical axis and a retracted position in a space between the optical axis of said photographic optical axis and said view finder optical axis where said close-up lens means is out of alignment with said photographic optical axis;

concave objective lens means provided in said view finder optical system, said concave objective lens means being movable in a direction parallel to the locus of the movement of said close-up lens so as to be selectively positionable between an ordinary photographic position and a compensating position for compensating for finder parallax, upon close-up photography; and

an operating means which is interactable with said concave objective lens means and which is movable in accordance with the positioning of said close-up lens means to move said concave objective lens means from said ordinary photographic position to said compensating position when said close-up lens is positioned in the photographic optical axis.

4,129,370

CONTROLLING CIRCUIT FOR ELECTRIC SHUTTERS

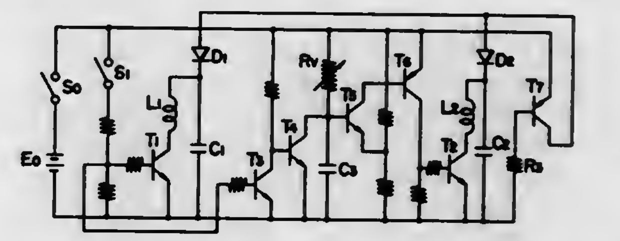
Yasuo Ishiguro, and Kenji Wakazono, both of Tokyo, Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Sep. 30, 1977, Ser. No. 838,224

Claims priority, application Japan, Oct. 8, 1976, 51-134866[U]; Oct. 8, 1976, 51-134867[U]

Int. Cl.² G03B *9/62*

U.S. Cl. 354—234 5 Claims



1. A controlling circuit for electric shutters comprising a first capacitor, a first driving coil connected to said first capacitor, a first switching means connected between said first capacitor and first driving coil and capable of flowing a discharge current to said first driving coil from said first capacitor when made to conduct to open a shutter, an exposure time controlling circuit connected to said first switching means, a second switching means connected to an output terminal of said exposure time controlling circuit and made to conduct by an electric current issued from said exposure time controlling circuit, a second driving coil connected to said second switching means and working to close the shutter when energized, a second capacitor connected between said second switching means and second driving coil and flowing a discharge current to said second driving coil to energize it when said second switching means is made to conduct, and a constant current circuit connected to said first and second capacitors to charge them.

4,129,371

ELECTROMAGNET CONTROLLED SCANNING SHUTTER BLADE ARRANGEMENT

Donato F. Pizzuti, Saugus, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1977, Ser. No. 830,111

Int. Cl.² G03B *9/08, 9/40*

U.S. Cl. 354—234 15 Claims

1. A photographic camera apparatus having means for

mounting photographic film material at a given focal plane, said camera comprising:

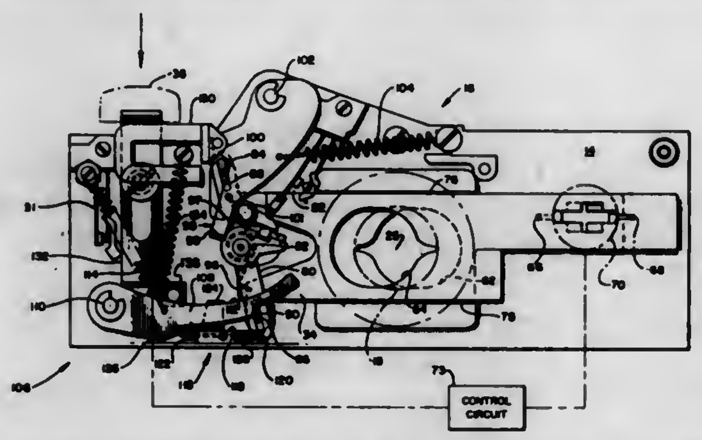
a blade mechanism;

means for mounting said blade mechanism for displacement between at least one blocking arrangement precluding transmission of scene light to the focal plane and an unblocking arrangement defining at least one aperture value structured for transmission of scene light to the focal plane;

first selectively actuable drive means for urging displacement of said blade mechanism from said blocking arrangement toward said unblocking arrangement;

second selectively actuable drive means for urging displacement of said blade mechanism from said unblocking arrangement toward said blocking arrangement;

first latch means movable between first and second positions for restraining said blade mechanism in said blocking arrangement against the urging of said first drive means and restraining said second drive means from urging displacement of said blade mechanism while said first latch means is in said first position, said first latch means being selectively actuable to move from its said first position to its said second position to effect the release of said blade mechanism and said second drive means, said blade mechanism thereafter moving under the influence of said first drive means from said blocking position toward said unblocking position to commence an exposure cycle;



second latch means for restraining said second drive means from urging displacement of said blade mechanism upon the release of said second drive means by said first latch means, said second latch means being thereafter actuable to cause the release of said second drive means and effect the displacement of said blade mechanism from said unblocking arrangement toward said blocking arrangement under the influence of said second drive means and thereby completing said exposure cycle; and

means for moving said first latch means from said second position back to said first position, said first latch means being operative during said movement from said second position toward said first position to maintain said blade mechanism in said blocking arrangement against the urging of said first drive means while simultaneously restraining said second drive means from urging displacement of said blade mechanism.

4,129,372
LIGHT MIXING APPARATUS AND PHOTOGRAPHIC ENLARGER EMBODYING SAME

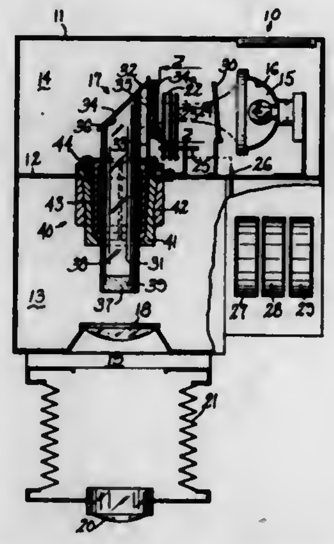
Michael Allgeier, Torrance, Calif., assignor to Vivitar Corporation, Santa Monica, Calif.

Continuation-in-part of Ser. No. 715,154, Aug. 17, 1976, abandoned. This application Mar. 2, 1977, Ser. No. 773,492

Int. Cl.^{2} G03B *27/00, 27/76;* G02B *5/14*

U.S. Cl. 355—1 36 Claims

26. A photographic enlarger comprising a housing member, a wall member dividing said housing member into upper and lower portions, a light mixing device in the form of a solid rod-like member of optically clear material having a straight longitudinal axis and smooth peripheral walls, said rod-like member having first and second end surfaces, means supporting said rod-like member through said wall member with said first end surface in said upper portion and said second end surface in said lower portion, a light source in said upper portion, said source directing light into the first end of said rod-like member, first means for diffusing the light entering said first end, whereby the diffused light is internally reflected by said smooth peripheral wall as it travels generally axially of said rod-like member with resulting mixing, said rod-like member having an essentially constant diameter throughout its length and a length to diameter ratio of at least three and one-half to one to provide sufficient mixing by the internal reflections from said peripheral wall, said support means having minimal contact with said rod-like member to minimize generation of heat at the contact, a condenser lens disposed below said second end of said rod-like member to receive the light output therefrom and second means for diffusing light exiting said rod-like member and entering said condenser lens.



4,129,373
ELECTROPHOTOGRAPHIC APPARATUS

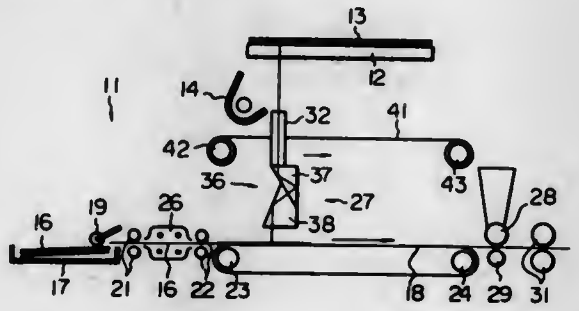
Yukio Ogura, and Mitsuhisa Fukuda, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 8, 1977, Ser. No. 831,624

Claims priority, application Japan, Sep. 9, 1976, 51-120508[U]; Nov. 1, 1976, 51-130544

Int. Cl.^{2} G03B *27/00;* G03G *15/28, 15/32*

U.S. Cl. 355—1 9 Claims



5. An electrophotographic apparatus comprising, in combination:

a stationary document carrier for supporting an original document;

a photosensitive member;

a focussing optical fiber array for focussing a light image of a linear portion of the original document onto the photosensitive member;

drive means for producing relative scanning movement between the document carrier, optical fiber array and photosensitive member in such a manner that the optical fiber array and the photosensitive member are moved relative to the document carrier; and

reflector means comprising two triangular prisms disposed between the optical fiber array and the photosensitive member for reflecting the light image an odd number of times which is at least three times, the reflector means reflecting the light image onto the photosensitive member substantially parallel to the optical axis of the optical fiber array.

4,129,374
ELECTROPHOTOGRAPHIC COPYING MACHINE HAVING MOVING CARRIER FOR ORIGINAL

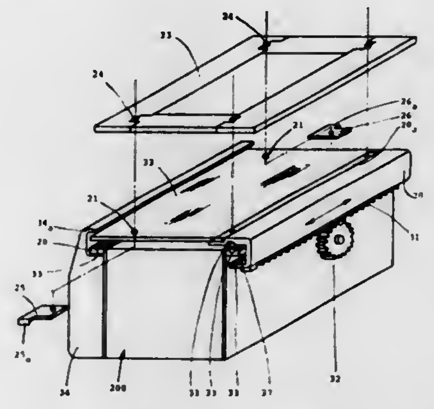
Katsuzo Uchida, Yamatokoriyama; Hiroaki Uchiyama, Nara, and Akira Mitsuyama, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 17, 1976, Ser. No. 742,448

Claims priority, application Japan, Nov. 18, 1975, 50-157126[U]

Int. Cl.^{2} G03G *15/28*

U.S. Cl. 355—8 9 Claims



1. An electrophotographic copying machine having a reciprocating original carrier, said original carrier comprising:

a. a transparent platen;

b. a frame member fixed to only one side edge of the transparent platen;

c. a pair of guide rails secured to both side walls of the copying machine body;

d. first supporting means for slidably supporting said frame member on one of said guide rails;

e. second supporting means for slidably supporting the transparent platen on the other guide rail at the opposite side edge to the side where the frame is fixed; and

f. means for driving the original carrier to reciprocate said carrier through said frame member.

4,129,375
METHOD AND APPARATUS FOR ELECTRICALLY BIASING DEVELOPING ELECTRODE OF ELECTROPHOTOGRAPHY DEVICE

Seiichi Miyakawa, and Tadahiro Eda, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 575,328, May 7, 1975, Pat. No. 4,050,806. This application Jul. 11, 1977, Ser. No. 814,806

Claims priority, application Japan, May 10, 1974, 49/52010; Jun. 14, 1974, 49/67714

The portion of the term of this patent subsequent to Sep. 27, 1994, has been disclaimed.

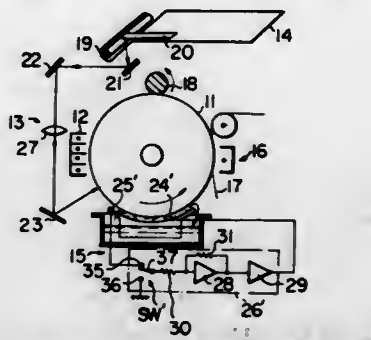
Int. Cl.^{2} G03G *15/10*

U.S. Cl. 355—10 15 Claims

1. In an electrophotographic device having a photoconductive member, charging means for charging the photoconductive member, imaging means for radiating a light image of an original document onto the photoconductive member, a developing electrode disposed adjacent to the photoconductive member after the photoconductive member has been charged by the charging means and radiated with the light image by the imaging means, and developing means utilizing a developing solution for developing the electrostatic image, the apparatus comprising:

sensing means disposed at least partially in said developing solution and arranged at a position corresponding to image areas of the photoconductive member for automatically sensing through the developing solution the potential remaining on the photoconductive member by means of electrostatic induction and the electrical conductivity of the developing solution; and

computing means to automatically compute the biasing voltage to be applied to the developing electrode in accordance with the value of the sensed potential and applying said biasing voltage to the developing electrode.



4,129,376
ELECTROPHOTOGRAPHIC APPARATUS

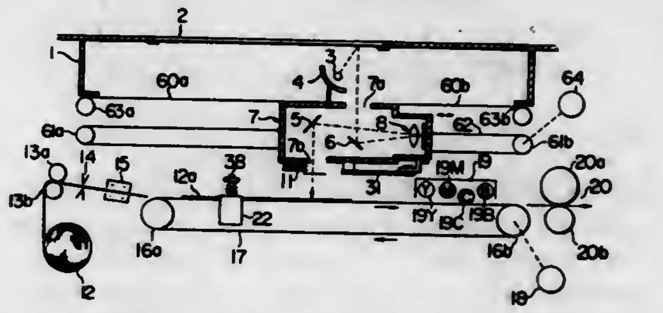
Teruo Yotsukura, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Jun. 14, 1976, Ser. No. 695,759

Claims priority, application Japan, Jun. 16, 1975, 50-71878

Int. Cl.^{2} G03G *15/00, 15/28*

U.S. Cl. 355—11 3 Claims



1. An electrophotographic apparatus comprising an original station, a photoconductive recording medium, a charger for uniformly charging the surface of said photoconductive recording medium, means for supporting said uniformly-charged photoconductive recording medium, and an optical system for optically exposing the recording surface of said recording medium to the information image of the original located on said original station, developer means for developing the electrostatic latent image on said recording surface of said recording medium exposed by said optical system, and fixer means for fixing on the recording surface a toner attached to said recording surface in accordance with said latent image, said optical system including a light source and an optical box reciprocally movable along the inside of said original station, said optical box including reflector means for introducing the light reflected on the original to the recording surface of said recording medium, said reflector means including a mirror lens, a prism lens, a lens holder for supporting said mirror lens and said prism lens, a guide rail for slidably supporting said lens holder, and switching means for sliding said lens holder along said guide rail, said developer means including a plurality of developing units each having a toner containing a sublimable dye, said fixer means including a pressure roller for fixing toner on the recording surface, wherein said switching means in said optical system includes a switching lever mounted swingingly on said optical box, said switching lever having an end engag-

ing said lens holder, and an engaging roller adapted to project into the operating locus of said switching lever, said operating locus being traced in response to the movement of said optical box.

4,129,377
VARIABLE MAGNIFICATION COPYING APPARATUS

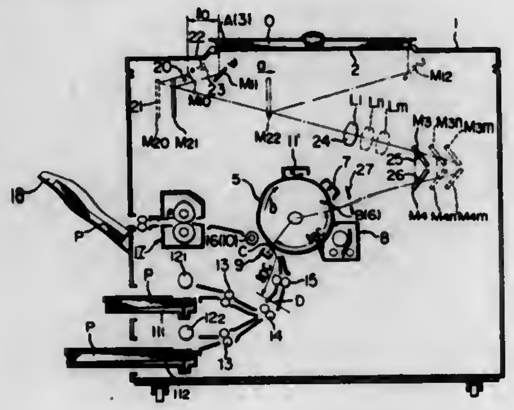
Koichi Miyamoto; Yoshikuni Tohyama, both of Tokyo; Seiji Sagara, Kawasaki; Yoshimasa Kimura, Kawasaki, and Masato Ishida, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1976, Ser. No. 750,569

Claims priority, application Japan, Dec. 18, 1975, 50-151411

Int. Cl.² G03G *15/00*

U.S. Cl. 355—14 **16 Claims**



1. A variable magnification copying apparatus comprising:

an index for aligning an edge of an original to be copied, said index being usable irrespective of magnification;

a photosensitive member movable sequentially past an image exposure station, then an image developing station and then an image transfer station at a constant peripheral speed irrespective of magnification;

scanning means movable along a predetermined path to optically scan the original, wherein the scanning velocity of said scanning means varies in inverse proportion to a selected copy magnification;

image forming means for projecting onto said photosensitive member at said image exposure station a light image of the original scanned by said scanning means at a speed corresponding to the selected magnification to form an electrostatic latent image thereon of the selected magnification;

developing means for developing the electrostatic latent image into a developed image at said developing station;

means for conveying copy material to said transfer station;

transfer means for transferring the developed image onto a copy material at said transfer station;

detecting means for detecting the position of said scanning means and for producing a signal when said scanning means reaches a position where it substantially scans the edge of the original; and

means coupled to said detecting means for controlling said conveying means in response to said signal to ensure that the leading edge of the developed image on said photosensitive medium registers with the leading edge of the copy material irrespective of the selected copying magnification.

4,129,378
ELECTROPHOTOGRAPHIC COPYING MACHINE HAVING A MASKING DEVICE FOR DIFFERENT COPY SHEET FORMATS

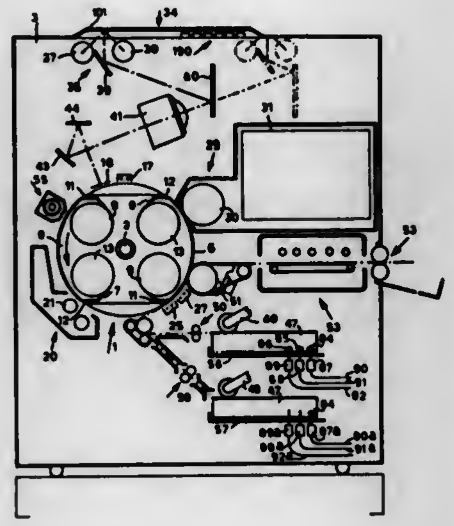
Luciano Rattin, Ivrea (Turin), and Roberto Guelfo, Montanaro (Turin), both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

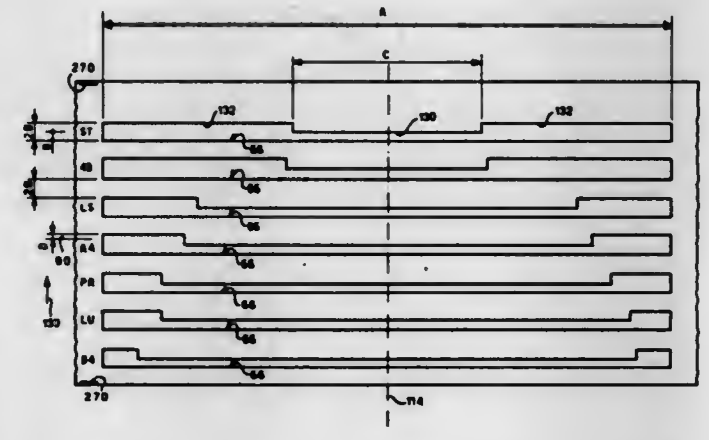
Filed Jan. 7, 1977, Ser. No. 757,537

Claims priority, application Italy, Jan. 20, 1976, 67123 A/76

Int. Cl.² G03G *15/00*

U.S. Cl. 355—14 **5 Claims**





1. In an electrophotographic copying machine having a moving photoconductive surface adapted to be charged and to carry an electrostatic latent image thereon,

developing means positioned at a developing zone to develop the moving electrostatic image on the surface, the developed image being adapted for transfer to a copy sheet having a format selected from among at least two different copy sheet formats usable in the machine, and selecting means for selecting the copy sheet format to be used,

a discharge device positioned immediately before the developing zone, and adapted, when activated, to discharge a side edge portion of the photoconductive surface during a first mode of operation, and during a second mode of operation to discharge a trailed edge portion of the photoconductive surface, the dimensions of said edge portion being dependent upon the copy sheet format selected,

means for detecting the position of the photoconductive surface during its motion,

and control means responsive to the selecting means and to the detecting means for activating the discharge device in the first mode of operation during a first part of said motion, depending on the selected format, and for switching the discharge device to the second mode of operation during the remaining part of the motion.

4,129,379
OPTICAL SYSTEM FOR ELECTROSTATIC COPIERS

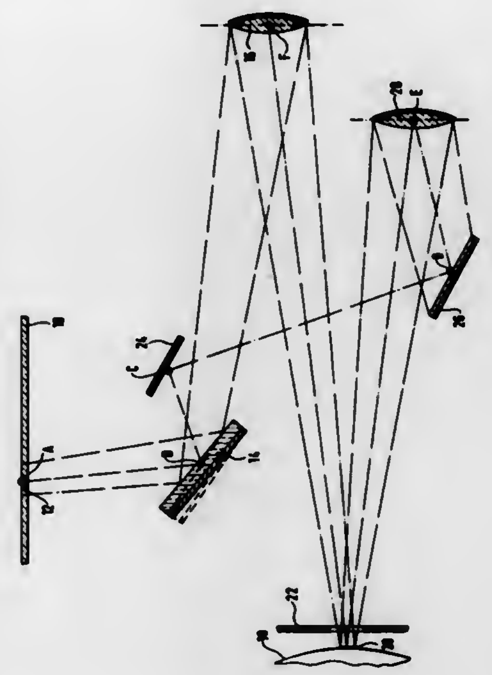
Harriet H. Ogrisek, Bonndorferstr. 7, 7827 Loffingen, Fed. Rep. of Germany, and Kurt Egger, Bahnhofstr. 13-15, 7470 Albstadt-Tailfingen, Fed. Rep. of Germany

Filed Nov. 16, 1977, Ser. No. 851,967

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1976, 7636234[U]

Int. Cl.² G03B *27/34, 27/40, 27/70*

U.S. Cl. 355—57 **11 Claims**



1. An optical system for an electrostatic copying machine, said copying machine including means for receiving an original document to be copied; means for providing moving illumination of sequential line portions of said original document; a primary mirror for reflecting light from said illuminated line portions of said original document to a first objective element, said first objective element being disposed to form a focussed first image of said illuminated line portions on a copying drum; and means for rotating said copying drum in synchronism with said moving illumination; and wherein the improvement comprises:

means for selectively pivoting said primary mirror into a first and a second position;

first and second supplemental mirrors, disposed externally to the light path from said primary mirror to said first objective element and located, respectively, on opposite sides of said light path, the planes of said supplemental mirrors being parallel and inclined with respect to a plane normal to said light path and said supplemental mirrors being set at an oblique angle with respect to said light path; and

a second objective element, located displaced from the optical axis of said first objective element, for receiving light from said second supplemental mirror and form forming a focussed second image thereof on said copying drum; whereby, when said primary mirror is placed in its said second position, light from said illuminated line portions is reflected by said primary mirror onto said first supplemental mirror, thence onto said second supplemental mirror and thence to said second objective element which forms said second image thereof on said copying drum, the beam of said second objective element being substantially parallel to the beam of said first objective element, the size of said second image being different from the size of said first image and at least one respective edge of said first and second images being in the same relative location on said copying drum.

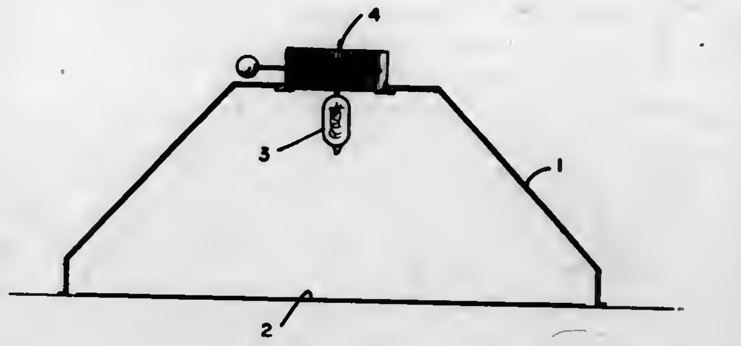
4,129,380
COPY APPARATUS USING CHEMICAL FLASHLAMP

Timothy Fohl, Carlisle, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed May 13, 1977, Ser. No. 796,795

Int. Cl.² G03B *27/30, 27/04*

U.S. Cl. 355—113 **6 Claims**



1. In a low cost portable copier of the type having a housing and a bottom surface at which a photosensitized sheet and an original can be disposed, and a pulse type flashlamp disposed within the housing so that radiant energy therefrom can be directed toward the photosensitized sheet and original, the improvement which comprises said flashlamp being a chemical flashlamp containing a combustible material and a combustion supporting means, and the copier having ignition means for flashing the flashlamp, said ignition means comprising a mechanically actuated lamp-striker spring which can be deflected and then released to ignite the flashlamp.

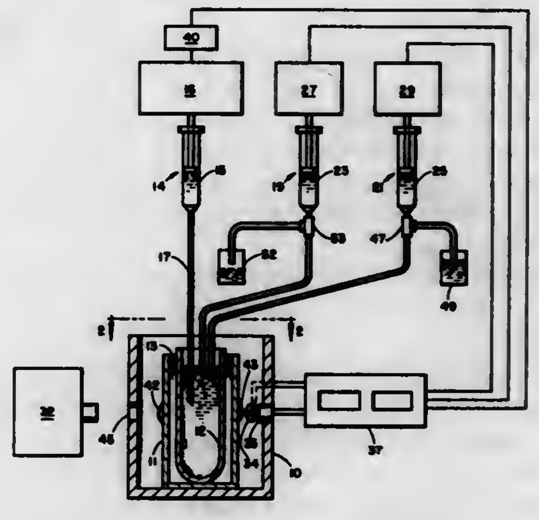
4,129,381
APPARATUS AND METHOD FOR PREPARING A PARTICLE SUSPENSION

George L. Wied, Chicago, Ill.; Gunter F. Bahr, Washington, D.C., and James H. Puls, Chicago, Ill., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 28, 1976, Ser. No. 736,516

Int. Cl.² G01N *1/00, 21/00*

U.S. Cl. 356—36 **9 Claims**



1. Apparatus for measuring and adjusting the concentration of a fluid suspension of cells while said suspension is subjected to particle-dispersing physical agitation, which comprises:

a light transmitting receptacle for retaining a suspension of cells;

agitation means for subjecting a suspension of cells in said receptacle to physical agitation to break up cell clumps without destroying the cells;

diluting means for diluting a suspension of cells in said receptacle to achieve a desired particle concentration;

a light source for passing a light beam through said receptacle;

first light sensing means positioned to receive direct light from said source passed through said receptacle and obtain a first light signal;

second light sensing means positioned to receive scattered light from said source passed through said receptacle and obtain a second light signal;

monitoring means connected to said first light sensing means and to said diluting means for comparing the first light signal with a predetermined value for dilution and for regulating the diluting means in response thereto to achieve the desired concentration of cells in suspension in said receptacle; and

monitoring means connected to said second light sensing means and to said agitation means for comparing the second light signal with a predetermined value for dispersion and for regulating the agitation means in response thereto to achieve the desired dispersion of cells in suspension in said receptacle.

4,129,382

METHOD AND APPARATUS FOR STORING AND READING AUTHENTICATING INFORMATION

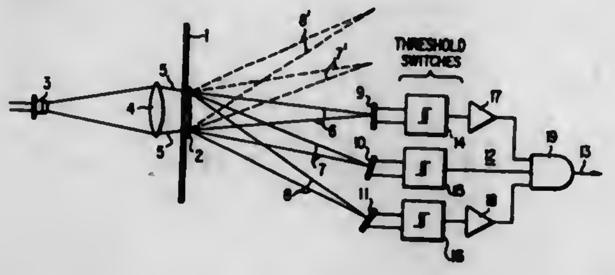
David L. Greenaway, Birchwil, Great Britain, assignor to Landis & Gyr, Zug, Switzerland

Filed Aug. 9, 1976, Ser. No. 712,751

Claims priority, application Switzerland, Aug. 14, 1975, 010602/75

Int. Cl.² G02B *27/38*

U.S. Cl. 356—71 **8 Claims**



1. A method of providing and reading an authenticating indicia on a carrier comprising the steps of:

disposing a diffraction grating on the carrier said diffraction grating producing a phase shift in a portion of light incident thereon to diffract the incident light into a plurality of diffraction orders having a predetermined ratio of light intensities;

impinging the diffraction grating with a light beam wherein the wave length of the light beam and the structure of the grating are selected to maximize the light diffraction efficiency of the grating for a predetermined diffraction order of the grating;

receiving light diffracted by the grating at a first predetermined location in a path of the diffraction order of the light beam;

receiving light diffracted by the grating at a different predetermined location in a path of another diffraction order of the light beam; and,

producing an indication of authenticity when the energies of the light received at the locations are in a predetermined proportion to one another.

4,129,383

SMOKE DETECTOR AND HOUSING ASSEMBLY THEREFORE

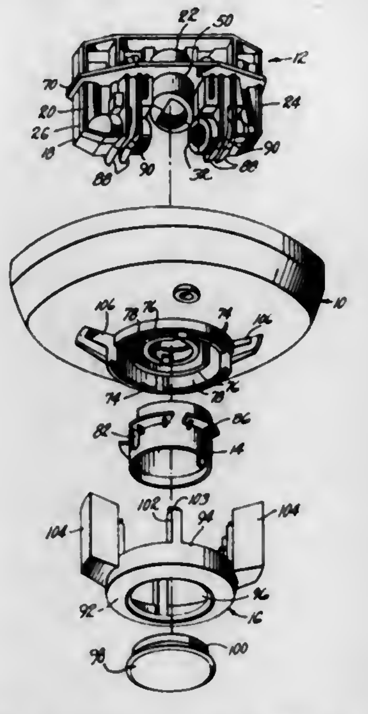
William J. Malinowski, Pembroke, Mass., assignor to Chloride Incorporated, Tampa, Fla.

Filed Feb. 10, 1976, Ser. No. 656,833

Int. Cl.² G01N *21/00*

U.S. Cl. 356—439 **4 Claims**

1. A smoke detector housing, comprising a support plate having a central aperture and a pair of apertures laterally spaced from the central aperture, an optical component retainer assembled with the base plate, said retainer having a base portion disposed on the rear side of the base plate, a medial portion projecting through the central aperture of the base plate, said medial portion having an internal cavity opening forwardly and shaped to receive a photo-cell, said retainer having a pair of forwardly projecting portions extending through the pair of laterally spaced apertures, one of said forwardly projecting portions having an internal cavity opening toward the other forwardly projecting portions to receive a light source so as to project a beam of light toward the other forwardly projecting portion, said other forwardly projecting portion having an aperture with an opening positioned in the path of said light beam, said medial portion having an internal cavity opening forwardly and shaped to receive a photo-cell in position to view the light beam, said support plate and said retainer having cooperating means positioning said retainer in relation to said support plate.



4,129,384

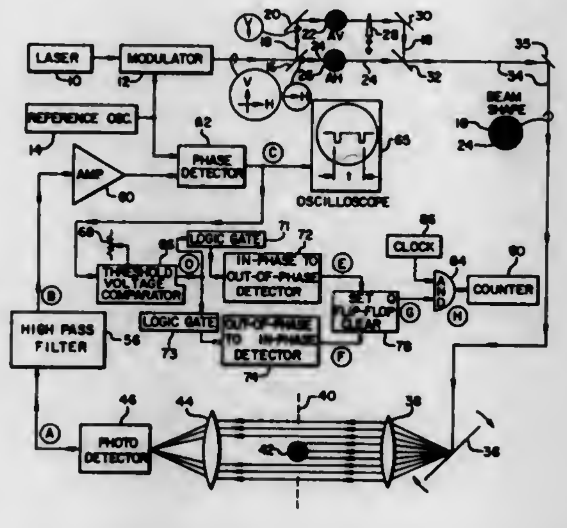
OPTICAL EXTENSOMETER

Ray A. Walker, Kennewick; Fred R. Reich, and James T. Russell, both of Richland, all of Wash., assignors to Batelle Memorial Institute, Columbus, Ohio

Filed Jun. 8, 1977, Ser. No. 804,814

Int. Cl.² G01B *11/08*

U.S. Cl. 356—381 **24 Claims**



1. An optical dimensional measuring apparatus comprising:

pulsed light beam generating means for producing a plurality of pulsed light beams which are alternatingly time modulated at the frequency of a reference signal to provide three beam segments positioned consecutively along a beam scanning direction with the outer two segments being distinguishable from the middle segment;

scanning means for scanning said light beams in said scanning direction across two opposite edges of an object to be measured;

detector means for detecting said light beams as they scan the opposite edges of said object to produce an electrical readout signal; and

signal processor means for processing said readout signal to produce a measurement signal output when the scanned light beams cross the opposite edges of said object.

4,129,385

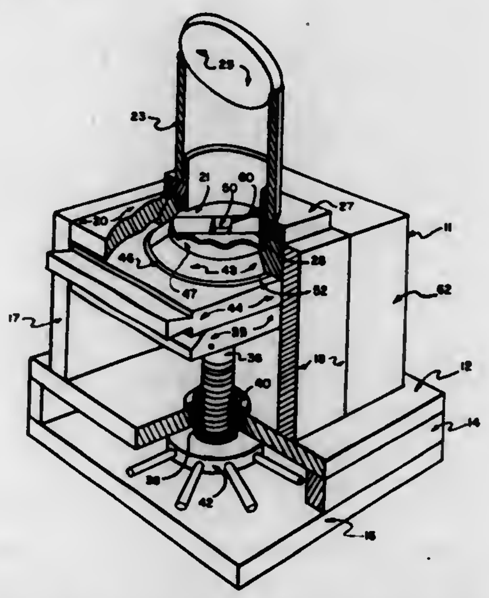
PHOTOACOUSTIC SAMPLE CELL

Allan Rosencwaig, Elyria, and Robert J. Emary, Wakeman, both of Ohio, assignors to Gilford Instrument Laboratories, Oberlin, Ohio

Filed Feb. 28, 1977, Ser. No. 772,728

Int. Cl.² G01N *21/24*

U.S. Cl. 356—244 **7 Claims**



1. A sample cell for photoacoustic measurement of a solid and quasi-solid sample material in a fluid medium comprising a table and means on said table for receiving a predetermined quantity of sample material thereon, a housing into which the table is selectively inserted in a horizontal plane as to prevent physical disturbance thereto, means for moving said table vertically in said housing between a sample load position and sample test position, said sample receiving means being engageable with said housing when said table is moved to its sample test position to define therebetween a sample test chamber, positioning means interacting between said table and said housing to precisely position the sample material in said test chamber, said sample cell being formed of sufficient mass to enable the sample material to be insensitive to physical vibration, radiant energy deflecting means carried on said housing over said test chamber being operable to direct radiant energy into said chamber effective to correspondingly change the energy level of said sample material and result in like changes in the resident fluid in said chamber.

4,129,386

EXTRUSION APPARATUS

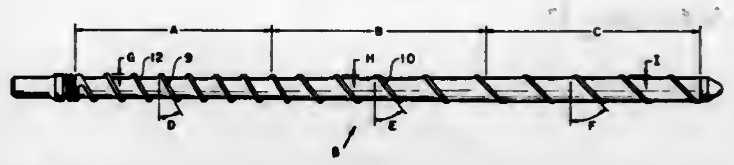
Christiaan J. Rauwendaal, Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Continuation-in-part of Ser. No. 691,940, Jun. 1, 1976, which is a continuation-in-part of Ser. No. 585,925, Jun. 11, 1975, abandoned. This application Jun. 29, 1977, Ser. No. 811,337

Int. Cl.² A21C *1/06;* B01F *7/08*

U.S. Cl. 366—88 **19 Claims**

1. An extrusion apparatus for processing a thermoplastic resin comprising a barrel portion with grooves within the feed section and an extruder screw extending the length of the barrel and having in sequence from the feed section end, a feed section, a transition section, and a metering section; the core of said screw being helically wound with a flight of constant helix angle in the feed section, the helix angle being between 10° and 25°, the helix angle of the flight in the metering section being constant and between 25° and 35° and the helix angle in the transition zone constantly increasing from the helix angle of the feed section to the helix angle of the metering section.



4,129,387

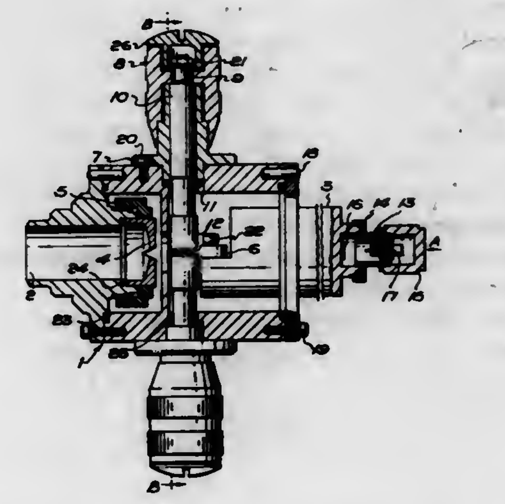
APPARATUS FOR THE HOMOGENIZATION OF LIQUIDS

Arthur Grange, and Stuart E. Booth, both of Shipley, England, assignors to Ultrasonics, Ltd., Shipley, England

Filed Aug. 11, 1976, Ser. No. 713,396

Int. Cl.² B01F *3/08, 11/02*

U.S. Cl. 366—119 **6 Claims**



1. An apparatus for the ultrasonic homogenization of liquids, such as emulsions and dispersions, comprising:

(a) a body including a homogenization chamber having an inlet end and an outlet end,

(b) jet means having an orifice in the inlet end portion of said chamber for forcing liquid through said orifice along a flow axis toward said outlet end,

(c) blade means having opposite blade surfaces converging in a blade edge,

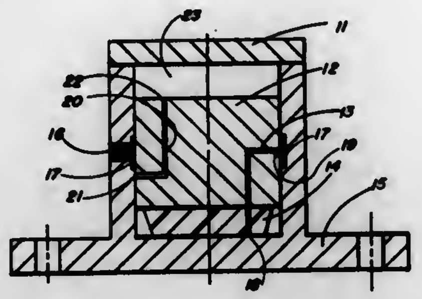
(d) mounting means supporting said blade means in said homogenization chamber for non-rotary, vibratory movement and positioning said blade edge opposite said orifice and in aligment with the flow axis of liquid through said orifice, so that liquid flowing from said orifice impinges on said blade edge and passes over said opposite blade surfaces toward said outlet end,

(e) at least one tuning member in said homogenization chamber having a tuning surface opposing at least one of said blade surfaces,

(f) adjustment means on said body supporting said tuning member for relative movement of said tuning surface toward and away from said blade surface to contain the flow of liquid between said tuning member and said blade means.

4,129,388
VIBRATOR FOR FLOWING GRANULAR MATERIAL

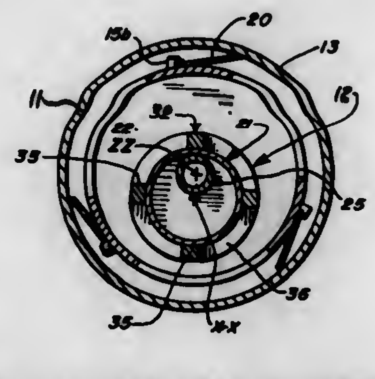
Ronald H. McKee, 2614 N. Galvez St., New Orleans, La. 70117
Filed Jul. 25, 1977, Ser. No. 818,622
Int. Cl.^{2} B06B *1/18*
U.S. Cl. 366—124 **3 Claims**



1. An impact type pneumatic piston vibrator comprising in combination:
- (a) a vibrator housing defining an elongated cylinder with round walls and oppositely disposed closed ends, and a base normal to said cylinder at one of said closed ends for attaching said vibrator housing to an exterior surface of any containing means for granular material;
- (b) a peripheral air passage defined interiorly in said round walls intermediate said cylinder closed ends for receiving compressed air;
- (c) means for introducing compressed air through said cylinder circular wall into said peripheral air passage;
- (d) an elongated piston slidably mounted in said cylinder and adapted to be reciprocated between said oppositely disposed closed ends thereof, said piston defining two air conduits between said air passage and respective piston ends for alternate registration with said peripheral air passage for the greater part of piston reciprocation toward and away from said base, and for registration of both said air conduits with said peripheral air passage for a lesser part of piston reciprocation near the closed end of said cylinder oppositely disposed from said base closed end for air cushioning the piston at said oppositely closed end in its reciprocation in said cylinder; and
- (e) a resilient elastomer material adapted to be mounted between said base closed end of said cylinder and the adjacent piston end for absorbing a noise of impact and little of the force of impact of said piston on said base end adjacent said containing means for granular material.

4,129,389
AGITATOR CONSTRUCTION

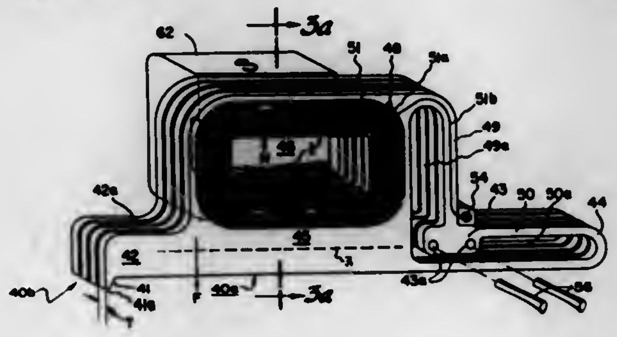
Alden H. Wakeman, Lake Mills, and Leonard R. Heiliger, Fort Atkinson, both of Wis., assignors to Crepaco, Inc., Lake Mills, Wis.
Filed Jan. 30, 1978, Ser. No. 873,214
Int. Cl.^{2} B01F *7/12*
U.S. Cl. 366—144 **9 Claims**



1. An agitator construction for use within an elongated skeletal dasher assembly rotatable about its longitudinal axis, the dasher assembly being disposed within an elongated cylindrical chamber through which a viscous product is caused to flow; said agitator construction comprising an elongated imperforate cylindrical support unit fixedly mountable within the dasher assembly, the central longitudinal axis of the support unit being offset with respect to the rotary axis of the dasher assembly; and an elongated cagelike member mounted on and in close encompassing relation substantially throughout said support unit for independent rotation about the central longitudinal axis of said support unit in response to the rotation of the dasher assembly and the product flow through the chamber.

4,129,390
STACKED BLADE MATRIX PRINTER HEADS

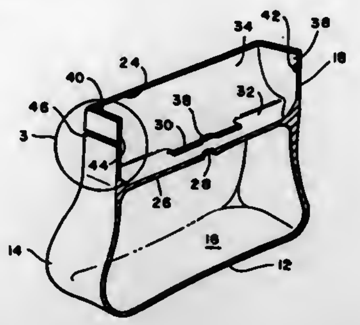
John E. Bigelow, Rexford, and Donald C. Peroutky, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 687,985, May 19, 1976, abandoned. This application Oct. 25, 1977, Ser. No. 845,425
Int. Cl.^{2} B41J *3/12*
U.S. Cl. 400—121 **7 Claims**



1. A printhead for use in a matrix printer, comprising:
- a housing having a front wall and a side wall arranged substantially perpendicular thereto;
- a plurality of printing blades, each blade having a conductive annular hub member; a substantially planar coil would about said hub member; an annular conductive rim member disposed about the exterior of said coil and in electrical contact with a second end of said coil; a conductive mounting portion positioned in the plane of and spaced from said coil; a pair of conductive elongated resilient arms having opposed first and second ends, the first end of each arm joined to each of a pair of spaced locations on the exterior of said rim member and the second end of each arm joined to said mounting portion, said arms electrically connecting said mounting portion of said second end of said coil and supporting said coil and the hub and rim members for movement relative to said mounting portion; and a printing tip extending from the exterior of said rim member in a first direction substantially perpendicular to the elongated dimension of that one of said arms closest to said tip;
- said plurality of blades being stacked with the planes thereof parallel to one another and said mounting portions in parallel alignment;
- first means for rigidly fastening only the parallel stacked mounting portions of all said blades to said housing side wall with the plane of each said blade substantially perpendicular to both said front and side walls and with said printing tips aligned along a common line; and
- second mens positioned only outside the stack of blades for forming a single permanent magnetic field directed to all of the coils of the entire stacked plurality of printing blades;
- a plurality of terminal means insulatively fastened to said housing; and
- means for electrically connecting the hub member of each said printing blade to one of said terminal means;
- a flow of current through a coil of one of said blades interacting with said single permanent magnetic field to move the printing tip of that blade in said first direction and outwardly from said front wall of said housing.

4,129,391
INTEGRAL APPLICATOR STRUCTURE

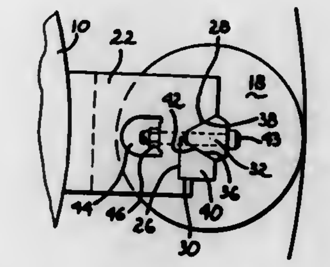
Robert J. Gamacher, 33185 W. Warren, Westland, Mich. 48135
Filed Jan. 23, 1975, Ser. No. 543,427
Int. Cl.^{2} B05C *17/00;* **B43M** *11/02;* **B44D** *3/28*
U.S. Cl. 401—208 **12 Claims**



1. Applicator structure comprising a container including a chamber for a cosmetic such as suntan lotion, an elongated slot in the container, a roller rotatably mounted in and extending radially from the slot including a radially outer compressible portion and having a diameter extending across the width of the slot of slightly greater dimension than the width of the slot at the diameter of the roller means extending across the width of the slot whereby the roller means is under compression across the width of the slot and length substantially equal to the corresponding dimension of the slot, and means for directing the cosmetic from the chamber onto the roller over the greater portion of the surface thereof with the applicator inverted to place the roller lower than the container on rotating the roller in frictional engagement with a body portion.

4,129,392
ROLLING CUTTER ARRANGEMENT

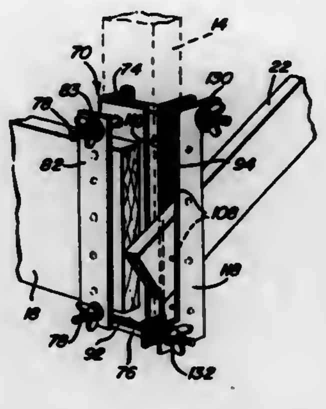
Homer B. Lupton, Mercer Island, Wash., assignor to Subterranean Tools Inc., Denver, Colo.
Filed Mar. 24, 1978, Ser. No. 889,722
Int. Cl.^{2} E21B *9/12*
U.S. Cl. 403—25 **4 Claims**



1. A mounting arrangement for a rolling cutter, especially a gauge cutter, which comprises; a saddle having a first sloping wall, a base portion joining said first sloping wall and an abutment region facing said first sloping wall, said rolling cutter having a shaft whose ends have converging side walls, a wedge block seated on said base portion of said saddle and having a second sloping wall converging with and facing said first sloping wall, said wedge block held in a predetermined position relative to said first sloping wall by backing on said abutment region on said saddle, said converging side walls of said shaft ends mating with said first and second converging sloping walls and means holding and urging said shaft ends to said saddles, and said rolling cutter shaft ends converging toward said saddle when said rolling cutter is mounted on said saddle and said first and second sloping walls converging toward said saddle.

4,129,393
SCAFFOLD LUMBER CLAMPS

Jack R. Sickler, P.O. Box 20803, Billings, Mont. 59104
Filed Jul. 25, 1977, Ser. No. 818,815
Int. Cl.^{2} E04G *7/00*
U.S. Cl. 403—49 **7 Claims**



1. A scaffold lumber clamp assembly including an elongated angle member comprising first and second right angularly disposed elongated flanges integrally joined together along adjacent longitudinal edge portions and including inner and outer included and excluded angle sides, respectively, the opposite ends of one of said flanges including a pair of outstanding threaded studs anchored relative thereto and projecting outwardly from the outer side thereof, a first elongated clamp bar paralleling the outer side of said one flange and including opposite end openings formed therein through which said studs are slidingly received, and a pair of first threaded abutment members threadedly engaged on said studs outwardly of the side of said clamp bar remote from said one flange and abuttingly engageable with said clamp bar about said openings, one end of said one flange including a threaded shank anchored relative thereto and projecting endwise outwardly from the corresponding end portion of the longitudinal edge of the one flange remote from the other flange, the end of the other flange remote from said one end of said one flange having one end portion of a threaded bolt pivotally anchored thereto adjacent the free longitudinal edge of said other flange remote from said one flange for swinging of said bolt about an axis generally paralleling the free longitudinal edge and extending transversely of said bolt between a free position generally paralleling said one flange and a second position projecting endwise outwardly of said free longitudinal edge of said other flange and generally paralleling the latter, and second and third inner and outer elongated clamp bars paralleling said second flange and including corresponding first and second ends, said first ends having registered openings formed therein through which the outer free end portion of said threaded shank is slidingly received, a second threaded abutment member threadedly engaged on the outer end of said shank outwardly of said outer clamp bar and abuttingly engageable with the outer side of said outer bar, said second ends of said second and third bars including registered notches formed therein opening laterally outwardly through the longitudinal side edges of said second and third bars corresponding to said free longitudinal edge of said other flange and into which the free end portion of said threaded bolt is receivable when said bolt is swung from said second position to said first portion, and a third threaded abutment member threadedly engaged on the free end portion of said bolt and abuttingly engageable with the side of said outer clamp bar remote from said inner clamp bar.

4,129,394

PIVOT PIN FOR JOINTS, PARTICULARLY UNIVERSAL JOINTS OR THE LIKE

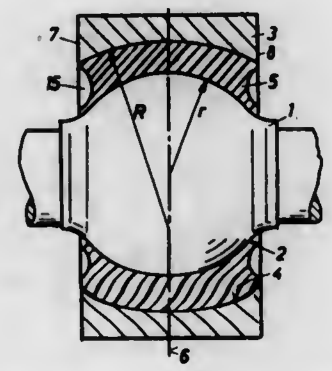
Johann Eichinger, Putzbrunn, and Manfred Hirt, Munich, both of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik, Munich, Germany

Filed Jun. 23, 1977, Ser. No. 809,195

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1976, 2630205

Int. Cl.² F16D *3/00;* E21B *19/16*

U.S. Cl. 403—57 **5 Claims**



1. A pivotal joint having limited universal movement, comprising:

an inner pin member having a continuous first annular surface portion thereon extending radially outwardly of said pin member with its largest radial dimension being located at a point intermediate in its axial length;

a monolithic outer hub member having a continuous annular second surface which surrounds, is centrally disposed with respect to and is radially spaced from said first surface of said inner pin member, said first and second surfaces being convergingly related from the axial ends thereof to the points intermediate their axial lengths;

a single layer of flexible resilient material disposed in the annular space between said inner pin member and said outer hub member, said flexible resilient material being bonded to said first and second surfaces and having a uniform radial compression characteristic throughout the entire axial length of said flexible resilient material, said flexible resilient material having an axial cross section in said annular space which converges from the axial ends thereof to the point intermediate its axial length at a rate such that, upon a relative movement between said inner pin member and said outer hub member, said flexible resilient material is displaced and each planar section of said flexible resilient material contained in planes perpendicular to the axis of said inner pin member undergoes generally the same form change and the volume of the displaced flexible resilient material of a first plane plus the volume of the displaced flexible resilient material of an adjacent second plane is absorbed by the volume between said first and second surfaces between said first and second planes.

4,129,395

CONTAINER LOCK ASSEMBLY

John Theurer, Alpine; William C. Guenzel, New Brunswick, both of N.J., and Orville F. Beck, Downingtown, Pa., assignors to Theurer Atlantic Incorporated, Newark, N.J.

Filed Jul. 5, 1977, Ser. No. 812,897

Int. Cl.² B25G *3/18;* F16B *21/02, 21/14*

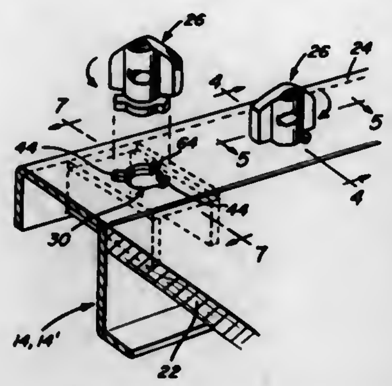
U.S. Cl. 403—317 **8 Claims**

1. A container lock assembly, comprising, in combination:

(a) a rail mountable on a vehicle frame;

(b) a body member including a base portion removably engaged with the rail, and a stem portion extending away from the base portion; and

(c) lock pin means removably attached to the stem portion of the body member for retaining in place against the rail a container to be secured to the rail, the stem portion of the body member having a through hole disposed perpendicularly to the extent of the stem portion, the lock pin means being removably arranged within the hole provided in the stem portion of the body member, the base portion of the body member including a shank extending from the stem portion, and a pair of tabs depending from the shank in a common plane spaced from the stem portion, the rail being provided with a cutout, and the tabs being arranged for fitting into the cutout provided in the rail and engaging with and disengaging from the rail upon a rotating motion of the body member about the longitudinal extent of the stem portion.



4,129,396

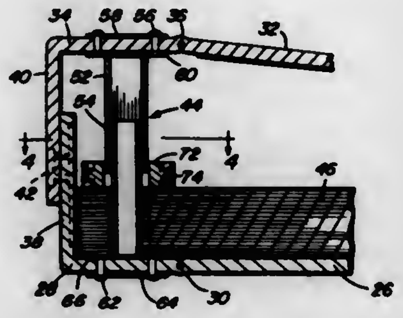
LOOSE LEAF BINDER WITH RIGID TELESCOPIC POST ASSEMBLIES AND MAGNETICALLY RETAINED BAR

James P. Stecklow, 8558 Broadview Rd., Broadview Heights, Ohio 44147

Filed Apr. 28, 1977, Ser. No. 792,036

Int. Cl.² B42F *3/02, 3/30*

U.S. Cl. 402—46 **8 Claims**



1. A loose leaf binder for loose leaf sheets or brochures and enabling individual sheets or brochures to be removed or added without taking the binder apart and without removing additional sheets or brochures, said binder comprising a supporting base, a top member spaced from the base and adapted to receive a plurality of loose sheets of material therebetween, a plurality of post assemblies extending between the supporting base and top member for receiving and mounting the loose leaves, each post assembly including a pair of tubular members with one of the tubular members being supported from the supporting base and the other of the tubular members being supported from the top member, the inner ends of the tubular members being disposed in telescoping relation to enable variation in the length of each post assembly, and a hold down means which adheres to at least one of said tubular members and is adjustable relative thereto for holding said sheets or brochures in place by exerting pressure thereon.

4,129,397

ROAD SURFACE MARKING PREFABRICATED TAPE MATERIAL, HAVING RETROREFLECTIVE COMPOSITE ELEMENTS ASSOCIATED THERETO

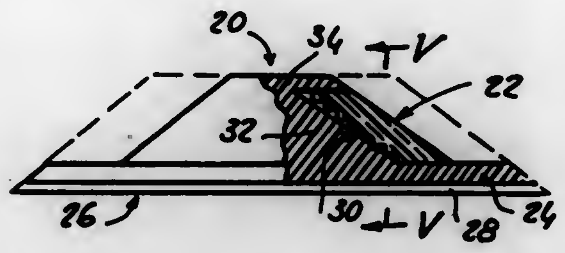
Ludwig Eigenmann, Vacallo, Canton Ticino, Switzerland

Filed Nov. 9, 1977, Ser. No. 850,024

Claims priority, application Italy, Nov. 10, 1976, 29196 A/76

Int. Cl.² E01F *9/04*

U.S. Cl. 404—14 **8 Claims**



1. A prefabricated road-surface marking tape, comprising a tape adapted to be placed on and secured to a road surface to form a traffic aid thereon; a plurality of reflectors spaced lengthwise of and upwardly projecting from an upper face of said tape, each of said reflectors comprising a casing having a generally planar base portion of a first width and having a bottom face juxtaposed with said upper face, and a receiver portion of a smaller second width projecting upwardly from said base portion, and an optically reflective element mounted and sheltered in said receiver portion and operative for retroreflecting a relatively narrow beam of light lengthwise of said tape in one direction when impinged by vehicle-emitted light rays travelling in the opposite direction; and means including a plurality of recesses in said bottom face and accommodating portions of said tape therein, for fixedly anchoring said reflectors to said tape.

4,129,398

METHOD AND APPARATUS FOR PLASTIFYING AND TEARING UP OF DAMAGED ROAD-SURFACES AND COVERS

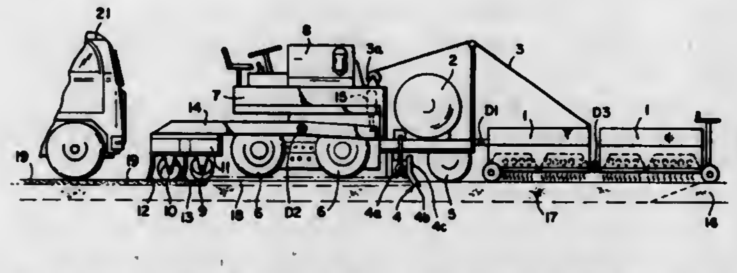
Walter Schoelkopf, Bruchlstrasse 38, 7024 Filderlinden, Fed. Rep. of Germany

Filed Nov. 26, 1976, Ser. No. 745,122

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1975, 2554710; Oct. 25, 1976, 2648158

Int. Cl.² E01C *23/14*

U.S. Cl. 404—95 **8 Claims**



1. An apparatus for resurfacing a road including a mobile apparatus for breaking up a road surface and distributing a layer of broken-up material on said road surface, said mobile apparatus comprising a main frame having a forwardly extending cantilever arm, a heating unit pivotally mounted to the front end of said cantilever arm, road surface breaking-up means adjustably mounted to said cantilever arm, and steering means further mounted on said cantilever arm, said apparatus further comprising broken-up material distributing means, and means pivotally mounting said distributing means to said main frame behind said breaking-up means, and means for adjusting the position of said distributing means, said broken-up material distributing means comprising means for rearranging and distributing broken-up material from said breaking-up means on a road surface.

4,129,399

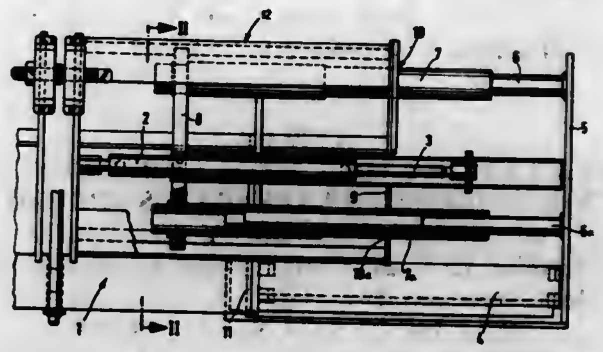
MOUNTING BARS FOR ROAD MAKING MACHINES

Hans Ruge, Wardenburg, Fed. Rep. of Germany, assignor to Firma Klaus-Gerd Hoes, Wardenburg, Fed. Rep. of Germany

Filed Nov. 14, 1977, Ser. No. 851,236

Int. Cl.² E01C *19/22*

U.S. Cl. 404—118 **8 Claims**



1. A device for adjusting the working width of a road making machine comprising:

a main bar having an elongated front wall and two lateral ends;

a pair of adjuster bars disposed rearwardly of said front wall of said main bar, each of which is associated with an opposite end of said main bar and which is reciprocably movable laterally away from and toward said associated end of said main bar so as to serve as an extension for said main bar and to cooperate therewith for adjusting the working width;

at least one pair of guide tubes each of which is associated with an opposite end of said main bar and in each of which one of said adjuster bars is at least partially and telescopically received and supported therein for reciprocal sliding movement and telescopic extension and retraction from one end thereof; and

mounting means for slidably mounting said guide tubes on said main bar for lateral reciprocal movement in the same direction of extension and retraction of the adjuster bar supported therein, and mounting means being coupled between said main bar and an end of said tubes remote from said one end thereof, said slidable guide tubes cooperating with said adjuster bars and said main bar for adjusting the working width.

4,129,400

TREPANNING TOOL

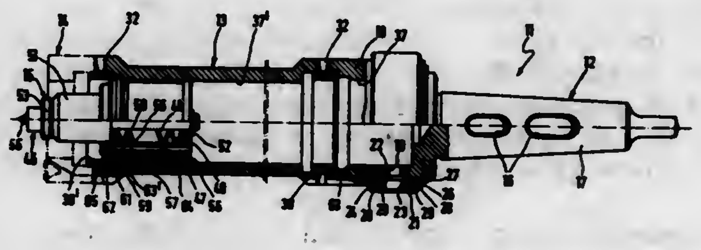
Tiberius M. Wozar, Waldackerweg 5, 7300 Esslingen-Wiflingshausen, Fed. Rep. of Germany

Filed Nov. 23, 1976, Ser. No. 744,269

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1975, 2553035; Oct. 29, 1976, 2649399

Int. Cl.² B23B *51/06, 41/02*

U.S. Cl. 408—56 **12 Claims**



1. A trepanning tool which includes

an elongated shank, at least one end of which is formed by a hollow body, and which defines a central boring axis;

cutting elements connected to the end of said elongated shank formed by said hollow body;

a centering element axially movably positioned within said hollow body portion of said elongated shank, said centering element including a guide piston, a centering spigot, and springs positioned between said centering element and said guide piston such that said centering spigot is relatively movable with respect to said guide piston; and

means provided in said hollow body portion of said elongated shank forming a radial aperture therein for allowing coolant medium into said hollow body portion and act to resist axial movement of said centering element when said trepanning tool is used and said centering element is subjected to axial compressive loads due to the tool being placed against a workpiece to be bored.

4,129,401

HOLE-CUTTING TOOL WITH A FREE CENTRAL PORTION AND EJECTOR APPARATUS FOR THE CORE OF METAL FORMED BY THE TOOL

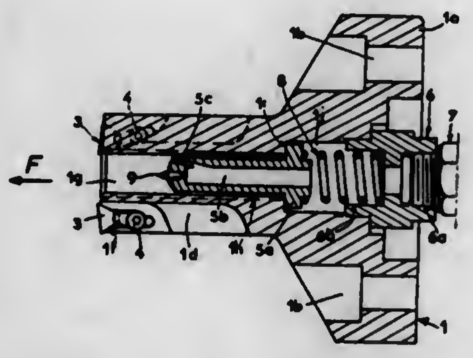
Pierre Berthier, La Grand Croix, France, assignor to Manufacture de Vilebrequins de Lorette S.A., Chamond, France

Filed Jun. 27, 1977, Ser. No. 810,841

Claims priority, application France, Jul. 7, 1976, 76 21553

Int. Cl.² B23B *27/10, 51/00, 41/02*

U.S. Cl. 408—59 9 Claims



1. A hole-forming tool comprising a body adapted for being driven in rotation, said body including a front portion having an axial bore, a plurality of cutting plates removably secured to said front portion for cutting a ring from a metal workpiece while leaving a non-cut core in the axial bore, ejector means in said bore for ejecting said core at the end of the cutting operation, and means for axially distributing a liquid through said bore, said ejector means comprising an ejector member slidable in said bore, and resilient means urging said ejector member into said bore for ejection of the core, said body having a chamber communicating with the means for axially distributing the liquid, said ejector member having a blind axial bore communicating with said chamber, and orifices extending into said bore and opening at said body at the front face thereof which faces the core.

4,129,402

SELF-PRIMING CENTRIFUGAL TRASH PUMP

Harry A. Eberhardt, Paoli, Pa., assignor to Hale Fire Pump Company, Conshohocken, Pa.

Filed Jan. 5, 1977, Ser. No. 757,060

Int. Cl.² F04D *29/44;* **F01D** *1/02, 9/02;* **F04D** *29/08*

U.S. Cl. 415—53 R 19 Claims

1. A centrifugal pump, comprising:

a first casing member having an endwall with a laterally-extending peripheral flange cooperating therewith to form a cavity,

means providing an inlet in said first casing member,

means providing an outlet in said first casing member,

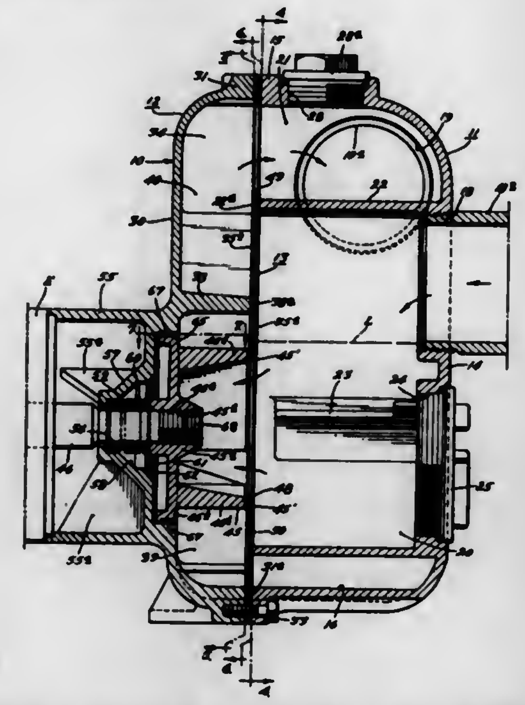
a baffle extending around said inlet means and into said cavity to divide said cavity into an inlet plenum in fluid communication with said inlet means and an outlet plenum in fluid communication with said outlet means,

a second casing member having an endwall with a laterally-extending peripheral flange cooperating therewith to form a recess,

a volute-shaped wall extending into said recess to divide said recess into a pumping chamber interiorly thereof and a discharge chamber exteriorly thereof,

a divider plate interposed between said first and second casing members and extending transversely across said partition and volute-shaped wall,

said divider plate having an orifice below said inlet means providing fluid communication between said inlet plenum and said pumping chamber and having a vent providing fluid communication between said discharge chamber and said outlet plenum.



said divider plate, baffle, and said casing member fastening means being disposed symmetrically with respect to a vertical axis through the pump assembly to enable the divider plate to be reversed in position between the casing members,

impeller means rotatably mounted in said pumping chamber, and

means releasably fastening said first and second casing members together with said divider plate therebetween,

whereby rotation of the impeller causes fluid to flow through the pump.

4,129,403

HELICOPTER ROTORS

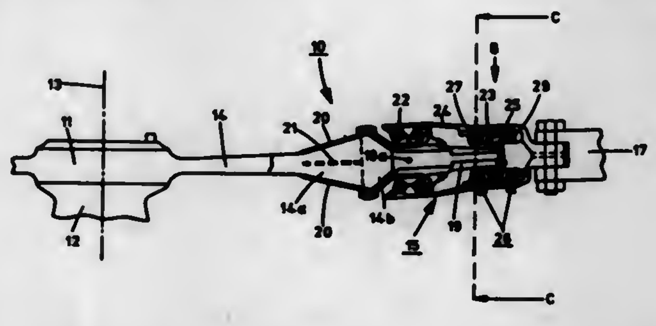
Kenneth Watson, Yeovil, England, assignor to Westland Aircraft Limited, Yeovil, England

Filed Jul. 8, 1977, Ser. No. 814,038

Claims priority, application United Kingdom, Jul. 15, 1976, 29587/76

Int. Cl.² B64C *27/38, 27/48*

U.S. Cl. 416—134 A 12 Claims



1. A helicopter rotor comprising a rotor hub for rotation about a generally vertical axis, a plurality of rotor blades, the rotor hub including, for each rotor blade, a generally radially extending flexure member resiliently flexible in a blade flap plane, a feathering hinge mounted at the outer end of said flexure member, said feathering hinge including a tubular portion, means on the outer end of said tubular portion for attachment of a rotor blade, a spindle extending outwardly from said flexure member with the outer end portion thereof disposed within said tubular portion, inner and outer elastomeric bearings disposed in spaced apart relationship on said spindle and supporting said tubular portion and an elastic shear mounting disposed adjacent said outer elastomeric bearing and mounted between said tubular portion and said outer bearing to permit lead and lag movements of the tubular portion and rotor blade about a geometrical center of said inner bearing.

4,129,404

ARRANGEMENT OF AIR COMPRESSOR AT A RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE

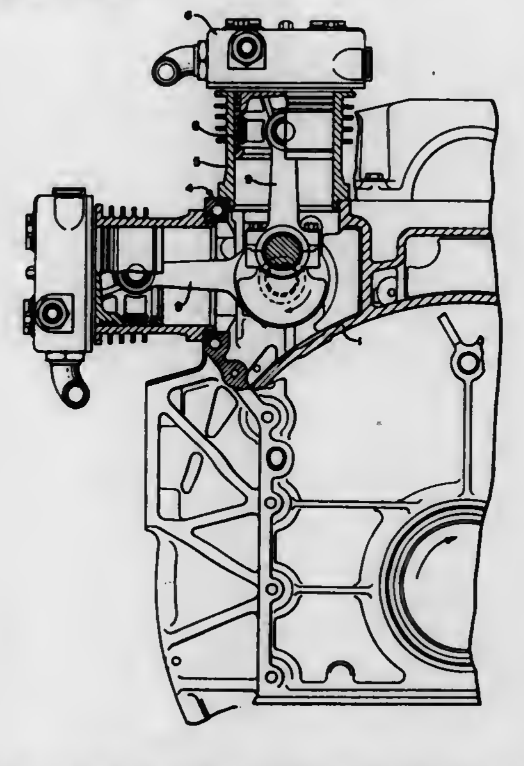
Wolf-Dietrich Körner, Hochberg, Uber Ludwigsburg, and Otto Hartmann, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Jan. 19, 1971, Ser. No. 107,738

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1970, 2002470

Int. Cl.² F04B *35/00, 17/00*

U.S. Cl. 417—364 9 Claims



1. An air compressor arrangement for use with a piston-type internal combustion engine of the type having an engine crankshaft, an engine output side, and a clutch means arranged adjacent the engine output side; said arrangement comprising: control housing means arranged at the output side of the engine between the clutch and the engine, a compressor crankshaft bearing means rotatably supporting said compressor crankshaft in the control housing means, compressor cylinder means including at least one compressor cylinder, compressor piston means including at least one compressor piston drivingly connected to said compressor crankshaft and arranged for reciprocating movement within the respective at least one compressor cylinder in response to rotation of said compressor crankshaft, compressor cylinder connecting means for detachably connecting said compressor cylinder means to said control housing means, and compressor crankshaft driving means operatively connected to the engine crankshaft for rotatably driving said compressor crankshaft, wherein said control housing means is an integral housing structure which accommodates engine auxiliary units such as control wheels for camshafts and the like and an engine flywheel as well as the compressor crankshaft, wherein said compressor crankshaft driving means includes a compressor gear directly and drivingly engaging a camshaft gear of the engine, wherein said compressor gear is attached to a first end of said compressor crankshaft for rotation about the rotational axis of the compressor crankshaft, wherein said bearing means includes a common roller bearing means which supports and centers both said first end and said compressor gear, and wherein said bearing means further includes an anti-friction bearing in supporting engagement with the second end of said compressor crankshaft, wherein means are provided for feeding pressure oil to said anti-friction bearing, wherein connecting rod means are provided for interconnecting said compressor piston means with said compressor crankshaft and wherein oil channels are provided for communicating the pressure oil from the anti-friction bearing to connecting rod bearing means on said connecting rod means.

4,129,405

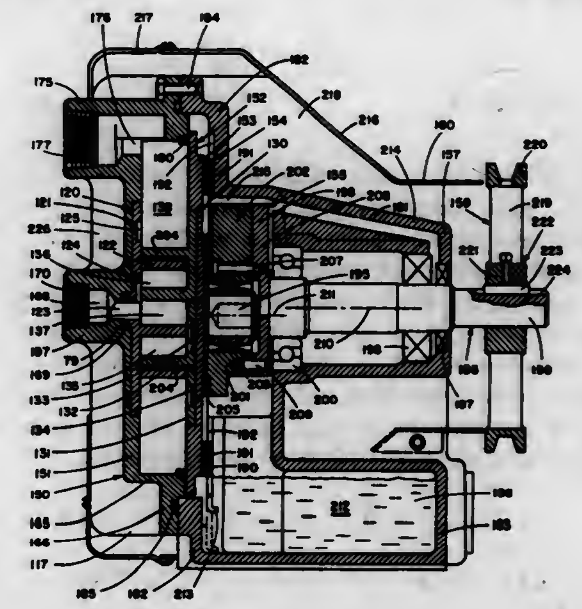
SCROLL-TYPE LIQUID PUMP WITH TRANSFER PASSAGES IN END PLATE

John E. McCullough, Carlisle, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Jun. 17, 1977, Ser. No. 807,413

Int. Cl.² F04C *11/02, 15/02;* **F01C** *21/04, 21/06*

U.S. Cl. 418—55 46 Claims



1. A scroll element suitable for forming a scroll member in a liquid scroll pump, comprising in combination

(a) an end plate;

(b) an involute wrap of one and one-half involute turns affixed to one surface of said end plate; and

(c) recessed liquid transfer passage means cut in said one surface of said end plate, said recessed liquid transfer passage means being defined along one principal boundary by a partial tracing of an involute wrap edge of a mating scroll element.

4,129,406

MOLD FOR THE VULCANIZATION OR RETREADING OF VEHICLE TIRES

Floriano Capecchi, Pistoia, Italy, assignor to CIMA Costruzioni Industriali Metalmeccaniche e Affini S.A.S. di Capecchi Floriano & C., Italy

Continuation-in-part of Ser. No. 740,055, Nov. 8, 1976, abandoned. This application Dec. 7, 1977, Ser. No. 858,374

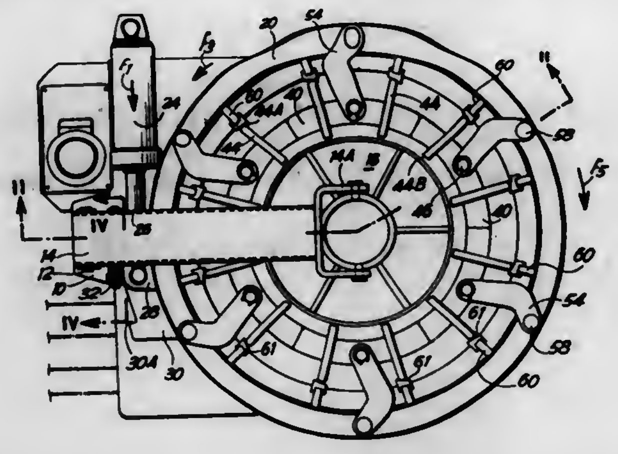
Claims priority, application Italy, Nov. 25, 1975, 9626 A/75; Jul. 12, 1977, 9518 A/77

Int. Cl.² B29H *5/02, 5/08*

U.S. Cl. 425—46 10 Claims

1. A pneumatic tire mold, comprising, in combination, a lower disc-like plate; an upper disc-like plate; an inner chill disposed between said plates to define the inner periphery of a tire-receiving mold cavity; a plurality of outer chill sectors matingly engageable with each other and with said inner chill to define the outer periphery of the mold cavity; means mounting said upper plate for movement relative to said outer chill sectors to open the mold; means mounting said outer chill sectors for guided radial movement relative to said inner chill;

an angularly displaceable, axially fixed operating ring surrounding said outer chill sectors; respective linkages connecting each outer chill sector mounting means to said operating ring and operable, responsive to angular displacement of said operating ring, to move said outer chill sectors radially relative to said inner chill; ring operating control means connected to said operating ring to angularly displace said operating ring; cooperating abutment means on said operating ring and said outer chill sector mounting means interengageable, when the



mold cavity is closed, to resist radial stresses on said outer chill sectors; said cooperating abutment means comprising at least an inclined surface acting as a wedge; and clamping means engageable with said lower and upper disc-like plates, responsive to angular displacement of said operating ring effecting radial movement of said outer chill sectors into engagement with said inner chill, to clamp said plates to resist axial stresses thereon; whereby, during the tire molding operation, no radial stresses are exerted on said linkages and no axial stresses are exerted on said upper plate mounting means.

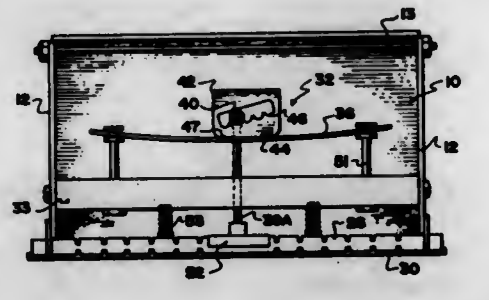
4,129,407
CURVATURE AND PRESSURE REGULATOR FOR TROWELLING BARS OF MASTIC APPLICATOR AND FINISHING TOOLS

John W. Golls, St. Albert, and Peter Griep, Edmonton, both of Canada, assignors to Custom Tool & Die Ltd., Edmonton, Canada

Filed Dec. 13, 1977, Ser. No. 859,998

Int. Cl.² B28B *3/00;* B29C *3/04;* B05C *17/10;* E01C *19/12*

U.S. Cl. 425—87 12 Claims



1. In a mastic applicator and finishing tool movable over a surface for discharging mastic on the surface and which includes a resilient trowelling bar carried by the tool for trowelling a crown on the discharged mastic; the improvement which comprises means to regulate, within limits, the curvature of the trowelling bar, said means including a ramp component mounted for sideways movement relative to said trowelling bar, a notched ramp formed in said component extending at an angle inclined to the longitudinal axis of the trowelling bar and means interposed between said notched ramp and said trowelling bar and selectively engageable with said notched ramp whereby pressure upon said trowelling bar is progressively increased when said notched ramp component is moved sideways in one direction and decreased when said notched ramp component is moved sideways in the opposite direction, said last mentioned means including a resilient strip having a first support means adjacent each end of said strip and a second support means intermediate the ends of said strip, one of said support means being operatively connected to said ramp component, the other of said support means being operatively connected to said trowelling bar.

4,129,408
GAS BURNER LIGHTING DEVICE FOR AN ABSORPTION REFRIGERATING APPARATUS

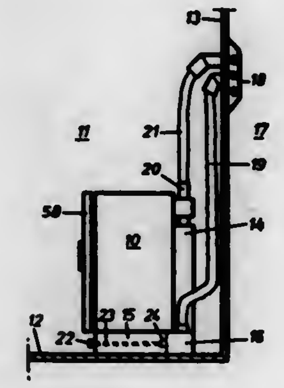
John R. Hammar, Molle, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Oct. 21, 1976, Ser. No. 734,549

Claims priority, application Sweden, Nov. 20, 1975, 75130617

Int. Cl.² F23D *11/36*

U.S. Cl. 431—251 3 Claims



1. In a sealed combustion system having a gas burner, a source of gas supply and a conduit for conducting gas to said burner, a safety shut-off valve for said gas supply provided with a manual disconnecting means, the improvement comprising; a frame, a housing for said gas burner having a door, a spring connected at one end to said frame or housing and at the other end to said door, and a member movable to operate said manual disconnecting means and to open said door of the gas burner housing to the atmosphere against the pressure of said spring, said movable member being a pressure plate that moves to establish communication between said gas burner housing and the atmosphere first before operating said manual disconnect means, the latter permitting a supply of gas to be furnished to said gas burner.

4,129,409
ARSENIC CONTAINING FUELS

Dean A. Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 669,314, Mar. 22, 1976, Pat. No. 4,040,797. This application Apr. 13, 1977, Ser. No. 787,002

Int. Cl.² C10L *9/00*

U.S. Cl. 431—3 9 Claims

1. The process of combusting a solid or liquid hydrocarbonaceous or carbonaceous fuel containing at least 2 ppmw As comprising injecting one or more metallic components selected from the class consisting of the metals and compounds of Mg, Ba, Ni, and Zn into a turbulent stream of said fuel, and subtantially immediately thereafter, combusting said fuel, said injecting being conducted such that a larger proportion of the As contained in said fuel is retained in the ash produced therefrom than is retained when said fuel is combusted alone.

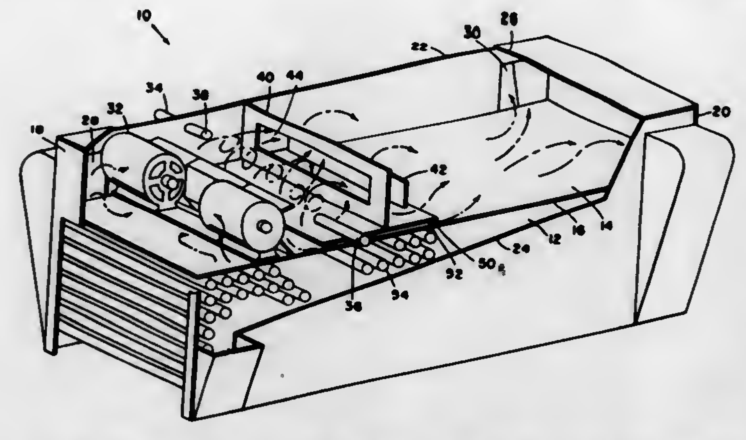
4,129,410
METHOD OF DRYING GYPSUM WALLBOARD AND APPARATUS THEREFOR

Chester R. Nowick, Williamsville, and Alfred de Franza, Buffalo, both of N.Y., assignors to National Gypsum Company, Dallas, Tex.

Continuation-in-part of Ser. No. 668,085, Mar. 18, 1976, Pat. No. 4,050,885. This application Aug. 17, 1977, Ser. No. 825,403

Int. Cl.² F27B *17/00*

U.S. Cl. 432—31 6 Claims



1. The method of drying gypsum wallboard in a wallboard dryer having

(1) a drying section with means for conveying wallboard therethrough at a plurality of spaced apart levels, and

(2) an elongate gas reheating plenum section having elongate exterior walls separating the interior of said plenum from the exterior thereof, having means for moving gases from said dryer section into and on through said plenum and back to said dryer section, and having combustion means in said walls for propelling heated products of combustion, said method comprising the steps of

(a) continuously conveying a plurality of undried gypsum wallboards into and through said drying section at said plurality of levels,

(b) drying said wallboards at an equal rate at all said levels by passing heated gases through said drying section, which said gases are at a uniform temperature throughout as said gases enter said drying section,

(c) providing said uniform temperature heated gases by moving gases from said dryer section through said means for moving gases and from said moving means on through said plenum whereat said means for propelling heated products of combustion directs heated products of combustion crosswise of said plenum at an angle of from about 45° to about 135° to the direction of flow of said gases from said moving means, and mixing said heated products of combustion thoroughly with substantially all of said gases by the turbulence caused by the combination of said combustion and said crossed directions of flow of said products of combustion and substantially all of said gases to be heated, lowering the temperature of said products of combustion to about 550° F. upon being mixed with said gases which intersect with said flow of products of combustion, and

(d) propelling said heated products of combustion by feeding fuel and air through a sonic nozzle, and creating intense sonic waves at the outlet portion of said sonic nozzle whereby said fuel is caused to be divided into extremely fine particles, creating a high intensity flame which contributes to the propelling of said products of combustion.

4,129,411
FLUID DISTRIBUTOR

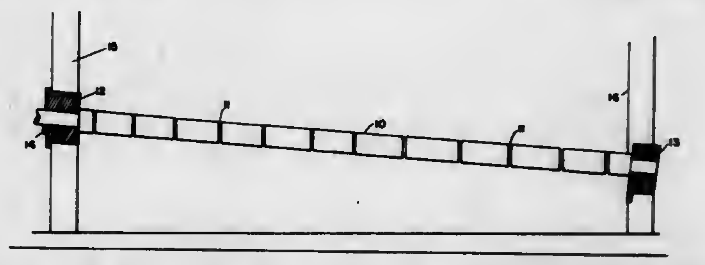
Gerald Moss, Oxford, England, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 679,179, Apr. 22, 1976, abandoned. This application Sep. 15, 1977, Ser. No. 833,672

Claims priority, application United Kingdom, Apr. 24, 1975, 17032/75

Int. Cl.² F27B *15/00*

U.S. Cl. 432—58 10 Claims



1. A distributor for distributing a fluid substantially uniformly from an upstream side thereof to a downstream side, the distributor transversely disposed of the fluid passing from said upstream to said downstream side and comprising a plurality of elongate cylindrical members arranged in side-by-side contiguous relationship with the longitudinal axes of adjacent members being substantially parallel to each other, contiguous parts of the surfaces of adjacent members being disposed in mutual contact, at least some of the elongate members having circumferential recesses in their surfaces such that each said recess defines with a contiguous surface portion of an adjacent contacting elongate member an aperture for the passage of fluid from said upstream side to said downstream side, at least some of said elongate members being mounted for rotation about their respective longitudinal axes, drive means operatively connected with the rotatable elongate members for rotating said rotatable elongate members about their longitudinal axes, and deposit-removing means mounted and arranged for being at least partly received in said apertures at least intermittently for removing material deposited in said apertures.

4,129,412

BRIGHTENER MIXTURES AND THEIR USE

Dieter Günther, Kelkheim; Erich Schinzel; Rüdiger Erckel, both of Hofheim am Taunus, and Gunter Rösch, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

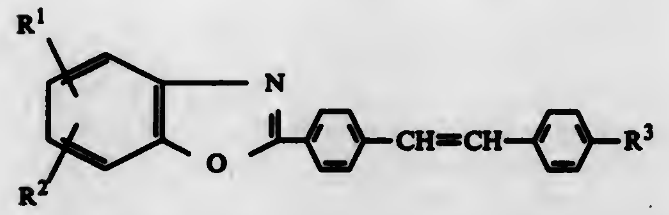
Filed Jun. 28, 1977, Ser. No. 811,145

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1976, 2629703

Int. Cl.² D06P *1/38*

U.S. Cl. 8—1 W — 3 Claims

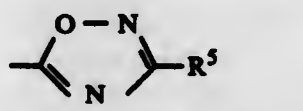
1. Mixtures of optical brighteners containing from 0.05 to 1 part by weight of a compound of the general formula



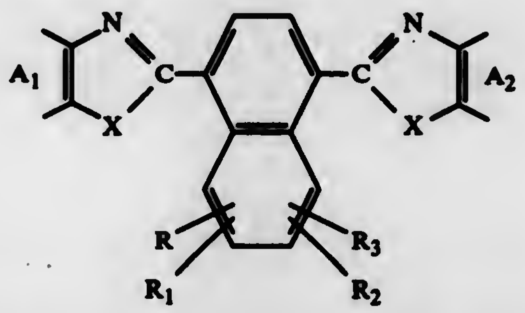
(I)

in which R^1 and R^2 may be identical or different and represent hydrogen, fluorine, chlorine, bromine, alkyl, alkoxy, dialkylamino, trialkylammonium, alkanoylamino, cyano, carboxyl, carboalkoxy, carboalkoxyalkoxy, carbophenoxy, or carbonamide, two adjacent radicals R^1 and R^2 together possibly also forming a benzo ring, an alkylene or a 1,3-dioxapropylene group,

and R^3 stands for hydrogen, cyano, a group of the formulae $COOR^4$ or $CONR_2{}^4$, wherein R^4 represents hydrogen, alkenyl, alkyl(C_1–C_{18}), cycloalkyl, aryl, alkylaryl, halogenoaryl, aralkyl, alkoxyalkyl, halogenoalkyl, hydroxyalkyl, alkylaminoalkyl, carboxyalkyl, or carboalkoxyalkyl, or two alkyl groups bound to the carbonamide group may together also form a morpholine, piperidine or piperazine ring, or R^3 represents a group of the formula



in which R^5 represents straight-chain or branched alkyl groups having 1 to 6 carbon atoms, which may be substituted by halogen atoms, dialkylamino, aryloxy, alkylmercapto or arylmercapto groups or aryl radicals, a phenyl, alkylphenyl or alkoxyalkyl group, a group of the formula $—(CH_2CH_2O)_n—R$, wherein R equals lower alkyl and n is 2 or 3, a dialkylaminoalkoxyalkyl or alkylthioalkoxyalkyl group or those dialkylaminoalkoxyalkyl groups in which the two alkyl groups may together form a piperidine, pyrrolidine, hexamethylene-imine, morpholine or piperazine ring, and from 1 to 0.05 part by weight of a compound of the general formula



in which A_1 and A_2 represent, independently of each other, unsubstituted or non-chromophoric substituted ring systems fused to the azole ring of benzene, naphthalene or tetrahydronaphthalene,

R represents halogen, alkyl of 1 to 12 carbon atoms, alkoxy of 1 to 18 carbon atoms, alkenyl of 3 or 4 carbon atoms, cyano, cycloalkyl, phenylalkyl of 1 to 4 carbon atoms in the alkyl moiety, aralkoxy of 1 to 4 carbon atoms in the alkoxy moiety, phenyl, phenoxy, arylsulfonyl, alkylsulfonyl of 1 to 8 carbon atoms, $—SO_2NY_1Y_2$, wherein Y_1 and Y_2 — independently of each other — stand for hydrogen or optionally substituted alkyl of 1 to 8 carbon atoms, or Y_1 and Y_2 — together with the nitrogen atom to which they are bound — form a heterocyclic ring which may optionally show further hetero atoms in the ring and which may optionally be substituted, SO_3M, in which M stands for hydrogen or a salt-forming cation, or —COOY, wherein Y stands for hydrogen, a salt-forming cation, alkyl of 1 to 8 carbon atoms, or together with R_1 makes up a fused benzene ring,

R_1 represents hydrogen, halogen, alkyl of 1 to 12 carbon atoms, alkoxy of 1 to 18 carbon atoms, alkenyl of 3 or 4 carbon atoms or aralkoxy of 1 to 4 carbon atoms in the alkoxy moiety, or together with R makes up a fused benzene ring,

R_2 represents hydrogen, halogen or alkyl of 1 to 12 carbon atoms,

R_3 represents hydrogen or halogen, and

X represents oxygen or =N—Z, wherein Z stands for hydrogen, alkyl of 1 to 4 carbon atoms, which may be unsubstituted or substituted by hydroxy or cyano, alkenyl of 3 or 4 carbon atoms, aralkyl of 1 to 4 carbon atoms in the alkyl moiety, or alkanoyl of 2 to 5 carbon atoms.

4,129,413

OXIDATION HAIR DYES BASED UPON TETRAAMINOPYRIMIDINE DEVELOPERS AND MONO- AND DIALKYL -M- DIHYDROXY BENZENE COUPLERS

David Rose, Hilden; Erwin Weinrich, Haan, and Edgar Lieske, Dusseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf, Fed. Rep. of Germany

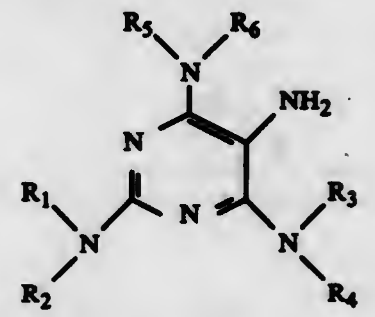
Filed Apr. 14, 1977, Ser. No. 787,465

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1976, 2617739

Int. Cl.² A61K *7/13;* D06P *1/32*

U.S. Cl. 8—10.2 — 16 Claims

1. A composition of the developer-coupler type for the dyeing of hair, consisting essentially of, as developer, (A) a tetraaminopyrimidine of the formula



wherein R_1, R_2, R_3, R_4, R_5 and R_6 are each selected from the group consisting of hydrogen, phenyl, alkyl having 1 to 4 carbon atoms, phenylalkyl having 7 to 10 carbon atoms, phenylalkenyl having 7 to 10 carbon atoms,

$X—(CH_2)_n—$

wherein n is an integer from 1 to 4, and X is selected from the group consisting of hydroxyl, halogen and NR_7R_8— in which R_7 and R_8 are each hydrogen or alkyl having 1 to 4 carbon atoms, and together with the nitrogen atom R_7 and R_8 form a member selected from the group consisting of a 5 to 6 membered heterocyclic ring optionally containing an additional nitrogen atom or oxygen atom, and wherein R_1 and R_2, or R_3 and R_4, or R_5 and R_6, together with the nitrogen atom form a five to six membered heterocyclic ring optionally containing another nitrogen or oxygen atom in the ring, or (B) a water-soluble acid addition salt of (A), or a mixture of said tetraaminopyrimidines, and, as coupler, a mono- and/or di-alkyl-m-dihydroxybenzene, wherein the alkyl radical has 1–4 carbon atoms, or a mixture of said m-dihydroxybenzenes, said developer and said coupler being present in the molar range of about 2:1 to 1:2.

4,129,414

OXIDATION HAIR COLORANTS CONTAINING WATER-SOLUBLE POLYHALOGEN 3-AMINOPHENOLS AS COUPLERS

David Rose, Hilden; Ferdi Saygin, Erkrath, and Edgar Lieske, Dusseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Germany

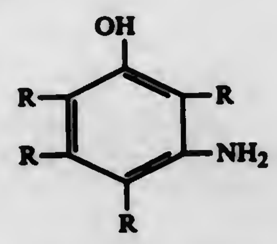
Filed Feb. 26, 1976, Ser. No. 661,548

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1975, 2509096

Int. Cl.² A61K *7/13*

U.S. Cl. 8—10.2 **21 Claims**

1. An oxidizable developer-coupler combination for use in the dyeing of hair, comprising a water-soluble polyhalogen 3-aminophenol of the formula:



wherein two or three of the R's are halogen and the other R or R's are hydrogen, as the coupler, and a developer therefor.

4,129,415

METHOD FOR REMOVING PERMANENT DYES FROM HAIR AND OTHER KERATINACEOUS MATERIALS

Morton A. Westman, Fort Lee, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 732,618, Oct. 15, 1976, abandoned. This application Jan. 18, 1978, Ser. No. 870,303

Int. Cl.² D06L *3/00*

U.S. Cl. 8—102 **4 Claims**

1. A method for the removal of permanent oxidation-type dyes from hair and other keratinaceous materials which comprises treating said dyed hair with a dilute solution of dichloro-s-triazine-2,4,6-trione for a period of about 5 to 20 minutes; rinsing said solution from the hair with water; treating the hair with a dilute solution of sodium bisulfite for a period of about 5 to 20 minutes; and thoroughly rinsing said treated hair with water.

4,129,416

PROCESS FOR SHRINKING NYLON FABRICS

Roxanne L. Bennett, Mountville, and James A. Tahudy, Ephrata, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Jun. 28, 1977, Ser. No. 810,852

Int. Cl.² B05D *5/00;* **D06M** *3/16*

U.S. Cl. 8—115 **15 Claims**

1. A method for longitudinally contracting fibers of nylon in textile fabrics comprising the steps of:
- (a) applying to defined areas of said textile fabric a nylon textile fabric contracting agent comprising
  - (1) ammonium nitrate or a metal nitrate,
  - (2) an inorganic acid, an organic carboxylic acid, an organic sulfonic acid, an anhydride of said acids or mixtures thereof, and
  - (3) a halo, C_6 to C_{14} carboxylic aryloxy or C_1 to C_4 linear or branched alkoxy substituted C_1 to C_4 linear or branched aliphatic alcohol or mixtures thereof;
- (b) heating said fabric of step (a) to a temperature of from about 200° F. to about 400° F. for a period sufficient to initiate said longitudinal contraction of said fibers of nylon in said textile fabric;
- (c) removing substantially all of the contracting agent from said textile fabric, thereby resulting in a wet textile fabric; and,
- (d) drying the textile fabric of step (c), thereby further longitudinally contracting said fibers of nylon in said textile fabric.

4,129,417

MULTISYSTEM TEST MEANS

William I. White, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 28, 1977, Ser. No. 846,441

Int. Cl.² G01N *33/16*

U.S. Cl. 23—230 B **34 Claims**

1. A multisystem test composition effective for the determination of a sample constituent in a single operation comprising:
- at least one component reactive upon a single contact to chemically alter said sample constituent under reaction conditions incompatible with production of a detectable response, and
- at least one additional component effective upon said single contact with said sample to change reaction conditions after a time sufficient for reaction of said first component with said sample constituent from those incompatible with the production of a detectable response to those compatible with such a detectable response.

26. A method for determination of a constituent in a sample requiring reaction systems which are effective under different reaction conditions which method comprises contacting the sample with the composition of claim 1 and observing any detectable reaction.

4,129,418

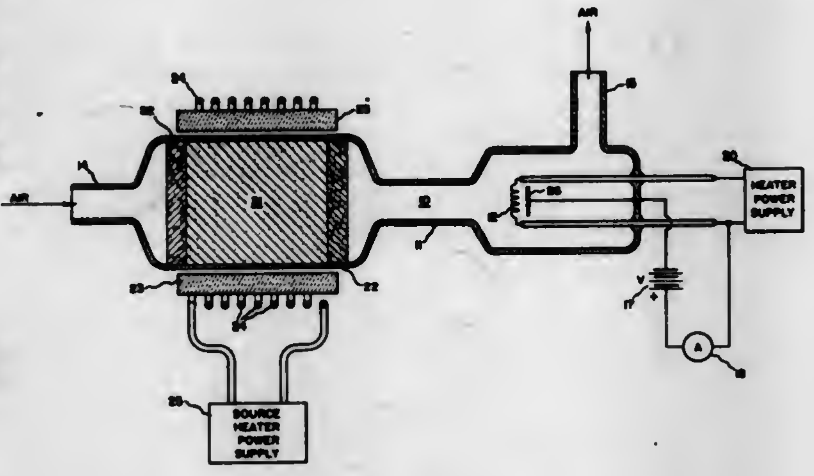
DISCRIMINATING HALOGEN SENSOR

William D. Davis, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 21, 1978, Ser. No. 879,157

Int. Cl.² G01N *27/62*

U.S. Cl. 422—98 **9 Claims**



1. A discriminating halogen detector comprising:
- an envelope with an air inlet and an air outlet at substantially opposite ends thereof, said envelope enclosing a source region and an electrode region, said source region being proximal to the air inlet and said electrode region being proximal to the air outlet, said source region internally communicating with said electrode region;
- an alkali metal compound source contained in said source region;
- means to independently heat said source region;
- a heated anode disposed in said electrode region capable of ionizing alkali vapors generated by said alkali metal compound source; and
- a cathode disposed in said electrode region adjacent to but not contacting said anode, whereby ions generated at the heated anode migrate to said cathode thereby forming a detectable current in an external circuit in response to halogens contained in air passing through the source region of the detector.

4,129,419

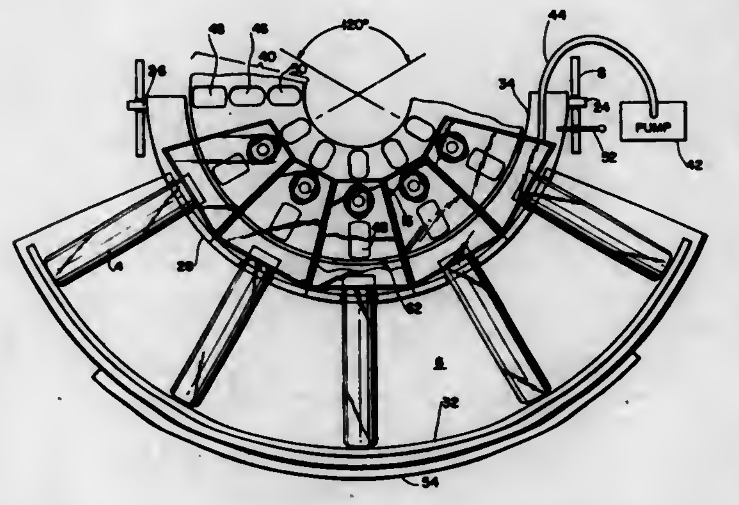
DISPOSABLE LABORATORY DEVICE FOR TRANSFER OF FLUIDS TO A CENTRIFUGAL ANALYZER HEAD

William J. Hermann, Jr., Houston, Tex., assignor to Jocelyn Dickson, Potomac, Md., a part interest

Continuation-in-part of Ser. No. 734,950, Oct. 22, 1976, Pat. No. 4,086,060. This application Apr. 14, 1978, Ser. No. 896,548

Int. Cl.² G01N *1/14*

U.S. Cl. 422—64 **16 Claims**



1. A disposable laboratory device for transferring fluids from at least one primary container to an associated well in a centrifugal analyzer head, comprising:
- (A) an arcuately extending enclosure defining at least one radially disposed compartment therein, wherein said compartment is adapted to maintain fluid therein separate from any adjacent compartments, said enclosure having a first radially outermost surface adapted to receive an open end of a radially disposed primary container for flow communication into an associated compartment within said enclosure, and;
- (B) a second surface on said enclosure, said second surface including an outlet means operable for a selective outlet flow communication from each compartment to an associated well in a centrifugal analyzer head when said second surface is positioned substantially horizontal and above a centrifugal analyzer head which is in a registration position, and;
- (C) means for delivering a selectively controlled volume of pressurized gas to said at least one compartments, whereby said pressurized gas is operable to transfer a selective volume of fluid, which has flowed into any compartment from an associated primary container, from said any compartment into a well which is in registration with the outlet means of said compartment, wherein said outlet means further includes fluid valve means operable to close said outlet flow communication when all of the fluid within a given compartment has been so transferred to the well in registration therewith.

4,129,420

PROCESS FOR MAKING COKE FROM CELLULOSIC MATERIALS AND FUELS PRODUCED THEREFROM

Edward Koppelman, 4424 Bergamo Dr., Encino, Calif. 91316

Continuation-in-part of Ser. No. 648,170, Jan. 12, 1976, Pat. No. 4,052,168. This application Sep. 7, 1977, Ser. No. 831,343

The portion of the term of this patent subsequent to Oct. 4, 1994, has been disclaimed.

Int. Cl.² C10L *1/32, 9/08;* **C10B** *51/00*

U.S. Cl. 44—51 **12 Claims**

1. A process for converting cellulosic feed materials into a useful solid fuel which comprises the steps of charging the cellulosic feed material into an autoclave, heating said feed material to an elevated temperature of at least about 750° F. up to about 1250° F. and pressure of at least about 1000 psi for a period of time to convert the moisture and at least a portion of the volatile organic constituents therein into a gaseous phase and to effect a partial thermal restructuring of the chemical structure thereof and a change in its chemical composition to produce a solid reaction product, and thereafter cooling said reaction product and recovering the upgraded solid coke product.

11. A liquid fuel comprising a mixture of a residual fuel oil and a wood coke particulate solid fuel produced in accordance with the process as defined in claim 1, said wood coke solid fuel present in an amount of from about 1% up to about 50% by weight of the fuel slurry, said wood coke being present in the form of suspended particles substantially uniformly distributed and having an average particle size of less than about 48 mesh.

4,129,421

CATALYTIC FUEL ADDITIVE FOR JET, GASOLINE, DIESEL, AND BUNKER FUELS

Harry M. Webb, Toronto, Canada, assignor to Natural Resources Guardianship International, Inc., Clayville, N.Y.

Continuation-in-part of Ser. No. 783,777, Apr. 1, 1977. This application Jun. 24, 1977, Ser. No. 809,864

The portion of the term of this patent subsequent to Jul. 11, 1995, has been disclaimed.

Int. Cl.² C10L *1/22*

U.S. Cl. 44—56 **9 Claims**

1. A fuel additive for jet, internal combustion, and diesel engines consisting of an active ingredient formulation comprising a mixture of picric acid and ferrous sulfate in a relationship of picric acid:ferrous sulfate of about 17:1 to 70:1 in a combination alcohol solvent of methanol, ethanol, isopropanol, and toluene and water.

4,129,422

COAL GASIFICATION PLANT

Andrew Wood, Dunfermline, Scotland, assignor to British Gas Corporation, London, England

Filed Feb. 23, 1977, Ser. No. 771,330

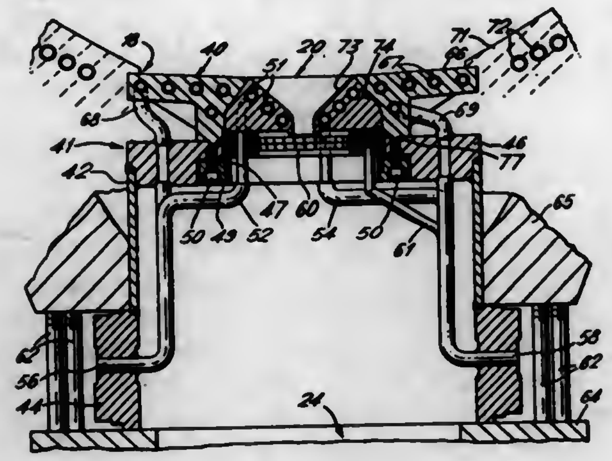
Claims priority, application United Kingdom, Mar. 22, 1976, 11445/76

Int. Cl.² B01J *3/00*

U.S. Cl. 48—62 R **7 Claims**

1. In a coal slagging gasifier comprising: a gasifying vessel; means for introducing coal into said vessel for gasification thereof in said vessel; means for introducing oxygen and steam into said vessel to effect gasification of coal therein; and a hearth located at the bottom of said vessel and including a slag tap orifice located centrally within said hearth for removing slag from the vessel; the improvement wherein said hearth further includes means for defining a removable annular hearth member located so as to fit over and around said slag tap orifice and comprising a solid mass of high thermal conductivity material having means defining an integrally formed passageway for circulating a coolant liquid at a pre-determined rate of flow through said mass, and means defining an inlet and

outlet communicating said passageway exteriorly of the mass, whereby in operation of the gasifier the exposed surfaces of the



mass in direct contact with the molten slag are maintainable at a temperature within the range 200° C. to 400° C.

4,129,423

STABLE LIQUID ABRASIVE COMPOSITION SUITABLE FOR REMOVING MANGANESE-ION DERIVED DISCOLORATIONS FROM HARD SURFACES

Fred K. Rubin, Leonia, N.J., assignor to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 679,521, Apr. 23, 1976, Pat. No. 4,049,467. This application Apr. 22, 1977, Ser. No. 790,124

The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.

Int. Cl.² B08B *3/08*

U.S. Cl. 51—304 **5 Claims**

1. A pourable liquid, abrasive, stain removing composition, comprising:

- (A) a solid phase, comprising about 5 to about 65 percent, by weight of said composition, of a substantially water insoluble, abrasive material selected from the group consisting of calcite, dolomite, feldspar, silica flour, quartz, pumice, polishing clays and mixtures thereof, dispersed and suspended in;
- (b) a stabilizing aqueous liquid phase, comprising
  - (i) about 1 to about 20 percent of a tertiary surfactant mixture, said mixture consisting essentially of:
    - (a) about 0.25 to about 10 percent, by weight of said composition, of an alkylaryl sulphonate synthetic anionic surfactant;
    - (b) about 0.25 to about 10 percent, by weight of said composition, of a soap wherein said soap is an alkali metal salt of a ten to twenty-two carbon fatty acid; and
    - (c) about 0.50 to about 10 percent by weight of said composition, of a fatty acid alkanolamide, nonionic surfactant wherein the fatty acid moiety of said amide contains about 8 to about 18 carbon atoms;

wherein the ratio of said soap to said synthetic anionic in said mixture is about 1:3.2 to about 1:0.8, and wherein the ratio of said synthetic anionic surfactant plus said soap to said nonionic surfactant is about 0.6:1 to about 1:0.9; and

  - (ii) about 3 to about 20 percent of an electrolyte system comprising at least one electrolyte selected from the group consisting of dihydroxymaleic acid, of an alkali metal salt of dihydroxymaleic acid, dihydroxytartaric acid, an alkali metal salt of tartaric acid, and mixtures thereof.

4,129,424

GAS SEPARATION

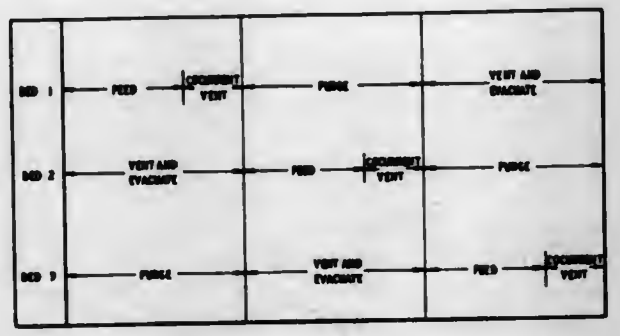
John W. Armond, Great Bookham, England, assignor to BOC Limited, London, England

Filed May 5, 1977, Ser. No. 794,141

Claims priority, application United Kingdom, May 7, 1976, 18926/76

Int. Cl.² B01D *53/00*

U.S. Cl. 55—25 **8 Claims**



1. A method for increasing the proportion of a gas in a gaseous mixture of which it is a constituent, which method consists essentially of sequentially contacting the gaseous mixture with a bed of adsorbent which preferentiallly adsorbs said gas, purging the bed of adsorbent with said gas or a gas stream, which has a higher proportion of said gas than said gaseous mixture, at a pressure substantially equal to the partial pressure of said gas in the gaseous mixture before contact thereof with the bed of adsorbent, and then regenerating the bed to recover a gaseous product enriched in said gas.

4,129,425

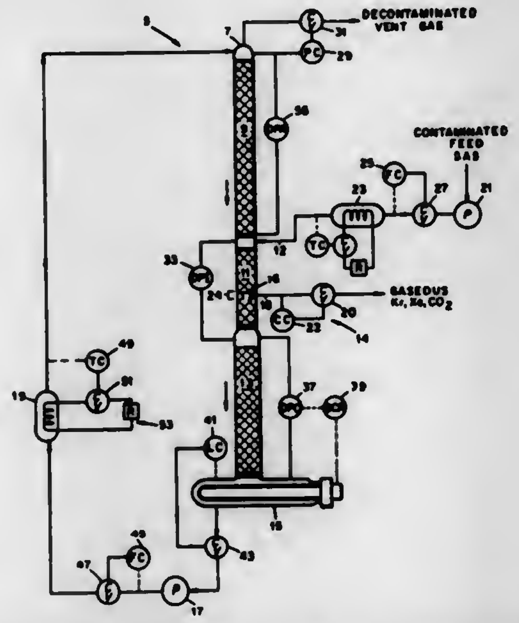
GAS-ABSORPTION PROCESS

Michael J. Stephenson, and Robert S. Eby, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 18, 1977, Ser. No. 816,575

Int. Cl.² B01D *53/16*

U.S. Cl. 55—44 **10 Claims**



1. In a process wherein a liquid phase is withdrawn from a first liquid-gas contacting zone for effecting preferential absorption of a selected component of a feed-gas mixture in a liquid absorbent and is passed downwardly through second and third liquid-gas contacting zones, the liquid-phase input to the second zone comprising said liquid containing absorbent in solution said gaseous component and at least one less-soluble, diluent gas, said liquid-phase input being contacted in the second zone with a warmer, upflowing gas phase derived from the third zone, said gas phase comprising vapor of said liquid

absorbent and a lesser amount of gas desorbed from said liquid absorbent; the method of recovering said component as a gas, comprising:

- (a) establishing a peak concentration of said component in a section of the second zone by
  - (1) maintaining the temperature of the liquid-phase input to the second zone at a sufficiently lower value than the temperature of said upflowing third-zone-derived gas-phase input to the second zone to effect, in said section, condensation of a major fraction of the absorbent-vapor upflow into said section; and
  - (2) maintaining below said section stripping factors of less than one for said component and for gases less soluble than said component while maintaining above said section stripping factors of more than one for said component and less than one for less-soluble gases; and
- (b) withdrawing gas rich in said component from said section.

6. A process for recovering a selected component from a feed-gas mixture containing the same, said process comprising:

- (a) providing a liquid-gas contacting column defining an upper zone, an intermediate zone, and a lower zone;
- (b) passing a stream of a liquid absorbent for said component downwardly through the zones of said column, said zones being maintained at approximately the same superatmospheric pressure and at least part of said lower zone being maintained at the boiling point for said absorbent at the pressure prevailing in said column;
- (c) in said upper zone, countercurrently contacting said liquid absorbent with said feed gas mixture;
- (d) in said intermediate zone, countercurrently contacting the resulting gas-enriched liquid absorbent with desorbed gases and absorbent vapor derived from said lower zone;
- (e) in said lower zone, countercurrently contacting the liquid absorbent from the intermediate zone with absorbent vapor and desorbed gases obtained by boiling the liquid absorbent downflow through said lower zone;
- (f) maintaining the temperatures and flow rates of the countercurrent liquid- and gas-phase inputs to said intermediate zone at values effecting, in a section of said intermediate zone, condensation of a major fraction of the absorbent-vapor upflow into said section, while maintaining below said section stripping factors of less than one for said components and for gases less suitable than said component and above said section stripping factors of more than one for said component and less than one for gases less soluble than said component, thus concentrating said component as in said section, and
- (g) withdrawing gas enriched in said component from said section.

4,129,426

DEVICE FOR CLEANING WORKSHOP AIR

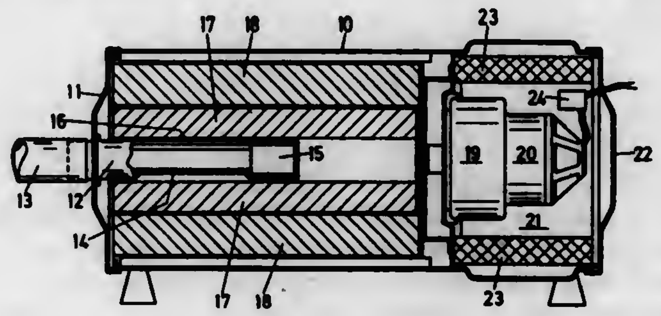
Willy Furåsen, Kungälv, Sweden, assignor to Flex Ake Wennberg AB, Karlstad, Sweden

Filed Jul. 29, 1977, Ser. No. 820,371

Claims priority, application Sweden, Aug. 10, 1976, 7608901

Int. Cl.² B01D *50/00*

U.S. Cl. 55—217 **3 Claims**



1. A device for cleaning workshop air comprising:

- (a) a casing having an inlet at one end thereof and an outlet at the other end thereof;
- (b) means for separating and collecting large particles and arresting sparks located at the inlet end of the casing;
- (c) a fan and an electric motor driving the same located at the outlet end of the casing;
- (d) a mechanical filter located within said casing downstream of and communicating with said spark arresting means and upstream of said fan;
- (e) filter means containing active carbon located at the outlet end of the casing downstream of said motor; and
- (f) conduit means within said casing for directing air from said mechanical filter to said fan past said motor to said active carbon-containing filter means;
- (g) whereby the air being filtered, after passing through said spark arresting means and said mechanical filter and said fan, is heated by passing over said motor before passing through said active carbon-containing filter means.

4,129,427

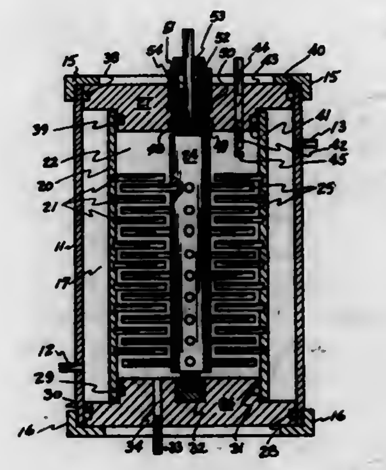
APPARATUS FOR CONTACTING AN AEROSOL STREAM WITH A LIQUID

James L. Harris, Westfield, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Oct. 11, 1977, Ser. No. 840,864

Int. Cl.² B01D *47/02*

U.S. Cl. 55—247 **13 Claims**



1. Apparatus for effecting removal of components from an aerosol stream by intimately contacting said stream with an agitated liquid medium which apparatus comprises:

- (a) a vessel of substantially circular cross section having side walls and first and second end closures in sealing engagement with the side walls with at least one of said end closures being removable;
- (b) a plurality of rod-like projections rigidly secured to and extending radially inwardly from the side walls of said vessel at predetermined locations;
- (c) a rotatably supported shaft concentrically positioned within said vessel and provided with a plurality of finger-like appendages rigidly secured thereto and extending radially outwardly from predetermined locations on the sides of the shaft;
- (d) support means for maintaining the position of said shaft in concentric relationship with respect to the axis of the vessel that is perpendicular to the circular cross section of the vessel and for restricting axial movement of said shaft so that the finger-like appendages intermesh with the rod-like projections in non-contacting relationship during rotation of said shaft;
- (e) a liquid medium disposed in said vessel;
- (f) inlet and outlet means for passing an aerosol stream through said vessel and for introducing the liquid medium into the vessel; and
- (g) means for rotating said shaft at a rotational speed that is

effective for removing components from the aerosol stream.

4,129,428
COMPACT FILTER MOUNTED IN A CASSETTE FRAME

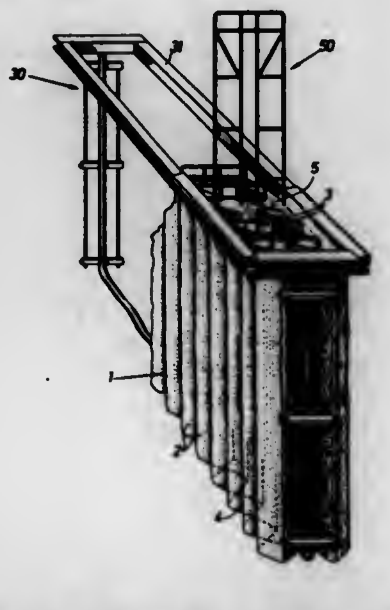
Rune S. Andersson, and Svante O. Berglund, both of Växjö, Sweden, assignors to Aktiebolgatet Svenska Flaktfabriken, Nacka, Sweden

Filed Aug. 29, 1977, Ser. No. 828,427

Claims priority, application Sweden, Aug. 31, 1976, 7609624

Int. Cl.^{2} B01D *46/02*

U.S. Cl. 55—379 6 Claims



1. For use in a filter housing, at least one filter cassette, a bag-type filter element supported in said cassette, said filter element comprising a plurality of filter bags forming gas passageways which, at their lower ends are closed, and at their upper ends form a common gas opening, said element having collar means extending outwardly therefrom around said upper end to comprise means for fastening the filter element in the cassette, said cassette having a rectangular frame surrounding said upper end and underlying said collar means, said frame adapted to connect said opening with the filter housing and comprising four channel elements of U-shaped cross-section facing with the groove opening outwardly, two of said channel elements at the outer edges having lips directed toward each other and forming a gap therebetween of a width smaller than the width of the groove, said collar means extending about the periphery of the opening being folded over the upper sides of the channel elements and into the grooves thereof, and the collar means of the filter element being formed with sleeves for the sides associated with the said two channel elements provided with lips, two L-shaped locking rods having two legs of a thickness less than the width of the groove, each inserted with one leg in one of said sleeves to lockingly retain said sleeve in the respective channel element provided with lips, the other locking rod leg, with the collar wrapped partially around it, being lockingly pressed into the groove of the adjacent channel element in such a manner than an efficient detachable locking of the filter element to the cassette frame is obtained, said collar means forming a seal between the upper surface of the channel element and the filter housing.

4,129,429
DUAL ELEMENT AIR FILTER

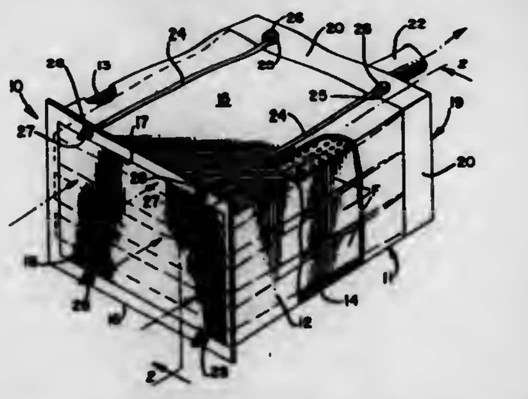
Kingsley E. Humbert, Jr., Gastonia, N.C., and Lewis J. Judah, Meeker, Okla., assignors to Wix Corporation, Gastonia, N.C.

Filed Jun. 30, 1977, Ser. No. 811,594

Int. Cl.^{2} B01D *46/02*

U.S. Cl. 55—484 8 Claims

1. An air filter, comprising: a frame having a pair of channel shaped side walls, each side wall having a web portion and a pair of flanges connected to said web portion, said flanges defining a frame top and a frame bottom, respectively, said top and bottom each having an air inlet opening defined therein and being spaced apart to define a thickness for said frame, said frame further including an imperforate front wall, and a frame back including an end wall having a plurality of air openings defined therein, said front wall and back being spaced apart to define a length for said frame, said air openings in said frame back end wall forming a filter outlet for passing filtered air out of the air filter, said side walls being spaced apart imperforate and extending from the front wall to the frame back at opposite sides of the frame; first and second pleated air filter elements mounted on said frame side wall defining channels, said first filter element being located at said frame top, and said second filter element being located at said frame bottom, extending, respectively, from the top of the front wall to the top of the frame back, and from the bottom of the front wall to the bottom of the frame back, said pleated elements each having a top surface and a bottom surface and a pair of sides with said side wall defining channels being located on the outside of said filter element sides, said pleated filter elements being separate from each other and spaced apart from one another along the entire length thereof and defining an outlet space therebetween communicating with said filter outlet defined in said frame back end wall; perforate cover sheets mounted on each of said pleated element top and bottom surfaces, said perforate cover sheets defining air passages for the air filter for passing air to be filtered from said air inlet openings through said pleated elements and into said outlet space; and a plurality of reinforcing means in the filter between the pleated filter elements, said plurality of reinforcing means including a pair of side reinforcing means each located between said perforate cover sheets and near said filter element sides and said frame side wall defining channel webs and an intermediate reinforcing means located intermediate said filter element sides to support said filter elements near the middles thereof, and adhesive means securing said side reinforcing means to said frame side wall defining channel webs, said reinforcing means contacting the cover sheets of both said filter elements for supporting said filter elements in spaced relation and extending from said front wall to said frame back to contact both said filter elements for the entire length thereof to support said filter elements for the entire length and thickness of said frame thereby strengthening the entire frame sufficiently to enable the air filter to support the weight of a man thereon.



4,129,430
FILTER ASSEMBLY

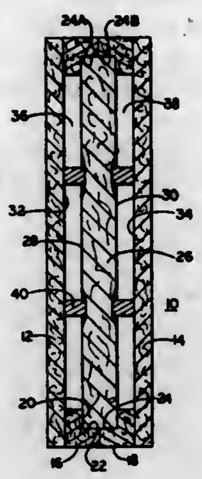
Charles L. Snow, 4900 Spring Grove Ave., Cincinnati, Ohio 45232

Filed Apr. 11, 1977, Ser. No. 786,341

Int. Cl.^{2} B01D *46/00*

U.S. Cl. 55—485 1 Claim

1. A filter assembly which comprises a pair of flat fibrous dimensionally stable resin-impregnated first stage filter members, means for supporting the first stage filter members in spaced parallel relation, means for supporting a flat fibrous second stage filter member in parallel relation with and between the first stage filter members, means surrounding the second stage filter member and forming plenum chambers between the second stage filter member and the first stage members, the means supporting the first stage filter members in spaced relation including a pair of ring members defining a frame, there being an inwardly directed groove in the frame an outer edge portion of the second stage filter member being mounted in the groove, edge portions of the first stage filter members bearing on the sides of the frame and a plurality of spacer members between sides of the second stage filter member and opposed sides of the first stage filter members to hold the second stage filter member in spaced relation to the first stage filter members, the spacer members and the ring members holding the second stage filter member spaced from the first stage filter members.



4,129,431
CRYOTHERMAL MANIPULATION OF PETROLEUM

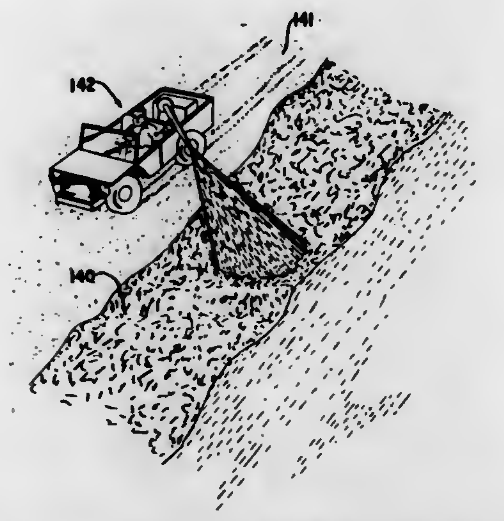
Sigmund L. Ross, Bronx, N.Y., and Oscar Shuffman, deceased, late of Scarsdale, N.Y., assignors to Rose Shuffman, executrix u/w Oscar Shuffman, deceased, Scarsdale, N.Y.

Division of Ser. No. 246,960, Apr. 24, 1972, Pat. No. 4,031,707.

This application Jan. 26, 1977, Ser. No. 762,657

Int. Cl.^{2} F25C *1/00*

U.S. Cl. 62—66 3 Claims



1. A method for recovering a body of petroleum constituting an oil spill on a sandy surface comprising the steps of:

providing a mass of material at a cryothermal temperature corresponding to the freezing point of water at sea level or lower, which cryothermal temperature is lower than the temperature of said body of petroleum;

spraying said mass of material onto said sandy surface so as to increase the surface tension of said body of petroleum thereby causing the latter to rise to the upper surface of said sandy surface; and

removing said body of petroleum from said sandy surface.

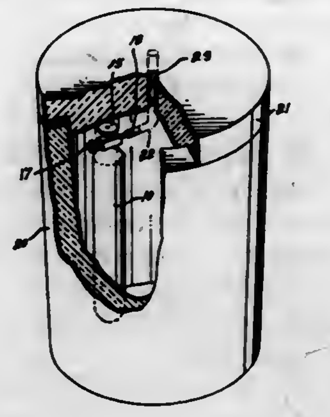
4,129,432
EXPENDABLE REFRIGERATION SYSTEM

David Garside, Rosemere, Canada, assignor to Garwall Cooling Limited, Montreal, Canada

Filed May 4, 1977, Ser. No. 793,646

Int. Cl.^{2} F25D *3/10*

U.S. Cl. 62—222 8 Claims



1. In combination with a refrigeration chamber having an insulated storage compartment,

a pressurized uninsulated liquid carbon dioxide storage reservoir within the storage compartment, said liquid storage reservoir having a gaseous space,

a vent from the gaseous space,

and a pressure relief valve in the vent adapted to maintain a substantially constant pressure within the liquid storage reservoir, such that the temperature of the liquid carbon dioxide within the storage reservoir is controlled and is below the desired temperature within the insulated storage compartment.

4,129,433
FABRICATION OF AN OPTICAL FIBER WAVEGUIDE WITH PERIODIC VARIATIONS IN DIAMETER

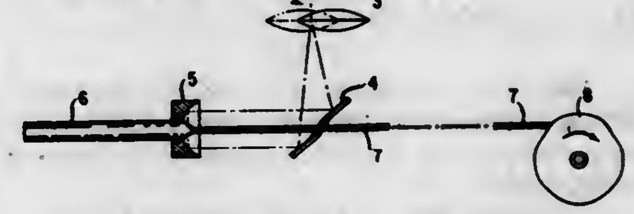
Raymond E. Jaeger, Basking Ridge, and Herman M. Presby, Highland Park, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 732,344, Oct. 14, 1976, abandoned.

This application Apr. 12, 1978, Ser. No. 895,816

Int. Cl.^{2} C03B *37/00*

U.S. Cl. 65—2 7 Claims



1. A method of fabricating an optical fiber with periodic diameter variations along the length of the fiber comprising:

focusing light emitted from a laser onto the drawdown zone of an optical fiber preform;

heating the drawdown zone of the optical fiber preform to a molten state using the focused laser light;

pulsing the laser light;

feeding continuously the preform into the region of focused laser light;

the invention characterized in that the laser light is pulsed at a rate greater than 10Hz and an optical fiber is drawn from the molten region of the preform, with diameter variations of magnitude greater than 0.1 percent of the fiber diameter and of period over the fiber length of less than 10mm.

4,129,434
PROCESS FOR FORMING A METAL OXIDE COATING

Emile Plumat, Gilly, and Robert Posset, Mont-sur-Marchienne, both of Belgium, assignors to Glaverbell, Watermael-Boitsfort, Belgium

Continuation of Ser. No. 269,400, Jul. 6, 1972, abandoned. This application Aug. 19, 1975, Ser. No. 605,815

Claims priority, application Luxembourg, Jul. 8, 1971, 63490

The portion of the term of this patent subsequent to Nov. 26, 1991, has been disclaimed.

Int. Cl.² C03C *17/00*

U.S. Cl. 65—60 D **9 Claims**

1. In a process for forming a metal oxide coating on a substrate wherein a solution of at least one metal compound is applied to the substrate and said compound is converted in situ by heating to a temperature within the range of 300° C. to 700° C. to convert said metal compound and leave a coating of at least one metal oxide, the step of coating the substrate with a solution of an acetylacetonate of a metal selected from the group: Fe, Ni, Co, Zn, V, Mn, Cu, In, Al, Ti, Zr, Th, Cr, Mg, Bi, Y, W, Ce or a mixture of acetylacetonates of two or more metals of such group in a solvent, the improvement wherein the solvent is selected from the group consisting of ethylene diamine, propylene diamine, butylamine, propylamine, dimethylformamide, dimethylacetamide, tetramethylurea, dimethylsulfoxide, acetonitrile, nitrobenzene, ethylene carbonate, tetramethylenesulfone, hexamethylphosphoramide, or a mixture of two or more solvents selected from solvents of that group.

4,129,435
AGRICULTURAL CHEMICAL/RESIN COMPOSITIONS

Tetsuo Takematsu, Utsunomiya; Fusayoshi Masuda, Kyoto; Kenji Tanaka, Ootsu; Kazuo Nishida, and Akira Nakamura, both of Kyoto, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Jul. 26, 1976, Ser. No. 708,714

Int. Cl.² A01N *7/00, 17/08*

U.S. Cl. 71—65 **5 Claims**

1. An agricultural chemical composition of improved efficiency, long range effectiveness and decreased phtotoxicity to desirable plants, which comprises:

a herbicidally effective amount of a herbicide and a film-forming polyurethane resin emulsion or organic solvent solution containing hydrophilic groups and having a soil fixity of at least 40% and a water vapor permeability of 400–1500 g/m²/24 hrs.

4,129,436
N'-[4-(SUBSTITUTED PHENETHYLOXY)PHENYL]-N-METHYL-N-METHOXYUREA

Ichiki Takemoto, Toyonaka; Ryo Yoshida, Kawanishi; Seizo Sumida, Nishinomiya, and Katsuzo Kamoshita, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

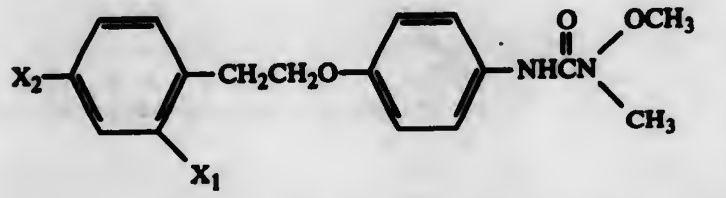
Filed Mar. 1, 1978, Ser. No. 882,383

Claims priority, application Japan, Mar. 3, 1977, 52-23443

Int. Cl.² A01N *9/20;* C07C *69/76*

U.S. Cl. 71—120 **7 Claims**

1. A compound of the formula



wherein X_1 is a hydrogen atom or a methyl group and X_2 is a C_1–C_3 alkyl or a C_1–C_3 alkoxy group.

5. A herbicidal composition which comprises as an active ingredient a herbicidally effective amount of the compound according to claim 1 and an inert carrier.

4,129,437
IRON ORE PELLET HAVING A SPECIFIC SHAPE AND A METHOD OF MAKING THE SAME

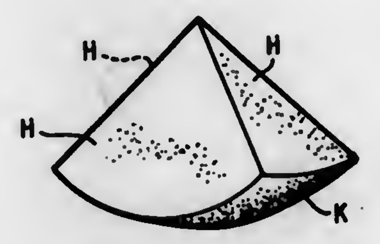
Kazumasa Taguchi, Amagasaki; Tsutomu Nishida, Kobe; Masaharu Kitajima, Okayama; Kan Aketa, Kakogawa; Isao Fujita, Kobe; Mamoru Onoda, Miki; Nobuyuki Imanishi, and Ryo Watanabe, both of Kobe, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed May 26, 1976, Ser. No. 690,289

Claims priority, application Japan, May 26, 1975, 50/63317; May 26, 1975, 50/63318

Int. Cl.² C21B *1/10*

U.S. Cl. 75—5 **9 Claims**



1. A fired and crushed iron ore pellet for use in the production of pig iron wherein:

the external form of said pellet comprises a combination of at least one spherically formed surface and at least one non-spherically formed surface; wherein

the average particle size of said iron ore pellet is in the range of from 5 to 25 mm; and

said iron ore pellet comprises iron ore and a slag component and has a compressive strength above 200 kg/pellet, a drum index about 95% above a particle size of 5 mm, and a swelling index below 14%.

4,129,438
METHOD OF ADDING TRACE ELEMENTS TO BASE METALS

Howard B. Bomberger, Jr., Canfield, Ohio, assignor to RMI Company, Niles, Ohio

Continuation-in-part of Ser. No. 669,534, Mar. 23, 1976, abandoned. This application May 9, 1977, Ser. No. 795,340

Int. Cl.² C22C *15/00*

U.S. Cl. 75—10 C **7 Claims**

1. In a process in which a consumable electrode of titanium base metal is assembled and said electrode is melted to form an ingot, a method of adding a trace element to said ingot to produce a content of 0.001 to 0.10 percent of trace element in the ingot in the form of minute highly dispersed particles not observable as undesirably large segregates in a lightly etched section, said trace element being of the group consisting of yttrium and a rare earth metal of atomic number 57 to 71, said method comprising dispersing finely divided particles of the trace element in a vehicle, and blending the vehicle and dispersed trace element with finely divided base metal of the electrode to form an electrode of uniform composition throughout before melting the electrode.

6. In a process in which a melt charge of titanium base metal is assembled and said charge is melted to form an ingot, a method of adding a trace element to said ingot to produce a content of 0.001 to 0.10 percent of trace element in the ingot in the form of minute highly dispersed particles not observable as undesirably large segregates in a lightly etched section, said trace element being of the group consisting of yttrium and a rare earth metal of atomic number 57 to 71, said method comprising dissolving particles of trace element in an acid solvent and a diluent as a vehicle, the diluent being water or alcohol, dispersing the solution of vehicle and trace element on finely

divided base metal or the constituents of the charge, and drying the charge before melting it.

4,129,439
PROCESS FOR REFINING MOLTEN STEEL USING FERROALLOY

Hajime Nashiwa, Sakai; Susumu Tsuzita, and Tsutomu Nagahata, both of Wakayama, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 578,750, May 19, 1975, abandoned. This application Sep. 30, 1976, Ser. No. 727,998

Claims priority, application Japan, May 24, 1974, 49-58946

Int. Cl.² C21C *7/00;* C22C *28/00*

U.S. Cl. 75—58 **5 Claims**

1. In a process for the manufacture of steel composed of 0.12 to 0.20% C, 0.20 to 0.50% Si, 1.20 to 1.60% Mn, 0.02 to 0.05% Al and the remainder Fe, the improvement in which a ferroalloy consisting essentially of 13 to 16% Si, 55 to 63 Mn, 4 to 6% Al, and the remainder of Fe with inevitable amounts of impurities, is added to molten steel containing 0.03 to 0.12% C, 0.10 to 0.25% Mn and the balance of Fe, in an amount of 17 to 22 kg of said ferroalloy per ton of said molten steel so as to deoxidize increase the yield and homogeneity of aluminium addition and said steel and adjust the composition thereof.

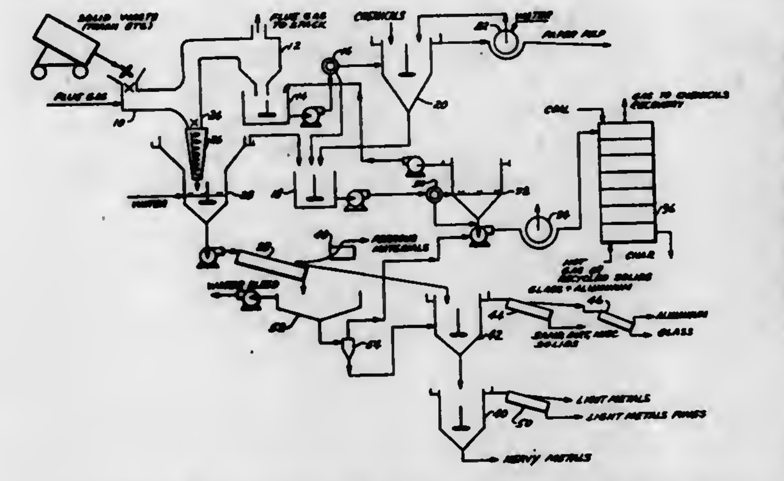
4,129,440
PROCESS FOR DISPOSAL OF SOLID WASTES

Donald E. Garrett, Claremont, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation of Ser. No. 551,452, Feb. 19, 1975, abandoned, which is a continuation of Ser. No. 371,042, Jun. 22, 1973, abandoned, which is a continuation of Ser. No. 113,115, Jul. 8, 1970, abandoned. This application Jan. 17, 1977, Ser. No. 759,749

Int. Cl.² C22B *7/00;* C10B *53/08*

U.S. Cl. 75—63 **32 Claims**



1. A process for recovery of values from solid wastes which contain paper stock which comprises in combination:

(a) initially expanding the solid waste to permit elutriation;

(b) classifying by elutriation the initially expanded solid waste into a first organic fraction containing the paper stock and a predominately inorganic-metals fraction containing residual organic waste, elutriation of the paper stock from the inorganic-metals fraction containing residual organic waste occurring by an upward flow of a gas stream through the initially expanded solid waste;

(c) collecting the first organic fraction;

(d) pulping the first organic fraction, and separating paper pulp to leave a first organic residue;

(e) further comminuting the predominately inorganic-metals fraction containing the residual organic waste and separating the residual organic waste therefrom by elutriation by an upward flow of water through the further comminuted inorganic-metals fraction to form a second organic residue;

(f) pyrolyzing the first and at least a portion of the second organic residues under nonoxidizing conditions to form char and a gaseous stream containing condensible hydrocarbons and gases; and

(g) processing the inorganic-metals fraction to recover values contained therein.

4,129,441
RECOVERY OF SILVER FROM SILVER CONTAINING SOLUTIONS

Wasyl Kunda, Edmonton, and Roderick H. Hitesman, Fort Saskatchewan, both of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Feb. 7, 1977, Ser. No. 766,108

Claims priority, application Canada, Sep. 29, 1976, 262288

Int. Cl.² C22B *11/00*

U.S. Cl. 75—118 R **22 Claims**

1. A process for the recovery of silver from an aqueous sulphate solution containing dissolved silver and at least one other dissolved metal selected from the group consisting of copper, nickel and cobalt, including treating said solution at a temperature between about 60° C. and about 125° C. with hydrogen gas at a partial pressure between about 2 and about 5 kg/cm² to precipitate the dissolved silver without precipitating any significant quantity of said at least one other dissolved metal.

4,129,442
WEAR- AND IMPACT-RESISTING CAST STEEL

Kaoru Horiuchi, Toride; Akio Matsui, Chiba; Masahiro Hara, Sakura, and Hiroshi Takahashi, Funabashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Continuation-in-part of Ser. No. 756,629, Jan. 4, 1977, abandoned. This application Apr. 14, 1977, Ser. No. 787,492

Claims priority, application Japan, Jan. 14, 1976, 51-3331

Int. Cl.² C22C *38/28*

U.S. Cl. 75—126 C **1 Claim**

1. A wear- and impact-resisting cast steel characterized by a hardness of Rockwell C 50 or higher and an impact value of 4 kg-m/cm² or higher, said cast steel consisting essentially of from 0.20 to 0.35% by weight of carbon, from 1.30 to 2.80% by weight of silicon, from 0.50 to 1.50% by weight of manganese, from 3.00 to 4.50% by weight of chromium, from 0.10 to 0.50% by weight of molybdenum, at least one element selected from the group consisting of titanium and zirconium, the sum of said at least one element being between 0.03 and 0.10% by weight, and the balance essentially iron.

4,129,443
METHOD FOR IMPROVING THE SINTERABILITY OF IRON POWDER DERIVED FROM COMMINUTED SCRAP METAL

Sydney M. Kaufman, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 584,563, Jun. 6, 1975, abandoned, and Ser. No. 584,564, Jun. 6, 1975, abandoned, and Ser. No. 637,350, Dec. 3, 1975, abandoned. This application Oct. 26, 1976, Ser. No. 735,468

Int. Cl.² B22F *1/02;* B02C *11/08*

U.S. Cl. 75—212 **58 Claims**

1. A method of making sintered shapes from ferrous-based metallic particles containing maganese and silicon, the latter having been cryogenically comminuted, the steps comprising:

(a) repeatedly impacting a charge of said metallic particles with a plurality of elements laden with copper or iron, each of said elements having a transverse dimension at least 50 times the longest dimension of any of said particles, said impacting being continued to simultaneously coat substantially each of said particles with a thin copper or iron envelope and to cold-work each of said particles having a size above 120–124 microns,

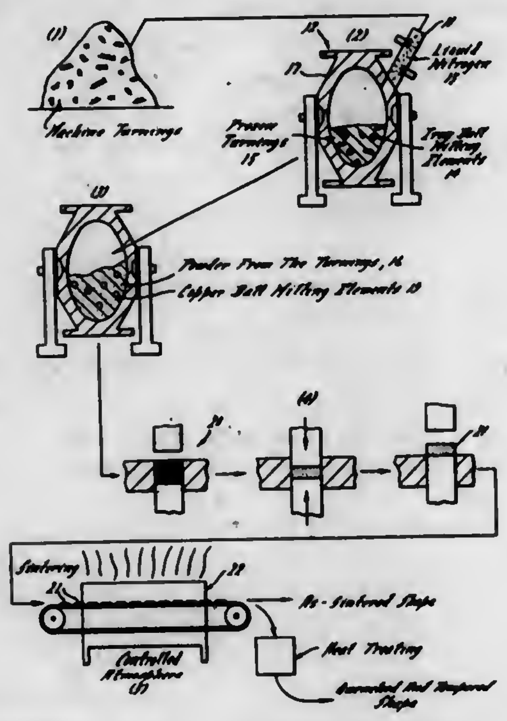
(b) compacting a predetermined quantity of said impacted particles into a desired shape, and

(c) heating said shape in an endothermic gas atmosphere to at least the sintering temperature for said metal particles to permit atomic diffusion to take place between particles in adjacent contact within said shape, said copper or iron envelope above each of said particles prohibiting oxidation of the ingredients of said particles during said heating, and said cold-working promoting increased diffusion.

9. A method of making an intermediate powder, comprising:

(a) selecting metallic turnings having oxidizable ingredients and which have a surface-to-volume ratio of at least 60:1,

(b) simultaneously refrigerate to below the ductile-brittle transition temperature of said turnings and impacting said turnings with a fracturing force, continuing said refrigeration and impaction for a period of time to comminute said turnings,


(1)
Machine Turnings
(2)
12
11
Liquid Nitrogen 13
17
Frozen Turnings 15
Iron Ball Milling Elements 14
(3)
Powder From The Turnings, 16
Copper Ball Milling Elements 19
(4)
20
Sintering
21
22
As-Sintered Shape
Controlled Atmosphere (5)
Heat Treating
Annealed And Tempered Shape

(c) impacting said comminuted particles at ambient temperature conditions with an abrading force, said impacting being carried out by the use of elements laden with a protective metal protective against oxidation of ingredients soluble in the base metal of said turnings and having a hardness less than that of the coated powder to promote transfer of said protective metal to said particles upon impact between said elements and particles, said protective metal having a melting temperature below but substantially near the liquidus of said particles and being completely soluble in said metal of said particles, said protective metal being relatively easy to abrade, and

(d) continuing to carry out the impaction of step (c) to provide both coating of said particles with a thin envelope of said protective metal and cold working of substantially each particle having a size greater than 124 microns to thereby promote at least one cold-work strain site therein.

4,129,444

POWER METALLURGY COMPACTS AND PRODUCTS OF HIGH PERFORMANCE ALLOYS

Dennis G. Dreyer, Kokomo; Edward M. Foley, Russiaville, and Herbert E. Rogers, Jr., Sharpsville, all of Ind., assignors to Cabot Corporation, Kokomo, Ind.

Continuation of Ser. No. 688,013, May 19, 1976, Pat. No. 4,062,678, which is a division of Ser. No. 443,091, Jan. 17, 1974, Pat. No. 3,945,621, which is a continuation-in-part of Ser. No. 323,502, Jan. 15, 1973, Pat. No. 3,846,126. This application Aug. 22, 1977, Ser. No. 826,362

Int. Cl.^{2} B22F *1/00*

U.S. Cl. 75—251 **6 Claims**

1. A powder metallurgy intermediate particulate product consisting essentially of a finely divided, crushed, pre-consolidated mixture of alloy metal powder, and finely divided organic binder in an amount less than 5% by weight of said alloy powder said crushed mixture providing a substantial fraction of −100 mesh particles at least about half of which are −325 mesh.

4,129,445

METAL IMAGE FORMATION PROCESS

Masato Fujiwara; Keiji Takeda, and Masayoshi Tsuboi, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

Continuation of Ser. No. 731,957, Oct. 13, 1976, abandoned. This application Feb. 28, 1978, Ser. No. 881,945

Claims priority, application Japan, Oct. 13, 1975, 50-123107

Int. Cl.^{2} G03C *5/54, 5/24*

U.S. Cl. 96—29 R **9 Claims**

1. A process for forming metal images which comprises:

imagewise inactivating an image receiving element containing physical development nuclei to intensification with a physical developer containing a salt of a reducible metal and a reducing agent by imagewise depositing silver on said physical development nuclei by diffusion transfer of silver ion from the unexposed portion of an imagewise exposed silver halide photographic element, said image receiving element comprising a support having vacuum deposited thereon or vacuum deposited on a layer on said support, nuclei for physical development selected from the group consisting of GeS_2, SnS_2, CdS and a combination of GeS_2 and gold, said silver ions being transferred in an effective amount to imagewise inactivating said nuclei for physical development;

and subsequently depositing said metal on said nuclei not deposited with said silver by contacting said image receiving element with said physical developer.

4,129,446

COLOR PHOTOGRAPHIC RECORDING MATERIAL

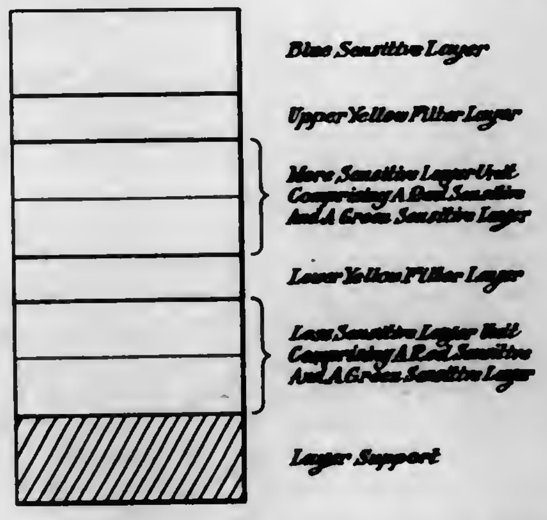
Joachim W. Lohmann, Kuerten; Otto Lapp, and Gerhard Kuhn, both of Leverkusen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 17, 1977, Ser. No. 797,752

Claims priority, application Fed. Rep. of Germany, May 21, 1976, 2622922

Int. Cl.^{2} G03C *1/76, 1/84*

U.S. Cl. 96—74 **6 Claims**


Blue Sensitive Layer
Upper Yellow Filter Layer
More Sensitive Layer Unit Comprising A Red Sensitive And A Green Sensitive Layer
Lower Yellow Filter Layer
Less Sensitive Layer Unit Comprising A Red Sensitive And A Green Sensitive Layer
Layer Support

1. The color photographic recording material consisting of

(a) a layer support having applied to it a plurality of light-sensitive and non-light-sensitive layers including

(b) at least two red sensitive silver halide emulsion layers of different speed each having associated with it a non-diffusing cyan-forming coupler, at least two green sensitive silver halide emulsion layers of different speed each having associated with it a non-diffusing magenta-forming coupler, and one or more blue sensitive silver halide emulsion layers each of said one or more blue sensitive layers having associated with it a non-diffusing yellow-forming coupler, and being located further removed from the layer support than anyone of said red sensitive and green sensitive layers, and

(c) at least one non-light-sensitive yellow filter layer located closer to the layer support than any of said one or more blue sensitive layers,

the more sensitive of said red sensitive layers and the more sensitive of said green sensitive layers being combined to form a comparatively more sensitive emulsion layer unit which is located further removed from the layer support than the less sensitive of said red sensitive layers and the less sensitive of said green sensitive layers being combined to form a comparatively less sensitive emulsion layer unit

wherein the improvement comprises a yellow filter layer is located between said more sensitive emulsion layer unit and said less sensitive emulsion layer unit

and said yellow filter being more adjacent to the layer support than said comparatively more sensitive emulsion layer unit, and

said yellow filter is not adjacent to a blue sensitive layer.

4,129,447

PROCESS FOR THE PREPARATION OF HYDROPHOBIC AGENTS

Michael Roth, and Konrad Gogolok, both of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Feb. 7, 1977, Ser. No. 766,110

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1976, 2606273

Int. Cl.^{2} C09D *5/20*

U.S. Cl. 106—2 **5 Claims**

1. An improved process for preparing a hydrophobic agent which may be combined with inorganic binding agents prior to molding, said hydrophobic agent being obtained by slaking caustic lime with an organopolysiloxane and water in which at least one mol of water is present for each mol of CaO, the organopolysiloxane in said emulsion having an average of from 0.8 to 1.8 SiC-bonded hydrocarbon radicals selected from the group consisting of alkyl radicals having from 1 to 16 carbon atoms and phenyl in the presence of a protective colloid and thereafter dried, the improvement which comprises adding to the above mixture at least one alkali metal salt of an acid having the formula:

$$R(O)_a\,SO_3H$$

in which R is a monovalent hydrocarbon radical having up to 50 carbon atoms and which may also contain oxygen and nitrogen atoms and a is 0 or 1.

4,129,448

FORMALDEHYDE STABILIZED COATING COMPOSITIONS

Stanley A. Greenfield, Ambler, and John A. Dupont, Glenside, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 389,745, Aug. 20, 1973, abandoned. This application Sep. 6, 1977, Ser. No. 830,716

Int. Cl.^{2} C09D *5/14*

U.S. Cl. 106—15 R **21 Claims**

1. In a coating composition which comprises a film-forming material, carrier, and a 3-isothiazolone, the improvement wherein the composition further comprises a stabilizing amount of formaldehyde.

4,129,449

SOIL-HARDENING COMPOSITION

Shokichi Kojima, Yamazaki Danchi 6-9-208, No. 2130, Yamazaki-Cho, Machida City, Tokyo, Japan

Filed Jul. 27, 1977, Ser. No. 819,238

Claims priority, application Japan, Jul. 29, 1976, 51-89681

Int. Cl.^{2} C04B *7/355*

U.S. Cl. 106—95 **4 Claims**

1. A composition to be added to soil to harden said soil consists essentially of Portland cement which has incorporated therein 2.0 to 0.8% by weight of lignin sulfonate having a molecular weight of 400 to 700,000, 0.4 to 0.5% by weight of sodium tripolyphosphate, 0.2 to 0.3% by weight of calcium stearate, 1.5 to 2.0% by weight of calcium chloride and 0.5 to 1.0% by weight of a slag silica.

4,129,450

ACETYLENE VESSEL FILLER COMPOSITION

Edith M. Flanigen, White Plains; Brent M. Lok, Spring Valley, and Norbert R. Mumbach, East Concord, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 9, 1977, Ser. No. 849,896

Int. Cl.^{2} C04B *7/34*

U.S. Cl. 106—120 **12 Claims**

1. An aqueous slurry composition which is curable at saturated steam pressure and temperature of 360° to 400° F. to form a hard porous mass suitable for containing dissolved acetylene gas solutions, comprising lime, crystalline silica, and a thickening agent selected from the group consisting of (a) polyethylene oxide, (b) a soluble salt of phosphate and a soluble salt of calcium, and (c) a soluble salt of phosphate and a neutralizing acid.

4,129,451

SPINNABLE CELLULOSE SOLUTION AND PROCESS FOR MAKING SAME

Jacques Menault, Charbonnieres les-Bains, and Henry Rodier, Sainte-Foy-les-Lyon, both of France, assignors to Rhone Poulenc Textile, Paris, France

Filed Jul. 14, 1977, Ser. No. 815,852

Claims priority, application France, Jul. 16, 1976, 76 22030; Jul. 16, 1976, 76 22032

Int. Cl.^{2} C08L *1/24*

U.S. Cl. 106—168 **16 Claims**

1. A spinnable, shapable solution of native cellulose in dimethylsulphoxide and formaldehyde, said cellulose having a degree of polymerization of at least 400 and a concentration in said solution of at least 6% by weight of cellulose per volume of dimethylsulphoxide, said formaldehyde present in a formaldehyde/cellulose weight ratio of about 0.2 to less than 0.8, said solution having a water content no greater than about 5000 ppm by weight.

4,129,452

STABILIZATION OF N,N'-[(THIOCARBONYL)THIO]DIMORPHOLINE

Curtis A. Franz, Piscataway, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jul. 11, 1977, Ser. No. 814,603

Int. Cl.^{2} C08L *91/00*

U.S. Cl. 106—243 **10 Claims**

1. A stabilized accelerator composition for rubber comprising N,N'-[(thiocarbonyl)thio]dimorpholine and an effective stabilizing amount of an oxirane compound having a molecular weight greater than about 60.

4,129,453
SULFUR COMPOSITION

Milutin Simic, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 29, 1974, Ser. No. 518,438

Int. Cl.² C09K *3/00*

U.S. Cl. 106—287.32 **1 Claim**

1. A composition comprising the following ingredients in about the indicated percentages by weight:

Sulfur	86–88%
Dicyclopentadiene plasticizer	2%
Asbestos fibers	2–4%
Talc dispersing agent	8–9.6%

said asbestos fibers including, by weight, about 40–60% chrysotile and about 40–60% amphibole, the amphibole being predominantly tremolite.

4,129,454
IRON OXIDE BASED PIGMENT AND PROCESS FOR PREPARING SUCH A PIGMENT

Wilhelm E. Pavonet, Flemalle-Haute, Belgium, assignor to Societe de Prayon, Belgium

Filed Jan. 5, 1976, Ser. No. 646,609

Claims priority, application Netherlands, Jan. 3, 1975, 7500055

Int. Cl.² C09C *1/24*

U.S. Cl. 106—304 **17 Claims**

1. A process for producing iron oxide based pigment in alpha Fe_2O_3 form, comprising calcining at a temperature from 600° to 800° C. and during a period from 2 to 240 minutes a starting material which consists of basic iron sulfate residues and/or jarosite based residues, said residues having resulted from the preparation of zinc sulfate solutions from roasted blende and therefore containing at least zinc impurities, so as to decompose such basic iron sulfates and/or jarosite, performing the calcining in an atmosphere containing SO_2 in gaseous phase and controlling the SO_2 content of said atmosphere to produce a pigment of the desired color shade, discontinuing the calcining at a time within said period at which the calcined product still has an iron bonded sulfur content of more than 0.6%, solubilizing the not decomposed iron sulfates with other soluble sulfated metals, such as zinc sulfate, by lixiviating the calcined product, and separating these water-soluble compounds.

4,129,455
DISPERSIONS

Morice W. Thompson, Maidenhead, and Arthur Topham, Middleton, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 495,042, Aug. 5, 1974, abandoned. This application May 7, 1976, Ser. No. 684,356

Claims priority, application United Kingdom, Aug. 21, 1973, 39428/73

Int. Cl.² C04B *31/40*

U.S. Cl. 106—308 N **6 Claims**

1. Composition of matter comprising a finely divided dispersion of a solid having a particle size of less than 20 microns in an organic liquid selected from the class consisting of hydrocarbons and halogenated hydrocarbons containing dissolved therein a reaction product obtained by chemical reaction of one or more compounds from each of the following classes:

(a) an aliphatic, cycloaliphatic or aromatic hydrocarbon substituted by at least two isocyanate groups;

(b) an aliphatic diol containing from 5 to 10 methylene groups, and

(c) an addition polymer containing an hydroxy group consisting of the reaction product of an alkylene oxide with a phenol, an aliphatic alcohol or an aliphatic amine wherein such alcohol or amine contains a chain of at least 12 carbon atoms.

4,129,456
METHOD OF REMOVING DENTAL CEMENT

James J. Longo, Wilmington, Del., assignor to DHP Corporation, Wilmington, Del.

Filed Feb. 8, 1977, Ser. No. 766,701

Int. Cl.² B08B *3/08, 3/12*

U.S. Cl. 134—1 **6 Claims**

1. In a method of removing from a surface a hardened dental cement prepared by mixing a surgical grade metal oxide powder with an aqueous solution containing from about 20% to about 60% of polyacrylic acid having a viscosity determined average molecular weight of from about 5,000 to about 250,000 the improvement comprising forming a substantially aqueous or alcoholic solution of citric acid having a concentration of at least 1 gram citric acid per 10 ml of solution, and applying an amount of said solution to the surface effective to remove said cement.

2. In the method of claim 1 wherein the surface is on a dental product, placing the solution in an ultrasonic cleaner, and immersing the cement containing dental product in the citric acid solution, and utilizing mechanical agitation from the ultrasonic cleaner to enhance the removal of the cement.

4,129,457
POST-POLISHING CLEANING OF SEMICONDUCTOR SURFACES

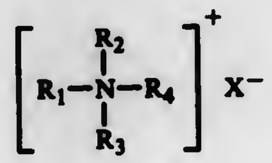
Jagtar S. Basi, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 23, 1977, Ser. No. 799,886

Int. Cl.² B08B *3/08*

U.S. Cl. 134—2 **9 Claims**

1. In a method for cleaning a semiconductor surface following the polishing of said surface with a polishing slurry containing colloidal silica, the improvement comprising removing said colloidal silica from said surface by contacting said surface with an aqueous quarternary ammonium salt solution containing at least about 0.1 percent by weight of a quarternary ammonium salt represented by the formula:



$$\left[\begin{array}{c} R_2 \\ | \\ R_1-N-R_4 \\ | \\ R_3 \end{array}\right]^+ X^-$$

where

R_1 is a long chain alkyl group containing about 12 to 18 carbons; R_2, R_3 and R_4 are selected from the group consisting of lower alkyl groups and substituted lower alkyl groups having 1 to 7 carbon atoms including various combinations thereof and X^- is an anion, so as to coagulate and suspend said silica in said solution and then removing said solution from said surface.

4,129,458
SOLAR-CELL ARRAY

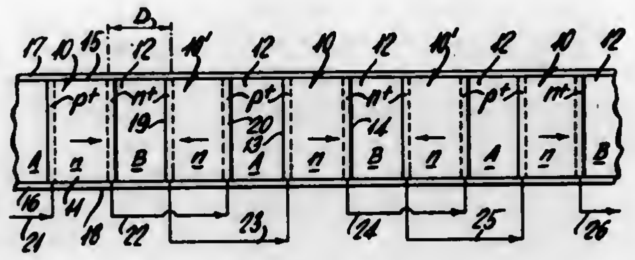
Roy Kaplow, Newton; Robert I. Frank, Lexington, and Joel L. Goodrich, Quincy, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 13, 1978, Ser. No. 877,356

Int. Cl.² H01L *31/06*

U.S. Cl. 136—89 PC **14 Claims**

1. A semiconductor solar-cell array comprising a plurality of spaced, elongate, parallel units formed from a common substrate and comprised of a first conductivity type, the body material of each of said units having the same spaced relation to the body material of other of said units as in the original substrate from which they are formed, each unit having upstanding sidewalls and having therebetween an upper surface adapted for exposure to receive incident radiation, adjacent pairs of sidewalls at first spaces between adjacent units each including a region of a second conductivity type, adjacent pairs of sidewalls at second spaces between adjacent units being devoid of second conductivity-type regions, first-space pairs of sidewalls being in alternating interlace with second-space pairs of sidewalls in a given direction of traverse of the units of said array, and ohmic connections extending between the second conductivity-type region of one unit and a first conductivity-type region of an adjacent unit.



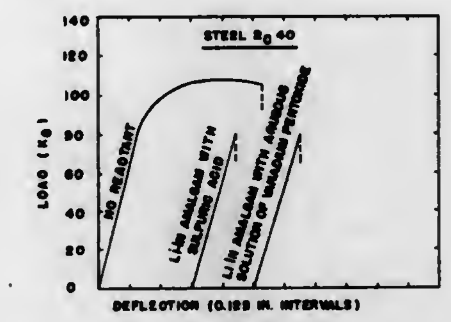
4,129,459
METHOD FOR DIMINISHING THE STRENGTH AND DUCTILITY OF STEEL UTILIZING A LITHIUM-INDIUM-AMALGAM CONTAINING A SMALL AMOUNT OF VANADIUM PENTOXIDE

Clarence H. Walker, Jr., Phoenix, Ariz., and John D. Corrie, Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 25, 1966, Ser. No. 576,502

Int. Cl.² C23C *1/10;* **C22C** *7/00;* **B26F** *3/00*

U.S. Cl. 148—4 **4 Claims**



1. In a method for diminishing the strength and ductility of steel comprising contacting said steel with a reactant consisting essentially of an amalgam containing about 0.75 to 1.25 weight percent lithium, 0.25 to 0.75 weight percent indium, and about 98 to 99 weight percent mercury, the improvement comprising intimately commingling with said amalgam a small amount of an aqueous solution of vanadium pentoxide.

3. A reactant for diminishing the strength and ductility of steel consisting essentially of a small amount of an aqueous solution of vanadium pentoxide intimately commingled with an amalgam consisting essentially of about 0.75 to 1.25 weight percent lithium, 0.25 to 0.75 weight percent indium, and about 98 to 99 weight percent mercury.

4,129,460
METHOD FOR COPING I-BEAMS

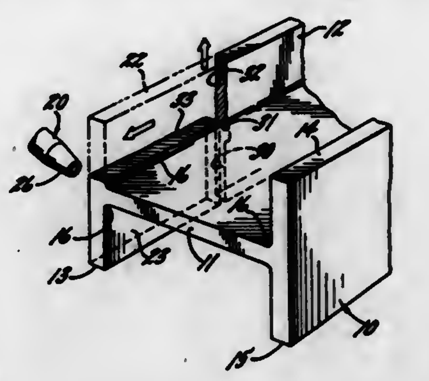
Theodore F. Brolund, Rockford, and William B. Scott, Rochelle, both of Ill., assignors to W. A. Whitney Corp., Rockford, Ill.

Filed Nov. 3, 1977, Ser. No. 848,221

Int. Cl.² B23K *7/00*

U.S. Cl. 148—9 R **6 Claims**

1. A method of coping the end portion of a metal I-beam having a longitudinally extending web disposed in a generally horizontal plane and having longitudinally extending upper and lower flanges projecting upwardly and downwardly, respectively, from one margin of the web, said method comprising the steps of, moving a metal melting tool along a generally vertical path spaced longitudinally from one end of the beam and extending along the outer sides of said flanges between the lower edge of said lower flange and the upper edge of said upper flange, directing metal melting energy from said tool toward the outer sides of said flanges during such movement to form a vertical cut through said flanges, moving said tool longitudinally along a path located between said web and the upper edge of said upper flange and extending along the outer side of said upper flange between said vertical cut and said one end of said beam, directing metal melting energy from said tool toward the outer side of said upper flange during movement of said tool along the last-mentioned path to form a longitudinal cut through said upper flange and to permit removal from the beam of that portion of the upper flange located longitudinally from said vertical cut and above said longitudinal cut, and thereafter shearing downwardly through said one margin of said web along a line located inwardly of said flanges and extending from said vertical cut to said one end of said beam to remove from the beam those portions of the flanges and the web located outwardly of said line, longitudinally of said vertical cut and below said longitudinal cut.



4,129,461
FORMABLE HIGH STRENGTH LOW ALLOY STEEL

Moinuddin S. Rashid, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 642,457, Dec. 19, 1975, abandoned. This application Apr. 7, 1977, Ser. No. 785,339

Int. Cl.² C21D *7/00*

U.S. Cl. 148—12.3 **10 Claims**

1. The method of producing a high strength low alloy steel having improved formability comprising the steps of:

heating a high strength low alloy steel having alloy constituents taken from the group consisting of the carbides, nitrides and carbonitrides of the metals taken from the group consisting of V, Ti, and Nb to at least the lowermost eutectoid temperature of said steel for a time sufficient to at least partially transform the microstructure of said steel to austenite and to dissolve a substantial proportion of said constituents into the austenite without appreciable grain growth and then cooling said steel to substantially room temperatures so as to substantially lower the yield strength and improve the formability of said steel while maintaining the tensile strength thereof; and

plastically deforming said steel an amount equivalent to at least 2% strain on the tensile stress-strain diagram to effect a substantial increase in the yield strength after said deformation.

4,129,462
GAMMA PRIME HARDENED NICKEL-IRON BASED SUPERALLOY

Michael K. Korenko, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

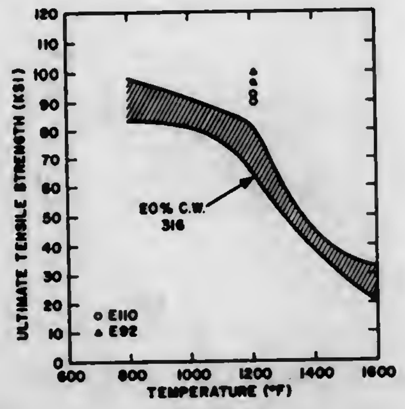
Filed Apr. 7, 1977, Ser. No. 785,640

Int. Cl.² C22C *38/08*

U.S. Cl. 148—31 **4 Claims**

1. A gamma prime strengthened and solid solution hardened

nickel-iron base alloy useful for fast reactor duct and cladding applications, the composition of said alloy imparting improved resistance to swelling in a neutron irradiation environment to said alloy, consisting essentially of from about 7.0 weight percent to about 10.5 weight percent chromium, from about 24 to about 35 weight percent nickel, from about 2.0 to about 3.3 weight percent molybdenum, from about 1.7 to about 2.5 weight percent titanium, from about 0.3 to about 1.0 weight percent aluminum, from about 0.5 to about 1 weight percent silicon, from about 0.03 to about 0.06 weight percent carbon, a maximum of about 2.0 weight percent manganese, and the balance iron, wherein said low chromium concentration range inhibits the formation of the detrimental sigma phase, and said silicon concentration range acts as a swelling inhibitor to the low chromium and low to intermediately low nickel range, which nickel composition range minimizes neutron absorption, and said molybdenum concentration range inhibits Laves phase precipitation induced by neutron irradiation, and wherein said alloy swells less than 0.3% at the peak swelling temperature of 538° C. at the fluence of 2.2×10^{22} n/cm² (E > 0.1 MeV), and wherein said alloy exhibits an ultimate tensile strength in the range of about 90 to 100 ksi at 650° C.

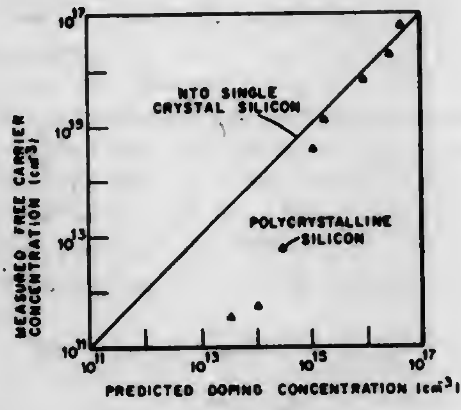


4,129,463

POLYCRYSTALLINE SILICON SEMICONDUCTING MATERIAL BY NUCLEAR TRANSMUTATION DOPING TRANSMUTATION DOPING

John W. Cleland, Knoxville; Russell D. Westbrook; Richard F. Wood, both of Oak Ridge, and Rosa T. Young, Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 29, 1977, Ser. No. 811,348
Int. Cl.² B05D *3/06*; H01L *27/14*
U.S. Cl. 148—33 **8 Claims**



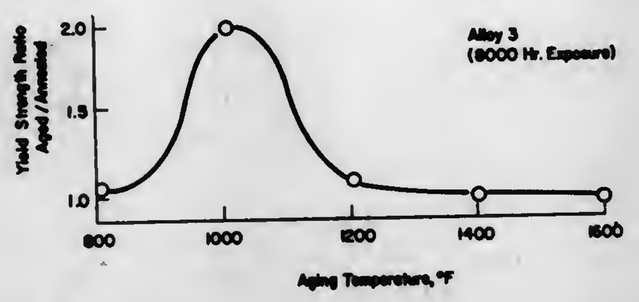
1. A semiconductor material comprising polycrystalline silicon having a mean grain size less than 1000 microns containing phosphorus atoms dispersed throughout said polycrystalline silicon rather than at the grain boundaries said semiconductor material prepared by exposing polycrystalline silicon containing ^{30}Si to a neutron flux to cause the transmutation of ^{30}Si to ^{31}P, thereby providing polycrystalline silicon containing dispersed phosphorus atoms, and then annealing said polycrystalline silicon containing phosphorus to remove radiation damage.

4,129,464

HIGH YIELD STRENGTH NI-CR-MO ALLOYS AND METHODS OF PRODUCING THE SAME

Steven J. Matthews, Greentown; H. Joseph Klein, and Frank G. Hodge, both of Kokomo, all of Ind., assignors to Cabot Corporation, Kokomo, Ind.

Filed Aug. 24, 1977, Ser. No. 827,330
Int. Cl.² C22C *19/05*
U.S. Cl. 148—162 **10 Claims**



1. In a process for producing a high strength material having good ductility to provide a ductile, high strength, corrosion resistant alloy, the steps comprising:

(1) preparing a body of material having a composition consisting essentially of by weight, about 13% to 18% chromium, about 13% to 18% molybdenum, less than 0.01% carbon, less than about 6% iron, less than about 2.50% cobalt, less than about 4% tungsten, less than 0.5% aluminum, less than 1% manganese, less than 0.5% silicon, and the balance nickel with usual transient metals and impurities in ordinary amounts, and

(2) thereafter aging said body at a temperature in the range about 900° to 1100° F. for at least about fifty hours to effect an A_2B ordering reaction in the composition and an increase in room temperature yield strength at least about 1.5 times the mill annealed strength.

4,129,465

SMOKE-GENERATING COMPOSITION

Duane M. Johnson, Loogootee, and Henry A. Webster, III, Ellettsville, both of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 21, 1977, Ser. No. 817,896
Int. Cl.² C06B *45/10*; C06D *3/00*
U.S. Cl. 149—19.3 **8 Claims**

1. A smoke-generating composition comprised, by weight, of

about 50 percent of phosphorus
between 37 and 44 percent of calcium sulfate,
between 3 and 10 percent of boron, and
about 3 percent of a binder.

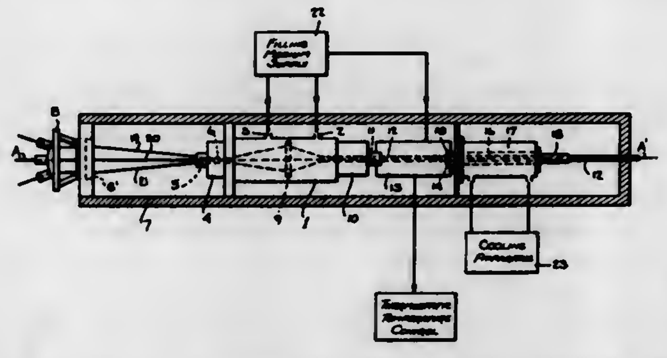
4,129,466

METHOD FOR IMPREGNATING STRANDED WIRES DURING STRANDING THEREOF

Antonio Portinari, Sesto San Giovanni (Milan), and Piero Lavezzari, Desio (Milan), both of Italy, assignors to Industrie Pirelli Societa per Azioni, Milan, Italy

Continuation of Ser. No. 569,806, Apr. 21, 1975, abandoned.
This application Dec. 20, 1976, Ser. No. 752,477
Claims priority, application Italy, May 28, 1974, 23225 A/74
Int. Cl.² H01B *13/16*
U.S. Cl. 156—48 **5 Claims**

1. In a process for manufacturing a grouped strand for a fully-filled electric cable, said strand comprising a plurality of electrically conductive components of elongated shape stranded together with spaces between said components filled with, and the exterior of the strand coated by, a water-impermeable and electrically insulating filling medium which has a predetermined dropping point temperature and which is semi-solid at room temperature, the method of forming, filling and coating said strand which comprises feeding a plurality of said components in unstranded, close and side-by-side relation into a substantially liquid-tight chamber having an inlet die with an opening therethrough through which said components are fed, having an outlet die spaced from said inlet die and with an opening therethrough through which said components are fed and having an internal diameter between said inlet die and said outlet die larger than the exterior diameter of said strand, circulating said filling medium through said chamber in a direction opposite to the direction of feed of said components and from a first point in said chamber to a second point in said chamber, both said first point and said second point being intermediate said inlet die and said outlet die while maintaining said medium at a temperature at least 5° C. above its dropping point temperature and under a pressure higher than atmospheric pressure, separating said components within said chamber and within said filling medium after passage thereof through said opening in said inlet die by forcing them apart and causing said components to follow non-rectilinear paths between said inlet die and said outlet die so that they are in more widely spaced relation to each other than they are when they pass through said opening in said inlet die each of said components being separated from all other said components by a distance sufficient for said filling medium to flow around the entire outer surface of each component and thereafter, bringing said components together in said chamber and stranding them to form said strand, feeding said strand from said outlet die into a bath of said filling medium at a temperature at least 5° C. above said dropping point temperature and at atmospheric pressure, said bath being at said opening of said outlet die, maintaining said bath at a level above said opening in said outlet die so that said lastmentioned opening and said strand are maintained covered by said filling medium during the passage of the strand from said outlet die through said bath, and while feeding said strand out of said bath, cooling the medium on said strand to a temperature at least 5° C. below said dropping point temperature and smoothing and shaping the medium on said strand.



4,129,467

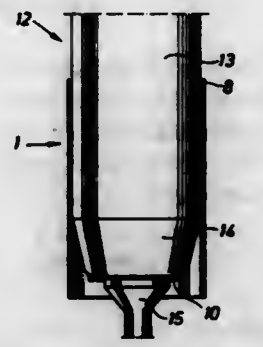
METHOD FOR MAKING PACKING CONTAINERS

Kent I. Knutsson, Landskrona, Sweden, assignor to AB Ziristor, Lund, Sweden

Continuation of Ser. No. 621,598, Oct. 10, 1975, abandoned.
This application Apr. 20, 1977, Ser. No. 789,246
Claims priority, application Sweden, Oct. 18, 1974, 74131525
Int. Cl.² B29C *27/02*; B32B *31/26*
U.S. Cl. 156—84 **3 Claims**

1. A method for making, filling and sealing packing containers for liquids composed of a heatshrinkable laminated material having a base layer of foamed plastic and at least one layer of a thermoplastic, heatsealable material, said method comprising:

- wrapping a strip of the laminated material about a cylindrical mandrel to overlap the opposed ends of the strip, heating the overlapping end portions of the strip to heat seal the strip end portions together to form a tubular member,
- moving said tubular member relative to the mandrel so that one end thereof extends beyond the corresponding end of said mandrel,
- placing a bottom forming plate member against the end of the mandrel, the plate member having a diameter not greater than the diameter of the end of the mandrel,
- heating the extended end of the tubular member of laminated material to shrink the extended end portion of the tubular member inwardly to embrace the marginal surface of the plate member and to heat seal the inwardly shrunk end of the tubular member to the marginal surface of the plate member to form a seal,



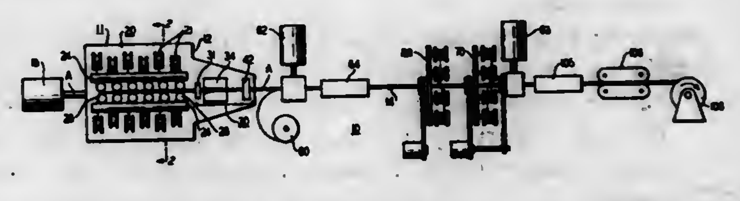
- applying pressure to the end of the tubular member and plate member while still in a heated condition, to provide a liquid tight seal therebetween and to provide the base portion of the container with a flat, substantially uniform surface for stability,
- removing the container from the mandrel,
- filling the container with liquid contents,
- heating the upper edge of the container to a heat-sealing temperature, and
- pressing a lid member thereonto in abutting relation to the heated upper edge of the filled container to form a liquid-tight butt seal therewith.

4,129,468

METHOD AND APPARATUS FOR MANUFACTURING OPTICAL COMMUNICATION CABLES

Emil D. Knab, Cumming, Ga., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 13, 1977, Ser. No. 787,110
Int. Cl.² D01H *7/10*; B32B *5/02*; G02B *5/14*
U.S. Cl. 156—148 **17 Claims**



1. Method for manufacturing an optical cable comprising a helically stranded stacked array of optical fiber ribbons comprising:

- directing said ribbons from a plurality of ribbon supply reels mounted on a platform rotatable about a predetermined axis, where each said reel pivots about an axis substantially parallel to said predetermined axis, into substantially parallel paths of travel in a predetermined plane with the faces of said ribbons being normal to said plane and said parallel paths being substantially coincident with said predetermined axis with at least one curved stationary surface for contacting each of said ribbons, where said surface has an axis of curvature substantially parallel to said predetermined axis and tangentially intersects said predetermined plane for gradually directing each said corresponding ribbon into said predetermined plane with the ribbon face of each said ribbon parallel to said plane, and a plurality of idler sheaves mounted in said plane with their axes of rotation normal to said plane for receiving said ribbons from said curved surface;

controlling the orientation of the ribbon faces of said ribbons until said ribbons enter said substantially parallel paths with said curved stationary surface and said idler sheaves;

substantially mechanically supporting said ribbons until they enter said parallel paths of travel with said curved stationary surface and said idler sheaves, said curved stationary surface supporting transverse displacements of said ribbons in the planes of their faces;

bringing together said ribbons into a precise stacked array;

applying a spring-loaded force to said stacked array with a device comprising a dimensionally varying orifice being formed in part by a movable wall, which supplies said spring-loaded force, to urge compacting of said ribbon stack; and

rotating said ribbons and said stacked array about said predetermined axis to helically strand said stacked array.

8. Method of manufacturing an optical cable comprising a core of optical fiber ribbons arranged in a helically stranded stacked array, a first layer of insulation, an inner tubular jacket, a second layer of insulation, and an outer cable jacket with helically stranded and embedded strength members, said method comprising:

directing said ribbons from a plurality of ribbon supply reels mounted on a platform rotatable about a predetermined axis, where each said reel pivots about an axis substantially parallel to said predetermined axis, into substantially parallel paths in a predetermined plane with faces of said ribbons normal to said plane and said parallel paths being substantially coincident with said predetermined axis with at least one curved stationary surface for contacting each of said ribbons, where said surface has an axis of curvature substantially parallel to said predetermined axis and tangentially intersects said predetermined plane for gradually directing each said corresponding ribbon into said predetermined plane with the ribbon face of each said ribbon parallel to said plane, and a plurality of idler sheaves mounted in said plane with their axes of rotation normal to said plane for receiving said ribbons from said curved surface;

controlling the orientation of the ribbon faces of said ribbons until said ribbons enter said substantially parallel paths with said curved surface and said idler sheaves;

substantially mechanically supporting said ribbons until they enter said parallel paths of travel with said curved surface and said idler sheaves, said curved surface supporting transverse displacements of said ribbons in the planes of their faces;

bringing together said ribbons into a precise stacked array;

applying a spring-loaded force to said stacked array with a device comprising a dimensionally varying orifice being formed in part by a movable jaw which supplies said spring-loaded force, to urge compacting of said ribbon stack;

rotating said ribbons and said stacked array about said predetermined axis to helically strand said stacked array;

controlling transition of said stacked array into a helically stranded stacked array;

applying said first insulation layer around said core of stacked ribbons;

extruding said inner tubular jacket around said first insulation layer;

applying said second insulation layer around said inner tubular jacket;

feeding said strength members from a payout assembly;

extruding said outer cable jacket in a jacket-forming cavity;

introducing said longitudinal strength members and the insulated and tubular jacketed cable structure into said jacket-forming cavity through guiding orifices of a nosepiece formed at the end of a hollow core tube; and

generating unidirectional helical stranding of said strength members in said jacket-forming cavity by rotating in synchronization and about the cable axis of travel the feeding means and said core tube.

9. Apparatus for manufacturing an optical cable comprising a plurality of helically stranded and stacked optical fiber ribbons comprising:

a strander comprising:

a platform rotatable about a predetermined axis to helically strand said ribbons;

a payout mounted to said platform, said payout comprising:

a plurality of reels for supplying ribbons, each reel pivotable about an axis substantially parallel to said predetermined axis;

at least one curved stationary and nonrotating surface with which said ribbons make sliding contact, said surface having an axis of curvature substantially parallel to said predetermined axis and tangentially intersecting a predetermined plane of travel for gradually directing each said corresponding ribbon into said predetermined plane of travel with the ribbon face of each said ribbon parallel to said plane of travel;

a plurality of idler sheaves mounted in said plane of travel with their axes of rotation normal to said plane of travel for receiving said ribbons from said curved surface where said curved surface supports transverse displacements of said ribbons in the planes of their faces to allow said ribbons to seek out their most natural paths from said reels to said idler sheaves and where said ribbons twist approximately 90 degrees between said sheaves and curved surface so their faces become positioned normal to said plane of travel; and

means for stacking said ribbon into a precise stacked array.

4,129,469

SPLICING PROCESS AND APPARATUS

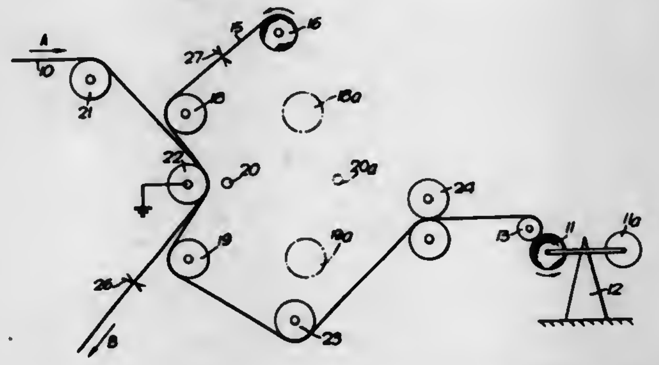
Christopher Deverell, Rosenberg, Netherlands, and Ronald W. Wells, Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 12, 1977, Ser. No. 815,027

Claims priority, application United Kingdom, Aug. 12, 1976, 33603/76

Int. Cl.² B31F *5/00;* B65H *17/28, 19/18*

U.S. Cl. 156—157 **9 Claims**



1. A threading operation in a process for the production of a web, said operation comprising the steps of sequentially

feeding a production web to a dump location while threading a leader web through a subsequent stage in the process,

transporting the threaded leader web at a linear speed substantially equal to that of the production web,

electrostatically splicing the production and leader webs together by bringing the moving webs into surface-to-surface contact, the webs being transported in substantially the same direction of movement in the region of surface-to-surface contact, and depositing electrostatic charges on at least one of the moving webs so that the webs adhere electrostatically, and

then severing the production web from that which has passed to the dump location, so that the conditions for splicing are established in advance of the instant when splicing must occur.

4,129,470

METHOD OF PREPARING A POROUS IMPLANTABLE MATERIAL FROM POLYTETRAFLUOROETHYLENE AND CARBON FIBERS

Charles A. Homsy, 11526 Raintree Cir., Houston, Tex. 77024

Division of Ser. No. 515,443, Oct. 17, 1974, Pat. No. 3,992,725, which is a continuation-in-part of Ser. No. 416,641, Nov. 16, 1973, abandoned, which is a continuation of Ser. No. 145,497, May 20, 1971, abandoned. This application Jun. 7, 1976, Ser. No. 694,056

Int. Cl.² B29D *27/00;* B32B *31/00*

U.S. Cl. 156—155 **10 Claims**

1. A method of preparing an implantable composition of material which comprises

mixing together in an organic liquid media, carbon fibers, polytetrafluoroethylene fibers, polytetrafluoroethylene resin, and from 60 to 80 percent of a material soluble in solvents other than the media used to form a uniform slurry,

filtering the slurry to form a filter cake having a reduced amount of organic liquid media,

compressing the filter cake at elevated temperatures at a pressure of up to about 3,000 pounds per square inch (lbs/in^2),

rolling the compressed filter cake between rolls heated between about 100° up to about 280° F.,

drying the rolled cake at a temperature of up to about 350° F.,

sintering the dry cake at temperatures between 600° and 680° F., at a pressure of up to about 5,000 lbs/in^2, for a period in excess of three minutes;

leaching said sintered cake to remove said soluble material and subsequently drying same, to produce a material having spheroidal and dendritic spaces therein and which is bio-compatible.

5. The method according to claim 1 wherein the implantable composition is bonded on at least one side thereof to a bonding material including the steps of

leaching from the surface of the sintered cake, that is to be bonded, the soluble material,

drying the leached material, and

bonding a bonding material to the surface of the material from which the soluble material has been leached.

4,129,471

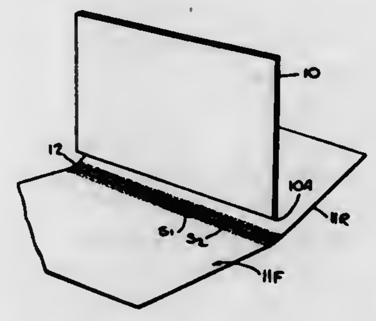
BOOKBINDING TECHNIQUE

Bernard Rome, New York, N.Y., assignor to Rome Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 583,891, Jun. 5, 1975, abandoned. This application May 13, 1976, Ser. No. 683,461

Int. Cl.² B32B *3/04;* B31F *3/00;* B42D *1/00*

U.S. Cl. 156—211 **9 Claims**



1. A method of making a binder to be used in the subsequent binding together of a stack of sheets comprising defining a backbone zone and flanking cover sections in a one-piece panel of folder material, applying a substantially uniform band of hot-melt adhesive in the liquid state to said backbone zone, the margins of said band overlying said backbone zone and extending slightly into said cover sections, and folding said panel while said adhesive band is still wet and non-resistant so that said backbone zone is substantially in one plane and said flanking cover zones are in planes substantially perpendicular thereto, and cooling said hot melt adhesive so that it sets in a general U-shape in cross-section as it extends throughout said backbone zone and slightly into said cover sections along the edges of said backbone zone, thereby to complete said binder to be used for the subsequent binding of a stack of sheets therewithin.

4,129,472

COMPOSITION AND USE OF ETHYLENE COPOLYMERIZATES AS FUSIBLE ADHESIVE

John Hobes, Dinslaken, and Wolfgang Payer, Wesel, both of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Germany

Filed May 13, 1977, Ser. No. 797,550

Claims priority, application Fed. Rep. of Germany, May 22, 1976, 2623006

Int. Cl.² C09J *5/00*

U.S. Cl. 156—331 **14 Claims**

1. A method of bonding two objects together which comprises disposing therebetween a fusion adhesive, said fusion adhesive comprising an olefin polymer comprising 70 to 95% by weight ethylene, 0.5 to 10% by weight of an amide of an unsaturated carboxylic acid and 0.5 to 15% by weight of an unsaturated carboxylic acid and fusing said objects together.

12. A fusion adhesive comprising an olefin copolymer comprising 70 to 95% by weight of ethylene, 0.5 to 10% by weight of an amide of an unsaturated carboxylic acid and 0.5 to 15% by weight of an unsaturated carboxylic acid.

4,129,473

APPARATUS FOR THE AUTOMATIC LABELLING OF OBJECTS OF DIFFERING SHAPES

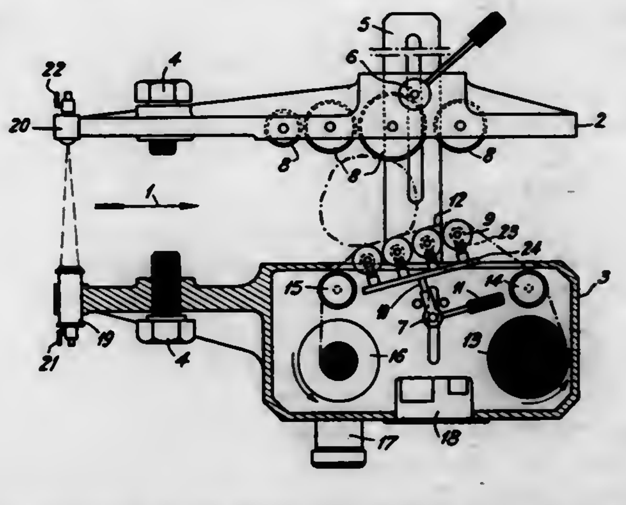
Jean Y. Perret, Domaine de Soulancé, Martres-Tolosane, Haute-Garonne, France

Filed Sep. 27, 1976, Ser. No. 726,615

Claims priority, application France, Oct. 3, 1975, 75 30320

Int. Cl.² B65C *3/00, 9/42*

U.S. Cl. 156—364 **6 Claims**



1. Apparatus for automatically labelling objects of varying shapes conveyed for labelling to a labelling device comprising mounting means for mounting said labelling device adjacent to said conveyed objects for pivotal movement about an axis generally perpendicular to the plane of movement of said objects, and pressure contact means forming a convergent path (way) leading to said labelling device and a divergent path

away from said device for urging said conveyed objects against said labelling device and releasing them after labelling.

4,129,474
RETREADING OF TIRES

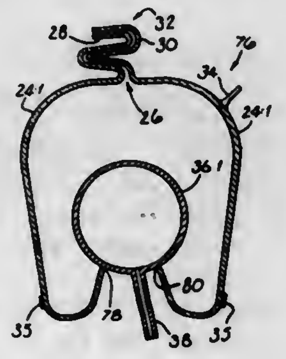
Aubrey W. Martin, Heilbron, South Africa, assignor to Republic Rubber Industries (Prop.) Ltd., Heilbron, South Africa

Filed Feb. 2, 1977, Ser. No. 765,044

Claims priority, application South Africa, Feb. 27, 1976, 76/1179

Int. Cl.^{2} B29H *17/36*

U.S. Cl. 156—394 **14 Claims**



1. Tire retreading apparatus including a flexible envelope which can totally enclose the assembly of a tire casing and a tread positioned on the tread zone of the tire casing so that the envelope covers the internal and the external surfaces of the assembly, a tubular rim on which a tire casing enclosed in the envelope is locatable so that the tyre is axially restrained on the rim and so that an annular cavity is defined between the rim and the tire casing enclosed in the envelope located on the rim, and an expandible tube which is positionable in the annular cavity and is an annulus of an elastic material and is fast with the flexible envelope and at least a part of the flexible envelope covering the internal surface of the tire casing forming a part of the expandible tube, the expandible tube being expandible by being inflatable by a gas under pressure to thereby pressurize the annular cavity to force the envelope against the internal surface of the tire casing to thereby stress the tire casing.

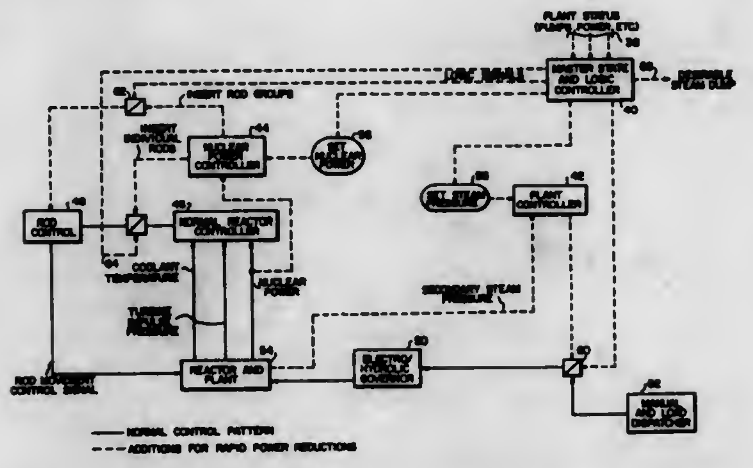
4,129,475
METHOD OF OPERATING A NUCLEAR REACTOR

Anthony J. Spurgin, San Diego, Calif., and William F. Schaefer, Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 31, 1975, Ser. No. 600,547

Int. Cl.^{2} G21C *7/06*

U.S. Cl. 176—22 **6 Claims**



PLANT STATUS (PUMPS, POWER, ETC)
MASTER STATE AND LOGIC CONTROLLER
INSERT ROD GROUPS
REACTOR AND PLANT
ELECTRO/HYDRAULIC GOVERNOR
ROD MOVEMENT CONTROL SIGNAL
MANUAL AND LOAD DISPATCHER
NORMAL CONTROL PATTERN
ADDITIONS FOR RAPID POWER REDUCTIONS

1. A method of controlling the operation of a nuclear reactor in the event of a malfunction in specified operating components, wherein the reactor includes a nuclear core for generating heat, a plurality of control elements movable into and out of the core for controlling the reactivity of the core and heat removal means for cooling the core, comprising the steps of,

monitoring the operation of the specified components providing a corresponding representative electrical output upon the occurrence of a malfunction;

completely inserting prearranged control elements in groups sequentially into the core in response to the electrical indication of a malfunction until the reactivity of the core is reduced to a first predetermined power level;

selectively, individually, inserting control elements not yet inserted, according to a designed sequence when the core power level is lowered to the first predetermined power level until the power level of the core is reduced to a second predetermined value which is specificed for the respective components monitored at a corresponding value the reactor can safely operate at during power operation with the respective components out of operation and wherein the first predetermined power level is specified for the respective components at a value above the second predetermined power level, which is less than or equal to the power reduction resulting from the complete insertion of one prearranged group of control elements; and

controlling the heat removed from the core by the heat removal means as a function of the reduced core power to substantially maintain the normal operating temperatures of the reactor for power generation.

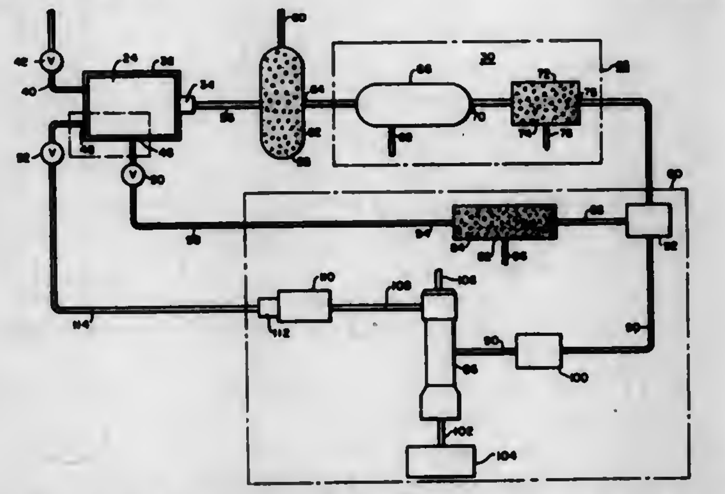
4,129,476
ENVIRONMENT CONTROL SYSTEM

Dino G. Sammarone, Edgewood Borough, Pa., assignor to The United States of America as representedby the United States Department of Energy, Washington, D.C.

Filed Jul. 28, 1976, Ser. No. 709,473

Int. Cl.^{2} G21C *9/00*

U.S. Cl. 176—37 **15 Claims**



1. A system for controlling the environment of an enclosed area in a nuclear reactor installation comprising:

an enclosed area containing a gas, said area being enclosed by a plurality of walls;

means extending through one of said walls for inserting oxygen into said enclosed area;

means extending through one of said walls for inserting an inert gas into said enclosed area;

means extending through one of said walls for removing said gas from said enclosed area;

means interconnected with said enclosed gas removing means for removing oxygen from said gas removed from said enclosed area, said gas passing from said enclosed gas removing means to said oxygen removing means;

means interconnected with said oxygen removing means for purifying the gas removed from said oxygen removing means, said gas passing from said oxygen removing means to said purifying means; and

means interconnected with said purifying means for supplying said purified gas from said purifying means to said means for inserting an inert gas into said enclosed area, whereby the gas removed from said enclosed area has removed therefrom any oxygen it contains, is purified and is capable of being reinserted into said enclosed area as said inert gas.

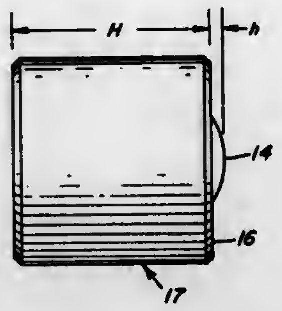
4,129,477
AXIALLY ALIGNABLE NUCLEAR FUEL PELLETS

Eric B. Johansson, San Jose; Dale H. Klahn, Berkeley, and Mickey O. Marlowe, Livermore, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Dec. 8, 1976, Ser. No. 748,652

Int. Cl.^{2} G21C *3/02*

U.S. Cl. 176—73 **48 Claims**



1. In a nuclear fuel element for use in a nuclear reactor, a generally cylindrical axially alignable fuel pellet having a given end surface and an opposite end surface and stacked in a column of a plurality of said pellets in end-to-end relationship within a tubular cladding of said fuel element with an annular gap between said pellets and said cladding and with the given end surfaces of the pellets of the stack abutting the opposite end surfaces of adjacent pellets of the stack, said given end surface of said pellet being formed with a centrally disposed raised area generally convex in shape, and said opposite end surface of said pellet having a shape such that the load-bearing contact area between the pellets in said stack is limited to a portion of the surface of said centrally disposed raised area of said given end surface that is orthogonal to the longitudinal axis of said pellet said contact area being limited sufficient to increase the mean temperature of said contact area during operation in said reactor to increase the ability of the pellets to deform plastically at their interface whereby the alignment forces required to straighten misaligned pellets in said column and the consequent loading on the cladding is decreased.

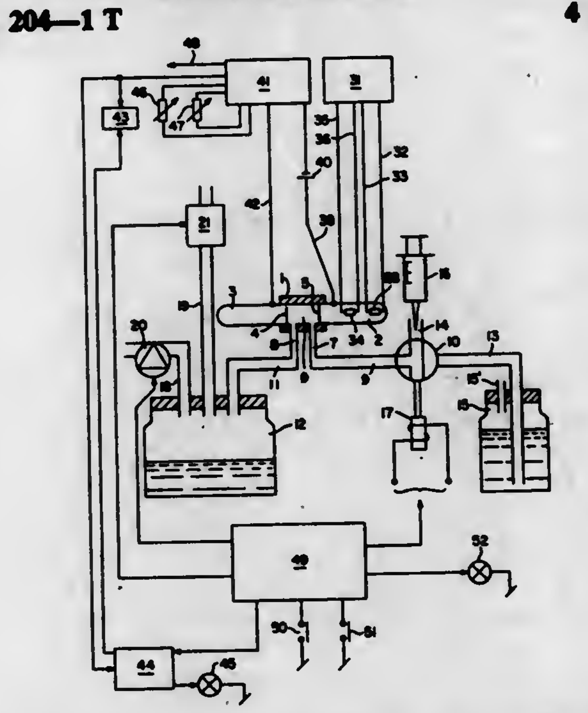
4,129,478
METHOD FOR MEASURING SUBSTRATE CONCENTRATIONS

Philippe Racine, Münchenstein, Switzerland; Jean-Claude Higelin, Hegenheim; Roland Engelhardt, Mulhouse, both of France, and Wolfgang Mindt, Erlangen, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 493,583, Aug. 1, 1974, Pat. No. 4,005,002. This application Oct. 18, 1976, Ser. No. 733,570

Int. Cl.^{2} G01N *27/46*

U.S. Cl. 204—1 T **4 Claims**



1. A method of measuring the concentration of substrates of enzyme reactions occurring during intermediate metabolism, more particularly the concentration of lactate and glucose in fluid biological samples, wherein the substrate concentration is measured by measuring a current produced by oxidation of an acceptor at an enzyme electrode with a measuring device substantially comprising a measuring cell for receiving the fluid sample, the enzyme electrode and a reference electrode, both electrodes being in contact with the fluid sample, and the enzyme electrode containing a platinum or gold electrode, an enzyme layer and a semi-permeable membrane covering the enzyme layer, the temperature at which the enzymatic reaction takes place being regulated at a pre-determined value and a direct voltage being applied between the enzyme electrode and the reference electrode, which method is characterized by performing a local temperature regulation of the enzyme layer within the enzyme electrode by means of a temperature control of the gold or platinum electrode thereof, filling the measuring cell with a buffer solution containing an acceptor prior to filling the cell with a fluid sample and keeping the cell filled with said buffer solution over a time interval long enough to enable diffusion of a quantity of the acceptor through the semi-permeable membrane of the enzyme electrode into the enzyme-containing layer, said quantity of acceptor being sufficiently high for assuring a linear response of the enzyme electrode, sucking the buffer solution from the measuring cell at the end of said time interval, filling the measuring cell with a fluid sample and measuring the concentration of the substrate contained in the fluid sample by determining the peak value of the current flowing through the enzyme electrode with an electronic circuit.

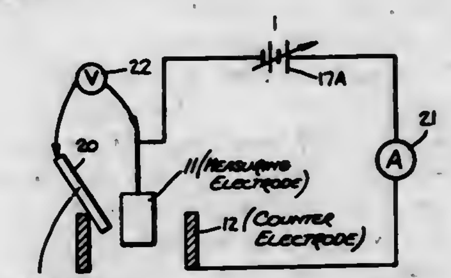
4,129,479
METHOD OF ANALYZING RESIDUAL CHLORINE

James J. Morrow, Norristown, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Continuation of Ser. No. 313,644, Dec. 11, 1972, abandoned. This application Jan. 30, 1975, Ser. No. 545,515

Int. Cl.^{2} G01N *27/46*

U.S. Cl. 204—1 T **2 Claims**



1. The method of measuring the free chlorine residual in a chlorinated liquid supply having an ammonia content giving rise to a combined chlorine residual, said liquid supply being chlorinated by a controllable chlorinator, said method comprising the steps of:

A. feeding a sample stream of said supply which is buffered and contains a potassium bromide additive through a passage defined by the space between the measuring electrode formed of gold and the counter electrode formed of copper of an amperometric cell,

B. impressing across said electrodes a potential at a current-limiting level at which the current flow in the cell as a result of chlorine content increases progressively as a function of the free chlorine residual in the sample stream and is substantially insensitive to the combined chlorine residual therein,

C. measuring said current to indicate the first appearance of said free chlorine residual and,

D. controlling the operation of said chlorinator in response to the indication of the first appearance of the chlorine residual so that the degree of chlorination is such as to maintain a breakpoint condition at which ammonia destruction is optimized.

4,129,480

METHOD AND APPARATUS FOR DETERMINING THE IMMERSED SURFACE AREA OF ONE OF THE ELECTRODES OF AN ELECTRO-CHEMICAL BATH

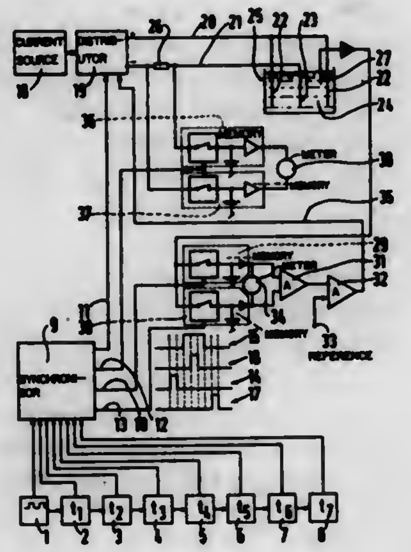
Eric Robert, Rue du Chapeau Râblé 19, 2300 - La Chaux-de-Fonds, Canton of Neuchâtel, Switzerland

Filed Dec. 20, 1977, Ser. No. 862,399

Claims priority, application Switzerland, Dec. 24, 1976, 16297/76

Int. Cl.² G01N *27/26;* C25D *21/12*

U.S. Cl. 204—1 T 6 Claims



1. Method of determination of the immersed surface area of one of the electrodes of an electro-chemical installation including an electrolyte, especially of the cathode, comprising measuring the potential between said electrode and the electrolyte without current being then applied to the bath, applying between the electrodes, immediately after the said measuring, a pulse of defined load; measuring immediately thereafter the potential between the electrode, the immersed surface area of which it is desired to be determined, and the electrolyte; taking the difference between the two measured potentials; and then using the value of this difference for the determination of the surface area it is desired to know, taking into account the fact that the ratio between the load of pulse Q, the immersed surface area of the electrode S, and the measured difference of potentials Δ U responds to the equation

$$Q/S = f(\Delta U),\ f(\Delta U)$$

being practically constant in a large field of application.

4. Apparatus for determining the immersed surface area of an electrode in an electro-chemical installation including an electrolyte, comprising:

means for generating pulses of current and applying them to the electrodes of the electro-chemical installation;

means for measuring the potential between the electrode, whose immersed surface area is to be determined, and the electrolyte, before and after each pulse;

means for memorizing the measured potential values;

means for effecting the difference between the memorized potential values;

means for controlling said generating means as a function of the difference between the memorized potential values and as compared to an assigned value;

means for displaying of the difference between the memorized potential values;

means for displaying the pulse current value, said difference between the potential values and said current value both being indicative of the immersed surface area of the electrode whose immersed surface area is to be determined.

4,129,481

URANIUM ISOTOPIC ENRICHMENT

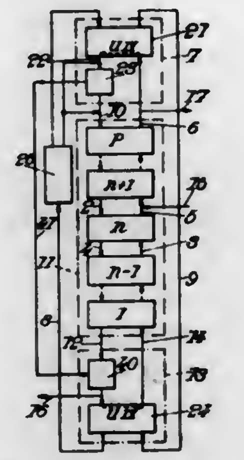
Jacques Aubert; Maurice Cariès, and Roger Neige, all of Pierrelatte, France, assignors to Commissariat A l'Energie Atomique, Paris, France

Filed Feb. 11, 1977, Ser. No. 767,984

Claims priority, application France, Feb. 13, 1976, 76 03986

Int. Cl.² C25C *1/22*

U.S. Cl. 204—1.5 12 Claims



1. A process for effecting isotopic exchange between a compound of uranium at a first valence and a compound of uranium at a second valence unreactive with the first compound to produce enrichment of the lighter uranium isotope in the compound of uranium at the higher of the first and second valences, said valences being III and IV, which comprises repeating a number of times a cycle which comprises:

contacting an aqueous acid phase loaded with the compound of uranium at the first valence with a different phase loaded with the compound of uranium at the second valence, under conditions such that there is substantially no net transfer of uranium, in either valence state, from one phase to the other;

extracting uranium at said second valence from said other phase, after said contact, by said aqueous phase which has previously been depleted of its uranium contents;

subjecting the uranium contents in said aqueous phase, after said extraction to a valence change from said second valence to said first valence by a process which involves electrolysis, before any new contact with said other phase;

changing the valence of the uranium contained in said aqueous phase, after said contact, from said first valence to said second valence during that same electrolysis which occurs during the change of valence from said second to the first valence;

and transferring uranium at said second valence into said other phase which has previously been depleted of its uranium contents.

4,129,482

ELECTROPLATING IRON GROUP METAL ALLOYS

Ronald J. Lash, Warren, Mich., assignor to M&T Chemicals Inc., Stamford, Conn.

Filed Jan. 24, 1977, Ser. No. 809,558

Int. Cl.² C25D *3/56*

U.S. Cl. 204—43 T 14 Claims

8. In an aqueous acidic plating bath for the preparation of an electrodeposit which contains 15% to 70% iron; at least one metal selected from the group consisting of nickel and cobalt or; binary or ternary alloys of iron and of the metals selected from nickel and cobalt; the improvement comprising the presence of at least one complexing compound consisting of a poly-substituted aryl compound containing at least one carboxylic acid group defined as —COOH, another substituent independently selected from hydroxy or carboxy, and one or more substituents independently selected from sulfo, or sulfoalkyl groups.

4,129,483

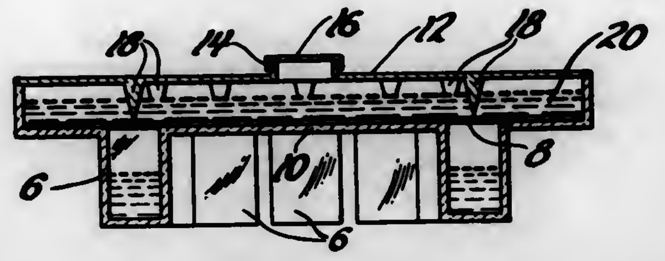
DEVICE, COMPOSITION AND METHOD FOR IDENTIFYING MICROORGANISMS

Barry R. Bochner, 1546 Arch St., Berkeley, Calif. 94708

Filed Mar. 3, 1977, Ser. No. 773,879

Int. Cl.² C12K *1/10*

U.S. Cl. 195—100 29 Claims



1. A composition for identifying or testing a microorganism by growing a culture of the microorganism in contact therewith, said composition consisting essentially of an aqueous solution containing: (1) an oxidation-reduction indicator which substantially irreversibly undergoes a change in color upon being reduced; (2) a biodegradable test substrate compound which, when catabolized by a microorganism, will engender a reduction of said indicator; (3) a buffer to maintain the pH of the composition at a level which enables microorganism culture growth without engendering or preventing reduction of said indicator; and (4) a microorganism nutrient in a concentration sufficient to support microorganism culture growth without engendering reduction of said indicator.

4,129,484

PROCESS FOR REGENERATION OF SPENT REACTION SOLUTIONS

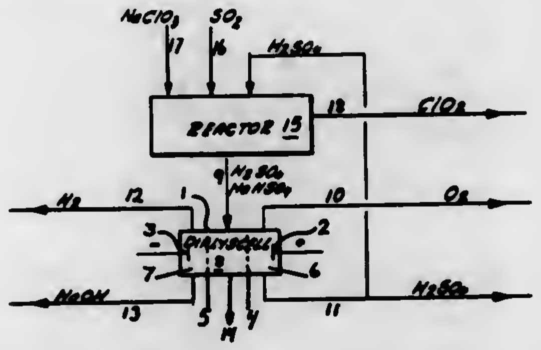
Karl-Georg Larsson, Trollhättan, Sweden, assignor to Kema-Nord AB, Stockholm, Sweden

Filed May 6, 1977, Ser. No. 794,699

Claims priority, application Sweden, May 11, 1976, 7605372

Int. Cl.² C25B *1/26*

U.S. Cl. 204—101 6 Claims



1. A process for manufacture of chlorine dioxide by contacting and mixing in a reaction zone an alkali or alkali earth metal chlorate with sulfuric acid and/or hydrochloric acid in the presence of water and a reducing cathode or a reducing agent for the chlorate such as sulfur dioxide, chloride ion and/or methanol whereby chlorine dioxide is liberated and withdrawn and a residual aqueous solution is produced containing alkali or alkali earth metal ions, comprising the steps of:

(a) withdrawing the residual solution from the reaction zone and feeding it to a compartment of an electrolytic cell containing at least one membrane between an anode and a cathode, whereby the membrane closest to the anode is permeable to cations when the residual solution is fed to the anode compartment and permeable to anions when the residual solution is fed to a compartment opposite the anode,

(b) electrolytically producing hydrogen ions in the anode compartment,

(c) withdrawing the solution from the anode compartment with, in relation to the residual solution, decreased concentration of the alkali or alkali earth metal ions,

(d) feeding at least a part of the so withdrawn anode compartment solution to the reaction zone, and

(e) withdrawing a product containing alkali or alkaline earth metal ions from a compartment of the cell other than the anode compartment.

4,129,485

METHOD FOR ELECTROLYTIC REMOVAL OF SCALE FROM BAND STEEL

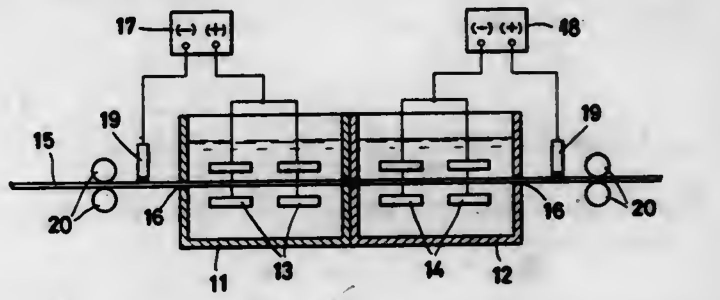
Nobuo Shikata, and Sukemitsu Ito, both of Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Oct. 11, 1977, Ser. No. 840,839

Claims priority, application Japan, Oct. 12, 1976, 51/122180

Int. Cl.² C25F *1/06, 1/00*

U.S. Cl. 204—144.5 3 Claims



1. A method for the removal of scale composed preponderantly of Fe_3O_4 and having a thickness of about 10μ from band steel consisting of a hot rolled steel plate of carbon steel, consisting of the steps of subjecting the band steel to electrolysis for a period of from 3 to 10 seconds in an electrolyte composed of an aqueous solution of sodium chloride at temperatures in the range of from 80° to 100° C., the electrolysis being effected with feed voltages in the range of from 3 to 10 V and current densities in the range of from 0.5 to 1.0 A/cm², with the band steel used as a cathode and an electrode tool as an anode, and then subjecting the band steel to electrolysis for a period of from 15 to 25 seconds in the aqueous solution of sodium chloride at temperatures of from 80° to 100° C., with feed voltages of from 3 to 10V and current densities of from 0.5 to 1.0 A/cm², with the treated band steel used as the anode and the electrode tool as the cathode.

4,129,486

ULTRAVIOLET CURING PRINTING INKS HAVING IMPROVED SHELF LIFE

Albert A. Deutsch, Scarsdale, N.Y.; Richard Dennis, E. Rutherford, N.J., and Robert Gumbinner, Tarrytown, N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Filed May 9, 1978, Ser. No. 904,143

Int. Cl.² C08G *18/00, 63/00*

U.S. Cl. 204—159.19 7 Claims

1. An ink composition which is curable upon exposure to ultraviolet radiation which comprises:

I. An ethylenically unsaturated oligomer comprising an epoxy or urethane type material having terminal acrylic, methacrylic or allylic groups, a molecular weight of from about 200 to 1300, one carbon-carbon double bond linkage per 50-400 molecular weight units, and a preponderance of which material has a functionality greater than 1; and

II. A photoinitiator system comprising Michler's Ketone and a o-halogen hexa-aryl biimidizolyl compound; and

III. A colorant conventionally employed in forming printing inks.

4,129,487

PROCESS FOR IMPROVING THE PROPERTIES OF AN AQUEOUS EMULSION TYPE COATING COMPOSITION

Keizo Makuuchi, Sakai; Kunio Araki, Takasaki; Tohru Takagi; Hiroyuki Nakayama, both of Hiratsuka, and Haruo Kozu, Fujisawa, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Feb. 25, 1976, Ser. No. 661,153

Claims priority, application Japan, Feb. 28, 1975, 50-24528

Int. Cl.^{2} C08F *8/00*

U.S. Cl. 204—159.14 **3 Claims**

1. A process for improving the properties of an aqueous emulsion type coating composition containing from 30% to 60% by weight of at least one radiation cross-linkable resin, selected from the group consisting of homo- or co-polymers of an acrylate, vinyl acetate, versatic acid, vinyl chloride and ethylene, wherein said coating composition contains less than 0.5% by weight of a stabilizer having hydroxy groups on the basis of weight of the composition and the composition is irradiated with ionizing radiation at a total dose in the range of from 10^4 rad to 10^8 rad before coating the composition on a substrate, said composition being and maintained in a stable emulsion state during and after irradiation.

4,129,488

ULTRAVIOLET CURABLE EPOXY-POLYESTER POWDER PAINTS

Vincent D. McGinniss, Valley City, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Nov. 8, 1976, Ser. No. 739,526

Int. Cl.^{2} C08G *18/00, 63/00*

U.S. Cl. 204—159.19 **9 Claims**

1. In a dry powder paint composition containing a film-forming binder and having an average powder particle size less than about 325 mesh, the improvement comprising:

said binder being a spatially arranged ethylenically unsaturated epoxy-polyester polymer containing an epoxy adduct and a polyester adduct, said epoxy adduct being spatially arranged by spacing said epoxy adduct from said polyester adduct by an intervening linear polymer chain containing repeating polymer units, said epoxy adduct having a molecular weight at least about 100 and said polyester having a molecular weight of at least about 100, said spatially arranged epoxy-polyester polymer having a molecular weight of between about 1,000 and 10,000 and having a melting point of at least 80° C. whereby the powder becomes fluid upon exposure to moderate heat above 80° C., said epoxy-polyester polymer containing by weight at least about 2% ultraviolet sensitizer connected to said epoxy-polyester polymer for activating and cross-linking the ethylenic unsaturation upon exposure to ultraviolet energy.

4,129,489

PREPARATION OF POLYMER BASED POWDER COATINGS BY IONIZING RADIATION

Roger M. Christenson; Rostyslaw Dowbenko, both of Gibsonia, and Joseph M. Makhlouf, Mars, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 649,118, Feb. 14, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,426

Int. Cl.^{2} C08F *2/54*

U.S. Cl. 204—159.22 **12 Claims**

1. A method of preparing a polymer based powder coating material which comprises the steps of:

(a) preparing a mixture comprising one or more monomers each having substantially no more than one ethylenically unsaturated group, which mixture is polymerizable by means of ionizing radiation to form a thermoplastic, substantially non-crosslinked film;

(b) applying a coating of said mixture to a substrate;

(c) subjecting the coated substrate to ionizing radiation to polymerize said ethylenically unsaturated monomer or monomers in said coating and to thereby form a solid thermoplastic, substantially non-crosslinked film; and

(d) breaking and reducing said film into substantially powder-sized particles of polymer based powder coating composition which when electrostatically deposited upon a substrate and baked, fuse to produce a film.

4,129,490

POLYMERIC PRODUCTS

Karl F. Schimmel, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 728,368, Sep. 30, 1976, Pat. No. 4,069,210. This application Dec. 7, 1977, Ser. No. 858,223

Int. Cl.^{2} C25D *13/00*

U.S. Cl. 204—181 C **4 Claims**

1. A method of electrocoating an electrically conductive surface serving as a cathode in an electrical circuit comprising passing an electric current between said cathode and an anode through an aqueous electrodepositable composition wherein the electrodepositable composition comprises an aqueous dispersion of a non-gelled, internally ionized, quaternary ammonium salt group-containing polymer comprising the reaction product of:

(A) an organic polyepoxide,

(B) a polyamine containing at least two tertiary amine groups, formed from reacting:

(1) an organic polyisocyanate, an organic polycarboxylic acid,

(2) an active hydrogen-containing tertiary amine in which the active hydrogen is selected from the class consisting of hydroxyl, mercapto, primary and secondary amino, (1) and (2) reacted with one another to form a polyamine which is stable in water;

said reaction product being acidified to provide a quaternary ammonium salt group-containing polymer in which the salt groups are located along the polymer backbone.

4,129,491

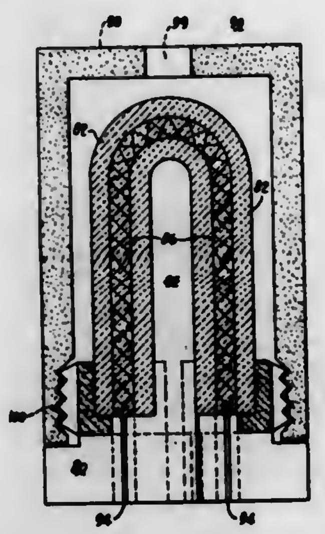
OXYGEN CONCENTRATION ANALYZER

Joseph O. Obiaya, 4773 Walford, #13, Warrensville Heights, Ohio 44128

Filed Oct. 25, 1977, Ser. No. 845,048

Int. Cl.^{2} G01N *27/46;* **204** *1 S;195 S*

U.S. Cl. 204—195 S **7 Claims**



1. An oxygen concentration analyzer comprising:

(a) a material comprised of zirconium oxide doped with bivalent molecules the presence of which within the material creates oxygen ion vacancies;

(b) a heater embedded with said material for heating said material; said heater configured in the form of a structure with meshes and capable of radiating heat to said material while allowing oxygen ions in said material to migrate through meshes of said structure;

(c) means for structurally supporting said heater;

(d) a first conductive electrode on one area of said material to facilitate the reduction of oxygen molecules in a first gas;

(e) a second conductive electrode on a second area of said material to facilitate the oxidation of gas ions within said material, said second conductive electrode being located for exposure to a second gas; and

(f) means for electrically connecting said first and second electrodes to means for correlating voltage difference between said electrodes with oxygen concentration within said first or second gas.

4,129,492

ELECTROLYTIC CELL

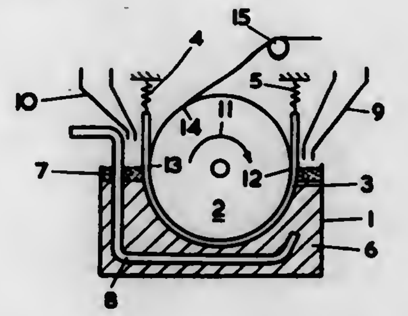
Peter H. Morton, Solihull; John R. B. Gilbert, Sutton Coldfield, and John P. A. Wortley, Harborne, all of England, assignors to Imperial Metal Industries (Kynoch) Limited, Birmingham, England

Filed Dec. 21, 1976, Ser. No. 752,857

Claims priority, application United Kingdom, Dec. 23, 1975, 52593/75

Int. Cl.^{2} C25D *1/04, 3/38, 17/00*

U.S. Cl. 204—212 **15 Claims**



1. An electrolytic cell for the production of sheet metal comprising a container for electrolyte, a cylindrical cathode rotatable about its longitudinal axis having part at least of its surface immersed within the electrolyte, an anode of particulate consumable or slowly consumable metallic material, a stereo-reticular array of electrically insulating material in contact with the cathode and anode and spacing the anode from the cathode, the stereo-reticular array being fixed in position relative to the anode and to the container, the cathode being rotatable with its surface in contact with the stereo-reticular array so that the surface of the cathode wipes the stereo-reticular array.

4,129,493

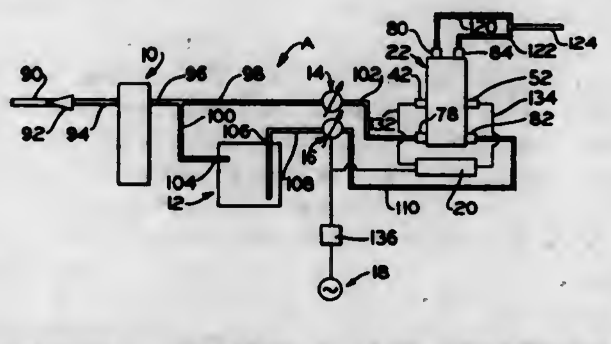
SWIMMING POOL CHLORINATOR SYSTEM

Michael R. Tighe, Mentor, and Hugh L. McCutchen, Chardon, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Jun. 30, 1977, Ser. No. 811,989

Int. Cl.^{2} C25B *15/02, 9/00, 1/26;* **E04H** *3/20*

U.S. Cl. 204—228 **3 Claims**



1. A swimming pool chlorinator system comprising in combination:

an ion exchange column including an inlet for receiving a supply of water therein and an outlet for discharging deionized water therefrom;

a briner adapted to receive a portion of said deionized water and convert same to a saturated brine solution;

a single monopolar electrolytic membrane cell having opposed catholyte and anolyte chambers which respectively include an expanded mesh cathode and an unflattened large mesh anode member with said members disposed in a close spaced parallel relationship to each other and separated by a substantially hydraulically impermeable cation exchange membrane, said catholyte chamber including an inlet for receiving a portion of said deionized water discharged from said ion exchange column outlet therein in communication with said cathode and an outlet for discharging sodium hydroxide therefrom during operation of said cell, said anolyte chamber including an inlet for receiving said brine solution from said briner therein in communication with said anode and an outlet for discharging chlorine during operation of said cell;

means for supplying a voltage differential across said cathode and anode to generate a current flow through said cell and effect electrolysis therein;

means for selectively varying the current flow through said cell for controlling the amount of sodium hypochlorite electrolytically produced for introduction into the water of said swimming pool;

means for connecting said catholyte and anolyte chamber outlets externally of said cell such that the individual products of electrolysis discharged from said chambers therethrough may be mixed together forming sodium hypochlorite for introduction into the water of said swimming pool;

a first pump adjacent said catholyte chamber inlet for pumping said deionized water thereinto and a second pump adjacent said anolyte chamber inlet for pumping said saturated brine solution thereinto;

and means for conveying said sodium hypochlorite to a pumping system for said swimming pool.

4,129,494

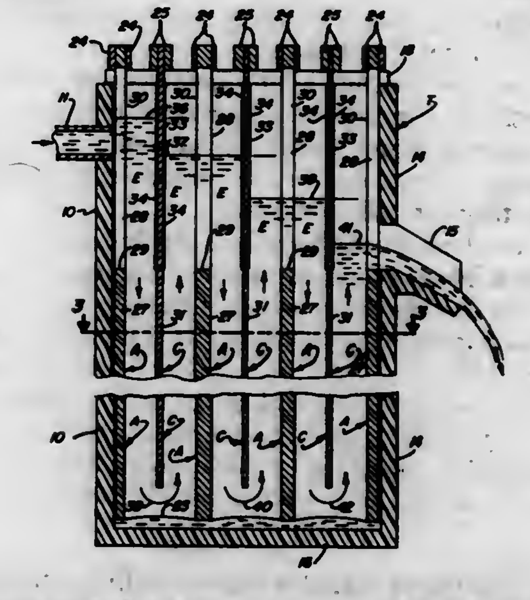
ELECTROLYTIC CELL FOR ELECTROWINNING OF METALS

Telfer E. Norman, P. O. Box 781, Green Valley, Ariz. 85614

Filed May 4, 1977, Ser. No. 794,623

Int. Cl.^{2} C25C *7/00, 7/04*

U.S. Cl. 204—268 **12 Claims**



1. An electrolytic cell for electrowinning of metals, comprising:

an upright, electrolyte containing tank of rectangular lateral configuration, having uniformly spaced, opposed vertical slots along each of its two interior sides;

a series of upright, generally rectangular anodes extending across said tank and having a width to extend into opposed slots at opposite sides of said tank, said anodes being loosely positioned in alternate slots and removable from said slots;

a series of upright, generally rectangular cathodes extending across said tank and having a width to extend into opposed slots at opposite sides of said tank, said cathodes being loosely positioned in slots alternating with the slots of said anodes and removable from said slots;

an inlet at one end of said tank;

an outlet weir at the opposite end of said tank at a lower elevation than the level of electrolyte at the inlet end of said tank;

the construction and arrangement of said anodes and cathodes being such that the electrolyte is forced to flow in an alternating upward and downward path between said anodes and cathodes;

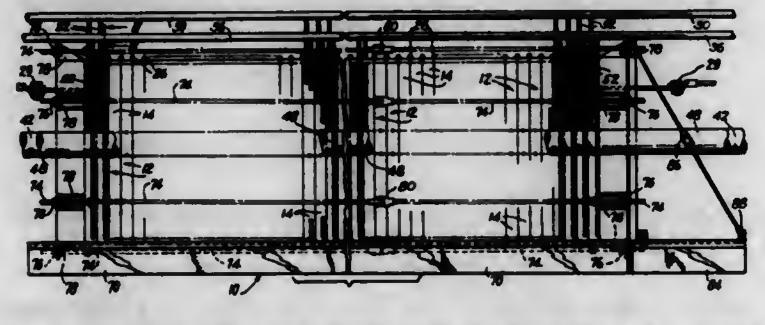
said elevation of said outlet weir being sufficiently below the level of electrolyte at said inlet end of said tank that flow velocities in excess of ten feet per minute will be induced in the electrolyte as it flows downstream between said anodes and cathodes towards the outlet end of said tank and will produce pressure against said anodes and cathodes to maintain said anodes and cathodes against the downstream edges of said slots and spaced from upstream edges of said slots;

means for supplying an electrical current for flow between adjacent anodes and cathodes through said electrolyte.

4,129,495
SUPPORT STRUCTURE FOR PLURAL CELL ELECTROLYZER

Robert H. Fitch, Syracuse; Bruce E. Kurtz, and Bronislaw B. Smura, both of Marcellus, all of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Dec. 30, 1977, Ser. No. 866,157
Int. Cl.^{2} C25B *1/16, 1/26, 9/00*
U.S. Cl. 204—279 7 Claims



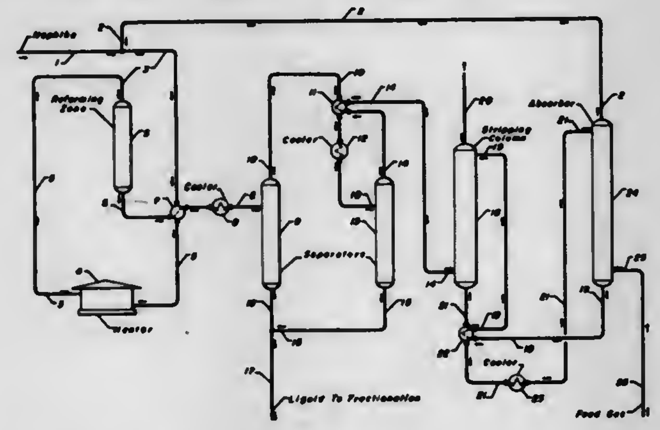
1. A retaining and restraining support structure for a plural cell electrolyzer, comprising:
   (a) a sleeper assembly for supporting an electrolyzer cell vertically beneath the longitudinal dimension thereof;
   (b) retaining support means for applying a longitudinal compressive force on the individual cells constituting said electrolyzer cell, comprising:
      (i) terminal electrolyzer cell end frames;
      (ii) a plurality of adjustable, longitudinal tension bars disposed between said end frames; and,
   (c) restraining support means for applying an oblique stabilizing force on said electrolyzer cell for maintaining the individual cells constituting the same in substantially vertical orientation, said restraining support means including adjustable, diagonal tie bar means extending from one of said end frames to a horizontally displaced anchor point.

4,129,496
HYDROCARBON REFORMING PROCESS

Robert S. Loboda, Hacienda Heights, Calif., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 706,858, Jul. 19, 1976, Pat. No. 4,058,452. This application Aug. 11, 1977, Ser. No. 823,794
The portion of the term of this patent subsequent to May 15, 1994, has been disclaimed.
Int. Cl.^{2} C10G *35/04*
U.S. Cl. 208—134 2 Claims

1. A process for catalytically reforming a naphtha which comprises the steps of:
   (a) passing a feed gas stream comprising hydrogen and a C_2 to C_6 hydrocarbon through an absorption zone operated under conditions effective to remove the C_2 to C_6 hydrocarbon, including countercurrent contact with a stripping zone liquid effluent stream, and thereby forming a hydrogen-rich gas stream and an absorption zone liquid effluent stream;
   (b) passing the absorption zone liquid effluent stream into a stripping zone operated at conditions effective to cause the removal of the C_2 to C_6 hydrocarbon from the absorption zone liquid effluent stream, including countercurrent contact with a gaseous stripping media, and thereby forming the stripping zone liquid effluent stream and an off-gas stream comprising hydrogen and the C_2 to C_6 hydrocarbons;
   (c) admixing the hydrogen-rich gas stream with a naphtha feed stream to form a reforming zone feed stream;



   (d) passing the reforming zone feed stream through a reforming zone and thereby forming a reforming zone effluent stream;
   (e) cooling and effecting a partial condensation of the reforming zone effluent stream and passing the reforming zone effluent stream into a vapor-liquid separation zone operated at conditions effective to form a condensate stream and a separation zone gas stream;
   (f) passing the condensate stream to a product recovery zone; and,
   (g) passing the separation zone gas stream into a lower portion of the stripping zone as the gaseous stripping media.

4,129,497
HYDROCARBON CATALYTIC REFORMING PROCESS

Paul W. Tamm, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

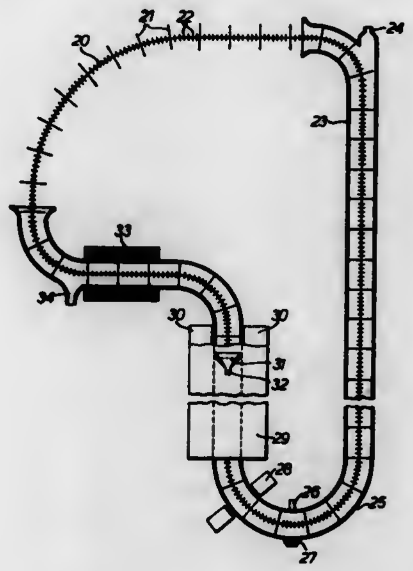
Division of Ser. No. 716,924, Aug. 23, 1976, Pat. No. 4,082,697, which is a continuation-in-part of Ser. No. 496,788, Aug. 12, 1974, which is a continuation-in-part of Ser. No. 387,100, Aug. 9, 1973, abandoned. This application Oct. 13, 1977, Ser. No. 841,616
Int. Cl.^{2} C10G *35/08*
U.S. Cl. 208—138 14 Claims

1. In a catalytic hydrocarbon reforming process using a reformable hydrocarbon feedstock and typical reforming process conditions, the improvement comprising using a catalyst selected from the group consisting of reforming catalyst compositions comprising a carrier component and a catalytic component, said carrier component comprising predominantly alumina having (1) a pore volume of at least 0.5 cc per gram, (2) a content of micropores sized in the range between about 80 and 150 A in diameter constituting at least 70% of said pore volume and (3) a content of pores having diameters greater than about 1000 A constituting from about 0.1 to 3% of said pore volume, said catalytic component being at least one Group VIII noble metal promoted and/or stabilized by at least one material selected from the metals, oxides and halides of the group of elements consisting of rhenium, manganese, germanium, tin, zinc and titanium; said composition containing on a dry basis and calculated as metal, an amount in the range of from about 0.1 to 3 weight percent of said noble metal, and an amount in said range of said promoter; and said pore-sizes corresponding to sizes determined by the mercury porosimetry method.

4,129,498
MAGNETIC SEPARATION

Norman O. Clark, Par, and James H. P. Watson, St. Austell, both of England, assignors to English Clays Lovering Pochin & Co. Limited, Cornwall, England

Filed Nov. 24, 1975, Ser. No. 634,597
Claims priority, application United Kingdom, Nov. 22, 1974, 50801/74
Int. Cl.^{2} B03C *1/16*
U.S. Cl. 209—213 17 Claims



1. A method of separating native magnetisable particles from a fluid having such particles in suspension therein, which method comprises:
   establishing a magnetic field in a predetermined zone,
   adding foreign magnetisable particles to the fluid, from which native magnetisable particles are to be separated, the foreign magnetisable particles being relatively large in relation to the native magnetisable particles,
   passing the fluid and the native and foreign magnetisable particles into the predetermined zone by means of a chain means which is moved by the action of the fluid and particles on transverse members attached to the chain means, so that native magnetisable particles are magnetised and attracted to foreign magnetisable particles and the foreign magnetizable particles and the entrained native magnetisable particles are magnetically attracted to magnetizable portions of the chain means within the predetermined zone, and
   removing the foreign magnetisable particles and entrained native magnetisable particles from the fluid by means of the chain means.

4,129,499
OIL SEPARATION MATERIAL

Roger J. R. Cairns, Woking, and Joan M. Howard née Murtagh, Farnham, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Mar. 1, 1977, Ser. No. 773,281
Claims priority, application United Kingdom, Mar. 9, 1976, 09311/76
Int. Cl.^{2} B01D *17/04, 15/00*
U.S. Cl. 210—23 R 22 Claims

1. A method for separating oil from water contaminated with oil which method comprises passing a contaminated water stream through one or more purification beds containing treated solid particles in such manner that the oil coalesces and an oil phase and a water phase are formed, wherein said treated solid particles comprise solid particles which have been treated with a solution of a hydrocarbon activating agent and a dispersant additive.

3. The method according to claim 1 wherein the dispersant additive is selected from the group consisting of
   (1) a copolymer which contains a carboxylic ester group and one or more additional polar groups,
   (2) a hydrocarbon polymer having a polar group,
   (3) an N-substituted long chain alkenyl succinimide,
   (4) a high molecular weight amide or polyamide,
   (5) a high molecular weight ester or polyester, and
   (6) an amine salt of a high molecular weight organic acid.

4,129,500
TREATMENT OF DROPLET DISPERSIONS

Godfrey V. Jeffreys; Clive J. Mumford, both of Sutton Coldfield; Frank E. G. Ravault, and Colin Washbourne, both of Birmingham, all of England, assignors to Foseco International Limited, Birmingham, England

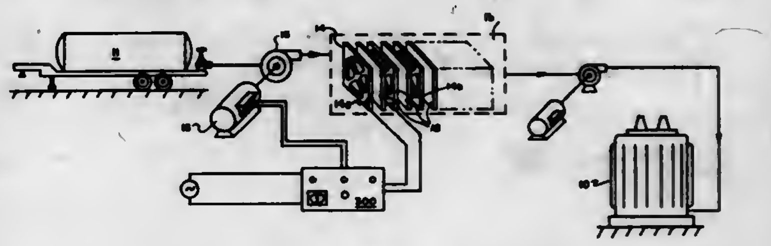
Filed Oct. 29, 1974, Ser. No. 518,963
Claims priority, application United Kingdom, Nov. 5, 1973, 51333/73
Int. Cl.^{2} B01D *13/00*
U.S. Cl. 210—23 R 3 Claims

1. A method of coalescing the disperse phase of a droplet dispersion which comprises passing the droplet dispersion through a porous body of reticular foam-structured ceramic material of progressively increasing pore size from a region at or adjacent the face at which the dispersion enters the body to the face from which the coalesced disperse phase leaves the body.

4,129,501
METHOD AND APPARATUS FOR DETECTING WATER IN OIL

Edward M. Haynes, Box 197, Clifton Forge, Va. 24422

Filed Sep. 7, 1977, Ser. No. 831,164
Int. Cl.^{2} B01D *13/00*
U.S. Cl. 210—23 R 7 Claims



1. A method of charging electric power transmission equipment with dielectric oil comprising the steps of providing a flow conduit between a reservoir of said oil and said equipment, providing a full-flow, hydrophilic filter within said conduit and motor driven pump means to induce flow of said oil through said filter, the improvement comprising the steps of:
   A. Disposing within said conduit, downstream of said filter, water sensing means comprising a pair of electrodes separated by hydrophilic insulating means, said electrodes intimately contacting said insulating means;
   B. Charging an electric potential across said electrodes of insufficient strength to conduct past said insulating means in the absence of water permeation thereof;
   C. Sensing the presence of current flow past said insulating means in the event of water permeation thereof;
   D. Initiating an actuating signal in response to said current flow;
   E. Inactivating said pump motor means in response to said actuating signal.

4,129,502
LIQUID TREATMENT PROCESS

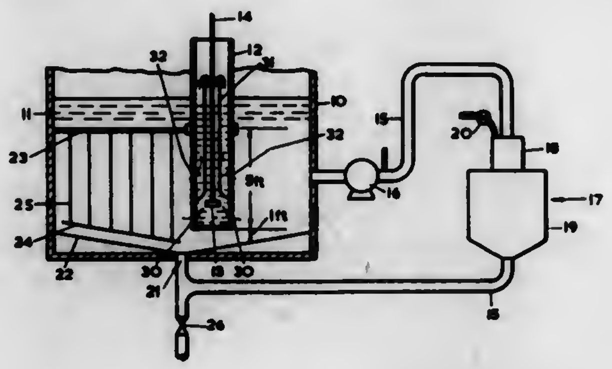
Michael E. Garrett, 92 York Rd., Woking, Surrey, and Richard M. Keene, 27 Commonfield Rd., Banstead, Surrey, both of England

Filed Mar. 8, 1977, Ser. No. 775,627

Claims priority, application United Kingdom, Mar. 12, 1976, 10020/76; Apr. 20, 1976, 15956/76

Int. Cl.² C02C *5/04*

U.S. Cl. 210—60 **11 Claims**



1. A process for treating liquid, which process comprises passing a stream of the liquid under pressure through a line, introducing gas into the stream to form bubbles of gas in the liquid, passing the stream of liquid and gas bubbles downwardly through an expansion chamber in which the velocity of the liquid stream is reduced to a value which allows a prolonged contact time between the gas and liquid while allowing the larger bubbles of gas to rise in the chamber, the stream being introduced into the chamber so as to create sufficient turbulence within the chamber to shatter some of the larger bubbles in the stream into relatively smaller bubbles, passing the stream containing liquid, dissolved gas and possibly relatively small bubbles of undissolved gas into a lower settling zone of a container for the liquid, said expansion chamber being located outside said container, and controlling the pH of the liquid in the container to a value in a predetermined range by injecting a stripping gas to strip unwanted gases from the liquid in the container.

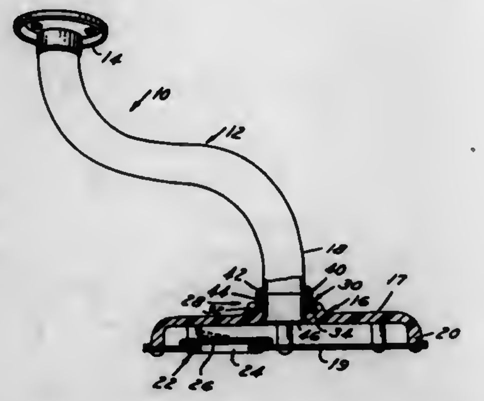
4,129,503
OIL PUMP INLET SCREEN ASSEMBLY

A. David Joseph, North Muskegon, Mich., assignor to Sealed Power Corporation, Muskegon, Mich.

Filed Feb. 28, 1978, Ser. No. 882,269

Int. Cl.² B01D *25/04*

U.S. Cl. 210—232 **2 Claims**



1. An oil pump inlet screen assembly adapted to be immersed in an oil sump comprising a metal pipe adapted at one end to be connected to an oil pump housing and having a second end with a circumferential rib formed on an outer surface of said pipe adjacent said second end, a filter screen including a molded screen housing of oil-resistant plastic construction having an aperture adapted to receive said second pipe end, a metal eyelet molded at one end into said housing and having a second end embracing said rib, and an annular resilient sealing ring surrounding said pipe and captured by said eyelet in compression between said rib and said housing.

4,129,504
VAT FOR SEPARATING WORT FOR SPENT GRAIN

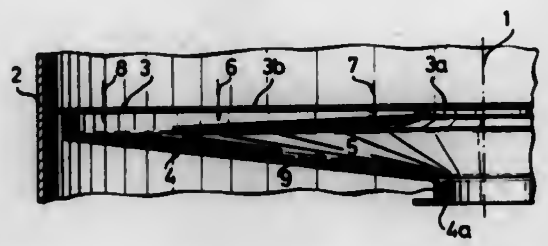
Alfons Wolfseder; Hans Urban, both of Freising, and Simon Redl, Reichertshausen, all of Germany, assignors to Anton Steinecker Maschinenfabrik GmbH, Freising, Germany

Filed Feb. 4, 1977, Ser. No. 765,818

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1976, 2607562

Int. Cl.² C02C *1/14*

U.S. Cl. 210—247 **1 Claim**



1. A refining vat for the separation of wort from spent grain, having a substantially cylindrical side wall, and apparatus for controlling the draining of the wort from the spent grain so as to cause the wort to leach with substantial uniformity the layer of grain in the vat, said apparatus consisting of:

(a) a flat sieve base in the vat, having a central portion which is impervious to fluids,

(b) an intermediate base which has a slightly outwardly inclined, flattened frusto-conical shape and has its upper edge joined to the outer edge of said central impervious portion of the sieve base, the diameter of said intermediate base being from 0.6 to 0.8 times the inner diameter of said cylindrical side wall, to cause the wort to leach with substantial uniformity the layer of grain which lies on said sieve base and is surrounded by said substantially cylindrical wall, and

(c) a discharge base below the intermediate base, which is inwardly inclined in funnel form and has a central drain hole, to cause the wort to flow down the discharge base and directly into said drain hole.

4,129,505
ANTI-STATIC SPRAY AND METHOD OF USE

George F. Dasher, Inverness, and August E. Fiebig, Jr., Chicago, both of Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

Continuation-in-part of Ser. No. 725,361, Sep. 22, 1976, abandoned. This application Mar. 6, 1978, Ser. No. 883,723

Int. Cl.² D06M *13/46*

U.S. Cl. 252—8.8 **7 Claims**

1. An anti-static spray, comprising: a volatile aqueous ethanol solvent carrier composed essentially of from 2 to 10% by weight water and from 90 to 98% ethanol; and a combination of two anti-static agents dissolved in said carrier, one of said agents comprising a quaternary ammonium fabric softener present in an amount of from 0.5 to 2.0% by weight based on the carrier and the other agent being ammonium acetate, said ammonium acetate being present in an amount of from 0.05 to 0.5 parts by weight per part of said quaternary fabric softener.

4,129,506
FABRIC SOFTENERS

Karl H. Wallhäusser; Ulrich Cuntze; Adolf May, all of Hofheim, and Hans-Walter Bücking, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 31, 1976, Ser. No. 719,114

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1975, 2539349

Int. Cl.² D06M *13/40, 13/46*

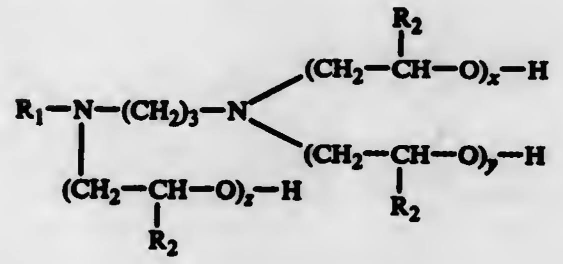
U.S. Cl. 252—8.8 **6 Claims**

1. Fabric softening compositions having germ-inhibitive properties in the form of liquid, aqueous dispersions, consisting essentially of

(a) 1 to 15% by weight of a condensation product of 1 to 1.5 mols of fatty acid or of a fatty acid ester of the formula I

$$R—CO_2X \qquad (I)$$

in which R is an aliphatic radical having about 11 to 21 carbon atoms and X is hydrogen, methyl or ethyl, and 1 mol of an alkylpropylenediaminoxalkylate of the formula II



(II)

$$R_1—N(CH_2—CH(R_2)—O)_z—H—(CH_2)_3—N[(CH_2—CH(R_2)—O)_x—H][(CH_2—CH(R_2)—O)_y—H]$$

in which R_1 is an aliphatic radical having 12 to 22 carbon atoms and R_2 is hydrogen or methyl and x, y and z are 0 or 1, the sum of x, y and z being 1 to 2; and

(b) 1 to 6% by weight of a cationic disinfectant.

4,129,507
SPIN FINISH FOR POLYAMIDE YARN

Robert M. Marshall; Sung K. Pak, both of Chester, and Kimon C. Dardoufas, Richmond, all of Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jan. 18, 1978, Ser. No. 870,306

Int. Cl.² D06M *13/10*

U.S. Cl. 252—8.9 **10 Claims**

1. A spin finish particularly for continuous filament polyamide yarn to be processed into twist plied tire cord, said finish being an oil in water emulsion of about 10 to 25 percent by weight of said oil portion, said oil portion consisting essentially of 5 to 10 parts by weight of an oxidized polyethylene wax having an average molecular weight between about 1,000 and about 3,000 and containing 3 to 9 percent of oxygen by weight; 30 to 60 parts by weight of white mineral oil having a viscosity of 300 to 500 S.U.S. at 100° F.; 25 to 50 parts by weight of a polyoxyethylene oleyl phosphate; and 2 to 10 parts by weight of a sulfonated succinic acid ester of decyl alcohol, said oil in water emulsion being adjusted to pH 7.1 to 8.0 with sodium hydroxide.

4,129,508
DEMULSIFIER ADDITIVE COMPOSITIONS FOR LUBRICANTS AND FUELS AND CONCENTRATES CONTAINING THE SAME

Edward J. Frihauf, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 841,617, Oct. 13, 1977, abandoned. This application Apr. 24, 1978, Ser. No. 899,037

Int. Cl.² C10M *1/40, 3/34;* C09K *50/00;* C10L *1/32*

U.S. Cl. 252—33 **33 Claims**

1. A lubricant composition comprising a major proportion of a lubricating oil and a minor proportion of at least one demulsifier additive comprising the mixture of:

(A) one or more reaction products of a hydrocarbon-substituted succinic acid or anhydride with one or more polyalkylene glycols or mono-ethers thereof, wherein said hydrocarbon substituent is an alkyl or alkenyl radical having from 4 to about 50 carbon atoms,

(B) one or more organic basic metal salts, and

(C) one or more alkoxylated amines.

14. In an automatic transmission fluid having a major proportion of lubricating oil and minor proportion of one or more additives including seal swellers, viscosity modifiers, dispersants, detergents, extreme pressure agents and anti-wear agents, anti-rust agents and corrosion inhibitors, the improvement which comprises incorporating into said fluid at least one demulsifier additive comprising the mixture of:

(A) one or more reaction products of a hydrocarbon-substituted succinic acid or anhydride with one or more polyalkylene glycols or mono-ethers thereof, wherein the hydrocarbon substituent on said acid or anhydride is an alkyl or alkenyl radical having about 6 to about 30 carbon atoms, and said polyalkylene glycols have an average molecular weight of about 200 to 1500,

(B) one or more organic basic alkaline earth metal salts, and

(C) one or more amines characterized by having at least one group of the formula $—NR_1R_2$ wherein R_1 is $(O\text{-}alkylene)_nOH$ wherein alkylene contains up to 6 carbon atoms, and n is a number of 1 to about 10, and R_2 is selected from hydrogen, alkyl of up to about 18 carbon atoms, and R_1.

33. A fuel composition having demulsified properties resulting from the incorporation of 1 to 200 parts per million based on the fuel of a demulsifier additive comprising the mixture of:

(A) one or more reaction products of a hydrocarbon-substituted succinic acid or anhydride with one or more polyalkylene glycols or mono-ethers thereof, wherein said hydrocarbon substituent is an alkyl or alkenyl radical having from 4 to about 50 carbon atoms,

(B) one or more organic basic metal salts, and

(C) one or more alkoxylated amines.

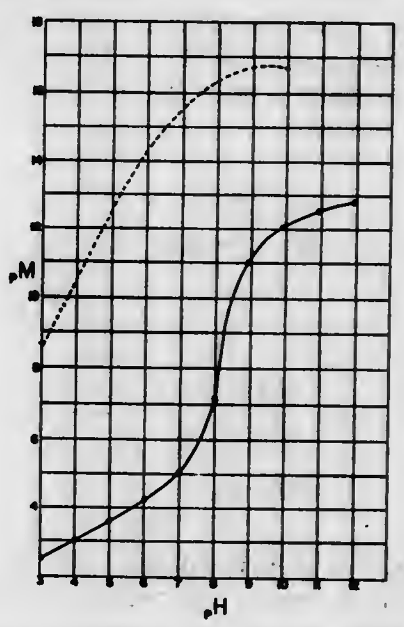
4,129,509
METALWORKING FLUID COMPOSITIONS AND METHODS OF STABILIZING SAME

Sudhir K. Shringarpurey, Cincinnati, and Gerald L. Maurer, Fairfield, both of Ohio, assignors to National Research Laboratories, Cincinnati, Ohio

Continuation-in-part of Ser. No. 597,756, Jul. 21, 1975, Pat. No. 4,055,655. This application Sep. 1, 1976, Ser. No. 719,813

Int. Cl.² C10M *1/04, 3/04*

U.S. Cl. 252—49.5 **24 Claims**



3. A stabilized metalworking fluid composition comprising

an oil and water dispersion and, an emulsifying agent selected from the group of anionic and nonionic agents, and mixtures thereof, which imparts an electronegativity to the oil phase of the dispersion, and as a stabilizer therefor in an effective stabilizing amount, a metal complex of a heavy metal ion and a polyfunctional organic ligand, in a ratio of 1:1 of the metal ion to the ligand, said ligand selected from the group of an organic acid and a substituted organic acid, said complex having an aqueous proton induced dissociation property represented by a sigmoidally shaped curve on a cartesian coordinate plot of the megative log of the metal ion concentration versus the negative log of hydrogen ion concentration, said dissociation property causing the controlled release of metal ion to impart stability to the dispersion.

4,129,510
SULFUR-CONTAINING COMPOUNDS AND LUBRICANTS AND FUELS CONTAINING THEM

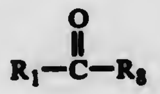
Donald M. Smith, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Apr. 28, 1976, Ser. No. 681,107

Int. Cl.² C10M *1/38*

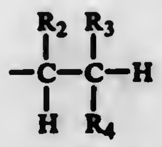
U.S. Cl. 252—48.6 36 Claims

1. A process comprising first reacting, in the presence of a catalytic amount of an acid selected from the group consisting of mineral acids and organic acids, (A) at least one mercaptan of the formula R-(SH)$_{m'}$, wherein R is a hydrocarbyl radical and m' is from 1 to about 5 with (B) at least one carbonyl compound of the formula



$$R_1-\overset{\overset{\displaystyle O}{\|}}{C}-R_8$$

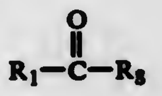
wherein R_8 is



$$-\underset{\underset{\displaystyle H}{|}}{\overset{\overset{\displaystyle R_2}{|}}{C}}-\underset{\underset{\displaystyle R_4}{|}}{\overset{\overset{\displaystyle R_3}{|}}{C}}-H$$

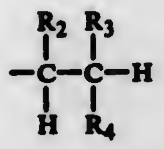
and each of R_1, R_2, R_3 and R_4 is independently hydrogen or a hydrocarbyl radical, to form an intermediate which is subsequently reacted with (C) at least one olefinic carboxylic acid or functional derivative thereof.

6. A process comprising first reacting, in the presence of a catalytic amount of an acid selected from the group consisting of mineral acids and organic acids, (A) at least one mercaptan of the formula R-(SH)$_{m'}$, wherein R is a hydrocarbyl radical and m' is from 1 to about 5 with (B) at least one carbonyl compound of the formula



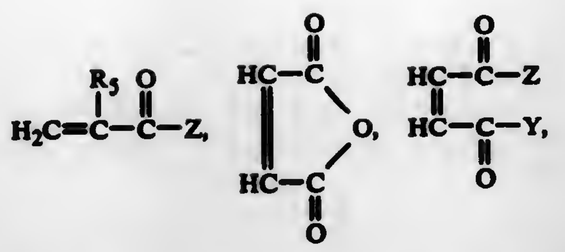
$$R_1-\overset{\overset{\displaystyle O}{\|}}{C}-R_8$$

wherein R_8 is



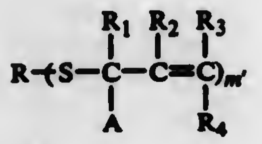
$$-\underset{\underset{\displaystyle H}{|}}{\overset{\overset{\displaystyle R_2}{|}}{C}}-\underset{\underset{\displaystyle R_4}{|}}{\overset{\overset{\displaystyle R_3}{|}}{C}}-H$$

and each of R_1, R_2, R_3 and R_4 is independently hydrogen or a hydrocarbyl radical, to form an intermediate which is subsequently reacted with (C) at least one member selected from the group consisting of



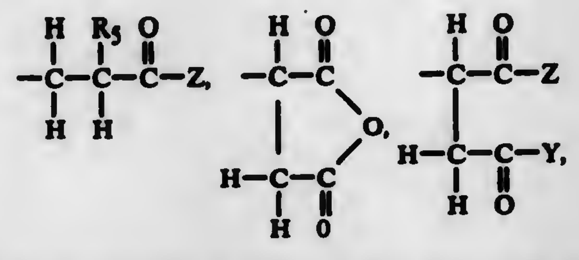
and mixtures of two or more of any of these wherein R_5 is hydrogen or a lower alkyl radical and each of Z and Y is independently a member selected from the group consisting of halo, —OR_6, —OM, —O(Alkylene-O)$_n$—R_6, —$N(R_7)_2$, —NR_7(Alkylene-NR_7)$_n R_7$, —$ON(R_7)_4$, and —$ON(R_7)_3$(Alkylene-NR_7)$_n R_7$, wherein n has an average value of about one to about ten, M is a metal cation wherein the metal is selected from the group consisting of Group Ia, Ib, IIa, IIb, IVa, IVb, Va, Vb, VIa, VIb, VIIb, VIII of the periodic table; each R_6 is independently hydrogen or a hydrocarbyl radical; each R_7 is independently hydrogen, a hydrocarbyl radical or a hydroxy-substituted hydrocarbyl radical; the alkylene group has from about one to about ten carbon atoms, and Z and Y, when taken together as part of the same reactant (C), form an >N-R_7 or >N-(Alkylene-NR_7)$_n R_7$ group wherein alkylene is as above defined.

30. A fuel composition comprising a major amount of a normally liquid fuel and from about 0.0003% up to about 5% of at least one sulfur-containing compound of the formula



$$R\!\left(S-\underset{\underset{\displaystyle A}{|}}{\overset{\overset{\displaystyle R_1}{|}}{C}}-\overset{\overset{\displaystyle R_2}{|}}{C}=\underset{\underset{\displaystyle R_4}{|}}{\overset{\overset{\displaystyle R_3}{|}}{C}}\right)_{m'}$$

wherein R is a hydrocarbyl radical; each of R_1, R_2, R_3 and R_4 is independently hydrogen or a hydrocarbyl radical; m' is from 1 to about 5; and each A is a member selected from the group of



wherein R_5 is hydrogen or a lower alkyl radical and each of Z and Y is independently a member selected from the group of halo, —OR_6, —OM, —O(Alkylene-O)$_n$—R_6, —$N(R_7)_2$, —NR_7(Alkylene-NR_7)$_n R_7$, —$ON(R_7)_4$, and —$ON(R_7)_3$(Alkylene-NR_7)$_n$—R_7, wherein n has an average value of about one to about ten; M is a metal cation, wherein the metal is selected from the group consisting of Group Ia, Ib, IIa, IIb, IVa, IVb, Va, Vb, VIa, VIb, VIIb, VIII of the periodic table, each R_6 is independently hydrogen or a hydrocarbyl radical; each R_7 is independently hydrogen, a hydrocarbyl radical or a hydroxy-substituted hydrocarbyl radical; each Alkylene group independently has from one to about 10 carbon atoms; and Z and Y, when taken together as part of a single A group, form an

>N-R_7 or >N-(Alkylene-NR_7)$_n R_7$

group.

4,129,511
METHOD OF SPRAY DRYING DETERGENTS CONTAINING ALUMINOSILICATES

Toshiaki Ogoshi, Funabashi; Masayoshi Nakamura, Koshigaya, and Izumi Yamane, Yokohma, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Sep. 19, 1977, Ser. No. 834,302

Claims priority, application Japan, Sep. 24, 1976, 51/114459; Oct. 22, 1976, 51/126277; Nov. 5, 1976, 51/132332

Int. Cl.² C11D *3/12, 11/02*

U.S. Cl. 252—140 6 Claims

1. A method of manufacturing a granular detergent, which comprises:

(a) preparing an aqueous detergent slurry which contains 15–40% of organic synthetic surface active agent and 5–20% of sodium silicate based on the dry weight of said granular detergent, said detergent slurry having a water content of 35–45 wt.%;

(b) preparing an aqueous aluminosilicate slurry containing fine aluminosilicate particles having a mean particle diameter of not greater than about 5μ and which are substantially free of particles having a particle diameter of at least about 10μ, said aluminosilicate slurry having a water content of 55–80 wt.%;

(c) spraying said detergent slurry downwardly into the upper region of a drying space wherein a hot drying gas is flowing upwardly, at one or a plurality of spraying stages disposed in said upper region; and

(d) simultaneously separately spraying said aluminosilicate slurry upwardly or downwardly into the lower region of said drying space, at a spraying stage disposed in said lower region, in an amount such that said granular detergent contains 0.5–5 wt.% of said aluminosilicate based on the dry weight of said granular detergent, the temperature of said drying gas being lower in said upper region than it is in said lower region.

4,129,512
LUBRICATING GREASES

Alexander W. Kisselow, Hamburg, and Peter K. Wulk, Wedel, Holst, both of Fed. Rep. of Germany, assignors to The British Petroleum Company Limited, Sunbury-on-Thames, England

Continuation of Ser. No. 765,375, Feb. 3, 1977, abandoned. This application Feb. 8, 1978, Ser. No. 876,018

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1976, 2604342

Int. Cl.² C10M *1/32, 3/26, 5/20, 7/30*

U.S. Cl. 252—51.5 A 9 Claims

1. A process for the production of polyurea lubricating greases by the reaction, in a lubricating oil, of

(a) a mono-amino component consisting of a mixture of at least one representative of each of the classes of compounds of general formulae:

$R—NH_2$ and

$R'—NH_2$

in which R is a monovalent aliphatic and R' is a monovalent aromatic radical,

(b) a diamino component of the general formula:

$NH_2—R—O—R'—O—R''—NH_2$,

in which R, R' and R'' are divalent aliphatic radicals,

(c) is di-isocyanato component consisting of an aromatic di-isocyanate or a mixture of aromatic di-isocyanates, the two isocyanate groups in the molecules being connected with the same aromatic ring or with different aromatic rings,

characterised in that the diamino component is: 4,17-dioxaeicosandiamine-1,20

having the formula

$$H_2N—(CH_2)_3—O—(CH_2)_{12}—O—(CH_2)_3—NH_2$$

4,129,513
ELECTRIC FIELD RESPONSIVE FLUIDS

James E. Stangroom, Castleton, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation-in-part of Ser. No. 593,494, Jul. 7, 1975, Pat. No. 4,033,892. This application Jan. 21, 1977, Ser. No. 760,977

Claims priority, application United Kingdom, Jul. 9, 1974, 30456/74

The portion of the term of this patent subsequent to Jul. 5, 1994, has been disclaimed.

Int. Cl.² C09K *3/00*

U.S. Cl. 252—78.1 12 Claims

1. An electroviscous fluid composition comprising in dispersion in an electrically non-conducting oleaginous vehicle, a water-containing solid phase, said solid phase consisting essentially of particles of a polymer containing acid groups, having a density of not greater than 1.8 and a water absorbency such that a sample thereof after being allowed to equilibrate with air containing water vapor, loses at least 8% of its weight when heated to constant weight at a temperature which does not cause decomposition of the polymer, and regains at least 40% of this loss in weight when exposed to air at an ambient relative humidity of about 60% and a temperature of 20° C.

4,129,514
SURFACE-ACTIVE COMPOSITION BASED ON NON-IONIC SURFACTANTS

Jean-Claude Caffarel, Decines; Bernard Papillon, La Mulatiere, and Jean Neel, Lyons, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Mar. 15, 1977, Ser. No. 777,848

Claims priority, application France, Mar. 24, 1976, 7608529

Int. Cl.² C11D *1/825, 1/72*

U.S. Cl. 252—89 R 10 Claims

1. Non-ionic surface active composition useful for washing and degreasing containing a mixture of:

(a) at least one non-ionic surface-active compound A of general formula: $R—(OCH_2CH_2)_nOH$ in which R is a C_6 to C_9 alkyl group and n is greater than 6 and up to 15 and,

(b) at least one non-ionic surface-active compound B of the general formula: $R'—(OCH_2CH_2)_mOH$ in which R' is a C_{16} to C_{20} alkyl group and m is from 6 to 15, and wherein more than half the groups R and R' taken separately are linear, characterized in that said composition is solid at ambient temperature and in that it includes:

(i) 2 to 70% by weight of surface-active compound A having an ethoxylation rate of at least 64.7% but less than 72.5% by weight of this compound and 98 to 30% by weight of surface-active compound B which has an ethoxylation rate of from about 47% to less than 62.5% by weight of this compound: or

(ii) 2 to 70% by weight of surface-active compound A having an ethoxylation rate of at least 64.7% but less than 72.5% by weight of this compound and 98 to 30% by weight of surface-active compound B having an ethoxylation rate of at least 62.5% and up to about 73.1% by weight of this compound; or

(iii) 10 to 90% by weight of surface-active compound A having an ethoxylation rate of at least 72.5% and up to about 86.6% by weight of this compound and 90 to 10% by weight of surface-active compound B having an ethoxylation rate of from about 47% to less than 62.5% by weight of this compound; or

(iv) 10 to 90% by weight of surface-active compound A having an ethoxylation rate of at least 72.5% and up to about 86.6% by weight of this compound and 90 to 10% by weight of surface-active compound B having an ethoxylation rate of at least 62.5% and up to about 73.1% by weight of this compound.

4,129,515
HEAVY-DUTY LIQUID DETERGENT AND PROCESS

Gregory S. Foster, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 722,917, Sep. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 615,270, Sep. 22, 1975, abandoned. This application Feb. 14, 1978, Ser. No. 877,631

Int. Cl.² C11D *1/83, 3/26*

U.S. Cl. 252—117 **18 Claims**

1. In a process for preparing a clear homogeneous heavy-duty liquid detergent composition which contains a surfactant component comprising detersive amounts of both anionic and nonionic surfactants, as well as alkanolamines and magnesium salts, the improvement which comprises:

(a) mixing the surfactant component comprising a detersive amount of an anionic surfactant, or mixtures thereof, in the free acid form, with sufficient magnesium hydroxide to provide a mixture characterized by a solution pH of from about 1 to about 5.5; and

(b) thereafter admixing sufficient alkanolamine with the foregoing mixture to provide a finished composition characterized by a solution pH of from about 6 to about 9.

4,129,516
ENERGY SAVING DETERGENT MANUFACTURE

Donald J. Peterson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 12, 1976, Ser. No. 731,182

Int. Cl.² C11D *9/30, 15/04*

U.S. Cl. 252—122 **18 Claims**

1. An energy-saving process for adjusting the water content of wet soaps, wet non-soap detersive surfactants, or wet crutcher mixes to a lower total water content by adding thereto a quantity of a drying agent which comprises a soap having a low water content which is prepared by saponifying carboxylic acid esters with alkali metal hydroxides in a reaction medium which comprises an alkyl nitrile.

4,129,517
AQUEOUS PEROXY-CONTAINING CONCENTRATE

Heinz Eggensperger, Hamburg, and Wolfgang Beilfuss, Hamburg-Hummelsbüttel, both of Germany, assignors to Sterling Drug Inc., New York, N.Y.

Filed Nov. 28, 1977, Ser. No. 855,461

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1976, 2654164

Int. Cl.² C11D *3/395, 7/18;* **A61K** *33/40;* **C11D** *7/54*

U.S. Cl. 252—186 **3 Claims**

1. A stable, aqueous peroxy-containing concentrate consisting essentially of by weight of the concentrate:

(a) about 1 to 60 percent of perglutaric acid;

(b) about 1 to about 50 percent of hydrogen peroxide;

(c) about 0.01 to about 2 percent of a stabilizing agent for the perglutaric acid and the hydrogen peroxide;

and (d) the remainder to 100 percent water.

4,129,518
METHOD FOR CONDITIONING METALLIC WASTE SHELLS MADE OF ZIRCONIUM OR ZIRCONIUM ALLOYS

Karl-Ludwig Huppert, Neuthard, and Dieter Fang, Karlsruhe, both of Fed. Rep. of Germany, assignors to Gesellschaft zur Wiederaufarbeitung von Kernbrennstoffen mbH, Eggenstein-Leopoldshafen, Fed. Rep. of Germany

Filed Mar. 28, 1977, Ser. No. 782,088

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1976, 2613537

Int. Cl.² G21F *9/30*

U.S. Cl. 252—301.1 W **13 Claims**

1. Method for conditioning metallic waste shells of zirconium or zirconium alloys obtained during processing of irradiated nuclear reactor fuel elements for noncontaminating final storage, comprising subjecting the waste shells to a controlled oxidation at increased temperature in a reaction furnace to produce noncombustible, stable waste products which consist essentially of zirconium dioxide, and bringing the noncombustible waste products so-produced to final storage.

4,129,519
THERMO-LUMINESCENT MATERIAL

Takashi Matsuzawa, Tokyo, Japan, assignor to Nemoto Tokusho Kagaku Kabushiki Kaisha, Japan

Filed Jun. 24, 1977, Ser. No. 809,778

Claims priority, application Japan, Jun. 29, 1976, 51-772776

Int. Cl.² C09K *11/50, 11/44, 11/42, 11/18*

U.S. Cl. 252—301.4 H **2 Claims**

1. A thermo-luminescent material which comprises crystals or powdery crystallites of lithium fluoride having present therein (A) activators consisting of from 0.05 to 1.0 mol% of magnesium in combination with at least one element selected from the elemental group consisting of copper, silver, and gold, in amount of 0.05–1.0 mol%, respectively, with respect to the LiF, and (B) sensitizers therefor consisting of at least one element selected from the group consisting of carbon, phosphorus, sulfur, arsenic, selenium and tellurium in amount of 0.1 – 5.0 mol% respectively with respect to the LiF.

4,129,520
SOAP MAKING

Donald J. Peterson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 12, 1976, Ser. No. 731,183

Int. Cl.² C11D *13/00, 15/04*

U.S. Cl. 252—367 **16 Claims**

1. A process for preparing the alkali metal salts of organic carboxylic acids which comprises saponifying the corresponding organic carboxylic acid ester of the formula RCOOR′ wherein RCOO- is an organic acid substituent and wherein R′ is derived from alcohols or polyols, with an alkali metal hydroxide selected from lithium hydroxide, sodium hydroxide, potassium hydroxide, cesium hydroxide and rubidium hydroxide in a liquid reaction medium comprising a substantially water-free alkyl nitrile of the formula R″CN wherein R″ is selected from linear, branched chain, and cyclic aliphatic substituents; separating said salts from the reaction mixture; and removing excess alkyl nitrile from the salts.

4,129,521
BRANCHED CHAIN NONYL AND DODECYL ISOMERIC MIXTURES OF 2-(5′-NONYL, OR DODECYL-2′-HYDROXYPHENYL)BENZOTRIAZOLE AS UV STABILIZERS

Albert F. Strobel, Delmar, N.Y., assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 500,083, Aug. 23, 1974, Pat. No. 3,983,132. This application Sep. 28, 1976, Ser. No. 727,428

The portion of the term of this patent subsequent to Sep. 28, 1993, has been disclaimed.

Int. Cl.² C09K *15/22*

U.S. Cl. 252—403 **8 Claims**

1. A normally liquid composition for stabilizing heat and light sensitive materials consisting essentially of branched-chain isomers of hydroxyphenyl benzotriazoles selected from the group consisting of a branched chain dodecyl isomeric mixture of 2-(5′-dodecyl-2′-hydroxyphenyl) benzotriazoles and a branched chain nonyl isomeric mixture of 2-(5′-nonyl-2′-hyroxyphenyl) benzotriazoles.

4,129,522
PREPARATION OF SILICA-ALUMINA MACROSPHERES

Edward Michalko, Chicago, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 3, 1977, Ser. No. 848,171

Int. Cl.² B01J *37/02*

U.S. Cl. 252—453 **10 Claims**

1. A method of preparing silica-alumina macrospheres which comprises:

(a) acidifying an aqueous alkali metal silicate solution with a strong mineral acid and a weak organic acid, the former being in sufficient concentration to provide an acid anion-/alkali metal ratio of from about 0.75 to about 1.0, and the latter being in sufficient concentration to increase said ratio by a factor of from about 1.3 to about 2;

(b) admixing the acidified solution with an acidic alumina sol and with sufficient urea to effect from about 150 to about 250% neutralization of the acid anion content of the mixture upon total hydrolysis or decomposition of said urea to ammonia;

(c) dispersing the mixture as droplets in a hot oil bath effecting the formation of spheroidal hydrogel particles;

(d) aging the particles in the hot oil;

(e) washing and drying, and calcining the aged spheroidal particles.

4,129,523
CATALYSTS CONTAINING ACTIVE METALLIC COPPER

Paul Snowden, Norton, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 28, 1976, Ser. No. 736,499

Claims priority, application United Kingdom, Nov. 4, 1976, 45758/76

Int. Cl.² B01J *21/04, 23/06, 23/72, 23/26*

U.S. Cl. 252—475 **6 Claims**

1. A method of making a catalyst containing active metallic copper from a corresponding catalyst precursor containing copper oxide and zinc oxide in which the molar ratio of zinc oxide to copper oxide is 0.5–3:1, which comprises treating at a temperature of 275° C. or less the precursor with a reducing gas mixture containing steam, carbon dioxide or steam and carbon dioxide totaling at least 50% v/v of the mixture and a reducing gas selected from the group consisting of hydrogen, carbon monoxide and compounds that react readily to give hydrogen and/or carbon oxides the content of reducing gas, calculated as equivalent hydrogen, being less than 3% v/v, until a substantial part of the copper oxide has been reduced to metallic copper and thereafter treating it at a temperature of 275° C. or less with a more strongly reducing gas mixture consisting essentially of a reducing gas selected from the group consisting of hydrogen, carbon monoxide and compounds that react readily to give hydrogen and/or carbon oxides and less than 25% by volume of steam, carbon dioxide or carbon dioxide and steam.

4,129,524
RADIATION SHIELDING MATERIAL AND A PROCESS FOR PRODUCING THE SAME

Haruo Nagai; Hiroshi Uehara, both of Nakajo, and Kunikazu Numokawa, Kurokawa, all of Japan, assignors to Kyowa Gas Chemical Industry Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1977, Ser. No. 815,175

Claims priority, application Japan, Jul. 16, 1976, 51-84617; Jun. 6, 1977, 52-65728

Int. Cl.² G21F *1/10*

U.S. Cl. 252—478 **34 Claims**

1. An optically transparent radiation shielding material of a composition containing

a polymer comprising (A) at least one essential monomer selected from the group consisting of alkyl methacrylate having 1–4 carbon atoms in an alkyl group, hydroxyalkyl acrylate, hydroxyalkyl methacrylate and styrene and (B) lead acrylate or lead methacrylate, and

a lead carboxylate represented by the general formula: $(RCOO)_aPb$, a being an integer equal to the valency of lead and R representing a saturated or unsaturated hydrocarbon residue non-substituted or substituted with a hydroxyl group and having 5–20 carbon atoms, wherein the ratio x (% by weight) of the lead acrylate or the lead methacrylate to the total constituent monomer in the polymer and the compounding ratio y (parts by weight) of the lead carboxylate to 100 parts by weight of said total monomer in said composition satisfy anyone of the following three formulas I, II and III:

$$200 \geqq y \geqq 2, \text{ where } 9 \leqq x \leqq 30 \qquad \text{(I)}$$

$$200 \geqq y \geqq 2/5\,(x - 30) + 2, \text{ where } 30 \leqq x \leqq 75 \qquad \text{(II) and}$$

$$200 \geqq y \geqq -(9/10)\,(x - 75) + 20, \text{ where } 75 \leqq x \leqq 95 \qquad \text{(III).}$$

4,129,525
METHOD OF MAKING LEAD-RICH AND BISMUTH-RICH PYROCHLORE COMPOUNDS USING AN ALKALINE MEDIUM

Harold S. Horowitz, Clark; John M. Longo, New Providence, and Joseph T. Lewandowski, Middlesex, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 2, 1977, Ser. No. 856,648

Int. Cl.² C01G *55/00*

U.S. Cl. 252—518 **21 Claims**

1. A method of preparing compounds having the formula:

$$A_2[B_{2-x}A_x]O_{7-y}$$

wherein A is selected from the group consisting of lead, bismuth and mixtures thereof, wherein B is selected from the group consisting of ruthenium, iridium and mixtures thereof, wherein x is a value such that $0<x\leqq 1.0$ and y is a value such that $0\leqq y\leqq 1$, comprising:

reacting A cations and B cations from an aqueous solution source of these cations in a liquid alkaline medium having a pH of at least about 13.5 in the presence of an oxygen source at a temperature below about 200° C. for a sufficient time for reaction to occur.

4,129,526

GRANULAR DETERGENT COMPOSITIONS AND A PROCESS FOR PRODUCING SAME

Toshiaki Ogoshi, Funabashi; Masayoshi Nakamura, Koshigaya, and Mitsuyoshi Yazaki, Yachiyo, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Jul. 14, 1977, Ser. No. 815,849

Int. Cl.² C11D *3/34*

U.S. Cl. 252—536 **6 Claims**

1. A granular detergent composition which consists essentially of:

(a) from 20 to 35% by weight of anionic surfactants are selected from the group consisting of a sodium, potassium or magnesium salt of an α-olefinsulfonic acid, in which the α-olefin moiety has 12 to 20 carbon atoms, a sodium, potassium or magnesium salt of an alkyl ether sulfuric acid, in which the alkyl group has 8 to 18 carbon atoms and the average molar ratio of ethylene oxide is 1 to 5 moles per mole, and a sodium, potassium or magnesium salt of an alkylsulfuric acid, in which the alkyl group has 9 to 16 carbon atoms, from 15 to 50% by weight of the total amount of the anionic surfactants being said α-olefinsulfonic acid salt;

(b) from 10 to 20% by weight of an alkali metal silicate represented by the formula $M_2O.xSiO_2$, where M is an alkali metal and x is a number in the range from 2.5 to 3.6,

(c) from 25 to 60% by weight of an alkali metal carbonate,

(d) from 1 to 20% by weight of an alkali metal salt of a hydroxypolycarboxylic acid, and

(e) not more than 4% by weight of an alkali metal sulfate, said composition being at least substantially free of phosphate.

4,129,527

LIQUID ABRASIVE DETERGENT COMPOSITION AND METHOD FOR PREPARING SAME

Frederick P. Clark, Walnut Creek; Robert C. Johnson, Pleasanton, both of Calif., and John Topolewski, Overland Park, Kans., assignors to The Clorox Company, Oakland, Calif.

Continuation of Ser. No. 521,557, Nov. 7, 1974, abandoned. This application Jun. 21, 1976, Ser. No. 697,961

Int. Cl.² C11D *1/17, 1/83*

U.S. Cl. 252—547 **9 Claims**

1. A stable liquid suspension of abrasive particles in an aqueous detergent vehicle, consisting essentially of abrasive particles wherein said abrasive particles are less than 100 mesh size but of sufficient size so as to provide gentle abrasive action suspended in a solution of water and suspension agents consisting essentially of lauryl dimethyl amine oxide, a multiple ionic oxygen containing salt, and an alkylaryl sulfonate detergent, said abrasive particles comprising in the order of about 500 parts by weight per 1,000 parts of the suspension.

9. A stable liquid suspension of abrasive particles of an aqueous detergent vehicle consisting essentially of:

abrasive particles wherein said abrasive particles are less than 100 mesh size but of sufficient size as to provide gentle abrasive action suspended in a solution of water and suspension agents, said suspension agents consisting essentially of:

lauryl dimethyl amine oxide in an amount of from about 12 parts by weight per thousand parts of suspension to about 40 parts by weight per thousand of suspension;

a multiple ionic oxygen containing salt in an amount of from about two parts per thousand parts of the suspension to about thirty parts per thousand part of the suspension; and

an alkylaryl sulfonate detergent, present by weight in an amount of at least 16.5 parts per thousand parts of the suspension,

said abrasive particles comprising in the order of about 500 parts by weight per 1000 parts of the suspension.

4,129,528

POLYAMINE-EPIHALOHYDRIN RESINOUS REACTION PRODUCTS

John P. Petrovich, Chesterfield, and Donald N. Van Eenam, Des Peres, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed May 11, 1976, Ser. No. 685,227

Int. Cl.² C08F *00/00*

U.S. Cl. 260—823 **8 Claims**

1. A method for preparing a resinous composition which comprises:

A. forming an amine prepolymer containing a hydrohalide,

B. removing a substantial amount of the halide ion from the amine prepolymer, and thereafter,

C. contacting the substantially halide-free amine prepolymer with an epihalohydrin.

4,129,529

PROCESS FOR THE PRODUCTION OF PHOSPHAZENE POLYMERS

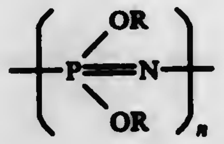
John W. Fieldhouse, Mogadore; Daniel F. Graves, Akron; William M. Cole, Norton; Mark L. Stayer, Suffield, and Steven L. Fenske, Uniontown, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 12, 1977, Ser. No. 824,004

Int. Cl.² C08G *79/02, 73/00*

U.S. Cl. 528—168 **8 Claims**

1. In a process for producing alkoxy and/or aryloxy polyphosphazene esters represented by the general formula



wherein each OR represents at least one alkoxy or aryloxy group including groups with either saturated or unsaturated substituents and not all of the OR groups are required to be the same, and n is an integer of between about 7 and about 50,000 or more;

wherein a solution of a linear dihalophosphazene represented by the formula $(NPHal_2)_n$ wherein Hal represents a halogen selected from the group consisting of Cl and Br an n is an integer greater than about 7; is reacted with a solution of an alkoxide or aryloxide represented by the formula $M(OR)_x$ in which M represents a metal selected from the group consisting of the alkali and alkaline earth metals and x is the valence of M;

and a solution of the desired ester is produced along with $M(Hal)_x$ as a by-product of the reaction;

the improvement which comprises providing a single common solvent for (1) said linear dihalophosphazene; (2) said alkoxide or aryloxide; and (3) said polyphosphazene ester; whereby the reaction is carried out in a homogeneous system and complete replacement of the P-Hal atoms is more readily effected than in a heterogeneous system in which a plurality of different solvents are utilized in said solutions.

4,129,530

SOFT ETHYLENIC POLYMER FOAMS

Chung P. Park, Pickerington; John M. Corbett, Newark, both of Ohio, and Warren H. Griffin, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 763,269, Jan. 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 708,447, Jul. 23, 1976, abandoned. This application Dec. 19, 1977, Ser. No. 861,938

Int. Cl.² C08J *9/14*

U.S. Cl. 521—79 **14 Claims**

1. A method for making soft ethylenic polymer resin foams having substantially closed cell structure, dimensional stability, and thickness greater than about 0.5 inch from starting ethylenic polymer resins which have low stiffness less than about 20,000 psi and which comprise low stiffness copolymers of ethylene which copolymers consist essentially of ethylene and monoethylenically unsaturated non-ionic comonomers, by forming under heat and pressure a flowable gel composition of the starting polymer resin and a volatile blowing agent and releasing the resulting flowable gel to ambient air atmosphere whereby the blowing agent separates from the gel and forms gas bubbles in the polymer resin, particularly characterized in that the volatile blowing agent is composed of a mixture of dichlorodifluoromethane and an essential constituent A which is at least one fluorocarbon which has normal boiling point between −40° and 5° C. and a value for the critical quantity T_b-$0.5V_c$ of not greater than 110, where T_b is the normal boiling point temperature of the fluorocarbon in degrees Kelvin and V_c is its critical volume in cubic centimeters per gram-mole, the mixed blowing agent containing, per 100 parts by weight, from about 35 to about 50 parts of fluorocarbon constituent A and at least about 75 parts of total fluorocarbon mixture of dichlorodifluoromethane and constituent A and there being up to about 0.18 gram-mole of such mixed blowing agent per 100 grams of polymer resin in the flowable gel.

4,129,531

CROSSLINKING OF POLYMERS WITH AZO-ESTERS

Kurt Rauer; Harald Hofmann, both of Guenzburg; Heidelinde Schiller, Norderstedt, all of Fed. Rep. of Germany, and Chester S. Sheppard, Kenmore, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

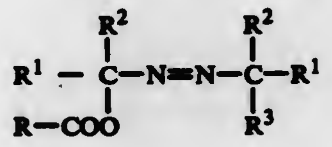
Filed Dec. 14, 1977, Ser. No. 860,353

Int. Cl.² C08J *9/10*

U.S. Cl. 521—94 **7 Claims**

1. The process of crosslinking or simultaneously cross-linking and foaming a polymer selected from the group consisting of polyethylene, ethylene-vinyl acetate copolymer, ethylene-propylene copolymer, ethylene-propylene-diene terpolymer, styrene-butadiene rubber, acrylonitrile-butadiene-styrene rubber, ethylene-propylene-ethylidene-norbornene rubber, and polybutadiene rubber comprising:

(a) mixing with 100 parts by weight of said polymer 0.5 to 20% by weight of a composition including at least one azo-ester cross-linking and foaming agent of the formula:



$$R^1-\underset{R-COO}{\overset{R^2}{C}}-N=N-\underset{R^3}{\overset{R^2}{C}}-R^1 \qquad (I)$$

in which

R is selected from the group consisting of H, lower alkyl, cycloalkyl, aryl and aralkyl;

R^1 and R^2 are independently selected from the group consisting of alkyl, cycloalkyl, aryl and aralkyl wherein each of the groups may have alkyl branching;

R^1 and R^2 can join together to form R^1R^2 group where the group is selected from $—(CH_2)_4—$, $—(CH_2)_5—$, alkylsubstituted tetramethylene or alkyl-substituted pentamethylene;

R and R^1 can join together to form RR^1 group where the group is selected from $—(CH_2)_2—$, $—(CH_2)_3—$, alkylsubstituted $—(CH_2)_2—$ or alkylsubstituted $—(CH_2)_3—$; and

R^3 is selected from the group consisting of —OOC—R, alkyl, cycloalkyl and aralkyl; and

(b) in the absence of an activator which lowers the decomposition temperature of the cross-linking and foaming agent when the composition is heated, heating the polymer mixture at a temperature above 170° C. but not to the point where the polymer will substantially degrade and a pressure of 0 to 300 psia until cross-linking or crosslinking and foaming are effected.

4,129,532

METHOD OF PREPARING IMIDOZOLINE AND TETRAHYDRO PYRIMIDINE POLYMERS

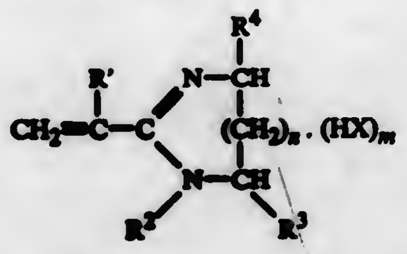
Hans P. Panzer, Stamford; Michael N. D. O'Connor, Norwalk, and Louis J. Baccei, Newington, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 643,729, Dec. 22, 1975, which is a division of Ser. No. 467,331, May 6, 1974, Pat. No. 4,006,247. This application Jul. 13, 1977, Ser. No. 815,339

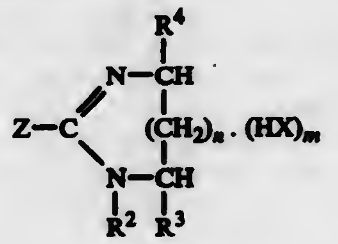
Int. Cl.² C08F *126/06*

U.S. Cl. 526—75 **7 Claims**

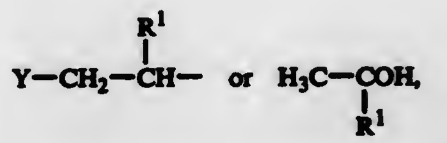
1. A method for the production of a homopolymer of a compound having the formula



wherein n is 0 or 1, m is 1, X is an anion, R^1 is hydrogen, methyl or phenyl and R^2, R^3 and R^4 are, individually, hydrogen, alkyl (C_1–C_4), aryl (C_6–C_{10}), aralkyl (C_7–C_{11}) or alkaryl (C_7–C_{11}), said homopolymer being colorless and free of non-amidine imino, carboxyl, ester and amide groups, unreacted nitrile groups and unreacted polyamine, which comprises melt cracking a compound having the formula



wherein Z is



$$Y-CH_2-\overset{R^1}{CH}- \quad \text{or} \quad H_3C-\underset{R^1}{COH},$$

wherein Y is hydroxyl or RO, R being alkyl (C_1–C_{10}), aryl (C_6–C_{10}) or aralkyl (C_7–C_{11}), and R^1–R^4, n, m and X are as defined above, at a temperature ranging from about 150° C. to about 500° C. and recovering the resultant polymer.

4,129,533

PROCESS FOR PRODUCING STABILIZED HIGH STRENGTH UREA-ALDEHYDE INSULATING FOAMS

William P. Moore, Jr., Hopewell, Va., assignor to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 836,492, Sep. 26, 1977, Pat. No. 4,097,419. This application Dec. 16, 1977, Ser. No. 861,170

Int. Cl.² C08J *9/30, 9/12*

U.S. Cl. 521—117 **4 Claims**

1. An improved process for producing stable urea-aldehyde insulating foams having properties of improved structural strength and low formaldehyde vapor emission, from two separate storable liquids, said process comprising: blending an air-foamed solution containing dialdehydes having two to eight molecular carbons, surfactant, and mineral acid, with a partially cured aqueous urea-formaldehyde resin containing between 1.3 and 1.5 mols of formaldehyde per mol of urea and

about 50 percent total solids, so that the molecular aldehyde moieties supplied by the dialdehyde are between 0.2 and 0.4 times the number of aldehyde moieties supplied by formaldehyde, and the molecular ratio of total aldehyde moieties to urea is between 1.7 and 2.0; curing and drying the blended fluids at a pH between 2.0 and 3.5 at ambient conditions until the foam hardens.

4,129,534
POLY(DIMETHYLAMINOETHYL METHACRYLATE) AND METHOD OF PREPARATION

Virginia L. Cunningham, Hatboro, Pa., assignor to Rohm and Haas Company, Del.
Division of Ser. No. 630,477, Nov. 10, 1975, Pat. No. 4,052,343. This application Aug. 11, 1977, Ser. No. 823,569
Int. Cl.^{2} C08F *2/18*
U.S. Cl. 521—38 **2 Claims**

1. In the process for manufacturing macroreticular cross-linked polymers by suspension polymerization of monomers in the presence of a phase extender, the improvement which comprises utilizing a trialkylamine wherein the alkyl groups contain 2 to 8 carbon atoms as the phase extender, wherein the trialkylamine comprises between about 20% and 80% by weight of the total organic mixture.

4,129,535
FIRE RETARDANT POLYVINYL CHLORIDE CONTAINING COMPOSITIONS

Robert G. Elcik, Mount Holly, N.J., assignor to Stauffer Chemical Company, Westport, Conn.
Division of Ser. No. 502,590, Sep. 3, 1974, Pat. No. 3,983,290. This application Dec. 8, 1975, Ser. No. 638,734
Int. Cl.^{2} C08K *5/10, 5/51;* **C08L** *27/06, 91/00*
U.S. Cl. 260—23 XA **13 Claims**

1. A film forming composition adapted for use in a vapor barrier comprising an intimate admixture of: (1) from about 40% to 55%, by weight, of a vinyl chloride polymer; (2) from about 7% to 20%, by weight, of a chlorinated polyethylene having a chlorine content of from about 35% to about 45%; (3) from about 4% to 20%, by weight, of a phosphate ester plasticizer; (4) from about 3% to 6%, by weight, of an antimony trioxide flame retardant having a particle size of below about 5 microns; (5) from about 3% to 7%, by weight, of a magnesium hydroxide filler having a low oil absorption value and a particle size such that at least 99% of the particles have a diameter of less than 45 microns and, (6) from about 3% to 6%, by weight, of zinc borate.

4,129,536
VINYL CHLORIDE BASED INJECTION MOLDING COMPOSITION

Carl J. Martin, Indianapolis, and Robert J. Ryan, Zionsville, both of Ind., assignors to RCA Corporation, New York, N.Y.
Filed Jul. 25, 1977, Ser. No. 818,280
Int. Cl.^{2} C08F *15/00, 114/02;* **G11B** *3/44*
U.S. Cl. 260—23 XA **2 Claims**

1. An injection molding composition comprising a vinyl chloride-propylene copolymer containing about 6–8 percent by weight of propylene; from about 1–3 percent by weight of the molding composition of a solid mercapto tin stabilizer; from about 1–3 percent by weight of the molding composition of an acrylic resin processing aid; and a mixture of from about 0.25–1 percent by weight of the molding composition of an ester wax of a monofatty acid and alcohol lubricant and from about 0.1–0.5 percent by weight of the molding composition of an ester wax of a polyfunctional acid and alcohol lubricant.

4,129,537
AIR-DRYING ACRYLATE LACQUER BINDERS

Rolf Dhein, Krefeld, and Lothar Fleiter, Krefeld-Traar, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany
Filed Oct. 14, 1977, Ser. No. 842,042
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1976, 2647314
Int. Cl.^{2} C09D *3/58, 3/74*
U.S. Cl. 260—23 EP **4 Claims**

1. An air-drying lacquer binder, comprising a copolymer of average molecular weight from about 3,000 to 20,000, as determined in tetrahydrofuran by the vapor pressure reduction method, comprising copolymerised units of

20 to 55% by weight of styrene,
5 to 30% by weight of glycidyl(meth)acrylate, and
0 to 50% by weight of at least one (meth)acrylic acid ester with 1 to 10 carbon atoms in the alcohol component,

which has been esterified with

0 to 15% by weight of at least one natural, drying fatty acid, and
10 to 50% by weight of isomerised drying fatty acids

(the sum of the percentage contents amounting to 22–50% by weight) based on the copolymer and drying fatty acids and dicarboxylic acid anhydride subsequently used, up to an acid number of < 10, from 30 to 75% by weight of the isomerised drying fatty acids containing conjugated double bonds, and wherein the hydroxyl groups formed have subsequently been reacted with from 0.5 to 3% by weight, based on the total components of the binder, of tetrahydrophthalic acid anhydride or at least one isomer thereof or a mixture of these anhydrides.

4,129,538
PEPTIZING AGENT FOR NATURAL RUBBER AND SYNTHETIC BUTADIENE-STYRENE RUBBER

Earl Kaplan, Metuchen, and Frank G. Pinto, Martinsville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.
Filed May 20, 1977, Ser. No. 799,047
Int. Cl.^{2} C09K *3/00;* **C08C** *4/00*
U.S. Cl. 260—23.7 M **12 Claims**

1. A peptizing composition for natural rubber and synthetic butadiene-styrene rubber comprising (A) from about 97% to about 99%, by weight, based on the weight of said composition, of a mixture of (1) an iron-free peptizer selected from the group consisting of (a) organic mercaptans, (b) organic disulfides, (c) zinc salts of organic mercaptans and (d) mixtures thereof and (2) the zinc salts of a mixture of fatty acids containing from about 14 to about 20 carbon atoms having a melting point below about 115° C. and (B) from about 1.0% to about 3.0%, by weight, same basis, of an iron phthalocyanine, the weight ratio of (1) to (2) ranging from about 2:1 to about 1:2, respectively.

11. A method for peptizing natural rubber and synthetic butadiene-styrene rubber at from about 70° C. to about 150° C. which comprises incorporating therein from about 0.1 to about 1.0 weight percent of the composition of claim 1.

4,129,539
HOT MELT ADHESIVES FOR CELLULOSIC MATERIAL

Istvan E. Fakla, Glashutten, and Reinhard Grote, Oberursel, both of Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.
Filed Aug. 30, 1977, Ser. No. 829,160
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1976, 2639132
Int. Cl.^{2} C08L *31/00*
U.S. Cl. 260—27 R **12 Claims**

1. A hot melt adhesive composition having a softening point (Ball and Ring) of from about 60° to about 110° C. for application in molten state to form strong, flexible adhesive bonds to

cellulosic material and also capable of being dissolved or dispersed in cold water when disposed as an adhesive layer between cellulosic sheets, said adhesive comprising a polymeric binder material which is insoluble in cold water and which has free carboxylic groups, said binder being selected from the group consisting of a copolymer of vinyl acetate with from about 2% to about 10% of crotonic acid and a colophonium ester of pentaerythritol having an acid number of from about 196 to about 212, characterized in that the composition contains from about 2% to about 10% of an aliphatic amino alcohol reactive in the presence of water with the carboxylic groups of the polymeric material to promote solubility of the polymeric material in cold water.

4,129,540
SMOKE RETARDED POLYMER COMPOSITIONS CONTAINING AMINE MOLYBDATES

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio
Continuation-in-part of Ser. No. 770,168, Feb. 14, 1977, Pat. No. 4,053,455. This application Oct. 11, 1977, Ser. No. 841,182
Int. Cl.^{2} C08K *5/34, 5/17*
U.S. Cl. 260—28.5 A **19 Claims**

1. A smoke retarded composition comprising
(A) a smoke retardant amount of at least one amine molybdate, the amine used in preparing said amine molybdate containing from 1 to 40 carbon atoms and from 1 to 10 primary, secondary or tertiary amine groups or a mixture thereof, and
(B) at least one polymer selected from the group consisting of, polychloroprene, polymonoolefins, halogenated and chlorosulfonated polymonoolefins, poly(vinylacetate), and polymers of acrylonitrile alone or with butadiene and/or styrene.

18. A composition of claim 1 wherein a halogen source is additionally present.

19. A composition of claim 18 wherein said halogen source is a chlorinated paraffin wax.

4,129,541
ASPHALTIC COMPOSITIONS CONTAINING CONJUGATED DIENE-MONOVINYL-SUBSTITUTED AROMATIC HYDROCARBON COPOLYMERS OF PARTICULAR STRUCTURES

Oren L. Marrs, and Robert E. Reusser, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Oct. 26, 1977, Ser. No. 845,706
Int. Cl.^{2} C08L *91/00*
U.S. Cl. 260—28.5 AS **12 Claims**

1. An improved composition adapted for coating of an object to be protected such as a pipeline to be laid under the sea, especially in cold water or in a cold climate, and having highly desirable resistance to stress cracking or flexibility at low temperatures of the order of 40° F. (4.4° C.) or lower which comprises asphalt, aggregate, and as desired, a fibrous filler and a conjugated diene/monovinyl aromatic radial teleblock copolymer having been prepared by copolymerizing a conjugated diene having 4 to 8 carbon atoms with a monovinyl-substituted aromatic hydrocarbon having 8 to 12 carbon atoms in presence of an organolithium initiator but in absence of randomizer, or by incremental additionof both monovinyl-substituted aromatic hydrocarbon and initiator, said copolymer having a poly(monovinyl-substituted aromatic hydrocarbon) portion which has a weight average molecular weight of at least 7.5% of the weight average molecular weight of the copolymer, the weight ratio of conjugated diene to vinyl aromatic hydrocarbon is in the approximate range 60–95/40–5, and weight average molecular weight of a copolymer is in the approximate range 70,000–300,000.

4,129,542
THERMOPLASTIC ELASTOMERIC BLEND OF RUBBER AND BITUMINOUS MATERIAL

Alister F. Matheson, Wilmslow, England; Douglas J. Tosh, Sarnia, and Mitchell Borr, Guelph, both of Canada, assignors to Uniroyal Ltd., Montreal, Canada
Continuation of Ser. No. 417,701, Nov. 20, 1973, abandoned. This application Feb. 5, 1976, Ser. No. 655,593
Claims priority, application Canada, Nov. 14, 1973, 185784
Int. Cl.^{2} C08L *95/00*
U.S. Cl. 260—28.5 AS **1 Claim**

1. A method of converting into a thermoplastic elastomer an unsaturated vulcanizable rubber comprising providing an intimately mixed blend of (A) 100 parts by weight of said unsaturated vulcanizable rubber with (B) from 125 to 250 parts by weight of bituminous material by masticating the said unsaturated vulcanizable rubber and bituminous material together at elevated temperature, and further masticating said intimately mixed blend under dynamic shearing conditions in an internal mixer in the presence of (C) a curative for said unsaturated vulcanizable rubber in amount sufficient to cure the rubber, the said dynamic shearing of the intimately mixed blend in the presence of the curative being continued for a time and at a temperature sufficient to dynamically cure the rubber, whereby the bend is converted into a thermoplastic elastomer which is characterized by the ability to be thermoformed thereafter without cure into useful shaped articles having elastomeric properties, and by the ability to be re-processed, the said rubber (A) being ethylene-propylene-non-conjugated diene terpolymer.

4,129,543
THERMOSETTING MOLDING RESIN COMPOSITIONS

Neil Kaplan, Brooklyn, N.Y., assignor to Hi-Tech Industries, Inc., Jamaica, N.Y.
Filed Jun. 18, 1976, Ser. No. 697,307
Int. Cl.^{2} C08K *5/54*
U.S. Cl. 260—29.15 B **17 Claims**

1. In a polymerizable thermosetting liquid resin composition which is designed and adapted for use in an injection molding process, the composition comprising an unsaturated polyester resin capable of cross-linking to form a thermoset polymer and a cross-linking monomer capable of copolymerizing with the polyester resin to form a cross-linked thermoset polymer, and a particulate filler material in an amount of at least about 100 parts per 100 parts by weight of the resin and cross-linking monomer, the improvement comprising a dimethylpolysiloxane, having a viscosity of at least 100 centistokes when measured at 25° C in a Brookfield viscometer, RV series, and converted to centistokes according to the formula

viscosity(centistokes) =
viscosity(centipoise)/density;

dimethylpolysiloxane being present in an amount of from about 0.02 to about 3 parts per 100 parts of the combined resin, whereby the polymerizable resin composition is rendered substantially free of incondensible gases to that voids are not formed in a product injection molded from said polymerizable resin composition.

4,129,544
AQUEOUS ACRYLIC COATING COMPOSITION FOR ELECTRICAL CONDUCTORS

John D. Craig, Medford Lakes, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 681,595, Apr. 29, 1976, abandoned. This application Aug. 24, 1977, Ser. No. 827,234
Int. Cl.^{2} C08L *61/10, 33/24*
U.S. Cl. 260—29.3 **15 Claims**

1. An aqueous coating composition having a solids content of about 5–50% of film forming constituents; wherein the film forming constituents consist essentially of about

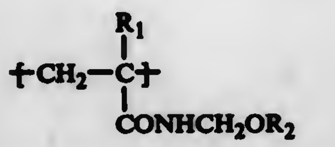
(A) 60–95% by weight of a dispersed acrylic polymer consisting essentially of about
  (1) 35–55% by weight, based on the weight of the acrylic polymer, of acrylonitrile or methacrylonitrile;
  (2) 15–58% by weight, based on the weight of the acrylic polymer, of an alkyl acrylate having 2–12 carbon atoms in the alkyl group;
  (3) 2–15% by weight, based on the weight of the acrylic polymer, of methacrylic acid or acrylic acid; and
  (4) 5–15% by weight, based on the weight of the acrylic polymer, of an (alkoxymethyl) acrylamide having 1–6 carbon atoms in the alkozy group;
 wherein the acrylic polymer has a weight average molecular weight of at least 150,000; and
(B) 5–40% by weight of a phenol formaldehyde condensate; having a weight average molecular weight of about 100–2000 measured by gel permeation chromatography; wherein the composition contains a sufficient amount of ammonia or an amine to provide a pH of about 7–9.5.

4,129,545
THERMOSETTING ACRYLIC COPOLYMER USABLE AS A POWDER PAINT AND METHOD FOR PRODUCING THE SAME

Takashi Sunamori; Koji Matsushima, and Susumu Tanaka, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

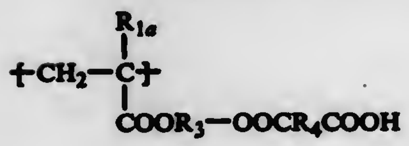
Continuation-in-part of Ser. No. 759,125, Jan. 13, 1977, abandoned. This application Nov. 8, 1977, Ser. No. 849,559
Claims priority, application Japan, Jan. 16, 1976, 51-4447
Int. Cl.² C08F *24/00, 124/00, 20/10;* C08J *3/12*
U.S. Cl. 260—29.6 TA **13 Claims**

1. A thermosetting acrylic copolymer for the use as powder paint, which comprises
(1) 3 to 30% by weight of at least one repeating unit of the formula (I):



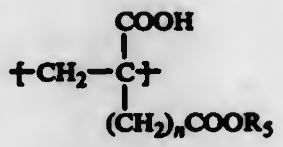
$$\left[CH_2-\overset{R_1}{\underset{CONHCH_2OR_2}{C}}\right] \tag{I}$$

wherein R_1 represents a hydrogen atom or methyl group and R_2 represents an alkyl group having 1 to 8 carbon atoms or a cycloalkyl group having 6 to 8 carbon atoms,
(2) 1 to 50% by weight of at least one repeating unit selected from the groups of the formulae (II) and (III):



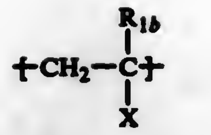
$$\left[CH_2-\overset{R_{1a}}{\underset{COOR_3-OOCR_4COOH}{C}}\right] \tag{II}$$

and



$$\left[CH_2-\overset{COOH}{\underset{(CH_2)_nCOOR_5}{C}}\right] \tag{III}$$

wherein R_{1a} represents a hydrogen atom or methyl group, R_3 represents an alkylene group having 2 to 6 carbon atoms, R_4 represents an aliphatic group containing or not containing a carboxyl group and having 2 to 12 carbon atoms or an aromatic group containing or not containing a carboxyl group and having 6 to 12 carbon atoms, R_5 represents an aliphatic group containing or not containing a hydroxyl group and having 1 to 18 carbon atoms or an aromatic group containing or not containing a hydroxyl group and having 6 to 18 carbon atoms, and n represents an integer of 1 or 2, and
(3) 20 to 96% by weight of at least one repeating unit of the formula (IV):



$$\left[CH_2-\overset{R_{1b}}{\underset{X}{C}}\right] \tag{IV}$$

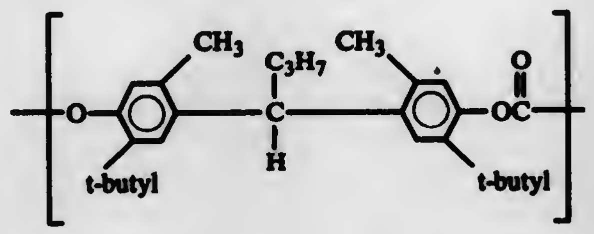
wherein R_{1b} represents a hydrogen atom or methyl group, and X represents an ester, nitrile, amide, R_6COO— in which R_6 represents an alkyl group having 1 to 18 carbon atoms, glycidylester, glycidylether or aromatic group having 6 to 18 carbon atoms or a halogen atom, said polymer having a weight average molecular weight of 4,000 to 30,000 and being in a solid state at normal temperature.

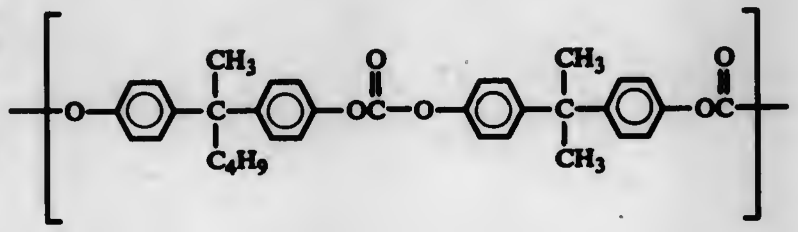
4,129,546
PLASTICIZED WITH A MINOR AMOUNT OF AN OLIGOMERIC POLYMERIC POLYCARBONATE

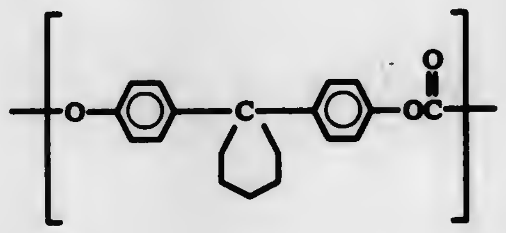
Robert J. Axelrod, Glenmont, N.Y.; Victor Mark, Evansville, and Phillip S. Wilson, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

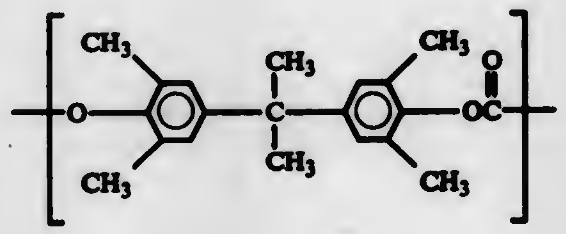
Filed Dec. 8, 1976, Ser. No. 748,464
Int. Cl.² C08K *5/11*
U.S. Cl. 260—31.8 T **8 Claims**

1. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer and a minor amount of an oligomeric polymeric carbonate selected from the group consisting of those having repeating units of the following formulae:









and wherein said oligomeric polymeric carbonate has an intrinsic viscosity of 0.001 to 0.36 dl./g. as measured in methylene chloride at 25° C.

4,129,547
HIGH SOLIDS COATING COMPOSITIONS FOR FLEXIBLE SUBSTRATES CONTAINING UREA-FORMALDEHYDE

Paul R. Noyes, Philadelphia, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1977, Ser. No. 811,983
Int. Cl.² C08K *5/05*
U.S. Cl. 260—33.4 R **5 Claims**

1. A high solids thermosetting coating composition consisting essentially of:
(A) 50–85 parts by weight, based on the weight of (A) plus (B), of a methylated urea-formaldehyde crosslinking agent; and
(B) 50–15 parts by weight, based on the weight of (A) plus (B) of a liquid polyol having a molecular weight range of 425–1,100, selected from the group consisting of aliphatic diols and triols, ether diols and triols, and polyester diols; wherein components (A) and (B) are compatible and wherein the mixture of (A) and (B) has a maximum Brookfield viscosity of 2,000 centipoises at 25° C.; said composition having a minimum solids content of 80% by weight.

4,129,548
HARDENABLE RESIN COMPOSITIONS

Christopher R. S. McDonnell, Harrogate, England, assignor to Metalife Molecular Belzona Limited, North Yorkshire, England

Filed Jul. 5, 1977, Ser. No. 812,755
Int. Cl.² C08L *63/00*
U.S. Cl. 260—37 M **11 Claims**

1. A method of repairing metal parts comprising replacing worn or damaged portions of metal in said parts with a composition comprising a liquid polymerizable resin, ferrosilicon, and a hardener for said resin.

4,129,549
METHOD OF GRAFTING A POLYMER TO FILLER MATERIALS

Lucien Kahane, Villers-sous-Saint Leu, France, assignor to Union Minerale, Villers-sous-Saint Leu, France

Filed Mar. 26, 1976, Ser. No. 670,557
Claims priority, application France, Mar. 27, 1975, 75 09626; Mar. 8, 1976, 76 06508
Int. Cl.² C08K *9/04*
U.S. Cl. 260—40 R **13 Claims**

1. A method of grafting a polymer to an inorganic filler material composed of mineral particles comprising:
(a) fixing a predetermined quantity of a surfactant consisting essentially of a non-ionic substance containing a plurality of —OH functions to the mineral particles of said filler material while keeping free at least one functionally reactive —OH site of said surfactant; and
(b) reacting the product formed in step (a) at a temperature in the range of about from 100° C. to 150° C. with an organic chemical reagent containing at least one carboxyl function capable of esterifying said free at least one functionally reaction —OH site of the surfactant to form, in situ, an organic polymer grafted to the mineral filler.

4,129,550
SELF-LUBRICATING HEAT-RESISTANT MATERIAL AND PROCESS FOR MANUFACTURING SAME

Nikolai S. Nametkin, Leninsky prospekt, 13, kv. 11; Georgy V. Vinogradov, ulitsa Chernyshevskogo, 41, kv. 26; Jury Y. Podolsky, prospekt Vernadskogo, 81, kv. 70; Nina T. Pavlovskaya, ulitsa Krasikova, 19, kv. 19; Ernest I. Frenkin, Leninsky prospekt, 57, kv. 147, and Jury G. Yanovsky, B. Serpukhovskaya, 48, korpus 1, kv. 11, all of Moscow, U.S.S.R.

Filed Apr. 23, 1975, Ser. No. 570,791
Claims priority, application U.S.S.R., Apr. 24, 1974, 2017551
Int. Cl.² C08K *3/04, 3/30, 3/38*
U.S. Cl. 260—42.22 **5 Claims**

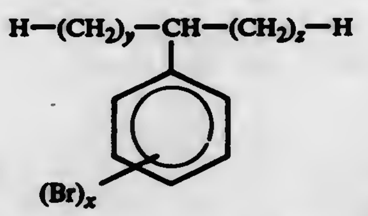
1. A self-lubricating heat-resistant material, consisting of from 20 to 90 percent by weight of poly(butadiene) with a degree of cross-linking in the final product of from 30 to 95 percent, and from 10 to 80 percent by weight of an antifriction filler selected from the group consisting of molybdenum disulphide, graphite, boron nitride and a mixture of said compounds.

4,129,551
FLAME RETARDANT POLYESTERS

Jöern Rüeter, and Raban Grundmann, both of Marl, Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Germany

Filed Oct. 8, 1976, Ser. No. 730,954
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1975, 2547498
Int. Cl.² C08K *5/53, 5/03*
U.S. Cl. 260—45.7 R **10 Claims**

1. In a thermoplastic, saturated linear polyester molding composition rendered nonflammable by the presence therein of
(a) 0.1–2% by weight of phosphorus provided by an organic, oxygen-containing phosphorus compound; and
(b) 1–5% by weight of bromine provided by a ring-brominated aromatic compound,
the improvement wherein the phosphorus compound of (a) is triphenylphosphine oxide and the bromine compound of (b) is a compound of the formula



wherein x is an integer from 2 to 5, y and z each are 0 or an integer from 1 to 17, and the sum of y + z is an integer between 7 and 17, or a mixture thereof.

4,129,552
INSULATION MATERIAL FOR HIGH VOLTAGE ELECTRIC POWER CABLE

Stanislas Galaj, Arcueil; Bernard Hochon, La Garenne Colombes, and Pierre Lerner, Villebon sur Yvette, all of France, assignors to Compagnie General d'Electricite S.A., Paris, France

Filed Feb. 28, 1977, Ser. No. 772,881
Claims priority, application France, Mar. 10, 1976, 76 06812
Int. Cl.² C08L *23/06;* C08F *6/00, 110/02;* C08K *5/18*
U.S. Cl. 260—45.9 QB **8 Claims**

1. Insulation material for a high voltage electric power distribution cable, consisting essentially of low density extrudible polyethylene having a density of less than 0.930 and a concentration of low molecular weight polyethylene capable of being removed by washing the polyethylene with diethyl oxide or ethanol solvent over a period of several hours by bringing the polyethylene into contact with the solvent in vapor form in counter flow at a temperature slightly above its dew point in a flow of inert gas and shaded from light which is less than 600 parts per million be weight.

4,129,553

ORGANIC PHOSPHITES AND THEIR USE AS STABILIZERS

Harald Häberlein; Herbert Nies, and Franz Scheidl, all of Gersthofen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

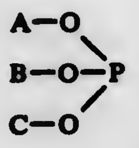
Filed May 23, 1977, Ser. No. 799,277

Claims priority, application Fed. Rep. of Germany, May 28, 1976, 2623985

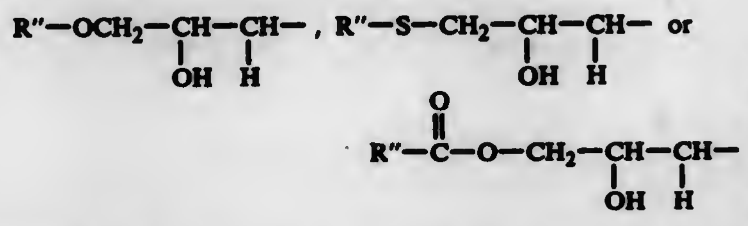
Int. Cl.² C07F *9/02;* **C08K** *5/36, 5/10, 5/06*

U.S. Cl. 260—45.85 R **6 Claims**

1. Phosphites of the formula



wherein A, B and C are identical or different radicals, and at least one is a member of the structure



$$R''-OCH_2-\underset{OH}{\underset{|}{CH}}-\underset{H}{\underset{|}{CH}}-,\ R''-S-CH_2-\underset{OH}{\underset{|}{CH}}-\underset{H}{\underset{|}{CH}}-\text{ or } R''-\overset{O}{\overset{\|}{C}}-O-CH_2-\underset{OH}{\underset{|}{CH}}-\underset{H}{\underset{|}{CH}}-$$

wherein R″ is a phenyl- or naphthyl group or a cycloalkyl group having from 5 to 12 ring carbon atoms or an alkyl chain having from 1 to 60 carbon atoms, and any radicals of A, B and C remaining are aryl groups having from 6 to 12 carbon atoms or cycloalkyl groups having from 5 to 12 carbon atoms or alkyl groups having from 1 to 60 carbon atoms, the total sum of carbon atoms contained in the radicals A, B and C being at least 10.

6. Plastic molding compositions containing a phosphite as claimed in claim 1 as stabilizer.

4,129,554

THERMOSETTABLE, POLYMERIZABLE RESIN COMPOSITION COMPRISING A POLYEPOXIDE AND A POLYISOCYANATE STABILIZED BY INCORPORATING AN ORGANIC ELECTRON ACCEPTOR

Yoshiharu Karasawa; Tohru Koyama, both of Hitachi, and Toshikazu Narahara, Naka, all of Japan, assignors to Hitachi Chemical Co., Ltd. and Hitachi, Ltd., both of, Japan

Filed May 16, 1977, Ser. No. 797,429

Claims priority, application Japan, May 14, 1976, 51-54340; Nov. 15, 1976, 51-136328

Int. Cl.² C08L *63/00*

U.S. Cl. 528—48 **28 Claims**

1. In the stabilizing of thermosettable, polymerizable compositions comprising polyepoxides having more than one epoxy group and polyisocyanates having more than one free-isocyanate group, on the average, which are normally catalyzed by a basic curing catalyst for forming in the cured product oxazolidone rings and isocyanurate rings or uretdione rings, or both, the improvement that comprises inhibiting at temperatures of about 60° C. or lower the polymerization of the reactive components in the compositions in the absence of the basic curing catalyst by incorporating into the compositions an electron acceptor selected from the group consisting of:

(1) Compounds having an active methylene or methine group connected to an electron attractive group from the class consisting of group of —CN, —NO_2, —COOR, —COR, and —CHO, where R is a lower alkyl group having one to 8 carbon atoms; and

(2) Compounds of π-type electron acceptor, wherein the amount of the electron acceptor is of 1×10^{-5} to 1% by weight based on the total weight of the polyepoxides and polyisocyanates.

4,129,555

POLY-PHENYLENE OXIDE PROCESS EMPLOYING AMINOPHENOL REACTANTS

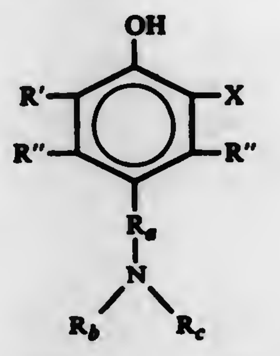
Dwain M. White, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 23, 1977, Ser. No. 780,289

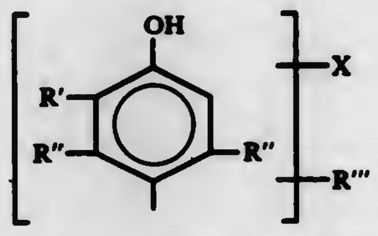
Int. Cl.² C08G *65/44;* **C08L** *25/04*

U.S. Cl. 260—823 **8 Claims**

1. The process of forming self-condensation products of (a) an aminophenol of the formula



wherein X is hydrogen, chlorine, bromine, or iodine, R′ is hydrogen, a hydrocarbon radical, a halohydrocarbon radical having at least 2 carbon atoms between the halogen atoms and phenol nucleus, a hydrocarbonoxy radical, or a halohydrocarbonoxy radical having at least two carbon atoms between the halogen atoms and phenol nucleus, R″ being the same as R′ and, in addition, halogen, R_a being methylene or a substituted methylene hydrocarbon group, R_b and R_c being acyclic or cyclic, saturated or unsaturated hydrocarbon groups, subject to the proviso that R_b and R_c either alone or in combination do not constitute an aromatic ring structure having an aromatic ring carbon atom directly bonded to the nitrogen atom of the amino group and further subject to the proviso that at least one of R_b or R_c is a hydrocarbon group, and (b) another phenol of the formula



wherein X, R′ and R″ are the same as defined hereinbefore with respect to the aminophenol and R‴ being the same as R′ and in addition, a halogen.

4,129,556

CURABLE EPOXIDE RESIN MIXTURES

Helmut Zondler, Bottmingen, and Roland Moser, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

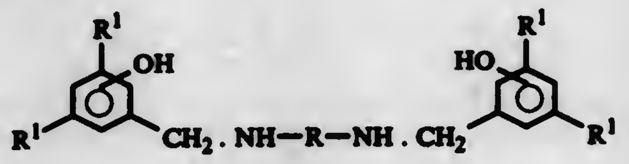
Filed Dec. 2, 1977, Ser. No. 856,892

Claims priority, application Switzerland, Dec. 10, 1976, 15574/76

Int. Cl.² C08G *59/50*

U.S. Cl. 528—97 **9 Claims**

1. A curable mixture comprising (a) a polyepoxide compound having on average more than one epoxide group per molecule and (b) a hydroxyl groups containing diamine of the formula Ia or Ib



(Ia)

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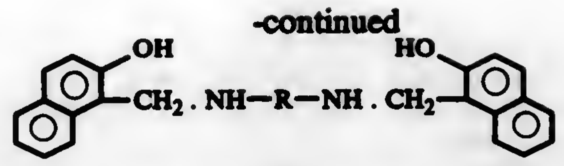


(Ib)

in which R denotes a straight-chain or branched alkylene having a total of 2 to 16 C atoms, an aralkylene having a total of 7 to 12 C atoms, an arylene having a total of 6 to 16 C atoms, a cycloaliphatic or cycloaliphatic-aliphatic radical having 6 to 12 C atoms or a radical which contains at least one N, O or S atom in chains or cyclic groups and R_1 denotes hydrogen, halogen or alkyl group having 1 to 4 C atoms, and in which, in formula Ia, the two OH groups are in the ortho-position or para-position relative to the methylene group, there being, in the mixture, 0.5 to 1.5 equivalents of active hydrogen atoms, which are bonded to nitrogen and oxygen in the diamine containing hydroxyl groups, per 1 equivalent of epoxide groups.

4,129,557

PROCESS FOR PRODUCING COPOLYMERIZED RESINS

Ken-ichi Kudo; Yoshihiko Kitawaga; Teruhisa Koyama, all of Niihama; Akira Takata, Habikino; Shuichi Kanagawa, Osaka, and Tetsuo Yamaguchi, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 23, 1977, Ser. No. 799,266

Claims priority, application Japan, May 26, 1976, 51-61614; May 26, 1976, 51-61615; Jul. 30, 1976, 51-91490; Jul. 30, 1976, 51-91491

Int. Cl.² C08F *32/08, 232/08, 216/02*

U.S. Cl. 526—283 **20 Claims**

1. A thermally copolymerized resin having a softening point of 50° to 200° C., a number average molecular weight of 300 to 1,500 measured by vapor pressure osmometry and a bromine number of less than 120 and soluble in hydrocarbon solvents, the composition of said resin comprising (a) 5 to 95 mol % of one or more monomeric substances selected from cyclopentadiene, dicyclopentadiene and alkyl-substituted compounds thereof, (b) 2 to 25 mol % of one or more codimers of cyclopentadiene and/or an alkyl-substituted compounds thereof and a chain conjugated diolefin having 4 to 5 carbon atoms, and (c) 3 to 70 mol % of one or more hydroxystyrene derivatives.

4,129,558

PREPARATION OF FUNCTIONAL POLYMERS

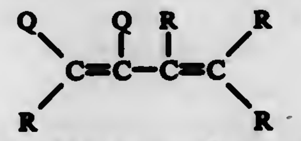
Charles M. Selman, and Carl A. Uraneck, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 690,802, May 27, 1976, Pat. No. 4,046,745, which is a division of Ser. No. 625,743, Oct. 24, 1975, Pat. No. 3,993,853. This application Jun. 24, 1977, Ser. No. 809,830

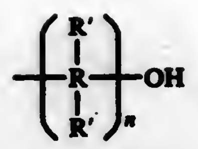
Int. Cl.² C08F *4/48, 8/00, 8/08*

U.S. Cl. 260—823 **23 Claims**

1. Hydroxy functional copolymers of at least one conjugated diene, or of at least one conjugated diene with at least one monovinyl-substituted aromatic hydrocarbon, and a lithium salt of a monohydroxyalkyl-substituted conjugated alkadiene as comonomer, wherein said lithium salt of a monohydroxyalkyl-substituted conjugated alkadiene is the reaction product of effective amounts of a monohydroxyalkyl-substituted conjugated alkadiene with lithium or with a hydrocarbyllithium compound, and wherein said monohydroxyalkyl-substituted conjugated alkadiene is represented by the formula



wherein Q is R or a monohydroxyalkyl group represented by



$$-\!\left(\overset{R'}{\underset{R'}{\overset{|}{\underset{|}{R}}}}\right)_n\!-OH$$

wherein each R is hydrogen or is an alkyl, cycloalkyl, aryl, or combination radical; each R′ is hydrogen, methyl, or ethyl; n is an integer of 1 to 3; such that said monohydroxyalkyl-substituted conjugated alkadiene contains 1 hydroxyalkyl group per molecule.

4,129,559

REVERSE OSMOSIS ANISOTROPIC MEMBRANES BASED ON POLYPIPERAZINE AMIDES

Lino Credali, Casalecchio (Bologna); Giovanni Baruzzi, Ferrara, and Vincenzo Guidotti, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 433,087, Jan. 14, 1974, abandoned. This application Oct. 28, 1975, Ser. No. 626,289

Claims priority, application Italy, Jan. 16, 1973, 19247 A/73

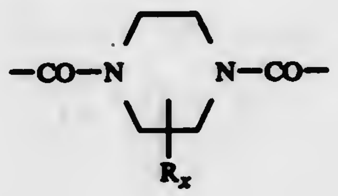
Int. Cl.² C08G *69/26;* **B01D** *39/16*

U.S. Cl. 528—337 **6 Claims**

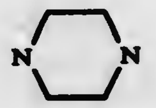
1. Polypiperazine amide reverse osmosis anisotropic-gel membrane consisting essentially of the repeating unit having the formula (I):

$$-\!\!\left(A-Q\right)_n \qquad \text{(I)}$$

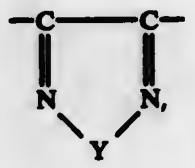
wherein n is a whole number sufficiently high to impart to the polymer a molecular weight suitable for the formation of a membrane; —A— is a divalent organic radical having the structure (II):



wherein

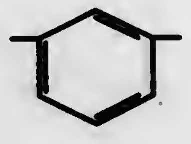


is a divalent piperazine ring, x is a whole number between 0 and 8 and R is a lower alkyl group; said R groups, when present in the piperazine ring in a number greater than 1, being placed in any steric position with respect to the ring; —Q— is at least two divalent organic radicals selected from the group consisting of the formulae:



(III)

wherein Y is O or S:



(IV)

and

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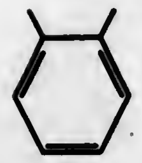


(V)

with the proviso that at least 5 mol % of the —Q— groups are of formula (III).

4,129,560
PROCESS FOR THE PURIFICATION OF HIGH MOLECULAR WEIGHT PEPTIDES USING NON-IONIC DETERGENTS

Manfred Zoltobrocki, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 29, 1977, Ser. No. 810,979

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1976, 2629568

Int. Cl.² C07C *103/52;* C07G *7/00, 15/00*

U.S. Cl. 260—112 R **1 Claim**

1. A method for purifying a high molecular weight peptide selected from the group consisting of insulins, insulin analogues, insulin derivatives, natural adrenocorticotropic hormone, growth hormone, glucagon, and glycoproteid hormones of the anterior lobe of the pituitary gland, which peptides have a tendency to associate, which method comprises subjecting a buffered solution of said peptide to ion exchange chromatography on an acidic or basic ion exchanger, said buffered solution additionally comprising a non-ionic detergent.

4,129,561
ANTI-ULCER METHANO-DIBENZAZOCINES DERIVATIVES

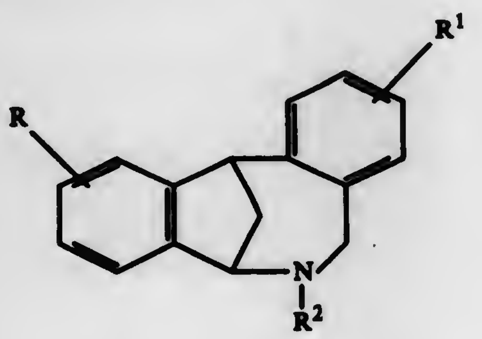
Reinhardt P. Stein, Audubon, and Daniel J. Delecki, Royersford, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Jul. 20, 1977, Ser. No. 817,392

Int. Cl.² C07D *225/04;* A61K *31/55*

U.S. Cl. 260—239 BB **4 Claims**

1. A compound of the formula:



wherein:

R and R^1, independently, are hydrogen, (lower)alkyl, (lower)alkoxy, cyclo(lower)alkyl, halo, or phenyl; and
R^2 is di(lower)alkylaminoacetyl or di(lower)alkylaminoethyl; or a non-toxic acid addition salt thereof.

4,129,562
THIAZOLO-RIFAMYCIN DERIVATIVES AND A METHOD FOR THEIR PREPARATION

Renato Cricchio, Varese, Italy, assignor to Gruppo Lepetit S.p.A., Milan, Italy

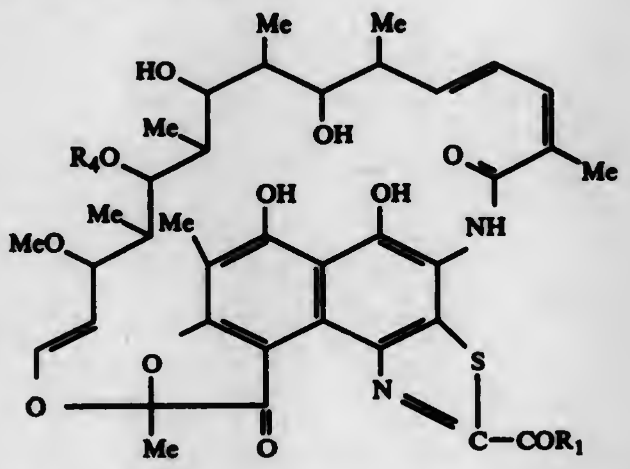
Filed May 12, 1977, Ser. No. 796,291

Claims priority, application United Kingdom, May 28, 1976, 22205/76

Int. Cl.² C07D *513/18*

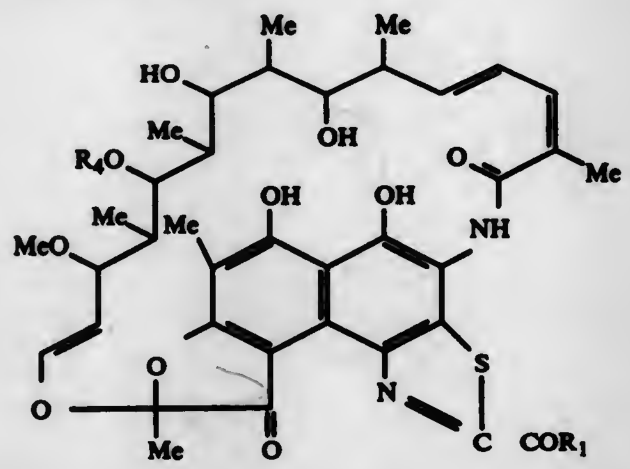
U.S. Cl. 260—239.3 P **10 Claims**

1. A compound of the formula:

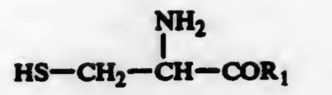


wherein: R_1 represents loweralkoxy, cycloalkoxy having from 5 to 8 carbon atoms in the ring, phenoxy, benzoxy, or an amino or hydrazino moiety represented by the formulas: $—NR_2R_3$ and $—NH—NR_2R_3$, respectively, wherein R_2 and R_3 are independently selected from the group consisting of hydrogen, lower alkyl hydroxy lower alkyl, cycloalkyl having from 5 to 8 carbon atoms in the ring, phenyl or benzyl or R_2 and R_3 taken together with the adjacent nitrogen atom represent a saturated 5 or 6 membered heterocyclic ring which may contain an additional nitrogen or oxygen atom in the ring thereby forming a residue of pyrrolidino, piperidino, piperazino, N-lower alkylpiperazino or morpholino and R_4 represents hydrogen or acetyl.

2. A process for preparing a 4-desoxy-thiazolo[5,4-c]rifamycin SV of the formula:

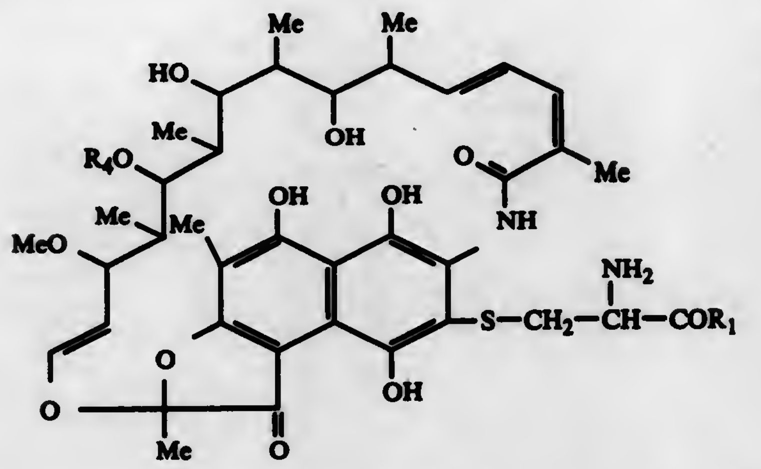


R_1 represents loweralkoxy, cycloalkoxy having from 5 to 8 carbon atoms in the ring, phenoxy, benzoxy, or an amino or hydrazino moiety represented by the formulas: $—NR_2R_3$ and $—NH—NR_2R_3$, respectively, wherein R_2 and R_3 are independently selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl, cycloalkyl having from 5 to 8 carbon atoms in the ring, phenyl or benzyl or R_2 and R_3 taken together with the adjacent nitrogen atom represent a saturated 5 or 6 membered heterocyclic ring which may contain an additional nitrogen or oxygen atom in the ring thereby forming a residue of pyrrolidino, piperidino, piperazino, N-lower alkylpiperazino or morpholino and R_4 represents hydrogen or acetyl; which comprises reacting rifamycin S or 25-deacetyl rifamycin S with a cysteine having the formula:



$$HS—CH_2—\overset{\displaystyle NH_2}{\overset{|}{C}H}—COR_1$$

wherein R_1 is as defined above, whereby a 3-(2-substituted ethylthio)-rifamycin SV of the formula:



is obtained, wherein R_1 and R_4 are as defined before, and contacting said 3-(2-substituted ethylthio)-rifamycin SV with an oxidizing agent in an aqueous buffered water-miscible solvent system at a controlled pH of between 2 and 6.5.

4,129,563
PYRAZOLINE COMPOUNDS

Manfred Patsch, and Albert Hettche, both of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

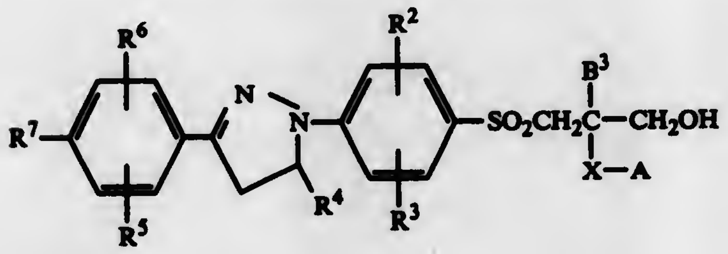
Filed Jul. 6, 1976, Ser. No. 702,975

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1975, 2534180; Aug. 6, 1975, 2535095; Nov. 11, 1975, 2550548

Int. Cl.² C07D *231/06, 401/12*

U.S. Cl. 260—239.9 **5 Claims**

1. A pyrazoline compound of the formula



in which

B^3 is hydrogen or C_1 to C_4 alkyl,
R^2, R^3, R^5, R^6 and R^7 are independently hydrogen, chlorine, bromine, fluorine, methyl, ethyl, methoxy or ethoxy,
R^4 is hydrogen, C_1 to C_4 is alkyl, benzyl, phenylethyl, phenyl or phenyl substituted by chlorine, bromine, methyl, ethyl, methoxy, ethoxy, cyano or hydroxysulfonyl,
X is —O— or —S— and
A is C_2 or C_3 alkyl substituted by C_1 to C_4 dialkylamino, piperidino, pyrrolidino or hexamethyleneimino.

4,129,564
SPIROLACTONES

Rudolf Wiechert; Dieter Bittler; Ulrich Kerb; Jorge Casals-Stenzel, and Wolfgang Losert, all of Berlin, Fed. Rep. of Germany, assignors to Schering, A.G. Patentabteilung, Berlin, Fed. Rep. of Germany

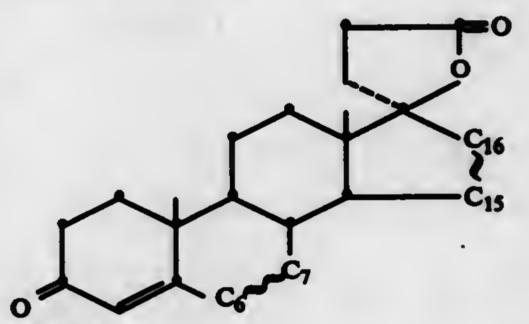
Filed Nov. 11, 1977, Ser. No. 850,524

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1976, 2652761

Int. Cl.² A61K *31/58;* C07J *1/00*

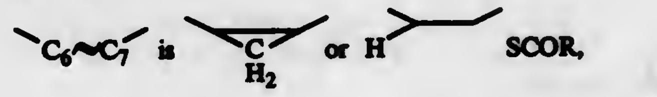
U.S. Cl. 260—239.57 **19 Claims**

1. A spirolactone of the formula

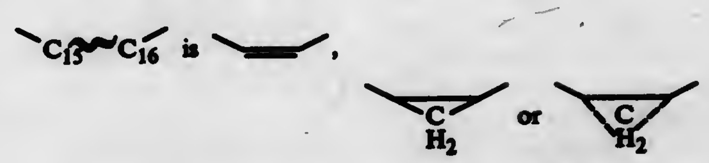


(I)

wherein



wherein R is lower alkyl of up to 5 carbon atoms, and



19. The method of achieving diuretic effects in mammals which comprises administering a diuretically effective amount of a spirolactone of claim 1.

4,129,565
ISOCARBOSTYRIL DERIVATIVES

Hideo Fukushima, Saitama, and Yoshikuni Suzuki, Kawagoe, both of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

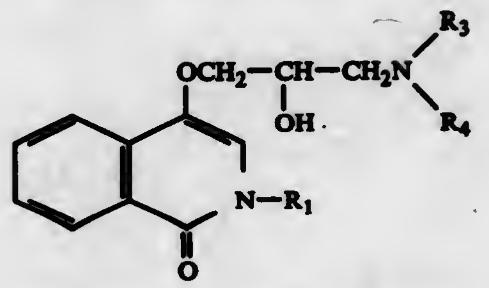
Continuation-in-part of Ser. No. 703,502, Jul. 8, 1976, abandoned. This application Dec. 16, 1976, Ser. No. 751,522

Claims priority, application Japan, Jul. 11, 1976, 51-83408; Fed. Rep. of Germany, Jul. 9, 1976, 2631080; United Kingdom, Jul. 11, 1975, 29335/75

Int. Cl.² C07D *217/16, 217/24, 401/12*

U.S. Cl. 546—142 **6 Claims**

1. A 4-(3-substituted amino-2-hydroxy) propoxy-2-alkyl isocarbostyril compound of the formula



wherein R_1 represents C_1 to C_4 alkyl, and R_3 and R_4 individually means hydrogen, C_1 to C_6 alkyl, benzyl or cyclohexyl provided that both R_3 and R_4 are not hydrogen, or alternatively R_3 and R_4, together with their adjacent nitrogen atom, is piperidino, piperazino or methylpiperazino, the acid addition salt or quaternary salt thereof.

4,129,566

DERIVATIVES OF DEHYDROCYCLICIMINO ACIDS

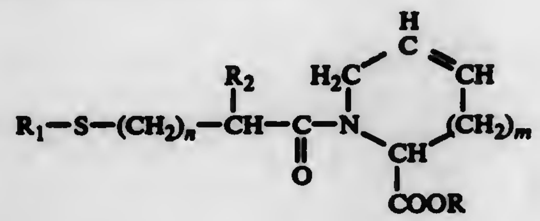
Miguel A. Ondetti, Princeton, and Sehsea I. Natarajan, Lawrenceville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 15, 1978, Ser. No. 878,144

Int. Cl.² C07D *213/55, 207/16*

U.S. Cl. 546—326 **12 Claims**

1. A compound of the formula



wherein

R and R_2 each is hydrogen or lower alkyl;

R_1 is hydrogen,

m and n each is 0 or 1;

and basic salts thereof.

4,129,567

QUATERNARY SALTS AS HYPOGLYCEMIC AGENTS

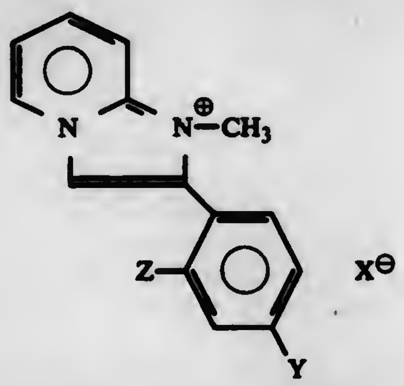
Donald E. Kuhla, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 712,204, Aug. 6, 1976, Pat. No. 4,044,015, which is a continuation-in-part of Ser. No. 609,914, Sep. 3, 1975, abandoned. This application Aug. 8, 1977, Ser. No. 822,738

Int. Cl.² C07D *487/00*

U.S. Cl. 546—121 **4 Claims**

1. A compound selected from the group consisting of



wherein Y is chlorine, bromine or methoxy; Z is hydrogen or chlorine; and X is a pharmaceutically acceptable anion.

4,129,568

2-[3-ARYL-2-ISOXAZOLIN-5-YL]BENZOATES

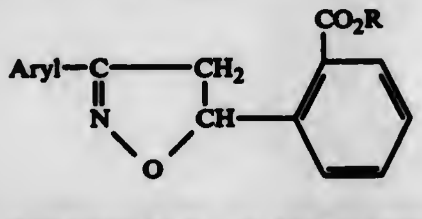
Robert K. Howe, Bridgeton, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 796,110, May 12, 1977, abandoned. This application Aug. 29, 1977, Ser. No. 828,445

Int. Cl.² C07D *263/14*

U.S. Cl. 260—307 F **4 Claims**

1. A compound having the formula



wherein Aryl is selected from the group consisting of naphthyl, phenyl, phenyl substituted by one or more halogen, trifluoromethyl, lower alkyl or lower alkoxy moieties and R is selected from the group consisting of hydrogen, lower alkyl and agriculturally acceptable cations.

4,129,569

CYCLIC OXAZO DERIVATIVES

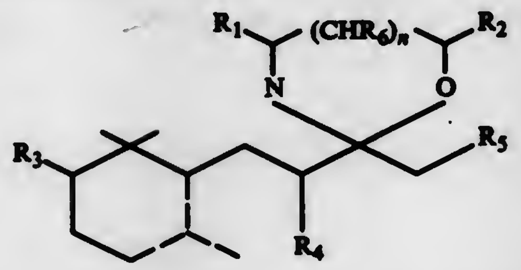
William L. Schreiber, Jackson; James N. Siano, Keyport, and John B. Hall, Rumson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jun. 16, 1977, Ser. No. 807,057

Int. Cl.² C07D *263/04, 265/06*

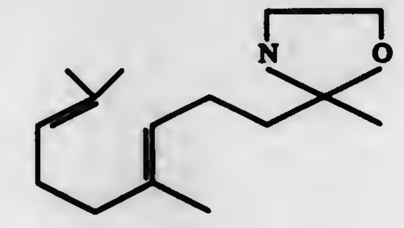
U.S. Cl. 260—307 FA **3 Claims**

1. A mixture of three oxazo derivatives of dihydro ionone derivatives defined by the generic structure:



wherein one of the dashed lines is a carbon carbon double bond and the other two dashed lines are carbon carbon single bonds and n is 0 or 1; R_1, R_2 and R_6 are each the same or different and each represents hydrogen or C_1–C_3 lower alkyl; and R_3, R_4 and R_5 are each the same or different and each represents hydrogen or methyl, wherein in said mixture, the only difference among the derivatives is in the position of the carbon-to-carbon double bond.

3. A cyclic oxazo derivative of geranyl acetone having the structure:



4,129,570

NITRILE SUBSTITUTED POLYIMIDE OLIGOMERS

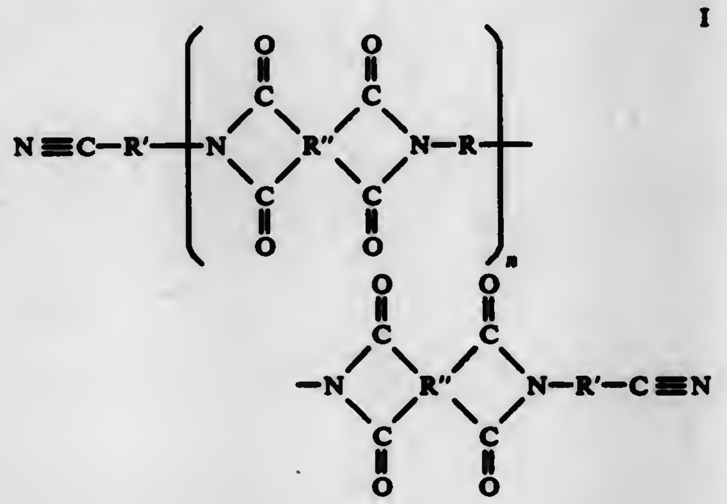
Norman Bilow, Los Angeles; Abraham L. Landis, Northridge, and Leroy J. Miller, Canoga Park, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 347,535, Apr. 3, 1973, abandoned. This application Jul. 6, 1976, Ser. No. 702,818

Int. Cl.² C07D *209/42, 487/04*

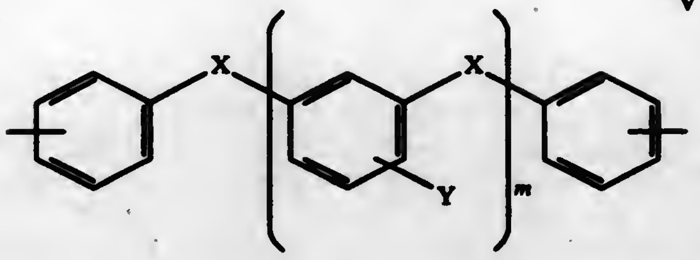
U.S. Cl. 528—128 **11 Claims**

1. A compound having the following chemical structure



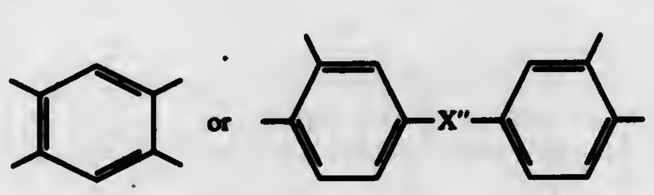
I

wherein R is a divalent moiety of the formula



V

wherein X is O or S, Y is H or C≡N, and m is a value from 0 to 4, R′ is phenylene, naphthylene, oxydiphenylene, or diphenylene and R″ is



where X″ is CO, O, CH_2, S, or a bond and n has an average value of from 1 to 4.

4,129,571

AMINO ACID DERIVATIVES

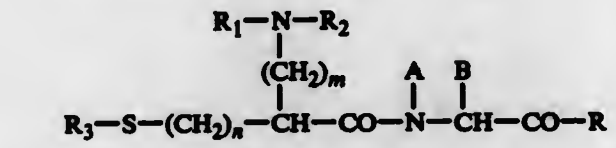
Miguel A. Ondetti, Princeton, and Michael E. Condon, Lawrenceville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 759,685, Jan. 17, 1977. This application Oct. 31, 1977, Ser. No. 846,645

Int. Cl.² C07D *207/16, 403/12*

U.S. Cl. 260—326.2 **11 Claims**

1. A compound of the formula



$$R_3-S-(CH_2)_n-\underset{\substack{|\\(CH_2)_m\\|\\R_1-N-R_2}}{CH}-CO-\overset{A}{N}-\overset{B}{CH}-CO-R$$

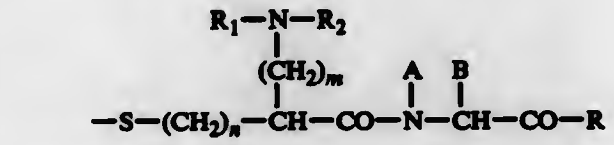
and salts physiologically acceptable thereof, wherein

R is hydroxy or lower alkoxy

R_1 is hydrogen, lower alkanoyl or amino (imino)methyl;

R_2 is hydrogen, lower alkyl or phenyl-lower alkylene;

R_3 is hydrogen, lower alkanoyl, benzoyl or



$$-S-(CH_2)_n-\underset{\substack{|\\(CH_2)_m\\|\\R_1-N-R_2}}{CH}-CO-\overset{A}{N}-\overset{B}{CH}-CO-R$$

A and B together form a $(CH_2)_p$ bridge which completes an unsubstituted ring of 5 atoms with the nitrogen and carbon to which they are joined or said ring substituted with a hydroxy group;

m is 1, 2, 3, or 4;

n is 0 or 1; and

p is 3.

4,129,572

PHENYL-2 INDOLE DERIVATIVES

Charles Pigerol, Saint-Ouen; Paul de Cointet de Fillain, and Yves Bazile, both of Sisteron, all of France, assignors to Labaz, Paris, France

Filed Jul. 1, 1977, Ser. No. 812,253

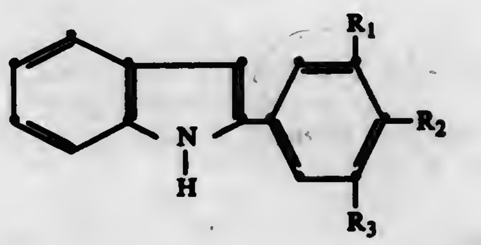
Claims priority, application France, Jul. 15, 1976, 76 21582

The portion of the term of this patent subsequent to May 17, 1994, has been disclaimed.

Int. Cl.² C07D *209/12*

U.S. Cl. 260—326.12 R **5 Claims**

1. A compound of the formula:



wherein R_1 represents a hydroxy radical, a branched- or straight-chain alkyloxy group containing from 1 to 12 carbon atoms, an allyloxy or propargyloxy radical, a cyclohexyloxy radical or a benzyloxy radical, R_2 represents a hydroxy radical, an ethoxy, methylsulphonyloxy, benzenesulphonyloxy or toluenesulphonyloxy group and R_3 represents a hydrogen atom, a hydroxy radical or a methoxy group, with the proviso that when R_2 represents a hydroxy or ethoxy group, R_1 represents allyloxy or propargyloxy.

4,129,573

COMPOSITIONS FOR AND METHOD OF INFLUENCING PLANT GROWTH AND NOVEL 1-PHENYL-2-OXO-PYRROLIDINE-4-CARBOXYLIC ACID DERIVATIVES

Daniel Bellus, Riehen; Werner Föry, Basel, and Hans Tobler, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

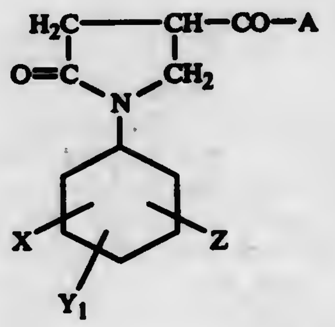
Filed Oct. 28, 1976, Ser. No. 736,656

Claims priority, application Switzerland, Nov. 7, 1975, 14427/75

Int. Cl.² C07D *207/26;* A01N *9/22*

U.S. Cl. 260—326.45 **3 Claims**

1. 1-Phenyl-2-oxo-pyrrolidine-4-carboxylic acids of the formula



wherein

A is —OH,—OR_1, —SR_2 or —CN;

R_1 is an alkali metal, alkaline-earth metal, zinc, copper, iron or quaternary ammonium cation; C_1–C_{18} alkyl or C_1–C_{18} alkyl mono-to-tri-substituted by halogen, hydroxyl, alkoxy, alkylthio, amino, mono-alkyl amino, dialkyl amino, cyano, alkoxycarbonyl, carbamoyl, tetrahydrofuryl or tetrahydropyranyl, the alkyl moieties of these substituents having 1–4 carbon atoms; C_3–C_8 alkenyl; C_3–C_8 haloalkenyl; C_3–C_8 alkynyl; C_3–C_8 haloalkynyl; C_3–C_{12} cycloalkyl; phenyl, benzyl or phenylethyl, or phenyl, benzyl or phenylethyl substituted by alkyl, alkoxy, alkylthio, N-alkylamino, N,N-dialkylamino, halogen, trifluoromethyl, amino or nitro, the alkyl moieties of these substituents having 1–4 carbon atoms;

R_2 is C_1–C_6 alkyl, benzyl, phenyl, or benzyl and phenyl substituted by alkyl, alkoxy, alkylthio, N-alkylamino, N,N-dialkylamino, halogen, trifluoromethyl, amino or nitro, the alkyl moieties of these substituents having 1–4 carbon atoms;

X is —NH-SO_2CF_3 or —NH-SO_2CH_3 in the 3- or 4- position;

Y_1 is halogen, trifluoromethyl, C_1–C_4 alkyl or C_1–C_4 alkylthio; and

Z is hydrogen or C_1–C_4 alkyl.

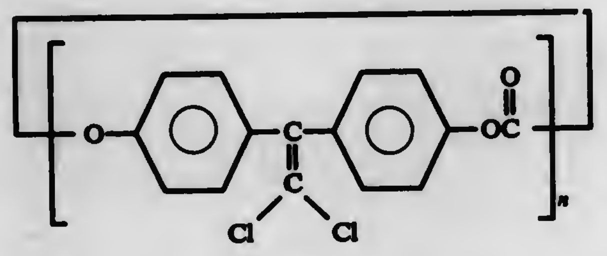
4,129,574

METHOD FOR MAKING CYCLIC CARBONATES AND POLYMERS THEREFROM

John E. Hallgren, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

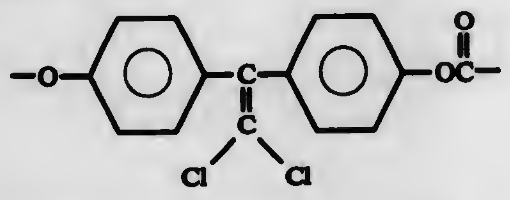
Filed Jun. 9, 1977, Ser. No. 804,938
Int. Cl.² C07D *323/00*
U.S. Cl. 260—340.2 **6 Claims**

1. A method for making cyclic carbonates of the formula,



where n is 3 or 4, which comprises

(1) agitating at a temperature in the range of from 0° C. to 200° C., an organic solvent solution of a linear polycarbonate consisting essentially of chemically combined units of the formula,



in the presence of an effective amount of a tertiary organic amine catalyst, and

(2) removing the precipitated cyclic carbonate trimer from the mixture of (1).

4,129,575

8-METHOXYPSORALEN

Louis J. Glunz, Wilmette, and Donald E. Dickson, Chicago, both of Ill., assignors to Thomas C. Elder, Inc., Hamilton, Ind.

Filed Apr. 12, 1976, Ser. No. 676,302
The portion of the term of this patent subsequent to Dec. 12, 1995, has been disclaimed.
Int. Cl.² C07D *311/78*
U.S. Cl. 260—343.21 **15 Claims**

1. In a process for making 8-methoxypsoralen from pyrogallol in the following steps:

(1) reacting pyrogallol with chloracetic acid to form ω-chloro-2,3,4-trihydroxyacetophenone,

(2) heating ω-chloro-2,3,4-trihydroxyacetophenone in the presence of a hydrogen chloride acceptor to form 6,7-dihydroxycoumaranone,

(3) hydrogenating 6,7-dihydroxycoumaranone to form 6,7-dihydroxy-2,3,-dihydrobenzofuran,

(4) reacting 6,7-dihydroxy-2,3-dihydrobenzofuran with malic acid to form 2,3-dihydroxanthotoxol,

(5–6) methylating and dehydrogenating to form 8-methoxypsoralen,

the improvement which comprises effecting step 3 with elemental hydrogen over a palladium catalyst in a solution of acetic acid in ethyl acetate.

4,129,576

PROCESS FOR MAKING ω-CHLORO-2,3,4-TRIHYDROXYACETOPHENONE

Louis J. Glunz, Wilmette, and Donald E. Dickson, Chicago, both of Ill., assignors to Thomas C. Elder, Inc., Hamilton, Ind.

Continuation-in-part of Ser. No. 676,302, Apr. 12, 1976. This application Jun. 24, 1976, Ser. No. 699,466
The portion of the term of this patent subsequent to Dec. 12, 1995, has been disclaimed.
Int. Cl.² C07D *311/78;* C07C *49/78*
U.S. Cl. 260—343.21 **10 Claims**

1. In a process for making 8-methoxypsoralen from pyrogallol in the following steps:

(1) reacting pyrogallol with chloroacetic acid to form ω-chloro-2,3,4-trihydroxyacetophenone,

(2) heating ω-chloro-2,3,4-trihydroxyacetophenone in the presence of a hydrogen chloride acceptor to form 6,7-dihydroxycoumaranone,

(3) hydrogenating 6,7-dihydroxycoumaranone to form 6,7-dihydroxy-2,3,-dihydrobenzofuran,

(4) reacting 6,7-dihydroxy-2,3-dihydrobenzofuran with malic acid to form 2,3-dihydroxanthotoxol,

(5–6) methylating and dehydrogenating to form 8-methoxypsoralen,

the improvement which comprises, effecting step 1 with boron trifluoride as the condensing agent and a two-fold excess of chloroacetic acid, in which the hydrogenation of 6,7-dihydroxycoumaranone is effected with elemental hydrogen over a palladium catalyst in a solution of acetic acid in ethyl acetate.

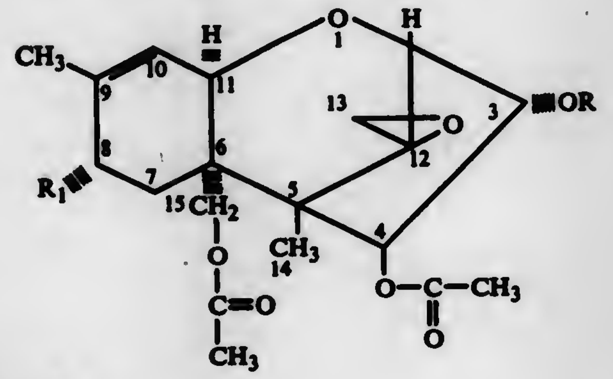
4,129,577

DERIVATIVE OF T-2 TOXIN AND ANGUIDINE

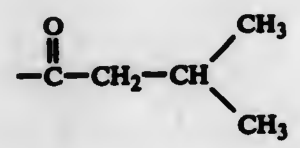
Robert A. Ellison, Madison, Wis., and Frank N. Kotsonis, Kansas City, Mo., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 646,647, Jan. 5, 1976, abandoned. This application Aug. 19, 1977, Ser. No. 826,067
Int. Cl.² C07C *311/02;* A61K *31/35*
U.S. Cl. 260—345.2 **3 Claims**

1. A compound having the general formula

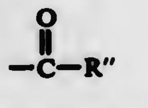


in which R_1 is



$$-\overset{\overset{\displaystyle O}{\|}}{C}-CH_2-CH\begin{matrix}\diagup CH_3\\ \diagdown CH_3\end{matrix}$$

and R is an alkanoate having the general formula



$$-\overset{\overset{\displaystyle O}{\|}}{C}-R''$$

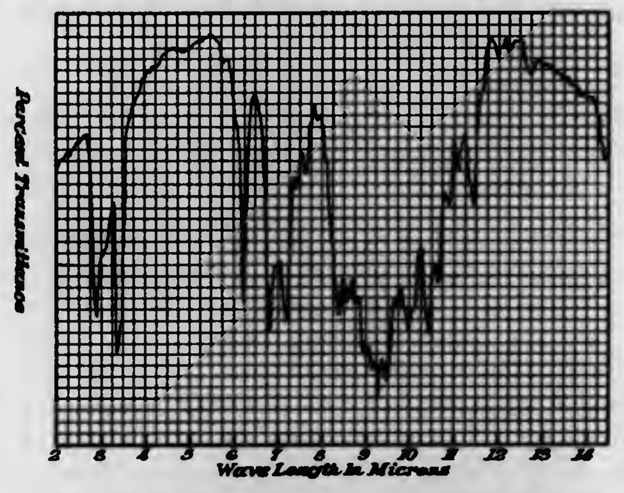
in which R″ is an alkyl group having from 1 to 11 carbon atoms.

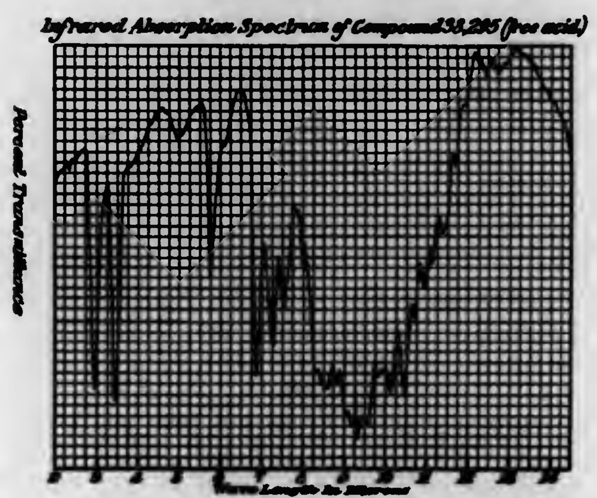
4,129,578

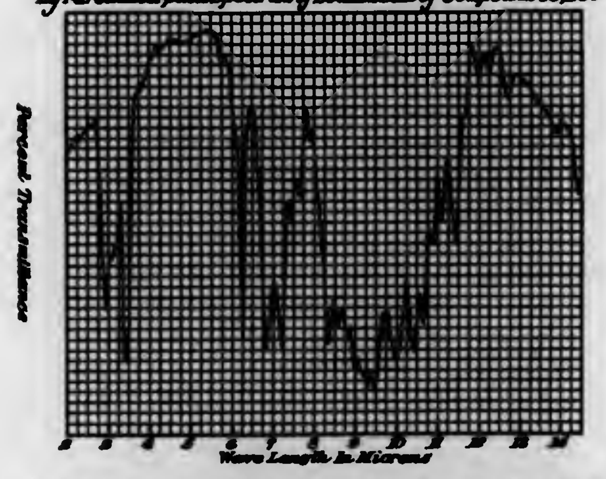
POLYCYCLIC ETHER ANTIBIOTIC

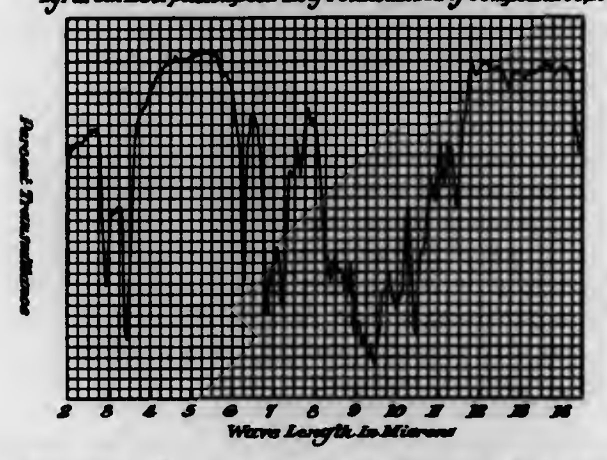
Walter D. Celmer, New London; Walter P. Cullen, East Lyme; Mark T. Jefferson, Waterford; Charles E. Moppett, Mystic; John B. Routien, Lyme, and Frank C. Sciavolino, East Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 558,785, Mar. 17, 1975, abandoned, which is a continuation-in-part of Ser. No. 496,289, Aug. 9, 1974, abandoned. This application Oct. 1, 1976, Ser. No. 728,907
Int. Cl.² C07D *309/22;* A61K *31/35*
U.S. Cl. 260—345.7 R **4 Claims**

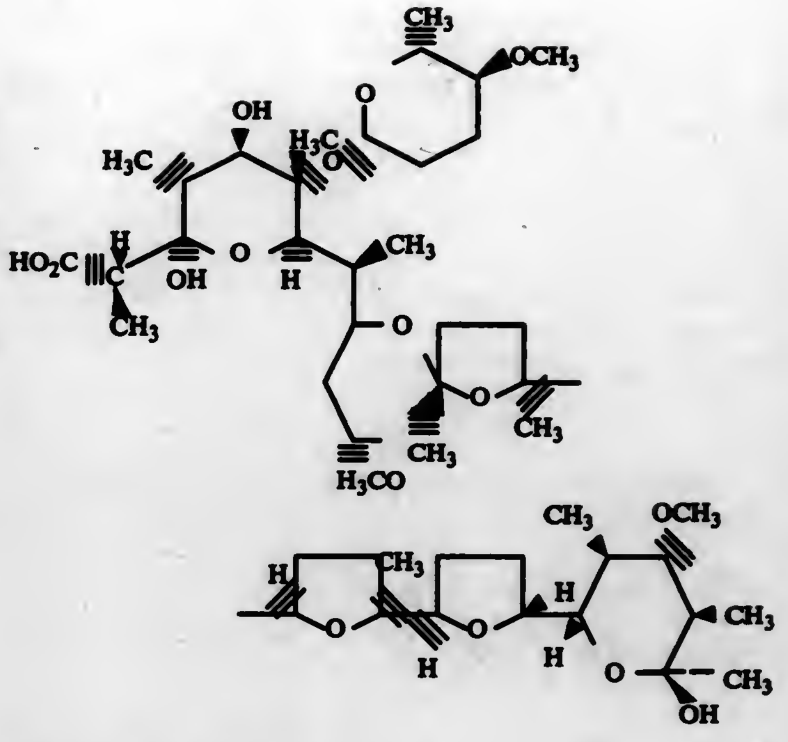

Infrared Absorption Spectrum of Sodium/Potassium Salt of Compound 38,295


Infrared Absorption Spectrum of Compound 38,295 (free acid)


Infrared Absorption Spectrum of Sodium Salt of Compound 38,295


Infrared Absorption Spectrum of Potassium Salt of Compound 38,295

1. Compound 38,295, an antibiotic having the formula



and the cationic salts thereof.

4,129,579

PREPARATION OF 2,3-DIHYDROFURAN

Jung W. Kang, Clinton, and William L. Hergenrother, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 725,603, Sep. 22, 1976, abandoned, which is a division of Ser. No. 629,168, Nov. 5, 1975, abandoned. This application Aug. 31, 1977, Ser. No. 829,364
Int. Cl.² C07D *307/28*
U.S. Cl. 260—346.11 **10 Claims**

1. A process for the preparation of 2,3-dihydrofuran from 2-hydroxytetrahydrofuran, comprising the steps of:

heating a dehydration catalyst to a temperature of from about 130° C. to about 500° C.;

contacting the 2-hydroxytetrahydrofuran with said dehydration catalyst to form the 2,3-dihydrofuran, said catalyst selected from the class consisting of the 1A and 2A metals of pyrosulfate, phosphorous pentaoxide, and dimethyl sulfoxide; or from the class consisting of Al_2O_3, Mo_2O_3, W_2O_3, and combinations thereof; and

utilizing a sufficient amount of said catalyst to convert a portion of 2-hydroxytetrahydrofuran to said 2,3-dihydrofuran.

4,129,580

RESOLUTION OF CERTAIN ASYMMETRIC PRIMARY AMINES USING LASALOCID

John Westley, Cedar Grove, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 708,655, Jul. 26, 1976, abandoned. This application Nov. 14, 1977, Ser. No. 851,317
Int. Cl.² C07D *307/22;* C07C *85/26*
U.S. Cl. 260—347.7 **7 Claims**

1. In a process for resolving a racemic amine into its enantio-

mers by (a) forming a diastereomeric mixture of salts of the enantiomers of the racemic amine with an optically active acid component; (b) separating the diastereomers; (c) decomposing the salt of the desired enantiomer by treatment with a dilute aqueous acid and (d) recovering the desired enantiomer, the improvement which comprises utilizing lasalocid as the optically active acid component and, as the racemic amine, a primary asymmetric amine having its asymmetric center either attached directly to or separated by a single methylene unit from, the primary amino group, one optical isomer of which is preferentially crystallized as a salt of lasalocid.

4,129,581
MONOMERS HAVING PENDANT ELECTRON ACCEPTOR GROUPS-PROCESS FOR PREPARATION AND USE

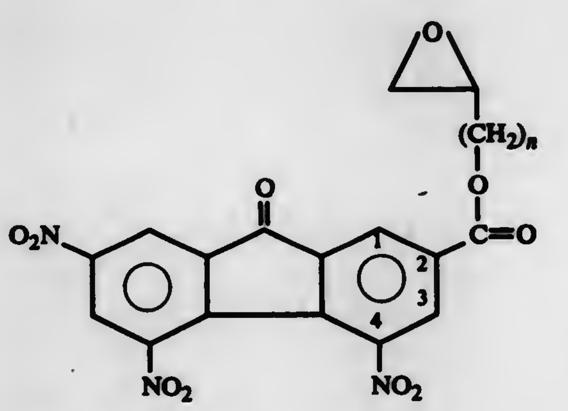
Sam R. Turner, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 596,690, Jul. 16, 1975, Pat. No. 4,062,886. This application May 23, 1977, Ser. No. 799,844

Int. Cl.² C07D *303/16*

U.S. Cl. 260—348.45 **1 Claim**

1. Monomers which are represented by the structural formula



wherein n may be from 1 to 10.

4,129,582
CIS-4,5-DIDEHYDRO-CIS-13-PGE₁, COMPOUNDS

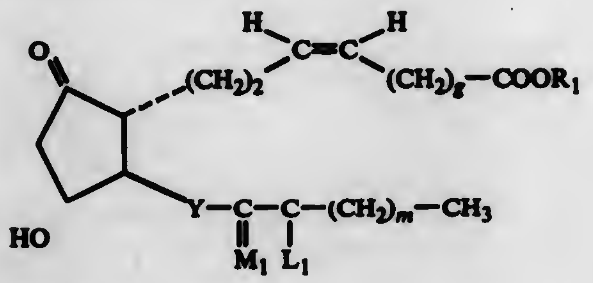
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909. This application Mar. 3, 1977, Ser. No. 774,078

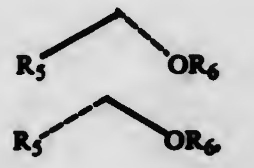
Int. Cl.² C07C *177/00*

U.S. Cl. 260—408 **25 Claims**

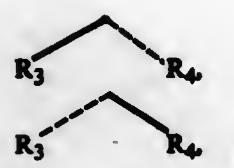
1. A compound of the formula



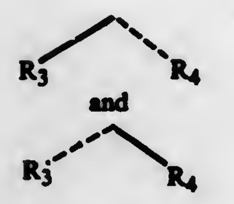
wherein g is two, three, or 4;
wherein Y is cis—CH=CH—;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein m is one to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,129,583
PROCESS FOR SEPARATING CRYSTALLIZABLE FRACTIONS FROM MIXTURES THEREOF

Klaus Zondek, Callao 3385, Santiago, Chile

Continuation of Ser. No. 686,807, May 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 476,685, Jun. 5, 1974, abandoned, which is a continuation of Ser. No. 170,249, Sep. 8, 1971, abandoned. This application Jan. 24, 1978, Ser. No. 871,964

Claims priority, application Argentina, May 19, 1971, 235663

Int. Cl.² C09F *5/10;* C11B *3/00;* C10G *43/06*

U.S. Cl. 260—428.5 **12 Claims**

1. A continuous process for separating crystallizable organic components selected from the group consisting of fats, fatty acids, glycerides thereof and waxes from mixtures thereof in solution which comprises the steps of:

(A) mixing a feedstock of said components with at least one organic solvent therefor, which is suitable for crystallization of desired components of said feedstock,
(B) continuously feeding the resulting mixture of feedstock and solvent to a first partially confined zone,
(C) continuously injecting at least one low-boiling high-vapor pressure liquid refrigerant into said mixture in said first zone and evaporating and adiabatically expanding said refrigerant in said first zone to cool said mixture in said first zone rapidly to a selected low temperature and thereby form within said first zone a slurry of microcrystals of components of said mixture which are crystallizable down to said selected low temperature,
(D) withdrawing evaporated refrigerant from said first zone,
(E) continuously flowing the resulting chilled slurry of microcrystals from said first zone to a second partially confined zone,
(F) continuously contacting said chilled slurry of microcrystals in said second zone with incoming feedstock mixture at a temperature above that of said slurry to achieve an intermediate temperature in said second zone at which temperature crystals of lower melting point components melt and redissolve and crystals of high melting point components undergo crystal growth to form a slurry of larger crystals in said second zone,
(G) continuously withdrawing a portion of the resulting slurry of larger crystals from said second zone, and

(H) separating crystals from said withdrawn slurry.

5. A process according to claim 1, in which said feedstock comprises a mixture of fatty acids and/or glycerides thereof and solvent.

4,129,584
PROCESS FOR PREPARING DIMETHYLTIN DICHLORIDE

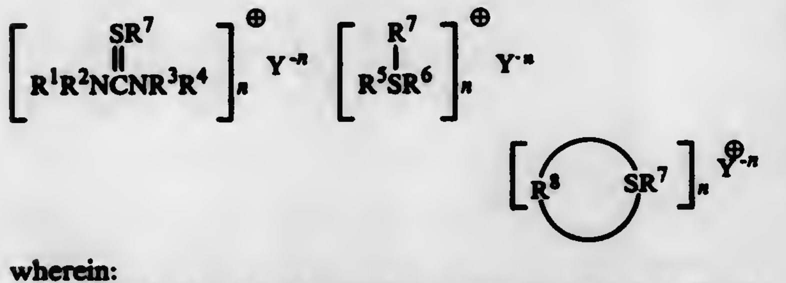
Gerald H. Reifenberg, Hightstown, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 29, 1977, Ser. No. 828,578

Int. Cl.² C07F *7/22*

U.S. Cl. 260—429.7 **12 Claims**

1. The process for catalytically making dimethyltin dichloride in essentially quantitative yield by contacting tin metal with methyl chloride at a temperature within the range of about 120° C. to 300° C. for a period within the range of 0.5 to 24 hours while in the presence of a single sulfonium or isothiuronium salt catalyst selected from the group consisting of:



wherein:
R^1, R^2, R^3, R^4, R^5, R^6, and R^7 are hydrocarbyl radicals of 1 to 24 carbon atoms, R^1, R^2, R^3, and R^4 can also be hydrogen;
R^8 is a hydrocarbon linking group of 3–5 carbon atoms;
Y is an anion, n is the valence of anion Y; and while in the presence of a liquid solvent for methyl chloride at the beginning of the reaction.

4,129,585
PROCESS FOR THE PRODUCTION OF SULFUR CONTAINING ORGANOSILICON COMPOUNDS

Wolfgang Buder, Rodenbach, Germany; Hans-Dieter Pletka, Mobile, Ala.; Rudolf Michel, Freigericht, Germany; Rudolf Schwarz, Wasserlos, Germany, and Gerhard Düsing, Eppstein, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

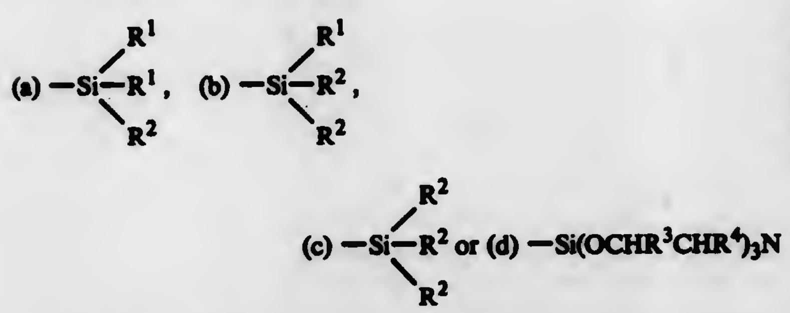
Filed Mar. 7, 1978, Ser. No. 884,212

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1977, 2712866

Int. Cl.² C07F *7/18, 7/10, 7/08*

U.S. Cl. 260—448.8 R **12 Claims**

1. A process for the production of sulfur containing organosilicon compounds of the formula (I) Z — Alk — S_x — Alk — Z, where Z is the grouping:



in which R^1 is an alkyl group having 1 to 5 carbon atoms, a cycloalkyl group with 5 to 8 carbon atoms, the benzyl group, phenyl or phenyl substituted with at least one methyl, ethyl or chloro group, R^2 is alkoxy of 1 to 4 carbon atoms, methoxyethoxy, cycloalkoxy with 5 to 8 carbon atoms, phenoxy or benzyloxy, R^3 and R^4 are alkyl of 1 to 3 carbon atoms or hydrogen, Alk is a divalent saturated hydrocarbon group having 1 to 5 carbon atoms or such a group interrupted by —O—, —S— or —NH— and x is a number from 2.0 to 6.0, said process comprising reacting an alkali metal alcoholate with a compound of the formula (II) Z — Alk — Hal, where Hal is chlorine, bromine or iodine with a hydrosulfide of the formula (III) MeSH, in which Me is ammonium, an alkali metal atom or an equivalent of an alkaline earth metal or zinc and with sulfur and removing the halide formed from the product.

4,129,586
PEROXIDE FREE RADICAL INITIATORS CONTAINING ULTRAVIOLET LIGHT STABILIZING GROUPS

Chester S. Sheppard, and Ronald E. MacLeay, both of Buffalo, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

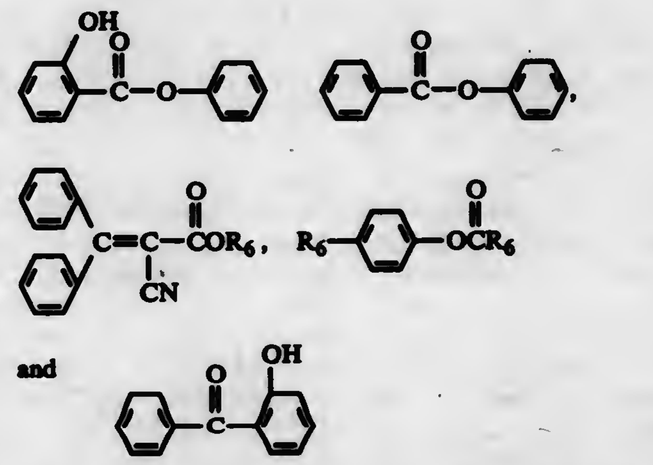
Continuation of Ser. No. 663,653, Mar. 4, 1976, abandoned, which is a division of Ser. No. 435,623, Jan. 22, 1974, Pat. No. 3,956,269, which is a continuation of Ser. No. 98,893, Dec. 6, 1970, abandoned. This application Jun. 6, 1977, Ser. No. 803,493

Int. Cl.² C07C *179/06, 179/10, 179/18*

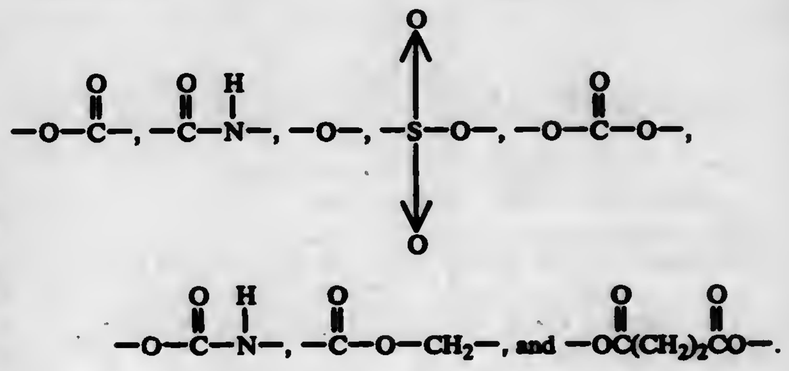
U.S. Cl. 260—465 D **7 Claims**

1. A free radical initiator containing ultraviolet light stabilizing radicals and having the formula R—O—O—R′ wherein

(a) R and R′ are independently selected from the group consisting of hydrogen, carboxylic acyl of 2–20 carbons, aroyl of 7–20 carbons, tert-alkyl of 4–12 carbons, tert-aralkyl of 9–15 carbons, alkoxycarbonyl of 2–20 carbons, cycloalkoxycarbonyl of 4–20 carbons, carbamoyl, phenylcarbamoyl, alkylcarbamoyl of 2–13 carbons, and cycloalkylcarbamoyl of 4–13 carbons,
(b) only one of R and R′ can be hydrogen; and
(c) at least one of non-hydrogen R and R″ moieties contains an ultraviolet light stabilizing radical selected from the group consisting of



where R_6 is alkyl of 1–6 carbons and the ultraviolet light stabilizing radical is joined to the R and R′ moieties at a ring carbon of the ultraviolet light stabilizing radical or at a carbon in the R_6 group of the ultraviolet light stabilizing radical either directly or through a coupling group selected from the class consisting of



$$-O-\overset{\overset{O}{\|}}{C}-,\ -\overset{\overset{O}{\|}}{C}-\overset{\overset{H}{|}}{N}-,\ -O-,\ -\underset{\underset{O}{\downarrow}}{\overset{\overset{O}{\uparrow}}{S}}-O-,\ -O-\overset{\overset{O}{\|}}{C}-O-,$$

$$-O-\overset{\overset{O}{\|}}{C}-\overset{\overset{H}{|}}{N}-,\ -\overset{\overset{O}{\|}}{C}-O-CH_2-,\ \text{and}\ -O\overset{\overset{O}{\|}}{C}(CH_2)_2\overset{\overset{O}{\|}}{C}O-.$$

4,129,587

DIMERIZATION PROCESS

James R. Jennings, and Dipankar Sen, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

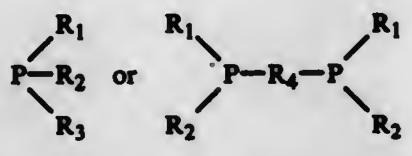
Filed Nov. 23, 1977, Ser. No. 854,491

Claims priority, application United Kingdom, Nov. 24, 1976, 48959/76

Int. Cl.² C07C *120/00, 121/20*

U.S. Cl. 260—465.8 D **8 Claims**

1. A process for the dimerisation of acrylonitrile to predominantly 1,4-dicyanobutenes, in which the acrylonitrile is contacted with an organic phosphorus (III) compound having the formula



where R_1 is a hydrocarbyl group, R_2 is an alkoxy or cycloalkoxy group, R_3 is a hydrocarbyl, alkoxy or cycloalkoxy group and R_4 is a divalent hydrocarbyl or hydrocarbyloxy group, each hydrocarbyl or hydrocarbyloxy group having from 1 to 10 carbon atoms and being unsubstituted or substituted by halogen, cyanide or alkyl groups, at a temperature from 0° to 120° C., the acrylonitrile being dissolved in an organic solvent capable of donating protons, optionally with an inert non-hydroxylic co-solvent, the concentrations of acrylonitrole and said phosphorus (III) compound being in the ranges 5 to 75% and 0.01 to 5% by volume, respectively, and the acrylonitrile and solvent or solvents being substantially dry, characterised in that a polymeric by-product reducing amount of an anhydrous metal compound capable of reducing the proportion of polymeric by-products is added to the reaction mixture, the metal being selected from Group IVA to VIIA, VIII and IB to VB of the Periodic Table of Elements.

4,129,588

SELECTIVE MANUFACTURE OF ANHYDROUS MODIFICATIONS OF METHYL PHOSPHONIC ACID AND USE THEREOF IN MAKING PURE METHYL PHOSPHONIC ACID AND SALTS THEREOF

William A. Sanderson, Palo Alto, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 7, 1973, Ser. No. 394,982

Int. Cl.² C07F *9/38*

U.S. Cl. 260—502.4 P **7 Claims**

1. Process for the selective manufacture of pyro-methyl phosphonic acid from dimethyl phosphite which comprises introducing dimethyl phosphite into a reaction zone, heating the dimethyl phosphite according to a temperature regime which lies predominantly above 170° C., the heating at least in later stages being conducted at temperatures above 200° C. while maintaining the phosphite in liquid phase, whereby vapors of dimethyl ether are evolved, removing the dimethyl ether containing vapors from the reaction zone, and continuing said heating until gas evolution substantially ceases and a liquid product containing more than about 97% pyro-methyl phosphonic acid is obtained.

4,129,589

OVER-BASED MAGNESIUM SALTS OF SULPHONIC ACIDS

Theo I. Eliades; Ronald J. Muir, and James D. Horner, all of Scarborough, Canada, assignors to Surpass Chemicals Limited, Scarborough, Canada

Continuation of Ser. No. 705,678, Jul. 15, 1976, abandoned. This application Apr. 3, 1978, Ser. No. 892,978

Int. Cl.² C07B *13/00;* C07C *143/24;* C09K *3/00*

U.S. Cl. 260—504 A **29 Claims**

1. A process for preparing an over-based oil-soluble magnesium salt of a sulfonic acid having a metal ratio of approximately 10 to approximately 40; comprising contacting carbon dioxide gas with a mixture comprising:

(a) an oil-soluble magnesium salt of a sulfonic acid,
(b) more than ten equivalents up to approximately 40 equivalents of a light magnesium oxide per equivalent of sulfonic acid,
(c) a promoter system comprising:
  (1) from approximately 0.5 to approximately 5 equivalents of an essentially oil-insoluble carboxylic compound per equivalent of sulfonic acid, said compound being selected from the group of compounds consisting of lower carboxylic acids, substituted lower carboxylic acids, and mixtures thereof, all having from 1 to 5 carbon atoms,
  (2) from approximately 2 to approximately 30 equivalents of water per equivalent of sulfonic acid, and
  (3) from 0 to approximately 35 equivalents of an alcohol per equivalent of sulfonic acid, said alcohol being selected from the group of components consisting of lower alkanols, lower alkoxy alkanols and mixtures thereof, all having from 1 to 5 carbon atoms, and
(d) an inert solvent for lowering the viscosity of said mixture to facilitate mixing;

said contacting being conducted at a temperature ranging from approximately 50° F. up to reflux temperature of said mixture, the volatile components being stripped from the reaction mixture after absorption of the carbon dioxide gas by the reaction mixture is at a desired level to give an over-based, oil-soluble magnesium salt of a sulfonic acid.

4,129,590

UREYLENEBIS(ANIONIC SUBSTITUTED PHENYLENE CARBONYL)IMINO NAPHTHALENE SULFONIC ACIDS AND NAPHTHALENE CARBOXYLIC ACIDS AND THEIR SALTS

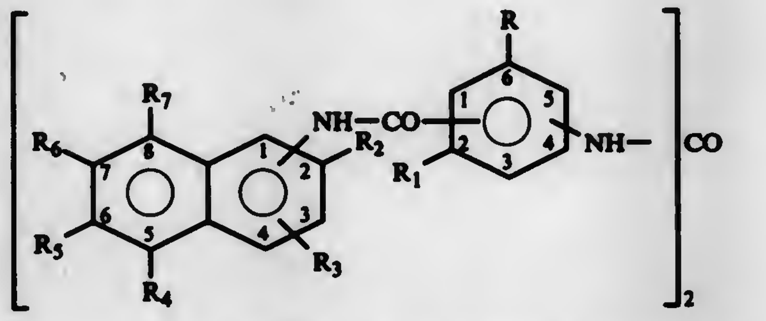
Ransom B. Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 17, 1977, Ser. No. 778,398

Int. Cl.² C07C *143/30;* A61K *31/185*

U.S. Cl. 260—506 **15 Claims**

1. A compound of the formula:



wherein R is SO_3X, wherein X is alkali metal; R_1 is hydrogen; R_4, R_5 and R_6 are selected from the group consisting of hydrogen and SO_3X, wherein X is as previously defined; R_2 is hydrogen; with the proviso that there is no R_1 or R_2 substituent when the bridgehead carbonylimino is attached at the carbon 2-position of the respective ring; with the further proviso that each naphthalene moiety must contain two or three SO_3X substituents, wherein X is as previously defined; R_3 is SO_3X, wherein X is as previously defined; R_7 is selected from the group consisting of hydrogen, hydroxy and SO_3X, wherein X is as previously defined; and other pharmaceutically acceptable salts.

4,129,591

UREIDA-PHENYLENEBIS(SUBSTITUTED IMINO)MULTIANIONIC SUBSTITUTED DINAPHTHALENE SULFONIC ACIDS AND SALTS

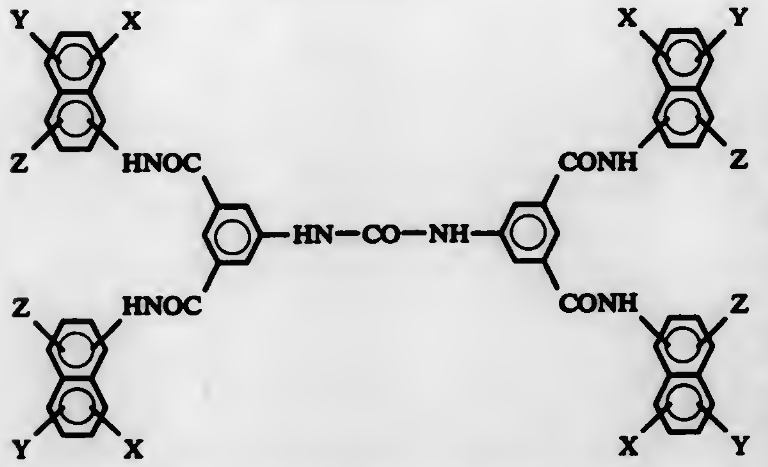
Seymour Bernstein, New City, N.Y.; Robert H. Lenhard, Paramus, N.J., and Ransom B. Conrow, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 27, 1976, Ser. No. 736,042

Int. Cl.² C07C *143/53;* A61K *31/185*

U.S. Cl. 260—506 **8 Claims**

1. A compound of the formula:



wherein X, Y and Z are selected from the group consisting of hydrogen, hydroxy, and $—SO_3R_1$, wherein R_1 is selected from the group ccnsisting of hydrogen, alkali metal and alkali earth methal; and with the proviso that when X, Y or Z is hydrogen or hydroxy, then the remaining two substituents must be $—SO_3R_1$.

4,129,592

HYDROCARBON OXIDATION PROCESS

William E. Slinkard, and Anthony B. Baylis, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 7, 1976, Ser. No. 674,357

Int. Cl.² C07C *51/20*

U.S. Cl. 562—549 **8 Claims**

1. A process for producing acetic acid which comprises contacting butane and an oxygen containing gas in the vapor phase with a reduced molybdenum catalyst, wherein said molybdenum catalyst is prepared by coprecipitating a molybdenum compound and one or more compounds of a metal selected from the group consisting of Ti, Zr, Sn, Hf, Nb and Ta from an aqueous solution or slurry; calcining the precipitate in air or nitrogen at about 300°–650° C. for about 4–20 hours; and reducing the calcined composition by contacting with a reducing gas at about 300°–600° C. for about 4–48 hours.

4,129,593

PROCESS FOR THE PRODUCTION OF HIGH PURITY S-CARBOXYMETHYL-L-CYSTEINE

Alfred Maierhofer, Allensbach, and Hans Wagner, Kostanz, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

Filed Sep. 14, 1977, Ser. No. 833,043

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1976, 2647094

Int. Cl.² C07C *101/20*

U.S. Cl. 562—557 **12 Claims**

1. In a process for the production of highly pure S-carboxymethyl-L-cysteine by reacting L-cystine in luqiid ammonia with metallic sodium to form the disodium salt of L-cysteine, vaporizing the ammonia, reacting the disodium salt of L-cysteine with an aqueous solution of chloroacetic acid and precipitating the S-carboxymethyl-L-cysteine formed by acidifying the reaction mixture, the improvement comprising carrying out the reaction of the disodium salt of L-cysteine with aqueous chloroacetic acid in the presence of 0.1 to 10 weight percent based on the chloroacetic acid of a reducing agent which is formic acid or an alkali salt of an oxygen containing acid of sulfur wherein the sulfur has a valance below 6, all steps of the process being carried out with the exclusion of air.

4,129,594

PROCESS FOR THE MANUFACTURE OF AROMATIC DICARBOXYLIC ACID CHLORIDES

Josefina T. Baker, Mount Tabor, N.J.; John Pisanchyn, Olyphant, Pa., and Stylianos Sifniades, Madison, N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Oct. 27, 1977, Ser. No. 846,098

Int. Cl.² C07C *63/30, 63/22, 63/38, 63/46*

U.S. Cl. 260—544 D **14 Claims**

1. In a process for preparing aromatic dicarboxylic acid chlorides, in solution or slurry form for direct use as acylating agents, which comprises adding an aromatic dicarboxylic acid to a liquid medium containing phosgene and a weak tertiary amine base at a temperature of about 10° to 50° C., the improvement which comprises providing in the reaction mixture, at least 1.02 equivalents of the weak tertiary amine base having a pK_b of 9.0 ± 2.0 as measured in aqueous solution at 25° C. per equivalent of carboxylic acid group present in the reaction mixture as such, throughout the reaction period, and providing in the reaction mixture about 8 to 30 parts by weight of a chlorinated paraffinic hydrocarbon solvent containing 1–6 carbon atoms and 1–4 chlorine atoms per part of total dicarboxylic acid employed, whereby a yield of dicarboxylic acid chloride of at least about 90% of theory, based on the total dicarboxylic acid employed in the reaction, is obtained.

4,129,595

PREPARATION OF CHLOROACETYL CHLORIDE

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 29, 1978, Ser. No. 891,429

Int. Cl.² C07C *51/58*

U.S. Cl. 260—544 Y **3 Claims**

1. A process for preparing chloroacetyl chloride which comprises reacting glycolic acid with 2 moles of thionyl chloride in the presence of a catalytic amont of a nitrogen-containing hydrocarbyl organic compound having a total of not more than about 10 carbon atoms selcted from the group consisting of amides, imides, amines, quaternary ammonium salts and ureas or a hydrocarbyl phosphine compound having a total of not more than about 30 carbon atoms selected from the group consisting of trihydrocarbylphosphines and trihydrocarbylphosphine oxides, wherein not more than 0.15 moles of the catalyst is used per mole of glycolic acid, maintaining the reaction at a temperature and for a time sufficient to convert the glycolic acid to chloroacetyl chloride, and separating chloroacetyl chloride.

4,129,596

PROCESS FOR THE CONTINUOUS PREPARATION OF ACETOACETAMIDES

Gerhard Kunstle, Raitenhaslach; Hellmuth Spes, Burghausen, and Herbert Siegl, Haiming, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 11, 1977, Ser. No. 840,709

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1976, 2647499

Int. Cl.² C07C *102/00*

U.S. Cl. 260—561 K **3 Claims**

1. A process for the continuous preparation of acetoacetamides of the general formula

$$CH_3COCH_2CO—N—R—R',$$

in which R represents alkyl radicals having from 1 to 18 carbon atoms, and R′ represents a member of the group consisting of hydrogen atoms and radicals R, by reaction of diketene in stoichiometric ratio with amines of the general formula

H—N—R—R′,

in which R and R′ have the meaning given above, which consists of carrying out the reaction for a residence time of at the most 15 minutes and at temperatures of at least 60° C. under atmospheric pressure.

4,129,597
AMINO COMPOUNDS AND USE THEREOF AS ANTIOXIDANTS

Neil E. S. Thompson, Creve Coeur, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

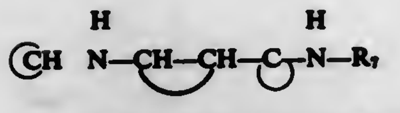
Filed Jul. 15, 1977, Ser. No. 815,886

Int. Cl.² C07C 87/40

U.S. Cl. 260—563 P **7 Claims**

I claim

1. A compound of the formula



$$\text{CH}\ \overset{\text{H}}{\text{N}}\text{—CH—CH—C—}\overset{\text{H}}{\text{N}}\text{—R}_7$$

where R_7 is hydrogen or substituted groups and ◡ indicates a cycloalkyl or substituted cycloalkyl ring.

4,129,598
PHENYLETHYLAMINE DERIVATIVES

Don P. R. L. Giudicelli, Fontenay-sous-Bois, and Henry Najer, Paris, both of France, assignors to Synthelabo, Paris, France

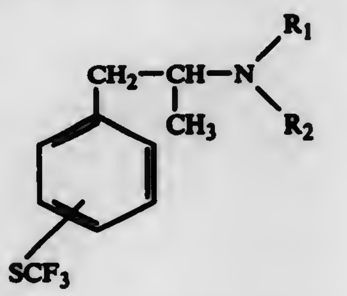
Continuation-in-part of Ser. No. 365,181, May 30, 1973, Pat. No. 3,965,190. This application May 24, 1974, Ser. No. 473,231

Claims priority, application France, May 31, 1972, 72 19515

Int. Cl.² C07C 87/28

U.S. Cl. 260—570.8 R **8 Claims**

1. A phenylethylamine of the formula:



wherein R_1 and R_2 are independently hydrogen or straight or branched-chain alkyl of 1 to 5 carbon atoms, in the racemic or optically active forms and the acid addition salts thereof.

4,129,599
A-NORSTEROIDS

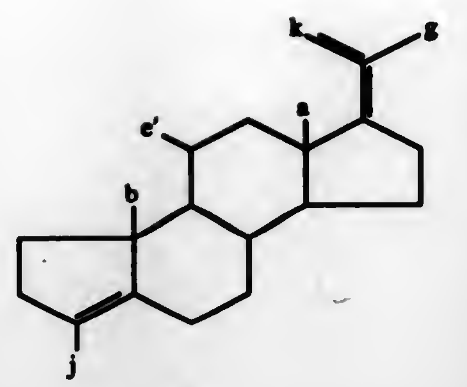
Sina Escher, Onex, Switzerland, and Grant E. Dubois, Menlo Park, Calif., assignors to The Board of Trustees of Leland Stanford Jr. University, Stanford, Calif.

Division of Ser. No. 572,380, Apr. 28, 1975, abandoned. This application Jun. 23, 1977, Ser. No. 809,237

Int. Cl.² C07C 49/61

U.S. Cl. 260—586 E **3 Claims**

1. A steroidal compound of the formula:



wherein:

- a and b are hydrogen or lower alkyl of from 1 to 4 carbon atoms;
- e′ is β-alkenyl of from 3 to 6 carbon atoms, haloalkenyl of from 3 to 6 carbon atoms, wherein said halogen is of atomic number 17 to 35, halovinyl, hydroxy, mercapto or their alkyl ethers of up to 4 carbon atoms, and carboxyester of from 1 to 6 carbon atoms with the carboxyl functionality bonded to an annular carbon atom through oxygen;
- there is one double bond between the C-17 carbon atom and k signified by the broken line; when the double bond is between the two carbon atoms, k is a perhalocarboxylic acid ester of from 2 to 4 carbon atoms, said halogen being of atomic number 9 to 17 and when the double bond is between the carbon atom and k, k is oxygen;
- j is alkyl of from 1 to 4 carbon atoms; and
- g is hydrogen, alkyl of from 1 to 4 carbon atoms, hydroxyalkyl of from 1 to 2 carbon atoms, or alkanoyloxyalkyl of up to 8 carbon atoms.

4,129,600
METHOD FOR MAKING ACROLEIN AND CATALYST THEREFOR

David L. Childress, Angleton; William V. Hayes, and Richard L. Poppe, both of Clute, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 640,616, Dec. 15, 1975, Pat. No. 4,049,577. This application Mar. 18, 1977, Ser. No. 778,907

Int. Cl.² C07C 47/20, 47/22

U.S. Cl. 260—604 R **4 Claims**

1. The process of oxidizing in the vapor phase an olefin having from 3 to 6 carbon atoms to the analogous unsaturated aldehyde which comprises introducing a gaseous mixture of the olefin and oxygen together with an inert diluent consisting essentially of nitrogen and carbon oxides at a temperature of from about 285° to about 375° C. and a contact time of from about 0.5 to about 5.0 seconds over a catalyst consisting essentially of the oxides of cobalt, iron, bismuth, molybdenum, potassium and optionally silicon wherein the metals are present in the atomic ratios of

$Co_{4.5\text{-}7.0}Fe_{1\text{-}2}Bi_{1\text{-}2}Mo_{15}K_{0.05\text{-}0.2}$ and when present $Si_{1\text{-}1.5}$.

4,129,601
PYROCATECHOL DERIVATIVES

Karl Kiehs, Lampertheim, and Rolf Huber, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

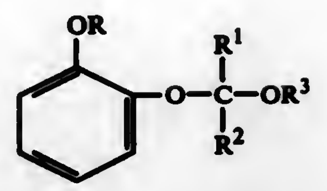
Continuation-in-part of Ser. No. 409,309, Oct. 24, 1973, abandoned, and Ser. No. 409,330, Oct. 24, 1973, abandoned. This application Aug. 2, 1976, Ser. No. 710,415

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1972, 2252250

Int. Cl.² C07C 43/22

U.S. Cl. 568—593 **4 Claims**

1. A pyrocatechol bis-ether of the formula



- R denotes alkyl of from 1 to 4 carbon atoms which may be substituted with halogen; alkenyl having up to 4 carbon atoms which may be substituted with halogen; alkynyl having up to 5 carbon atoms which may be substituted with halogen; or benzyl;
- R^1 denotes hydrogen or alkyl of from 1 to 4 carbon atoms;
- R^2 denotes benzyl or alkyl of from 1 to 3 carbon atoms which may be substituted with halogen, methoxy or ethoxy;
- R^3 denotes alkyl of from 1 to 4 carbon atoms; cycloalkyl of from 3 to 7 carbon atoms; β-chlorethyl; methoxyethyl; ethoxyethyl; alkenyl of from 2 to 4 carbon atoms; alkynyl of from 2 to 4 carbon atoms.

4,129,602
LIQUID PHASE FLUORINATION PROCESS

Lawrence P. Sendlak, Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Sep. 1, 1977, Ser. No. 829,846

Int. Cl.² C07C 25/04

U.S. Cl. 260—651 F **22 Claims**

1. A process for the preparation of compounds of the formula

$$R_nAr(CF_{w'}X_{p'})_Z$$

comprising contacting compounds of the formula

$$R_nAr(CF_wX_p)_Z$$

in liquid phase, with hydrogen fluoride in the presence of a catalyst selected from the group consisting of pentachlorides and pentafluorides of tantalum, niobium and rhenium

wherein

- Ar is aryl;
- R is a substituent on the aryl nucleus selected from the group consisting of aryl, substituted aryl, halogen, alkyl, alkoxy, and substituted alkyl;
- n is 0 to 9;
- X is a halogen atom other than fluorine;
- w is 0 to 2;
- p is 1 to 3;
- w′ is 1 to 3, and is greater than w;
- p′ is 0 to 2, and is less than p′
- w + p is 3;
- w′ + p′ is 3;
- Z is 1–10; and
- the maximum value of n + Z is 10.

4,129,603
MANUFACTURE OF HALOGENATED COMPOUNDS

Stephen L. Bell, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 7, 1978, Ser. No. 875,935

Int. Cl.² C07C 17/20

U.S. Cl. 260—653 **14 Claims**

1. A process for the manufacture of 1,1,1,2-tetrafluoroethane which comprises reacting in the vapour phase at elevated temperature a haloethane of formula CX_3CH_2Y wherein X is bromine, chlorine or fluorine and Y is chlorine with hydrogen fluoride in the presence of a catalyst which is chromium oxide or which is at least in part basic chromium fluoride and wherein the 1,1,1,2-tetrafluoroethane product containing 1,1-difluoro-2-chloroethylene as impurity is intimately contacted with a metal permanganate in a liquid medium whereby said haloethylene content is reduced.

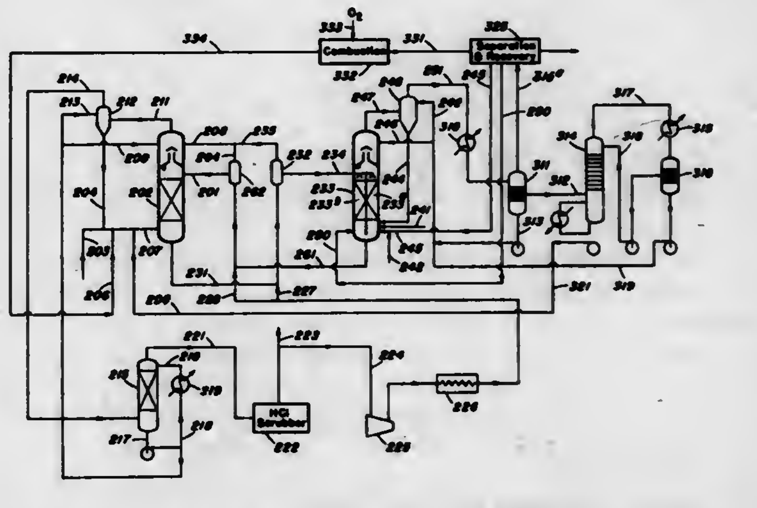
4,129,604
REACTOR EFFLUENT QUENCH SYSTEM

Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Division of Ser. No. 238,196, Mar. 27, 1972, Pat. No. 3,968,200. This application May 14, 1976, Ser. No. 686,278

Int. Cl.² C07C 21/02

U.S. Cl. 260—656 R **3 Claims**



1. In the production of chlorinated hydrocarbons, a process for recovering hydrogen chloride, comprising:

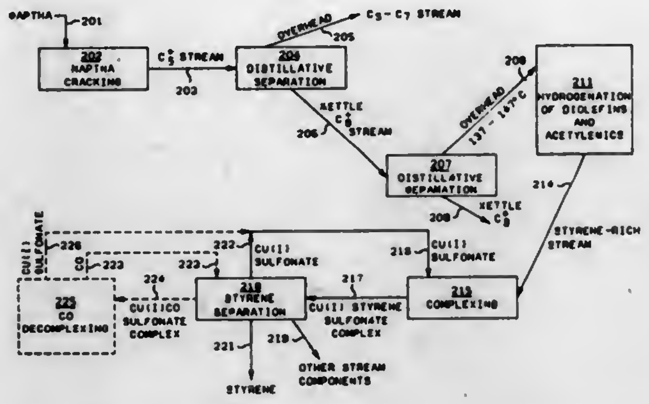
- (a) contacting in a first reaction zone a salt mixture comprising a multivalent metal chloride in its higher and lower valent state with gaseous molecular oxygen and an aqueous solution of hydrogen chloride to produce the corresponding oxychloride and recover chlorine values from the hydrogen chloride by enriching the higher valent metal chloride content of the salt mixture;
- (b) contacting the salt mixture from step (a) in a second reaction zone with a C_1 to C_4 hydrocarbon, and a member selected from the group consisting of chlorine, hydrogen chloride and mixtures thereof to produce a gaseous reaction effluent comprising chlorinated hydrocarbon, water vapor and hydrogen chloride;
- (c) separating an aqueous solution of hydrogen chloride from said gaseous reaction effluent;
- (d) passing aqueous hydrogen chloride from step (c) to step (a) as a portion of said aqueous solution of hydrogen chloride;
- (e) withdrawing a gas containing unreacted hydrogen chloride and water vapor from the first reaction zone;
- (f) contacting gas withdrawn from the first reaction zone in a first quench zone with an aqueous hydrogen chloride quench liquid to cool said gas, said contacting partially vaporizing said quench liquid to produce a remaining aqueous hydrogen chloride liquid having a hydrogen chloride concentration greater than the hydrogen chloride concentration of said quench liquid;
- (g) introducing said remaining aqueous hydrogen chloride liquid into said first reaction zone as a further portion of said aqueous solution of said hydrogen chloride;
- (h) further cooling cooled gas from said first quench zone in a second quench zone to produce aqueous hydrogen chloride having a hydrogen chloride concentration of from about 8% to about 20%, by weight; and
- (i) passing aqueous hydrogen chloride from said second quench zone to said first quench zone as said aqueous hydrogen chloride quench liquid.

4,129,605

RECOVERING STYRENE BY COMPLEXING WITH COPPER(I) SULFONATES

Donald C. Tabler, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 28, 1977, Ser. No. 763,460
Int. Cl.^{2} C07C *15/10, 7/08*
U.S. Cl. 260—669 A **24 Claims**



1. A process for recovering styrene from a styrene-containing stream comprising styrene and other close-boiling hydrocarbons by the process which comprises:

(a) extractively distilling said styrene-containing stream with an effective complex-forming amount of a copper(I) sulfonate salt in aromatic hydrocarbon solution effective to complex said styrene, thereby producing a copper(I) styrene sulfonate complex in aromatic hydrocarbon stream, and substantially stripping off said close-boiling hydrocarbons during said extractive distillation,

(b) heating said copper (I) styrene sulfonate complex in aromatic hydrocarbon stream under thermal decomplexing conditions, thereby decomplexing said copper(I) styrene sulfonate complex and recovering said styrene as a styrene stream, and said copper(I) sulfonate as a solution in said aromatic hydrocarbon, and

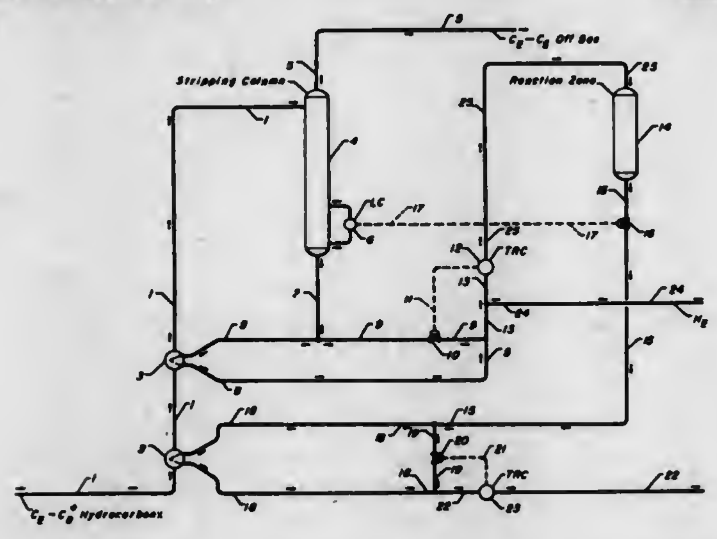
(c) recycling said copper(I) sulfonate in aromatic hydrocarbon solution from said heating step (b) to said extractively distilling step (a).

4,129,606

TEMPERATURE CONTROL OF INTEGRATED FRACTIONATION COLUMN AND REACTION ZONE

Steve A. Gewartowski, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 762,220, Jan. 24, 1977, Pat. No. 4,053,367, which is a continuation-in-part of Ser. No. 717,978, Aug. 26, 1976, Pat. No. 4,024,026. This application Aug. 22, 1977, Ser. No. 826,909
Int. Cl.^{2} C07C *7/01, 5/24*
U.S. Cl. 260—674 R **7 Claims**



1. A method for controlling the temperature of a fractionation column effluent stream as the effluent stream is being passed into a hydrotreating reaction zone and of adjusting the temperature of the hydrotreating reaction zone effluent stream which comprises the steps of:

(a) passing a hydrocarbon feed stream which comprises C_2 to C_8 hydrocarbons into a fractionation column operated at effective fractionation conditions including a bottom temperature above a maximum desired inlet temperature of a downstream hydrotreating reaction zone, and effecting the removal of C_2 to C_5 hydrocarbons from the hydrocarbon feed stream by fraction to thereby produce a fractionation column effluent stream having a first temperature which is above an instantaneous preselected inlet temperature for said reaction zone;

(b) cooling the fractionation column effluent stream to a second temperature by dividing the fractionation column effluent stream into a first portion and a second portion, cooling the second portion by indirect heat exchange against the hydrocarbon feed stream, and then recombining the first portion and the second portion of the fractionation column effluent stream;

(c) measuring the second temperature of the fractionation column effluent stream, and comparing the second temperature to the instantaneous preselected inlet temperature for said reaction zone;

(d) adjusting the relative flow rates of the first portion and the second portion of the fractionation column effluent stream in a manner which changes the second temperature of the fractionation column effluent stream to the instantaneous preselected inlet temperature for said reaction zone;

(e) passing the fractionation column effluent stream through said reaction zone at hydrocarbon conversion conditions to produce a hydrotreating reaction zone effluent stream having a first temperature;

(f) cooling said reaction zone effluent stream to a second temperature by dividing said reaction zone effluent stream into a first portion and a second portion, cooling the second portion by indirect heat exchange against the hydrocarbon feed stream, and then recombining the first portion and the second portion of said reaction zone effluent stream;

(g) measuring the second temperature of said reaction zone effluent stream, and comparing the second temperature to the instantaneous preselected inlet temperature of a downstream unit operation; and,

(h) adjusting the relative flow rates of the first portion and the second portion of said reaction zone effluent stream in a manner which changes the second temperature of said reaction zone effluent stream to the instantaneous preselected inlet temperature of the downstream unit operation.

4. A method for controlling the temperature of a fractionation column effluent stream as the effluent stream is being passed into a hydrotreating reaction zone and of adjusting the temperature of the hydrocarbon stream being fed to the fractionator column which comprises the steps of:

(a) measuring the existing temperature of a hydrocarbon feed stream which comprises C_2 to C_8 hydrocarbons as the hydrocarbon feed stream is being passed into a fractionation column operated at effective fractionation conditions including a bottom temperature above a desired inlet temperature of a downstream hydrotreating reaction zone, and effecting the removal of C_2 to C_5 hydrocarbons from the hydrocarbon feed stream by fractionation to thereby produce a fractionation column effluent stream having a first temperature which is above an instantaneous preselected inlet temperature for said hydrotreating reaction zone;

(b) cooling the fractionation column effluent stream to a second temperature by dividing the fractionation column effluent stream into a first portion and a second portion, cooling the second portion by indirect heat exchange against the hydrocarbon feed stream, and then recombining the first portion and the second portion of the fractionation column effluent stream;

(c) measuring the second temperature of the fractionation column effluent stream, and comparing the second temperature to the instantaneous preselected inlet temperature for said reaction zone;

(d) adjusting the relative flow rates of the first portion and the second portion of the fractionation column effluent stream in a manner which changes the second temperature of the fractionation column effluent stream to the instantaneous preselected inlet temperature for said reaction zone;

(e) passing the fractionation column effluent stream through said reaction zone at hydrocarbon conversion conditions to produce a hydrotreating reaction zone effluent stream;

(f) dividing said reaction zone effluent stream into a first portion and a second portion, heat exchanging the second portion against the hydrocarbon feed stream and thereby heating the hydrocarbon feed stream, and then recombining the first portion and the second portion of said reaction zone effluent stream;

(g) comparing the existing temperature of the hydrocarbon feed stream to a preselected inlet temperature for the hydrocarbon feed stream; and,

(h) adjusting the relative flow rates of the first portion and the second portion of said reaction zone effluent stream in a manner which changes the existing temperature of the hydrocarbon feed stream as determined in step (a) to the preselected inlet temperature of the hydrocarbon feed stream entering the fractionation column.

6. A method for controlling the temperature of a fractionation column effluent stream as the effluent stream is being passed into an isomerization reaction zone and of adjusting the temperature of an isomerization reaction zone effluent stream which comprises the steps of:

(a) passing a hydrocarbon feed stream which comprises C_2 to C_8 hydrocarbons into a fractionation column operated at effective fractionation conditions including a bottom temperature above a maximum desired inlet temperature of a downstream isomerization reaction zone, and effecting the removal of C_2 to C_5 hydrocarbons from the hydrocarbon feed stream by fractionation to thereby produce a fractionation column effluent stream having a first temperature which is above an instantaneous preselected inlet temperature for said reaction zone;

(b) cooling the fractionation column effluent stream to a second temperature by dividing the fractionation column effluent stream into a first portion and a second portion, cooling the second portion by indirect heat exchange against the hydrocarbon feed stream, and then recombining the first portion and the second portion of the fractionation column effluent stream;

(c) measuring the second temperature of the fractionation column effluent stream, and comparing the second temperature to the instantaneous preselected inlet temperature for said reaction zone;

(d) adjusting the relative flow rates of the first portion and the second portion of the fractionation column effluent stream in a manner which changes the second temperature of the fractionation column effluent stream to the instantaneous preselected inlet temperature for said reaction zone;

(e) passing the fractionation column effluent stream through said reaction zone at hydrocarbon conversion conditions to produce an isomerization reaction zone effluent stream having a first temperature;

(f) cooling said reaction zone effluent stream to a second temperature by dividing said reaction zone effluent stream into a first portion and a second portion, cooling the second portion by indirect heat exchange against the hydrocarbon feed stream, and then recombining the first portion and the second portion of said reaction zone effluent stream;

(g) measuring the second temperature of said reaction zone effluent stream, and comparing the second temperature to the instantaneous preselected inlet temperature of a downstream unit operation; and,

(h) adjusting the relative flow rates of the first portion and the second portion of said reaction zone effluent stream in a manner which changes the second temperature of said reaction zone effluent stream to the instantaneous preselected inlet temperature of the downstream unit operation.

7. A method for controlling the temperature of a fractionation column effluent stream as the effluent stream is being passed into an isomerization reaction zone and of adjusting the temperature of the hydrocarbon stream being fed to the fractionator column which comprises the steps of:

(a) measuring the existing temperature of a hydrocarbon feed stream which comprises C_2 to C_8 hydrocarbons as the hydrocarbon feed stream is being passed into a fractionation column operated at effective fractionation conditions including a bottom temperature above a desired inlet temperature of a downstream isomerization reaction zone, and effecting the removal of C_2 to C_5 hydrocarbons from the hydrocarbon feed stream by fractionation to thereby produce a fractionation column effluent stream having a first temperature which is above an instantaneous preselected inlet temperature for said isomerization reaction zone;

(b) cooling the fractionation column effluent stream to a second temperature by dividing the fractionation column effluent stream into a first portion and a second portion, cooling the second portion by indirect heat exchange against the hydrocarbon feed stream, and then recombining the first portion and the second portion of the fractionation column éffluent stream;

(c) measuring the second temperature of the fractionation column effluent stream, and comparing the second temperature to the instantaneous preselected inlet temperature for said reaction zone;

(d) adjusting the relative flow rates of the flow portion and the second portion of the fractionation column effluent stream in a manner which changes the second temperature of the fractionation column effluent stream to the instantaneous preselected inlet temperature for said reaction zone;

(e) passing the fractionation column effluent stream through said reaction zone at hydrocarbon conversion conditions to produce an isomerization reaction zone effluent stream;

(f) dividing said reaction zone effluent stream into a first portion and a second portion, heat exchanging the second portion against the hydrocarbon feed stream and thereby heating the hydrocarbon feed stream, and then recombining the first portion and the second portion of said reaction zone effluent stream;

(g) comparing the existing temperature of the hydrocarbon feed stream to a preselected inlet temperature for the hydrocarbon feed stream; and,

(h) adjusting the relative flow rates of the first portion and the second portion of said reaction zone effluent stream in a manner which changes the existing temperature of the hydrocarbon feed stream as determined in step (a) to the preselected inlet temperature of the hydrocarbon feed stream entering the fractionation column.

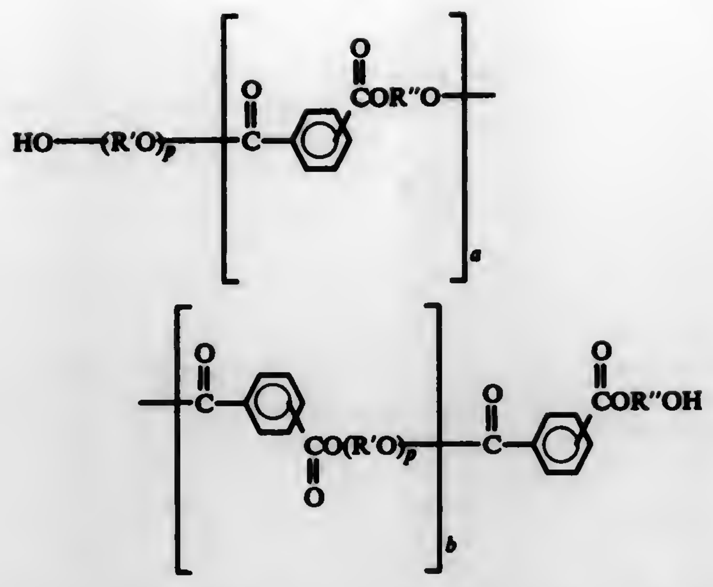
4,129,607

HOT MELT ADHESIVE HAVING BOTH HIGH PEEL AND TENSILE SHEAR STRENGTH

John H. Kool, La Grange Park; Ralph M. Schure, Darien, and John M. Brown, Chicago, all of Ill., assignors to Unitech Chemical Inc., Chicago, Ill.

Filed May 31, 1977, Ser. No. 802,079
Int. Cl.^{2} C08L *63/00*
U.S. Cl. 260—835 **11 Claims**

1. A hot melt thermoplastic adhesive having both high peel and tensile shear strength, which comprises a blend of a 1,2-epoxy resin with a hydroxy-terminated poly(ester/ether) block copolymer of the formula (I):



wherein R′ and R″ are alkyl, alicyclic, acyclic, aryl, or arylalkyl of from 2 to 12 carbon atoms, *p* is a number of from 2.4 to 136.0, a is a number such that the "hard" segment within the first set of brackets makes up about 70 to 20 percent by weight of the copolymer, and b is a number such that the "soft" segment within the second set of brackets makes up about 30 to 80 percent by weight of the copolymer, said adhesive having the epoxy resin present in an amount of about 5 to about 50 weight percent and the copolymer present in an amount of about 50 to 95 weight percent of the blend.

4,129,608

MULTI-COMPONENT GRAFT COPOLYMER AND THERMOPLASTIC RESIN COMPOSITION THEREOF

Naohiro Murayama; Kenichi Nakamura, and Shunzo Endo, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1977, Ser. No. 767,022

Claims priority, application Japan, Mar. 9, 1976, 51-24644; Sep. 7,.1976, 51-106984; Nov. 30, 1976, 51-143746

Int. Cl.² C08L *63/00*

U.S. Cl. 260—836 8 Claims

1. A multi-component graft copolymer which comprises 50 to 80 wt. parts of an elastic component produced by an emulsion polymerization of 100 to 70 wt.% of a C_{2-12} alkyl acrylate and 0 to 30 wt.% of a comonomer having a single vinyl or vinylidene group and 50 to 20 wt. parts of a graft polymerized component produced by a graft-polymerization of 5 to 90 wt.% of a vinyl monomer having a glycidyl group and 95 to 10 wt.% of a lower alkyl acrylate, styrene, α-methyl styrene, methacrylonitrile, or acrylonitrile on the elastic component.

4,129,609

METHOD FOR IMPROVING STORAGE STABILITY OF EPOXY ESTER THERMOSETTING RESINS WITH THIURAM COMPOUNDS

Toshio Awaji, Amagasaki, and Daisuke Atobe, Suita, both of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Jul. 11, 1977, Ser. No. 814,480

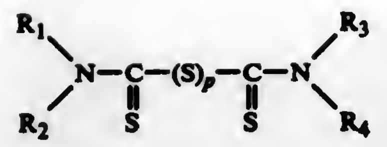
Claims priority, application Japan, Jul. 12, 1976, 51-82020

Int. Cl.² C08L *63/00*

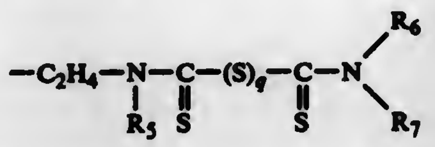
U.S. Cl. 260—837 R 47 Claims

1. A method for improving storage stability of a thermosetting resin, which comprises a adding thiuram compound to the thermosetting resin comprising a reaction product of a 1,2-epoxy resin with an α, β-unsaturated monocarboxylic acid dissolved in a polymerizable olefinic unsaturated compound, said thiurum compound having the formula selected from the group having the formula:

(I)



wherein p is an integer of 1 through 4, R_1, R_2 and R_3 are alkyl of 1 to 4 carbon atoms or phenyl, and R_4 is alkyl of 1 to 4 carbon atoms, phenyl or



wherein q is an integer of 1 to 4, R_5, R_6 and R_7 are alkyl of 1 to 4 carbon atoms or phenyl, provided that where R_1 and R_2 are joined, and R_3 and R_4 are joined, said joined groups are selected from the group consisting of pentamethylene and diethyleneoxy and being used in an amount of 0.0001 to 2.0 parts by weight per 100 parts by weight of said reaction product.

4,129,610

WATER-SOLUBLE COATING COMPOSITION FOR SHIP BOTTOMS

Kengo Kobayashi; Masayuki Mogami; Shigeyoshi Tanaka, all of Hitachi; Manabu Nakao; and Sadao Tamura, both of Hiroshima, all of Japan, assignors to Hitachi Chemical Co., Ltd. and Chugoku Marine Paints, Ltd.

Filed Oct. 22, 1976, Ser. No. 735,031

Claims priority, application Japan, Oct. 23, 1975, 50-128029

Int. Cl.² C08L *63/02, 63/10*

U.S. Cl. 260—837 R 12 Claims

1. A water-soluble coating composition for coating ship bottoms comprising

(A) 70–95 parts by weight of a vinyl copolymer of

(a) 5–40% by weight of one monoethylenic unsaturated monomer having at least one basic nitrogen atom, selected from the group consisting of aminoalkyl ester, alkylaminoalkyl ester, or dialkylaminoalkyl ester of acrylic acid or methacrylic acid,

(b) 5–40% by weight of another monoethylenic unsaturated monomer having at least one amide group, and

(c) at least one monoethylenic unsaturated monomer copolymerizable with the components (a) and (b), a total of the components (a), (b), and (c) being 100% by weight, and

(B) 30–5 parts by weight of a water-soluble epoxy resin compound.

4,129,611

THERMOPLASTIC POLYURETHANES OF MIXTURES OF HARD AND SOFT THERMOPLAST POLYMERS

Herbert L. Heiss, New Martinsville, W. Va., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 121,652, Mar. 8, 1971, abandoned. This application Dec. 9, 1974, Ser. No. 531,026

Int. Cl.² C08L *75/04, 75/06, 75/08*

U.S. Cl. 260—858 13 Claims

1. A physical thermoplastic mixture of polyurethane polymers which comprises (A) from about 10% to about 90% by weight of a soft thermoplastic polymer prepared by reacting at an NCO to active hydrogen atom ratio of from about 0.9/1 to about 1.1/1 (1) an organic isocyanate having an average functionality of about 2 with (2) an organic compound or compounds containing active hydrogen atoms and having an average functionality of about 2 and an average equivalent weight greater than 200 and (B) from about 90 to about 10% by weight of a hard thermoplastic polymer prepared by reacting at an NCO to active hydrogen ratio of from about 0.9/1 to about 1.2/1 (1) an organic diisocyanate having an average functionality of from about 1.90 to about 2.20 with (2) an organic compound or compounds containing active hydrogen atoms and having an average functionality of about 2 and an average equivalent weight less than 100.

4,129,612

1,1,3,4,6-PENTAMETHYL-3-(3,5-DIMETHYL-4-HYDROXYPHENYL)-INDAN-5-OL POLYCARBONATES

Volker Serini; Gerhard Friedhofen; Dieter Frietag, and Jürgen Heuser, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 28, 1977, Ser. No. 782,205

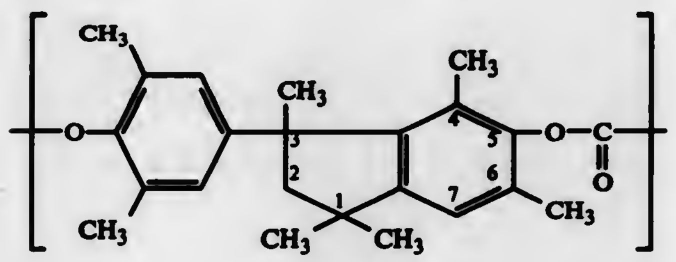
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1976, 2615038

Int. Cl.² C08L *69/00;* C08G *63/62*

U.S. Cl. 260—860 19 Claims

1. Aromatic, thermoplastic polycarbonates, characterized in that they contain 0.5 to 100 mol % of carbonate units of the formula (1)

(1)



4,129,613

THERMALLY STABLE HIGH MOLECULAR WEIGHT ACYL PEROXYCARBONIC ESTERS IN POLYESTER CURING

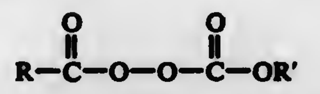
Roger N. Lewis, Martinez; Ronald L. Pastorino, Larkspur, and James F. Wilts, Richmond, all of Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Continuation-in-part of Ser. No. 696,463, Jun. 16, 1976, Pat. No. 4,051,310. This application Jul. 21, 1977, Ser. No. 817,634

Int. Cl.² C08L *67/06*

U.S. Cl. 260—861 9 Claims

1. A process for the curing of polyester resins comprising subjecting ethylenically unsaturated polyester resin and cross-linkable monomer to cross-linking conditions in the presence of a cross-linking initiating amount of an acyl peroxycarbonic ester of the formula:



$$R-\overset{\overset{O}{\|}}{C}-O-O-\overset{\overset{O}{\|}}{C}-OR'$$

where R is selected from methyl and ethyl; and R′ is an alkyl group which together with R contains a total of 17 to about 25 carbon atoms.

4,129,614

THERMOPLASTIC MOLDING COMPOSITION OF POLYMETHYL METHACRYLATE AND RUBBER MODIFIED STYRENE-MALEIMIDE

Ronald A. Fava, Monroeville, Pa., assignor to ARCO Polymers, Inc., Philadelphia, Pa.

Filed Dec. 23, 1977, Ser. No. 863,962

Int. Cl.² C08L *33/12, 35/06, 53/02*

U.S. Cl. 260—876 B 3 Claims

1. A thermoplastic molding composition which comprises:

A. from about 20% to about 80% by weight of polymethyl methacrylate;

B. from about 20% to about 80% by weight of a copolymer of three components:

(aa) a rubbery block polymer prepared in a stereospecific system using from 5 to 35% vinyl aromatic compound and from 65 to 95% conjugated alkadiene, said rubbery block copolymer constituting from 5% to 35% of the copolymer of three components.

(bb) an imide derivative of an ethylenically unsaturated dicarboxylic acid constituting from 5% to 35% of the copolymer of three components, and

(cc) vinyl aromatic composition constituting from 60% to 90% of the copolymer of three components.

4,129,615

PLASTIC ALLOY OF COPOLYMERS

Ronald A. Fava, Monroeville, Pa., assignor to ARCO Polymers, Inc., Philadelphia, Pa.

Filed Dec. 23, 1977, Ser. No. 863,963

Int. Cl.² C08L *33/12, 35/06, 53/02*

U.S. Cl. 260—876 B 2 Claims

1. Thermoplastic molding composition consists essentially of a blend of:

A. 20–80% by weight of a copolymer comprising methyl methacrylate and vinyl aromatic compound containing from 20% to 80% of methyl methacrylate and from 20% to 80% of vinyl aromatic compound; and

B. from about 20% to about 80% by weight of a copolymer comprising:

(aa) an imide derivative of an ethylenically unsaturated dicarboxylic acid constituting from 5% to 35% of the copolymer of B; and

(bb) vinyl aromatic compound constituting from 60% to 95% of the copolymer of B;

4,129,616

POLYMERIC COMPOSITIONS CONTAINING BROMINATED FLAME RETARDANTS

Steven C. Zingheim, Mountain View, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 806,676, Jun. 15, 1977, abandoned. This application Aug. 29, 1977, Ser. No. 828,731

Int. Cl.² C08J *3/24, 5/00;* C08F *255/02;* C08L *23/06*

U.S. Cl. 260—878 R 36 Claims

1. A composition which can be cross-linked by heating, and which comprises:

(a) a polymer which can be cross-linked with the aid of an organic peroxide said polymer comprising at least 40% by weight of said composition;

(b) an organic peroxide;

(c) a compound which contains carbon-carbon unsaturation and which cooperates with said peroxide, when the composition is heated, to promote cross-linking of said polymer; and

(d) a bromine-containing organic flame retardant said flame retardant being present in said composition in an amount not greater than 35% by weight; the ratio by weight of the unsaturated compound (c) to the peroxide (b) being at least 1.2:1.

13. A process for the production of a shaped article of a cross-linked polymer composition, which process comprises:

(1) melt-shaping a composition which comprises:

(a) a polymer which can be cross-linked with the aid of an organic peroxide said polymer comprising at least 40% by weight of said composition;

(b) an organic peroxide;

(c) a compound which contains carbon-carbon unsaturation, which cooperates with said peroxide, when the composition is heated, to promote cross-linking of said polymer; and

(d) a bromine-containing flame retardant said flame retardant being present in said composition in an amount not greater than 35%; said melt-shaping being carried out under conditions such that cross-linking of said composition is substantially prevented; and

(2) heating said melt-shaped composition to effect cross-linking of the polymer; the absolute and relative amounts of

said peroxide (b) and said compound (c) being such that the shaped article has an IPCEA water absorption of less than 3% and an M_{100} value of at least 40.

4,129,617

FLUORO CARBON GRAFT COPOLYMER AND PROCESS FOR THE PRODUCTION THEREOF

Sueo Machi; Yasushi Matsui; Akio Sugishita; Takanobu Sugo; Hiroaki Taniguchi, all of Takasaki; Koichi Asano, Tokyo, and Hiroshi Fujiwara, Soka, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo and Maruzen Oil Company Limited, Osaka, both of, Japan

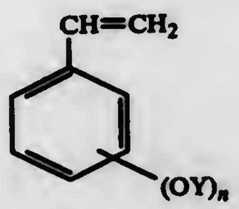
Continuation-in-part of Ser. No. 691,433, Jun. 1, 1976, abandoned. This application Nov. 7, 1977, Ser. No. 849,442

Claims priority, application Japan, Jun. 9, 1975, 50-69363

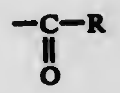
Int. Cl.² C08L *27/12, 27/16, 27/18*

U.S. Cl. 260—879 **18 Claims**

1. A novel graft copolymer comprising a backbone chain of fluoropolymer and side chains grafted thereon consisting essentially of at least one member selected from the group consisting of hydroxystyrenes having the generic formula:



wherein Y represents a hydrogen atom or a group having the formula



$$-\underset{\underset{O}{\parallel}}{C}-R$$

wherein R is a hydrocarbon group, and n represents an integer of 1 or 2, said fluoropolymer being a fluorocarbon polymer or copolymer in which at least one of the monomers thereof is a fluorocarbon.

4,129,618

TETRAFLUOROETHYLENE POLYMERS

John M. Downer, Harpenden; William G. Rodway, Welwyn, and Lawrence S. J. Shipp, Stevenage, all of England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 510,571, Sep. 30, 1974, Pat. No. 4,038,231. This application Dec. 30, 1976, Ser. No. 755,843

Claims priority, application United Kingdom, May 16, 1974, 21748/74

Int. Cl.² C08L *27/18*

U.S. Cl. 260—884 **2 Claims**

1. A tetrafluoroethylene polymer powder suitable for extrusion containing at least 98% of polymerised tetrafluoroethylene and polymerised therewith at least one coplymerisable monomer selected from perfluoroalkyl trifluoroethylens and perfluoroalkoxy trifluoroethylenes each having from 3 to 10 carbon atoms, said powder being composed of particles having inner core and outer shell portions in which the weight concentration of copolymerised monomer present in the outer shell portion (relative to the weight concentration of tetrafluoroethylene with which it is copolymerized) is less than half that of the inner core portion and characterised in that the extrusion pressure of the powder is at least 50 MN/m², said extrusion pressure being measured at 30° C. with a ram speed of 2.03 cm per minute at a reduction ratio of 282:1 wherein the extradate is a mixture of the powder and a hydrocarbon lubricant which mixture contains 16 percent by weight of the hydrocarbon lubricant, said lubricant having a viscosity of 1.31 cP and a boiling range of 1.71° C. to 1.91° C.

4,129,619

MOLDABLE BLEND OF POLYMETHYL METHACRYLATE AND STYRENE-MALEIMIDE

Ronald A. Fava, Monroeville, Pa., assignor to ARCO Polymers, Inc., Philadelphia, Pa.

Filed Dec. 23, 1977, Ser. No. 863,964

Int. Cl.² C08L *33/12, 35/06*

U.S. Cl. 260—901 **6 Claims**

1. A molding composition suitable for thermoplastic molding operations which comprises a blend of:

(a) 10–90% by weight polymethyl methacrylate;

(b) 10–90% by weight of the copolymer derived by copolymerizing from about 5% to about 35% imide derivative of an ethylenically unsaturated dicarboxylic acid, and from about 65% to about 95% vinyl aromatic composition.

4,129,620

FUEL CHANGEOVER SYSTEM FOR MULTI-FUEL ENGINES

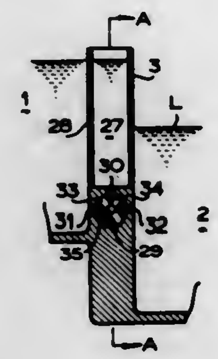
Motoaki Etoh, Ageo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1977, Ser. No. 828,548

Claims priority, application Japan, Sep. 10, 1976, 51-109185

Int. Cl.² F02M *13/06*

U.S. Cl. 261—18 R **3 Claims**



1. Fuel changeover system for multi-fuel engines comprising wall means forming a first float chamber for lighter fuel and a second float chamber for heavier fuel,

a lighter fuel reservoir provided adjacent to said first float chamber,

a passage communicating said lighter fuel reservoir with said lighter fuel float chamber at a level higher than the level of heavier fuel in said heavier fuel float chamber,

a cock provided for regulation of both of the fuela,

first and second valve passages provided in said cock,

a first passage adapted to communicate the bottom of said lighter fuel reservoir with said cock,

a second passage adapted to communicate said lighter fuel float chamber with said cock,

a third passage adapted to communicate said heavier fuel float chamber with said cock,

said second valve passage being adapted to communicate said second and third passages with each other, and

a passage for communicating said first valve passage in the cock with the nozzle of carburetor.

4,129,621

VOLATILE ANESTHETIC VAPORIZING APPARATUS

Wilfred Jones, Keighley, England; Keith W. Jones, Lancaster, N.Y., and Travers F. Sweatman, Toronto, Canada, assignors to Cyprane North America, Inc., Tonawanda, N.Y.

Division of Ser. No. 646,007, Jan. 2, 1976, Pat. No. 4,067,935. This application Sep. 21, 1977, Ser. No. 835,425

Int. Cl.² B01F *3/04;* **A61M** *17/00*

U.S. Cl. 261—39 R **10 Claims**

1. Vaporizing apparatus for a volatile anesthetic including:

a body forming a container for liquid anesthetic wherein such liquid can be vaporized by the flow thereby of a gas,

said container having a gas inlet thereto and a gas-anesthetic vapor outlet therefrom,

a bypass chamber for gas not passing through said container and a main inlet to and a main outlet from said bypass chamber for the flow of gas therethrough,

passage means connecting said main inlet to said container gas inlet,

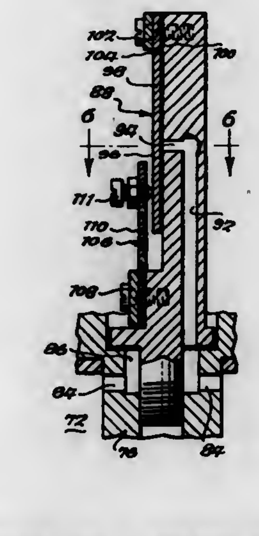
passage means connecting said container gas-anesthetic vapor outlet to said main outlet for mixing of gas-anesthetic vapor with gas passing through said bypass chamber,

valve means for selectively controlling the flow of gas into said bypass chamber to vary the anesthetic concentration of the resultant flow through said main outlet passing from the vaporizer,

a container valve means for controlling the flow of gas through said container, said container valve means comprising:

a housing having a planar surface portion and valve inlet passage means opening into said planar surface portion,

a valve element mounted in a pivoted manner at one location on said valve housing and having a planar surface portion disposed generally parallel to said housing planar surface portion and overlying said valve inlet passage opening therein, said valve element planar surface portion pivoting toward and away from said housing planar surface portion to variably restrict, in a laminar manner, gas flowing outwardly between said planar surface portions from said valve inlet opening, and



a temperature responsive element mounted at another location on said valve housing in contact with said valve element to pivot said valve element to vary the pressure drop over said container valve means as the temperature in said container varies so as to maintain the anesthetic concentration of gas delivered from said vaporizer substantially constant over a range of temperature conditions.

6. A thermally responsive valve means comprising:

a housing having a planar surface portion and valve inlet passage means opening into said planar surface portion,

a valve element mounted in a pivoted manner at one location on said valve housing and having a planar surface portion disposed generally parallel to said housing planar surface portion and overlying said valve inlet passage opening therein, said valve element planar surface portion pivoting toward and away from said housing planar surface portion to variably restrict, in a laminar manner, fluid flowing therebetween and

a temperature responsive element mounted at another location on said valve housing in contact with said valve element to pivotally control said valve element to vary the pressure drop over said valve means in response to changes in ambient temperature.

4,129,622

CARBURETOR WITH AN ALTITUDE COMPENSATOR

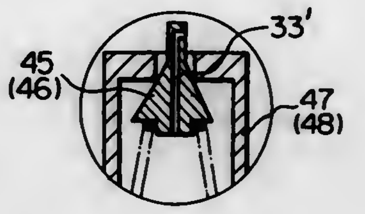
Tsuyoshi Tamazawa; Masayasu Suematsu, and Hideo Morita, all of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Japan

Division of Ser. No. 679,484, Apr. 22, 1976, abandoned. This application Nov. 14, 1977, Ser. No. 851,303

Claims priority, application Japan, Apr. 23, 1975, 50-55568; Apr. 23, 1975, 50–55570; May 24, 1975, 50–69885

Int. Cl.² F02M *7/24*

U.S. Cl. 261—39 A **3 Claims**



1. An internal combustion engine carburetor comprising, in combination, means defining an induction passage; means defining a main fuel delivery passage with a main air bleed; means defining a slow fuel delivery passage with a slow air bleed; and means defining an auxiliary air delivery circuit including an altitude compensating apparatus having an aneroid bellows deformable in dependence on the ambient atmospheric pressure, conduit means for passing air to the main and slow fuel delivery passage having two conduits one for each fuel passage, valve means for controlling the volume of air through said conduit means in accordance with the deformation of said aneroid bellows, said valve means having two valve housings and two valve members, one for each of said conduits, respectively accommodated in the two valve housings, and means bypassing said valve means to deliver a predetermined amount of air into said conduit means, said bypassing means including restricted passage means for constant fluid connection of said conduit means to the atmosphere across said valve means.

4,129,623

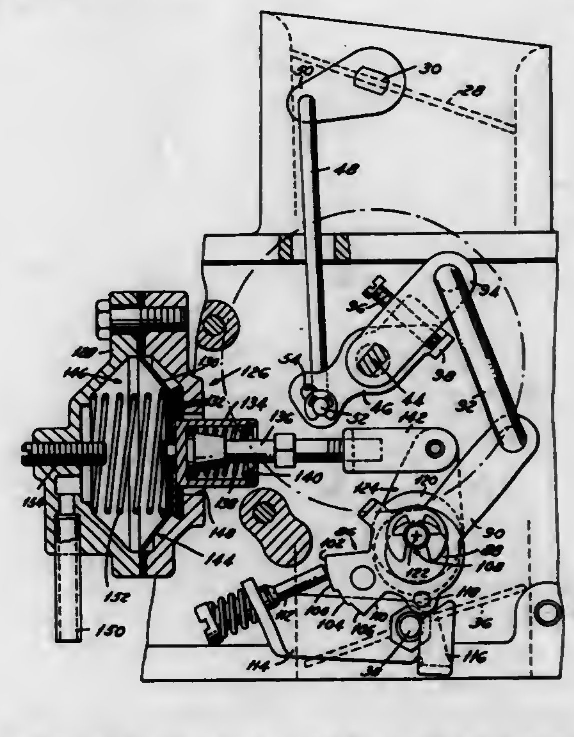
CARBURETOR WITH FAST IDLE CAM AUTOMATIC RELEASE

Jerry B. Rogerson, Northville, and Robert S. Harrison, Grosse Ile, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 26, 1977, Ser. No. 762,710

Int. Cl.² F02M *3/06*

U.S. Cl. 261—52 **6 Claims**



1. A carburetor having an air/fuel induction passage open at

one end to air at essentially atmospheric pressure and connected at its opposite end to an engine intake manifold to be subject to the changing vacuum levels therein, the one end having a choke valve rotatably mounted for movement across the passage between a closed air choking position and an open inoperative position, and a throttle valve rotatably mounted posterior of the choke valve for movement across the passage between a normal engine operating temperature level essentially closed engine idle speed position and beyond towards a wide open throttle position to control the quantity of air/fuel mixture flow through the passage, an abutment means rotatable with the throttle valve, a rotatable fast idle cam having a cammed contoured surface projecting radially from the cam axis and being of progressively decreasing radial extent in a circumferential direction from the axis of rotation of the cam for frictional engagement at times by the abutment means during movement of the throttle valve in a closing direction to stop the throttle valve in a faster more open idle speed position than the normal idle speed position to increase mixture flow to the manifold, the cam being rotatable by gravity towards an inoperative position upon disengagement of the abutment means with the cam surface to permit closure of the throttle valve to the normal idle speed positions, rotatable linkage and lever means operatively connected to the choke valve and cam, the lever means having a portion extending into the path of rotative movement of the fast idle cam linkage during movement of the cam towards the inoperative position to stop the cam rotation, means to rotate the rotatable means, and control means operable while maintaining the abutment means in essentially the same relative position engaged with the fast idle cam surface to automatically effect a linear shifting movement of the axis of the fast idle cam to effect a similar movement of the cam and the abutment means to move the abutment means to a less open throttle position of the abutment means to lean and reduce the mixture flow to the engine to improve emissions while minimizng engine stalling.

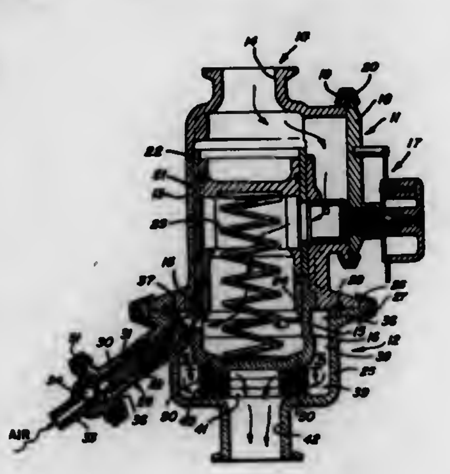
4,129,624
FLUID MIXER

Willard A. Kates, Winnetka, Ill., assignor to The W. A. Kates Company, Deerfield, Ill.

Filed May 13, 1977, Ser. No. 796,844

Int. Cl.² B01F *15/02*

U.S. Cl. 261—76 **28 Claims**



1. A fluid mixer comprising:
means for injecting into a liquid a fine stream of gas to provide a rough mixture;
means for conducting the liquid-gas rough mixture to an annular inlet space; and
means defining a first annular array of chordal substantially rectilinear flow passages leading inwardly from said inlet space to a central outlet space, and a second annular array of chordal substantially rectilinear flow passages intersecting said first flow passages for causing the rough mixture flowed through said flow passages to be discharged into said central outlet space in intersecting streams whereby the rough mixture is further mixed therein to define a fine mixture of said liquid and gas for delivery from said outlet space.

4,129,625
SELECTIVELY CONTROLLABLE WATER CURTAIN DAMPER FOR INLET FACE OF CIRCULAR WATER COOLING TOWER

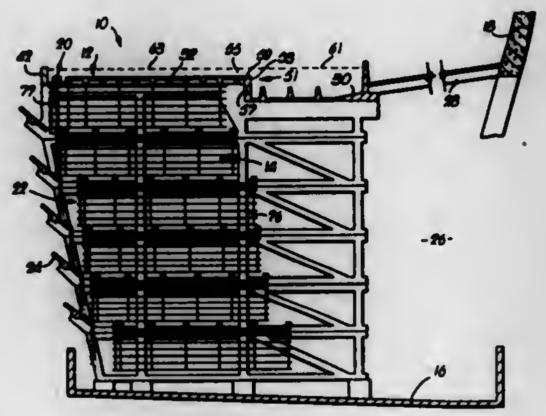
Homer E. Fordyce, Kansas City, Mo., and William C. Carter, Lenexa, Kans., assignors to The Marley Company, Mission, Kans.

Continuation-in-part of Ser. No. 662,560, Mar. 1, 1976, Pat. No. 4,048,265. This application Aug. 1, 1977, Ser. No. 820,453

The portion of the term of this patent subsequent to Sep. 13, 1994, has been disclaimed.

Int. Cl.² F28C *1/04*

U.S. Cl. 261—111 **10 Claims**



1. A water cooling tower comprising:
a hot water distribution basin having a generally horizontal bottom wall;
fill structure beneath said distribution basin for dispensing hot water gravitating from the latter for enhancing the evaporative cooling of the hot water;
a cold water collection basin beneath said fill structure for collecting cooled water gravitating from the latter;
means for directing ambient derived air currents through said fill structure for cooling of the hot water gravitating therethrough;
selectively actuable deicing means for deicing the outer margin of said tower, including
  horizontal, elongated slot means extending through the bottom wall of the distribution basin at an area of said bottom wall generally parallel to and overlying the outer margin of said tower,
  said slot means being configured and arranged for downward delivery of sufficient quantities of hot water therethrough directly onto at least a portion of said outer margin of the tower to effect deicing thereof under cold weather conditions;
elongated, shiftable cover means overlying said slot means in at least partial water flow-blocking disposition thereto; and
selectively actuatable means for shifting said cover means as desired from said flow-blocking disposition to a deicing position permitting free flow delivery of hot water through said slot means, and for selective return of said cover means to said flow-block disposition when deicing of the tower is complete;
an annular, hot water carrying flume disposed horizontally adjacent said distribution basin for delivery of hot water thereto,
said flume being configured to maintain a water level spaced above said bottom wall of the distribution basin; and
means for establishing fluid flow communication between said distribution basin and said flume at an elevation corresponding to the elevation of said bottom wall such that the water in said flume above said bottom wall is available to maintain an adequate water head for providing a flow of hot water through said slot means sufficient to create a substantially continuous, vertically extending curtain of water along selected portions of said outer margin of the tower whereby air flow therethrough is temporarily blocked to enhance the deicing properties of the hot water.

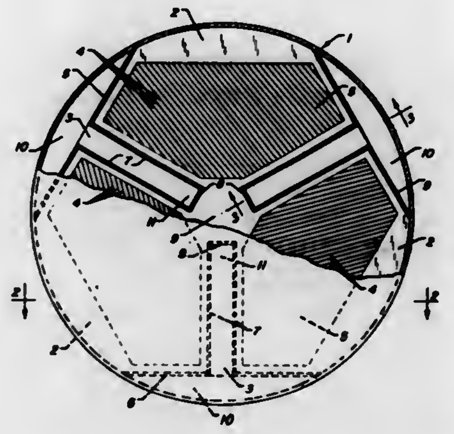
4,129,626
VAPOR-LIQUID CONTACTING APPARATUS

Marvin E. Mellbom, Clarendon Hills, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 3, 1978, Ser. No. 866,664

Int. Cl.² B01D *3/22*

U.S. Cl. 261—114 JP **15 Claims**



1. A multi-pass vapor-liquid contacting tray which comprises:
(a) a horizontal liquid support plate having a substantially circular periphery and an upper surface and which is adapted to retain a body of liquid upon the upper surface;
(b) at least three chordal imperforate liquid receiving areas alternately spaced along the periphery of the liquid support plate with an equal number of chordal liquid collection areas, with each chordal liquid collection area and each chordal liquid receiving area having a first and a second end;
(c) a plurality of liquid collection troughs dividing the liquid support plate into a number of vapor-liquid contacting areas, the liquid collection troughs being equal in number to the number of chordal liquid collection areas, with each liquid collection trough extending radially outward to a single chordal liquid collection area, and with each liquid collection trough having an open top which is partially surrounded by two substantially imperforate vertical baffles extending upward from the upper surface of the liquid support plate along two opposing sides of the liquid collection trough; and,
(d) a pair of substantially imperforate vertical walls rising above the upper surface of the liquid support plate and located along a chordal edge of each of the chordal liquid collection areas, with one of the pair of vertical walls extending horizontally from one of the vertical baffles associated with the liquid collection trough which abuts and is in fluid flow communication with the chordal liquid collection area to each of the first and second ends of the chordal liquid collection area, and with the vertical walls extending a greater distance above the upper surface of the liquid support plate than the vertical baffles associated with the liquid collection trough.

4,129,627
TORNADO PROTECTED COOLING TOWER

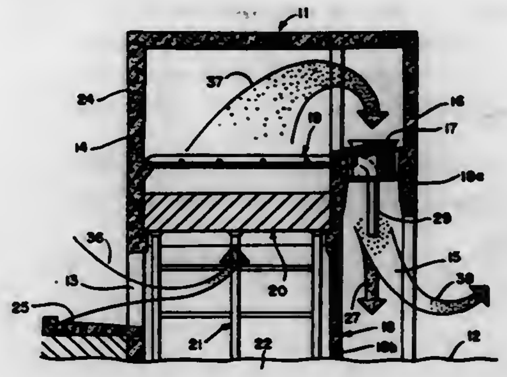
Dale D. Furr, Fort Worth, Tex., assignor to Ceramic Cooling Tower Company, Fort Worth, Tex.

Filed Aug. 5, 1977, Ser. No. 822,078

Int. Cl.² B01F *3/04*

U.S. Cl. 261—151 **21 Claims**

1. In a tornado protected cooling tower including a plurality of enclosed cooling cells arranged about the periphery of a central opening, each of said cells having a cool air inlet along the outer side thereof opposite said central opening and a warm air outlet along the inner side thereof adjacent said central opening, fan means mounted within said cells, said cells also having a perforate fill material supported therein above said cool air inlet, and water distribution means within said cells above said fill material for applying cooling water thereto to shower downwardly therethrough, and storage basin means beneath such cells for receiving the water discharged therefrom, the improvement comprising providing a plurality of fans mounted within each of said cells along the inner side thereof adjacent said central opening in direct communication with said warm air outlet, said fans being self-contained vane axial fans having motors as integral components utilizing direct drive, providing each of said cells with inner wall means having an upper apron portion extending downwardly below the lowest component of said fans, said apron portion being horizontally offset inwardly from the remaining portion of said inner wall means and being disposed in generally vertically overlapping relation with respect thereto, and said fans being mounted vertically within each of said cells so as to be supported between said apron portion and the remaining portion of said inner wall.



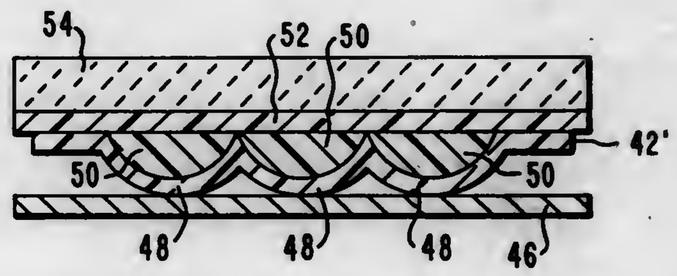
4,129,628
METHOD OF MAKING A THERMOPLASTIC LENS BY VACUUM FORMING

Donald J. Tamutus, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 19, 1976, Ser. No. 706,449

Int. Cl.² B29D *11/00*

U.S. Cl. 264—1 **6 Claims**



1. A method of making an array of plano-convex lenses comprising the steps of:
placing an array of plano-convex lenses, in the array pattern desired, on a flat surface flat side down;
placing a sheet of thermoplastic material, heated to its softening point over the exposed convex surfaces of the lenses;
creating a vacuum beneath the sheet to thereby cause the sheet to adhere to and assume the shape of the array of lenses, the outer surface of the sheet thereby assuming the final shape desired for the array of lenses;
permitting the sheet to harden;
after the sheet has hardened, removing it from the array of lenses and placing the hardened sheet on a support, convex surfaces down;

filling the concave cavities in the hardened sheet with an optically transparent fluid medium of the type which hardens, upon curing, and which has an index of refraction, when hard, which is substantially equal to that of the sheet; and

curing said medium to thereby harden the same, the surface of said medium, when hard, being adapted to form the plane surface of said array of lenses, and the outer surface of the sheet forming the convex surfaces of the array of lenses.

4,129,629

PROCESS FOR MAKING HYDROPHILIC POLYOLEFIN FIBERS CONTAINING CLAY

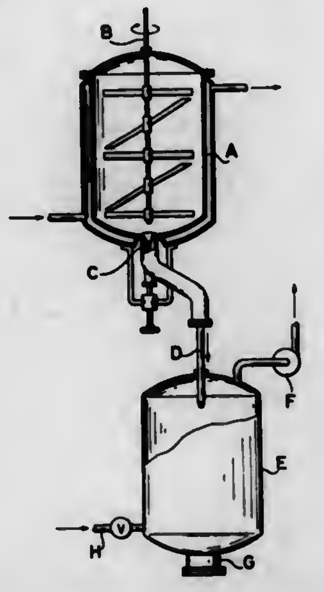
Wolfgang Gordon, Hofheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 26, 1975, Ser. No. 635,745

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1974, 2456277

Int. Cl.² C08J *3/20;* B29C *6/00*

U.S. Cl. 264—13 10 Claims



1. A process for making hydrophilic clay-containing polyolefin fibers which comprises preparing a suspension of non-pre-hydrophobized clay particles in an emulsion of (a) a solution of a polyolefin in a volatile organic solvent and (b) an aqueous solution of a hydrophilizing agent, said emulsion containing from 0.05 to 5% by weight, based on the weight of clay, of an amine selected from aliphatic, aromatic and alkylaromatic amines having from 4 to 30 carbon atoms, said amine constituting 0.01 to 10 grams per liter of said suspension and the residence time of said amine in said emulsion being at least 10 seconds, superheating said suspension under at least an autogenous pressure and flowing said suspension through a restricted passage to a relatively low pressure zone to cause flash evaporation of said solvent and form said hydrophilic clay-filled polyolefin fibers.

4,129,630

PROCESS FOR PRODUCING THERMOPLASTIC RESIN FILMS HAVING REDUCED THICKNESS UNEVENNESS

Masami Etchu; Takao Yamaguchi, and Norio Takagi, all of Ogaki, Japan, assignors to Teijin Limited, Osaka, Japan

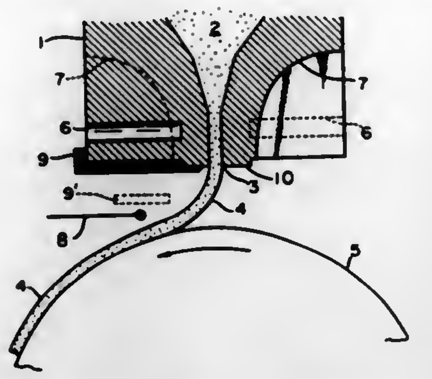
Filed Mar. 29, 1976, Ser. No. 671,380

Claims priority, application Japan, Apr. 1, 1975, 50-38588

Int. Cl.² B29F *3/08*

U.S. Cl. 264—22 6 Claims

1. In a process for producing a film of reduced thickness unevenness by extruding a thermoplastic resin from an extrusion die into a film form, exposing the extrudate to an electric field induced by a single electrostaticity applying electrode, and then pinning it to the surface of a cooling drum, the improvement comprising disposing a non-grounded shielding object between the extrusion surface of the die and the electrostaticity applying electrode thereby to maintain the applied voltage constant in the widthwise direction of the extrudate and to enable the extrudate to adhere intimately to the surface of the cooling drum.



4,129,631

METHODS FOR GUIDING SLIP-FORMS IN SLIP-FORM CONCRETING

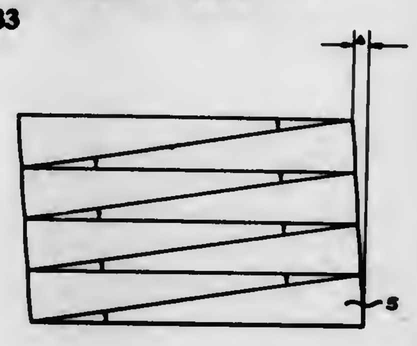
Nils H. Ahlgren, Skyttevägen 22, Saltsjöbaden, Sweden (S-13300)

Filed Nov. 30, 1976, Ser. No. 746,095

Claims priority, application Sweden, Dec. 23, 1975, 7514590

Int. Cl.² E04B *1/16*

U.S. Cl. 264—33 8 Claims



1. A method for guiding rigid slip-forms in the casting of concrete structures, where the rigid slip-form is guided away from one side of the structure being cast; said method comprising in any one lifting sequence of operations, said rigid slip-form being first lifted at a first side of the concrete structure being cast to a new higher position, from which side the slip-form is to be guided away, such that the slip-form when being lifted is shifted towards a second, opposite side; and being then lifted at said second side to said new higher position so that said rigid slip-form is guided away from said first side.

4,129,632

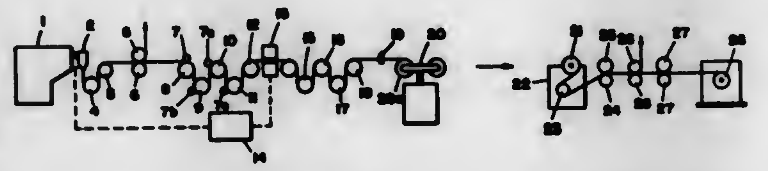
METHOD FOR EXTRUDING SLITTING AND FIBRILLATING THERMOPLASTIC FILM TAPES

Carl B. Olson, San Anselmo; Carl S. Weimer, Pleasant Hill, and Phillip H. Parker, San Rafael, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 21, 1977, Ser. No. 862,790

Int. Cl.² B29D *7/02;* B29C *17/14*

U.S. Cl. 264—40.1 20 Claims



10. A process for preparing thermoplastic fibrillated tapes which comprises the sequential steps of:

(a) extruding a film-forming thermoplastic through a narrow elongated slot orifice to form a molten film and casting the molten film upon a rotating casting cooling drum to form a film;

(b) trimming the width ends of said film to remove edge beads;

(c) passing said film to an orientation section comprising at least one orientation roll sequence comprising at least one orienting heating roll followed by at least one orienting cooling roll and whereby said film passes over and against said orienting rolls and wherein said orienting heating and cooling rolls are rotated at such relative speeds that the film leaves said orientation section at a speed at least about four times greater than the speed at which it enters the orientation section but below the relative speed stretch ratio at which the film fibrillates, thereby orienting said film;

(d) measuring the thickness of the oriented film across its width and adjusting said slot orifice to provide an oriented film having less than about 3% variation in thickness across its width;

(e) winding said oriented film to form film rolls;

(f) unwinding the film from said film roll over a hot surface, under a tension of about from 2 to 10 pounds per inch of film width, to remove wrinkles from said film;

(g) slitting said film into a plurality of tapes having a width of about from 0.3 to 1 cm; and

(h) fibrillating said tapes.

4,129,633

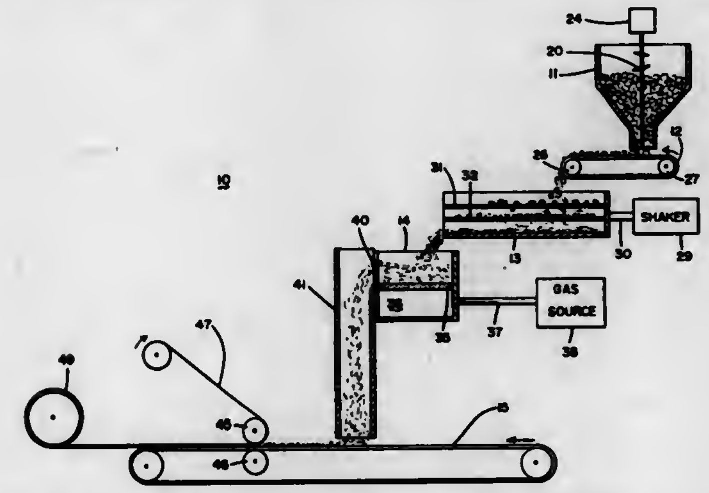
PROCESS AND APPARATUS FOR MANUFACTURE OF AN ELECTRODE

Royce E. Biddick, Edina, Minn., assignor to Gould Inc., Mendota Heights, Minn.

Continuation of Ser. No. 225,433, Feb. 11, 1972, abandoned. This application Nov. 3, 1975, Ser. No. 627,968

Int. Cl.² C04B *35/00*

U.S. Cl. 264—40.3 11 Claims



1. The process for manufacture of a continuous electrode comprising:

preparing a bulk electrode material including a hydrophobic binder comprised of sticky electrode material particles;

fluidizing the sticky electrode material particles in a fluid stream by observing sticky electrode particle behavior in a fluid stream and controlling the fluid stream such that particles are maintained in a uniform suspension allowing a uniform flow of sticky electrode particles over a weir onto a moving member to thereby produce a continuous strip of electrode particles; and

then compressing the electrode particles to produce a continuous electrode.

4. The process for manufacture of a continuous electrode comprising:

preparing a bulk electrode mixture including a hydrophobic binder having a predetermined melting temperature, said bulk electrode material characterized by self-adhesion;

first heating the bulk electrode mixture to a temperature below the melting temperature of the hydrophobic binder to drive off unwanted suspension materials in the bulk electrode mixture to thereby produce large lumps of electrode mixture;

breaking up the lumps of electrode mixture to produce self-adhering electrode particles;

fluidizing the self-adhering electrode particles in a fluid stream by observing sticky electrode particle behavior in a fluid stream and controlling the fluid stream such that particles are maintained in a uniform suspension allowing a uniform flow of sticky electrode particles over a weir

onto a moving member to thereby produce a continuous strip of self-adhering electrode particles; and

then compressing the electrode particles to produce a continuous self-adhering electrode.

4,129,634

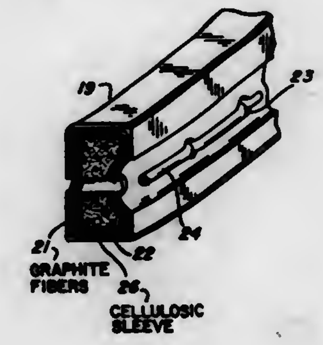
METHOD FOR PREPARING A COMPOSITE HIGH STRENGTH TO WEIGHT STRUCTURE HAVING SHELL AND SLEEVED CORE

Andrew M. Cecka, Thousand Oaks; Pol Dano, Camarillo, and Paul G. Pawling, Oxnard, all of Calif., assignors to Fansteel, Inc., North Chicago, Ill.

Division of Ser. No. 703,136, Jul. 7, 1976, Pat. No. 4,070,021. This application Nov. 25, 1977, Ser. No. 854,533

Int. Cl.² B29D *27/00*

U.S. Cl. 264—45.3 11 Claims



1. A method of producing a structural member of high strength to weight ratio comprising inserting an elongated core strip comprising a foamable resin composition within a seamless sleeve made of a thin, flexible cellulosic film, arranging within a mold cavity an outer shell comprising at least one layer of unidirectionally oriented resin-coated graphite fibers in sheet foam and said elongated core within said sleeve with said shell surrounding said core and sleeve, sealing said mold cavity, activating said foamable resin composition to cause expansion thereof and generate pressure within said mold cavity pressing said core within said sleeve against said shell and thereby providing intimate bonding of said core to said shell, and thereafter removing said core and said shell from said mold cavity as an integral composite structure.

4,129,635

METHOD FOR PRODUCING FOAMED MOLDINGS FROM SYNTHETIC RESIN MATERIALS

Akio Yasuike, Yokohama; Hiroshi Kataoka, Tokyo, and Kaoru Toyouchi, Yokohama, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Continuation of Ser. No. 534,134, Dec. 18, 1974, abandoned. This application Jul. 8, 1977, Ser. No. 814,127

Claims priority, application Japan, Dec. 28, 1973, 48-1245

Int. Cl.² B29D *27/00*

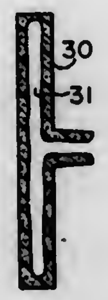
U.S. Cl. 264—45.5 2 Claims

1. A method for injection molding of articles having an unexpanded outer layer and an expanded core contained therein; including the steps of

plastifying a foamable resin material without substantial expansion,

injecting a mass of said plastified and substantially unexpanded resin material into a closed mold cavity pre-pressurized with a first body of gas through an inlet in said mold cavity in an amount less than the volume of said mold cavity,

charging a second body of gas under pressure into said mold cavity through an inlet in said mold cavity to force said injected resin material against the walls of the mold cavity by the pressure of the charged second body of gas, whereby said gas is enclosed by said resin material and



said second body of gas forms a hollow in the mass of said resin and

discharging said second body of gas from said mold cavity when said resin material within the mold cavity sets at least at its outer surface layer so as to permit the expansion of the remaining resin material, other than the set surface layer, to fill said hollow to thereby produce a molded article having a surface of an unexpanded layer of said resin and a core of foamed resin.

4,129,636

PROCESS FOR PROVIDING MIXED FOAMABLE REACTANTS TO A MOLD

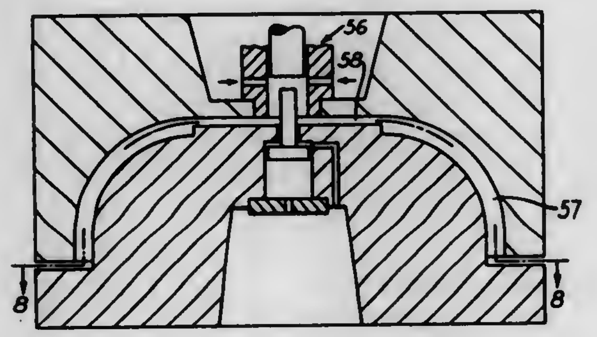
Heinrich Boden, Opladen, and Ulrich Knipp, Schildgen-Nittum, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 558,515, Mar. 14, 1975, Pat. No. 4,013,391. This application Nov. 18, 1976, Ser. No. 742,937

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1974, 2413337

Int. Cl.² B29D *27/00*

U.S. Cl. 264—51 **1 Claim**



1. A process for mixing foamable thermosetting resin reactants and introducing them into a mold comprising introducing said reactants into a mixing chamber through injection apertures in its side wall portion, said mixing chamber having an outlet aperture communicating with the cavity of the mold and prior to the introduction of reactants into the mixing chamber inserting a displacement piston having a smaller cross-section than the outlet aperature of said mixing chamber into said mixing chamber through said outlet aperture such that the injection apertures communicate with the mold cavity by means of a generally annular passage whereby a foamed resin product substantially free of sprue and surface marks is produced.

4,129,637

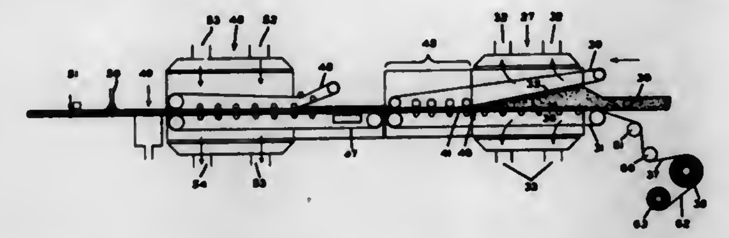
USE OF AN OPEN POROUS THERMOPLASTIC NETTING AS THE LAMINATING ADHESIVE IN FORMING A MINERAL WOOL FIBERBOARD PRODUCT

Wayne C. Kennedy, Lititz, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Jun. 8, 1977, Ser. No. 804,704

Int. Cl.² B04H *1/20*

U.S. Cl. 264—112 **4 Claims**



1. In a method of manufacturing a dry laid mineral wool fiberboard product faced with an open mesh glass fabric wherein fibers and resin binder forming the board product are entrained in an air stream and deposited on two converging forming wires and wherein an open mesh glass fabric is positioned between the lower forming wire and the layer of fibers and resin binder being formed thereover, with the fabric acting as a carrier which becomes adhered to the mineral wool fiberboard after consolidation of the two layers of fibers and resin binder and during oven cure of the resin binder, the improvement comprising: feeding an open weave thermoplastic netting between the open mesh glass fabric and the fibers and resin binder being formed thereover, said thermoplastic netting being of an open porous structure such that air flow through the fabric and netting during the forming operation is not impeded, said netting having a melting point below the oven curing temperature required for curing the resin binder in the mineral fiberboard whereby during the oven cure the netting melts and forms, on cooling, an adhesive bond between the glass fabric facing and the fiberboard.

4,129,638

COMPOSITIONS OF MATTER FOR COLORING TOOTHPASTE AND METHOD OF PREPARING SAME

Lyle W. Ritze, Hamilton Township, Warren County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 507,636, Sep. 20, 1974, abandoned, which is a division of Ser. No. 837,303, Jun. 27, 1969, abandoned. This application Nov. 22, 1976, Ser. No. 744,078

Int. Cl.² B29B *1/02*

U.S. Cl. 264—117 **5 Claims**

1. A process for preparing agglomerates of pigment particles which comprises the steps of:

(1) melting a wax having a hardness value of from 0 to 65;

(2) uniformly dispersing water-insoluble, non-toxic, colorfast, pigment particles having a mean particle size within the range from about 5 to about 490 microns in the molten wax, said particles being selected from the group consisting of dyed thermosetting resin particles, chromium oxide pigments, carbon blacks, ultramarine blues, ultramarine pinks, ferric oxides, dyed cellulose particles and water insoluble dye lakes;

(3) cooling the wax dispersion of pigment particles to solidification, said solidification yielding the final agglomerates or larger pieces; and

(4) reducing the solid wax dispersion to agglomerates having a mean particle size within the range from about 200 to about 500 microns and a pigment particle concentration of from about 30% to about 50% by weight of the total agglomerates.

4,129,639

METHOD AND APPARATUS FOR MANUFACTURING OPEN END SLIDING CLASP FASTENERS

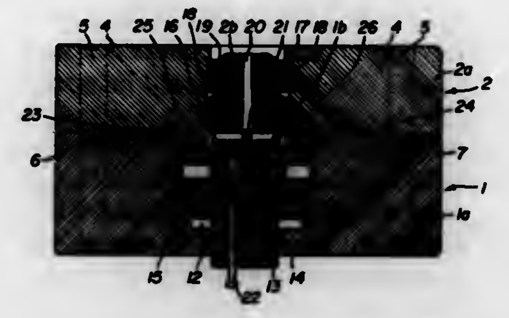
Riccardo Taccani, Milan, Italy, assignor to Interbrev S. A., Luxembourg, Luxembourg

Filed Oct. 22, 1976, Ser. No. 735,104

Claims priority, application Switzerland, Oct. 23, 1975, 13718/75

Int. Cl.² B29D *3/00, 5/00*

U.S. Cl. 264—157 **1 Claim**



1. In a process for making a separable sliding clasp fastener comprising two halves, each having a band, said band having on its inside edge, a row of interlocking elements of thermoplastic materials, a top stop on each half; a separating device having one female part and two male parts, one on each fastener half and adjacent to the row of interlocking elements and a sliding clasp which, when moved in either direction causes coupling or uncoupling of the two rows of interlocking elements, which comprises the steps of inserting a segment of each of the two disengaged halves of a continuous fastener, said halves having a row of interlocking elements thereon, into a mold having a band reinforcement track and a cavity adjacent thereto in such a manner that the band will be placed above the band reinforcement track and the row of interlocking elements will be housed in the cavity, the cavity being larger than the row itself, said cavity having a band side wall and two walls crosswise to the band being shaped like the male part to be manufactured, injecting molten thermoplastic material into the mold for the purpose of forming a reinforcement band and the male parts of said fastener, allowing the thermoplastic material to harden forming a reinforcement band, and then cutting the solidified material to further form the opposite lateral sides of the two male parts.

4,129,640

PROCESS FOR PRODUCING SHAPED ARTICLES OF CELLULOSE

Henry Rodier, Sainte-Foy-les-Lyon, France, assignor to Rhone Poulenc Textile, Paris, France

Filed Jul. 14, 1977, Ser. No. 815,856

Claims priority, application France, Jul. 16, 1976, 76 22031

Int. Cl.² C08L *1/24*

U.S. Cl. 264—187 **10 Claims**

1. Process for producing shaped articles of cellulose, said process comprising contacting a solution of cellulose in DMSO and formaldehyde, containing at least 6% by weight of cellulose based on the volume of DMSO and containing formaldehyde in a weight ratio of formaldehyde/cellulose of 0.2 to 0.6, in said shaped form with a coagulating solution consisting essentially of DMSO and water at a temperature of no greater than 10° C.

4,129,641

METHOD OF SHAPING ETHYLENICALLY UNSATURATED MONOMER SOLUTIONS CONTAINING URYLATED LINEAR POLYESTER/POLYURETHANE RESINS

James Ferrarini, Aston, Pa., and Erich Kuehn, Wilmington, Del., assignors to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 676,531, Apr. 12, 1976, Pat. No. 4,073,828. This application Dec. 6, 1977, Ser. No. 857,917

Int. Cl.² B29G *1/00;* B29B *1/04;* B29C *3/00;* C08L *75/00*

U.S. Cl. 264—294 **5 Claims**

1. A process for preparing a tractable shaped article capable of being further shaped and cured into an intractable shaped article, said process comprising the steps of:

(1) preparing a vinylidene monomer solution having dissolved therein an isocyanate terminated linear polyester/-polyurethane resin free of ethylenic unsaturation;

(2) gelling or thickening the vinylidene monomer solution by intermixing it with an organic diamine with sufficient agitation to form a homogeneous mixture;

(3) shaping said mixture and reacting said homogeneous mixture in the absence of substantial polymerization of said vinylidene monomer to obtain a shaped tractable article; and

(4) further shaping the shaped tractable article of Step (3) and polymerizing the vinylidene monomer until said shape becomes intractable.

4,129,642

PROCESS FOR THE PRODUCTION OF POTASSIUM SULFATE

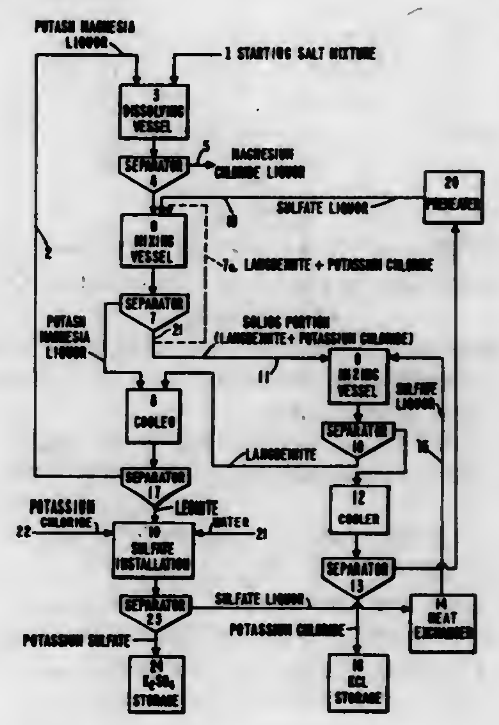
Ulrich Neitzel, Heringen, Germany, assignor to Kali & Salz AG, Kassel, Germany

Filed Jul. 19, 1977, Ser. No. 816,964

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2643001

Int. Cl.² C01D *5/00, 5/12*

U.S. Cl. 423—199 **18 Claims**



1. A process for producing potassium sulfate, which comprises:

(a) forming a starting mixture comprising carnallite, potassium chloride, kieserite and residual quantities of less than 15% by weight rock salt by electrostatically separating a ground crude potassium salt;

(b) contacting said starting mixture with a potash magnesia liquor at a temperature of about 20°–40° C. to form a slurry containing up to 70 mole $MgCl_2$/1000 H_2O, said contacting resulting in the decomposition of the carnallite and the dissolution of the rock salt contained in said starting mixture;

(c) separating the slurry formed in step b) into a magnesium chloride solution and a solids portion containing a mixture of kieserite and potassium chloride;

(d) mixing the solids portion obtained in step c) with a sulfate liquor containing 18–45 mole $MgCl_2$/1000 H_2O at a temperature of about 75°–110° C. to convert the solids portion into a mixture of langbeinite and potassium chloride; p1 (e) cooling the mixture obtained in step d) to a temperature between about 15°–60° C. to form slurry containing a potassium-magnesium double sulfate salt and potassium chloride;

(f) separating the slurry formed in step e) into a potash magnesia liquor portion and a double sulfate saltcontaining solids portion;

(g) mixing the solids portion obtained in step f) with water to convert the double sulfate salt contained in said solids portion into potassium sulfate; and

(h) separating the potassium sulfate formed in step g) from the sulfate liquor associated therewith.

4,129,643

METHOD FOR RAPID SCREENING OF TERATOGENIC AGENTS

Ruth M. Clayton, 1, Seton Pl., Edinburgh 9, Scotland

Filed Jul. 1, 1977, Ser. No. 812,176

Claims priority, application United Kingdom, Jul. 15, 1976, 1546/76

Int. Cl.² A61K *29/00, 43/00*

U.S. Cl. 424—1 **7 Claims**

1. A process for screening a compound for teratogenic activity comprising administering the compound being screened to a test animal, removing amniotic fluid from the test animal, using the amniotic fluid removed as at least part of a cell culture medium, and measuring the effect on cell properties of cells grown in the culture medium containing the amniotic fluid from the test animal as compared with the use of amniotic fluid from an otherwise identical control animal that has not had the compound being screened administered to it.

4. A process as claimed in claim 1 wherein the profiles of accumulation and synthesis of individual proteins of the cells being cultured are measured, the synthesis being measured after incorporation of radioactive precursor before harvesting.

4,129,644

PROTECTING SKIN AND HAIR WITH COSMETIC COMPOSITIONS CONTAINING SUPEROXIDE DISMUTASE

Grégoire Kalopissis, Neuilly-sur-Seine; Bernard Jacquet, Antony, and Gérard Lang, Deuil-la-Barre, all of France, assignors to L'Oreal, Paris, France

Filed Oct. 10, 1975, Ser. No. 621,629

Claims priority, application Luxembourg, Oct. 15, 1974, 71110

Int. Cl.² A61K *7/06, 7/72, 7/48*

U.S. Cl. 424—59 **8 Claims**

7. A process for protecting the skin from the harmful effects of ultra-violet rays comprising applying to the skin an effective amount of at least one superoxide dismutase to protect the skin from the harmful effects of ultra-violet rays.

4,129,645

SUNSCREEN COMPOSITIONS

Gabriel Barnett, New York; Nathan Gershaw, Commack, and Jack J. Mausner, East Hills, all of N.Y., assignors to Helena Rubinstein, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 611,435, Sep. 5, 1975, Pat. No. 4,087,555. This application Apr. 19, 1977, Ser. No. 788,885

Int. Cl.² A61K *7/44*

U.S. Cl. 424—60 **7 Claims**

1. An ultraviolet sunscreening composition for protection against the harmful rays of the sun comprising an oil phase, a water phase, and an encapsulated active base:

(A) said oil phase comprising an effective amount of an emulsifier, an effective amount of an emollient, and an effective amount of a non-ionic surfactant;

(B) said water phase comprising, in parts by weight, 0.10–7.50 parts of hectorite clay, 0.10–7.50 parts of a peptizer for said hectorite clay, 1.00–15.00 parts of a humectant, 0.10 parts of a hydrolyzed animal fatty protein complex, and water; and

(c) said encapsulated active base comprising, in parts by weight, 0.10–10.00 parts of hectorite clay; 0.10–3.0 parts of a polar group affording organic compound (1) characterized as being reactable with said hectorite clay to form water-insoluble particles having a size above colloidal dimensions when added to an aqueous colloidal solution of synthetic hectorite clay and tetrasodium pyrophosphate and (2) selected from the group consisting of a simple organic compound having at least one polar group characterized by insubstantial solubility in water at ordinary temperatures and (3) organic hydrophilic colloid; 0.05–2.00 parts of a peptizer for said clay; an effective amount of a sunscreen agent; and water.

4,129,646

ISOLATING HEPATITIS B DANE PARTICLES

William J. McAleer, Ambler, and Edward H. Wasmuth, Telford, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 737,862, Nov. 2, 1976, abandoned. This application Apr. 4, 1977, Ser. No. 784,191

Int. Cl.² A61K *39/12;* C12K *7/00*

U.S. Cl. 424—89 **10 Claims**

1. In a process for concentrating Dane particles from human biological fluid containing HB_sAg, the improvement comprising subjecting the fluid to isopycnic banding in sodium bromide density gradient encompassing the density range of from about 1.0 to about 1.41 g/cc and recovering fractions rich in Dane particles within the density range of from about 1.23 to about 1.30 g/cc.

4,129,647

TREATMENT OF ACNE

Edmund Klein, 1325 N. Forest Rd., Williamsville, N.Y. 14221

Filed Oct. 17, 1977, Ser. No. 843,053

Int. Cl.² A61K *39/02, 31/505*

U.S. Cl. 424—92 **9 Claims**

1. A method for the therapeutic control and treatment of acne which comprises administering to a patient an immunogen selected from the group consisting of dinitrochlorobenzene and Bacillus Calmette-Guerin Vaccine which induces or potentiates an immune response on local administration in an amount sufficient to induce a delayed hypersensitivity reaction and thereafter applying to the skin of said patient an immunological preparation in an immunologically effective amount for the treatment of acne, said preparation comprising an immunogen selected from the group consisting of dinitrochlorobenzene and Bacillus Calmette-Guerin Vaccine together with a pharmaceutically acceptable carrier.

4,129,648

METHOD FOR REDUCING ENDOGENOUS PROSTAGLANDIN SYNTHESIS

Harry O. J. Collier, 23 Campden Hill Rd., London, W.8.; Sheikh A. Saeed, 14 Eastcote Ave., South Harrow, Middlesex; Cyril Schneider, 71 Redway Dr., Whitton, Twickenham, all of England, and Frank Mannuzza, 855 Oakside La., Park Forest South, Ill. 60466

Filed Nov. 21, 1977, Ser. No. 853,305

Int. Cl.² A61K *35/14, 35/16*

U.S. Cl. 424—101 **22 Claims**

1. A therapeutic method of reducing or inhibiting endogenous prostaglandin synthesis in an individual for whom such therapy is indicated, comprising administering to the individual an amount of a high molecular weight mammalian blood plasma or serum extract effective to reduce or inhibit the activity of prostaglandin synthetase, selected from the group consisting of Cohn fraction IV, Cohn subfraction IV_1, Cohn subfraction IV_4 and haptoglobin.

4,129,649

PROCESS FOR PRODUCING EASILY ABSORBABLE AMORPHOUS STERYL GLUCOSIDE MONOPALMITATES AND PREPARATIONS THEREOF

Sho Inoue; Masanobu Kawamata; Hirokazu Ushimaru; Koichi Nakamichi, and Yutaka Takahashi, all of Kyoto, Japan, assignors to Nippon Shinyaku Co. Ltd., Japan

Filed May 5, 1976, Ser. No. 683,478

Claims priority, application Japan, May 24, 1975, 50-62263

Int. Cl.² A61K *31/705;* C07G *3/00*

U.S. Cl. 424—182 **7 Claims**

1. A process for the production of pharmaceutical composition having hemostatic activity which comprises converting a crystalline steryl glucoside monopalmitate to amorphous form by heating it to a temperature above 110° C. and in the range of 125°–145° C. and for a period of time of about 2–30 minutes to effect such conversion or by dissolving the crystalline steryl glucoside monopalmitate in an organic solvent in which it is soluble and distilling off the solvent, and admixing the thus formed amorphous steryl glucoside monopalmitate with physiologically harmless organic or inorganic fine particles to form a homogeneous dispersion having enhanced absorbability upon ingestion or administration and in which the amorphous steryl glucoside monopalmitate is absorbed on or dispersed in the physiologically harmless organic or inorganic fine particles in the proportion of at least 0.5 parts per part of steryl glucoside monopalmitate, by weight.

4,129,650

NOVEL PHOSPHOLIPID DERIVATIVES OF PROSTAGLANDINS AND PROCESS OF THEIR PREPARATION

Hans Betzing, Horrem, and Dac Lekim, Cologne, both of Germany, assignors to A. Nattermann & Cie. GmbH, Cologne, Germany

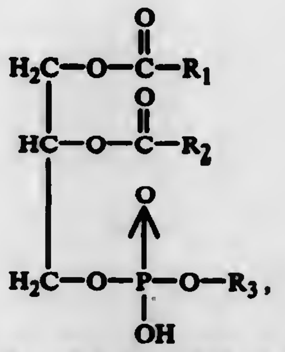
Filed Jun. 28, 1977, Ser. No. 810,820

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1976, 2629135

Int. Cl.² A61K *31/66, 31/685;* C07F *9/02*

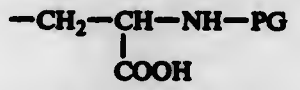
U.S. Cl. 424—211 **6 Claims**

1. An ester or amide derivative of natural prostaglandin and having the formula



wherein R_1 and R_2 are each hydrogen or a fatty-acid radical with the proviso that at least one of R_1 or R_2 is a fatty-acid radical, and R_3 is one of the following groups

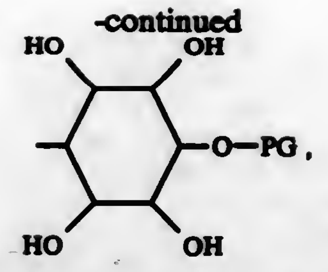
$-CH_2-CH_2-NH-PG$



$-CH_2-\underset{COOH}{\underset{|}{CH}}-NH-PG$

$-CH_2-CH_2-O-PG$

-continued



wherein PG is a prostagladin radical or its optical isomer, said PG being attached to the phospholipid through the carboxyl moiety.

6. A compound in accordance with claim 1 wherein R_1 and R_2 are both fatty acids.

4,129,651

METHOD OF REMOVING NITROGEN OXIDES IN EXHAUST COMBUSTION GASES

Sakae Koike; Shoichi Matsunami, and Yasuo Fujiwara, all of Kurashiki, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 648,730, Jan. 13, 1976, abandoned. This application Nov. 8, 1976, Ser. No. 739,729

Claims priority, application Japan, Jan. 13, 1975, 50-6174; Jan. 16, 1975, 50-7312

Int. Cl.² C01B *21/00*

U.S. Cl. 423—235 **2 Claims**

1. In a method of removing nitrogen oxides noncatalytically from an exhaust combustion gas by maintaining said combustion gas at a temperature of from 700°–1300° C. in the presence of 0.1–15 Vol.% of oxygen in said combustion gas and an ammonia source in a combustion apparatus which has metallic heat exchange pipes in a zone downstream of the position where the ammonia source is added, the improvement which comprises:

feeding said ammonia source in an amount of 0.6–50 times the NO_x concentration in said combustion gas into said exhaust combustion gas at a position where the total surface area of the heat exchange pipes, in the space downstream of the position of ammonia source addition which has a combustion gas residence time of about 1 second, is the range of 0.1×10^{-5}–0.5×10^{-2} m^2 per 1 Nm^3/H of said combustion gas flow; and the temperature of said combustion gas at the outlet of said space is above 700° C.

4,129,652

METHOD FOR POTENTIATING NEUROLEPTIC DRUGS

Kjell Fuxe, Sollentuna, Sweden, assignor to Nelson Research & Development Company, Irvine, Calif.

Continuation of Ser. No. 714,696, Aug. 16, 1976, abandoned, which is a division of Ser. No. 596,571, Jul. 16, 1975, Pat. No. 3,978,216, which is a continuation-in-part of Ser. No. 475,856, Apr. 23, 1974, Pat. No. 3,947,579. This application Jul. 25, 1977, Ser. No. 818,533

Int. Cl.² A61K *31/40, 31/54*

U.S. Cl. 424—247 **1 Claim**

1. A method for potentiating the neuroleptic activity of a phenothiazine derivative having neuroleptic activity comprising administering to a schizophrenic about 10 to about 50 percent of a conventional dosage amount of a phenothiazine derivative selected from the group consisting of chlorpromazine and thioridazine and an amount equal to about 0.1 to about 50 mg/kg of a gabergic compound selected from the group consisting of 5-ethyl-5-phenyl-2-pyrrolidone, 1-hydroxy-3-amino-2-pyrrolidone and a pharmaceutically acceptable salt thereof.

4,129,653
SUBSTITUTED PYRROLO [1,2-C] QUINAZOLINES AND PHARMACEUTICAL COMPOSITIONS AND METHODS EMPLOYING THEM

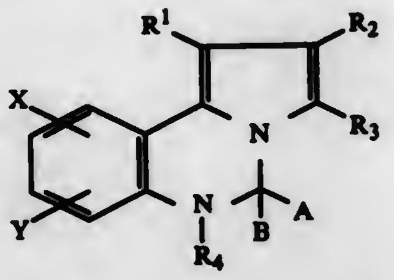
Victor T. Bandurco, Somerville, and Seymour Levine, North Brunswick, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Jan. 5, 1977, Ser. No. 757,117

Int. Cl.² A61K *31/505;* C07D *487/14*

U.S. Cl. 424—251 29 Claims

1. A substituted pyrrolo(1,2-c)quinazoline of the formula:



and pharmaceutically-acceptable acid addition salts thereof, wherein:

R_1 and R_2 are each members selected from the group consisting of hydrogen, loweralkyl, naphthyl, phenyl, halophenyl, loweralkyphenyl, loweralkoxyphenyl, amino, COOH, COO loweralkyl;

R_3 is a member selected from the group consisting of hydrogen, loweralkyl, loweralkenyl, and haloloweralkenyl;

R_4 is a member selected from the group consisting of hydrogen, hydroxymethyl, loweralkyl, cyanoethyl, CHO, COOH, COO loweralkyl, $(CH_2)_2COOH$, $(CH_2)_2COO$ loweralkyl,

X and Y are each members selected from the group consisting of hydrogen, halo, loweralkoxy, cyano;

a considered separately is hydrogen;

B considered separately is a member selected from the group consisting of hydrogen, halo; and

A and B considered together is a member selected from the group consisting of oxygen and sulfur.

22. A pharmaceutical composition useful in the treatment of cardiovascular disorders in dosage unit form comprising per dosage unit from about 5 to about 500 mg. of a compound of claim 1 in admixture with a pharmaceutical carrier suitable for internal administration.

23. The method of treating a patient having hypertension which comprises systemically administering to said patient an effective anti-hypertensive amount of a compound of claim 1.

4,129,654
ISOXAZOLO[3,4-d]PYRIMIDINES USEFUL AS ANTIINFLAMMATORY-ANALGESIC AGENTS

Ryuji M. Marumoto; Yoshiyasu Furukawa, Toyonaka, and Kiyohisa Kawai, Nagaokakyo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

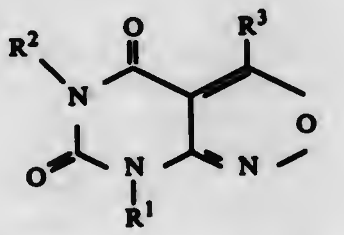
Filed Mar. 30, 1977, Ser. No. 782,762

Claims priority, application Japan, Apr. 5, 1976, 51-38419

Int. Cl.² A61K *31/42;* C07D *498/04*

U.S. Cl. 424—251 26 Claims

1. An antiinflammatory-analgesic composition which comprises (A) as active ingredient, at least one compound selected from the group consisting of the isoxozolo[3,4-d]pyrimidines of the formula



(I)

wherein R¹, R² and R³, respectively, are hydrogen, lower alkyl, cycloalkyl having 5 to 7 carbon atoms, or aryl selected from the group consisting of phenyl and naphthyl which may be substituted by halogen, and (B) a pharmaceutically acceptable carrier therefor.

4,129,655
NEUROLEPTIC
2-PIPERIDINOALKYL-1,4-BENZODIOXANS

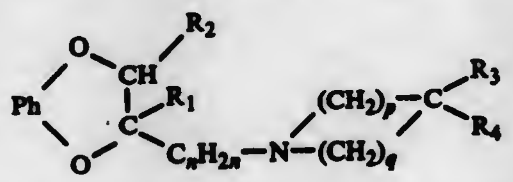
Charles F. Huebner, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 680,318, Apr. 26, 1976, which is a continuation-in-part of Ser. No. 589,118, Jun. 23, 1975, Pat. No. 4,039,676. This application Jan. 19, 1977, Ser. No. 760,493

Int. Cl.² C07D *409/14;* A61K *31/445*

U.S. Cl. 424—267 8 Claims

1. A compound corresponding to the formula



wherein Ph is unsubstituted 1,2-phenylene or 1,2-phenylene substituted by one or two members selected from lower alkyl, hydroxy, mercapto, lower alkoxy, lower alkylenedioxy, benzyloxy, lower alkylthio, halogeno, trifluoromethyl, nitro, or amino; n is an integer from 1 to 4; each of p and q is an integer from 1 to 3, but $(p + q) = 4$; each of R_1 and R_2 is hydrogen or lower alkyl; R_3 is hydrogen, hydroxy, lower alkoxy, lower 2- or 3-alkenyloxy, lower 2- or 3-alkynyloxy, lower or higher alkanoyloxy and R_4 is unsubstituted furyl, thienyl, benzofuryl or benzothienyl, or said heterocyclics mono- or disubstituted by lower alkyl, or therapeutically acceptable acid addition salts thereof.

4,129,656
THIAZOLIDINE DERIVATIVES, SALIDIURETIC COMPOSITIONS AND METHODS OF EFFECTING SALIDIURESIS EMPLOYING THEM

Hans-Jochen Lang, Altenhain, Taunus, and Roman Muschaweck, Frankfort am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

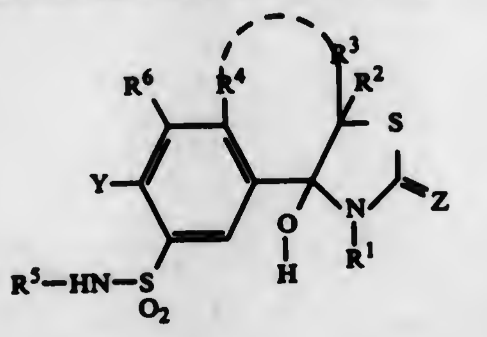
Filed Jan. 18, 1977, Ser. No. 760,411

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1976, 2601791

Int. Cl.² C07D *277/04, 277/60;* A61K *31/425, 31/435*

U.S. Cl. 424—263 14 Claims

1. A compound selected from the group consisting of thiazolidine derivatives of the formula



wherein R¹ is alkyl of from 1 to 4 carbon atoms, alkenyl of from 1 to 4 carbon atoms or pyridylmethyl; each of R² and R³ is hydrogen or alkyl of from 1 to 3 carbon atoms, each of R⁴ and R⁶ is hydrogen or halogen, one of R⁴ and R⁶ being hydrogen, or R³ and R⁴ together may be alkylidene of up to 5 carbon atoms, ethylene, propylene or methylethylene; R⁵ is hydrogen, alkyl of from 1 to 4 carbon atoms, benzyl, or benzyl substituted

in the aromatic nucleus by chlorine or methyl; Y is halogen; and Z is oxygen or sulfur;

and pharmaceutically acceptable acid addition salts thereof.

11. A method of effecting salidiuresis which comprises administering to a patient in need of salidiuretic treatment an amount of a compound as defined in claim 1 sufficient to effect salidiuresis.

12. A salidiuretic composition, in the form of a tablet, dragee, capsule, suppository or ampule, which comprises a compound as defined in claim 1, in an amount sufficient to effect salidiuresis, and a pharmaceutically usual filler or carrier substance.

4,129,657
IMIDAZOLE GUANIDINES AND USE AS INHIBITORS OF HISTAMINE ACTIVITY

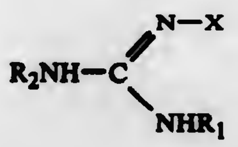
Graham J. Durant, Welwyn Garden City; John C. Emmett, Codicote, and Charon R. Ganellin, Welwyn Garden City, all of England, assignors to Smith, Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 726,356, Sep. 24, 1976, Pat. No. 4,083,988, which is a division of Ser. No. 560,909, Mar. 21, 1975, Pat. No. 4,000,296, which is a division of Ser. No. 384,992, Aug. 2, 1973, abandoned. This application Jan. 16, 1978, Ser. No. 869,418

Int. Cl.² A61K *31/415;* C07D *233/64*

U.S. Cl. 424—273 R 6 Claims

1. A compound of the formula:



wherein R_1 is hydrogen or lower alkyl; R_2 is a grouping of the formula

$$\text{Het} - (CH_2)_mZ(CH_2)_n-$$

wherein Het is imidazole which is attached at a ring carbon and which is optionally substituted by lower alkyl, trifluoromethyl or halogen; Z is sulphur, oxygen, NH or a methylene group; m is 0, 1 or 2 and n is 2 or 3, the sum of m and n being from 2 to 4; X is $N{=}CHR_5$; and R_5 is phenyl or a pharmaceutically acceptable acid addition salt thereof.

6. A method of inhibiting H-2histamine receptors which comprises administering to an animal in need of inhibition of said receptors in an effective amount to inhibit said receptors a compound of claim 1.

4,129,658
4-STYRYL-HEXAHYDRO-4-INDOLINOLS

Richard Berthold, Bottmingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

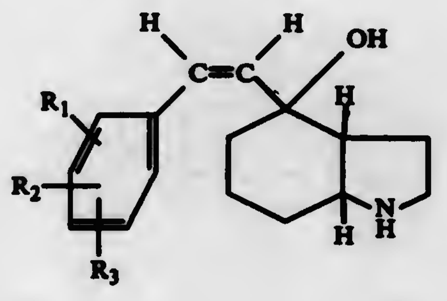
Filed Sep. 19, 1977, Ser. No. 834,103

Claims priority, application Switzerland, Sep. 22, 1976, 12001/76

Int. Cl.² A61K *31/415;* C07D *209/04, 405/06*

U.S. Cl. 424—274 36 Claims

1. A compound of formula I,



I

wherein

R_1 and R_2 are, independently, hydrogen, fluorine, chlorine, trifluoromethyl, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms, and

R_3 is hydrogen, or alkoxy of 1 to 4 carbon atoms, with the proviso that when R_3 is alkoxy then at least one of R_1 and R_2 is alkoxy, or

R_1 and R_2 are bound to adjacent ring carbon atoms and are together $—(CH_2)_m—$, wherein *m* is 3 or 4, $—CH{=}CH—CH{=}CH—$, or $—O—CH_2—X—$, wherein X is $—O—$ or $—CH_2—$, and

R_3 is hydrogen, fluorine, chlorine, trifluoromethyl, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms,

or a pharmaceutically acceptable acid addition salt thereof.

27. A pharmaceutical composition useful in treating lipidemia which comprises a compound of claim 1 or a pharmaceutically acceptable acid addition salt thereof in an amount effective in obtaining a hypolipidemic effect, in association with a pharmaceutical carrier or diluent.

32. A method of obtaining a hypolipidemic effect in a mammal in need of such treatment which comprises administering to said mammal a hypolipidemic-effective amount of a compound of claim 1 or a pharmaceutically acceptable acid addition salt thereof.

35. A method of obtaining an anti-arrhythmic effect in a mammal in need of such treatment which comprises administering to said mammal an anti-arrhythmic-effective amount of a compound of claim 1 or a pharmaceutically acceptable acid addition salt thereof.

4,129,659
METHOD FOR IMPROVING CARDIOVASCULAR FUNCTION WITH SALINOMYCIN

Berton C. Pressman, Coral Gables, and Norberto T. deGuzman, Miami Beach, both of Fla., assignors to The University of Miami, Miami, Fla.

Filed Aug. 8, 1977, Ser. No. 823,045

Int. Cl.² A61K *31/35*

U.S. Cl. 424—283 12 Claims

1. The method of increasing the contractility of mammalian heart muscle in a warm blooded mammal which comprises administering an effective non-toxic dose of salinomycin or the pharmaceutically acceptable sodium or potassium salt thereof.

4,129,660
DERIVATIVES OF CIS-EPOXY-1,2-PROPYL-PHOSPHONIC ACID AND DRUGS CONTAINING IN PARTICULAR AS ACTIVE INGREDIENTS DERIVATIVES OF CIS-EPOXY-1,2-PROPYLPHOSPHONIC ACID IN DEXTROROTATORY FORM

Christian J. Warolin, Paris; Pierre Chabrier de Lassauniere, La Chesnaye, and Nguyen T. Thuong, La Cellerie, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Paris, France

Division of Ser. No. 704,629, Jul. 12, 1976. This application May 31, 1977, Ser. No. 801,921

Claims priority, application United Kingdom, Jul. 16, 1975, 29918; Jul. 16, 1975, 29919

Int. Cl.² A61K *31/665*

U.S. Cl. 424—203 4 Claims

1. A method for treating bilharziasis comprising administering to a patient in need of said treatment an effective amount for treating bilharziasis of dextrorotatory cis-epoxy-1,2 propylphosphonic acid or a pharmaceutically acceptable salt thereof.

4,129,661

4,5-DIHYDRO-2-LOWER ALKOXYCARBONYLAMINO-4-PHENYLIMIDAZOLES AND SUBSTITUTED PHENYL DERIVATIVES THEREOF

Adolph P. Roszkowski, Saratoga; Colin C. Beard; Charles Dvorak, both of Palo Alto, and Klaus Weinhardt, Redwood City, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

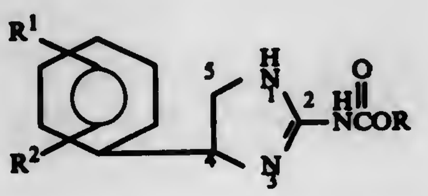
Continuation-in-part of Ser. No. 682,682, May 3, 1976, abandoned, which is a continuation-in-part of Ser. No. 599,551, Jul. 28, 1975, abandoned. This application Oct. 17, 1977, Ser. No. 842,655

The portion of the term of this patent subsequent to May 9, 1995, has been disclaimed.

Int. Cl.² A61K *31/415;* **C07D** *233/48*

U.S. Cl. 424—273 R **77 Claims**

1. A compound having the formula



(I)

wherein R is lower alkyl; R^1 is hydrogen, lower alkyl, hydroxy, lower alkoxy, fluoro, chloro, bromo, iodo or trifluoromethyl and R^2 is hydrogen or is a substituent which is identical to the R^1 substituent and wherein R^1 and R^2 can each be at any different position on the phenyl ring or R^1 and R^2 together form methylenedioxy and are at adjacent carbon atoms on the phenyl ring; and pharmaceutically acceptable salts thereof.

75. A method for treating, palliating or preventing abnormal conditions related to the central nervous system, in a mammal, such as depressive illness, epileptic or convulsant seizure states, anxiety, and disorders involving muscle spasms or spasticity which method comprises administering an effective amount of the compound of claim 1 to said mammal.

4,129,662

RETINOIC ACID DERIVATIVES FOR THE TREATMENT OF ACNE

Robert J. Gander, Whitehouse, and John A. Gurney, East Brunswick, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 628,185, Nov. 3, 1975, Pat. No. 4,055,659. This application Aug. 5, 1977, Ser. No. 822,281

Int. Cl.² A61K *31/215;* **C11C** *3/00*

U.S. Cl. 424—305 **9 Claims**

1. 4-Nitrobenzyl all-trans-retinoate.

6. A method for treatment of acne in a subject requiring such treatment which comprises topical application to the acne site of said subject of a composition comprising an effective acne-treatment amount of 4-nitrobenzyl all-trans-retinoate admixed with a pharmaceutically-acceptable topical vehicle.

4,129,663

POURABLE SALAD DRESSING COMPOSITION

Joel D. Jamison, Wilmington, Del.; Gordon A. Towle, Landenberg, Pa., and J. Gregory Vermeychuk, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Nov. 18, 1977, Ser. No. 852,654

Int. Cl.² A23L *1/24*

U.S. Cl. 426—602 **8 Claims**

1. In a low pH; liquid, pourable salad dressing composition consisting essentially of an oil-in-water emulsion, a stabilizer therefor, and appropriate seasonings to impart to said dressing a distinctive flavor characteristic, the improvement which comprises adding as said stabilizer about 0.3% to 0.8% Xanthan gum and 0.2 to 2% pectin, based on the total weight of said salad dressing and thereby imparting freeze-thaw stability thereto.

4,129,664

PROCESS FOR THE PRODUCTION OF A VEGETABLE-BASED SWEETENED CONDENSED MILK

Jan Krusemen, Tatroz; Pierre Y. Bertschy, Chardonne, and Jaime Hidalgo, La Tour-de-Peilz, all of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., La Tour de Peilz, Switzerland

Continuation of Ser. No. 738,877, Nov. 4, 1976, abandoned. This application Feb. 9, 1978, Ser. No. 876,512

Claims priority, application Switzerland, Nov. 14, 1975, 14787/75

Int. Cl.² A23C *11/00;* **A23L** *1/20*

U.S. Cl. 426—7 **8 Claims**

1. A process for the production of a vegetable-based sweetened condensed milk, which comprises subjecting a vegetable protein in the form of an aqueous solution or suspension to proteolytic enzymatic hydrolysis for a period of from about 4 to 24 hours at a temperature in the range of about 25° to 65° C. at a pH of about 2 to 9, the amount of proteolytic enzyme added to the solution or suspension being in the range of about 0.176 to 2% in weight of the dry matter of the solution or suspension, and preparing a mixture containing approximately 4 to 9 parts by weight of fats, 8 to 18 parts by weight of said enzymatically hydrolyzed protein, 0 to 14 parts by weight of lactose, 40 to 55 parts by weight of sucrose and 25 to 32 parts by weight of water.

4,129,665

PROCESS FOR THE EXTRACTION OF VEGETABLE MATERIALS

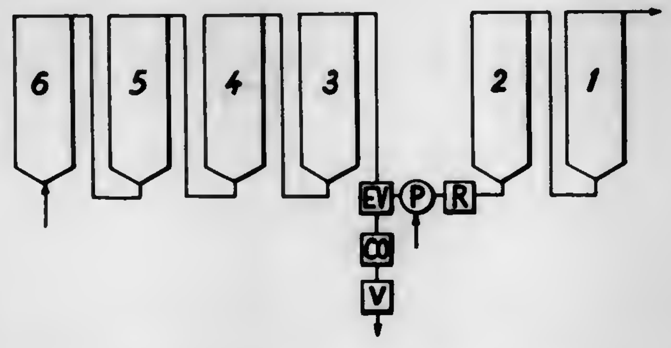
Brian Clark, Yverdon, Switzerland, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., LaTour de Peilz, Switzerland

Filed Apr. 1, 1977, Ser. No. 783,564

Claims priority, application Switzerland, Apr. 9, 1976, 4519/76

Int. Cl.² A23D *1/08*

U.S. Cl. 426—432 **6 Claims**



1. A process for extracting vegetable materials to form a vegetable extract by contacting progressively fresher vegetable materials countercurrently with an extraction liquid which comprises:

(a) passing the extraction liquid through "hot cells" of a group of extraction cells wherein the "hot cells" contain the most exhausted vegetable material;

(b) partially evaporating the resulting extract;

(c) adding additional extraction liquid to the partially evaporated extract in a quantity at least equal to the quantity of liquid evaporated; and then

(d) passing the extract through "cold cells" of the group of extraction cells wherein the "cold cells" contain the least exhausted vegetable material to produce the vegetable extract product.

4,129,666

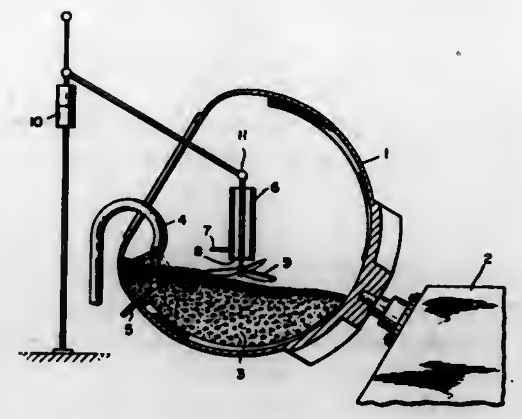
METHOD OF PROVIDING PELLETS WITH A WATER INSOLUBLE COATING USING A MELT

Walter Wizerkaniuk, 4146 Joshua Rd., Lafayette Hill, Pa. 19444

Filed Apr. 29, 1977, Ser. No. 792,461

Int. Cl.² B44C *1/08;* **A61K** *16/28*

U.S. Cl. 427—3 **4 Claims**



1. A process for enterically coating medicinal pellets in a rotating coating pan equipped with a rotatable propeller having a substantially vertically disposed shaft, means for controlling the temperature of the pellets when disposed in the coating pan and a coating composition container equipped with heating element, temperature control and closeable conduit to release molten coating composition from the container onto the shaft which process comprises;

(a) placing the pellets into the rotating pan and adjusting the position of the propeller such that each propeller blade during its revolution will continually contact only the upper level of the pellets,

(b) maintaining the pellets at a temperature of about 2°–3° C. below the melting temperature of the coating composition,

(c) dispersing the coating composition onto the pellets in a uniform manner by releasing molten coating composition from the container through the closeable conduit to flow down the propeller shaft onto and over the rotating propeller blades and onto the pellets,

(d) rotating the pan to obtain a uniform coating on each pellet.

4,129,667

RADIATION CURABLE COATING COMPOSITION COMPRISING AN ACRYL URETHANE OLIGOMER AND AN ULTRA-VIOLET ABSORBER

Donald H. Lorenz, Basking Ridge; Shu-Tung Tu, E. Brunswick, and Donald P. Wyman, Wayne, all of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 29, 1977, Ser. No. 865,663

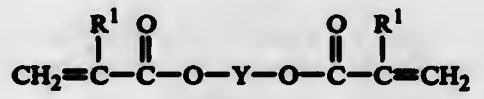
Int. Cl.² B05C *5/00, 17/04*

U.S. Cl. 427—44 **4 Claims**

1. A process for coating a substrate comprising in sequence the steps of:

I. contacting the substrate with a coating composition comprising:

A. an oligomer of Formula I:



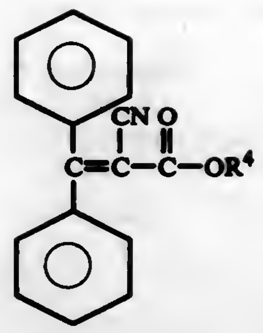
$$CH_2{=}\overset{R^1}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}-O-Y-O-\overset{O}{\overset{\|}{C}}-\overset{R^1}{\overset{|}{C}}{=}CH_2 \qquad (I)$$

wherein:

R^1 is hydrogen or methyl;

Y is a divalent urethane residue;

B. an acrylic ultra-violet light absorber of the Formula IV:



(IV)

wherein R^4 is alkyl or hydroxy alkylene;

C. a photoinitiator to form a coated substrate wherein the amount of B. is 0.5 to 3 weight percent based on the weight of the composition,

II. exposing the coated substrate to actinic radiation until an adherent dry polymerized weather-resistant coating is formed on the substrate.

4,129,668

METHOD OF DRAINING PARTS EMERGING FROM HOT GALVANIZING BATHS

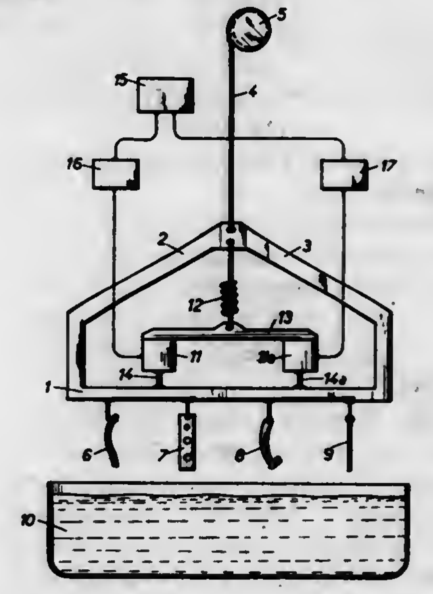
Georges Rouquié, Fontenay Le Fleury, France, assignor to Bertin & Cie, Plaisir, France

Filed Apr. 8, 1977, Ser. No. 785,790

Claims priority, application France, Apr. 12, 1976, 76 10648

Int. Cl.² C23C *1/02*

U.S. Cl. 427—57 **3 Claims**



1. A method of draining a plurality of parts emerging from a hot galvanizing bath while hanging from a support comprising setting said plurality of parts hanging from said support in vibration wherein the vibration is obtained by exciting within a frequency range of narrow-band white noise the said frequency range covering the natural fundamental frequencies of the said parts.

4,129,669

METHOD OF APPLYING DECORATIVE DESIGNS TO SURFACES

Martha Z. Lopez, 224 Holly Ave., South San Francisco, Calif. 94080

Filed Nov. 1, 1976, Ser. No. 737,482

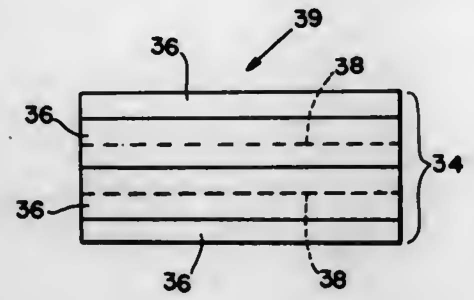
Int. Cl.² B05D *1/32;* **B41N** *1/24*

U.S. Cl. 427—282 **1 Claim**

1. A method of applying decorative designs through a stencil to surfaces, comprising:

placing a first layer of smooth waterproof adhesive tapes having a width less than the desired stencil width adjacent each other longitudinally to obtain a desired stencil width, each of said tapes having a non-adhesive waterproof front surface and an adhesive rear surface, said adhesive being thicker at the outside than in the middle of the rear surface;

placing a second layer of smooth waterproof adhesive tapes adjacent each other on said first layer in overlapping relationship thereto and covering the seams therein to form a laminated sheet, the adhesive rear surface of said second layer contacting the non-adhesive front surface of said first layer;



cutting a decorative design out of said sheet to form a stencil;

applying the stencil to a surface, with the adhesive rear surface of the first layer contacting said surface;

painting the stencil including the decorative design cut out portion; and removing the stencil from the surface leaving the decorative design painted thereon.

4,129,670

REACTION PRODUCTS OF NON-CYCLOALIPHATIC EPOXY RESINS AND AMINE-TERMINATED LIQUID POLYMERS AND PROCESS FOR PREPARATION THEREOF

Changkiu K. Riew, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 595,445, Jul. 14, 1975, Pat. No. 4,055,541, which is a continuation-in-part of Ser. No. 586,723, Jun. 13, 1975, abandoned. This application Aug. 15, 1977, Ser. No. 824,761

Int. Cl.² B05D *1/28, 7/02*

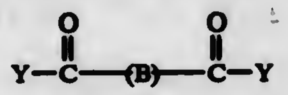
U.S. Cl. 427—386 **12 Claims**

1. A process for forming a facing on a tire comprising

(1) applying to the exterior surface of the tire a thin layer of a liquid coating material, said material comprising:

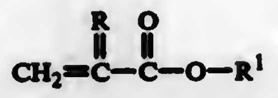
(A) 100 parts by weight of a non-cycloaliphatic epoxy resin containing at least an average of about 1.7 oxirane groups per molecule, said resin having an epoxy equivalent weight from about 70 to about 6000, and

(B) from about 1 to about 1,000 parts by weight of an amine-terminated liquid polymer containing an average from about 1.7 to about 3 amine groups per molecule, said groups being primary, secondary or a mixture thereof, and said polymer having the formula



$$Y-\overset{O}{\overset{\|}{C}}-(B)-\overset{O}{\overset{\|}{C}}-Y$$

wherein Y is a univalent radical obtained by removing hydrogen from an amine group of an aliphatic, alicyclic, heterocyclic or aromatic amine containing from 2 to 20 carbon atoms and at least two amine groups, at least two of said amine groups being primary, secondary or a mixture thereof, and B is a polymeric backbone consisting of carbon-carbon linkages and containing polymerized units of at least one vinylidene monomer having at least one terminal $CH_2=C<$ group, said monomer being selected from the group consisting of (a) monoolefins containing 2 to 14 carbon atoms, (b) dienes containing 4 to 10 carbon atoms, (c) vinyl and allyl esters of carboxylic acids containing 2 to 8 carbon atoms, (d) vinyl and allyl ethers of alkyl radicals containing 1 to 8 carbon atoms, and (e) acrylic acids and acrylates having the formula



$$CH_2=\overset{R}{\overset{\|}{C}}-\overset{O}{\overset{\|}{C}}-O-R^1$$

said R being hydrogen or an alkyl radical containing 1 to 3 carbon atoms and said R^1 being hydrogen, an alkyl radical containing 1 to 18 carbon atoms, or an alkoxyalkyl, alkylthioalkyl or cyanoalkyl radical containing 2 to 12 carbon atoms, and

(2) subjecting the tire surface to conditions sufficient to cure the layer of said coating material and adhere it to the tire.

4,129,671

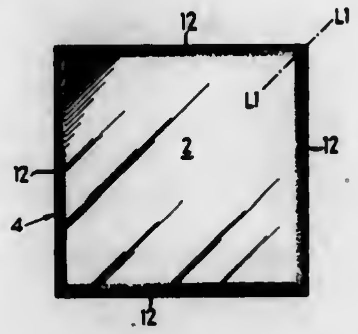
DECORATIVE MIRRORED ARTICLE WITH BEVEL-EFFECT PRODUCING EDGES

Ronald C. Greenberg, Bel Air, Calif., assignor to t.h.e. Original Mirror Company, Chicago, Ill.

Filed May 27, 1977, Ser. No. 801,039

Int. Cl.² B32B *3/02*

U.S. Cl. 428—48 **11 Claims**



1. In a decorative rectangular mirrored article comprising a generally transparent plate of substantially the same thickness throughout including the marginal portions thereof, and have a plurality of straight edges intersecting at various corners of the plate, there being a mirror-forming surface at the rear of the plate, the improvement comprising means forming within a band along each margin of the plate and visible from the front of the plate what appears to be a bevelled edge therealong, said means along said band along each margin of the plate comprising spaced, light interrupting areas behind which said mirror-forming surface extends to reflect light to the front of the plate between said light interrupting areas, said spaced light interrupting areas being so small as not to be readily individually descernible at usual viewing distances, the density of said light interrupting areas and hence the degree to which said light interrupting areas affects light reflection at the ends of said bands varying thereat so that at the confronting ends of each adjacent pair of said bands there is a relatively high density portion of said light interrupting areas of one band opposite a relatively low dense portion of the light interrupting areas of the other band along a line substantially bisecting the angle between the plate edges at the corner of the plate involved, so as to form what appears to be a mitered joint along said line at each corner of the plate.

4,129,672

AUTO CEILING PANEL AND ITS MANUFACTURING PROCESS

Takao Momura; Yoshiro Umemoto, both of Nagoya, and Tatsuo Sakamoto, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 11, 1978, Ser. No. 895,388

Claims priority, application Japan, May 12, 1977, 52-54664

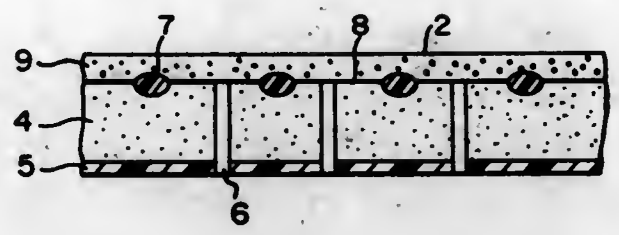
Int. Cl.² B62D *25/06;* **B32B** *3/10, 3/26*

U.S. Cl. 428—138 **33 Claims**

1. Auto ceiling panel comprising:

a metal lath coated with plastics around the meshes;

a foamed plastic layer with numerous through holes which is thermally fused to one side of said metal lath;



and another foamed plastic layer with continuous bubbles which is thermally fused to the other side of said metal lath.

4,129,673

SNOWPLOWING RESISTING ROAD SURFACE MARKING TAPE MATERIAL

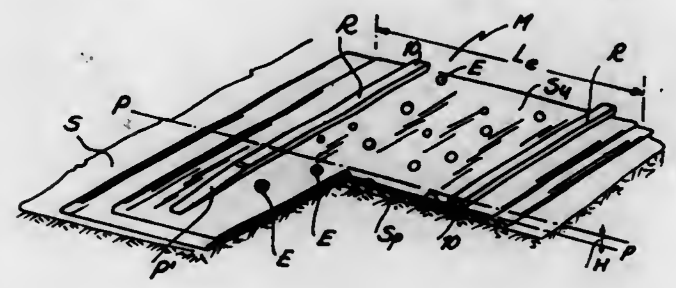
Ludwig Eigenmann, Vacallo, Ticino, Switzerland

Filed Apr. 13, 1977, Ser. No. 787,072

Claims priority, application Italy, Apr. 15, 1976, 22352 A/76; Dec. 24, 1976, 30886 A/76

Int. Cl.² E01F *9/04*

U.S. Cl. 428—172 **11 Claims**



1. A prefabricated pavement marking tape, comprising a unitary structure including an elongated tape portion securable to a pavement and having a substantially planar traffic-wear resistant upper surface; a plurality of retroreflective elements each having a lower section embedded in said tape portion and an upper section projecting above said upper surface of said tape portion to a predetermined height; and at least one uninterrupted rail portion extending lengthwise of the direction of elongation of said tape portion and being free of said retroreflective elements, said rail portion being provided on said upper surface of said tape portion and projecting upwardly therefrom to a height exceeding the predetermined height to which said upper sections of said retroreflective elements project, so as to protect said tape portion and said upper sections of said retroreflective elements against impingement of and damage by a snowplow.

4,129,674

FIBROUS MAT ESPECIALLY SUITABLE FOR ROOFING PRODUCTS AND A METHOD OF MAKING THE MAT

George J. Hannes, Maumee; Theodore R. Rohweder; Hans W. Dreikorn, both of Toledo, all of Ohio, and Philip B. Shepherd, Sedalia, Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Continuation of Ser. No. 650,109, Jan. 19, 1976, abandoned, which is a continuation of Ser. No. 486,123, Jul. 5, 1974, abandoned, which is a division of Ser. No. 301,578, Oct. 27, 1972, abandoned. This application Aug. 9, 1976, Ser. No. 712,632

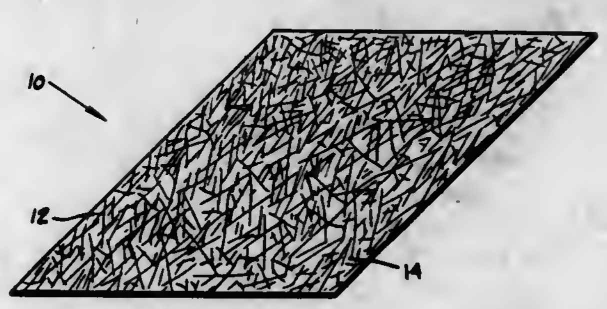
Int. Cl.² B04D *1/00*

U.S. Cl. 428—285 **6 Claims**

1. In a roofing product having as its base a fibrous glass mat coated on both sides with bituminous material, said mat being of the type (1) which is relatively thin, for example approximately 0.035 inch thick, (2) which includes both monofilament glass fibers and glass fiber bundles and a binder substance to cooperate in holding the monofilament fibers and fiber bundles together to form said mat, and (3) which is made by a process of preparing a dilute water slurry including said monofilament fibers and fiber bundles, vacuum filtering said slurry through a moving wire screen to from a web which together with said binder forms said mat, the improvement comprising the utilization of:

(a) a plurality of individual monofilament glass fibers between approximately 22 mm and 35 mm in length and between approximately 12 microns and 19 microns in diameter, said fibers comprising between approximately 70% and 95% of the total fibrous material in said web,

(b) a plurality of glass fiber bundles having ends, each of said bundles consisting essentially of a plurality of monofilaments held together in said bundle by a water insoluble binder substance, said glass fiber bundles being between approximately 65 mm and 75 mm in length, and comprising between approximately 5% and 30% of the total fibrous material in said web; and



(c) a relatively small amount of binder substance to cooperate in holding said web of monofilament fibers and fiber bundles together to form said mat;

(d) said mat consisting essentially of said monofilament fibers, said fiber bundles and said binder and said monofilament fibers and fiber bundles cooperating with one another in a random fashion to from said web such that

(i) said monofilament fibers and fiber bundles are substantially randomly oriented and uniformly dispersed throughout said web and,

(ii) a majority of the ends of said bundles are within the confines of said web.

4,129,675

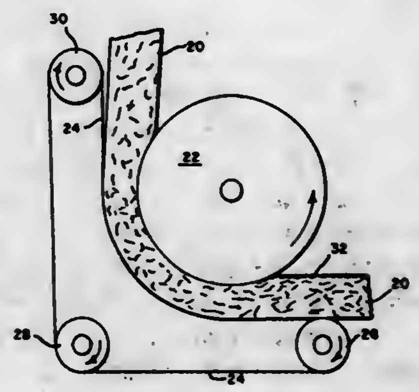
PRODUCT COMPRISING BLEND OF HOLLOW POLYESTER FIBER AND CRIMPED POLYESTER BINDER FIBER

Paul T. Scott, Kinston, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 14, 1977, Ser. No. 860,601

Int. Cl.² D04H *1/58*

U.S. Cl. 428—288 **4 Claims**



1. A fiberfill blend for making into a batt for heat bonding of said batt to make the fiberfill especially suitable for garments, said blend consisting essentially of from 55 to 97% by weight of crimped hollow polyester fiber having a void content of from 8 to 30% by volume and, complementally to total 100%,

3 to 45% by weight of crimped binder fibers of a lower melting polyester than said hollow polyester fiber, said blend possessing properties for providing batts having, as compared to batts provided from a blend which is the same except that the same weight of solid polyester fiber has been substituted for the hollow polyester fiber in the blend: (a) higher filling power but at least as low bulk under load when heat bonded by convection or radiation heating, and (b) higher filling power and a surface formable into a higher cover, less porous bonded skin by contact heating of said surface accompanied by compressing said batt during said heating no more than 50% of the original thickness of said batt.

4,129,676

PRIMER COMPOSITION, PROCESS FOR USING SAME AND PRODUCT OBTAINED THEREBY

Richard J. Guglielmo, Sr., Lambs La., Cresskill, N.J. 07626
Division of Ser. No. 643,699, Dec. 23, 1975, Pat. No. 4,046,587.
This application Apr. 28, 1977, Ser. No. 791,784
Int. Cl.^{2} B05D *1/36;* **B32D** *5/18;* **C09J** *5/02, 5/00*
U.S. Cl. 428—315 **7 Claims**

1. A process for treating a polyolefinic-containing foam material to effect adhesion of polyvinyl film thereto which comprises:

forming a primer composition by admixing a chlorinated hydrocarbon and a resin material selected from the group consisting of a chlorinated paraffin wax, an acrylic type ester polymer and a vinyl copolymer, and mixtures thereof, said resin material constituting of from 2 to 10 percent by weight of said primer composition;

coating said polyolefinic-obtaining foam material with said primer composition; and

thereafter over-laying said primer coated polyolefinic-containing foam with said polyvinyl film.

4,129,677

MELT SPUN SIDE-BY-SIDE BICONSTITUENT CONDUCTIVE FIBER

Norman W. Boe, Gulf Breeze, Fla., assignor to Monsanto Company, St. Louis, Mo.
Filed May 31, 1977, Ser. No. 802,141
Int. Cl.^{2} D02G *3/00*
U.S. Cl. 428—372 **7 Claims**

1. A side-by-side biconstituent melt spun fiber having a conductive constituent and a nonconductive constituent, wherein said conductive constituent consists essentially of normally nonconductive polymer containing uniformly dispersed therein an electrically conductive material in particulate form in an amount sufficient to provide said fiber with an electrical resistance of less than about 1×10^{10} ohms per centimeter at a direct current potential of 0.1 volt when measured at 20% relative humidity and 21° C. and said nonconductive constituent consists essentially of normally nonconductive polymer, the cross-section of said fiber being characterized in that the conductive constituent extends along a portion (L) of the periphery of the fiber and inwardly therefrom a distance (D) whereby the ratio of L to D is in the range of 4:1 to 100:1, wherein the interface formed by said nonconductive constituent/conductive constituent is convex/concave and the cross-sectional area of said conductive constituent comprises less than about 20% of the cross-sectional area of said fiber.

4,129,678

SELF-BONDABLE INSULATED WIRES COMPRISING THREE COATINGS INCLUDING A PHENOXY RESIN OUTER LAYER

Masatoshi Seki, Kodaira; Moriichi Sato, Hitachi; Hideo Tsukioka, Mito; Etuo Ohe, Hitachi; Masatsugu Ogata, Hitachi, and Akio Mitsuoka, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Cable, Ltd., both of, Japan
Filed May 26, 1977, Ser. No. 800,788
Claims priority, application Japan, Jun. 2, 1976, 51-63624
Int. Cl.^{2} B32B *15/02, 15/08;* **H01B** *3/36*
U.S. Cl. 428—383 **10 Claims**

1. A self-bondable insulated wire comprising a conductor and three resin insulating layers, wherein the first resin insulating layer, the layer adjacent said conductor, is formed with a resin selected from the group consisting of polyimide resins, polyamideimide resins and polyesterimide resins, the intermediate resin insulating layer is formed with a resin selected from the group consisting of polyvinyl formal resins and epoxy resins, and the outermost resin insulating layer is formed with a self-bondable resin of phenoxy series.

4,129,679

MULTI-LIMBED REGENERATED CELLULOSE FILAMENTS

Calvin R. Woodings, Nuneaton, England, assignor to Courtaulds Limited, London, England
Continuation of Ser. No. 280,113, Aug. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 92,799, Nov. 25, 1970, abandoned. This application Oct. 2, 1974, Ser. No. 511,434
Claims priority, application United Kingdom, Nov. 27, 1969, 58002/69
Int. Cl.^{2} D02G *3/00*
U.S. Cl. 428—398 **2 Claims**

1. A bundle of highly absorbent, regenerated cellulose filaments, substantially all of the filaments of said bundle having a collapsed hollow structure, and at least 60 percent of said filaments comprising in cross-section at least three elongated limbs extending from a common origin, the water imbibition of said bundle being from 170 to 345 percent.

4,129,680

CHROME DENTAL ALLOY

Raymond F. Vines, Chatham, N.J., assignor to Sterndent Corporation, Mount Vernon, N.Y.
Filed Feb. 6, 1974, Ser. No. 440,059
Int. Cl.^{2} B32B *7/06;* **E05D** *15/00, 15/26;* **A61C** *5/12*
U.S. Cl. 428—433 **5 Claims**

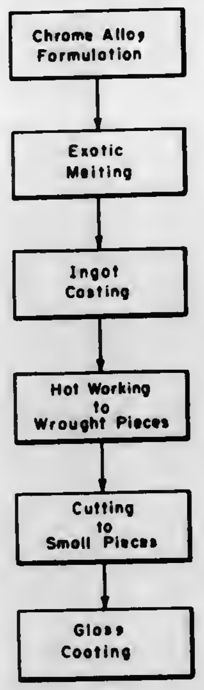
1. A shaped hot-worked chromium-containing alloy piece of pre-determined size comprising at least about 20 percent by weight chromium and suitable for casting dental appliances and being essentially free of deleterious amounts of carbon, nitrogen and oxygen, said shaped hot-worked chromium-containing alloy piece of predetermined size being formed by:

(a) fusing the chromium-containing alloy to form a melt in a heating means which substantially excludes the presence of carbon, oxygen and nitrogen from said melt;

(b) pouring the melt obtained in step (a) into a mold to form an ingot;

(c) hot-working the ingot obtained in step (b) to obtain an intermediate shaped piece; and

(d) dividing the intermediate shaped piece obtained in step (c) into said shaped hot-worked chromium containing alloy pieces of pre-determined size,



said hot-worked chromium-containing alloy piece of predetermined size being further characterized by being coated with glass derived from a water-soluble glass-forming compound, said coating step being conducted to minimize contamination with carbon, oxygen or nitrogen or other tramp elements during melting in dental laboratories preparatory to casting the alloy into dental appliances.

4,129,681

COATING COMPOSITIONS COMPRISING ALKOXYMETHYLAMINOTRIAZINES, POLYOLS AND POLYHYDROXY OLIGOMERS

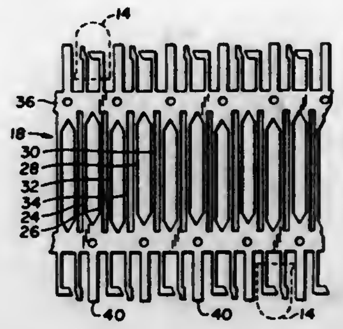
George J. Anderson, East Longmeadow; Timothy F. Desmond, Longmeadow, and J. Owen Santer, East Longmeadow, all of Mass., assignors to Monsanto Company, St. Louis, Mo.
Filed Oct. 20, 1976, Ser. No. 733,976
Int. Cl.^{2} C08L *61/28, 33/08*
U.S. Cl. 428—524 **17 Claims**

1. A coating composition comprising a blend of 1,4-dimethylolcyclohexane, a polyhydroxy oligomer of molecular weight in the range of about 200 to about 1000 selected from the group consisting of polyesters, polyacrylates and polymethacrylates, and a substantially completely methylolated polyaminotriazine substantially fully etherified with at least one C_1 to C_4 alcohol and from about 0.1 to about 10 weight percent of a soluble acid catalyst of pKa less than about 5, wherein the ratio of the hydroxyl groups of the 1,4-dimethylolcyclohexane to the hydroxyl groups of the oligomer is in the range of about 2:1 to about 1:4 and wherein the ratio of the hydroxyl groups of the 1,4-dimethylolcyclohexane and the oligomer to the alkoxymethyl groups of the polyaminotriazine is in the range of about 2:1 to about 1:2.

4,129,682

HIGH DENSITY LED LEAD FRAME

Walter P. Stewart, Palo Alto, and Lawrence F. Punte, San Jose, both of Calif., assignors to Monsanto Company, St. Louis, Mo.
Filed Nov. 16, 1977, Ser. No. 852,171
Int. Cl.^{2} H01K *1/40;* **H01L** *23/12, 31/02*
U.S. Cl. 428—571 **13 Claims**



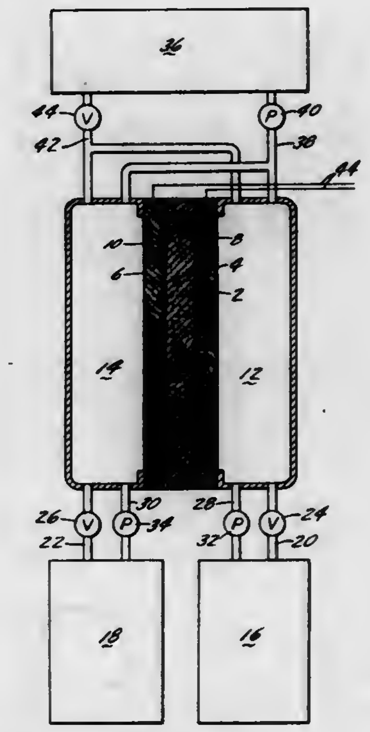
1. A high density separable lead frame for light-emitting diodes comprising

a unitary one piece elongated metal strip having a substantially uniform thickness, said strip including first and second segments separable into two unitary strips, each of said strips having a plurality of lead pairs.

4,129,683

ANHYDROUS H_2/Cl_2 REGENERATIVE FUEL CELL

Donald L. Maricle, Glastonbury, Conn., assignor to United Technologies Corp., Hartford, Conn.
Filed Dec. 23, 1977, Ser. No. 863,817
Int. Cl.^{2} H01M *8/18*
U.S. Cl. 429—21 **8 Claims**



1. A regenerative fuel cell including:

a matrix;

an electrode on each side of the matrix;

container means external to the cell for separately containing hydrogen and chlorine;

means connecting the container means to the cell for supplying the hydrogen and chlorine from the container means to the electrodes on the sides opposite the matrix;

an anhydrous electrolyte in the matrix dissolves the reacting gas in the cell; and

a tank external to the cell to receive hydrogen chloride gas evolved within the cell during discharge of the cell.

4,129,684
FLOAT TYPE METAL-AIR BATTERY

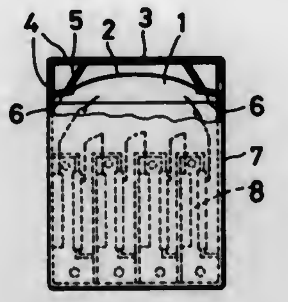
Yuichi Watakabe, Yokohama, Japan, assignor to Furukawa Denchi Kabushiki Kaisha, Yokohama, Japan

Filed Feb. 9, 1978, Ser. No. 876,451

Claims priority, application Japan, Feb. 15, 1977, 52-1707152

Int. Cl.² H01M *8/20*

U.S. Cl. 429—27 **5 Claims**



1. In a float type metal-air battery having an air pervious water repellent membrane defining a roof for an air chamber above the battery cells, the improvement comprising the combination of a lid enclosing said membrane, said lid having at least one opening, and an internal shelter plate interposed between said opening and said membrane, whereby at least a substantial portion of said membrane is protected from water incoming from outside through the opening.

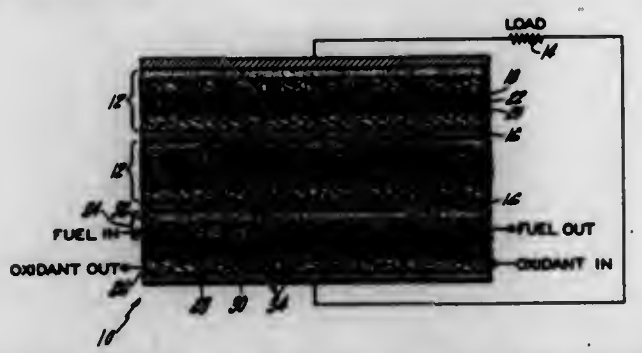
4,129,685
FUEL CELL STRUCTURE

Paul J. Damiano, Manchester, Conn., assignor to United Technologies Corp., Hartford, Conn.

Filed Aug. 15, 1977, Ser. No. 824,766

Int. Cl.² H01M *4/96, 4/86*

U.S. Cl. 429—38 **14 Claims**



1. In a cell stack comprising a plurality of electrochemical cells, each cell comprising an anode catalyst layer spaced apart from a cathode catalyst layer, the space therebetween adapted to have electrolyte disposed therein, the improvement comprising:

a pair of gas distribution layers each having first and second opposing surfaces, said first surfaces facing each other; and

a continuous layer of gas impermeable material disposed between and in substantially continuous contact with both of said first surfaces, said second surface of one of said pair of gas distribution layers being in substantially continuous contact with the cathode catalyst layer of one of said fuel cells, and said second surface of said other gas distribution layer being in substantially continuous contact with the anode catalyst layer of the next adjacent cell, wherein said gas distribution layers are gas porous, the gas distribution layers being sufficiently thick and including enough pores sufficiently large to permit a substantially free flow of a reactant gas therethrough both perpendicular to and parallel to the planes of their surfaces, each of said gas distribution layers also including a thin fine pore layer defining said second surface and a thicker larger pore layer behind said fine pore layer, said fine pores sized to permit a catalyst layer to be applied thereto without a substantial amount of catalyst entering said pores, at least one of said pair of gas distribution layers including means defining an electrolyte reservoir region in communication with the electrolyte space between said catalyst layers.

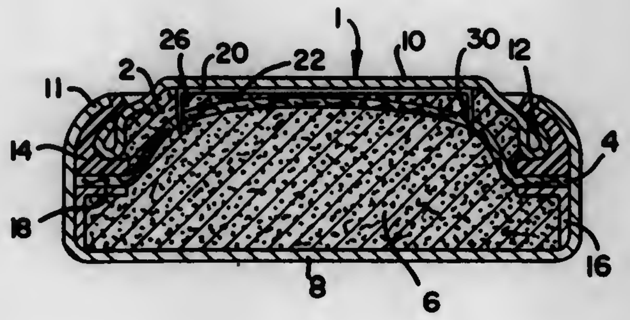
4,129,686
PRONGED ANODE COLLECTOR FOR INTERNALLY SHORTING GALVANIC CELLS

Mitchell J. Kaduboski, North Olmsted, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 16, 1977, Ser. No. 851,961

Int. Cl.² H01M *2/34*

U.S. Cl. 429—61 **18 Claims**



1. A galvanic cell having a consumable negative electrode (anode), a positive electrode (cathode) that expands during cell discharge or as the result of abusive discharge, a separator between said negative electrode and said positive electrode, and an electrolyte housed within a two-part conductive container, the first part of the conductive container being electronically connected to the negative electrode, the second part of the container being electronically connected to the positive electrode and wherein said first part and said second part of the container are electronically insulated from each other; the improvement wherein a conductive member is disposed between the negative electrode and the first part of the container, said conductive member being electronically connected to the first part of the container and having at least one segment embedded within the negative electrode such that upon partial electrochemical consumption of the negative electrode and expansion of the positive electrode to a predetermined amount during discharge of the cell, the protruded segment of the conductive member will be disposed to contact the positive electrode so as to internally short the cell.

4,129,687
REACTION CATALYST FOR THE ELIMINATION OF OXYHYDROGEN GAS IN LEAD-ACID STORAGE BATTERIES

Norbert Lahme, Hoppecke, and Günter Sassmannshausen, Brilon, both of Germany, assignors to Accumulatorenwerk Hoppecke, Cologne, Germany

Division of Ser. No. 341,577, Mar. 15, 1973, Pat. No. 3,940,348. This application Jun. 24, 1975, Ser. No. 589,874

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1972, 2213219

Int. Cl.² H01M *10/52*

U.S. Cl. 429—86 **9 Claims**

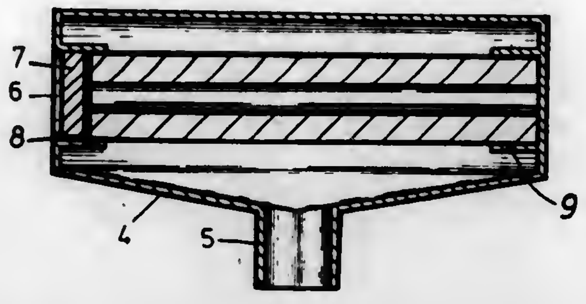
1. A device for the catalytic recombination of the oxyhydrogen gas produced by an electrical storage battery into water in a controlled exothermic reaction, comprising in combination:

a gas-tight catalyst housing;

means extending from the housing for establishing communication between the inside of the catalyst housing and the inside space of the storage battery above its electrolyte; and

catalyst means positioned inside the catalyst housing for catalyzing said recombination of the oxyhydrogen gas,

consisting essentially of a unitary solid catalyst carrier body having a generally cylindrical shape and carried on the surface of said carrier body an active catalytic material for said recombination reaction.



4,129,688
BATTERY COMPARTMENT IN PORTABLE APPARATUS

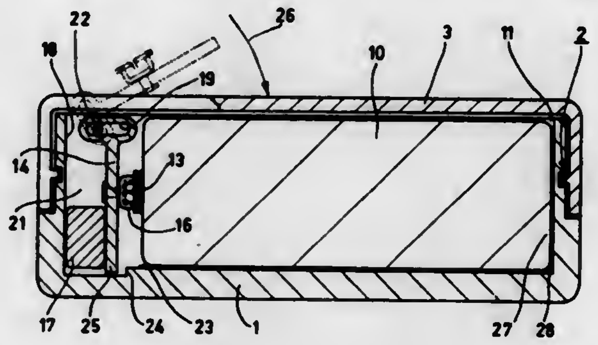
Karl Fischer, and Walter Matetschlager, both of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 13, 1978, Ser. No. 877,381

Claims priority, application Austria, Feb. 18, 1977, 1124/77

Int. Cl.² H01M *2/20*

U.S. Cl. 429—97 **6 Claims**



1. A portable electronic apparatus having a battery compartment for accommodating a battery having contacts for making electrical connection, and a contact carrier having a complementary contact for electrical connection to one of said battery contacts, said battery compartment having a side wall, and further comprising:

means for mounting said carrier for pivotal motion out of the battery compartment, and for translation in a direction perpendicular to said side wall, and

means for resiliently biasing said carrier in a direction opposite said direction.

4,129,689
ELECTRO-CHEMICAL CELLS

Kenneth Hesson, Ramsbottom, England, assignor to Unigate Limited, London, England

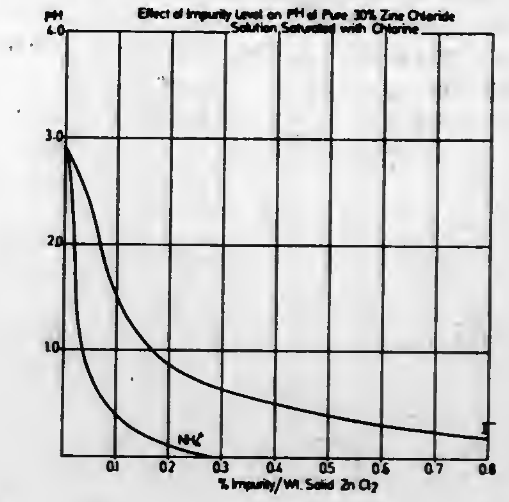
Continuation-in-part of Ser. No. 500,785, Aug. 26, 1974, abandoned. This application Aug. 10, 1976, Ser. No. 713,153

Claims priority, application France, Aug. 23, 1974, 74 28931

Int. Cl.² H01M *10/00, 4/96*

U.S. Cl. 429—101 **6 Claims**

1. A zinc chloride rechargeable cell comprising a container, at least one cathode element therein comprising a substate of a metal or mixture of metals selected from Groups IVA and VA of the Periodic Table according to Mendeleef having had applied thereto a layer of porous carbon with sufficient pressure to break the oxide film present on said metal or mixture of metals and to form permanent electrical contact between said carbon and said metal or mixture, wherein said layer of porous carbon occludes chlorine gas to form said cathode element and said substrate acts as a current collector, at least one zinc bearing electrode within said container and a substantially nitrogen free zinc chloride electrolyte in said casing having a pH value of not less than 1.0.



4,129,690
SODIUM SULPHUR CELLS

Ivor W. Jones; Graham Robinson, and Thomas L. Bird, all of Chester, England, assignors to The Electricity Council, London, England

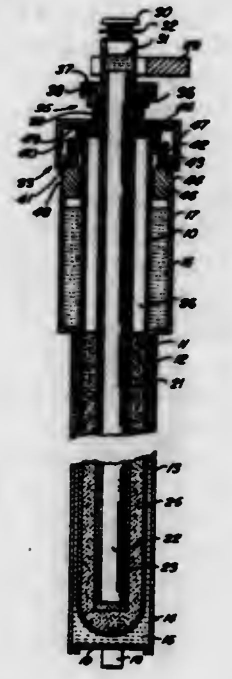
Continuation-in-part of Ser. No. 721,907, Sep. 9, 1976, Pat. No. 4,061,840, which is a continuation-in-part of Ser. No. 550,872, Feb. 14, 1975, Pat. No. 3,982,957. This application Oct. 13, 1977, Ser. No. 842,013

Claims priority, application United Kingdom, Feb. 15, 1974, 4884/75

The portion of the term of this patent subsequent to Sep. 28, 1993, has been disclaimed.

Int. Cl.² H01M *10/39*

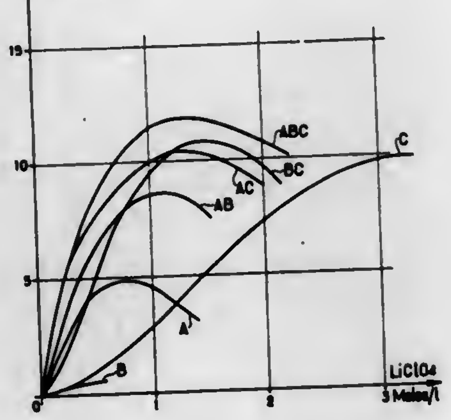
U.S. Cl. 429—104 **4 Claims**



1. In a sodium sulphur cell having a current collector in contact with the cathodic reactant, the improvement wherein said current collector is formed of a tube of electrically conductive impermeable material chemically and electrochemically inert to the cathodic reactant, a conductive core within said tube and extending along the length thereof, said core being of a solid material having an electrical conductivity greater than that of the tube, and a deformable electronically conductive material extending between the core and the internal surface of the tube to constitute an electrically conductive interface between the core and the inner face of the tube.

4,129,691
ORGANIC SOLVENT ELECTROLYTES FOR HIGH SPECIFIC ENERGY PRIMARY CELLS

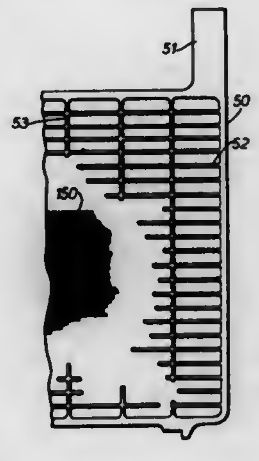
Michel Broussely, Poitiers, France, assignor to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France
Filed Jan. 13, 1978, Ser. No. 869,253
Claims priority, application France, Jan. 19, 1977, 77 01434
Int. Cl.² H01M *6/14*
U.S. Cl. 429—197 **6 Claims**



1. An electrolyte for lithium primary cells, comprising a mixture of three aprotic solvents which are compatible with lithium and a solute which is an alkaline salt, the first solvent being chosen from a first group of esters having a dielectric constant equal to or greater than 35, the first group consisting of propylene carbonate (PC) and ethylene carbonate (EC), the second solvent being chosen from a second group of linear polyethers in which the ether functional groups are in the γ position, the second group consisting of 1–2 dimethoxyethane (1—2 DME), dimethylether of diethylene glycol (DMEDG), and dimethylether of triethylene glycol (DMETG), and the third solvent having a high solvation power for dissolving large quantities of an alkaline salt and consisting of 1–3 dioxolane (DO), the solvents of the three groups being such that the conductivity maxima of electrolytes obtained by mixing the solvents in pairs are higher than the conductivity maxima of electrolytes obtained from each of the corresponding solvents alone.

4,129,692
ELECTRIC STORAGE BATTERIES

Walter J. King, Pinner; James C. Snook, Altrincham, and Kenneth Peters, Manchester, all of England, assignors to Chloride Group Limited, London, England
Filed Mar. 2, 1977, Ser. No. 773,694
Claims priority, application United Kingdom, Mar. 11, 1976, 9876/76; Apr. 15, 1976, 15665/76
Int. Cl.² H01M *4/72*
U.S. Cl. 429—234 **13 Claims**



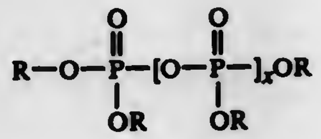
1. An electrode structure for an electrochemical cell comprising a porous fibrous support made of thermoplastic organic polymeric fiber material selected from the group consisting of polyolefins and polyesters, which is 0.1 to 3 mm. thick, having cast thereon and bonded thereto a pattern of solid conductors extending over the surface of the porous support from a current take off region to regions spaced therefrom, and containing electrochemically active material deposited on the fibrous support, in contact with the conductors, in an amount of at least 0.1 grams/sq. cm/mm thickness in such a manner that electrical energy produced by the electrochemical reaction can be conducted out of the electrode.

4,129,693
URETHANE-MODIFIED ISOCYANURATE FOAMS HAVING ENHANCED PHYSICAL PROPERTIES

Moses Cenker, Trenton, and Peter T. Kan, Plymouth, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.
Filed Dec. 20, 1976, Ser. No. 752,273
Int. Cl.² C08G *18/48;* C08K *3/32*
U.S. Cl. 521—106 **11 Claims**

1. In a foam characterized by urethane, isocyanurate and carbodiimide linkages prepared in the presence of
- a. a halohydrocarbon blowing agent, and
- b. a catalytically sufficient amount of a catalyst system comprising compounds which promote the urethane, isocyanurate and carbodiimide reactions

by condensing an organic polyisocyanate with an ethylene oxide adduct of a polyhydric alcohol having an equivalent weight of from 100 to 500 and an ethylene oxide content of from 50 percent to 90 percent by weight employing an NCO-/OH ratio of from 3:1 to 100:1, the improvement which comprises conducting the condensation reaction in the presence of from 5 percent to 50 percent by weight based on the weight of the organic polyisocyanate of an inorganic ammonium phosphate having the formula:



$$R-O-\underset{OR}{\underset{|}{\overset{O}{\overset{\|}{P}}}}-[O-\underset{OR}{\underset{|}{\overset{O}{\overset{\|}{P}}}}-]_xOR$$

wherein
- R is H or NH_4 providing that at least one R is NH_4, and
- x is from 0 to 100.

4,129,694
FABRIC SOFTENER URETHANE FOAM AND METHOD

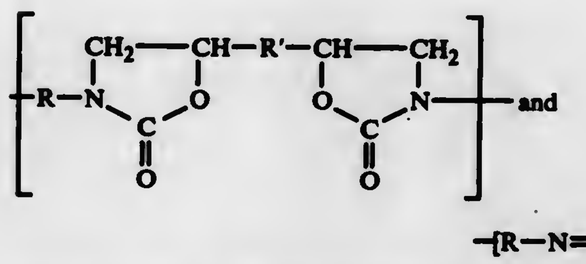
Joseph A. Cogliano, Baltimore, and Clifton L. Kehr, Silver Spring, both of Md., assignors to W. R. Grace & Co., New York, N.Y.
Filed Apr. 7, 1976, Ser. No. 674,695
Int. Cl.² C08G *18/14, 18/10, 18/32, 18/38*
U.S. Cl. 521—107 **9 Claims**

1. In a cross-linked hydrophilic polyurethane foam system having three-dimensional network which consists essentially of the reaction product of a first component comprising isocyanate capped hydrophilic polyoxyethylene polyol resin prepolymer with an isocyanate functionality equal to 2 and crosslinking agent having a reaction functionality greater than two, said crosslinking agent selected from the group consisting of polyol, polyamine, polythiol or polyisocyanate; or said isocyanate capped polyol with an isocyanate functionality greater than 2; and a second component comprising water, wherein the H_2O Index Value of said isocyanate capped polyol and water is about 1,300 to about 78,000, wherein the polyoxyethylene polyol moiety has a weight average molecular weight of about 200 to about 20,000, and a hydroxyl functionality of about 2 to about 8, the improvement which consists essentially of inclusion of a fabric softener during foaming reaction, at least 200% of said fabric softener being present in the foam,

4,129,695
PROCESS FOR PREPARING FOAMS FROM POLYISOCYANATES AND POLYEPOXIDES

Yves Bonin, Brignais, France, assignor to Rhone-Poulenc Industries, Paris, France
Continuation of Ser. No. 633,613, Nov. 20, 1975, abandoned. This application Mar. 16, 1977, Ser. No. 778,258
Claims priority, application France, Nov. 20, 1974, 74 38109
Int. Cl.² C08G *18/14, 18/18, 18/22, 18/16*
U.S. Cl. 521—108 **18 Claims**

1. A cellular polymer comprised of recurring dioxazolidone units of the formula (I) and recurring carbodiimide units of the formula (II):


(I)

$$-[R-N=C=N]- \quad \text{(II)}$$

wherein R and R′ may be the same or different and each represents a hydrocarbon selected from the group consisting of aliphatic, cycloaliphatic and aromatic groups and linear or branched chains thereof, wherein the ratio between the number of recurring dioxazolidone units of formula (I) and the number of recurring carbodiimide units of formula (II) is from about 0.5:0.05 to about 0.5:9.5, and characterized by carbodiimide bands at 2,140 cm^{-1} and carbonyl-oxazolidone bands at 1,715 cm^{-1} upon infra-red spectro photographic analysis.

4,129,696
PROCESS FOR THE PRODUCTION OF INORGANIC-ORGANIC PLASTIC COMPOSITES

Peter Markusch, Cologne; Dieter Dieterich, and Manfred Dietrich, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Mar. 5, 1976, Ser. No. 664,126
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1975, 2512170
Int. Cl.² C08G *18/14*
U.S. Cl. 521—154 **19 Claims**

1. A process for the production of hard inorganic-organic plastics consisting of a polymer-polysilica gel composite material in the form of a solid/solid xerosol, said process comprising reacting
- (A) an aqueous alkali metal silicate solution with
- (B) a polyisocyanate, said polyisocyanate being a liquid polyisocyanate, free from hydrophilic groups with a viscosity at 25° C. of at least about 500 cP and having an average functionality of greater than 2, and being selected from the group consisting of
  - (i) phosgenation products of condensates of aniline or anilines alkylsubstituted on the nucleus, with aldehydes or ketones;
  - (ii) solutions of distillation residues accumulating during the production of tolylene diisocyanate, diphenyl methane diisocyanate, or hexamethylene diisocyanate, in monomeric polyisocyanates or in organic solvents;
  - (iii) mixtures of said distillation residues; and
  - (iv) modified polyisocyanates containing carbodiimide groups, allophanate groups, isocyanurate groups, urea groups, imide groups, amide groups or biuret groups, said modified polyisocyanates prepared by modifying organic polyisocyanates thermally or catalytically by air, water, urethanes, alcohols, amides, amines, carboxylic acids, or carboxylic acid anhydrides;

said reaction being conducted in the absence of inorganic water-binding fillers, and further being characterized in that the weight ratio of said polyisocyanate to said aqueous alkali metal silicate is from 90:10 to 10:90.

7. The process of claim 1, wherein the reaction is accompanied by foam formation.

4,129,697
PROCESS FOR THE PRODUCTION OF THERMOFORMABLE POLYISOCYANURATE FOAMS

Dietmar Schäpel, Cologne, and Ulrich von Gizycki, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Feb. 4, 1977, Ser. No. 765,490
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1976, 2607380
Int. Cl.² C08G *18/14, 18/76, 18/65*
U.S. Cl. 521—176 **5 Claims**

1. In a process for the production of thermoformable polyisocyanurate foams by reaction of compounds which have hydroxyl groups with an excess of polyisocyanates in the presence of isocyanate trimerization catalysts, and blowing agents, the improvement which comprises reacting a polymethylene polyphenyl polyisocyanate which contains at least 80% by weight of diisocyanatodiphenylmethane and a mixture of
- (a) polyethers containing at least one hydroxyl group and having an OH number of from 28 to 112, in which at least 20% by weight of the alkylene oxide component consists of ethylene oxide groups, and
- (b) dihydric alcohols which have a molecular weight of from 62 to 200,

said polyethers being used in a quantity corresponding to from 0.015 to 0.04 equivalents of OH per equivalent NCO and the dihydric alcohols being used in a quantity corresponding to from 0.2 to 0.4 equivalents of OH per equivalent of NCO.

4,129,698
POLYMERS MODIFIED BY SULFOSUCCINAE ESTERS

Anthony J. Park, South Croydon, and Alan C. Sturt, Guildford, both of England, assignors to BP Chemicals International Limited, London, England
Continuation of Ser. No. 615,573, Sep. 22, 1977, abandoned, which is a continuation of Ser. No. 384,715, Aug. 1, 1973, abandoned. This application Jun. 24, 1977, Ser. No. 809,668
Claims priority, application United Kingdom, Aug. 16, 1972, 38199/72; Aug. 16, 1972, 38200/72
Int. Cl.² C08F *6/14, 2/26*
U.S. Cl. 526—3 **9 Claims**

1. A process for the production of a vinyl chloride paste forming polymer having reduced paste viscosity at high and low shear which comprises preparing a paste forming vinyl chloride polymer latex by microsuspension polymerization using an emulsifier other than a sulfosuccinate during said polymerization, adding a sulfosuccinate emulsifier to said paste forming vinyl chloride latex after polymerization is substantially complete and then subsequently isolating as particles the paste forming polymer in the presence of said emulsifier.

4,129,699
PROCESS FOR THE HYDROHALOGENATION OF BUTA-DIENE-CONTAINING POLYMERS

Harold E. Adams, Cuyahoga Falls; Stephen P. Boutsicaris, Akron, and Adel F. Halasa, Bath, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Aug. 25, 1977, Ser. No. 827,506
Int. Cl.² C08F *8/18*
U.S. Cl. 526—42 **10 Claims**

1. A process for the hydrohalogenation of butadiene-containing polymer comprising the steps of:
- dissolving the butadiene-containing polymer in a suitable organic solvent containing a catalytic amount of a quaternary ammonium salt having the formula $(R_4N)X$ wherein R is selected from the group consisting of alkyl groups having from 1 to about 20 carbon atoms, aryl groups having from 6 to about 12 carbon atoms and mixtures

thereof, and X is selected from the group consisting of fluorine, chlorine, bromine and iodine;

adding an aqueous hydrogen halide having the formula HX wherein X is selected from the group consisting of fluorine, chlorine, bromine and iodine;

mixing the reactants for a period of time of at least about 48 hours at a temperature of about 50° to 150° C.; and,

thereafter terminating the reaction and extracting the hydrohalogenated product.

4,129,700
PEROXY COMPOUNDS AND VULCANIZABLE COMPOSITIONS THEREOF

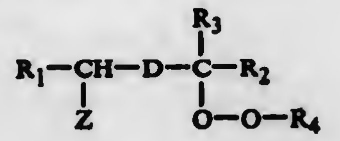
Orville L. Mageli, Kenmore, N.Y., and William A. Swarts, Dover, N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jul. 17, 1975, Ser. No. 596,778

Int. Cl.² C08F *8/30*

U.S. Cl. 260—823 **8 Claims**

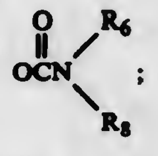
1. A peroxy compound of the formula:



$$R_1-\underset{\displaystyle Z}{\underset{|}{CH}}-D-\overset{\displaystyle R_3}{\overset{|}{\underset{\displaystyle O-O-R_4}{\underset{|}{C}}}}-R_2$$

where:

(a) R_1 is hydrogen or an alkyl of 1–4 carbons;
(b) R_2 and R_3 are an alkyl of 1–4 carbons;
(c) R_4 is t-alkyl of 4–8 carbons;
(d) Z is



;

(e) R_6 and R_8 are independently H, alkyl of 1–8 carbons;
(f) D is ethynyl diradical diethynyl diradical or alkyl diradical having 1–8 carbons.

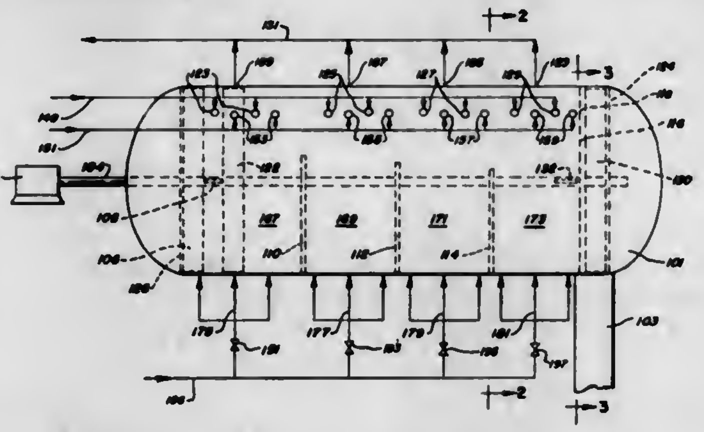
4,129,701
HORIZONTAL REACTOR FOR THE VAPOR PHASE POLYMERIZATION OF MONOMERS

James L. Jezl, St. Charles, and Edwin F. Peters, Winfield, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 533,020, Dec. 16, 1974, abandoned. This application Dec. 19, 1975, Ser. No. 642,583

Int. Cl.² C08F *10/00, 12/08, 14/06, 36/06*

U.S. Cl. 526—65 **12 Claims**



1. A continuous process for the vapor phase polymerization of at least one polymerizable monomer in a stirred, horizontal, reactor containing a subfluidized particulate polymer bed wherein at least a portion of the heat of polymerization is removed by evaporative cooling using an inert readily volatilizable liquid, said reactor being divided into two or more individually polymerization-temperature-controllable polymerization sections by one or more barriers so constructed to allow free gas mixing within said reactor and to control movement of said particulate between said sections.

4,129,702
POLYMERIZING UNSATURATED HALIDES WITH CARBAMATE TYPE METALLIC CATALYST

Philip D. Roberts; Geoffrey L. P. Randall; David G. Simon, and Jeffrey Booth, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

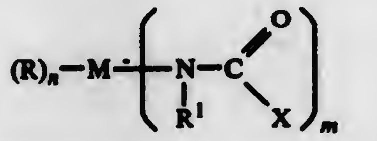
Filed Jul. 18, 1974, Ser. No. 489,716

Claims priority, application United Kingdom, Aug. 19, 1973, 34468/73

Int. Cl.² C08F *2/34, 4/64*

U.S. Cl. 526—71 **25 Claims**

1. A process for the polymerisation of a monomer selected from the group consisting of vinyl halides and vinylidene halides which comprises contacting the monomer in gaseous form with a catalyst composition consisting essentially of a mixture of, as first component, a compound of a transition metal selected from Groups IVA to VIA of the Periodic Table of the Elements and, as second component, the product obtained by ageing a compound having the structure



wherein M is aluminium or zinc, at least one of the groups R is a hydrocarbon group, n and m each is an integer not greater than one less than the valency of M, R^1 is hydrogen or a hydrocarbon group, and X is hydrogen or a monovalent organic group, and removing the resulting organic monoisocyanate as it is liberated, said catalyst composition having an atomic ratio of aluminium or zinc to transition metal in the range of 1:1 to 10:1 and a concentration in the monomer in the range of about 0.0025 to about 0.1 mole percent of transition metal.

4,129,703
FREE-RADICAL POLYMERIZATIONS USING MIXED INITIATOR SYSTEMS AT TWO THERMALLY DISTINCT POLYMERIZATION STAGES

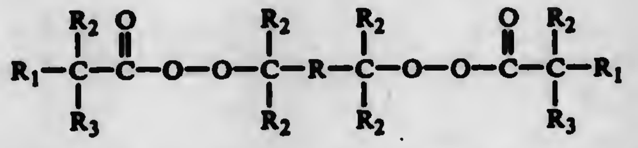
Vasanth R. Kamath, Tonawanda, and Gary A. Harpell, Kenmore, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 6, 1977, Ser. No. 757,186

Int. Cl.² C08F *4/38, 2/18, 2/02, 12/08*

U.S. Cl. 526—73 **11 Claims**

1. A process for the free-radical polymerization of vinyl monomers, including vinyl aromatic monomers, comprises polymerizing said vinyl monomers in at least two thermally distinct polymerization stages, each between the temperatures of about 70° C. and 150° C. in the presence of at least two free-radical initiators, one of which initiators is particularly effective at the lowest temperature stage and has the formula



$$R_1-\overset{\displaystyle R_2}{\overset{|}{\underset{\displaystyle R_3}{\underset{|}{C}}}}-\overset{\displaystyle O}{\overset{\|}{C}}-O-O-\overset{\displaystyle R_2}{\overset{|}{\underset{\displaystyle R_2}{\underset{|}{C}}}}-R-\overset{\displaystyle R_2}{\overset{|}{\underset{\displaystyle R_2}{\underset{|}{C}}}}-O-O-\overset{\displaystyle O}{\overset{\|}{C}}-\overset{\displaystyle R_2}{\overset{|}{\underset{\displaystyle R_3}{\underset{|}{C}}}}-R_1 \qquad (I)$$

and where R is an alkylene, alkynylene or alkenylene diradical, R_1 is alkyl, alkenyl, alkynl or alkoxy and R_2 is lower alkyl and R_3 is hydrogen or lower alkyl and a second of which initiators have a 10 hour half-life temperature of at least about 80° C., said temperature being at least about 15° C. above the 10 hour half-life temperature of the compound of Formula (I) wherein the same solvent is used for measuring the half-life of all initiators, wherein the initiator of Formula (I) allows completing the polymerization in a shorter time with the resulting polymer having a higher viscosity-average molecular weight than without the initiator of Formula (I).

4,129,704
POLYMERIZATION OF VINYL MONOMERS EMPLOYING A DIPEROXYESTER MIXTURE COMPOSITION PREPARED BY REACTING DIHYDROPEROXIDE AND PEROXYESTER FORMING CARBONYL COMPOUNDS

Jose Sanchez, Grand Island, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

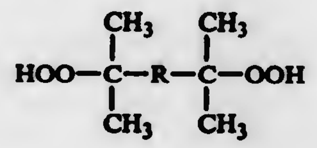
Division of Ser. No. 757,179, Jan. 6, 1977, Pat. No. 4,097,408. This application Jan. 25, 1978, Ser. No. 872,391

Int. Cl.² C08F *4/36, 4/38, 112/08;* B01J *31/02*

U.S. Cl. 526—73 **3 Claims**

1. In a polymerization process of vinyl monomer the improvement comprising polymerizing a vinyl monomer using in an initiating amount as catalyst a diperoxyester mixture composition prepared by:

reacting 100 mole percent of a dihydroperoxide having the structure:

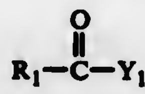


$$HOO-\overset{\displaystyle CH_3}{\overset{|}{\underset{\displaystyle CH_3}{\underset{|}{C}}}}-R-\overset{\displaystyle CH_3}{\overset{|}{\underset{\displaystyle CH_3}{\underset{|}{C}}}}-OOH$$

wherein

R is selected from the group consisting of an alkylene diradical of 2 to 4 carbons, an alkynylene diradical of 2 carbons, an alkadiynylene diradical of 4 carbons, 1,3 phenylene diradical and 1,4 phenylene diradical,

in the presence of 190 to 300 mole percent of a base with 180 to 220 total mole percent of at least two peroxyester forming carbonyl compounds selected from the group consisting of:

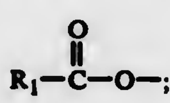


$$R_1-\overset{\displaystyle O}{\overset{\|}{C}}-Y_1$$

a)

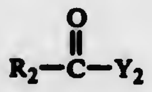
wherein

i. R_1 is selected from a primary alkyl, alkyloxy, aryl, aryloxy, primary alkenyl, alkenyloxy, or cycloalkoxy, and
ii. Y_1 is selected from chloride, bromide or



$$R_1-\overset{\displaystyle O}{\overset{\|}{C}}-O-;$$

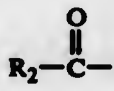
b)



$$R_2-\overset{\displaystyle O}{\overset{\|}{C}}-Y_2$$

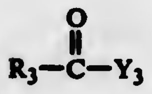
wherein

i. R_2 is selected from a primary aralkyl, cycloalkyl, cycloalkenyl or secondary alkyl, and
ii. Y_2 is selected from chloride, bromide or



$$R_2-\overset{\displaystyle O}{\overset{\|}{C}}-O$$

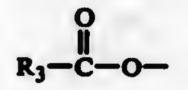
c)



$$R_3-\overset{\displaystyle O}{\overset{\|}{C}}-Y_3$$

wherein

i. R_3 is selected from a tertiary alkyl, secondary and tertiary aralkyl, or tertiary cycloalkyl, 1-alkoxy-1-alkyl, 1-aryloxy-1-alkyl, α-alkoxy-tertiary alkyl or α-aryloxy-tertiary alkyl, and
ii. Y_3 is selected from chloride, bromide or



$$R_3-\overset{\displaystyle O}{\overset{\|}{C}}-O-$$

4,129,705
POLYMERIZATION PROCESS

Yves de Zarauz, Le Cendre, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Jan. 13, 1977, Ser. No. 758,941

Claims priority, application France, Feb. 2, 1975, 75 04115

Int. Cl.² C08F *4/52*

U.S. Cl. 526—175 **8 Claims**

1. A process of homopolymerizing conjugated dienes or copolymerizing conjugated dienes with other conjugated dienes or with vinyl aromatic compounds to form elastomeric products which consists essentially of reacting the monomers in the presence of a catalytic composition consisting essentially of (a) an organo-lithium initiator and (b) a tercatalyst system comprising (b_1) a compound of barium or strontium or calcium, (b_2) an organometallic compound of aluminum or zinc and (b_3) an alkali metal alcoholate ether or amine.

4,129,706
MANUFACTURE OF STYRENE SUSPENSION POLYMERS

Hans G. Keppler, Weinheim; Erhard Stahnecker, Heidelberg, and Rolf Moeller, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

Filed Aug. 17, 1977, Ser. No. 825,277

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1976, 2638839

Int. Cl.² C08F *12/08*

U.S. Cl. 526—201 **8 Claims**

1. A process for the manufacture of homopolymers of styrene or copolymers of styrene containing at least 50% by weight of styrene by polymerizing the monomers in aqueous suspension in the presence of suspension stabilizers, in which the suspension stabilizer used is from 0.05 to 1 percent by weight, based on the suspension, of a calcium phosphate which, after its manufacture by precipitation, has been heated, in aqueous dispersion, for at least 2 hours at from 70° to 130° C.

4,129,707
BEAD SIZE DISTRIBUTION IN THE SUSPENSION POLYMERIZATION OF VINYL AROMATIC MONOMERS EMPLOYING AMINOALKANESULFONIC ACIDS

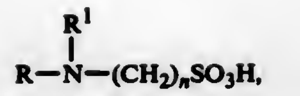
Harold A. Wright, Murrysville, Pa., assignor to ARCO Polymers, Inc., Philadelphia, Pa.

Filed Dec. 27, 1977, Ser. No. 864,187

Int. Cl.² C08F *2/18, 12/02, 112/02, 112/08*

U.S. Cl. 526—204 **8 Claims**

1. In a process for producing polymer beads by suspending a vinyl aromatic monomer containing a monomer-soluble, free-radical producing catalyst in an aqueous medium with the aid of from 0.10 to 2.0 percent by weight based on monomer of a finely divided, difficultly water-soluble phosphate suspending agent and a bisulfite or persulfate modifier and subjecting the suspension to an elevated temperature to cause said monomer to polymerize, the improvement for producing a narrow distribution of bead diameter sizes which comprises adding to said suspension at least 0.02 percent by weight based on monomer of an adjunct modifier comprising a compound of general formula



$$R-\underset{}{\overset{\displaystyle R^1}{\overset{|}{N}}}-(CH_2)_nSO_3H,$$

where n is 2 or 3, R and R^1 may be the same or different and R and R^1 may be hydrogen, 2-hydroxyethyl, 2-acetamido, tris (hydroxymethyl) methyl, cyclohexyl, or R and R^1 together may form ring structures such as morpholino, piperazino, and N'-(2-hydroxyethyl) piperazino.

4,129,708

POLYACRYLATE ELASTOMER COMPOSITIONS

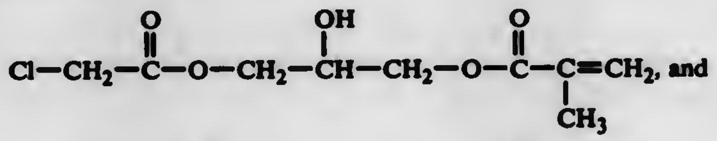
Guido Mino, Murray Hill, and Rudolf A. Behrens, Gladstone, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 788,172, Apr. 18, 1977, which is a continuation of Ser. No. 683,610, May 5, 1976, abandoned, which is a continuation of Ser. No. 615,873, Sep. 22, 1975, abandoned, which is a continuation of Ser. No. 452,318, Mar. 18, 1974, abandoned, which is a continuation of Ser. No. 287,305, Sep. 8, 1972, abandoned, which is a continuation-in-part of Ser. No. 119,963, Mar. 1, 1971, abandoned. This application Oct. 7, 1977, Ser. No. 840,194

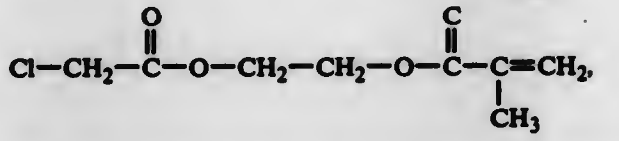
Int. Cl.² C08F *4/04, 4/32, 4/40*

U.S. Cl. 526—218 **18 Claims**

1. A vulcanizable polyacrylate elastomer composition having improved resistance to hydrocarbon oils which comprises one or more lower alkyl acrylic acid ester monomers copolymerized with a monomer selected from the group consisting of β-chloroethyl vinyl ether, vinyl chloroacetate, β-chloroethyl acrylate, allyl glycidyl ether, glycidyl methacrylate and compounds having the formulae



$$Cl-CH_2-\overset{O}{\overset{\|}{C}}-O-CH_2-\overset{OH}{\overset{|}{C}H}-CH_2-O-\overset{O}{\overset{\|}{C}}-\underset{CH_3}{\underset{|}{C}}=CH_2, \text{ and}$$



$$Cl-CH_2-\overset{O}{\overset{\|}{C}}-O-CH_2-CH_2-O-\overset{C}{\overset{\|}{C}}-\underset{CH_3}{\underset{|}{C}}=CH_2,$$

in the presence of from about 0.25 to 10 percent, by weight, of total monomer, of a liquid unsaturated, hydroxyl or aromatic hydrocarbon terminated homopolymer of butadiene or isoprene, or copolymers thereof with minor amounts of styrene or acrylonitrile, having a monomeric weight of from about 500 to 4,000 and containing from about 75% to 99% unsaturation, based on the monomeric butadiene or isoprene in the polymer.

4,129,709

COATING COMPOSITION COMPRISING N-VINYL-2-PYRROLIDONE AND AN OLIGOMER

Donald H. Lorenz, Basking Ridge, and Shu-Tung Tu, East Brunswick, both of N.J., assignors to GAF Corporation, New York, N.Y.

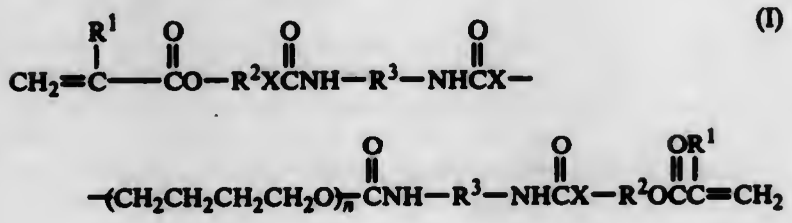
Filed Mar. 14, 1977, Ser. No. 777,031

Int. Cl.² C08F *120/02*

U.S. Cl. 526—264 **8 Claims**

1. A coating composition comprising;

A. an oligomer of Formula I:



(I)

$$CH_2=\overset{R^1}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}O-R^2X\overset{O}{\overset{\|}{C}}NH-R^3-NH\overset{O}{\overset{\|}{C}}X-$$
$$-(CH_2CH_2CH_2CH_2O)_{\overline{n}}\overset{O}{\overset{\|}{C}}NH-R^3-NH\overset{O}{\overset{\|}{C}}X-R^2O\overset{O}{\overset{\|}{C}}\overset{R^1}{\overset{|}{C}}=CH_2$$

wherein:

R^1 is hydrogen or methyl;

R^2 is lower alkylene;

R^3 is saturated aliphatic or cycloaliphatic;

X is —O— or —NH—;

n is an integer from 2 to 50 inclusive;

B. N-vinyl-2-pyrrolidone;

C. an acrylic acid ester having a boiling point of at least 200° C. at 760 mm Hg,

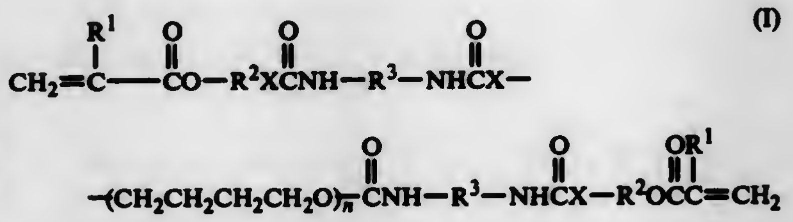
wherein the weight ratio A:B is from 1:9 to 9:1; and

wherein the weight ratio A:C is from 1:9 to 9:1.

7. A process for coating a substrate comprising in sequence the steps of:

I. contacting the substrate with a coating composition comprising:

A. an oligomer of Formula I:



(I)

$$CH_2=\overset{R^1}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}O-R^2X\overset{O}{\overset{\|}{C}}NH-R^3-NH\overset{O}{\overset{\|}{C}}X-$$
$$-(CH_2CH_2CH_2CH_2O)_{\overline{n}}\overset{O}{\overset{\|}{C}}NH-R^3-NH\overset{O}{\overset{\|}{C}}X-R^2O\overset{O}{\overset{\|}{C}}\overset{R^1}{\overset{|}{C}}=CH_2$$

wherein:

R^1 is hydrogen or methyl;

R^2 is lower alkylene;

R^3 is aliphatic or cycloaliphatic;

X is —O— or —NH;

n is an integer from 2 to 50 inclusive;

B. N-vinyl-2-pyrrolidone;

C. an acrylic acid ester having a boiling point of at least 200° C. at 760 mm Hg. and a photo-initiator to form a coated substrate,

II. exposing the coated substrate to radiation until an adherent dry polymerized coating is formed on the substrate.

4,129,710

FIRE RETARDANT COPOLYMER OF TRIALLYL PHOSPHATE AND A BIS (HYDROCARBYL) VINYLPHOSPHONATE

Jung I. Jin, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 496,233, Aug. 9, 1974, abandoned. This application Dec. 6, 1976, Ser. No. 748,071

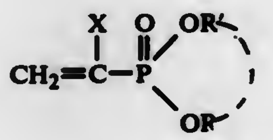
Int. Cl.² C08F *36/20, 36/22, 236/20*

U.S. Cl. 526—278 **8 Claims**

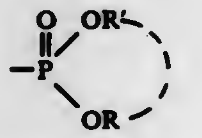
1. A flame retardant copolymer formed by free radical initiated polymerization techniques of monomers consisting of:

(1) an allyl group containing compound of the formula $(CH_2{=}CHCH_2O)_2P(O)A$, where A is OR, with R being selected from the group consisting of vinyl, allyl, C_1–C_{10} allyl and aryl; and

(2) at least one bis(hydrocarbyl)vinylphosphonate having the structure:



wherein X is selected from the group consisting of hydrogen, halogen, cyano, aryl, C_1–C_{18} alkyl and



where R and R' are hydrocarbyl and substituted hydrocarbyl groups which can be the same, different or conjoint.

4,129,711

POLYMERS COMPRISING VINYL ESTERS-CROTONIC ACID

Andre Viout, and Regine Pasero, both of Paris, France, assignors to L'Oreal, Paris, France

Division of Ser. No. 309,502, Nov. 24, 1972, Pat. No. 3,925,542, which is a continuation-in-part of Ser. No. 747,470, Jul. 25, 1968, Pat. No. 3,716,633, which is a continuation-in-part of Ser. No. 655,770, Jul. 28, 1967, Pat. No. 3,579,629, which is a continuation-in-part of Ser. No. 530,395, Feb. 28, 1966, abandoned. This application Aug. 1, 1975, Ser. No. 601,017

Claims priority, application France, Mar. 3, 1965, 65.7787; Jan. 27, 1966, 66.47441; Aug. 3, 1966, 66.71998; Luxembourg, Jul. 28, 1967, 54202

Int. Cl.² C08F *4/34, 20/04, 220/04, 28/04*

U.S. Cl. 526—286 **9 Claims**

1. A copolymer consisting essentially of

(1) 63–88% by weight vinyl acetate,

(2) 5–15% by weight crotonic acid and

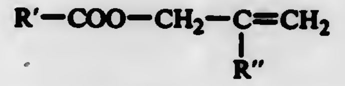
(3) 5–25% by weight of a monomer selected from the group consisting of

(i) vinylic ester of the formula

$$R-COO-CH=CH_2$$

wherein R is a linear or branched chain hydrocarbon containing from 10 to 22 carbon atoms, and

(ii) allylic or methallylic ester of the formula



$$R'-COO-CH_2-\underset{R''}{\underset{|}{C}}=CH_2$$

wherein R' is a linear or branched chain hydrocarbon containing 10 to 22 carbon atoms and R" is selected from the group consisting of hydrogen and methyl, wherein all of the monomers are copolymerized in the presence of a free radical catalyst, said copolymer having a molecular weight ranging between 10,000 and 300,000.

4,129,712

INTERPOLYMERS, METHOD OF PREPARING THE SAME AND EMULSIONS THEREOF, AND METAL CANS COATED WITH THE INTERPOLYMERS

Sergio E. Balatan, Westland, Mich., assignor to M&T Chemicals Inc., Stamford, Conn.

Division of Ser. No. 715,063, Aug. 17, 1976, abandoned. This application Jul. 18, 1977, Ser. No. 816,669

Int. Cl.² C08L *33/02*

U.S. Cl. 526—304 **1 Claim**

1. Copolymers having glass transition temperature of about −6° C. to about +30° C., containing by weight:

15 to 60% of aromatic vinyl monomer

25 to 50% of a long chain acrylate ester monomer

3 to 30% of an hydroxyalkyl ester of an unsaturated carboxylic acid monomer

3 to 30% of alkoxyalkyl (meth) acrylamide

0 to 12% of unsaturated carboxylic acid monomer, said acid producing an insoluble polymer in water, and an amount of surfactant to produce a stable emulsion.

4,129,713

LIQUID VINYLIDENE TERMINATED POLYMERS

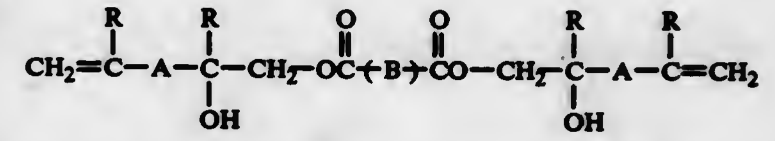
Douglas E. Skillicorn, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 585,962, Jun. 11, 1975, Pat. No. 4,013,710, which is a division of Ser. No. 292,926, Sep. 28, 1972, Pat. No. 3,910,992. This application Nov. 3, 1976, Ser. No. 738,195

Int. Cl.² C08F *220/18, 8/14*

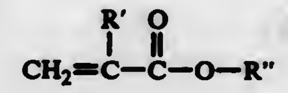
U.S. Cl. 526—320 **5 Claims**

1. A liquid vinylidene-terminated polymer having a molecular weight of from about 1000 to about 20,000 as measured using a Mechrolab Vapor Pressure Osmometer of the structure



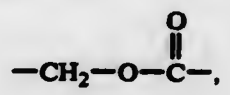
$$CH_2=\overset{R}{\overset{|}{C}}-A-\underset{OH}{\underset{|}{\overset{R}{\overset{|}{C}}}}-CH_2-O\overset{O}{\overset{\|}{C}}\!\leftarrow\!B\!\rightarrow\!\overset{O}{\overset{\|}{C}}O-CH_2-\underset{OH}{\underset{|}{\overset{R}{\overset{|}{C}}}}-A-\overset{R}{\overset{|}{C}}=CH_2$$

wherein B is a polymeric backbone of carbon-carbon linkages derived from interpolymerized units of one or more acrylates of the formula



$$CH_2=\overset{R'}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}-O-R''$$

wherein R' is —H, —CH_3, or —C_2H_5, and R" is selected from the group consisting of an alkyl radical containing 1 to 18 carbon atoms, an alkoxyalkyl radical, an alkylthioalkyl, and a cyanoalkyl radical each containing 2 to about 12 carbon atoms; A is a bivalent radical selected from the group consisting of



$$-CH_2-O-\overset{O}{\overset{\|}{C}}-,$$

—CH_2—O—CH_2—, and —CH_2—O—; and R is hydrogen or an alkyl radical containing 1 to 4 carbon atoms.

4,129,714

ETHYLENE COPOLYMERS AND TERPOLYMERS CONTAINING VINYL ESTERS OF TERTIARY ACIDS

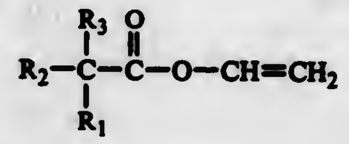
Samuel E. Colburn, Atwood; Duane K. Bryant, Charleston, both of Ill.; Gerald M. Platz, West Chester, Ohio, and Clarence J. Vetter, Jr., Atwood, Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 350,255, Apr. 11, 1973, abandoned, which is a continuation of Ser. No. 123,003, Mar. 10, 1971, abandoned, which is a continuation-in-part of Ser. No. 861,165, Sep. 25, 1969, abandoned. This application Jul. 15, 1976, Ser. No. 705,509

Int. Cl.² C08F *210/02, 218/10*

U.S. Cl. 526—331 **8 Claims**

1. A normally solid interpolymer consisting essentially of from 30 to 98 weight percent of ethylene, from 0.1 to 70 weight percent of a tertiary carboxylic acid vinyl ester monomer mixture having the formula



$$R_2-\underset{R_1}{\underset{|}{\overset{R_3}{\overset{|}{C}}}}-\overset{O}{\overset{\|}{C}}-O-CH=CH_2$$

wherein R_1, R_2 and R_3 are alkyl groups, and the total number of carbon atoms in said R_1, R_2 and R_3 is from 6 to 20, and from 1 to 50 weight percent of vinyl acetate.

4,129,715

POLYESTER AMIDES SUITABLE FOR INJECTION MOLDING

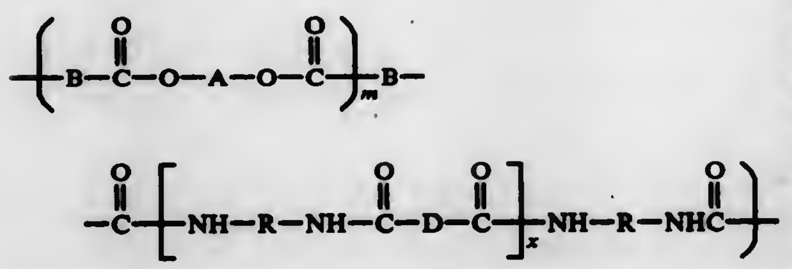
Augustin T. Chen, Cheshire; William J. Farrissey, Jr., Northford, and Robert G. Nelb, II, North Haven, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 803,027, Jun. 3, 1977, abandoned. This application Jan. 16, 1978, Ser. No. 869,705

Int. Cl.² C08G *18/12;* B29F *1/08;* C08G *18/34*

U.S. Cl. 528—67 **14 Claims**

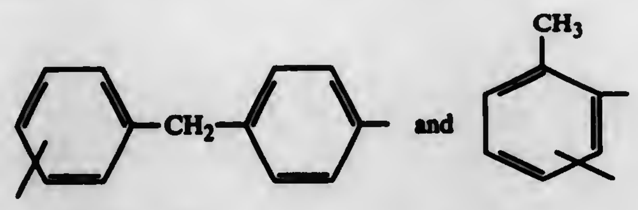
1. A substantially linear, segmented thermoplastic polyesteramide characterized by a recurring unit of the formula:



$$-\!\left(B-\overset{O}{\overset{\|}{C}}-O-A-O-\overset{O}{\overset{\|}{C}}\right)_{m}\!\!-B-$$

$$-\overset{O}{\overset{\|}{C}}\left[NH-R-NH-\overset{O}{\overset{\|}{C}}-D-\overset{O}{\overset{\|}{C}}\right]_{x}NH-R-NH\overset{O}{\overset{\|}{C}}\Big)$$

wherein R is selected from the class consisting of arylene of the formulae



and mixtures thereof, A is the residue of a polymeric diol HO—A—OH having a molecular weight from about 400 to about 4000, B is the residue of a dicarboxylic acid HOOC—B—COOH selected from the class consisting of aliphatic dicarboxylic acids having from 6 to 14 carbon atoms, inclusive, isophthalic and terephthalic acids, m has a mean value of less than 1 and greater than 0, D is the residue of a dicarboxylic acid HOOC—D—COOH such that the melt temperature of the hard segment is not greater than 280° C., and x is a number having an average value from zero to 10.

4,129,716

UREA-ALDEHYDE RESINS

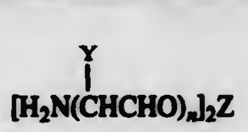
Heinz Schulze, Austin, Tex., assignor to Texaco Development Corporation, New York, N.Y.

Continuation of Ser. No. 717,062, Aug. 24, 1976, abandoned. This application Jun. 6, 1977, Ser. No. 804,130

Int. Cl.² C08G *12/12, 14/02*

U.S. Cl. 528—68 **10 Claims**

1. In a method for preparing a urea-formaldehyde condensate with the improvement which comprises contacting the aldehyde with a polyether polyureide formed by the reaction of a ureido group forming compound with a compound selected from a polyoxyalkylenepolyamine of the formula



$$[H_2N(\overset{Y}{\overset{|}{C}}HCHO)_n]_2Z$$

wherein Y is a hydrogen, a methyl radical or an ethyl radical; Z is a hydrocarbon radical having from 2 to 5 carbon atoms and n is a number from 1 to about 20.

4,129,717

LUBRICANTS USED IN THE PROCESSING OF PLASTICS

Heinz Praetorius; Karl Seibert, both of Duren, and Werner Holtvoigt, Lonne-Riessel, all of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Dec. 14, 1977, Ser. No. 860,509

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2656932

Int. Cl.² C08L *59/00*

U.S. Cl. 528—421 **4 Claims**

1. A lubricant for use in processing thermoplastic polymers, comprising a random polyalkylene copolymer made from ethylene oxide or propylene oxide, or a mixture thereof, and a monomer selected from the group consisting of aliphatic, non-substituted, 1,2-alkylene oxides containing from about 6 to about 40 carbon atoms, and mixtures thereof, the ethylene oxide or propylene oxide, or mixture thereof, being present in an amount from about 40 to about 60 percent, by weight, based on the total weight of the copolymer and the copolymer having an average molecular weight from about 1,000 to about 10,000.

4,129,718

PROCESS FOR THE REMOVAL OF CATALYST FROM POLYETHER POLYOL

John A. Muzzio, Taylor, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 1, 1977, Ser. No. 856,453

Int. Cl.² C07C *3/00;* C07H *1/06;* C07C *41/12*

U.S. Cl. 536—4 **5 Claims**

1. In the process for purifying crude polyoxyalkylene ether polyols containing residual catalyst impurities, said polyols having a molecular weight range of 700 to about 26,000, the improvement which comprises:

(a) adding an adsorbent consisting of synthetic magnesium silicate and water forming a mixture with said crude polyol wherein the amount of adsorbent is from about 0.5 to 3.0 weight percent based on the weight of the polyol and the amount of water is from about 2.0 to 3.0 weight percent based on the weight of the polyol,

(b) heating said mixture at a temperature range from about 80° Centigrade to about 130° Centigrade for at least 45 minutes,

(c) adding sufficient carbon dioxide to saturate the water 15 minutes prior to filtration, and

(d) separating the polyol and the water from the adsorbent by filtration at a temperature from about 90° C. to about 120° C. wherein the residual catalyst impurities are retained on the adsorbent.

4,129,719

5,6-EPINEAMINE AND PROCESS FOR PREPARING THE SAME

Tetsuo Suami, No. 5-8, Naka-machi 3-chome, Musashino-shi, Tokyo, Japan

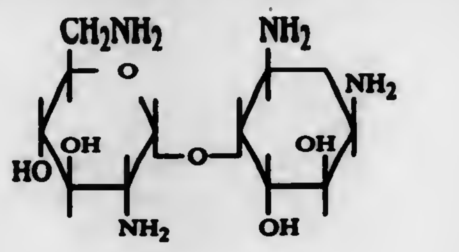
Filed May 20, 1977, Ser. No. 799,011

Claims priority, application Japan, May 28, 1976, 51-61246

Int. Cl.² C07H *3/10*

U.S. Cl. 536—17 **2 Claims**

1. 5,6-Epineamine represented by the formula (I)



(I)

4,129,720

AMINOEVERNINOMICIN AND DERIVATIVES THEREOF

Ashit K. Ganguly, Upper Montclair; Viyyoor M. Girijavallabhan, East Orange; Olga Sarre, Verona, and Hans Reimann, Wayne, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 768,124, Feb. 14, 1977, abandoned. This application Sep. 16, 1977, Ser. No. 833,838

Int. Cl.² C07H *17/04*

U.S. Cl. 536—17 **24 Claims**

1. A compound selected from the group consisting of aminoeverninomicin B, aminoeverninomicin C, aminoeverninomicin D, the N-acyl, N-acyl-N-hydroxyl, N-alky, N,N-dialkyl derivatives and non-toxic pharmaceutically acceptable cationic salts thereof wherein said acyl group is derived from a carboxylic acid having 1 to 12 carbon atoms and said alkyl group is a member selected from the group having 1 to 12 carbon atoms.

4,129,721

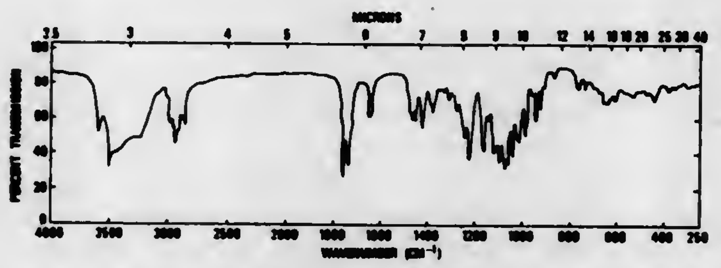
A-40104 ANTIBIOTICS AND PROCESS FOR PRODUCTION THEREOF

Karl H. Michel, and Calvin E. Higgens, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

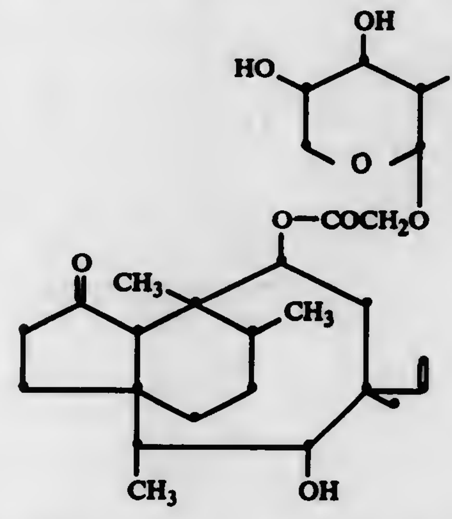
Filed Dec. 8, 1977, Ser. No. 858,505

Int. Cl.² C07G *11/00*

U.S. Cl. 536—17 **4 Claims**



1. A member of the group consisting of (1) antibiotic A-40104 factor A which is the β,D-xylopyranosyl acetal derivative of pleuromutilin having the following structure:



(2) the 19,20-dihydro derivative of A-40104 factor A; and (3) the tetra (C_2–C_6) alkanoyl derivatives of A-40104 factor A and of 19,20-dihydro A-40104 factor A.

4,129,722

PROCESS FOR THE PREPARATION OF HIGH D. S. POLYSACCHARIDES

Carmine P. Iovine, and Dilip K. Ray-Chaudhuri, both of Bridgewater, N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Dec. 15, 1977, Ser. No. 860,952

Int. Cl.² C08B *11/00, 31/08, 37/00*

U.S. Cl. 536—43 **11 Claims**

1. A process for the production of a water-soluble or water swellable highly substituted polysaccharide derivative comprising the steps of

(a) suspending a polysaccharide substrate in an organic solvent, which solvent is immiscible with the aqueous derivatizing reagent phase, does not dissolve the reagent or polysaccharide derivative as it is formed, has a boiling point at or above the temperature of the derivatization reaction, is insensitive to alkali and does not participate in the derivatization reaction;

(b) adding thereto an aqueous solution of the derivatizing reagent;

(c) derivatizing the resultant mixture in the presence of alkali if required, with agitation at a temperature of 10° to 100° C.; and

(d) isolating the resultant derivative; wherein it is required that either the aqueous solution or the organic polysaccharide suspension, or both, contain a cationic, anionic or nonionic surfactant and that the solids concentration is greater than 50% by weight of the total aqueous system.

4,129,723

BICHROMOPHORIC BENZOXAZOLE-STYRENE ESTER AND AMIDE ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

Gether Irick, Jr.; Charles A. Kelly, both of Kingsport, and James C. Martin, Johnson City, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 714,927, Aug. 16, 1976, Pat. No. 4,062,800. This application Oct. 17, 1977, Ser. No. 842,861

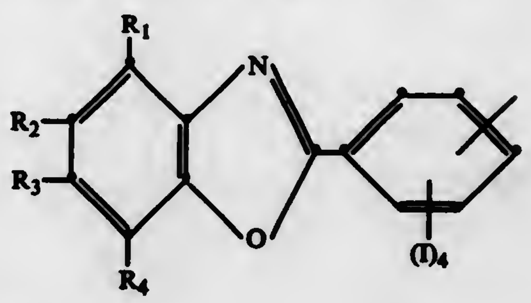
Int. Cl.² C07D *263/56;* C08K *5/15*

U.S. Cl. 542—416 **41 Claims**

1. A compound having the formula:

A—B—C

wherein A is a group having the structure

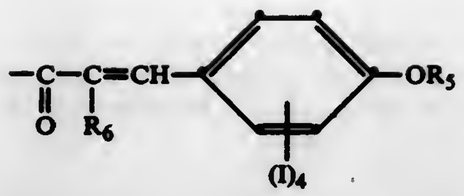


wherein

R_1, R_2, R_3 and R_4 are hydrogen, chloro, bromo, lower alkyl, substituted lower alkyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, lower alkylaryl, aryl-substituted-aryl, alkoxy, substituted amino, cyano, carboalkoxy and the substituents R_1 and R_2, R_2 and R_3, and R_3 and R_4, combined with the carbon atoms to which they are attached, are joined alkylene groups completing a carbocyclic ring, which ring can also be substituted with one or more of the substituents listed above for R_1, R_2, R_3 and R_4;

I is the same as R_1, R_2, R_3 and R_4 and is present on all positions of the benzenoid ring, except the carbon atom attached to the heterocyclic ring and the carbon atom attached to the B group connecting the heterocyclic aromatic A group with the aromatic C group, wherein B is a linking group connecting A and C and can be oxy, oxycarbonylalkyleneoxy, alkyleneoxy, alkyleneoxyalkyleneoxy, oxyalkylenearylenealkyleneoxy, thio, thioalkyleneoxy, aminocarbonylalkyleneoxy, N-alkylaminocarbonylalkyleneoxy, N-arylaminocarbonylalkyleneoxy, N-alkylamino, N-arylamino, N-arylaminoalkyleneoxy, N-alkyleneaminoalkyleneoxy, oxyalkyleneoxy, oxyaryleneoxy; and

wherein C is a group having the formula



where I is the same substituent as listed above and said I substituents can all be one of the substituents listed above or different listed substituents and R_5 is an alkyl group containing 1 to 20 carbon atoms and R_6 is cyano, carboxamido, alkanoyl or alkylsulfonyl.

4,129,724

9-DEOXY-9-METHYLENE-PGF-3,4-DIDEHYDROPIPERIDYLAMIDES

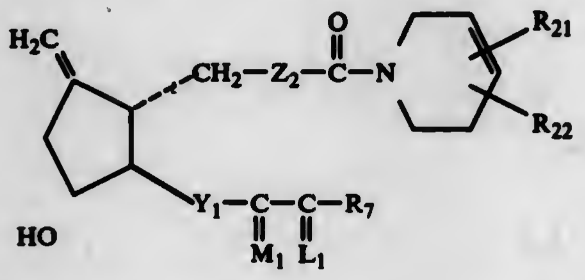
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 786,250, Apr. 11, 1977, Pat. No. 4,098,805. This application Apr. 7, 1978, Ser. No. 894,268

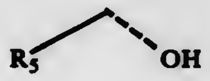
Int. Cl.² C07C *177/00*

U.S. Cl. 542—426 **32 Claims**

1. A prostaglandin analog of the formula



wherein Y_1 is trans—$CH{=}CH$—, —$C\equiv C$—, or —CH_2CH_2— wherein M_1 is



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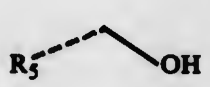
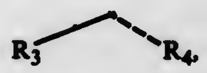
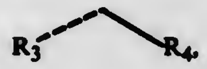
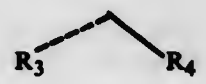


wherein R_5 is hydrogen or methyl; wherein L_1 is





or a mixture of



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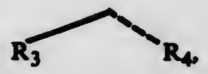
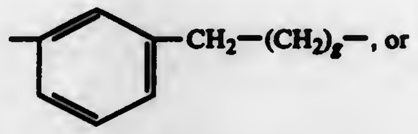
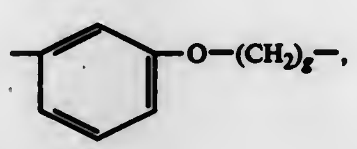


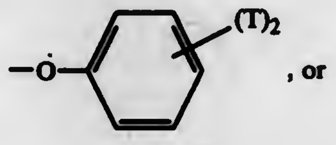
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; wherein Z_2 is

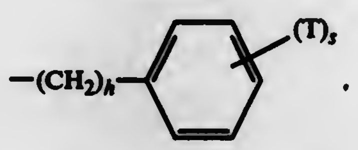
(1) $-(CH_2)_3-(CH_2)_g-CH_2-$,
(2) $-(CH_2)_3-(CH_2)_g-CF_2-$,
(3) $-CH_2-O-CH_2-(CH_2)_g-CH_2-$,
(4) $-C\equiv C-CH_2-(CH_2)_g-CH_2-$,
(5) $-CH_2-C\equiv C-(CH_2)_g-CH_2-$,
(6)

 (6)

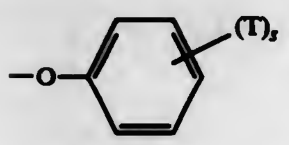
 (7)

wherein g is one, 2 or 3;
wherein R_7 is
(1) $-(CH_2)_m-CH_3$,

 (2)

 (3)

wherein m is one to 5, inclusive, h is zero or one, T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and s is zero, one, 2, to 3, the various T's being the same or different, with the proviso that not moe than two T's are other than alkyl, with the further proviso that R_7 is



wherein T and s are as defined above, only when R_3 and R_4 are hydrogen or methyl, being the same or different; and wherein R_{21} and R_{22} are hydrogen, alkyl of one to 12 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive.

4,129,725

9-DEOXY-9-METHYLENE-PGF₁-PYRROLINYLAMIDES

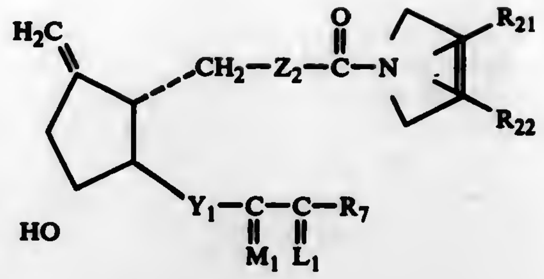
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 786,250, Apr. 11, 1977, Pat. No. 4,098,805. This application Apr, 7, 1978, Ser. No. 894,269

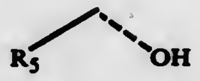
Int. Cl.² C07C *177/00*

U.S. Cl. 542—426 **32 Claims**

1. A prostaglandin analog of the formula



wherein Y_1 is trans—$CH{=}CH$—, —$C\equiv C$—, or —CH_2CH_2—
wherein M_1 is



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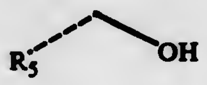
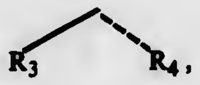
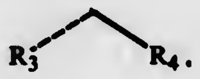
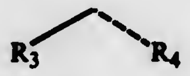


wherein R_5 is hydrogen or methyl;
wherein L_1 is





or a mixture of



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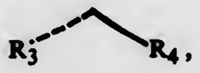
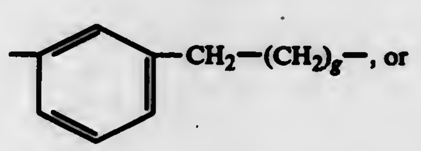
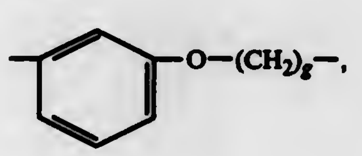


wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein Z_2 is

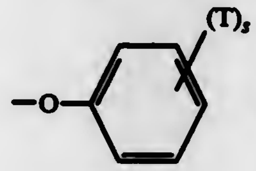
(1) $-(CH_2)_3-(CH_2)_g-CH_2-$,
(2) $-(CH_2)_3-(CH_2)_g-CF_2-$,
(3) $-CH_2-O-CH_2-(CH_2)_g-CH_2-$,
(4) $-C\equiv C-CH_2-(CH_2)_g-CH_2-$,
(5) $-CH_2-C\equiv C-(CH_2)_g-CH_2-$,

 (6)

 (7)

wherein g is 1, 2 or 3;
wherein R_7 is

$-(CH_2)_m-CH_3$, (1)

 (2)

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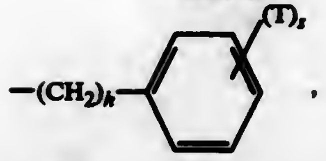
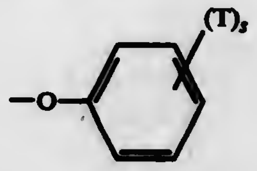
 (3)

wherein m is 1 to 5, inclusive, h is 0 or 1, T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and s is 0, 1, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that R_7 is



wherein T and s are as defined above, only when R_3 and R_4 are hydrogen or methyl, being the same or different; and
wherein R_{21} and R_{22} are hydrogen, alkyl of one to 12 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive.

4,129,726

9-DEOXY-9-METHYLENE-PGF₁-PIPERIZINYLAMIDES

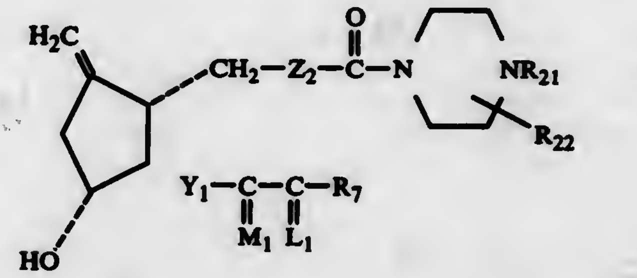
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 786,250, Apr. 11, 1977, Pat. No. 4,098,805. This application Apr. 7, 1978, Ser. No. 894,270

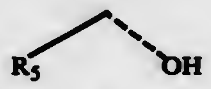
Int. Cl.² C07C *177/00*

U.S. Cl. 542—426 **32 Claims**

1. A prostaglandin analog of the formula



wherein Y_1 is trans—$CH{=}CH$—, —$C\equiv C$—, or —CH_2CH_2—wherein M_1 is



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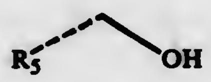
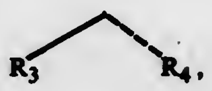
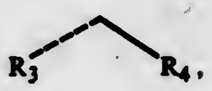


wherein R_5 is hydrogen or methyl;
wherein L_1 is





or a mixture of

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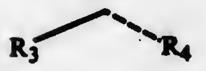

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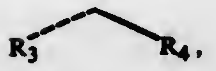


wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein Z_2 is

(1) $-(CH_2)_3-(CH_2)_g-CH_2-$,

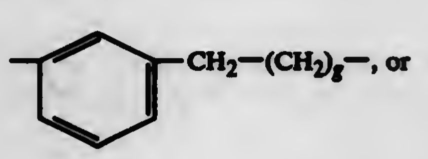
(2) $-(CH_2)_3-(CH_2)_g-CF_2-$,

(3) $-CH_2-O-CH_2-(CH_2)_g-CH_2-$,

(4) $-C{\equiv}C-CH_2-(CH_2)_g-CH_2-$,

(5) $-CH_2-C{\equiv}C-(CH_2)_g-CH_2-$,

(6)



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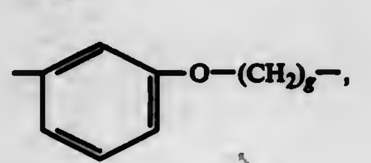
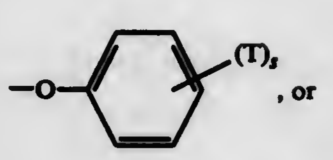


wherein g is one, 2 or 3;

wherein R_7 is

(1) $-(CH_2)_m-CH_3$,

(2)



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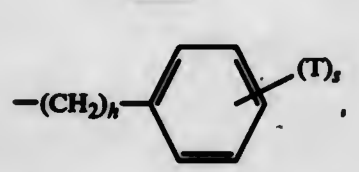
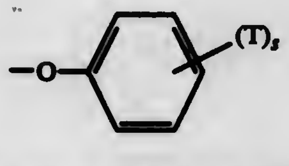


wherein m is one to 5, inclusive, h is zero or one, T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and s is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that R_7 is



wherein T and s are as defined above, only when R_3 and R_4 are hydrogen or methyl, being the same or different; and

wherein R_{21} and R_{22} are hydrogen, alkyl of one to 12 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive.

4,129,727

9-DEOXY-9-METHYLENE-PGF$_1$-PYRROLIDYLAMIDES

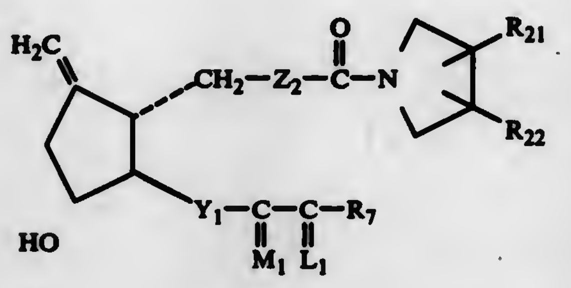
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 786,250, Apr. 11, 1977, Pat. No. 4,098,805. This application Apr. 7, 1978, Ser. No. 894,273

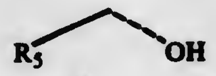
Int. Cl.^{2} C07C *177/00*

U.S. Cl. 542—426 **32 Claims**

1. A prostaglandin analog of the formula



wherein Y_1 is trans$-CH=CH-$, $-C|C-$, or $-CH_2CH_2-$ wherein M_1 is



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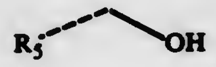

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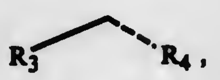
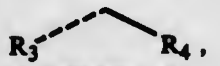
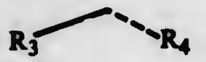
wherein L_1 is





or a mixture of



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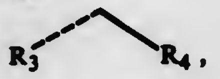


wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein Z_2 is

(1) $-(CH_2)_3-(CH_2)_g-CH_2-$,

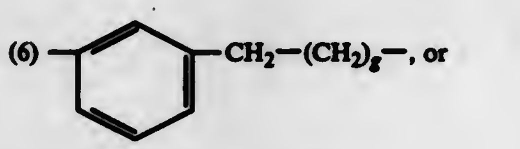
(2) $-(CH_2)_3-(CH_2)_g-CF_2-$,

(3) $-CH_2-O-CH_2-(CH_2)_g-CH_2-$,

(4) $-C|C-CH_2-(CH_2)_g-CH_2-$,

(5) $-CH_2-C|C-(CH_2)_g-CH_2-$,

(6)



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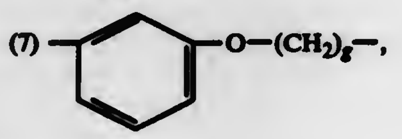
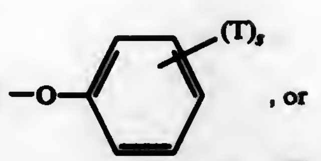


wherein g is 1, 2 or 3;

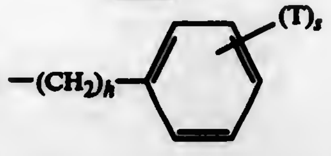
wherein R_7 is

(1) $-(CH_2)_m-CH_3$,

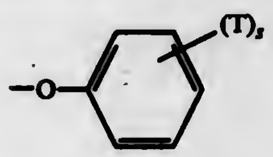
(2)



(3)



wherein m is 1 to 5, inclusive, h is 0 or 1, T is chloro, fluoro, trifluoromethyl, alkyl of 1 to 3 carbon atoms, inclusive, or alkoxy of 1 to 3 carbon atoms, inclusive, and s is 0, 1, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that R_7 is



wherein T and s are as defined above, only when R_3 and R_4 are hydrogen or methyl, being the same or different; and wherein R_{21} and R_{22} are hydrogen, alkyl of 1 to 12 carbon atoms, inclusive: aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with 1, 2, or 3 chloro or alkyl of 1 to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of 1 to 4 carbon atoms, inclusive.

4,129,728

2-(DESCARBOXY)-2-(TETRAZOL-5-YL) 11-DESOXY-15-THIAPROSTAGLANDINS

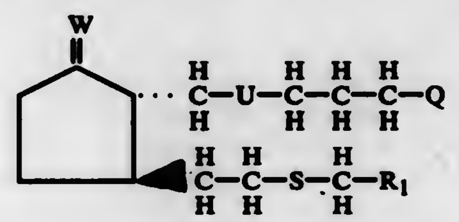
Jacob J. Plattner, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 740,381, Nov. 10, 1976, Pat. No. 4,092,349. This application Jan. 11, 1978, Ser. No. 868,503

Int. Cl.^{2} C07D *257/04*

U.S. Cl. 542—429 **2 Claims**

1. An optically active compound of the formula

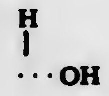


and the enantiomer and racemate thereof wherein:

Q is tetrazol-5-yl;

U is cis vinylene

W is



$$\overset{H}{\overset{|}{\cdots OH}}$$

or oxygen;

R_1 is selected from the group consisting of phenyl and monosubstituted phenyl, said substituent being selected from the group consisting of fluoro, chloro, methyl, methoxy and trifluoromethyl;

R_2 is selected from the group consisting of hydrogen and alkyl having one to four carbon atoms;

R_3 is selected from the group consisting of alkyl having from one to four carbon atoms and phenyl;

or a pharmaceutically acceptable alkali metal, alkaline earth metal or ammonium salt of said compound.

4,129,729

3-PHENACYL AND PHENACYLIDENE PHTHALIMIDINES AND CORRESPONDING NAPHTHOYL DERIVATIVES

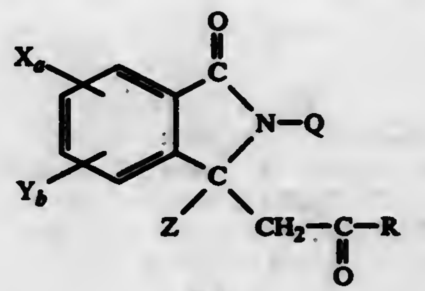
John A. Houbion, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 3, 1978, Ser. No. 867,721

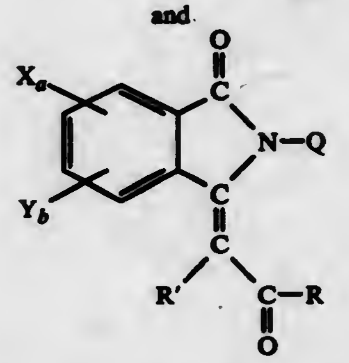
Int. Cl.^{2} A01N *9/22;* C07D *209/46*

U.S. Cl. 542—439 **20 Claims**

1. A compound having a formula selected from



and



wherein R is phenyl, naphthyl, biphenylyl or substituted phenyl, there being from 1 to 5 substituents selected from alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen, nitro and trifluoromethyl, R′ is hydrogen or bromine, X is halogen, Y is hydroxy, alkoxy of 1 to 4 carbon atoms, nitro or amino, a is 0 to 4, b is 0 to 2, the sum of a + b is 0 to 4, Q is hydrogen, alkyl of 1 to 3 carbon atoms, phenyl, halophenyl, nitrophenyl, trifluoromethylphenyl, tolyl, anisyl or tosylamino, and Z is hydrogen or OH.

4,129,730

7α-METHOXY-CEPHALOSPORINS

Isamu Saikawa; Shuntaro Takano; Hiroyuki Imaizumi; Isamu Takakura; Hirokazu Ochiai, all of Toyama; Takashi Yasuda, Kosugimachi; Hideo Taki, Toyama; Masaru Tai, Toyama, and Yutaka Kodama, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

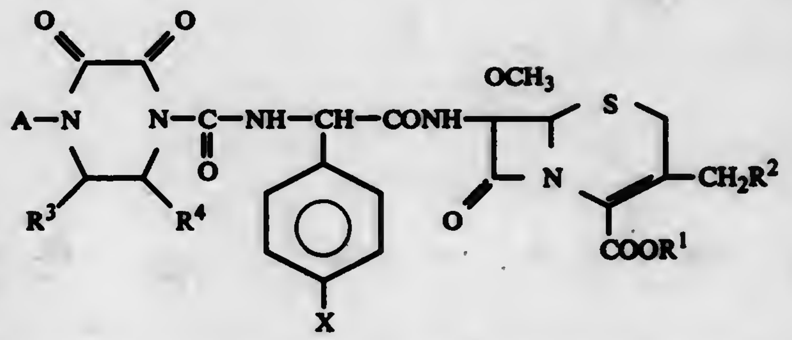
Filed Jan. 13, 1977, Ser. No. 759,134

Claims priority, application Japan, Jan. 22, 1976, 51-6117

Int. Cl.^{2} C07D *501/34*

U.S. Cl. 544—21 **6 Claims**

1. A 7 α-methoxy-cephalosporin represented by the formula:

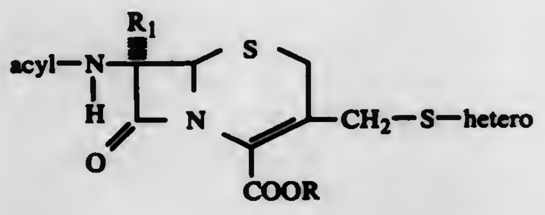


wherein R^1 is a hydrogen atom, a protective group, or a pharmaceutically acceptable salt-forming cation; R^2 is an acetoxy, propionyloxy, butyryloxy, benzoyloxy, naphthoyloxy, cyclopentanecarbonyloxy, cyclohexanecarbonyloxy, furoyloxy, or thenoyloxy group which is unsubstituted or substituted by a halogen atom, an alkyl group having 1 to 13 carbon atoms, or an alkyloxy or a hydroxyalkyl group each having 1 to 5 carbon atoms; R^3 and R^4 represent independently a hydrogen atom or a lower alkyl group; A is an alkyl group having 1 to 13 carbon atoms which is unsubstituted or substituted by a halogen atom, a hydroxyl group, or an alkyloxy or alkythio group each having 1 to 5 carbon atoms, and X is a hydrogen atom or a hydroxyl group.

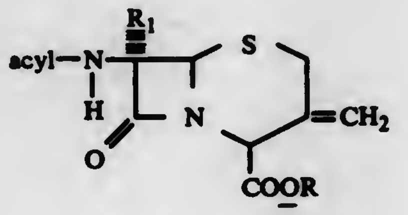
4,129,731
PROCESS FOR CONVERTING 3-METHYLENE CEPHALOSPORINS TO 3-HETEROTHIOMETHYL CEPHALOSPORINS

William A. Slusarchyk, Belle Mead; Eric M. Gordon, West Trenton, and William H. Koster, Pennington, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed Dec. 8, 1976, Ser. No. 748,426
Int. Cl.² C07D *501/04*
U.S. Cl. 544—21 **10 Claims**

1. A process for the preparation of a compound of the formula



which comprises reacting a 3-methylene compound of the formula



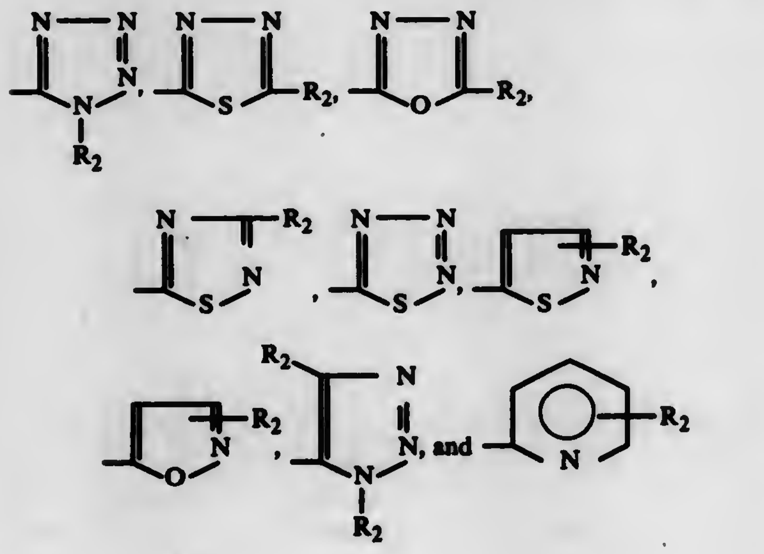
in an inert organic solvent with either a disulfide of the formula

hetero-S-S-hetero

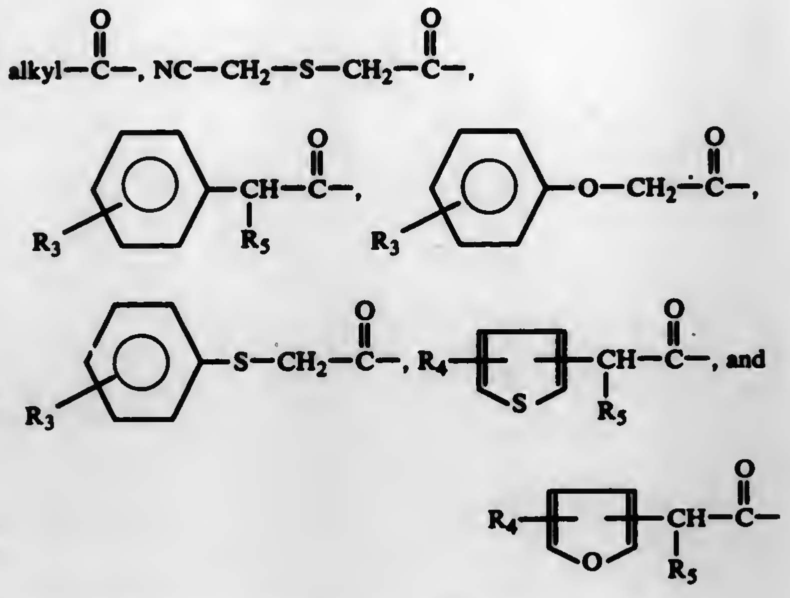
or a compound of the formula

X-S-hetero

in the presence of an alkali metal base or an organic base at a temperature of from about −80° C to about 20° C for from about 5 minutes to about 3 hours; wherein R is a readily removable ester group; R_1 is in the α-configuration and is hydrogen or methoxy; hetero is selected from the group consisting of

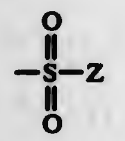


wherein R_2 is hydrogen or lower alkyl 1 to 4 carbons; acyl is selected from the group consisting of lower



$$\text{alkyl}-\overset{\overset{\displaystyle O}{\|}}{C}-,\quad NC-CH_2-S-CH_2-\overset{\overset{\displaystyle O}{\|}}{C}-,$$

wherein R_3 is hydrogen, Cl, Br, lower alkyl, or lower alkoxy, R_4 is hydrogen, Cl, Br, or lower alkyl, and R_5 is hydrogen, protected amino, or protected hydroxy; and X is halogen, lower alkoxycarbonylthio, phthalimido, succinimido, or



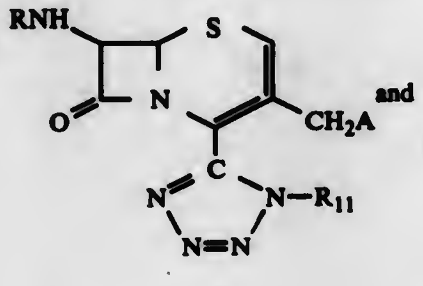
$$-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle O}{\|}}{S}}-Z$$

wherein Z is lower alkyl, phenyl, or phenyl having a methyl, methoxy, nitro, Br, or Cl substituent.

4,129,732
4(TETRAZOL-5-YL)-Δ³-CEPHEM COMPOUNDS

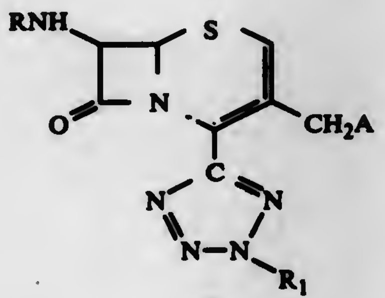
Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.
Division of Ser. No. 791,522, Apr. 27, 1977, which is a division of Ser. No. 658,303, Feb. 17, 1976, Pat. No. 4,045,436, which is a division of Ser. No. 508,634, Sep. 23, 1974, Pat. No. 3,966,719, which is a continuation-in-part of Ser. No. 407,097, Oct. 17, 1973, abandoned. This application Apr. 14, 1978, Ser. No. 896,322
Int. Cl.² C07D *501/16*
U.S. Cl. 544—23 **6 Claims**

1. A compound selected from the group consisting of



I

and



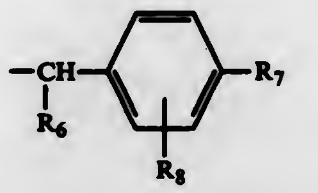
II

wherein R is selected from the group consisting of 2,2,2-trichloroethoxycarbonyl, 2,2,2-tribromoethoxycarbonyl and benzyloxycarbonyl;

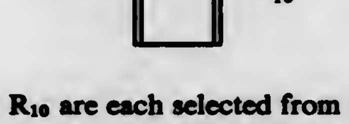
A is selected from the group consisting of 1-methyl-5-tetrazolylthio and 2-methyl-1,3,4-thiadiazolyl-5-thio;

R_1 is selected from the group consisting of hydrogen, alkanoyloxymethyl having from three to six carbon atoms, 1-(alkanoyloxy)ethyl having from four to seven carbon atoms, methoxymethyl, and phthalidyl;

and R_{11} is selected from the group consisting of hydrogen, alkanoyloxymethyl having from three to six carbon atoms, 1-(alkanoyloxy)ethyl having from four to seven carbon atoms, methoxymethyl, phthalidyl,



wherein R_6 is selected from the group consisting of alkyl having from one to three carbon atoms and phenyl and R_7 is selected from the group consisting of hydroxy, methoxy, alkanoyloxy having two to four carbon atoms, and benzyloxy and R_8 is selected from the group consisting of hydrogen, hydroxy, fluoro, chloro, bromo, iodo, methyl, methoxy, alkanoyloxy having from two to four carbon atoms, phenyl and benzyloxy and

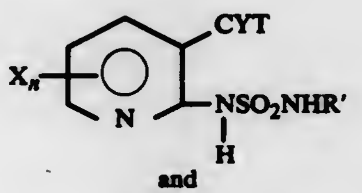


wherein R_9 and R_{10} are each selected from the group consisting of hydrogen and methyl and X is selected from the group consisting of oxygen and sulfur.

4,129,733
SUBSTITUTED PYRIDINE THIONOCARBONYL HALIDES AND DERIVATIVES

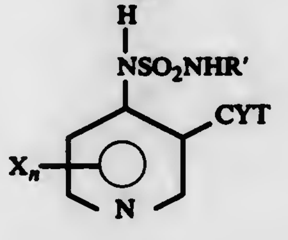
Lennon H. McKendry, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 747,671, Dec. 6, 1976, which is a division of Ser. No. 676,591, Apr. 13, 1976, Pat. No. 4,014,888, which is a continuation-in-part of Ser. No. 572,024, Apr. 28, 1975, abandoned, which is a division of Ser. No. 412,944, Nov. 5, 1973, Pat. No. 3,920,641. This application Jan. 23, 1978, Ser. No. 871,566
Int. Cl.² C07D *213/54*
U.S. Cl. 544—131 **1 Claim**

1. A compound of the formulae:



III

and



IV

wherein:

each X independently represents loweralkyl of 1 to 6 carbon atoms, haloloweralkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, SR^5, OR^5, aryl wherein aryl is phenyl, halophenyl or tolyl, $-NR^3R^4$, halo or nitro;

n represents an integer of 0 to 3, inclusive;

Y represents sulfur;

T represents halo;

R' represents pyrrolidinoethyl, piperidinoethyl or morpholinoethyl

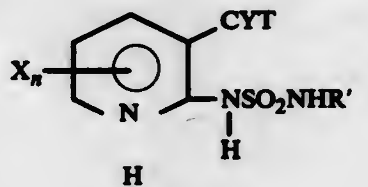
each of R^3 and R^4 independently represents hydrogen or loweralkyl of 1 to 6 carbon atoms;

R^5 represents loweralkyl of 1 to 6 carbon atoms.

4,129,734
SUBSTITUTED PYRIDINE CARBONYL HALIDES AND DERIVATIVES

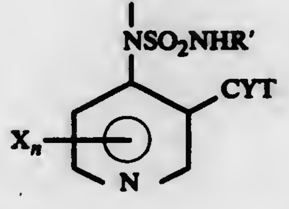
Lennon H. McKendry, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 747,267, Dec. 3, 1976, Pat. No. 4,085,279, which is a division of Ser. No. 676,591, Apr. 13, 1976, Pat. No. 4,014,888, which is a continuation-in-part of Ser. No. 572,024, Apr. 28, 1975, abandoned, which is a division of Ser. No. 412,944, Nov. 5, 1973, Pat. No. 3,920,641. This application Jan. 23, 1978, Ser. No. 871,568
Int. Cl.² C07D *213/54*
U.S. Cl. 544—131 **1 Claim**

1. A compound of the formulae:



III

and



IV

wherein:

each X independently represents loweralkyl of 1 to 6 carbon atoms, haloloweralkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, SR^5, OR^5, aryl wherein aryl is phenyl, halophenyl or tolyl, $-NR^3R^4$, halo or nitro;

n represents an integer of 0 to 3, inclusive;

Y represents oxygen;

T represents halo;

R' represents pyrrolidinoethyl, piperidinoethyl or morpholinoethyl;

each of R^3 and R^4 independently represents hydrogen or loweralkyl of 1 to 6 carbon atoms;

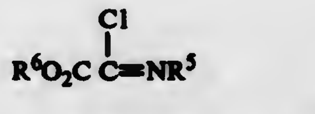
R^5 represents loweralkyl of 1 to 6 carbon atoms.

4,129,735
PROCESS FOR PREPARING TETRAZOLE-5-CARBOXAMIDE DERIVATIVES

John H. Sellstedt, Pottstown, and Dieter H. Klaubert, West Chester, both of Pa., assignors to American Home Products Corporation, New York, N.Y.
Division of Ser. No. 669,570, Mar. 23, 1976, Pat. No. 4,013,647. This application Sep. 24, 1976, Ser. No. 726,707
Int. Cl.² C07D *413/02, 257/04*
U.S. Cl. 544—132 **2 Claims**

1. A process for the production of a 1H-tetrazole-5-carboxamide which comprises

a. reacting an N-protected oxamic acid lower alkyl ester with PCl_5 in the presence of an acid acceptor to obtain the imidochloride



$$R^6O_2C\,\overset{\overset{\displaystyle Cl}{|}}{C}{=}NR^5$$

in which R^6 is lower alkyl and R^5 is a member selected from the group consisting of benzyl, 4-methoxybenzyl

2,4-dimethoxybenzyl, 2,6-dimethoxybenzyl, 2,4,6-trimethoxybenzyl and trichloroethyl;

b. cyclizing said imido-chloride with hydrazoic acid to produce the ester 1-R^5-5-carbo(lower)alkoxy-1H-tetrazole;

c. saponifying said ester to obtain an alkali metal salt of said tetrazole;

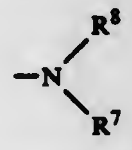
d. converting said tetrazole salt to the 5-chlorocarbonyl-1-R^5-1H-tetrazole by reaction with a chlorinating agent;

e. reacting said 5-chlorocarbonyl-1-R^5-1H-tetrazole with an aromatic amine of the formula ANH_2;

f. removing the 1-R^5 group from the product of step (e);

wherein

A is a member selected from the group consisting of 2-thiazolyl, 2-pyridyl, 6-(lower)alkyl-2-pyridyl, 3-cyano-2-pyridyl, 3-pyridyl, 4-pyridyl, 2-pyrimidinyl, 2-pyrazinyl, α-naphthyl, β-naphthyl, phenyl, 2,6-dichlorophenyl, and substituted phenyl moieties having from one to three substituents in any of the 2,3,4 and 5 positions of the phenyl ring, independently selected from the group consisting of lower alky', lower alkylsulfinyl, lower alkoxy, hydroxy(lower)alkoxy, 2-(lower alkoxy oxalyloxy)ethoxy, N-mono- and di-lower alkyl amino (lower)alkoxy, halo, sulfamyl, polyhalo(lower)alkyl, carbamyl, N-lower alkylcarbamyl, carboxy, lower alkylcarbonyl, cyano, carb(lower)alkoxy, phenoxy(lower)alkoxy, lower alkoxyoxalamido, lower alkoxyoxalamidophenoxy and



where R^8 and R^7, independently represent hydrogen, lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl of 5 or 6 carbon atoms, aralkyl of 7 to 9 carbon atoms, aryl of 6 to 10 carbon atoms or, R^8 and R^7, taken together with the nitrogen atom to which they are attached form a heterocyclic group selected from aziridinyl, azetidinyl, pyrrolidinyl, piperidino, piperazinyl, 4-lower alkylpiperazinyl, morpholino thio morpholino and a ring substituted lower alkyl analogue of said heterocyclic group.

4,129,736

TRIAZINYL-ANTRAQUINONE DYESTUFFS

Rainer Begrich, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

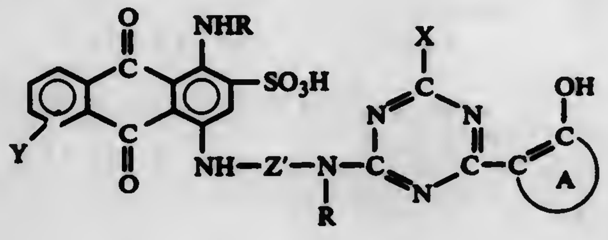
Division of Ser. No. 567,796, Apr. 14, 1975, Pat. No. 4,033,944. This application Jan. 27, 1977, Ser. No. 763,196

Claims priority, application Switzerland, Apr. 18, 1974, 5359/74

Int. Cl.² C07D ***251/16***

U.S. Cl. 544—189 **2 Claims**

1. A fiber-reactive anthraquinone dyestuff of the formula



wherein

Y is hydrogen or sulfo,

Z^1 is a phenylene or diphenylene divalent linking radical;

X is chloro, bromo or fluoro;

R is hydrogen, lower alkyl, cyclohexyl or phenyl; and the ring A is cyclopentenyl, cyclohexenyl or cycloheptenyl.

4,129,737

PROCESS FOR THE PREPARATION OF AN 8-ALKYL-5-OXO-5,8-DIHYDRO-PYRIDO(2,3-D)PYRIMIDINE-6-CARBOXYLIC ACID

Marcel Pesson, Paris, France, assignor to Laboratoire Roger Bellon, Neuilly-sur-Siene, France

Division of Ser. No. 625,779, Oct. 24, 1975, which is a division of Ser. No. 384,203, Jul. 31, 1973, Pat. No. 3,950,338. This application Aug. 17, 1976, Ser. No. 715,191

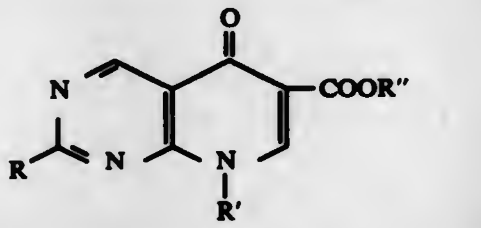
Claims priority, application France, Aug. 2, 1972, 72.27876

Int. Cl.² C07D ***471/04***

U.S. Cl. 544—279 **3 Claims**

1. Process for the preparation of an 8-alkyl-5-oxo-5,8-dihydro-pyrido(2,3-d)pyrimidine-6-carboxylic acid of the formula:

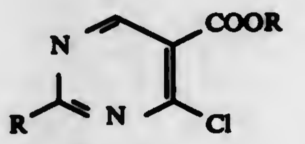
(I)



in which R is hydrogen, lower alkyl, lower alkoxy, lower alkylmercapto, or chloro and R' and R" are lower alkyl, which comprises:

(a) condensing a 4-chloro-5-carbalkoxy-pyrimidine of formula:

(II)

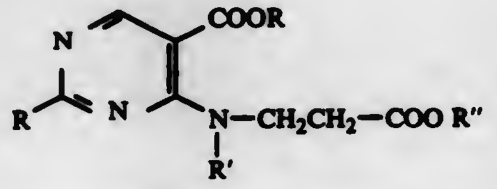


with a lower alkyl β-amino-propionate of formula:

$$R' - NH - CH_2 - CH_2 - COO\ R''$$

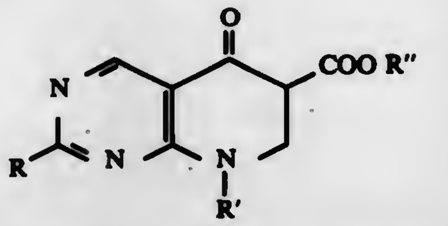
at about room temperature in a neutral solvent and in the presence of an acceptor of HCl formed during condensation to form a 4-N-(β-carbalkoxyethylamino)-5-carbalkoxy pyrimidine of formula:

(III)



(b) cyclising the compound of formula III by reaction with an alkaline alcoholate at about room temperature in the presence of an aromatic hydrocarbon to form a 5-oxo-6-carbalkoxy-5,6,7,8-tetrahydro-pyrido(2,3-d)-pyrimidine of formula:

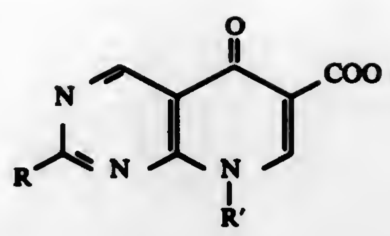
(IV)



(c) halogenating the -keto-ester of formula IV with an agent selected from bromine and sulphurylchloride to yield the corresponding 6-halogeno-derivative,

(d) treating the said derivative with a base selected from aliphatic, aromatic to bring about dehydrohalogenation to give a 6-carbalkoxy-5-oxo-5,8-dihydro-pyrido(2,3-d) pyrimidine of formula:

(VI)



4,129,738

5-PHENYLPYRAZOLO[1,5-a]PYRIMIDIN-7(1H)-ONES

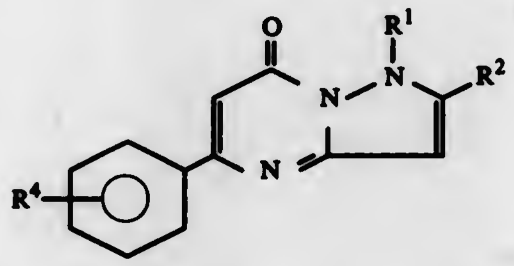
Hans Hoehn, Tegernheim, Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 741,572, Nov. 15, 1976, Pat. No. 4,048,184. This application May 9, 1977, Ser. No. 794,852

Int. Cl.² C07D ***487/04***

U.S. Cl. 544—281 **13 Claims**

1. A compound of the formula



wherein R^1 is lower alkyl, phenyl, phenyl-lower alkyl or cyclo-lower alkyl having 4 to 7 carbon atoms;

R^2 is hydrogen, lower alkyl or phenyl;

and R^4 is hydrogen, halogen, hydroxy, lower alkoxy or amino.

4,129,739

AMIDINE COMPOUNDS

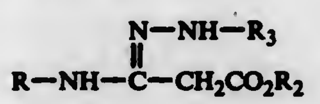
David J. Tracy, Lincoln Park, N.J., and Walter F. Hoffstadt, Vestal, N.Y., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 603,533, Aug. 11, 1975, abandoned. This application Nov. 15, 1976, Ser. No. 742,054

Int. Cl.² C07C ***79/46***

U.S. Cl. 560—21 **11 Claims**

1. Amidines of the general formula:



$$R-NH-\overset{\overset{\displaystyle N-NH-R_3}{\|}}{C}-CH_2CO_2R_2$$

where R_2 is lower alkyl, and R is phenyl substituted with halo and nitro, and R_3 is selected from the group consisting of phenyl or phenyl substituted with one or more of halo, nitro and alkoxy and combinations thereof.

4,129,740

PROCESS FOR THE PREPARATION OF PARA-NITROSO-DIPHENYLHYDROXYLAMINES

Hans Zengel, Kleinwallstadt, and Manfred Bergfeld, Erlenbach, both of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Jan. 30, 1978, Ser. No. 873,327

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1977, 2703919

Int. Cl.² C07C ***79/46, 85/24, 101/72***

U.S. Cl. 560—48 **8 Claims**

1. In a process for the preparation of para-nitrosodiphenylhydroxylamines wherein one member selected from the group consisting of nitrosobenzene, ortho-substituted nitrosobenzenes, meta-substituted nitrosobenzenes, ortho-meta-disubstituted nitrosobenzenes, and para-substituted nitrosobenzenes, is reacted with one member selected from the group consisting of nitrosobenzenes, ortho-substituted nitrosobenzenes, meta-substituted nitrosobenzenes, and ortho-meta-disubstituted nitrosobenzenes in the presence of an acid catalyst, the improvement comprising utilizing as the acid catalyst an acid selected from the group consisting of aliphatic, cycloaliphatic, and aromatic sulfonic acids, having a pK_a equal to or less than 1, perchloric acid, and trifluoroacetic acid, in an amount equal to or greater than 0.5 mol of acid per mol of nitroso reactants, and performing the reaction at a temperature from about −20° C. to 60° C.

4,129,741

NOVEL POLYETHERS HAVING TERMINAL AMINO GROUPS, A PROCESS FOR THEIR PRODUCTION AND THEIR APPLICATION

Oskar Schmidt, Kittsee, and Walter Sibral, Tulln, both of Austria, assignors to Lim-Holding, S.A., Luxembourg

Filed Oct. 26, 1976, Ser. No. 735,291

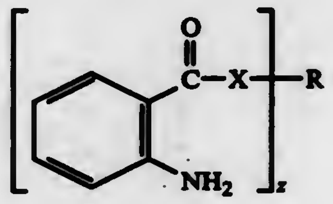
Claims priority, application Austria, Oct. 27, 1975, 8155/75; Oct. 27, 1975, 8156/75

Int. Cl.² C07C ***101/54;*** **C08G** ***18/02***

U.S. Cl. 560—50 **20 Claims**

1. Novel compounds having terminal amino groups, said novel compounds being of the general formula

(I)



wherein z is an integer of 2 to 4, X is oxygen or sulfur and R is a group of the formula

$$—Y—[Ar—B]_k \qquad (II)$$

wherein k stands for an integer of 1 to 4, Ar is an aromatic group, Y when k = 1 is B and when k = 2 to 4 is an alkylidene group having 1 to 5 carbon atoms and B represents a divalent polyalkylene ether group or polyalkylene thioether group such as it is obtained by removal of the hydroxyl or mercapto groups from a polyalkylene ether diol or a polyalkylene thioether dithiol of a molecular weight of about 100 to 15000.

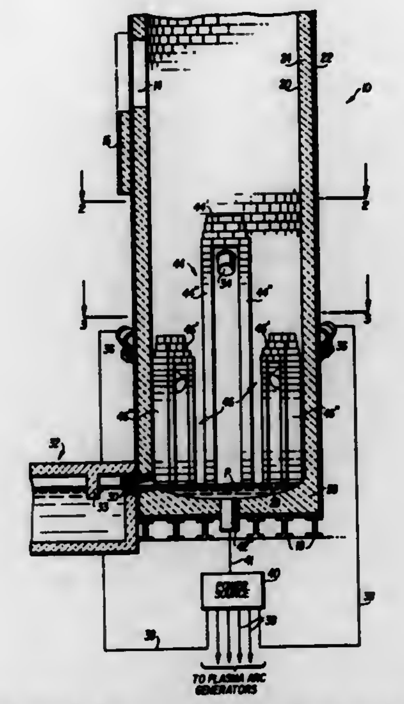
4,129,742
PLASMA ARC VERTICAL SHAFT FURNACE

George C. Ward, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Jul. 1, 1977, Ser. No. 812,291

Int. Cl.² F27D *3/00;* F27B *9/00;* H05H *1/00*

U.S. Cl. 13—2 P **10 Claims**



1. A vertical shaft furnace for melting metal materials comprising a vertically elongated melting chamber having upper and lower chamber portions, said upper chamber portion having means for gravity-charging metal into said melting chamber during operation of said furnace and forming thereby a continuously descending metal column during said operation, said lower chamber portion having an interior wall formed of a refractory material and a floor, said floor including means for collecting a pool of molten metal melted in said furnace, outlet means in said lower chamber portion communicating with said molten metal collecting means for continuously withdrawing molten metal therefrom, a plurality of downwardly-inclined openings arranged in two vertically spaced planes and in spaced relation about the lower chamber portion, plasma arc torches arranged in said openings, means for connecting an electrical power source between said torches and said metal charge and means connected to said torches for extending and retracting said torches relative to said lower chamber portion into operating positions thereof.

4,129,743
TERMINAL BOX FOR UNDERGROUND ELECTRICAL CONDUCTORS

Gerald A. Lohal, Somerville, N.J., assignor to Telephone Utility Terminal Co., Inc., Leesburg, Fla.

Filed May 6, 1976, Ser. No. 683,859

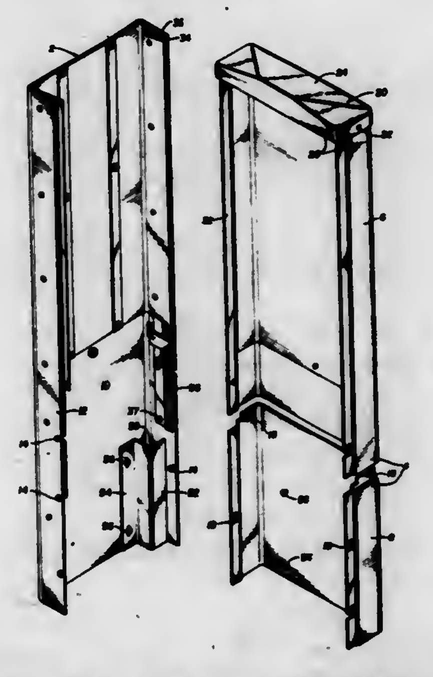
Int. Cl.² H02G *9/00, 3/14;* C23F *13/00*

U.S. Cl. 174—38 **9 Claims**

2. A terminal box for use in connection with underground electrical conductors, said terminal box comprising an upstanding housing having an upper exposed portion and a lower buried portion, said upper exposed portion being provided with an above-ground cover which is movable to provide access to the interior of said housing, means in said housing for supporting electrical conductors, an opening in said housing for the entry of underground electrical conductors, said terminal box having passage-forming means in said lower portion providing a vertical passage for guiding the entrance of underground electrical conductors into the housing, said passage-forming means including a first portion for lying against an interior wall of said housing, and a second portion which is spaced from the interior walls of the buried portion of the housing to form said passage, means for detachably connecting the first portion of the passage-forming means to the lower portion of the housing, and additional means in the housing for detachably connecting the passage-forming means at different locations within the lower portion.

4. A terminal box for use in connection with underground electrical conductors, said terminal box comprising an upstanding housing having an upper exposed portion and a lower buried portion, said upper exposed portion being provided with an above-ground cover which is movable to provide access to the interior of said housing, means in said housing for supporting electrical conductors, an opening in said housing for the entry of underground electrical conductors, said housing being formed of a front channel member and a rear channel member, said front channel member having a front panel and rearwardly extending side flanges, said rear channel member having a rear panel and forwardly extending side flanges, said side flanges of said channel members having vertical marginal portions, means for connecting the vertical marginal portions of said front channel member with vertical marginal portions of said rear channel member,

a first sheet of dielectric material overlying and connected to the interior face of said front channel member, a second sheet of dielectric material overlying and connected to the interior face of said rear channel members, said sheets including marginal vertical edge portions which overlie each other to provide electrical insulation throughout the horizontal extent of the housing.



5. A terminal box for use in connection with underground electrical conductors, said terminal box comprising an upstanding housing having an upper exposed portion and a lower buried portion, said upper exposed portion being provided with an above-ground cover which is movable to provide access to the interior of said housing, means in said housing for supporting electrical conductors, an opening in said housing for the entry of underground electrical conductors, said housing being formed of a front channel member and a rear channel member, said front channel member having a front panel and rearwardly extending side flanges, said rear channel member having a rear panel and forwardly extending side flanges, said side flanges of said channel members having vertical marginal portions, means for connecting the vertical marginal portions of said front channel member with vertical marginal portions of said rear channel member to hold the channel members at a predetermined position with respect to each other,

said vertical marginal portions of said front channel member having a confronting surface which overlaps and lies against a corresponding confronting surface of the vertical marginal portions of said rear channel member, resilient strip means connected to one of said channel members at a location adjacent to a said confronting surface, said resilient strip means being sealingly biased against the opposed channel member at a location on its surface which lies opposite to its said confronting surface, said resilient strip means contacting the opposed channel member in an area spaced from the edge of the opposed channel member when said channel members are at a said predetermined position with respect to each other, said resilient strip means having a lip portion outturned from the confronting surface of its respective channel member.

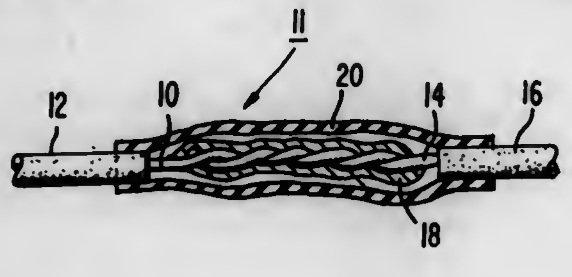
4,129,744
SOLDER CONNECTION BETWEEN COPPER AND ALUMINUM CONDUCTORS

Thomas J. Cunningham, Philadelphia, Pa.; Harold L. Schwartzberg, deceased, late of Holland, Pa., and Joseph L. McGlynn, Jr., executor, Philadelphia, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 2, 1976, Ser. No. 710,744

Int. Cl.^{2} H01R *5/04*

U.S. Cl. 174—94 R **9 Claims**



1. A solder connection comprising:
a strand of aluminum wire including a portion partially clad with a copper coating and a portion in which the aluminum is exposed to the ambient and coated with aluminum oxide,
a strand of copper wire having a portion disposed contiguous with said partially clad portion of said aluminum wire, and
lead-tin solder interconnecting said aluminum wire to said copper wire and forming a hermetic seal about said contiguous portions including said exposed aluminum oxide coated portion.

4,129,745
LARGE INSULATOR WITH PARTICULAR CEMENTED JOINT

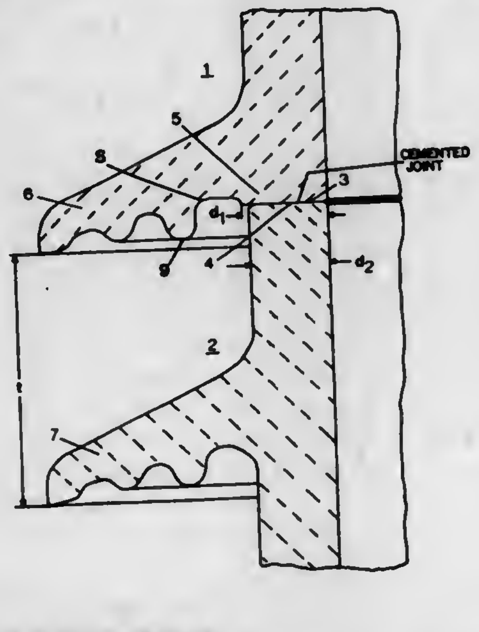
Fritz Korischum, Wettingen, Switzerland, assignor to Brown, Boveri & Company Limited, Baden, Switzerland

Filed Mar. 3, 1977, Ser. No. 774,117

Claims priority, application Switzerland, Mar. 12, 1976, 003081/76; Dec. 20, 1976, 015981/76

Int. Cl.^{2} H01B *17/66*

U.S. Cl. 174—209 **5 Claims**



1. A large insulator comprising:
at least two ceramic partial insulators, each provided with at least one annular protective screen, one of the partial insulators having a center axis and having a plane face at a lower end thereof, another partial insulator having a center axis and having a plane face at an upper end thereof, said two partial insulators being arranged one above the other with said plane faces being cemented together to form a cemented joint, the lower end face of the upper partial insulator extending perpendicularly relative to the center axis of the upper partial insulator, the upper end face of the lower partial insulator extending perpendicularly relative to the center axis of the lower partial insulator, the plane lower end face of the upper partial insulator being larger than the plane upper end face of the lower partial insulator so that the entire plane end face of the lower partial insulator is cemented to the lower plane end face of the upper partial insulator,
said annular protective screen of the upper partial insulator having a base portion and a series of concentric ridges and grooves on the underside of the annular protective screen,
said cemented joint being arranged at the level of said base portion between the level of the bottom of the innermost groove and the level of the top of the innermost ridge.

4,129,746
ELECTROGRAPHIC APPARATUS AND HAND REST FOR USE THEREWITH

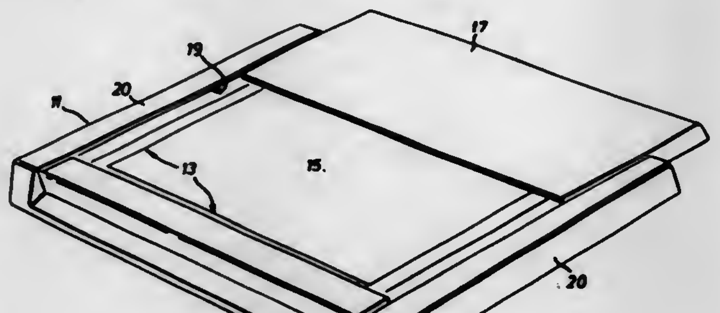
Martin R. Lambden, Wimborne, England, assignor to Quest Automation Limited, Dorset, England

Division of Ser. No. 710,083, Jul. 30, 1976, Pat. No. 4,070,544. This application May 2, 1977, Ser. No. 792,829

Claims priority, application United Kingdom, Aug. 5, 1975, 32687/75

Int. Cl.^{2} G08C *21/00*

U.S. Cl. 178—18 **4 Claims**



1. Electrographic apparatus comprising:
(a) a pressure sensitive surface which, in use of the apparatus, responds to pressure applied by a writing instrument to provide electrical output signals related to the location of the instrument;
(b) a hand-supporting member upon which the hand may conveniently be rested during writing on said pressure sensitive surface;
(c) a housing having a window formed in a wall thereof, said pressure sensitive surface being mounted within said housing so as to be exposed through said window, and
(d) bearing means on said housing, said bearing means supporting said hand-supporting member on said housing and arranged to permit movement of the said member across said window.

4,129,747
HUMAN-MACHINE INTERFACE APPARATUS

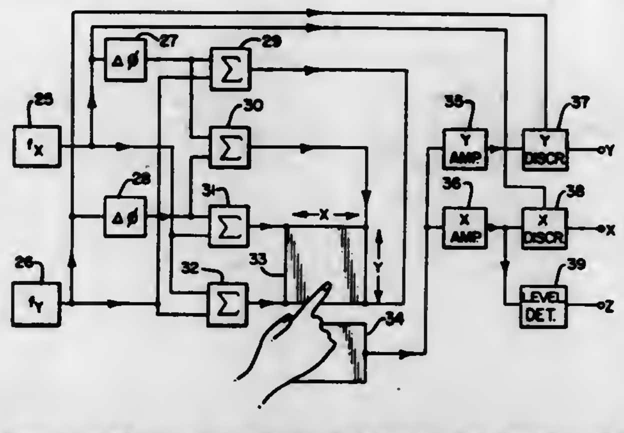
William Pepper, Jr., Bethesda, Md., assignor to Peptek, Inc., Bethesda, Md.

Continuation of Ser. No. 717,192, Aug. 24, 1976, Pat. No. 4,071,691. This application Nov. 11, 1977, Ser. No. 850,741

The portion of the term of this patent subsequent to Jan. 31, 1995, has been disclaimed.

Int. Cl.^{2} G08C *21/00*

U.S. Cl. 178—19 **2 Claims**



1. A human-machine interface apparatus for inputting information to a utilization device comprising:
means for defining a surface of predetermined length and having a reference point thereon; field-establishing means for establishing a low level electric field above said surface and along said predetermined length and into which a human finger can be inserted to touch a selected point on said surface and traverse a path therealong, said electric field having a parameter that varies continuously along said predetermined length as a function of distance from said reference point; detector means for detecting the position of said touched point on said surface and the path traversed thereby with respect to said reference point and producing an electrical signal corresponding thereto as an input signal to said utilization device, said detector means including a signal level detector for detecting the presence or absence of at least a portion of the operator's body in a predetermined position.

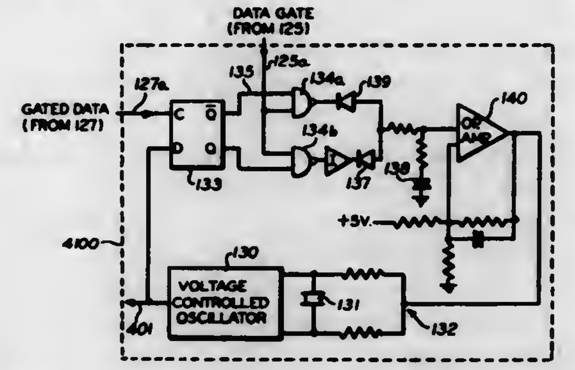
4,129,748
PHASE LOCKED LOOP FOR PROVIDING CONTINUOUS CLOCK PHASE CORRECTION

Richard Saylor, Monsey, N.Y., assignor to IDR, Inc., Farmingdale, N.Y.

Continuation-in-part of Ser. No. 611,843, Sep. 10, 1975, Pat. No. 4,042,958. This application Apr. 23, 1976, Ser. No. 679,701

Int. Cl.^{2} H04L *7/00*

U.S. Cl. 178—69.1 **20 Claims**



1. A phase locked loop apparatus for providing a continuous output digital clock signal having first and second states which is continuously phase locked to a reference digital data signal, said digital data signal comprising at least one data transition, said apparatus comprising variable voltage controlled oscillator means having a predetermined variable nominal frequency, said voltage controlled oscillator means having an input and an output and providing said output digital clock signal at said output thereof; bistable phase detection means having a pair of inputs for varying the state of said bistable phase detection means between a first and second state, said bistable means having a first control signal output in said first state thereof and a second control signal output in a second state thereof, one input of said bistable means being connected in parallel to said voltage controlled oscillator means output for detecting said clock signal output, the other input of said bistable means being connected to substantially simultaneously detect said reference digital data signal, said bistable phase detection means being responsive to said state of said clock signal and the occurrence of said at least one data transition in said substantially simultaneously detected digital data signal for varying said bistable means state, said bistable means being in said first state in response to the substantially simultaneous detection of said clock signal first state and said digital data transition and in said second state in response to the substantially simultaneous detection of said clock signal second state and said digital data transition for providing a change in said bistable means control signal output only when the phasing of said clock signal changes with respect to the phasing of said data signal, said first bistable means output control signal being indicative of a phase lead condition between said clock signal and said data signal and said second bistable means output control signal being indicative of a phase lag condition between said clock signal and said data signal, and means operatively connected between said bistable means first and second control signal outputs and said oscillator means input for providing a control voltage signal to said oscillator means input to vary said nominal frequency thereof in response to said bistable means provided control signal output for maintaining said continuous phase lock, said control voltage signal providing means comprising a capacitive means having a variable voltage signal output therefrom, said capactive means being responsive to one of said control signal outputs for charging to increase said capacitive means voltage signal output in response thereto and being responsive to said other one of said control signal outputs for discharging to decrease said capacitive means voltage signal output in response thereto, said respective charging and discharging of said capacitive means to vary said voltage signal output thereof occurring as long as said phase condition associated with said respective control signal output remains, said voltage signal output comprising said control voltage signal, said control signal providing means further comprising diode means operatively connected between said capacitive means and said bistable means control signal outputs for providing respective charge and discharge paths for said capacitive means in response to said respective first and second control signal outputs.

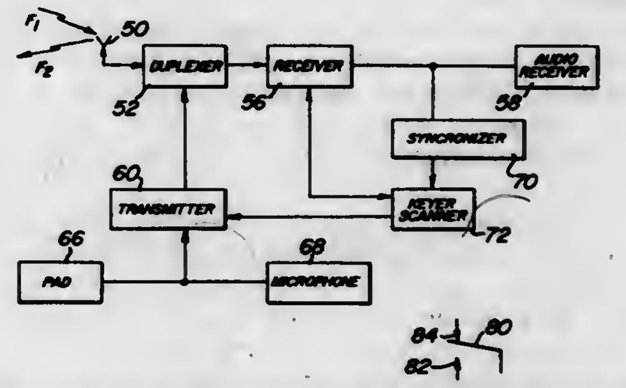
4,129,749
RADIO TELEPHONE COMMUNICATIONS SYSTEM

Stephen R. Goldman, 7435 Ruskin Rd., Philadelphia, Pa. 19151

Continuation-in-part of Ser. No. 699,450, Jun. 24, 1976, abandoned. This application Dec. 13, 1976, Ser. No. 750,175

Int. Cl.^{2} H04Q *7/04*

U.S. Cl. 179—2 EB **14 Claims**



1. In a two frequency time division multiplexed radio telephone system that includes a base station that transmits information on one of said frequencies and receives information on the other of said frequencies, and plurality of portable units that receive information on said one frequency and transmit information on the other of said frequencies and both of said frequencies are divided into a plurality of channels and each of said portable units includes a means for detecting a calling

signal which has been assigned to it, the improvement comprising,

each of said portable units including means for indicating that it is being called by the base station, said indicating means including an alarm means for alerting the operator of said portable unit that it is being called, said alarm means including a switch which is normally in a first position and a gate, said switch being operative to normally apply a first predetermined signal to said gate, means for applying a second predetermined signal to said gate when said portable unit detects that it is being called, said alarm means further including an energizable alarm and a ring timer, and said alarm is energized for a predetermined number of intervals by said ring timer when both of said signals are applied to said gate at the same time, and said alarm is deenergized when said switch is moved to a second position.

4,129,750
DIGITAL TIME DIVISION MULTIPLEX TELECOMMUNICATION NETWORK

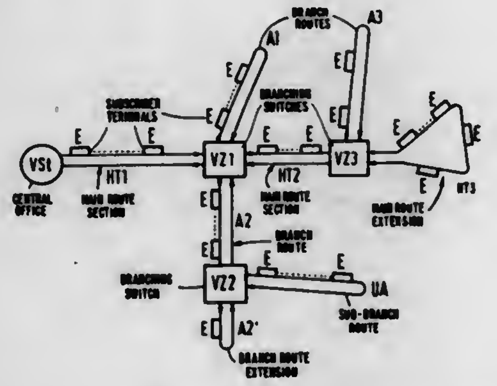
Alfred Mattern, Gröbenzell, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 4, 1977, Ser. No. 784,452

Claims priority, application Fed. Rep. of Germany, May 6, 1976, 2620058

Int. Cl.^{2} H04J *3/08*

U.S. Cl. 179—15 AL 3 Claims



1. In a digital time division multiplex (TDM) telecommunication network having a plurality of subscriber terminals connected in a predetermined sequence to a common TDM highway, said TDM highway beginning and ending in a central office thereby forming a loop, each TDM time frame containing information for each said subscriber terminal, said information being arranged in said time frame in a time sequence corresponding to the sequence of connection of said subscriber terminals to said TDM highway, the improvement comprising:

said TDM highway being arranged in at least one main route section and a plurality of branch routes, said main route section and said branch routes carrying information to and from said central office;

a plurality of branching switch means actuated by said central office for sequentially coupling said branch routes to said main route section and thereby to said central office, said main route section and said branch routes having incoming and outgoing portions relative to said branching switch means;

at least one said branching switch means including first switches for sequentially connecting the incoming portion of said main route section to the outgoing portion of said main route section and second switches for sequentially connecting the outgoing and incoming portions of at least one of said branch routes, respectively, to the incoming and outgoing portions of said main route section;

at least another one of said branching switch means connected to said main route section by one of said branch routes, said another one of said branching switch means including first switches for sequentially connecting the incoming portion of said one branch route to the outgoing portion of said one branch route and second switches for sequentially connecting the outgoing and incoming portions of at least another one of said branch routes, respectively, to the incoming and outgoing portions of said one branch route; and

storage means connected in the incoming portions of each of said branch routes for temporarily storing information returning to said central office to thereby prevent overlapping between time frames.

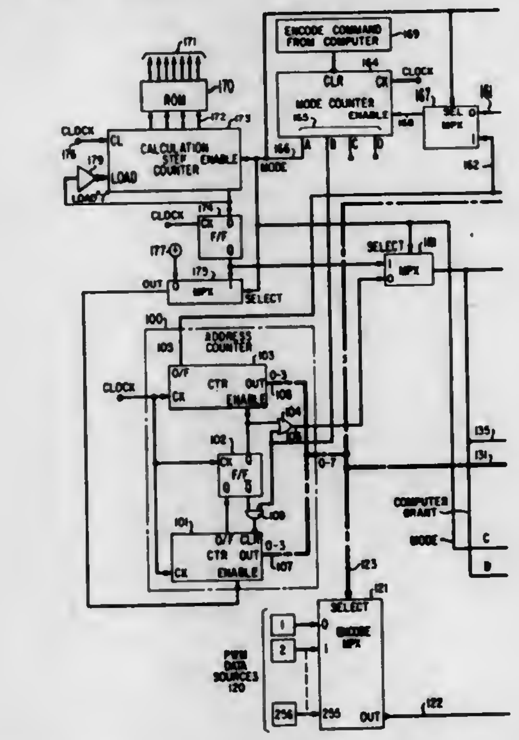
4,129,751
PCM DATA THROTTLE

Harold G. Alles, Bridgewater, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 30, 1977, Ser. No. 829,010

Int. Cl.^{2} H04J *3/18*

U.S. Cl. 179—15 BW 9 Claims



1. An arrangement for converting a pulse width modulated (PWM) signal to a pulse code modulated (PCM) signal, the arrangement comprising:

an input terminal capable of receiving a PWM signal;

an output terminal capable of connection to an external device for utilizing the generated PCM signal; and

converting means connected between the input and output terminals comprising;

an encoding means capable of generating a digital signal in response to the PWM signal at the input terminal which digital signal is a PCM representation of the portion of the time within a sample period during which the PWM signal is in a first logic state;

first storage means capable of storing a digital signal generated by said encoding means for a prior sample period;

first comparison means capable of generating a digital output signal at the end of each sample period which is representative of the difference between the digital signal generated by said encoding means and the digital signal stored in said first storage means;

second storage means capable of storing a digital signal corresponding to a predetermined data threshold value representative of a significant value change; and

second comparison means capable of both comparing the digital output signal from said first comparison means with the predetermined data threshold value in the second storage means, and generating an output signal capable of causing the digital signal generated by said encoding means to be both stored in said first storage means and applied to the output terminal of the arrangement.

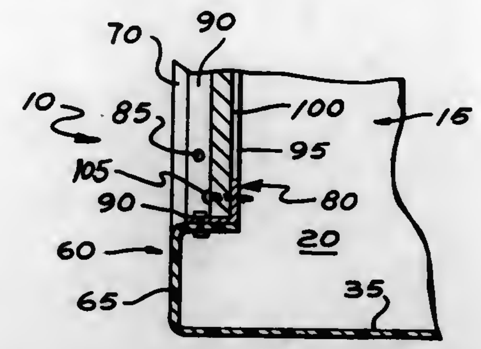
4,129,752
SHOCK RESISTANT LOUDSPEAKER ENCLOSURE

Timothy L. Griffin, Jr., Shutesbury, Mass., assignor to Amanita Sound, Inc., Easthampton, Mass.

Filed Oct. 20, 1977, Ser. No. 843,836

Int. Cl.^{2} H04R *1/02*

U.S. Cl. 179—146 E 7 Claims



1. A shock resistant loudspeaker enclosure comprising:

a resilient shell including a sidewall structure having an open front and further including a back wall,

a resilient bracket integral with said shell and disposed relative thereto about the periphery of said open front said bracket comprising a shoulder extending inwardly from said sidewall structure and a mounting flange extending perpendicular to said shoulder from an inner edge thereof,

a rigid frame secured to said bracket and

a loudspeaker mounting baffle secured to said rigid frame and enclosing said opening.

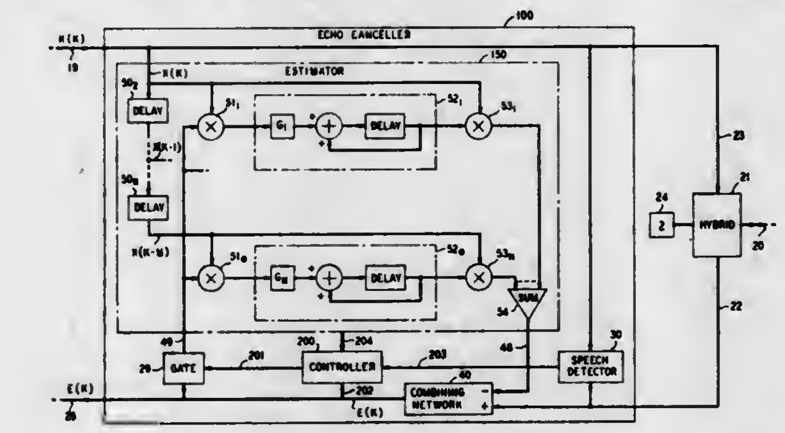
4,129,753
ECHO CANCELLER USING FEEDBACK TO IMPROVE SPEECH DETECTOR PERFORMANCE

Donald L. Duttweiler, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 9, 1977, Ser. No. 859,245

Int. Cl.^{2} H04B *3/20*

U.S. Cl. 179—170.2 7 Claims



1. An echo canceller including an adjustable signal processor coupled to a first transmission path;

means coupled to a second transmission path for combining a signal in said second path with a signal extended from said processor;

said combining means for providing an error signal;

means for extending said error signal to said processor;

said processor including

means responsive to said error signal for adjusting said processor extended signal, said processor extended signal being an estimate of said second path signal; and

detector means responsive to signals in said first and said second paths for providing a detection status signal and CHARACTERIZED IN THAT said echo canceller further comprises:

controller means responsive to said detection status signal, a first path signal, and said error signal for extending a control signal to said error signal extending means for controlling the adjusting of said signal processor;

said control signal including a first state responsive to which said processor inhibits adjusting said estimate;

said first inhibiting state being extendable upon detection of the value of a first function of said error signal exceeding the value of a second function of said error signal.

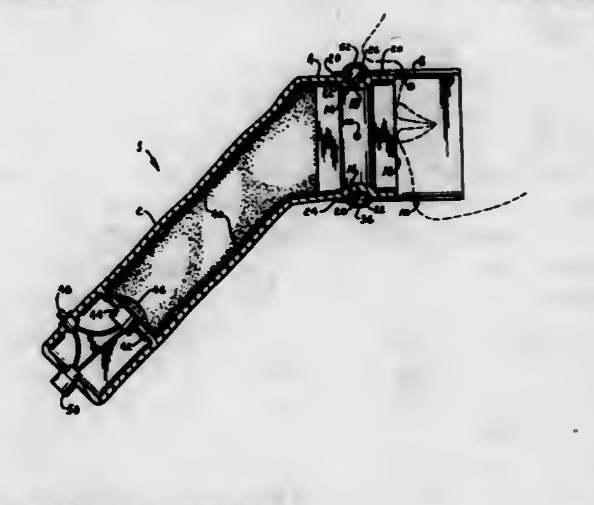
4,129,754
REPORTING DEVICE

Thomas A. Gore, Edina, Mo. 63537

Filed Jul. 1, 1977, Ser. No. 812,138

Int. Cl.^{2} H04R *1/08*

U.S. Cl. 179—188 17 Claims



1. A reporting device comprising:

(a) an elongated housing having a closed end and an open end;

(b) a hollow face piece having two open ends and being adapted for mounting with one of said open ends positioned over said open end of said housing and in contact with said housing adjacent said open end of said housing and with the other open end thereof having means for achieving a relatively airtight contact when placed against the facial area around the mouth of the user of said device;

(c) transducer means positioned within said housing for generating an electrical signal in response to audio waves within said device;

(d) means for permitting pressurized air within said device to escape to the outside of said device when said other open end of said face piece is pressed against the facial area around the mouth of the device user and the device is in use;

(e) said means for permitting pressurized air within said device to escape to the outside further comprises a groove circumscribing said housing with at least one orifice through said housing in said groove, a channel formed within said face piece and inscribing said face piece, at least one aperture through the material of said face piece, said aperture connecting the interior of said piece with the exterior thereof with at least one aperture being located in said channel, said channel being positioned in said groove when said face piece is positioned on said housing;

whereby pressurized air within said device escapes to the exterior thereof by moving from the interior of said device through said orifice to said groove and thus into said channel in said face piece and thence through said aperture in said face piece to the exterior of said device thus enabling said transducer to generate relatively distortion free signals responsive to the user's voice.

4,129,755
FRAME SYNCHRONIZING SYSTEM FOR TDMA RADIO COMMUNICATIONS

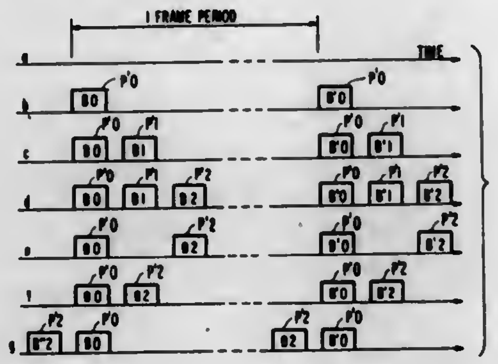
Shuji Murakami, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1977, Ser. No. 849,363

Claims priority, application Japan, Nov. 11, 1976, 51-136050

Int. Cl.² H04J *3/06*

U.S. Cl. 179—15 BS **4 Claims**



2. A frame synchronizing equipment for use in a time-division multiple-access radio communication system having plural radio channels between plural radio stations and separating the channels from one another on a time-sharing basis comprising: means for monitoring every channel upon initiation of a call for communication and for detecting the presence of an unoccupied channel; means responsive to the detection of an occupied channel followed by the unoccupied channel for extracting a pulse in a frame period synchronized with a burst signal of the occupied channel immediately preceding said unoccupied channel on the time axis; means responsive to the termination of the burst signal of the occupied channel for extracting another pulse in the frame period synchronized with the frame synchronization signal of said unoccupied channel; and a phase synchronization oscillating circuit for generating frame synchronization signals in synchronism with said pulses.

4,129,756
TELEPHONE EXCHANGE SIGNALLING UNIT

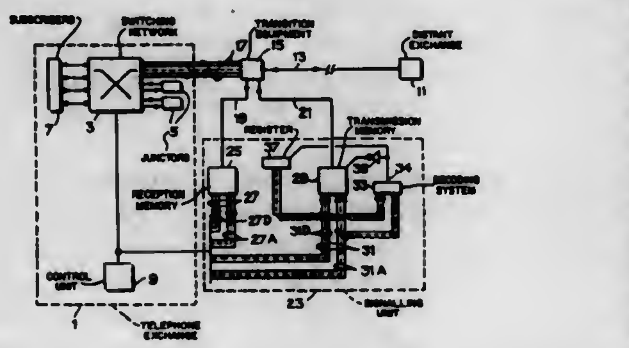
Bernard M. H. Depouilly, Paris, and Edouard M. J. A. I. Issenmann, Versailles, both of France, assignors to Le Material Telephonique, Boulogne-Billancourt, France

Filed Sep. 20, 1977, Ser. No. 834,874

Claims priority, application France, Sep. 24, 1976, 76 28776

Int. Cl.² H04M *3/22*

U.S. Cl. 179—175.2 R **7 Claims**



1. A telephone exchange signalling unit adapted to constitute an interface interconnected between a pulse code modulated signal junction and a telephone exchange control unit which signalling unit is capable of receiving, comparing, and exchanging signalling and synchronization data in the form of binary multiplet arrays between said control unit and said pulse code modulated signalling junction wherein said signalling unit comprises a reception memory capable of receiving and storing signals from said junction, wherein the output of said reception memory is connected to the input of the control unit and is capable of making said data signals available to said control unit, the output of said control unit is connected to the input of a transmission memory and said signals are capable of being transferred from said control unit to said transmission memory; a decoder is attached between said control unit and said transmission memory which is capable of intercepting certain pulse code data signals having predetermined characteristics thereby preventing the introduction of said certain data signals to the transmission memory and making said intercepted data signals available instead at a register for further manipulation in a looping feedback circuit, which circuit is capable of comparing such intercepted data with the data received from said pulse code modulated signal junction; means are further provided for subsequently returning the intercepted data signals to said pulse code modulated signal junction from said signalling unit.

4,129,757
ELECTRICAL SWITCH ASSEMBLY

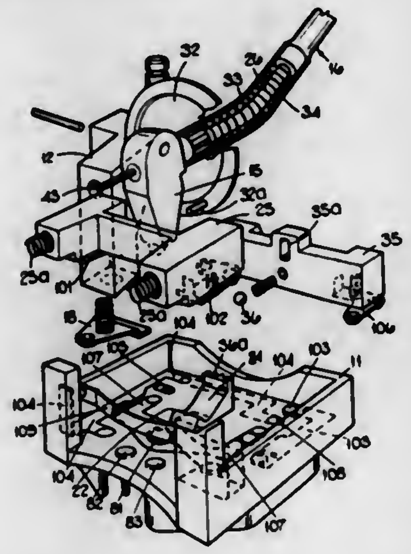
Edward Cryer, Higham, Nr. Burnley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jul. 9, 1976, Ser. No. 703,870

Claims priority, application United Kingdom, Jul. 9, 1975, 28828/75

Int. Cl.² H01H *9/00, 3/16*

U.S. Cl. 200—4 **6 Claims**



1. An electrical switch assembly including a body, movable means supported on the body for movement relative thereto, first and second sets of electrical contacts operable by movement of said movable means relative to the body in first and second generally mutually perpendicular directions respectively, an operating lever extending from the body and coupled to said movable means to facilitate movement of said movable means relative to the body in either of said mutually perpendicular directions, an operating member rotatably mounted on the lever adjacent the free end of the lever for movement relative to the lever about the axis of the free end region of the lever, the lever being bent intermediate the operating member and the movable means, a third set of electrical contacts supported by the body and operated by rotation of the operating member relative to the lever, a drive piece adjacent said movable means, said drive piece being rotatable relative to the operating lever about the longitudinal axis of that region of the lever adjacent the movable means to operate said third set of electrical contacts, a flexible sleeve encircling the bent region of the lever between the operating member and the drive piece, said sleeve coupling the operating member to the drive piece whereby rotation of the operating member relative to the lever is transmitted to the drive piece to rotate the drive piece relative to the lever and operate said third set of contacts, said drive piece including a flexible diaphragm through which the lever extends, the periphery of the diaphragm rotatably engaging the body and the diaphragm closing an aperture in the body through which the lever extends, the diaphragm flexing to permit movement of the lever relative to the body to operate said movable means, but transmitting rotational movements of said sleeve so as to operate said third set of contacts.

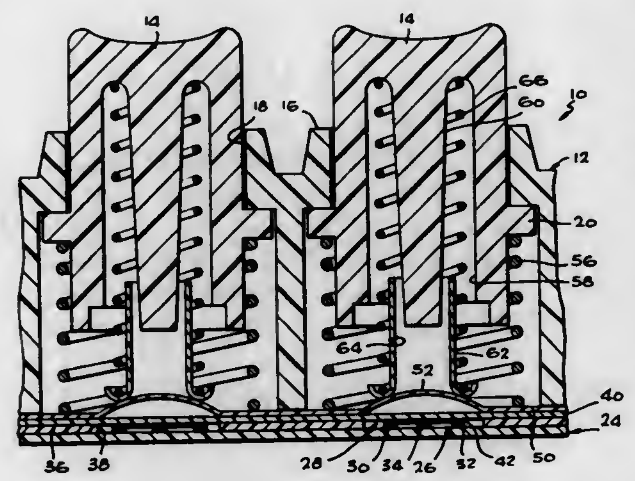
4,129,758
KEYBOARD SWITCH ASSEMBLY HAVING FLEXIBLE CONTACT CARRYING MEMBER BETWEEN CONTACT CARRYING SUBSTRATE AND FLEXIBLE, RESILIENT, KEY-DEPRESSIBLE BUBBLE PROTRUSIONS

Michael N. Gilano, Newport Beach, and James C. Hayes, Irvine, both of Calif., assignors to Telaris Telecommunications, Inc., Irvine, Calif.

Filed Jun. 10, 1977, Ser. No. 805,345

Int. Cl.² H01H *13/70*

U.S. Cl. 200—5 A **1 Claim**



1. A switch assembly comprising:

a planar substrate having a conductive circuit pattern printed on a surface thereof; the circuit pattern defining a plurality of sets of switch contacts each set including at least two separate contacts;

a planar dielectric spacer disposed adjacent the surface of the substrate and having a different aperture therethrough at each of the sets of switch contacts;

a thin planar contact carrying dielectric member disposed adjacent the spacer opposite the spacer from the substrate and having a conductive circuit pattern printed on a surface thereof facing the spacer and the substrate to close a set of switch contacts on the substrate upon being forced through an aperture in the spacer and into engagement therewith;

a thin layer of flexible material having a planar portion disposed adjacent the contact carrying member opposite the spacer and having a different protrusion therein adjacent each of the different apertures in the spacer, each of the protrusions being a continuation of the layer and extending outwardly from the layer on the opposite side of the layer from the spacer; and

an actuator mechanism including a spring biased key, a follower, and a follower spring providing the sole coupling between the key and follower positioned adjacent each protrusion, the follower engaging the adjacent protrusion with a force that increases in response to actuation of the key by an operator to force said protrusion into engagement with the dielectric member to force the conductive circuit pattern thereon into contact closure engagement with a set of switch contacts, the follower spring limiting the force that can be applied through the follower to the protrusion even though a greater force may be applied to the key.

4,129,759
PRESSURE RESPONSIVE CIRCUIT INTERRUPTER

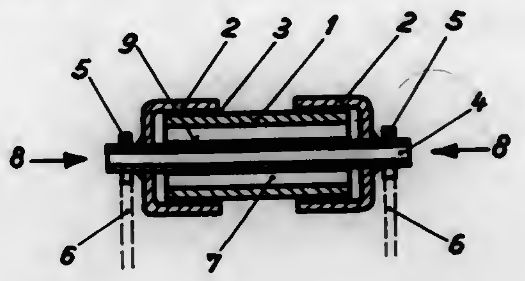
Alfred J. T. Hug, Beustweg 3, 8032 Zurich, Switzerland

Filed Jul. 16, 1976, Ser. No. 706,127

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1975, 2532295; Feb. 16, 1976, 2606096

Int. Cl.² H01H *35/34*

U.S. Cl. 200—83 R **12 Claims**



1. A pressure-responsive circuit interrupter safety device for interrupting an electrical circuit when a predetermined pressure of a fluid pressure medium is exceeded, said device comprising an enclosure having an opening, a pressure-responsive element closing said opening with respect to said pressure to be sensed and defining a sealed space in said enclosure, said element being adapted to be exposed to said pressure to be sensed; a frangible electrical conductor adapted to be connected in said electrical circuit; said element comprising a body of glass, and said electrical conductor comprising an electrically conductive coating applied to a surface of said body of glass, said pressure-responsive element being destroyed when said predetermined sensed pressure is exceeded so that said conductor is broken and said electrical circuit is interrupted.

4,129,760
VACUUM CIRCUIT BREAKER

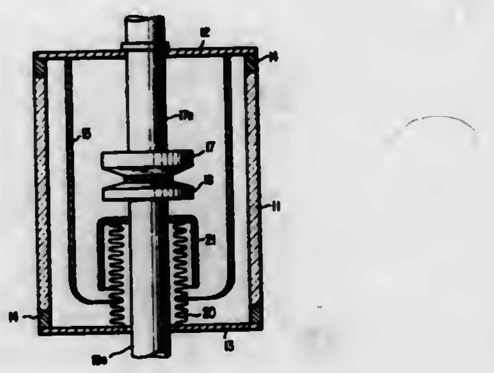
Tsutomu Okutomi, Kawasaki; Hisashi Yoshino, and Seishi Chiba, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed May 27, 1977, Ser. No. 801,214

Claims priority, application Japan, May 28, 1976, 51-61211

Int. Cl.² H01H *33/66*

U.S. Cl. 200—144 B **4 Claims**



1. In a vacuum electric circuit breaker, comprising an evacuated envelope and a pair of movable conductive rods within said envelope having points of contact equipped with contact members, wherein said conductive rods are movable into and out of engaging contact, the improvement comprising:

at least one of said contacts having circuit-making and breaking members formed of an alloy consisting essentially of 4 wt% to 9.4 wt% aluminum, 0.5 wt% to 3.5 wt% beryllium, 0.1 wt% to 10 wt.% Me_1, wherein Me_1 is at least one metal selected from the group consisting of bismuth, tellurium, selenium, antimony, magnesium, and lead, and the balance copper.

4,129,761
VACUUM CIRCUIT BREAKER

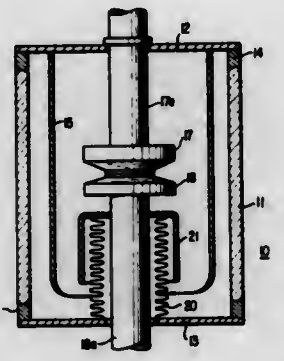
Tsutomu Okutomi, Kawasaki; Hisashi Yoshino; Seishi Chiba, both of Yokohama; Tadahito Tsutsumi, Fujisawa, and Kouichi Tejima, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kanagawa, Japan

Filed May 27, 1977, Ser. No. 801,218

Claims priority, application Japan, May 27, 1976, 51-60603

Int. Cl.^{2} H01H *33/66*

U.S. Cl. 200—144 B **2 Claims**



1. In a vacuum circuit breaker comprising an evacuated envelope and a pair of movable conductive rods within said envelope having points of contact equipped with contact members, wherein said conductive rods therefore are movable into and out of engaging contact, the improvement comprising:
at least one of said contacts having circuit making and breaking contact members formed of an alloy consisting essentially of 9.4wt % to 15 wt % Al, 4.5 wt % to 20 wt % Ni, 0.1 wt % to 10 wt % of at least one metal (Me) selected from the group consisting of bismuth, tellurium, selenium, antimony and magnesium with copper as the balance of the alloy, wherein said alloy contains an α copper phase (Cu(α)) containing nickel and a γ copper phase (Cu(γ)) containing nickel substantially dispersed throughout said alloy.

4,129,762
CIRCUIT-BREAKER OPERATING MECHANISM

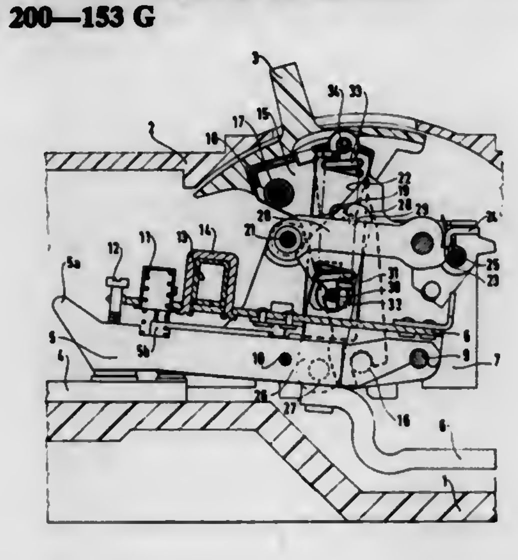
Michel Bruchet, Saint-Quentin, France, assignor to Societe Anonyme dite: UNELEC, Paris, France

Filed Jul. 19, 1977, Ser. No. 817,527

Claims priority, application France, Jul. 30, 1976, 76 23375

Int. Cl.^{2} H01H *3/54*

U.S. Cl. 200—153 G **5 Claims**



1. A circuit breaker mechanism comprising: an operating member rigidly fixed to a control handle, being free to move from a "closed" to an "open" position, said operating member having pivot means associated therewith; moving contact means free to move from a "closed" to an "open" position; an automatic tripping lever adapted to be latched as said circuit breaker mechanism assumes a closed position; linkage means disposed between the automatic tripping lever and moving contact driver; snap-action spring means anchored at one end to a shaft in said linkage means, and a lever pivotally-mounted on said pivot means carried by said operating member providing an operating area in which said shaft is engaged, the other end of said spring being anchored to said lever; said lever, linkage means, and attachment of said spring being such, to enable said mechanism to proceed from a position in which the spring acts in the direction of breaker closing, to one in which it acts in the direction of breaker opening in response to a first portion of the control handle's travel; and said mechanism acting through said linkage means in the direction of breaker opening established between said operating member and driver in response to a second portion of the control handle travel, when said moving contact means do not break contact under the urging of said snap action spring means during said first, portion of travel of said control handle travel.

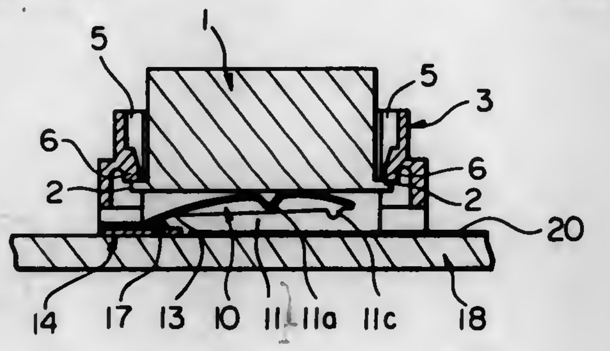
4,129,763
PUSH BUTTON SWITCH ASSEMBLY

Taneo Murata, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Feb. 8, 1977, Ser. No. 766,802

Int. Cl.^{2} H01H *3/12*

U.S. Cl. 200—159 A **2 Claims**



1. A pushbutton switch comprising:
a base plate;
a frame mounted on said base plate and having its opposite ends open;
a movable contact member formed integrally with an attachment portion attached to said frame, a snap-action disc portion bowing at its center away from said base plate and provided at its center with a contact and at its peripheral points with one or more contacts, and a connection portion connecting said attachment portion and said disc portion;
an insulating plate attached to said frame and underlying said connection portion, said insulating plate having a projection extending upwardly and abutting on said connection portion to urge said disc portion upwardly out of contact from said base plate;
said base plate having fixed contacts located in the positions corresponding to said respective movable contacts on said disc portion; and
a pushbutton supported for reciprocating movement in said frame to push said movable contact member toward said base plate so that said movable contacts located at said peripheral points first come into contact with said respective fixed contacts and then said disc portion is snapped toward said base plate so as to bring said movable contact located centrally on said disc portion into contact with said fixed contact on said base plate.

4,129,764
PUSH SWITCH

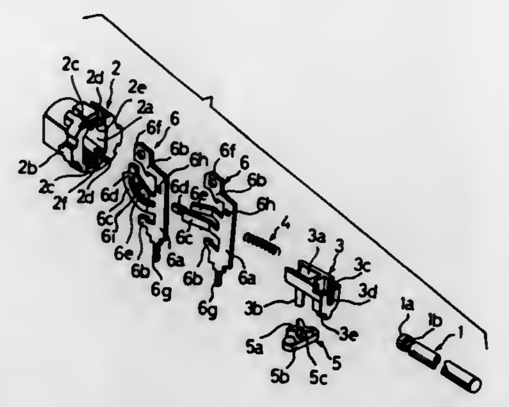
Masao Ohkita, and Hidetoshi Sato, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Jul. 14, 1977, Ser. No. 815,715

Claims priority, application Japan, Jul. 15, 1976, 51-94285

Int. Cl.^{2} H01H *13/52*

U.S. Cl. 200—159 R **12 Claims**



1. A push switch comprising an insulating driving body having a cam-teeth section and a driving section, a slider to which said driving body is rotatably secured, a casing having a hollow section for movably accomodating said driving body and said slider, at least two metal members each having a contact piece and which are disposed in said hollow section of said casing, and at least two driving pieces which are also disposed in said hollow section of said casing, said driving pieces clamping said cam-teeth section therebetween, a projection provided on one of said driving pieces for engagement with said cam-teeth section, said driving body being rotated by the movement of said slider and engagement of a cam-teeth by said projection, said driving body rotation moving said contact pieces into and out of contact with each other.

4,129,765
ELECTRICAL SWITCHING CONTACT

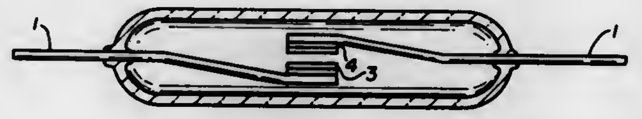
Günther Herklotz, Bruchköbel, and Walter Reichelt, Hanau, both of Germany, assignors to W. C. Heraeus GmbH, Hanau am Main, Germany

Filed Aug. 8, 1977, Ser. No. 822,729

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1976, 2638135

Int. Cl.^{2} H01H *1/66*

U.S. Cl. 200—268 **15 Claims**



1. Low-current rem-reed switch contact encased in a housing under vacuum or a protective gas comprising a substrate of medium-hard magnetic material having a coercive field strength of from 20 to 90 Oe containing anomalies on the surface thereof,
an intermediate layer of a thickness from 1 to 20 μm coated on at least a portion of said substrate, said intermediate layer consisting of at least one metal selected from the group consisting of titanium, zirconium, hafnium, vanadium, niobium and tantalum, and
an outer contact layer between 1 and 10 μm thick on said intermediate layer, said outer contact layer comprising a noble metal or noble metal alloy.

4,129,766
INDICATING MECHANISM FOR PUSH BUTTON SWITCHES

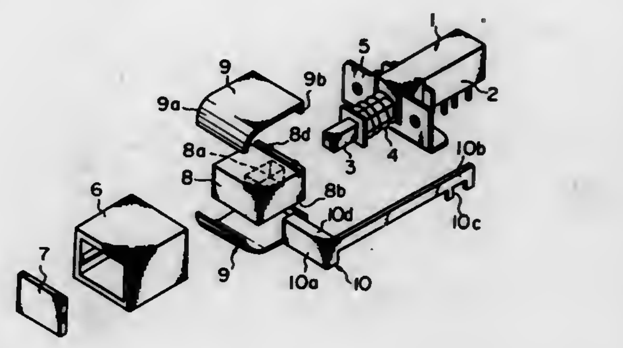
Hiroyasu Miyata, and Sadayoshi Iwasaki, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Apr. 14, 1977, Ser. No. 787,542

Claims priority, application Japan, Apr. 22, 1976, 51-50463[U]

Int. Cl.^{2} H01H *9/16*

U.S. Cl. 200—308 **1 Claim**



1. In an indicating mechanism for a pushbutton switch having a slide movable between a first outer position and a second inner position, said slide being movable inwardly past said second position for locking or unlocking said slide from said second position; said indicating mechanism comprising
a hollow nob adapted to be connected for movement with said slide and having a transparent window in its end portion;
an indicating member having an indicating surface disposed slidably within said nob; and
at least two shutter members disposed within said nob and having portions able to extend between said indicating surface and said window for preventing said indicating surface from being viewed through said window;
the improvement comprising:
said shutter members being formed from a resilient material and having said portions thereof biased towards one another; and
means for moving said shutter members with said nob;
whereby as the switch slide is pushed from its first position, said indicating surface will be moved between said portions of the shutter members to spread them apart resiliently to permit visual detection of said indicating surface and as the switch slide returns back from being pushed passed its second position, said portions of the shutter members will resiliently hold said indicating member near said window.

4,129,767
INDUCTION HEATING APPARATUS HAVING TIMING MEANS RESPONSIVE TO TEMPORARY REMOVAL OF COOKING IMPLEMENT

Keizo Amagami; Masatatsu Nakamura; Hideyuki Kominami; Kouji Funakoshi; Mitsuyuki Kiuchi, and Takumi Mizukawa, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Company, Limited, Japan

Continuation-in-part of Ser. No. 587,706, Jun. 17, 1975, abandoned. This application Jul. 22, 1977, Ser. No. 818,322

Int. Cl.^{2} H05B *5/04*

U.S. Cl. 219—10.49 R **1 Claim**

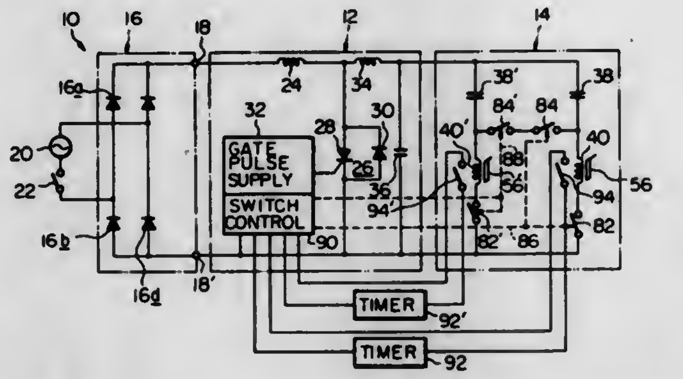
1. An induction heating apparatus comprising;
a d.c. power supply circuit,
a static power inverter connected to the d.c. power supply circuit for producing a high-frequency oscillating current,
an induction heating unit having a plurality of heater coils connected to the static power inverter for producing a commutating magnetic field around each of the heater coils,

capacitors respectively connected in series with the heater coils,

a plurality of first switches each connected between the static power inverter and each of the heater coils,

a plurality of second switches each provided in the vicinity of each of the plurality of the heater coils and responsive to removal of a load to be heated from its corresponding heater coil to be rendered open,

a plurality of timing circuits respectively connected in series with the second switches, each of the timing circuits producing an output signal in response to a condition in which the corresponding one of the second switches is kept open for a predetermined period of time,



a switch control circuit having input terminals connected to the timing circuits, being linked with the first switches through respective linkage linking the first switches to the switch control circuit, and being actuated by the output signal from each of the timing circuits so that the first switch associated with the timing circuit delivering the output signal is rendered open, and

a plurality of third switches connected in series and provided between junctions defined by the capacitors and the heater coils, each of the third switches being linked to the switch control circuit through respective said linkages for being rendered open when the first switch associated with the timing circuit delivering the output signal is rendered open by means of the switch control circuit.

4,129,768

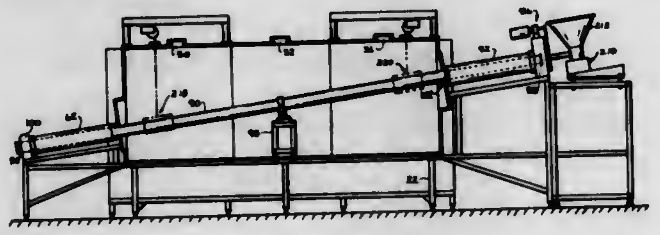
METHOD AND APPARATUS FOR MICROWAVE HEATING OF FLOWABLE MATERIAL

Eldon E. Anderson, Mountain View, Calif., assignor to Gerling Moore, Inc., Santa Clara, Calif.

Filed Jan. 7, 1977, Ser. No. 757,602

Int. Cl.^{2} H05B *9/06*

U.S. Cl. 219—10.55 A **17 Claims**



1. In a method for heating flowable material in a microwave oven having a microwave transparent tube extending therethrough, the steps of rotating said tube, said tube being inclined at an angle to the horizontal such that the material will flow through the tube as the tube is rotated, feeding material into the upper end of said tube, and removing material having passed through said tube from its lower end.

7

4,129,769

TIMER ARRANGEMENT IN A COMBINATION MICROWAVE OVEN AND ELECTRIC HEATING OVEN

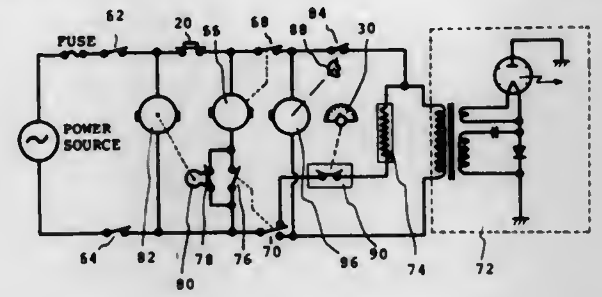
Yutaka Takagi, Sakai, and Munemitsu Toyoda, Osaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 11, 1977, Ser. No. 776,663

Claims priority, application Japan, Mar. 11, 1976, 51/26704; Mar. 12, 1976, 51/27387; Mar. 15, 1976, 51/28293; Mar. 19, 1976, 51/33508[U]

Int. Cl.^{2} H05B *9/06*

U.S. Cl. 219—10.55 B **10 Claims**



1. A combination microwave oven and electric heating oven comprising:
- a. an oven compartment;
- b. a microwave generator for performing microwave heating cooking;
- c. a heater means disposed within said oven compartment for performing electric heating cooking;
- d. a selection means for selectively energizing the microwave generator and the heater means;
- e. a timer arrangement including a timer setting means for setting a desired cooking period, and a timer motor associated with the timer setting means; and
- f. switching means associated with said selection means for continuously enabling said timer motor when the combination microwave oven and electric heating oven is placed in a microwave heating cooking mode, and for intermittently enabling said timer motor when the combination microwave oven and electric heating oven is placed in an electric heating cooking mode, whereby said timer arrangement functions as a short interval timer in the microwave heating cooking mode and as a long interval timer in the electric heating cooking mode.

4,129,770

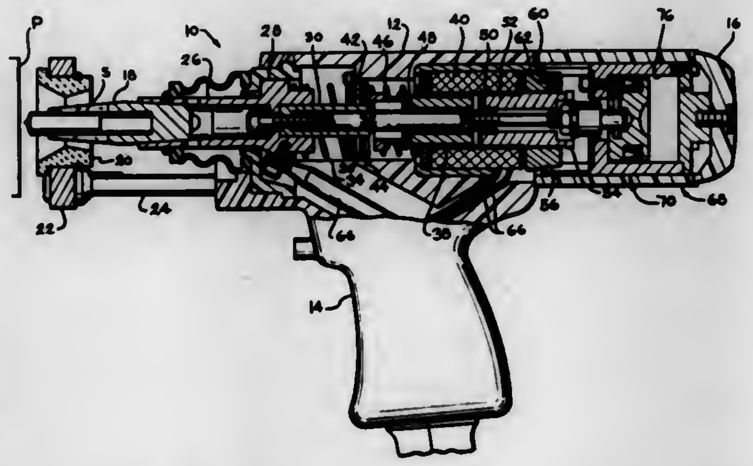
PLUNGE DAMPENER

Robert L. Gogolin, Lorain, and Steve Spisak, Elyria, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Apr. 28, 1977, Ser. No. 791,863

Int. Cl.^{2} B23K *9/20*

U.S. Cl. 219—98 **17 Claims**



1. Apparatus for welding a stud to a surface of a workpiece by a drawn-arc, stud welding technique, said apparatus comprising a welding tool body, means carried by said body for holding the stud with an end toward the workpiece, means for establishing a welding arc between the stud and the workpiece when the stud is spaced from the workpiece, means for moving the holding means and the stud toward and away from the workpiece, and means for slowing the movement of the stud toward the workpiece by said moving means, and including means forming a cylinder affixed to a rear portion of said welding tool body, a piston in said cylinder, a piston rod connected to said stud moving means, and means connecting said piston to said piston rod to enable pivotal movement of said piston rod relative to said piston in all directions.

4,129,771

METHOD FOR BUTT-WELDING CYLINDRICAL METALLIC RODS

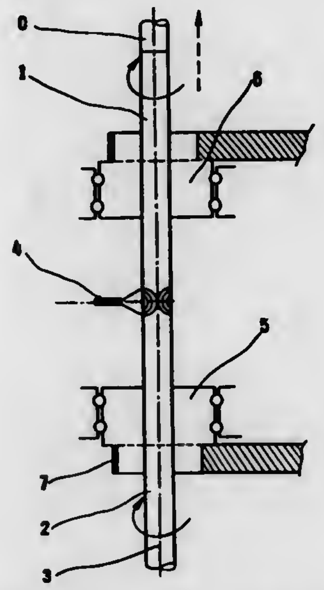
Jacques Pinettes, Gieres, and Jean Chaix, Claix, both of France, assignors to Alliages Frittes S.A., Paris, France

Filed May 10, 1977, Ser. No. 795,641

Claims priority, application France, May 31, 1976, 76 17172

Int. Cl.^{2} B23K *9/02*

U.S. Cl. 219—104 **10 Claims**



1. The method of butt welding hard facid metallic rods of substantially the same diameter without filler metal and without radial deformation in the welded area comprising the steps of bringing the ends of two adjacent coaxial rods having a common axis into contact with each other without compressive stress, welding said rod ends together by a heat source sufficient to accomplish said weld, while simultaneously rotating the rods about their common axis with respect to said heat source for at least more than one complete revolution at controlled a speed whereby the welded area forms with the unwelded area of the rods a substantially smooth surface and a rimless joint is formed between the ends of said coaxial rods.

4,129,772

ELECTRODE STRUCTURES FOR HIGH ENERGY HIGH TEMPERATURE PLASMAS

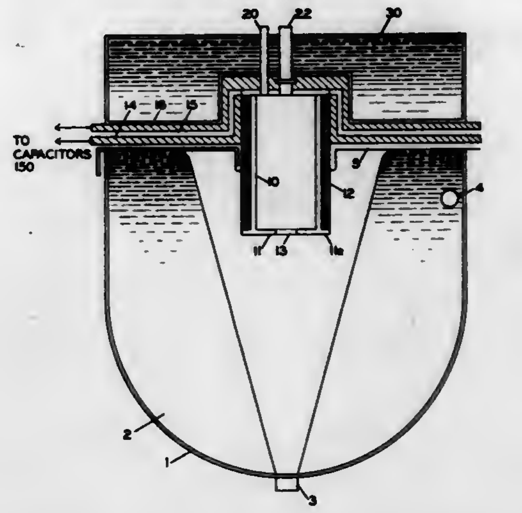
Gerald A. Navratil, and George R. Neil, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 12, 1976, Ser. No. 731,801

Int. Cl.^{2} B23K *9/00*

U.S. Cl. 219—121 P **5 Claims**

1. Apparatus for heating plasmas by plasma focusing, comprising:
- (a) means for generating and containing a vortex of liquid conducting metal;
- (b) an inner electrode mounted within and spaced away from said vortex of liquid conducting metal, said electrode having a substantially cylindrical portion whose major axis is coincident with the axis of rotation of said vortex, and an annular member having an aperture therein which is mounted on the bottom end of said cylindrical portion and electrically connected thereto, said inner electrode being electrically insulated from said liquid metal vortex;
- (c) a substantially cylindrical insulator surrounding the cylindrical portion of said electrode and leaving said annular member substantially exposed, whereby when a selected high voltage is applied between said inner electrode and said liquid metal vortex, a sheet of electrical current discharge is formed between said annular member and said vortex which travels from the top end of said vortex to the bottom thereof to form a focus for plasma forming gas injected into the focus area through said aperture in said annular member.



4,129,773

CONSUMABLE GUIDE TUBE ASSEMBLY

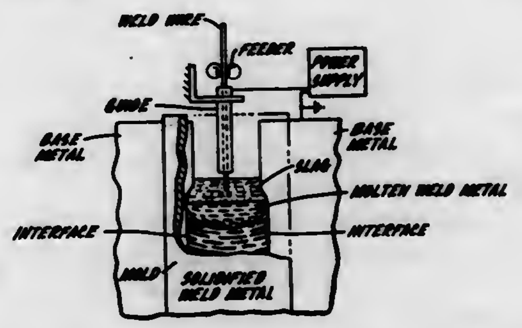
Charles E. Ridenour, Chicago Heights; Herman A. Fabert, Jr., Homewood, both of Ill.; John Tasker, West Milford, and Hugo R. Larson, Ridgewood, both of N.J., assignors to Abex Corporation, New York, N.Y.

Division of Ser. No. 613,040, Sep. 12, 1975, Pat. No. 4,054,919. This application Mar. 28, 1977, Ser. No. 781,587

The portion of the term of this patent subsequent to Aug. 1, 1995, has been disclaimed.

Int. Cl.^{2} B23K *35/22*

U.S. Cl. 219—146.23 **2 Claims**



1. An electroslag welding device constituting a source of metal for welding by the electroslag process and consisting of a stainless steel guide sleeve both to resist embrittlement of the weld metal and to lend structural support to an electrode, a tube of copper inside, and supported by, the guide sleeve and serving as an electrode for conducting the current away from the guide sleeve, and a weld wire inside the copper tube.

4,129,774

FILLING MATERIALS FOR HEATING ELEMENTS

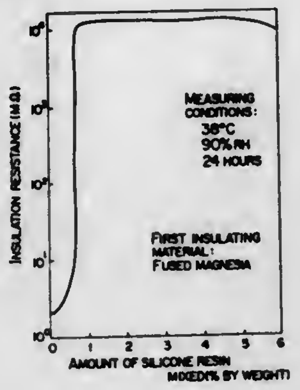
Tozaburo Inano, Chigasaki; Katsuhiro Yamazaki, Matsudo, and Minoru Otake, Kashiwa, all of Japan, assignors to Hitachi Heating Appliances Co., Ltd., Japan

Filed Aug. 13, 1976, Ser. No. 714,179

Claims priority, application Japan, Aug. 28, 1975, 50-104226

Int. Cl.² H05B *3/18*

U.S. Cl. 219—552 **10 Claims**



1. A heating element consisting of a metal pipe, an electric resistance conductor inserted into the metal pipe and a heat resistant insulating material filled between said metal pipe and said electric resistance conductor, characterized in that said heat resistant insulating material is one obtained by mixing with a first insulating material of particulate fused magnesia 1.0 to 5.0% by weight of a second insulating material selected from the group consisting of a silicone resin powder, an epoxy resin powder, polytetrafluoroethylene resin powder, and an unsaturated or copolymerized polyester resin powder, said second insulating material having a lower melting temperature than that of the first insulating material based on the weight of the first insulating material, and heating the mixture to a temperature at which the second insulating material is molten to melt the second insulating material and coat the surface of the first insulating material with the molten second insulating material.

4,129,775

GLINT CAPTURE SYSTEM FOR IMPROVING LOCK STABILITY OF COAT

Thomas R. O'Meara, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

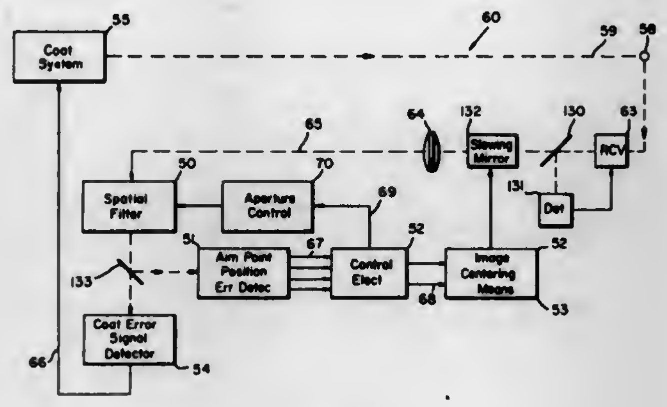
Filed May 31, 1977, Ser. No. 801,897

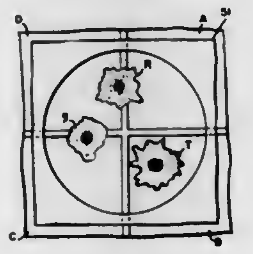
Int. Cl.² G01J *1/20*

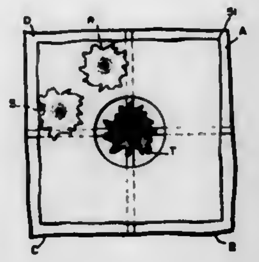
U.S. Cl. 250—203 R **12 Claims**

1. An adaptive optical system having means for transmitting optical energy to and for receiving optical energy from a target such that modulation signal components, derivable from the received energy beam and originating from energy from various discrete areas on the target, are indicative of the phasing across the beam at the target and said adaptive optical system further comprising phase control means which is responsive to said modulation signal components for adjusting the relative phase across the transmitted beam so as to cause the transmitted energy to approach an in-phase condition at the target, wherein the improvment comprises:

- position determining means disposed in an optical path of the energy received from the target for providing beam position control signals indicative of the relative position of the centroid of the intensity of the optical energy in the received energy beam;
- variable aperture means, interposed in an optical path of the received energy and including an adjustable aperture, for passing only that portion of the received energy beam applied thereto which is in alignment with said adjustable aperture;
- phasing control detector means responsive to the received energy which passes through said adjustable aperture, for providing said modulation signal components to said phase control means;
- position control means responsive to said position control signals for adjusting the spatial orientation between the received energy beam applied to said variable aperture means, and said variable aperture means, such that the centroid of the optical energy in said received beam is substantially centered within said aperture; and
- aperture control means, responsive to said position control signals, for reducing the size of said aperture when the centroid of the intensity of the optical energy in said received energy beam is substantially centered within said aperture;
- whereby modulation signal components originating from areas on the target whose return energy is not in alignment with said adjustable aperture do not effect adaptive phase control of said transmitted beam.







4,129,776

DETECTION OF SUBSURFACE AIR FLOW

Robert L. Fleischer, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

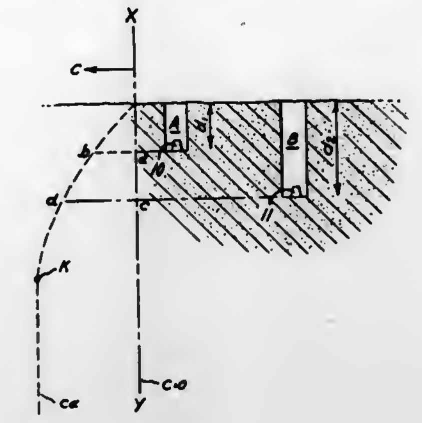
Filed Jun. 22, 1977, Ser. No. 808,963

Int. Cl.² G01V *5/00*

U.S. Cl. 250—253 **7 Claims**

1. A method for determining whether air flow is occurring into or out of the earth's surface at a given location comprising the steps of:

- excavating a first hole to a depth in the range of from about 20 cm to about 60 cm;
- excavating a second hole to a depth greater than about 1.5 the depth of said first hole, said second hole being at a distance from said first hole at least as great as the depth of said second hole;
- disposing in each of said holes identical means for detecting the presence of alpha particles;
- determining the concentration of alpha particles encountered at the bottom of each of said holes due to the presence of radon during some predetermined period of exposure; and
- calculating the ratio of the concentration of radon at the bottom of said second hole to the concentration of radon at the bottom of said first hole, the numerical value so determined providing an assessment of whether subsurface air flow was occurring and, if so, in which direction.



4,129,777

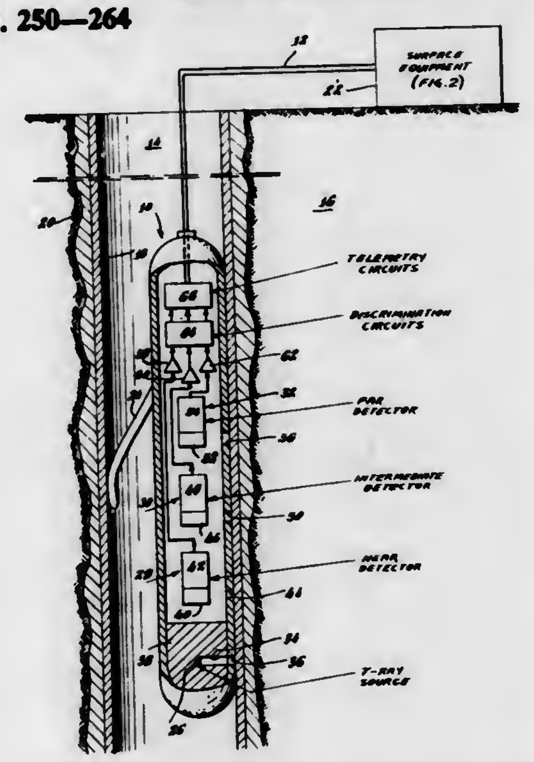
CEMENT THICKNESS MEASUREMENTS IN CASED BOREHOLES

John S. Wahl, Ridgefield, and Nick A. Schuster, Darien, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Jun. 13, 1977, Ser. No. 806,247

Int. Cl.² G01V *5/00*

U.S. Cl. 250—264 **23 Claims**



1. A method for logging a borehole traversing an earth formation and having solid matter along at least a portion of the wall thereof, comprising the steps of:

- emitting gamma radiation from the borehole into the surrounding media;
- detecting gamma radiation which returns to the borehole as a result of the interaction of the emitted radiation with three respective radial layers of the surrounding media, each beginning approximately at the borehole and extending to different radial depths; and
- obtaining from the detected radiation a representation of the thickness of said solid matter.

4,129,778

METHOD AND APPARATUS FOR MEASURING THE THICKNESS OF A NON-METALLIC COATING ON A PLATED METAL PLATE

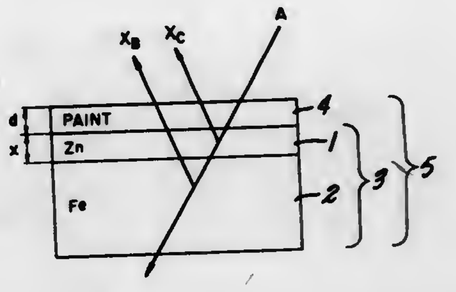
Akira Inoue, and Minori Oka, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed Jul. 12, 1977, Ser. No. 815,019

Claims priority, application Japan, Jul. 12, 1976, 51-82727

Int. Cl.² G01N *23/20*; G21K *1/00*

U.S. Cl. 250—272 **7 Claims**



1. A method of measuring the thickness of a non-metallic covering layer on a plated metal plate comprising a metal base plate and a plating metal layer, said method comprising applying to the covered side of said metal plate radiant rays to produce fluorescent X-rays including fluorescent X-rays emitted from said plating metal layer and fluorescent X-rays emitted from said base plate, measuring the intensity of said fluorescent X-rays emitted from said plating metal layer and the intensity of said fluorescent X-rays emitted from said base plate, and deriving the thickness of said covering layer from said intensity of said fluorescent X-rays emitted from said plating metal layer and said intensity of said fluorescent X-rays emitted from said base plate.

4,129,779

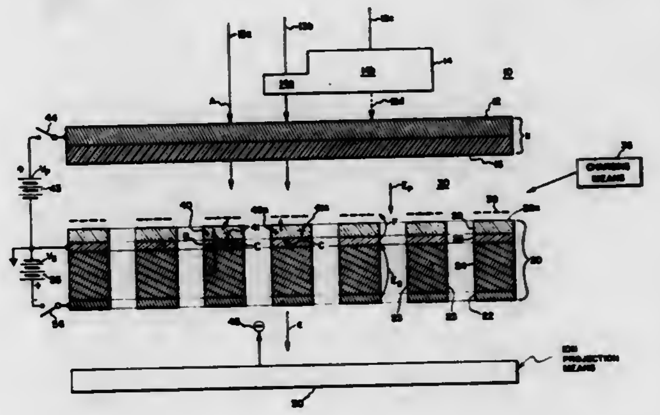
PHOTOCONTROLLED ION-FLOW ELECTRON RADIOGRAPHY APPARATUS WITH MULTI-LAYERED MESH STRUCTURE

Jack D. Kingsley, and Kei-Hsiung Yang, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 19, 1977, Ser. No. 834,649

Int. Cl.² G03D *41/16*

U.S. Cl. 250—315 A **25 Claims**



1. Apparatus for use in the radiographic analysis of an object differentially absorbing x-ray quanta, comprising:

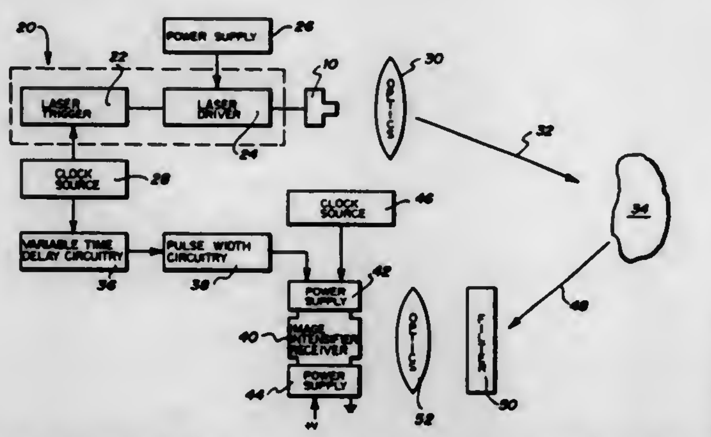
- a first electrode supporting a sheet of insulating material;
- a control mesh structure spaced from said first electrode to form a gap therebetween, said control mesh structure including, disposed sequentially away from said first electrode, a layer of a photoconductive insulating material; a thin film of a transparent and conductive material; a layer of material for conversion of x-ray quanta to photons in the ultraviolet and visible spctral regions; and a conduc-

tive mesh screen; said mesh control structure having a two-dimensional array of apertures formed therethrough;
means for depositing a quantity of a first polarity of electrical charge substantially uniformly adjacent a surface of said photoconductive layer facing said gap;
means for emitting a stream of ions of said first polarity toward said mesh electrode of said control mesh structure; and
means for applying an electric field across the gap for accelerating said ions toward said insulating layer of said first electrode; said ions being transmitted through the apertures of said mesh control structure and modulated by the charge remaining in areas of said photoconductive layer adjacent to each aperture after impingement of the differentially-absorbed x-rays, to create a charge image of said object upon said insulating sheet.

4,129,780
ACTIVE IMAGING SYSTEM USING TIME PROGRAMMED DWELL

Richard H. Laughlin, Richardson, Tex., assignor to Varo, Inc., Garland, Tex.

Filed Jun. 21, 1977, Ser. No. 809,052
Int. Cl.^{2} H01J *31/49*
U.S. Cl. 250—333 31 Claims



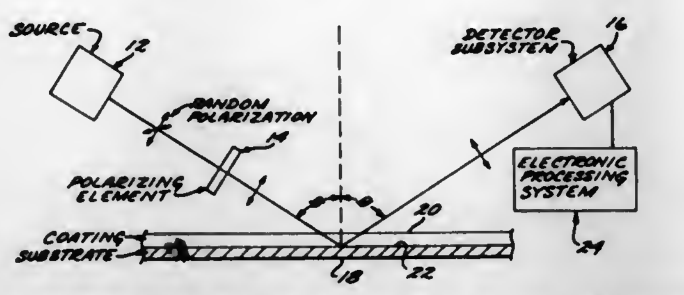
1. An imaging system for detection of a target comprising:
an electromagnetic radiation source for generating a series of interrogating pulse signals directed towards the target;
receiver means operable to be triggered for receiving during preselected time intervals reflected interrogating pulse signals from the target and for generating a resultant output signal; and
circuit means connected for triggering said receiver means to receive reflected interrogating pulse signals according to a predetermined time function such that the number of reflected interrogating pulse signals received by said receiver means is dependent on the distance between said receiver means and the target, said receiver means thus generating a resultant output signal to provide a signal of constant amplitude independent of the distance between said receiver means and the target.

4,129,781
FILM THICKNESS MEASURING APPARATUS AND METHOD

Walter M. Doyle, 2875 Bernard Ct., Laguna Beach, Calif. 92651

Filed May 17, 1976, Ser. No. 687,240
Int. Cl.^{2} G01J *1/00*
U.S. Cl. 250—341 7 Claims

1. An apparatus for measuring the thickness of a film on a reflecting surface wherein the measurement is optically accomplished by light radiation propagating in a plane of incidence



which is substantially parallel to the stria in the reflecting surface.

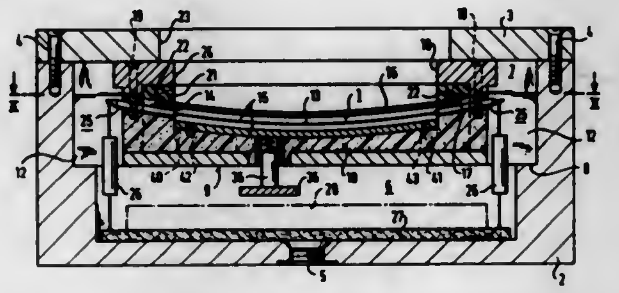
4,129,782
CURVED LOCATION-SENSITIVE PROPORTIONAL COUNTER TUBE

Werner Kreutz, Staufen, Fed. Rep. of Germany, assignor to M. Braun GmbH, Oberschleissheim, Fed. Rep. of Germany

Filed Aug. 25, 1977, Ser. No. 827,605

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1976, 2650607

Int. Cl.^{2} G01T *1/18*
U.S. Cl. 250—379 6 Claims



1. In a curved positionally-sensitive proportional counter tube having a counting chamber; an insulating member in said counting chamber; a trough-shaped metallic layer lining said insulating member to form a cathode; a counter tube window extending along the longitudinal side of said counting chamber; a radiation transmissive foil gas-tightly covering said window; and a counter tube wire forming an anode, said wire traversing said counting chamber in the longitudinal direction thereof and being mounted equidistantly spaced from said metallic trough side walls and being fastened at both ends thereof to the electrical elements of preamplifiers, the improvement comprising: said counting chamber being bent along its longitudinal axis at a constant rate of curvature, said counter tube wire being a spring-elastic wire; and fastening means for gripping both ends of said wire for mounting said wire in a curved position in conformance with the curvature of said counting chamber and of said cathode-trough, and maintaining said wire asymmetrically from said counter tube window and equidistantly relative to said cathode trough base surface.

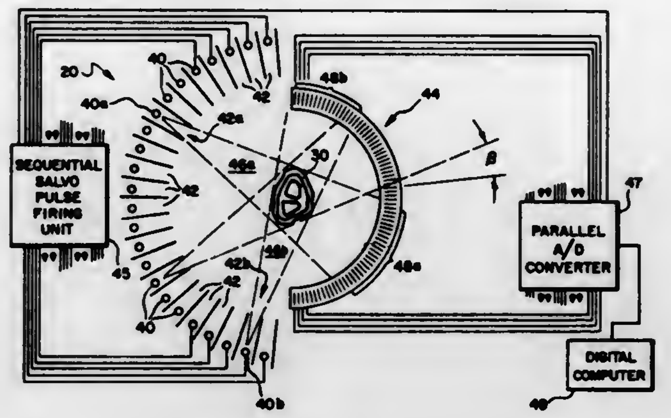
4,129,783
HIGH SPEED COMPUTERIZED TOMOGRAPHY IMAGING SYSTEM

John M. Houston, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 683,884, May 6, 1976, abandoned. This application Oct. 3, 1977, Ser. No. 838,458
Int. Cl.^{2} A61B *6/02;* G01N *23/08*
U.S. Cl. 250—445 T 8 Claims

7. A method for generating tomographic image data from body structures comprising the steps of:
disposing an array of x-ray sources about said body structures;

disposing an array of x-ray detectors about said body structures opposite said array of x-ray sources;
collimating x-ray energy from each of said sources into a beam which illuminates only a fraction of said x-ray detector array; and

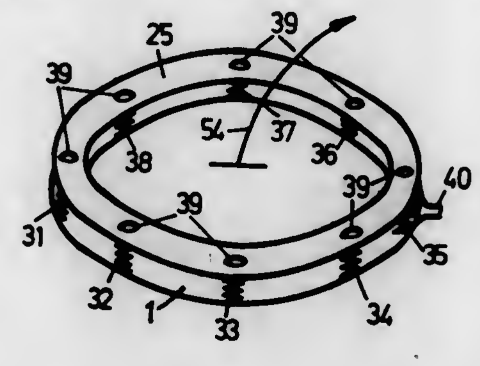


simultaneously pulsing a subset of x-ray sources in said array, the sources in said subset being selected so that x-ray energy from each said simultaneously pulsed sources illuminates a separate and distinct fraction of said x-ray detectors, whereby x-ray transmission data along a plurality of ray paths is obtained in a fast and unambiguous manner.

4,129,784
GAMMA CAMERA

Edgar Tschunt, Erlangen; Winfried Platz, Ratsberg; Ulrich Bär, Nuremberg, and Lothar Heinz, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation of Ser. No. 479,425, Jun. 14, 1974, which is a continuation of Ser. No. 324,063, Jan. 16, 1973, abandoned. This application Dec. 8, 1975, Ser. No. 638,346
Int. Cl.^{2} G21K *1/02*
U.S. Cl. 250—505 8 Claims

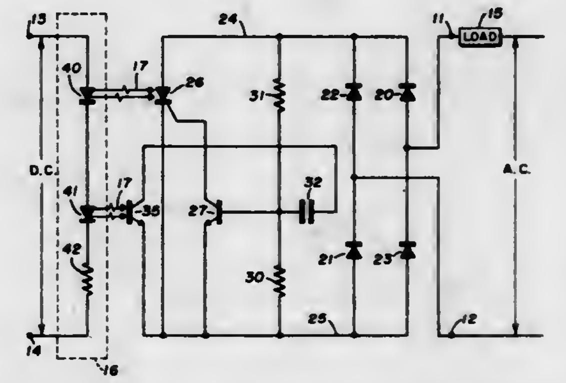


1. In combination with a gamma camera having means for exchangably mounting any of a series of collimators in the ray inlet of the camera, a plurality of reserve collimators, holders carrying said reserve collimators, a device for supporting said holders, said device comprising a column having a vertical axis, and means connected with said column and supporting said holders swingably one above the other, said holders each comprising a swinging support mounted for swinging movement about the vertical axis of the column, and a separate insert carried by the support for swinging movement therewith about the vertical axis of the column, each insert having a bearing surface for supporting one of said collimators thereon for transfer to the mounting means of the camera, the inserts of the respective holders being selectively swingable with the respective supports to respective positions in vertical alignment with the mounting means of the camera for selective transfer of the collimator supported by any of the inserts to the mounting means of the camera, and for subsequent return of each collimator from the mounting means of the camera to one of the inserts after use, each of said inserts having a series of springs connecting such insert with its respective support for accommodating slight lateral shifting of the insert relative to its support during exchange of the collimator between the mounting means of the camera and the bearing surface of the insert.

4,129,785
SOLID STATE SWITCH

Zagloul B. Kadah, San Jose, Calif., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 31, 1977, Ser. No. 846,966
Int. Cl.^{2} G02B *27/00*
U.S. Cl. 250—551 9 Claims



1. A solid state switch circuit comprising, in combination:
a pair of power terminals connectable in series with a load and in series with an A.C. source of power;
a single phase, full-wave bridge rectifier circuit having A.C. terminals and D.C. terminals; said D.C. terminals being a positive terminal and a negative terminal; said pair of power terminals connected to said A.C. terminals;
a first optically responsive conductive device having a pair of main terminals and a control terminal; said pair of main terminals of said first optically responsive conductive device being connected to said D.C. terminals of said full-wave bridge rectifier circuit;
zero-cross firing circuit means coupled between said D.C. terminals of said full-wave bridge rectifier circuit and coupled to said control terminal of said first optically responsive conductive device; said zero-cross firing circuit means having a voltage divider means;
a capacitor and a second optically responsive conductive device connected in series from a point intermediate of said voltage divider means to said negative terminal of said D.C. terminals;
and optical generator means optically coupled to said first and second optically responsive conductive devices; said optical generator means having a pair of D.C. terminals for receiving input signals for the operation of said solid state switch circuit.

4,129,786
RIM-TYPE HYDROELECTRIC MACHINE

Helmut Miller, Niederrohrdorf, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

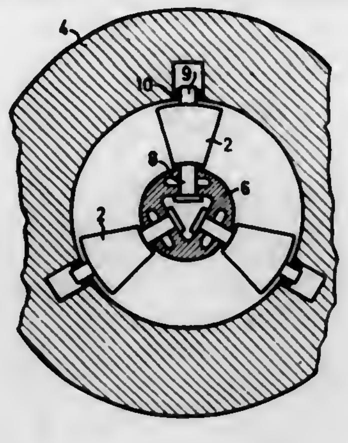
Filed Nov. 23, 1976, Ser. No. 744,250

Claims priority, application Switzerland, Dec. 2, 1975, 15611/75

Int. Cl.^{2} F01D *15/10, 7/00*
U.S. Cl. 290—52 5 Claims

1. In a hydroelectric machine set which includes a service water duct, a hydraulic machine having a wheel within the duct which carries radially extending blades, and an electrical machine which surrounds the duct and the bladed wheel in the manner of a rim and has a rotor, the improvement which

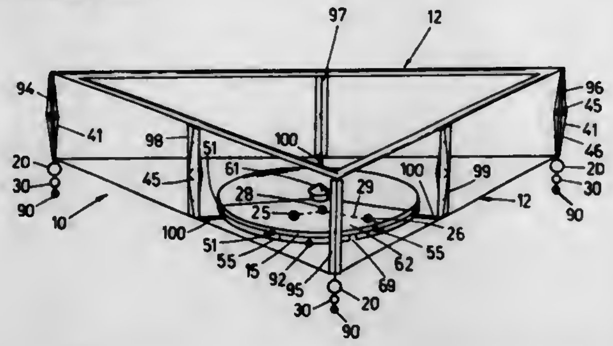
comprises torque-transmitting connections between the external ends of the blades and the rotor which allow free radial



movement and also pivotal movement of the blades relatively to the rotor.

4,129,787
DOUBLE WIND TURBINE WITH FOUR FUNCTION BLADE SET

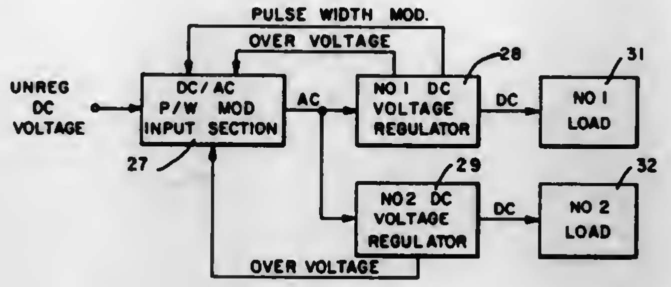
Florencio N. Palma, 263 Keele St., Toronto, Canada
Filed Apr. 19, 1977, Ser. No. 788,798
Int. Cl.^{2} F03D *7/06*
U.S. Cl. 290—55 **7 Claims**



1. A Free-Standing, Self-Starting, Vertical-Axis Rotor for Natural Energy Harnessing comprising; an equilateral triangular frame having a plurality of vertical airfoil blades having bilateral stress dampers to dissipate the centrifugal and aerodynamic stresses and supress blade flutter at high operating speeds; pivoted airfoil blades controlled by servo motors in response to controller signals in reference to anemometer signals in phase with the prevailing winds and in which the angle of attack of the blades is monitored by servomechanisms which also provide input signals to the said controller, allowing for control of the angle of attack of the pivoted blades for aerodynamic efficiency and also allowing the pivoted blades to operate as a drag turbine for self-starting in low wind speeds, further allowing operation as a lift-type turbine for high velocities of rotation and also the pivoted blades to be operated as aerodynamic brakes for arresting of operation; said frame mounted on a ring shaped tower base riding on wheels, said wheels disposed in a circular pattern and mounted on pillars allowing the harnessing of energy at gound level; said ring shaped tower base forming the frame of a ring shaped armature of an electromagnetic energy converter common to a number of stators mounted adjacently to it, to allow transfer of the harnessed energy by electromagnetic induction directly, at ground level.

4,129,788
HIGH EFFICIENCY DC TO DC CONVERTER

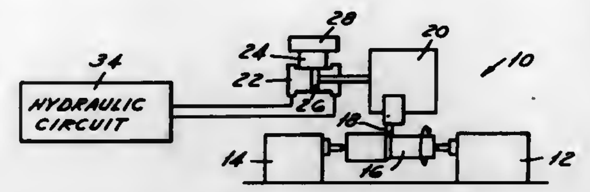
Theodore E. Chavannes, Woodland Hills, Calif., assignor to Dracon Industries, Chatsworth, Calif.
Filed Apr. 26, 1977, Ser. No. 790,976
Int. Cl.^{2} H02P *13/26*
U.S. Cl. 307—11 **8 Claims**



1. A dual output, high efficiency, low output ripple DC to DC converter, comprising
- an input section receiving a DC input and providing a substantially constant frequency AC output,
- a transformer having a primary winding receiving said AC output and having first and second secondary windings,
- a first rectifier connected to said first secondary winding and providing a first rectified output,
- a series inductance and parallel capacitance filter receiving said first rectified output and providing a smoothed first DC output,
- smoothing means for sensing said first rectified output and providing a first control signal corresponding thereto,
- a first regulator means for receiving said first rectified output and said first control signal and providing a feedback signal in response to said first control signal when said smoothed first DC output exceeds a predetermined reference level,
- means in said input section receiving said feedback signal and modulating the pulse width of said substantially constant frequency AC output in response thereto, so that said smoothed first DC output is maintained at a substantially constant voltage level while current demand from an applied load varies,
- a second rectifier connected to said second secondary winding providing a second rectified output,
- means for sensing said second rectified output and providing a second control signal which corresponds thereto and which is synchronized with said AC output,
- a series inductance and parallel capacitance filter receiving said second rectified output and providing a smoothed second DC output,
- a second regulator means for receiving said smoothed second DC output and said second control signal and providing a switching output in response thereto,
- an electronic switch connected with said second regulator means and being actuated by said switching output and operating to modulate the pulse width of said second rectified output, so that said smoothed second DC output is maintained at a substantially constant voltage level while current level demand from an applied electrical load varies,
- a series diode preload resistor circuit connected across said smoothed second DC output, said preload resistor circuit being coupled to said electronic switch and operating to provide driving current therefor when said switch is in the on condition and high load current is required at said smoothed second DC output, and to preload said second regulator means when said switch is in the off condition and low load current is required to said smoothed second DC output.

4,129,789
TOOL LOAD SENSOR AND CONTROL CIRCUIT

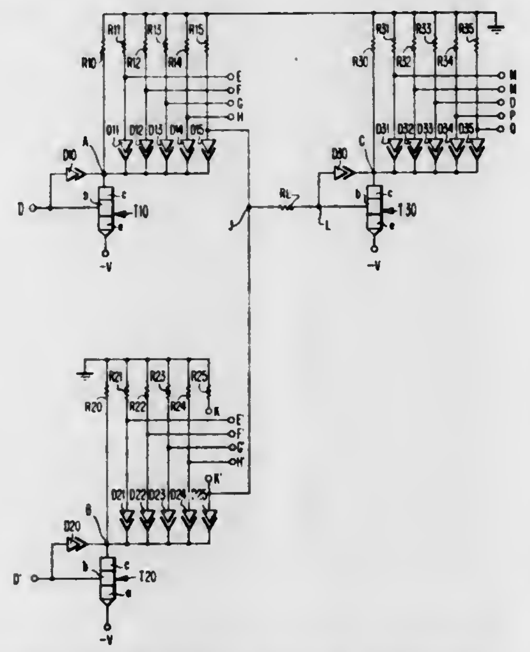
James D. Phillips, 548 Plymouth, Alpena, Mich. 49707
Filed Jan. 30, 1976, Ser. No. 653,660
Int. Cl.^{2} H01H *35/24, 45/00*
U.S. Cl. 307—118 **11 Claims**



1. In a machine tool for producing a cut on a workpiece, the combination comrising drive means for producing translatory movement between the workpiece and the cutting tool to produce a cut on the workpiece at a predetermined feed rate so that the force required to operate said drive means varies in accordance with the load on the cutting tool, said drive means including a drive piston coupled to the cutting tool and adapted to reciprocate the cutting tool relative to the workpiece through a predetermined stroke to effect a cutting pass on the workpiece and hydraulic fluid drive means for producing a predermined constant drive pressure on one face of said piston to displace the tool in the work-cutting direction, said hydraulic fluid drive means being adapted simultaneously to produce a back pressure on the opposing face of said piston which varies as a function of contact pressure between the cutting tool and the workpiece, pressure sensing means responsive to the pressure differential between said one face and said opposing face of said piston, and means actuated by said pressure sensing means for de-activating said drive means in response to said pressure differential exceeding a preselected threshold value.

4,129,790
HIGH DENSITY INTEGRATED LOGIC CIRCUIT

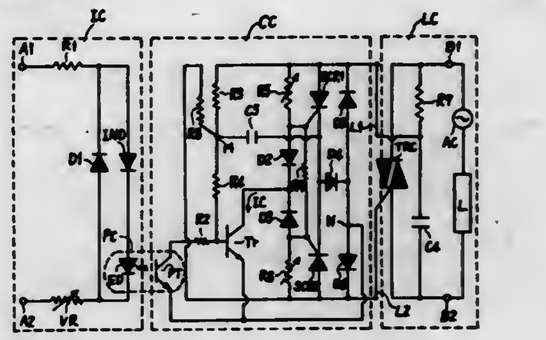
Venkappa L. Gani, and Frank A. Montegari, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 21, 1977, Ser. No. 862,704
Int. Cl.^{2} H03K *19/08, 19/12, 19/20*
U.S. Cl. 307—203 **9 Claims**



1. An improved integrated circuit comprising:
- first and second sources of potential;
- a first plurality of series connected resistors and diodes connected in electrical parallel with each other and in electrical series with a first transistor having collector, base, and emitter regions, the collector region being connected to said first plurality of diodes, said base region being connected to a first input terminal, said emitter region being connected to said first source of potential, said first plurality of resistors being connected to said second source of potential;
- a second plurality of series connected resistors and diodes connected in electrical parallel with each other and in electrical series with a second transistor have collector, base, and emitter regions, the collector region being connected to said second plurality of diodes, said base region being connected to a second input terminal, said emitter region being connected to said first source of potential, said second plurality of resistors being connected to said second source of potential;
- a third plurality of series connected resistors and diodes connected in electrical parallel with each other and in electrical series with a third transistor having collector, base, and emitter regions, the collector region being connected to said third plurality of diodes, said emitter region being connected to said first source of potential, said third plurality of resistors being connected to said second source of potential;
- an intermediate node formed by the common connection of one of said first plurality of diodes and one of said second plurality of diodes; and
- a metallurgical path having a finite resistance connecting said intermediate node to the base region of said third transistor such that base drive current for said third transistor proceeds in a current path from said second source of potential through one of said first or second plurality of resistors through said metallurgical path.

4,129,791
SOLID STATE SWITCHING CIRCUIT

Ryuichi Sato, Muko, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan
Continuation of Ser. No. 633,817, Nov. 20, 1975, abandoned. This application Mar. 15, 1977, Ser. No. 777,647
Claims priority, application Japan, Nov. 29, 1974, 49/138756
Int. Cl.^{2} H03K *17/72*
U.S. Cl. 307—252 Q **4 Claims**

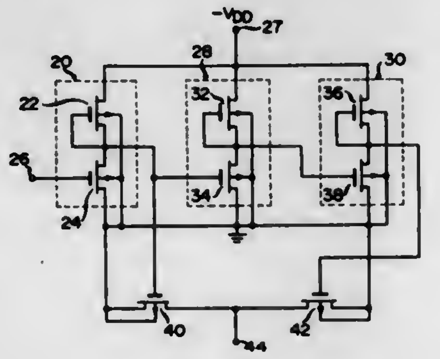


1. A solid state switching circuit comprising:
- an input signal circuit for receiving an input signal and producing a physical signal, and
- a load circuit including a load and an A.C. power source connected in series between first and second load terminals,
- a control circuit which is electrically isolated from the input circuit and coupled between said first and second load terminals to control application of load current from said A.C. power source to said load in response to the physical signal,
- wherein said control circuit comprises
- a transducer which receives said physical signal and transduces it into an electric signal,
- a zero-cross firing circuit including a single transistor controlled in response to the instantaneous values of A.C. voltage at said first and second load terminals and in response to said electric signal from said transducer, and
- a pair of thyristors connected in series and in opposite direction to each other and coupled across said first and second load terminals, said thyristors switching the positive part

and the negative part, respectively, of the load current from the A.C. power source to the load, the gates of both thyristors being commonly coupled to one of the collector and the emitter terminals of said single transistor, the other of the collector and emitter terminals of said single transistor being coupled to the anodes of both said thyristors.

4,129,792
DRIVER BUFFER CIRÇUIT USING DELAY INVERTERS

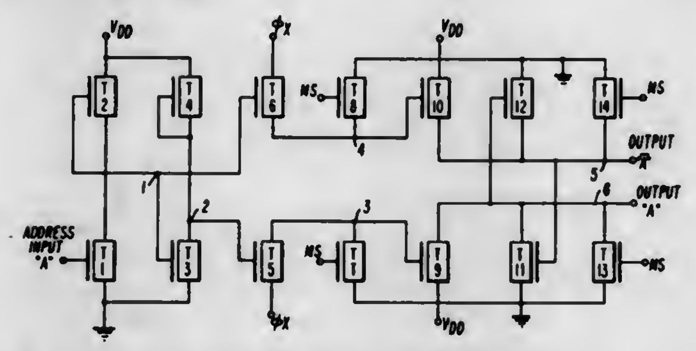
Kenji Kawagai, and Shigeki Yoshida, both of Kawasaki, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan
Filed May 31, 1977, Ser. No. 802,136
Claims priority, application Japan, May 31, 1976, 51-63067
Int. Cl.^{2} H03K *17/60, 17/16, 4/48, 6/04*
U.S. Cl. 307—270 **7 Claims**



1. A driver circuit which comprises an input terminal; first and second power terminals; a driver stage connected to said input terminal of the driver circuit; an inverter stage formed of an even number of mutually cascade connected inverters and connected to the output side of said driver stage; a first switching element formed of a first field effect transistor having a gate electrode connected to the output terminal of said driver stage and first and second output electrodes and rendered conducting or nonconducting according to a level of an output signal being received from said driver stage; a second switching element formed of a second field effect transistor having a gate electrode connected to the output terminal of said inverter stage and first and second output electrodes being connected to said first and second output electrodes, respectively, of said first switching element and rendered conducting or nonconducting according to a level of an output signal being received from said inverter stage; said first power terminal coupled to said first output electrodes and an output terminal coupled to said second output electrodes through which output signals from said first and second switching elements are drawn out.

4,129,793
HIGH SPEED TRUE/COMPLEMENT DRIVER

John Bula, Rockville, Md., and Larry C. Martin, Manassas, Va., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 16, 1977, Ser. No. 807,287
Int. Cl.^{2} H03K *17/60, 17/16, 19/40;* **G11C** *8/00*
U.S. Cl. 307—270 **1 Claim**



1. A true/complement driver, comprising:

a phase splitting circuit comprising a first static mode inverter having its input connected to a signal source and connected in cascade configuration with a second static mode inverter;

a first clocked FET device having its source, drain path connected between a source of clock signals and a first gate node, and its gate connected to the output node of said second inverter;

a second clocked FET device having its source, drain circuit connected between said source of clock signals and a second gate node, and its gate connected to the output node of said first inverter;

a first DC voltage FET switch having its gate connected to said first gate node, its drain connected to a drain voltage, and its source connected to a first output node;

a second DC voltage FET switch having its gate connected to said second gate node, its drain connected to a drain voltage, and its source connected to a second output node;

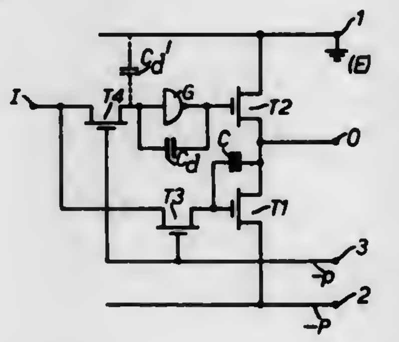
a first latching FET having its drain connected to said first output node, its source connected to ground potential and its gate connected to said second output node;

a second latching FET having its drain connected to said second output node, its source connected to ground potential and its gate connected to said first output node;

whereby said clock signal source is isolated from said first and second output nodes and from said ground potential.

4,129,794
ELECTRICAL INTEGRATED CIRCUIT CHIPS

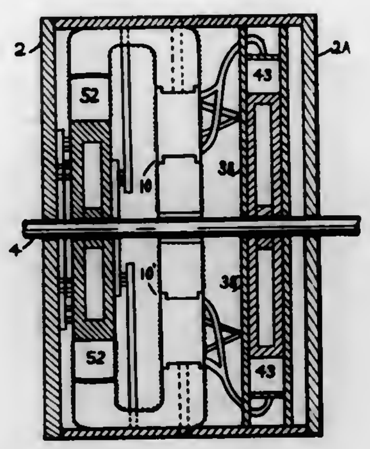
John F. Dickson, and John D. Wilcock, both of Northampton, England, assignors to Plessey Handel und Investments AG, Zug, Switzerland
Filed Sep. 3, 1976, Ser. No. 720,235
Claims priority, application United Kingdom, Sep. 4, 1975, 36458/75; Nov. 22, 1975, 48099/75
Int. Cl.^{2} H03K *17/60, 17/10*
U.S. Cl. 307—270 **12 Claims**



1. An electrical integrated circuit chip including a buffer amplifier comprising a first pair of power supply terminals for receiving a supply voltage thereacross having a first level of magnitude, first and second insulated gate field effect transistors of the same channel conductivity, said transistors having source, drain and control electrodes, and being connected in series between the first pair of power supply terminals with the source of the first transistor connected to the drain of the second transistor, output terminal means connected to the source of the first transistor, a second pair of power supply terminals for receiving a supply voltage thereacross of a magnitude different from that across said first pair of power supply terminals input means for receiving a two-level input signal having a potential difference of a magnitude less than that received across either of said pairs of supply terminals, said input means being connected between the second pair of power supply terminals and being connected for applying said two-level signal to the control electrodes of the first and second transistors in antiphase to one another and bootstrap capacitor means connected between the output terminal means and the control electrode of the first transistor.

4,129,795
ELECTROMAGNETIC PISTON ENGINE

Thomas S. Miyada, P.O. Box 430, Summit, N.J. 07901
Filed Feb. 28, 1977, Ser. No. 773,422
Int. Cl.^{2} H02K *7/06*
U.S. Cl. 310—24 **7 Claims**



1. An electromagnetic piston engine for converting electromagnetic energies into mechanical movements, comprising, in unique and useful combinations,

(a) a substantially cylindrical casing having disklike radial walls with inlets and outlets for electric lines, cylindrical cage-like wall constructed of evenly spaced bars running axially, reinforcing ribs running circumferentially, and a central opening with roller bearings in each of the said radial walls;

(b) a main shaft running through said central opening of each of said radial walls;

(c) a plurality of evenly spaced permanent magnets, arranged in a circle and securely held to the inner surface of one of the said reinforcing ribs, and having their free polar ends pointing in the general direction of said shaft;

(d) stationary conducting rings consisting of comparatively large ring enclosing a slightly smaller ring without direct contact between them, both rings divided by insulating strips into even number of corresponding sectors, such that a diametral line drawn through a midsection of any sector of the inner ring will pass through the midsection of the corresponding sector of the larger ring,

  (1) said conducting rings being mounted on the inner surface of the said radial wall and protected by proper insulation, and having their center aligned with the axis of said radial wall;

  (2) said outer ring having its sectors marked + − + − . . . . in a clockwise order, and the corresponding sectors of the inner ring marked with the symbols − + − + ... in a clockwise order;

  (3) said minus sectors of both rings connected to a conductor that carries electron current away from its source of supply, and said plus sectors of both rings connected to a conductor that carries current back to the same source of supply, thus making it possible for an electromagnet to change its polarity everytime its terminals brush over from "+ − " sectors to " − + " sectors, or vice versa, or said rings;

(e) a polarity wheel, designed for reversing the direction of electron current in electromagnetic poles and solenoids, comprising, in combination,

  (1) a concentric disk having a central opening to receive the said main shaft, which is keyed thereto, and positioned close to the said stationary conducting rings;

  (2) a plurality of evenly spaced electromagnetic poles securely attached to the periphery of said disk, and extending outwardly towards the polar ends of the permanent magnets described in section (c) above, but stopping short of touching the latter, each pole having windings of insulated conductors, one terminal of which attached to the closest conducting brush, and the other end to the next closest brush, and the other end to the next closest brush, said brushes being the ones described in subsection that follows;

  (3) a plurality of conducting brushes arranged in pairs on the reverse side of the said wheel, each pair securely held in insulation, which in turn attached to the wheel's radial surface near the base of each pole, and the whole forming a circular pattern whose center aligning with that of the said wheel, said paired brushes extending axially to be in constant contact with the stationary conducting rings described in section "*d*" hereinabove, thus causing the polarity of the electromagnets to change periodically as the said brushes sweep over the said conducting rings;

(f) conducting rear radial rings consisting of an inner and an outer rings, the former in touch by means of brush to the conducting wire that carries current from its source of supply, and the latter in contact by means of brush to the line that carries current back to the same source of supply, said rings securely mounted on the reverse side of said polarity wheel, but insulated therefrom, and their center aligned with that of the said wheels;

(g) conducting front radial rings consisting of an inner and an outer rings, mounted on insulation and securely attached to the obverse surface of the said polarity wheel, the outer ring having its first 180° sector marked as the plus sector, and its second 180° sector as its minus sector, and the inner ring having its first 180° sector marked as its minus sector and its second 180° sector as its plus sector, said rings having their minus sectors interconnected by means of a conductor that goes through the said wheel and connected to the rear minus ring, and their plus sectors also interconnected by a separate wire that goes through the said wheel to be attached to the rear plus ring, said front rings, by virtue of their rotary contacts, permitting a direct current to flow into one terminal and out of the other terminal, or vice versa, of the solenoids in the circuit, thus reversing the latter's polarity at the same speed as the rotation of the polarity wheel;

(h) a configuration of magnetic sets, each set arranged in the shape of an oversized spoke, identified herein simply as spoke, radiating from a common hub and forming an overall appearance of a wagon wheel, comprising, in combination,

  (1) a plurality of evenly spaced paired spokes having their lower ends merged and securely attached to a common hub that provides a passageway for the main shaft, each spoke consisting of an elongated permanent magnet whose one end starting from the said hub and whose other end coupled to the lower end of a solenoid, and the upper end of the solenoid, in turn, coupled to the lower end of a second permanent magnet whose upper elongated section being bent over the said polarity wheel to become a field pole of the wheel;

  (2) a plurality of insulated windings on each of the said permanent magnets having terminals marked "+" and "−" and left unconnected by any source or energy, except in emergencies requiring reenergizing of said magnets;

  (3) a plurality of insulated windings in each of the said solenoids, which constitute the middle sections of each spoke, the terminals of which in contact with the front conducting rings of the said polarity wheel;

  (4) a number of pipelines originating and ending in the intermediate section of the said spoke and permitting the inflow and outflow of fluids;

(i) a plurality of pistons designed to pump fluids for operating a turbine and to be cooled by the flowing fluids in which they are immersed, each piston occupying a space inside a solenoid of each of the said spokes, and consisting of

  (1) a solid cylindrical ferrous body with layers of insulated windings, all enclosed in

  (2) a watertight nonmagnetic cylindrical container, and

  (3) terminals from said windings passing through said

container to be in sliding contact with conductors that lead to and from the front rings of said polarity wheel, said pistons moving reciprocatingly or in pumping action with every reversal of its polarity by the rotation of the said polarity wheel;

(j) a turbine unit consisting of
  (1) a cylindrical housing having a central opening and roller bearings supporting the main shaft, and inlets and outlets in its walls permitting fluids to enter and leave the same;
  (2) a plurality of pipes communicating the interior of the solenoids and the turbine housing;
  (3) a cylindrical turbine wheel, keyed to said main shaft, and occupying the said housing, and rotated by streams of fluid pumped by said pistons in said solenoids, and carried by said pipes;
(k) lubricating means.

4,129,796
STATOR WINDING MOUNTING FOR AN ELECTRIC MOTOR

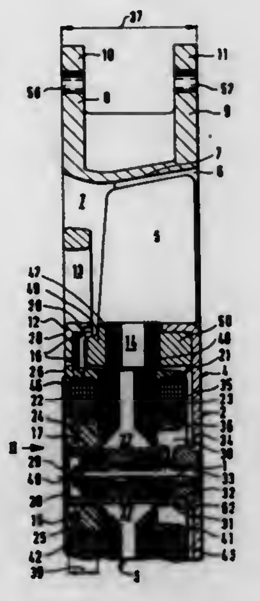
Georg Papst, St. Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren KG, St. Georgen, Fed. Rep. of Germany

Filed Dec. 12, 1975, Ser. No. 640,170

Claims priority, application Luxembourg, Dec. 13, 1974, 71477

Int. Cl.² H02K *1/04*

U.S. Cl. 310—43 **14 Claims**



1. An electric motor whose rear stator winding ends are embedded in a casting of electrically insulating plastic which is hard at the operating temperature of the motor, which is mounted with a stable metal flanged plate coaxial to the motor axis and fixed to a metallic outer casing member, wherein the flanged plate for the rear winding ends is perforated and has a portion embedded in the casting and an outer edge which is connected with the casing member, said rear stator winding ends extending through the perforated flanged plate with an insulating clearance.

4,129,797
BRAKE DEVICE FOR DRIVE MOTORS

Adolf Lindner, Rottendorf, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

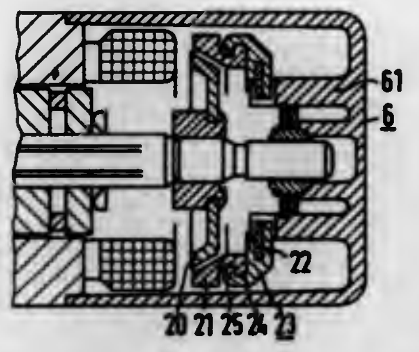
Filed Jun. 23, 1977, Ser. No. 809,396

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1976, 2629439

Int. Cl.² H02K *7/102*

U.S. Cl. 310—77 **9 Claims**

1. In a brake for use with a drive motor, the brake comprising: a brake lining; a brake disk adpated to be spring-lifted electromagnetically by an axial displacement of the rotor of the motor against the force of a spring when the motor winding is energized and to come into contact by the force of the spring with said brake lining when the motor winding is deenergized; said brake lining and brake disk having mutual contact surfaces arranged in the manner of a conical brake at an oblique angle to the rotor displacement and the action line of the spring force; means adapted to connect at least resiliently in the radial direction said brake lining to a stationary member including an elastic intermediate member and a brake disk ring; the improvement comprising:



said brake lining having a formed-on bead-like rim;
said intermediate member being formed as a molded rubber member having a profile which bears a mating relationship to said rim;
said brake lining being held via said rim in said rubber member detentably and elastically in the radial and axial direction in the manner of a snap connection;
and said rubber member being connected firmly to said brake disk ring.

4,129,798
PIEZO-RESISTIVE DEVICE FOR THE ELECTRICAL READ-OUT OF AN OPTICAL IMAGE

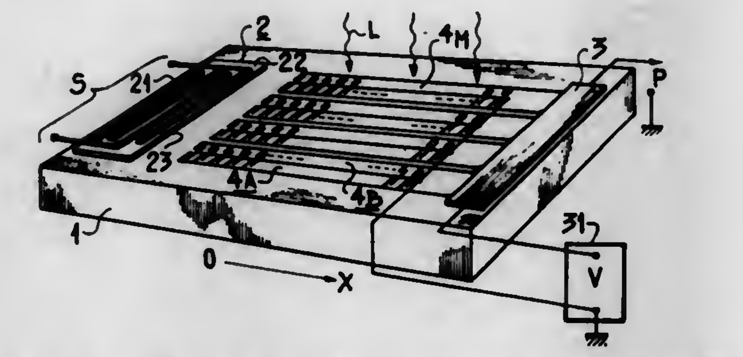
Philippe Defranould, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 12, 1977, Ser. No. 786,863

Claims priority, application France, Apr. 16, 1976, 76 11445

Int. Cl.² H01L *41/10*

U.S. Cl. 310—313 **11 Claims**



1. A piezo-resistive device for the electrical read-out of an optical image, which comprises:
a piezo-resistive and photoconductive substrate;
means for generating a pulse elastic wave of frequency F, propagating at the surface of the substrate;
a plurality of elementary detectors arranged in rows parallel to the direction of propagation of the elastic wave, on a surface of the substrate refered to as the interaction surface, on to which surface said image is projected, said elementary detectors each furnishing an electrical signal representing the local conductivity of said substrate due to the combined effect of said elastic wave, through the piezo-resistive effect, and of the optical energy of said image, through the photoconductive effect.

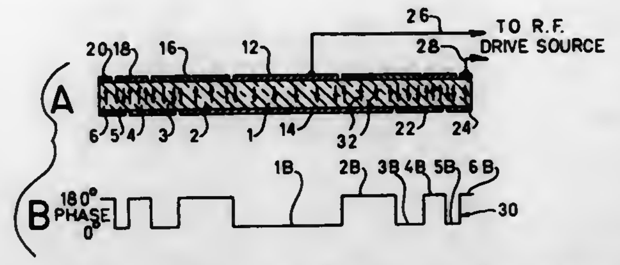
4,129,799
PHASE REVERSAL ULTRASONIC ZONE PLATE TRANSDUCER

Philip S. Green, Atherton, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Dec. 24, 1975, Ser. No. 644,093

Int. Cl.² H01L *41/10*

U.S. Cl. 310—359 **10 Claims**



1. An ultrasonic phase reversal zone plate focusing transducer comprising,
a transducer body of piezoelectric material uniformly polarized in a direction normal to opposite body surfaces,
a plurality of radially spaced concentric electrodes on the opposite body surfaces with electrodes on one surface overlapping portions of adjacent electrodes on the opposite surface, and
means for electrically connecting to inner and outer most electrodes for the provision of adjacent opposite phase active zones across the transducer body and transducer focusing.

4,129,800
GAS AND/OR VAPOR DISCHARGE LAMP

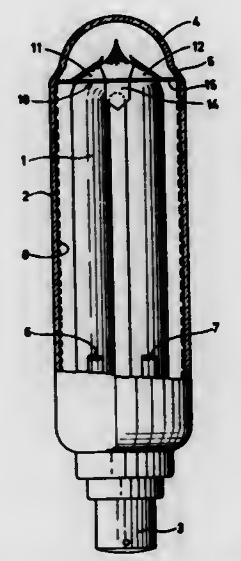
Willem Van Benthem, and Ernst M. Schmidt, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 27, 1977, Ser. No. 846,192

Claims priority, application Netherlands, Oct. 29, 1976, 7611991

Int. Cl.² H01J *61/30*

U.S. Cl. 313—25 **4 Claims**



1. A gas and/or vapour discharge lamp which comprises an elongated discharge tube and an elongated outer bulb enveloping said discharge tube, means for supporting a portion of said discharge tube relative to the outer bulb which includes a sheet metal element, at least one local change in profile of at least the inside of said outer bulb, said sheet metal element including a ring shaped part, said ring shaped part cooperating with said local change in profile of at least the inside of said outer bulb, said ring shaped part being disposed generally transverse to the longitudinal directin of said outer bulb, said sheet metal element including a plurality of fingers extending from the plane of said ring metal part, a portion of said discharge tube passing through said sheet metal element and bearing against said fingers of said sheet metal element.

4,129,801
CATHODE FOR CATHODE RAY TUBE OF DIRECTLY HEATING TYPE AND PROCESS FOR PRODUCING THE SAME CATHODE

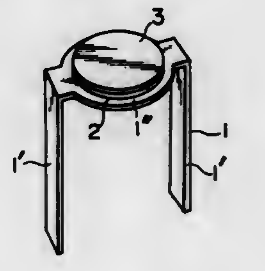
Ko Soeno, Hitachi; Tomio Iizuka, Ibaraki; Toshio Doi; Hisashi Ando, both of Hitachi; Testuo Oyama, Takahagi; Hiroshi Sakamoto, Hitachi, and Akira Misumi, Mobara, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 6, 1977, Ser. No. 813,240

Claims priority, application Japan, Jul. 7, 1976, 51-79964

Int. Cl.² H01J *19/06, 9/04*

U.S. Cl. 313—346 R **29 Claims**



1. A cathode for cathode ray tube of directly heating type comprising a cathode substrate body having two leg pieces extended in the same direction and a flat part connected to one end of each leg piece, prepared by shaping a flat metal plate of nickel- or cobalt-based alloy; a bonding layer comprising heat-diffusible metals having an affinity to said flat metal plate, and having an uneven surface, formed on an outer surface of said flat part by diffusion bonding, to whose surface a thermionic emission layer is to be bonded, and the thermionic emission layer formed on the surface of the bonding layer, wherein an improvement comprises the bonding layer consisting of nickel and cobalt.

4,129,802
LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP

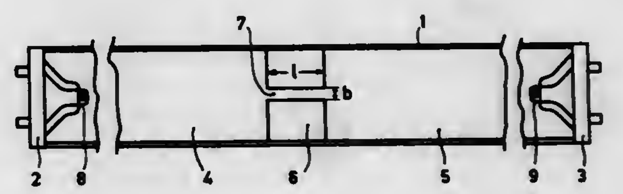
Louis E. Vrenken; Franciscus M. P. Oostvogels, and Rein W. van der Wolf, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 6, 1977, Ser. No. 830,650

Claims priority, application Netherlands, Sep. 14, 1976, 7610170

Int. Cl.² H01J *61/35, 61/42, 61/54*

U.S. Cl. 313—492 **5 Claims**



1. A tubular low-pressure mercury vapor discharge lamp which comprises a discharge tube, first and second electrodes disposed within said discharge tube in spaced relationship, a light-transmissive conductive coating disposed on the interior of said discharge tube and not connected to either electrode, and a luminescent layer disposed on at least a portion of the inner surface of said discharge tube, said conductive coating consisting of at least two parts which are axially spaced and which each have a resistance per square between 400 and 4000 ohm, said parts being connected to each axially adjacent part by at least one electrical conductor having such a resistance

that the total series resistance of the entire conductive coating is between 5000 and 500,000 ohms.

4,129,803

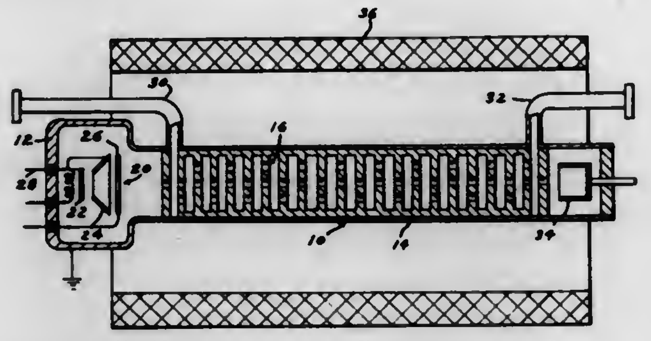
TRAVELING WAVE DEVICE WITH CAST SLOW WAVE INTERACTION STRUCTURE AND METHOD FOR FORMING

Walter Friz, Yellow Springs, Ohio, assignor to Louis E. Hay, Dayton, Ohio

Filed Apr. 5, 1977, Ser. No. 784,806

Int. Cl.^{2} H01J *25/34*

U.S. Cl. 315—3.5 **8 Claims**



1. A traveling wave device comprising:
(a) a body member;
(b) a metallic slow wave structure within the midsection of said body member, said slow wave structure including at least one casting formed in a mold having a chemically disposable core which is subsequently removed to leave at least a portion of the electrical passages through said slow wave structure;
(c) RF energy means joined to said slow wave structure for passing RF energy through said slow wave structure;
(d) means within said body member spaced from the first end of said slow wave structure for generating an electron beam interacting with the RF energy flowing through said slow wave structure;
(e) magnetic means encompassing said body member for producing a magnetic field for guiding said electron beam; and,
(f) collector means within said body member spaced from the second end of said slow wave structure for collecting the spent electron beam.

4,129,804

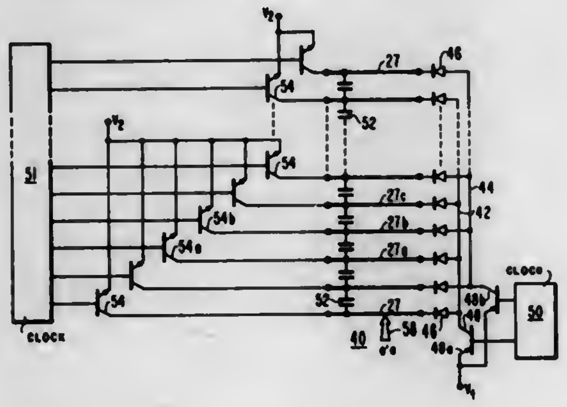
IMAGE DISPLAY DEVICE COMMUTATOR

Sherman Wiesbrod, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 6, 1977, Ser. No. 804,003

Int. Cl.^{2} H05B *37/00, 39/00, 41/00*

U.S. Cl. 315—169 TV **23 Claims**



1. An image display device commutator for biasing electrodes in the device comprising:
means for alternately switching a first electrical potential to one of at least two sets of alternate electrodes;
means for switching a second electrical potential to only one electrode in the other set of alternate electrodes; and
means for electrically isolating each electrode from the other electrodes in the same set when the second electrical potential is applied but not when the first electrical potential is applied.

4,129,805

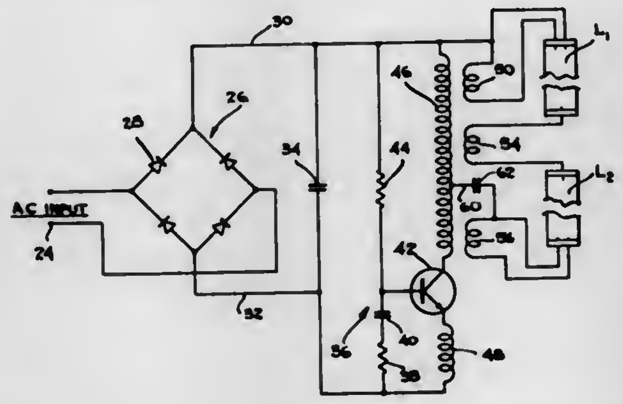
IMPULSE GENERATOR FOR USE WITH PHOSPHOR ENERGIZABLE LAMPS

Eli H. Sherman, 12554 Havelock Ave., Los Angeles, Calif. 90066

Filed Dec. 5, 1977, Ser. No. 857,220

Int. Cl.^{2} H05B *41/29*

U.S. Cl. 315—219 **47 Claims**



1. An impulse generator for use with a phosphor excitable lamp, said impulse generator comprising:
(a) means to receive electrical current,
(b) means operatively connected to said means to receive current for rectifying said electrical current,
(c) a solid-state switching element connected to receive the rectified current,
(d) primary coil means connected to at least one terminal of said switching element,
(e) secondary coil means located to be electromagnetically coupled with said primary coil means,
(f) terminal means on said secondary coil means for connection to a gaseious discharge lamp, and
(g) pulse control timing means operatively connected to said switching element for generating pulses of gradual increases in amplitude with a relatively short time peak amplitude rise to energize said lamp and which peak amplitude falls rapidly after energization of said lamp, said pulses occurring in a sequence and at intervals sufficient to maintain energization of said lamp, and which pulses are transmitted to said primary coil means and said lamp through coupling of said secondary coil means, the time interval between the leading edge of one pulse to the trailing edge thereof being substantially smaller than the time interval between the transmission of said pulses to said lamp.

4,129,806

CORRECTION CIRCUIT FOR LOAD DEPENDENT RASTER DISTORTION

Peter E. Haferl, Zurich, Switzerland, assignor to RCA Corporation, New York, N.Y.

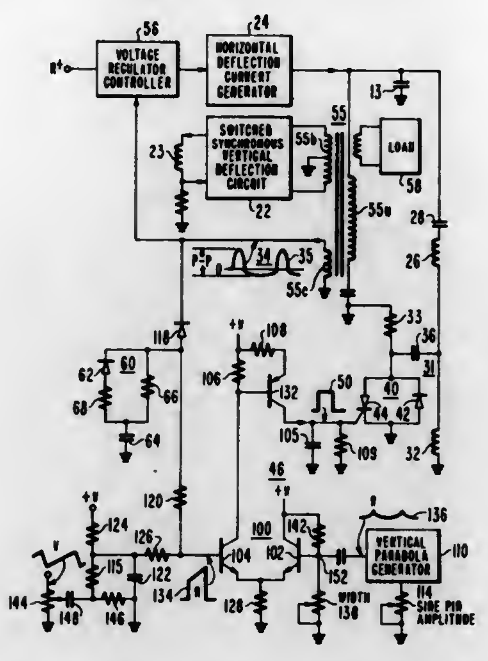
Filed Sep. 6, 1977, Ser. No. 830,854

Claims priority, application United Kingdom, Apr. 14, 1977, 15545/77

Int. Cl.^{2} H01J *29/56*

U.S. Cl. 315—370 **14 Claims**

1. A raster correction arrangement for a television deflection apparatus, comprising:
a horizontal deflection current generator for producing deflection signals at the horizontal rate;
a horizontal deflection winding coupled to said horizontal deflection current generator and responsive to said deflection signals to produce recurrent retrace pulses;
a load circuit coupled to an output of said horizontal deflection current generator for being energized thereby, variations in the load of said load circuit varying the duration of said retrace pulses in a manner to cause raster distortion;


VOLTAGE REGULATOR CONTROLLER
HORIZONTAL DEFLECTION CURRENT GENERATOR
SWITCHED SYNCHRONOUS VERTICAL DEFLECTION CIRCUIT
LOAD
VERTICAL PARABOLA GENERATOR
WIDTH
SIDE PIN AMPLITUDE
56
24
22
23
55
55b
55a
58
13
28
100
104
102
110
114
115
122
124
126
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152

retrace pulse duration sensing means coupled to said horizontal deflection current generator for generating a control signal representative of the duration of said retrace pulses; and
controllable impedance means coupled to an output of said horizontal deflection current generator and to said retrace pulse duration sensing means and responsive to said control signal for compensating said raster distortion.

4,129,807

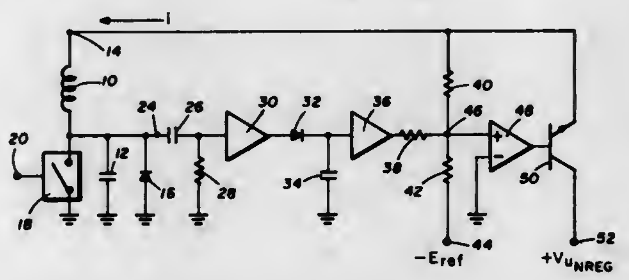
CURRENT REGULATING CIRCUIT FOR MAGNETIC DEFLECTION SYSTEMS

Carlo Infante, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 15, 1976, Ser. No. 732,686

Int. Cl.^{2} H01J *29/70, 29/72*

U.S. Cl. 315—387 **20 Claims**



1. A circuit for regulating the current through an inductor, comprising:
means responsive to the current in the inductor and generating a DC voltage varying therewith,
a voltage comparator receiving the DC voltage and including a reference voltage source, said comparator generating a control voltage varying with the difference between the DC voltage and the reference voltage, and
regulating means responsive to the control voltage and connected between a DC voltage source and the inductor to regulate the current through said inductor in accordance with the control voltage.

4,129,808

ELECTRONIC CONTROL ARRANGEMENT WHICH CAN BE USED IN PARTICULAR FOR DRIVING A BRUSHLESS AND SLIP-RINGLESS MOTOR AND AN INSTALLATION INCORPORATING SUCH AN ARRANGEMENT

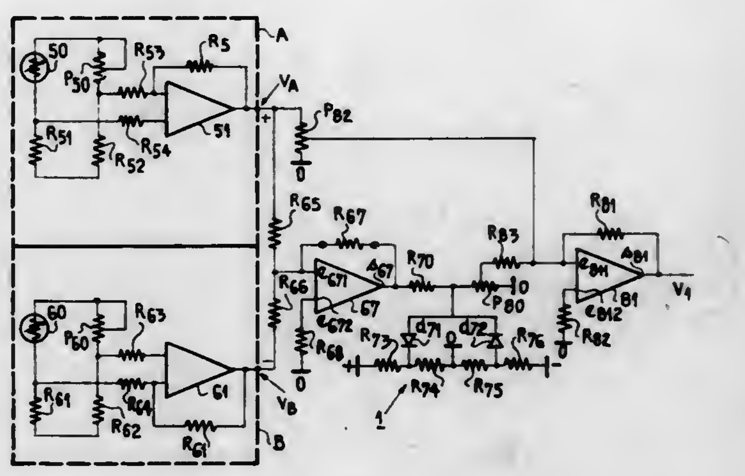
Marc Bregeault; Jacques Lecoeuche, and Pierre Margrain, all of Colombes, France, assignors to Auxilec, Colombes, France

Filed Jun. 10, 1977, Ser. No. 805,453

Claims priority, application France, Jun. 15, 1976, 76 18124; Jan. 18, 1977, 77 01331

Int. Cl.^{2} H02K *29/00*

U.S. Cl. 318—254 **11 Claims**



1. An electronic control arrangement which receives at its input a first DC control voltage V_1 which is formulated on the basis of at least one control parameter, and delivering at its output, from a source of DC electrical energy, two sinusoidal voltages of the same frequency and amplitude which are 90° out of phase and whose frequency varies as a function of the said first control voltage and whose amplitude is at all times held proportional to the said frequency, comprising:
a processing block which converts the said first DC control voltage V_1 into a second DC control voltage V_2. the curve of said second voltage V_2 rising linearly as a function of time;
a function generator which receives at its input the said second DC voltage V_2 and which produces at its output first and second sinusoidal voltages V_{a1} and V_{a2} which are of the same frequency and amplitude but which are 90° out of phase with one another, the frequency and amplitude of the said sinusoidal voltages being proportional to the said DC control voltage V_2;
first and second power amplifiers which contain first and second pre-amplifiers, respectively, which latter pre-amplifiers receive at their inputs the first and second sinusoidal voltages V_{a1} and V_{a2}, respectively, and which cooperate with the said source of DC electrical energy so as to produce at their respective outputs the said sinusoidal control voltages; and
an auxiliary arrangement for producing an auxiliary voltage V to supply the said preamplifiers, which arrangement co-operates with the amplifiers by blocking the operation of the said pre-amplifiers when the voltage from the said source of DC electrical energy falls below a certain threshold.

4,129,809

POWER FACTOR CORRECTED DUAL CONVERTER MOTOR DRIVE

John Rosa, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 28, 1977, Ser. No. 791,746

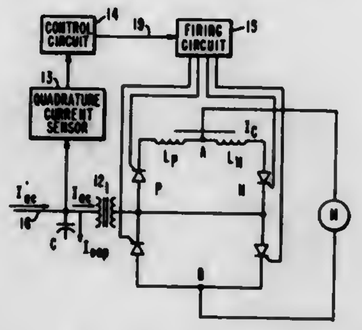
Int. Cl.^{2} H02P *7/00*

U.S. Cl. 318—293 **6 Claims**

1. In a dual converter motor drive including at least two

semiconductor controlled rectifier banks connected between an alternating current power source and a reversible direct current motor, said rectifier banks being connected in reverse parallel connection between the terminals of said direct current motor, and means for extablishing a first firing angle in one of said rectifier banks to control said direct current motor under predetermined torque and speed conditions in one of two opposite directions of rotation, the combination of:

means for sensing the lagging quadrature component of the total current drawn by said rectifier banks from said AC source;



means for establishing in the other of said rectifier banks a second firing angle, said second firing angle being the supplementary of said first firing angle; and

means responsive to said sensing means for modifying said first and second firing angles in two opposite directions and for causing a circulating direct current to be passed between said rectifier banks, the magnitude of said circulating direct current being in relation to a desired magnitude of said lagging quadrature component of current;

whereby the effect of said direct current motor on said sensed lagging quadrature current component is minimized.

4,129,810

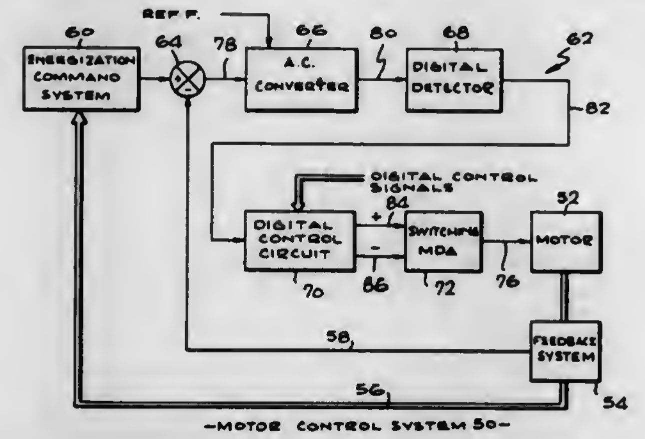
SWITCHING MOTOR CONTROL SYSTEM

Robert P. Harshberger, Jr., San Jose, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed May 3, 1976, Ser. No. 682,372

Int. Cl.^{2} H02P *7/00*

U.S. Cl. 318—317 **20 Claims**



1. A motor control system comprising:

a motor coupled to operate in response to a motor drive signal applied to the motor;

an energization command system generating an energization command signal commanding a magnitude of motor drive current;

a feedback system generating an actual energization signal indicative of actual motor drive current; and

a feedforward system coupled to receive the energization command signal and the actual energization signal and to energize the motor in accordance with a difference therebetween to tend to reduce the difference, the feedforward system including a switching motor drive amplifier coupled to drive the motor with a motor drive signal that switches at a constant frequency between at least two different states at a switching rate that is independent of motor velocity and faster than the cutoff frequency response to the motor to the applied motor drive signal.

4,129,811

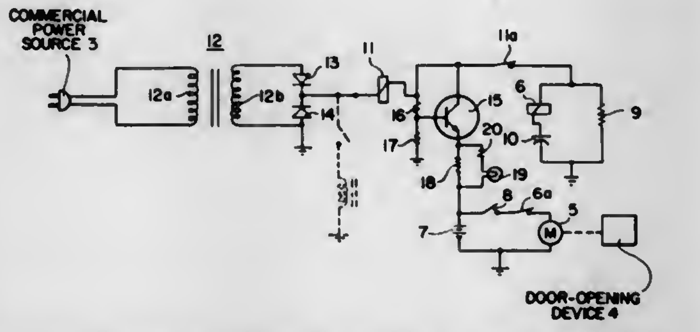
EMERGENCY DOOR OPENING DEVICE

James E. Pearson, 81 Airport Rd., Peru, Ind. 46970

Filed Oct. 25, 1977, Ser. No. 845,269

Int. Cl.^{2} H02P *1/04*

U.S. Cl. 318—478 **1 Claim**



1. An emergency door-opening device for a structure housing animals and having a door, and an electrically energized ventilation system supplied with electrical energy from a commercial power source for ventilating the structure, said emergency door-opening device comprising

a door-opening device in operative proximity with the door of the structure for opening said door;

a motor coupled to the door-opening device for operating said door-opening device to open said door;

a first relay device having a first relay energizing winding and a first relay switch controlled in operation by said first relay energizing winding;

a motor control circuit comprising the first relay switch, the motor and a battery connected in series circuit arrangement;

a time delay circuit including the first relay energizing winding;

a second relay device having a second relay energizing winding and a second relay switch controlled in operation by said second relay energizing winding, said second relay switch being electrically connected in series with said second relay energizing winding and coupled to the power source; and

battery charging means electrically connected between the second relay energizing winding and the battery for charging the battery whereby when power is supplied from the power source the second relay energizing winding is energized, closes the second relay switch, charges the battery, and energizes the time delay circuit while keeping the first energizing winding unenergized to maintain the first relay switch open and the motor deenergized and the door-opening device inoperative and when the power fails the second relay energizing winding is deenergized, opens the second relay switch and causes the time delay circuit to energize the first relay energizing winding for a predetermined period of time after which said first relay energizing winding is deenergized and closes the first relay switch thereby causing the battery to energize the motor and operate the door-opening device to open the door.

4,129,812

ELECTRONIC TIMER

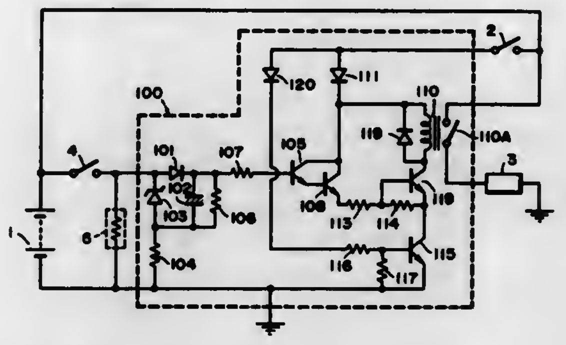
Hiromichi Shigenobu, Toyota; Toshiaki Isobe, and Minoru Kondo, both of Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai Rika Denki Seisakusho, both of Aichi, Japan

Filed Aug. 23, 1976, Ser. No. 716,631

Claims priority, application Japan, Oct. 16, 1975, 50-125079

Int. Cl.^{2} H02H *7/08*

U.S. Cl. 318—484 **13 Claims**



1. An electronic timer circuit comprising:

a source of electrical power;

a condenser coupled to said source of power for storing a charge;

a control switch means;

a load;

a controlled switch means for controlling the power to said load;

a high input impedance circuit for discharging said stored charge in said condenser at a predetermined rate and for causing said controlled switch means to allow power to be supplied to said load when said control switch means is closed and said charge stored in said condenser is greater than some predetermined amount; and

a switching component coupled to said high input impedance circuit which is actuated in response to said control switch means to reduce the discharge current through said switching components whenever said controlled switch means is opened and not allowing power to be supplied to said load.

4,129,813

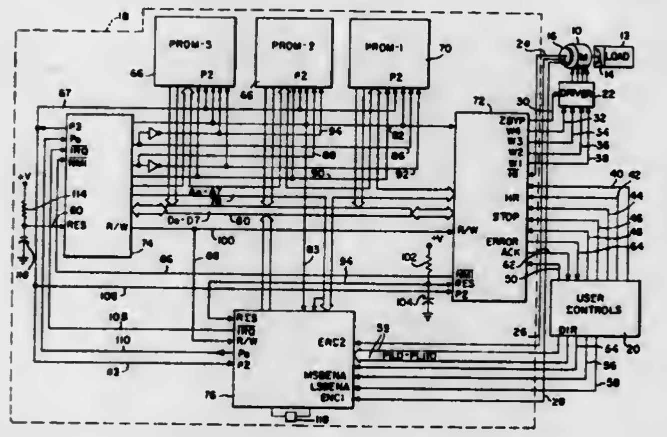
METHOD AND APPARATUS FOR ADAPTIVE CONTROL OF A STEPPER MOTOR

Barney D. Hunts, and John B. S. Waugh, both of Mountain Lakes, N.J., assignors to The Singer Company, New York, N.Y.

Filed Jul. 26, 1977, Ser. No. 819,188

Int. Cl.^{2} G05B *13/00*

U.S. Cl. 318—561 **38 Claims**



1. An adaptive control system for a stepper motor comprising:

a stepper motor;

electrical means coupled to said stepper motor for driving said stepper motor a predetermined number of steps;

said electrical means including means to temporarily decelerate said stepper motor during the time said stepper motor is being driven said predetermined number of steps; and

computing means coupled to said stepper motor for calculating the deceleration needed to bring said stepper motor to a stop at the end of said predetermined number of steps.

4,129,814

PROCESS FOR THE FORMATION OF A COMPARISON SQUARE WAVE SIGNAL

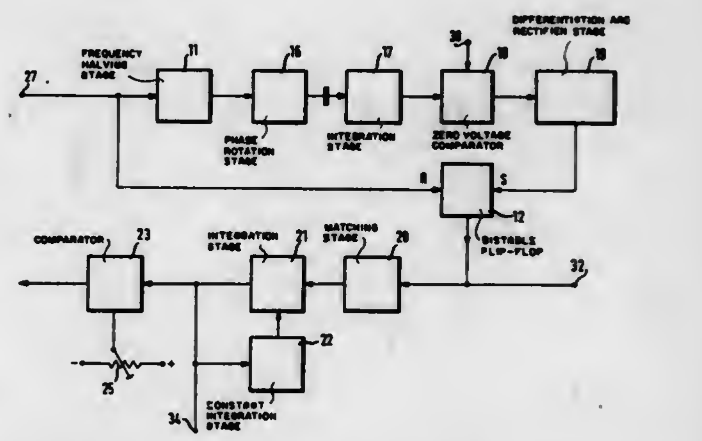
Erwin Francke, Munich, Germany, assignor to Erwin Sick Gesellschaft mit beschränkter Haftung Optik-Elektronik, Waldkirch, Germany

Filed Jun. 3, 1976, Ser. No. 692,563

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1975, 2527375

Int. Cl.^{2} G05B *19/36*

U.S. Cl. 318—577 **8 Claims**



1. A method for the formation of a comparison square wave signal having a reference edge in a curve control device in which a scanning head periodically transversely scans a line to be tracked and transmits a base comparison square wave signal and a measurement square wave signal whose phase position is a criterion for the divergence of the scanning head from the desired value, and is determined by comparison with the position of the base comparison square wave signal, whereby a follow-up signal is formed which is dependent on the direction of the divergence, comprising forming by frequency halving, integration and threshold means, needle pulses from the base comparison square wave signal produced by the scanning head, each successive pair of the needle pulses being completely symmetrical to the reference edge and wherein the comparison square wave signal is formed from the needle pulses and the reference edge.

4,129,815

POSTAL METER ACTUATOR

Jeffery C. Argentine, Santa Rosa, and Darrell B. Minton, Sebastopol, both of Calif., assignors to National Controls, Inc., Santa Rosa, Calif.

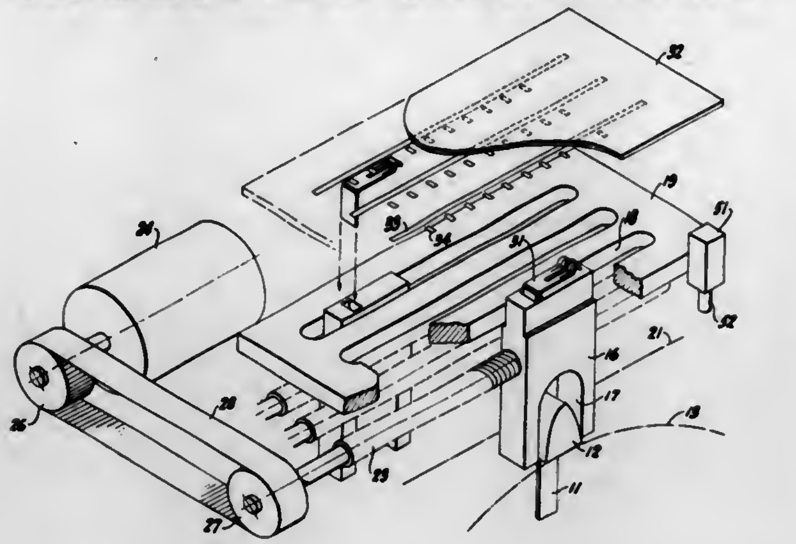
Filed Sep. 10, 1976, Ser. No. 721,983

Int. Cl.^{2} G05B *19/28*

U.S. Cl. 318—601 **9 Claims**

1. In combination: a postage meter having a plurality of levers movable between positions spaced along a predetermined path for selecting different values of postage, and an actuator removably mounted on the postage meter for moving the postage setting levers, said actuator comprising individually movable drive shoes for engaging respective ones of the levers, means constraining the drive shoes for movement along a linear path generally parallel to the predetermined path, lead

screws connected to the drive shoes for moving the shoes along the linear path when roatated, and motor means con-



nected to the lead screws for rotating the screws to move the shoes.

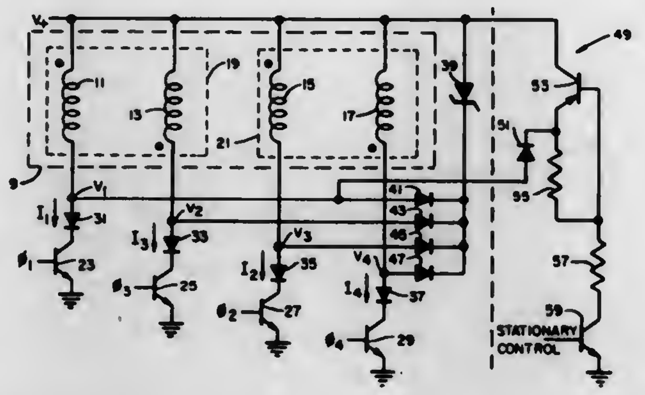
4,129,816
STEPPING MOTOR CONTROL CIRCUIT

Edmund C. Feldy, Evanston, and Dennis L. Stephens, Niles, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Aug. 10, 1977, Ser. No. 823,310

Int. Cl.^{2} H02K *37/00*

U.S. Cl. 318—696 **5 Claims**



1. In combination with a stepping motor having a plurality of stator phase windings each being successively energized during rotary operation with at least a first one of the phase windings being energized over a predetermined time period with a pulsed current during stationary operation and means for dissipating the induced energy in at least said first winding upon de-energization, the improvement comprising:

means for selectively reducing the energy dissipated by said dissipating means during stationary operation to a lower value than during rotary operation so as to increase the average current through said first pulsed winding and thus the operational efficiency of the combination.

4,129,817
STEPPED VOLTAGE POWER SUPPLY WITH EQUALIZED DISCHARGE OF BATTERY CELLS

Ming-Chih Yew, Rochester, and Trevor O. Jones, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 22, 1977, Ser. No. 826,372

Int. Cl.^{2} H02J *7/00*; H02P *7/00*

U.S. Cl. 320—18 **2 Claims**

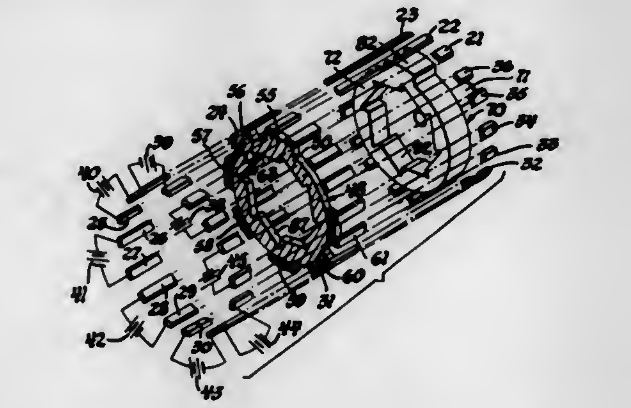
1. A stepped voltage electric power supply for a vehicle mounted electric motor, comprising, in combination:

a plurality of regularly spaced contact pairs;

a first commutating member having a plurality of regularly spaced contact members effective to connect the contacts of each pair but one, the commutating member being movable sequentially through a plurality of positions, each position providing a different unconnected contact pair, one of the contact members adjacent the unconnected contact pair providing a first output terminal;

a plurality of electric power cells, each cell being connected in a consistent polarity between the adjacent contacts of adjacent contact pairs and each contact pair being connected to its adjacent contact pairs on either side by such cells, whereby the contact members of the first commutating member are effective to connect the cells in series;

a second commutating member having a single contact member effective to connect the contacts of one of said pairs and provide a second output terminal, the second commutating member being movable sequentially through a plurality of positions, each position providing a different connected contact pair;



actuator means movable sequentially through a plurality of positions in a first, output voltage increasing direction and a second, opposite, output voltage decreasing direction;

drive means connecting the actuator to the first and second cummutating members, the drive means including unidirectional clutch means effective to move the first commutating member in one direction to increase the number of cells connected across the output terminals with movement of the actuator means in its first direction and to move the second commutating member in the same one direction to decrease the number of cells connected across the output terminals with movement of the actuator means in its second direction, whereby the specific cells connected across the output terminals are changed with movement of the actuator means in the first and second directions to equalize the discharge of the cells with use.

4,129,818
EXCITATION CONTROL APPARATUS SUITED FOR NORMAL STOP OPERATION OF SYNCHRONOUS GENERATORS

Masuo Goto; Akira Isono, both of Hitachi; Yasushi Momochi, Hitachiota, and Takaaki Kai, Tokaimura, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 15, 1977, Ser. No. 806,862

Claims priority, application Japan, Jun. 18, 1976, 51/71191

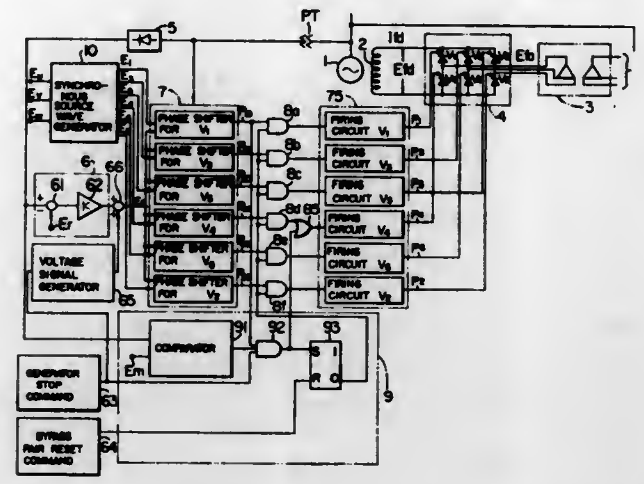
Int. Cl.^{2} H02P *3/06*

U.S. Cl. 322—10 **8 Claims**

1. An excitation control apparatus for controlling field excitation of a synchronous generator in which the field excitation is achieved by a d.c. output produced by rectifying an a.c. output voltage of the generator through a thyristor converter which is capable of operating as either a rectifier or an inverter, said apparatus comprising:

(a) first means for changing the operation of said converter to an inverter mode operation in response to a command for stopping operation of said generator, and

(b) second means for establishing a short-circuit in said converter immediately upon detecting a condition at which it is expected that said converter becomes incapable of being operated in the inverter mode.



4,129,819
VOLTAGE REGULATOR CIRCUIT FOR MOTOR VEHICLE GENERATOR WITH FEEDBACK TO OPPOSE REGULATOR TRANSIENTS

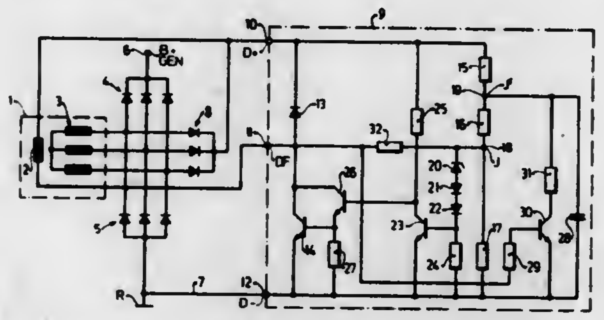
Armin Arendt, Munich, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 29, 1977, Ser. No. 837,990

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1976, 2649306

Int. Cl.^{2} H02P *9/38*

U.S. Cl. 322—28 **9 Claims**



1. A voltage regulator for a generator having an exciter field winding (2) connected in series with a semiconductor switch (14) controllable through a Zener diode (20) by the voltage at a first tap (18) of a voltage divider (15, 16, 17) connected across the voltage to be regulated, in which regulator there is also provided: an inverse feedback path (28, 29, 30, 31) having a delayed operation characteristic and connected between the connection of the semiconductor switch (14) to said exciter field winding (2) and a second tap (19) of said voltage divider.

4,129,820
VARIABLE REACTANCE TRANSFORMER

Elwood M. Brock, Bradenton, Fla., assignor to Hunterdon Transformer Company, Flemington, N.J.

Filed Sep. 30, 1977, Ser. No. 838,185

Int. Cl.^{2} H01F *21/08*; G05F *1/32*

U.S. Cl. 323—56 **6 Claims**

1. An improved saturable reactance transformer comprising:

an annular main core;

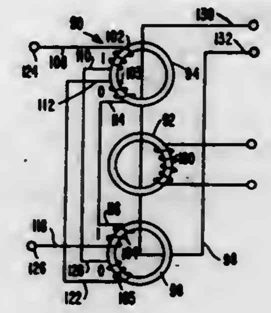
first and second auxiliary cores adjacent and coaxial with said main core;

first and second toroidal control windings on each of said auxiliary cores, the first control winding being toroidally wound on and electrically insulated from its core and the second control winding being toroidally wound over said first control winding;

a secondary winding toroidally wound only on said main core;

a primary winding having a first start lead and a first finish lead, said winding being toroidally wound over said main and auxiliary cores and their respective secondary and control windings; and

means cross-connecting said control windings in series opposition between a second start lead and a second finish



lead; said windings and cross-connections being so arranged that said first and second start leads are physically adjacent each other and said first and second finish leads are physically adjacent each other, whereby the instantaneous AC voltage induced in said control windings by alternating current applied to said primary windings and the AC voltage across said primary windings are subtractive.

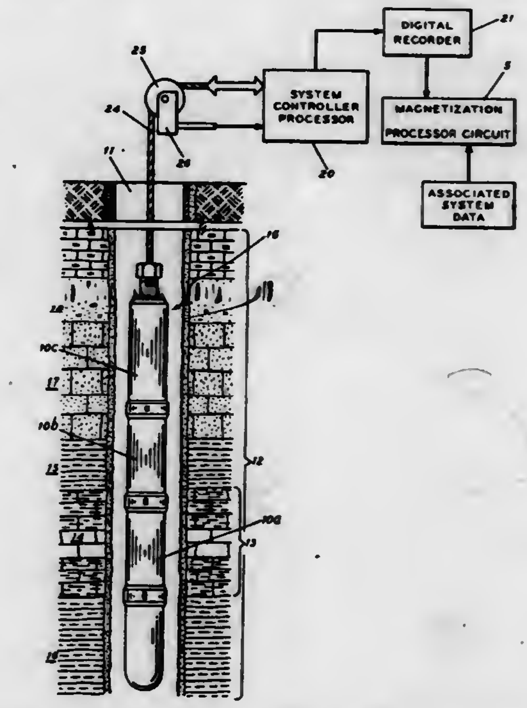
4,129,821
DETERMINATION OF REMANENT MAGNETIZATION OF AN EARTH FORMATION PENETRATED BY A BORE HOLE USING A MAGNETOMETER-FOLLOWED BY PROCESSING OF DATA INCLUDING MICROPULSATION DATA

Harold D. Messner, Vallejo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 5, 1974, Ser. No. 498,359

Int. Cl.^{2} G01V *3/00, 3/18*

U.S. Cl. 324—8 **5 Claims**



1. Apparatus for migrating time variations (micropulsations) of an earth's magnetic field waveform collected at a datum line to become associated with a series of depth locations in a well bore penetrating an earth formation comprising:

(a) memory means for storing said waveform as binary data,

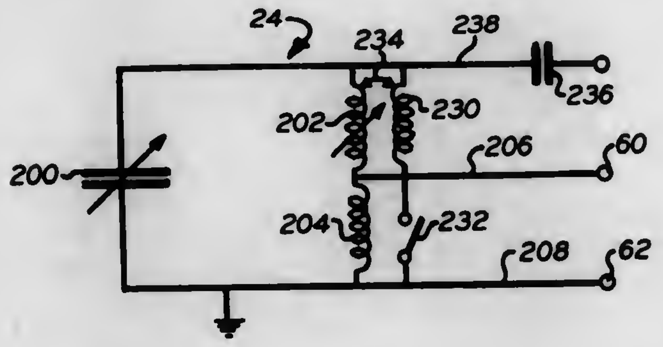
(b) means for digital filtering said binary data according to frequency characteristics of said data and including associated means for migrating said filtered data to said series of depth points as a function of conductivity of the intervening earth formation, and

(c) means for storing said filtered and migrated data as a function of depth within said earth formation.

4,129,822

WIDE-BAND NUCLEAR MAGNETIC RESONANCE SPECTROMETER

Daniel D. Traficante, 16 Fairbanks Rd., Lexington, Mass. 02173
Continuation-in-part of Ser. No. 571,433, Apr. 24, 1975, Pat. No. 4,075,552. This application Dec. 16, 1977, Ser. No. 861,169
Int. Cl.² G01R *33/08*
U.S. Cl. 324—0.5 AH **13 Claims**

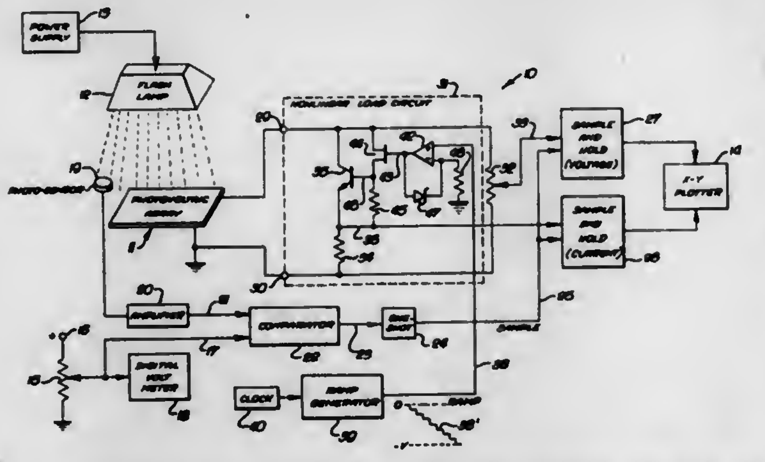


1. In a wide-band nuclear magnetic resonance spectrometer for determining the NMR frequency of a sample in an external magnetic field, a system comprising transmitting means for generating a signal having a frequency equal to the NMR frequency of the sample, receiving means for receiving the signal from the sample, and probe means for applying said signal from said transmitting means to the sample and for applying the signal from said sample to said receiving means, said probe means comprising serially connected coils connected across a capacitor to form a tank circuit resonant at the NMR frequency of the sample, one of said coils adapted to be inductively coupled to said sample for detecting the signal of NMR frequency from the sample, and another of said coils being inductively isolated from said one coil for applying the signal from the sample to said receiving means.

4,129,823

SYSTEM FOR DETERMINING THE CURRENT-VOLTAGE CHARACTERISTICS OF A PHOTOVOLTAIC ARRAY

Kees van der Pool, Canyon Country; Louis S. Rosinski, Jr., Canoga Park, and Johann B. Belli, Sylmar, all of Calif., assignors to Sensor Technology, Inc., Chatsworth, Calif.
Filed Nov. 3, 1977, Ser. No. 848,081
Int. Cl.² G01R *31/024*
U.S. Cl. 324—20 R **9 Claims**



1. A system for determining the current-voltage characteristics of a photovoltaic array, comprising:

a flash lamp mounted to illuminate said photovoltaic array at a pulsed rate,

a separate photosensor also mounted so as to be illuminated by said pulsed flash lamp,

comparator means, connected to said photosensor, for providing a gate pulse each time that the illumination level striking said photosensor reaches a preselected level,

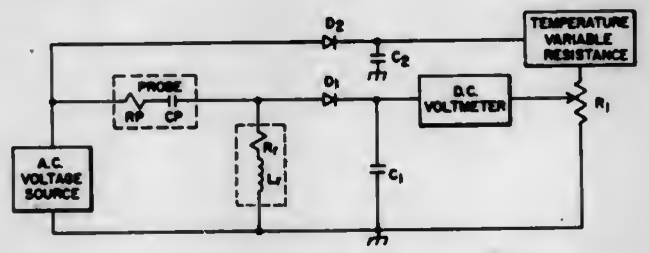
nonlinear load means for providing successively different load impedance values across said photovoltaic array, and

sampling means for sampling the current and voltage from said photovoltaic array at each of said successive load values, said sampling means being enabled by said gate pulse.

4,129,824

ELECTRONIC HYDROMETER

Edward P. Howes, 1244 Montgomery St., Salt Lake City, Utah 84104
Filed Nov. 22, 1976, Ser. No. 743,861
Int. Cl.² G01N *27/42*
U.S. Cl. 324—29.5 **23 Claims**



1. An electronic hydrometer for continuously monitoring during use of a lead acid battery the amount of charge remaining in the battery by monitoring the specific gravity of the acid solution in the battery, comprising a probe for insertion into the battery solution to be monitored, said probe having electrodes in spaced apart relationship; an A.C. resistance electrically connected in series with an electrode of the probe to form, with the probe, a voltage divider network having said resistance and said probe as elements thereof; means for converting D.C. voltage from the battery being monitored to A.C. voltage and supplying such A.C. voltage across said network, said means being capable of supplying full A.C. voltage across said network even when the battery is in a close to fully discharged condition so that they hydrometer will remain fully powered over a wide range of battery conditions; means for generating a reference voltage; and means for comparing the A.C. voltage across one of the elements of the voltage divider network with the reference voltage, whereby voltage difference is indicated and is calibrated in terms of the amount of charge remaining in the battery being monitored.

4,129,825

ELECTRICAL CONDUCTOR AND SHORT CIRCUIT LOCATOR

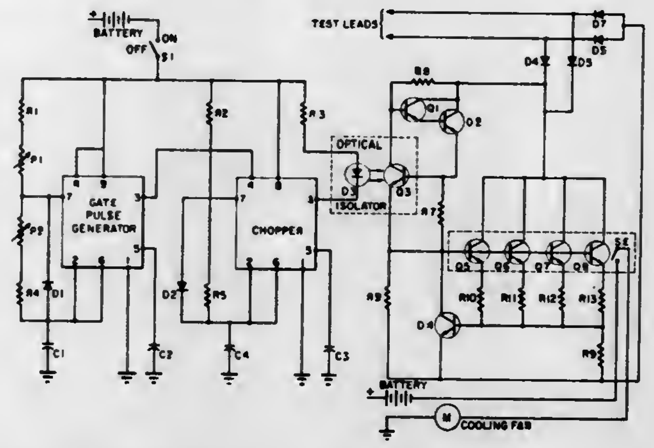
Paul E. Brinegar, 1731 Springlake Dr., Fort Worth, Tex. 76012
Continuation-in-part of Ser. No. 551,816, Feb. 21, 1975, Pat. No. 4,021,730. This application May 2, 1977, Ser. No. 792,923
Int. Cl.² G01R *31/08, 31/02*
U.S. Cl. 324—52 **8 Claims**

1. An apparatus for locating electrical conductors and short circuits comprising:

first and second test leads for connecting across open circuit breaker means in a circuit to be tested; the open circuit breaker means having a voltage potential across its terminals due to a circuit power source;

current limiting means connected across the test leads for allowing current due to the circuit power source to flow through the current limiting means and the circuit, and for limiting the current in the circuit being tested to a predetermined value to prevent excessive short circuit current in the circuit being tested; the predetermined value being sufficiently high such that pulsated and alternated currents are discernable at conducting points in the circuit by a clamp-on ammeter;

first pulse generating means, cooperating with the current limiting means, for intermittently interrupting the current in the circuit being tested; the first pulse generating means providing an on duration of the current in the circuit being tested sufficient for a clamp-on ammeter in an AC circuit to indicate a momentary pulse with the off duration substantially greater than the on duration; and

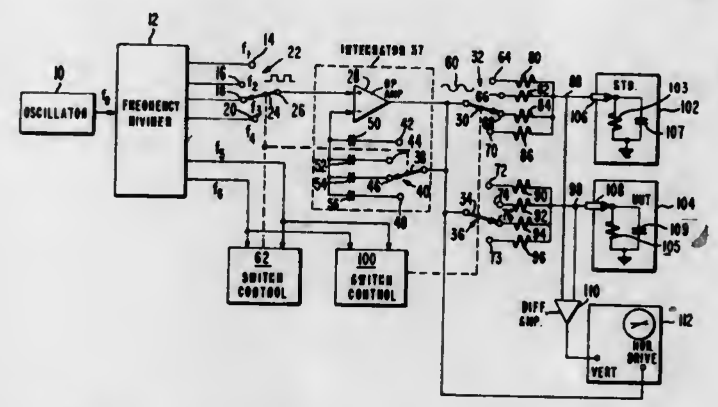


second pulse generating means, cooperating with the current limiting means and connected in series with the first pulse generating means, for interrupting the momentary pulse created by the first pulse generating means to provide a pulsating component in the momentary pulse so that a current reading is visible on a clamp-on ammeter in a DC circuit at all points along the circuit except at the short circuit.

4,129,826

CIRCUIT TEST APPARATUS

Chester R. Mills, Woodbury, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Aug. 24, 1977, Ser. No. 827,241
Int. Cl.² G01R *27/00*
U.S. Cl. 324—57 SS **8 Claims**



1. Apparatus for testing a circuit which is intended to be substantially identical to a reference circuit comprising, in combination:

means for generating a periodic test waveform each period of which comprises a signal which varies through the same range of frequencies and at an impedance level which changes as the frequency changes and which is proportional to the frequency;

means for applying the test waveform both to the reference circuit and the circuit under test;

means for comparing the voltages developed at corresponding test points in the reference circuit and the circuit under test in response to said test waveform; and

means for indicating the difference between said voltages.

5. A test circuit comprising:

first, second, third and fourth nodes;

a bridge comprising a first arm connected between the first and second nodes, and a fourth arm connected between the fourth and first nodes, said first and fourth arms comprising resistive arms of equal value;

said second and third nodes serving as points between which a unit under test (UUT) may be connected, said UUT, when in place, serving as a second arm of said bridge;

said third and fourth nodes serving as points between which a standard unit (STD) may be connected, said STD, when in place, serving as the third arm of said bridge;

means for applying a periodic test signal between said first and third nodes which varies in frequency, during each period of said signal, over a range of frequencies;

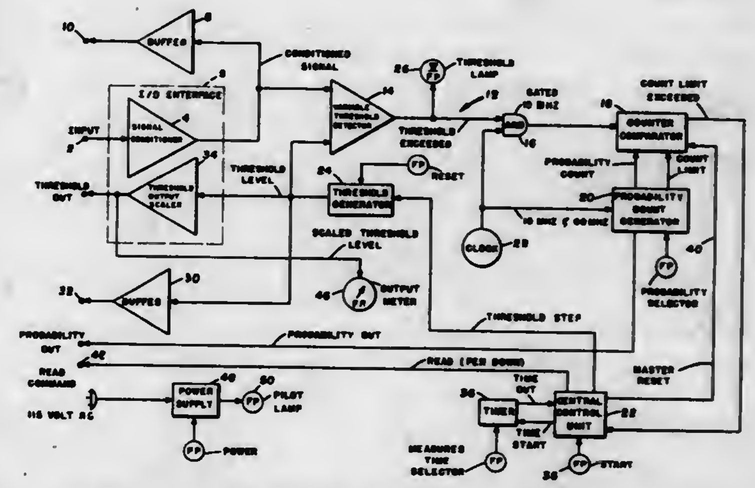
means for concurrently varying the resistance of said first and said fourth arms of said bridge in correspondence with and in the same sense as the variation in frequency of said test signal, while maintaining the resistance of said first and second arms equal to one another; and

means coupled between said second and said fourth nodes for sensing any differences in voltage between said nodes.

4,129,827

AMPLITUDE PROBABILITY DETECTOR

Roger A. Southwick, 8502 E. Mabel Pl., Tucson, Ariz. 85715
Filed May 20, 1976, Ser. No. 688,441
Int. Cl.² G01R *23/16*
U.S. Cl. 324—77 A **9 Claims**



1. An amplitude probability detector for selectively measuring the amplitude probability distribution of an input signal, comprising:

means for presetting a probability within the probability distribution range; and,

means operably connected and responsive to the probability presetting means for generating and adjusting a signal threshold level such that the probability of the input signal exceeding the threshold level is equal to the preset probability.

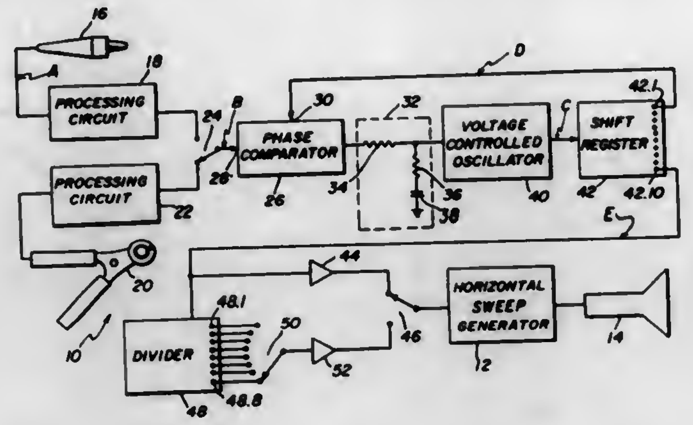
4,129,828

OSCILLOSCOPE PRETRIGGER CIRCUIT

James A. Jindrick, Kenosha, Wis., assignor to Snap-On Tools Corporation, Kenosha, Wis.
Filed Sep. 28, 1977, Ser. No. 837,636
Int. Cl.² G01R *13/42*
U.S. Cl. 324—16 S **9 Claims**

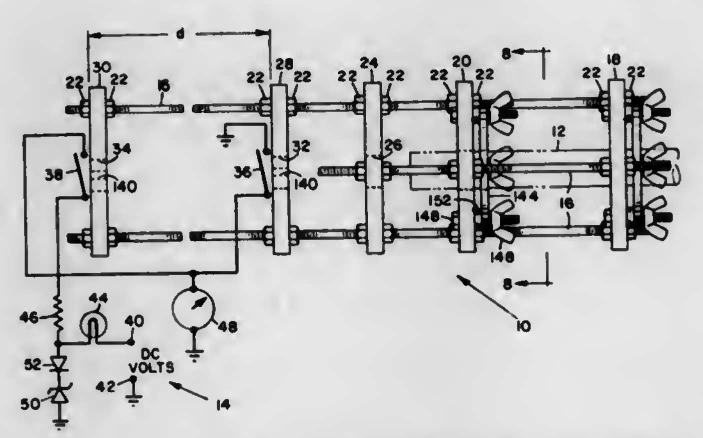
1. A pretrigger circuit for the horizontal-sweep generator of an oscilloscope which is used to display ignition signals of an internal combustion engine, said trigger circuit comprising phase-comparator means having first and second inputs and an output, said first input being connected to receive the ignition signals, said phase-comparator means generating a control voltage representative of the difference in phase and frequency of two signals respectively applied to said first and second inputs, voltage-controlled oscillator means coupled to the output of said phase-comparator means for producing a sequence of oscillator pulses at a frequency within a range of frequencies generally centered at N times the frequency of the

ignition signals, the frequency of the oscillator pulses being controlled by the value of said control voltage, and shift-register means having an input coupled to said voltage-controlled oscillator means and N shift-register outputs, one of said shift-register outputs being coupled to said second input of said phase-comparator means and another of said shift-register outputs being coupled to the horizontal-sweep generator, the sequence of oscillator pulses respectively causing said shift-register means to generate output pulses sequentially on said shift-register outputs, whereby the output pulses on said one shift-register output are at the same frequency as said ignition and are in phase therewith, and the output pulses on said other shift-register output are at the same frequency as said ignition signals but not in phase therewith so that horizontal sweeps of the oscilloscope commence at a selected point between the starts of the ignition signals.



4,129,829
CHRONOGRAPH

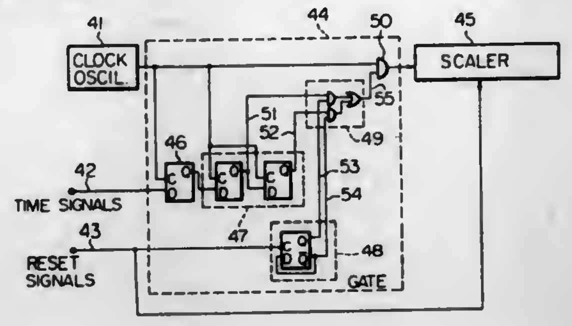
Norvel J. McLellan, 1002 N. Main, Pleasanton, Tex. 78064
Filed Aug. 18, 1977, Ser. No. 825,769
Int. Cl.^{2} G01P *3/66*
U.S. Cl. 324—178 12 Claims



1. An apparatus for measuring velocity of a projectile comprising:
start switch means with a first side connected to ground;
stop switch means connected to a second side of said first switch means and a source of power;
current limiting means inserted between said stop switch means and said source of power;
regulating means across said source of power for regulation thereof;
meter means having a ballistic movement therein, said meter means being connected between said connection of said start and stop switch means and ground;
said projectile first opening said start switch means to begin current flow through said meter means, subsequently said projectile traveling a predetermined distance to open said stop switch means to stop current flow through said meter means, said meter means being calibrated in velocity units.

4,129,830
COUNTING PROCESS FOR TIME-TO-DIGITAL CONVERTING CIRCUITS

Setsuro Kinbara, Mito, Japan, assignor to Japan Atomic Energy Research Institute, Tokyo, Japan
Filed May 25, 1977, Ser. No. 800,474
Claims priority, application Japan, Jun. 28, 1976, 51-76148; Sep. 7, 1976, 51-106263
Int. Cl.^{2} G04F *8/00*
U.S. Cl. 324—186 2 Claims



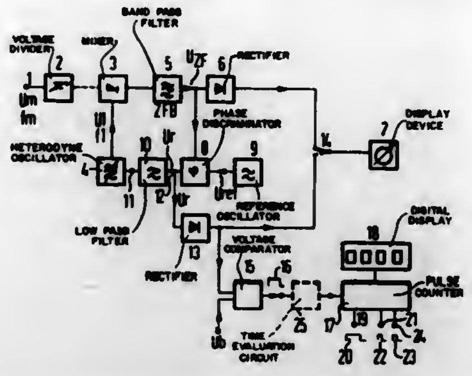
1. In a time-to-digital circuit, an apparatus for counting a pulse train obtained by gating clock-pulses by means of time signals to obtain digital values comprising:
a synchronizing circuit connected to a terminal of time signals for synchronizing the phases of said clock-pulses with the phases of said time signals,
a shift scaling circuit having a plurality of stages, including a binary coded unit, connected to the synchronizing circuit for shifting the time signals applied to the shift scaling circuit in accordance with the period of the clock pulses to obtain outputs from every stage of the shift scaling circuit,
a control scaling circuit having the same number of ordered outputs as the number of outputs of said shift scaling circuit and connected to a terminal of reset signals,
a plurality of selecting gates, each selecting gate having the same number of stages as those in the shift scaling circuit and connected to the shift scaling circuit and the control scaling circuit for applying one of the outputs obtained from the stages of the shift scaling circuit to the selecting gate to select a time signal by an ordered output signal of the control scaling circuit, said ordered output signal being provided by the control scaling circuit through being advanced every converting cycle, and
AND gate means connected to the selecting circuit for directly controlling the clock-pulses and for obtaining a pulse train with a number proportional to the number of the period of the time signals by gating the clock-pulses by the AND gate by means of the synchronized, shifted and selected time signals.

4,129,831
CIRCUIT ARRANGEMENT FOR DETERMINING AND ANALYZING THE PHASE INTERFERENCE-MODULATION OF A MEASURING SIGNAL

Helmuth Fink, Munich, and Guenter Wess, Seefeld, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Aug. 4, 1977, Ser. No. 821,838
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1976, 2644159
Int. Cl.^{2} G01R *27/00*
U.S. Cl. 324—57 H 7 Claims

1. Circuit arrangement for determining the phase interference modulation of a measuring signal which is obtained via an object to be measured in the carrier-frequency band, employing a selective carrier-frequency heterodyne receiver, wherein the output voltage of a phase discriminator arranged in an automatic fine tuning circuit of the carrier-frequency heterodyne receiver and producing a voltage which regulates the

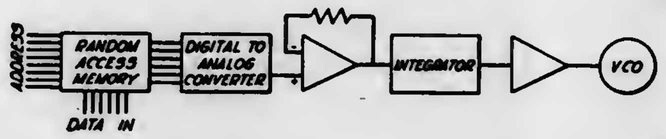
frequency of a heterodyne oscillator depending upon the phase difference between the measuring signal which has been converted into an intermediate frequency band and a reference voltage obtained from a reference oscillator, the output of said phase discriminator serving as a measurement for the phase interference modulation which is applied to an evaluation device, comprising the improvement in the combination



wherein said evaluation device contains a voltage comparator (15) which is connected to a source delivering a reference voltage (Ub), and emits an output signal (16) during the time the reference voltage (Ub) is exceeded by the output voltage (Ur) of the phase discriminator (8), and a pulse counter (17) connected to said voltage comparator (15) which counts the occurrrences of the output signals (16).

4,129,832
METHOD AND MEANS FOR LINEARIZING A VOLTAGE CONTROLLED OSCILLATOR SWEEP GENERATOR

Gary W. Neal, Melbourne, and Robert M. Montgomery, Indialantic, both of Fla., assignors to Harris Corporation, Melbourne, Fla.
Filed Jun. 20, 1977, Ser. No. 808,029
Int. Cl.^{2} H03B *23/00*
U.S. Cl. 331—44 9 Claims

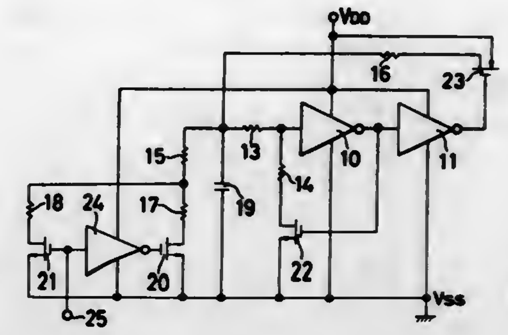


4. A method of linearizing a voltage-controlled oscillator wherein a control signal is shaped into ramp form by a random access digital memory, converted to analog form, integrated and transmitted to the control input terminal of a voltage-controlled oscillator to be linearized whereby the control signal received at the oscillator control input terminal is of continuously increasing voltage in time and thereby causing the oscillator to generate a chirp; nonlinearities in the chirp are detected; and the memory is reprogrammed so as to diminish the detected non-linearities by reshaping the ramp control signal.

4,129,833
MULTIVIBRATOR

Toshiji Shibata, Toride, Japan, assignor to Meisei Electric Co. Ltd., Tokyo, Japan
Continuation of Ser. No. 707,076, Jul. 20, 1976, abandoned. This application Aug. 12, 1977, Ser. No. 826,272
Claims priority, application Japan, Jul. 31, 1975, 50/93635
Int. Cl.^{2} G01K *7/16*
U.S. Cl. 331—66 16 Claims

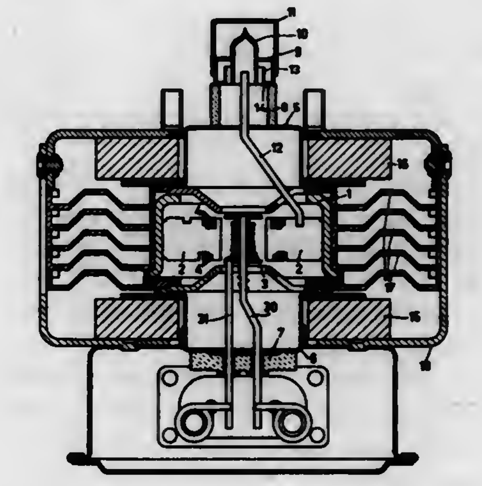
1. A multivibrator comprising:
an inverter having input and output terminals;
a charging circuit having a first switch, a resistor R_4 and a condenser connected in series to a D.C. power source, said first switch having a control terminal;
a circuit connected in parallel to said condenser and having a resistor R_1, a resistor R_2 and a second switch connected in series, said second switch having a control terminal;
a discharging circuit connected in parallel to said condenser and having a resistor R_3 and a resistor selected from resistors R_{x1} and R_{x2} connected in series:
means for connecting the junction point of the resistor R_1 and the resistor R_2 to the input terminal of said inverter; and



means for connecting the output terminal of said inverter to the control terminal of said second switch and to the control terminal of said first switch, respectively;
wherein the time constant of said charging circuit being smaller than that of said discharging circuit, the resistance value of the resistor R_4 of said charging circuit being smaller than the sum of the resistance values of the resistors R_1 and R_2 of said circuit.

4,129,834
RESONANT CAVITY MAGNETRON WITH CHOKE STRUCTURE FOR REDUCING HARMONICS IN OUTPUT SYSTEM

Franciscus N. A. Kerstens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 14, 1977, Ser. No. 851,280
Claims priority, application Netherlands, Jan. 17, 1977, 7700417
Int. Cl.^{2} H03B *9/10*
U.S. Cl. 331—91 4 Claims

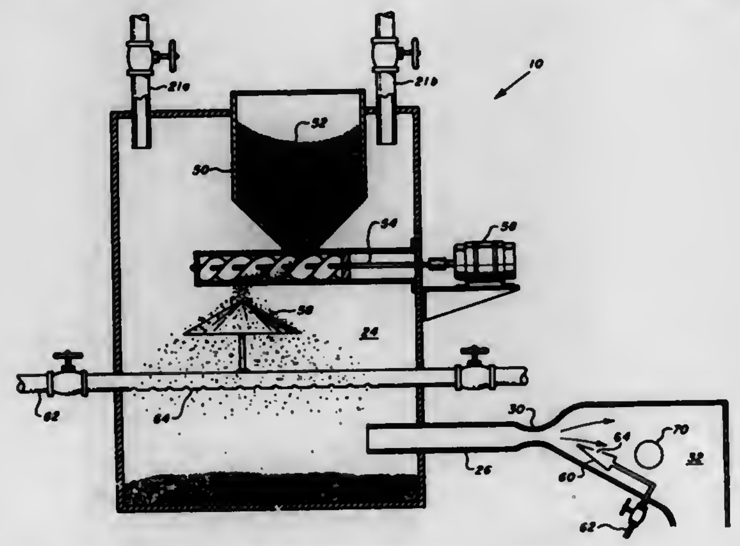


1. A resonant cavity magnetron comprising an anode housing having an aperture in one side thereof and a plurality of anode vanes extending from the inner wall of said housing, an output portion including a probe connected to at least one of said vanes and extending through said aperture beyond said housing and a $\frac{1}{4}$ λ folded choke for suppression of a higher harmonic of the fundamental frequency of oscillation of the magnetron spaced from said housing, said folded choke including a first generally cylindrical conductor connected to an end portion of said probe extending beyond said housing, a second tubular conductor coaxial with and surrounding said first conductor with a gap therebetween, the end of said second conductor remote from said housing being connected to said first conductor to define a first choke section, and a third

tubular conductor coaxial with said first conductor disposed between said first and second conductors, the end of said third conductor adjacent said housing being connected to one of said first and second conductors to define a second choke section, said first and second choke sections forming said folded $\frac{1}{4}\lambda$ choke.

4,129,835
METHOD AND APPARATUS FOR THE CONTINUOUS GENERATION OF METAL VAPOR

John W. Daiber, and John W. Raymonda, both of Williamsville, N.Y., assignors to Calspan Corporation, Buffalo, N.Y.
Filed Nov. 26, 1976, Ser. No. 745,155
Int. Cl.² H01S *3/095*
U.S. Cl. 331—94.5 G **6 Claims**

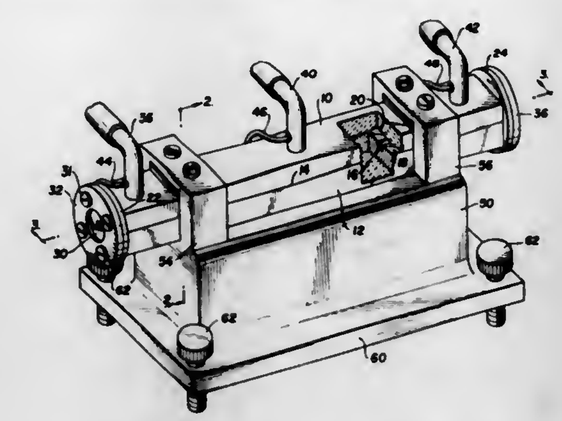


5. Apparatus for continuously generating metal vapor to produce lasing by vapor phase combustion of metal atoms including:
- precombustion chamber means for producing metal vapor;
- means for supplying an excess of metal in the refined state to said precombustion chamber means;
- means for supplying an oxidant selected from the group consisting of nitrous oxide, ozone and fluorine to said precombustion chamber means to react with said metal in an exothermic reaction whereby excess metal present is vaporized;
- means for supplying a diluent to said precombustion chamber means;
- optically resonant laser cavity means having an optical axis;
- means including a nozzle for withdrawing metal vapor and diluent from said precombustion chamber means, expanding the flow to supersonic speeds and delivering said withdrawn metal vapor and diluent to said laser cavity means at supersonic speeds;
- means for introducing an oxidant selected from the group consisting of nitrous oxide, ozone and fluorine into the supersonic flow region of said laser cavity means where the vaporized metal reacts with introduced oxidant to produce suitable excited molecules and thereby lasing.

4,129,836
FREQUENCY STABLE BORON NITRIDE CHANNEL LASER

Aristotle Papayoanou, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Apr. 4, 1977, Ser. No. 784,084
Int. Cl.² H01S *3/03*
U.S. Cl. 331—94.5 D **9 Claims**

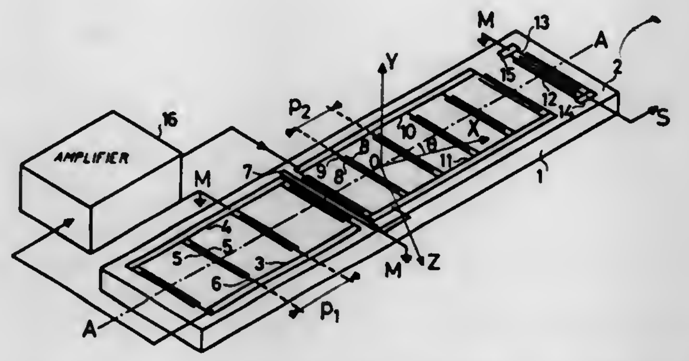
1. A tunable high pressure molecular laser comprised of an elongated dielectric waveguide laser cavity of relatively small cross sectional area relative to its length, terminated at each end by a respective end mirror, a laser medium comprising a gaseous mixture, and means to excite said medium to provide laser action;
- wherein said laser cavity comprises a channel formed in a block of boron nitride ceramic material which has high thermal conductivity and low thermal expansion, with the channel being the full length of said block and having cross sectional dimensions which are a very small fraction of the corresponding dimensions of said block;



- cooling means providing a reservoir for removing heat from said block, which in conjunction with the good thermal conductivity of the boron nitride, acts to maintain the laser at an efficient, low operating temperature;
- the construction means and the boron nitride thermal expansion properties being such that the change in mirror separation distance is very small and therefore the Fabry Perot resonance frequency is sufficiently stable to substantially eliminate line jumps.

4,129,837
ELASTIC SURFACE WAVE OSCILLATOR

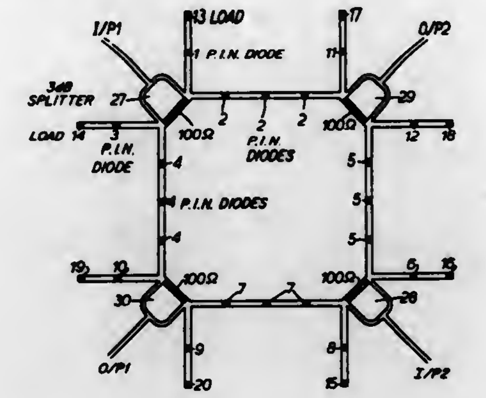
Pierre Hartemann, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Jul. 5, 1977, Ser. No. 812,472
Claims priority, application France, Jul. 9, 1976, 76 21104
Int. Cl.² H03B *5/32*
U.S. Cl. 331—107 A **11 Claims**



1. An elastic surface wave oscillator comprising: electrical amplifier means provided with a feedback loop, said feedback loop being formed by first and second interdigitated comb transducers arranged on a major face of a piezoelectric substrate; the electrical energy supplied by said oscillator being available at the terminals of a third interdigitated comb transducer arranged on said major face for collecting a fraction of the vibratory energy emitted by said second transducer; the interdigitated combs of said first and second transducers having fingers arranged for respectively forming arrays of discrete radiator elements; the pitches of said radiator elements in said arrays being respectively equal to k_1 and k_2 times the wavelength of said vibratory energy; k_1 and k_2 being integers respectively equal to 5 and 7.

4,129,838
SWITCHING ARRANGEMENTS

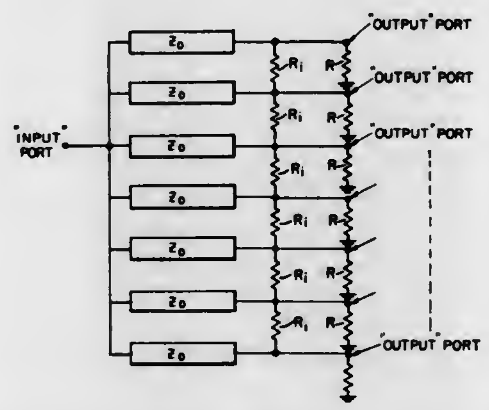
John R. Wallington, London, and Robert B. Greed, Colchester, both of England, assignors to The Marconi Company Limited, Chelmsford, England
Filed May 13, 1977, Ser. No. 796,750
Claims priority, application United Kingdom, May 15, 1976, 20137/76
Int. Cl.² H01P *1/15*
U.S. Cl. 333—7 D **14 Claims**



1. A switching arrangement including a switching device having four microstrips serially interconnected to form a closed loop with a port being provided at the junction between each two adjacent microstrips, and a 3dB splitter at two alternate ports in the loop, each microstrip including a variable impedance P.I.N. diode positioned at intervals $n\lambda/4$, n being an odd integer, from a port and each of the two 3dB splitters being provided with two selectable matched loads which are coupled to respective ones of the two microstrips which are interconnected at that 3dB splitter.

4,129,839
RADIO FREQUENCY ENERGY COMBINER OR DIVIDER

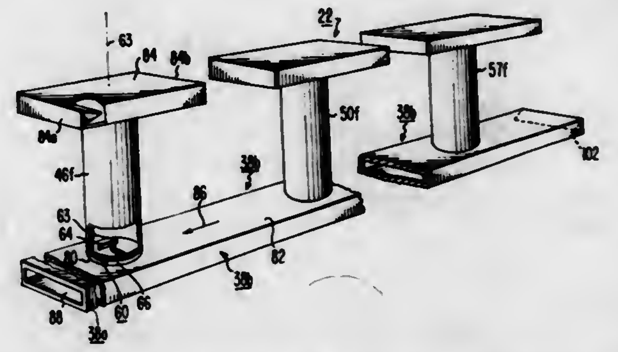
Zvi Galani, Bedford, and Steven J. Temple, Arlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Continuation-in-part of Ser. No. 775,801, Mar. 9, 1977, abandoned. This application Jun. 20, 1977, Ser. No. 807,859
Int. Cl.² H01P *5/12*
U.S. Cl. 333—9 **2 Claims**



1. A power divider having an input port for receiving radio frequency energy within a band of frequencies from a source thereof and N output ports, where N is an integer greater than two, for distributing such energy among N loads, such power divider being fabricated as a printed circuit on one side of a dielectric substrate, the second side of such substrate being covered with an electrically conductive coating, such power divider comprising:
- (a) a first printed transmission line connected to the input port, such line having a characteristic impedance matching the characteristic impedance of the source of electromagnetic energy and having a free end;
- (b) N printed output transmission lines, each one thereof having one end connected to a different one of the output ports and a free end, the characteristic impedance of each one of the N printed output transmission lines being matched to the characteristic impedance of a corresponding one of the loads;
- (c) N printed transmission lines interconnecting the free end of the first printed transmission line and the free end of each different one of the N printed output transmission lines, the characteristic impedance of each one of the printed transmission lines being greater, by a factor of $N^{\frac{1}{2}}$, than the characteristic impedance of each corresponding one of the plurality of loads; and
- (d) N-1 isolating resistors, each different one connected between the junctions of each successive pair of the N printed transmission lines and N printed output transmission lines.

4,129,840
ARRAY OF DIRECTIONAL FILTERS

Chuck K. Mok, Pincourt, Canada, assignor to RCA Corporation, New York, N.Y.
Filed Jun. 28, 1977, Ser. No. 810,875
Int. Cl.² H01P *1/20, 7/06, 1/00*
U.S. Cl. 333—73 W **4 Claims**



1. A filter array for filtering first, second and third contiguous channels of frequencies where frequencies of said third channel are higher than frequencies of said second channel and frequencies of said second channel are higher than frequencies of said first channel, comprising:
- a first directional filter having a resonant frequency band that includes said first channel;
- a second directional filter having a resonant frequency band that includes said second channel and substantial portions of said first and third channels;
- a third directional filter having a resonant frequency band that includes said third channel and a substantial portion of said first channel, all of said filters being of a type that has an end wall with a hybrid slot pair;
- a rectangular waveguide having an end adapted for connection to a source and to a load, and a wall with first, second and third ports, said first and second ports being respectively closest to and furthest from said waveguide end, said end walls of said first, second and third filters being connected to said first, second and third ports, respectively, in a manner that causes a signal that passes through said filters to said waveguide to propagate towards said waveguide end.

4,129,841

RADIATING CABLE HAVING SPACED RADIATING SLEEVES

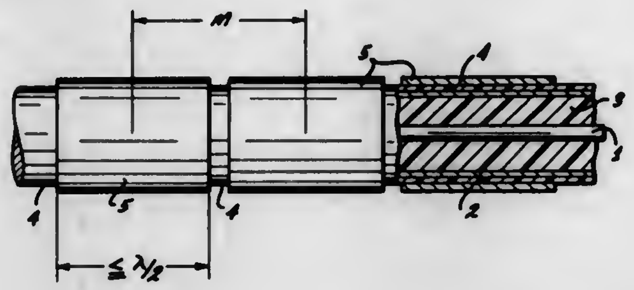
Helmut Hildebrand, Langenhagen, and Gerhard Dunker, Hanover, both of Fed. Rep. of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte A.G., Hanover, Fed. Rep. of Germany

Filed Aug. 15, 1977, Ser. No. 824,427

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1976, 2636523

Int. Cl.² H01P *3/06*

U.S. Cl. 333—84 L **6 Claims**



1. Radiating high frequency cable having an inner conductor, an outer conductor and a spacer made of dielectric material disposed and configured so as to establish a concentric relation between the inner and the outer conductors, the outer conductor being constructed to radiate high frequency energy as transmitted through the cable, the improvement comprising:

an insulative envelope on the outer conductor; and

a plurality of radiating elements made of electrically conductive material and placed on the envelope in axially spaced apart relation to each other, each of the elements having an axial length not larger than half the wavelength of the radiated energy at a particular frequency of a radiated band, the elements having an axial center-to-center distance equal to the wavelength of the energy at said frequency and as transmitted through the cable.

4,129,842

U-SHAPED MICROSTRIP RESONANT CIRCUIT

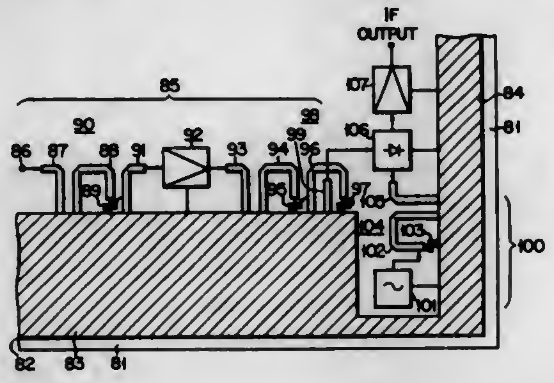
Kenichi Torii, Yokohama, and Shigeo Fujimori, Ichikawa, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Feb. 15, 1977, Ser. No. 768,906

Claims priority, application Japan, Feb. 18, 1976, 51-16754

Int. Cl.² H03J *3/18;* H03B *5/08*

U.S. Cl. 334—15 **9 Claims**



1. A resonant circuit comprising a ground-contacting conductive member; a dielectric layer provided on said ground-contacting conductive member; a ground-contacting member provided on said dielectric layer and electrically connected to said ground-contacting conductive member; at least one U-shaped microstrip line formed on said dielectric layer and having two ends each facing said ground-contacting member; and at least one lumped capacitor connected to said U-shaped microstrip line, one end of said U-shaped microstrip line being grounded through the lumped capacitor of the resonant circuit and the other end thereof being grounded by way of direct grounding.

4,129,843

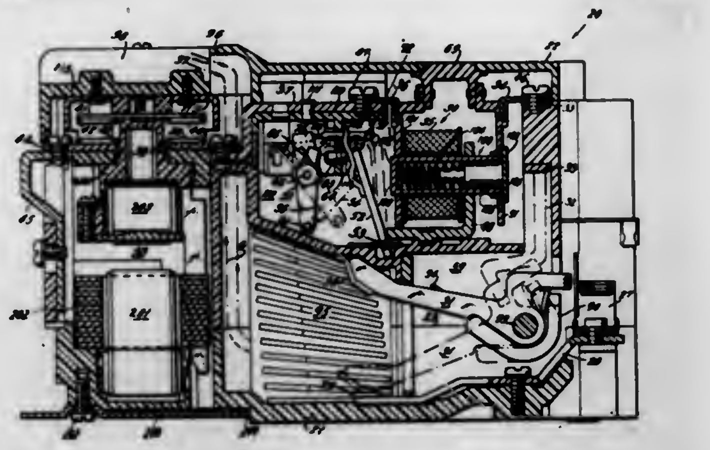
MAGNETIC TRIP MEANS FOR CIRCUIT BREAKER

Frank R. Keller, Villanova; John B. Cataldo, Lansdale, both of Pa.; Frank W. Kussy, Randallstown, Md., and Bernard DiMarco, Bellefontaine, Ohio, assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Oct. 5, 1976, Ser. No. 729,699

Int. Cl.² H01H *9/00*

U.S. Cl. 335—174 **9 Claims**



1. An electrical switching device including separable switch contact means; a spring powered operating means connected to said switch contact means for opening and closing thereof; an overload device operatively connected to said spring powered operating mechanism; housing means wherein said contact means, said operating means and said overload device are disposed; said housing means including a front opening normally closed by removable cover means; said housing means having means at the rear thereof for operatively securing said switching device in front of a support surface; said overload device upon sensing predetermined overload conditions in circuit with said switching device automatically actuating said spring powered operating mechanism to open said switch contact means; said overload device including a sensing coil in series circuit with the contact means, a stationary magnetic yoke, and a magnetic armature biased away from said yoke and mounted for movement toward said yoke to actuate said spring powered mechanism; said overload device also including additional magnetic means comprising a movable magnetic core coaxial with said coil, projecting out the end of said coil remote from said armature, biasing means urging said core away from said aperture, and additional means for retarding movement of said core into said coil and toward said armature in a controlled manner upon energization of said coil by overload currents; said coil, said yoke and said additional magnetic means being parts of a sub-assembly that is removable and replaceable through said front opening to change the calibration range of the switching device while the armature remains operatively mounted within said housing means as part of the switching device and while said device remains secured to a support surface adjacent the rear of said device.

4,129,844

MULTI-DIRECTIONAL POSITIONER

William M. Wells, Midfield, Ala., assignor to Thomas H. Hudson, Birmingham, Ala., a part interest

Filed Jul. 14, 1977, Ser. No. 815,519

Int. Cl.² H01F *7/18*

U.S. Cl. 335—268 **7 Claims**

1. In a multi-directional positioner for moving one element relative to another element,

(a) a ball-like member,

(b) a housing having a socket therein receiving said ball-like member with a rotating fit with the inner surface of said socket extending an angular distance around said ball-like member to retain said ball-like member in said socket with a portion of said ball-like member projecting outwardly of said socket,

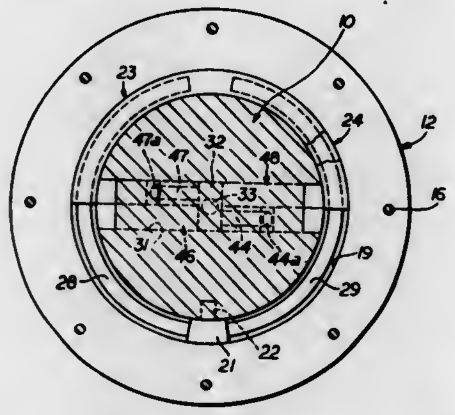
(c) means operatively connecting said portion of the ball-like member projecting outwardly of said socket to said one element,

(d) means operatively connecting said housing to said another element,

(e) at least one arcuate groove in the inner surface of said housing extending in a plane passing generally through the center of said ball-like member,

(f) at least one first arcuate shaped electrical power unit fixedly mounted within said arcuate groove in said housing and being extendable and retractable lengthwise of said arcuate groove in said housing and pivotally connected adjacent one end to an adjacent side of said ball-like member,

(g) means to actuate said first power unit to selectively extend and retract said first power unit within said arcuate groove in said housing to rotate said ball-like member selectively in opposite directions and impart relative movement between said ball-like member and said housing,



(h) at least one arcuate groove in the outer surface of said ball-like member extending in a plane passing generally through the center of said ball-like member and perpendicular to said arcuate groove in the inner surface of said housing,

(i) at least one second arcuate shaped electrical power unit mounted in said arcuate groove in the outer surface of said ball-like member and being extendable and retractable lengthwise of said arcuate groove in said ball-like member and connected adjacent one end thereof to said ball-like member and pivotally connected adjacent the other end thereof to an adjacent portion of said housing, and

(j) means to actuate said second power unit to selectively extend and retract said second power unit within said arcuate groove in the outer surface of said ball-like member to rotate said ball-like member selectively in opposite directions and impart relative movement between said ball-like member and said housing.

4,129,845

VAPORIZATION COOLED ELECTRICAL APPARATUS

Frank W. Beake, Hermitage, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jul. 15, 1977, Ser. No. 816,129

Int. Cl.² H01F *27/10*

U.S. Cl. 336—57 **5 Claims**

1. An electrical inductive apparatus comprising:

a sealed housing;

an electrical winding having top and bottom ends disposed in inductive relation with a magnetic core in said sealed housing;

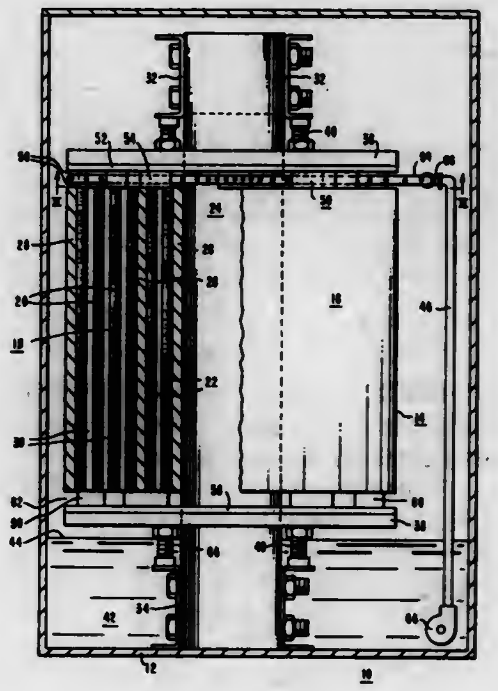
said electrical winding having a plurality of radially spaced cooling ducts extending between said top and bottom ends of said electrical winding;

a dielectric fluid, vaporizable within the normal operating temperature range of said electrical inductive apparatus, disposed within said housing, said dielectric fluid having a liquid level above the bottom of said housing;

means for supplying said dielectric fluid from said bottom portion of said housing to the top portion of said housing;

means for applying compressive stress to said top and bottom ends of the electrical winding, said means including first and second pressure rings, with said first pressure ring disposed around the magnetic core and adjacent said top end of said electrical winding and said second pressure ring disposed around said magnetic core and adjacent said bottom end of said electrical winding, and means for applying pressure to said first and second pressure rings to hold said electrical winding in compression; and

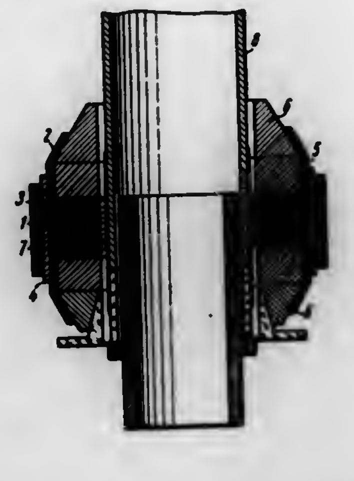
means for distributing said dielectric fluid to the top end of said ducts, said distributing means disposed adjacent said top end of said winding and in fluid flow communication with said supplying means, said distributing means including a first member having a plurality of spacers attached to one surface thereof, said first member disposed with said spacers in registry with said top end of said electrical winding and the other surface of said first member in registry with said first pressure ring such that a first passage is formed between said top end of said electrical winding and said first member and compressive force is maintained on said electrical winding, said distributing means including at least one conduit disposed in said first passage and having first and second ends with at least one of said ends disposed in fluid flow communication with said supplying means, said conduit being formed of electrical insulating material and having a plurality of longitudinal and circumferential spaced apertures therein, said conduit further having a predetermined configuration across said top end of said electrical winding in which said apertures are located adjacent said cooling ducts such that said dielectric fluid is uniformly distributed over said cooling ducts; said distributing means further including a second member having a plurality of spacers attached to one surface thereof, said second member disposed with said spacers in registry with said bottom end of said winding and the other surface of said second member in registry with said second pressure ring to form a second passage below said electrical winding.



4,129,846
INDUCTOR FOR MAGNETIC PULSE WORKING OF TUBULAR METAL ARTICLES

Boris A. Yablochnikov, ulitsa Chaplygina 39, kv. 4, Novosibirsk, U.S.S.R.

Filed Aug. 13, 1975, Ser. No. 604,477
Int. Cl.² H01F *15/04, 27/28*
U.S. Cl. 336—84 C **11 Claims**

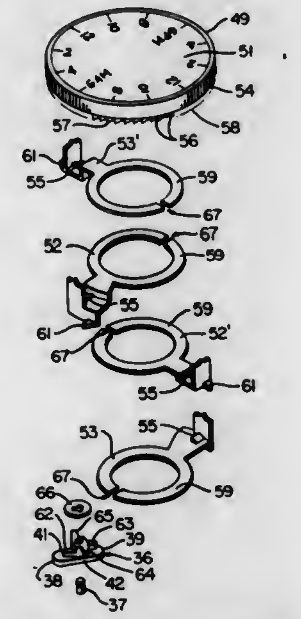


1. An inductor for magnetic pulse working of tubular articles, comprising: a coil composed of flat conductors insulated from one another, said conductors each being made as a sector portion of an annular disc of less than one full turn, which sector portions are helically bent along the axis of said coil at a pitch that ensures a displacement of the ends of each conductor relative to each other by the axial length of said coil, said conductors being assembled into a multiple helix, and the ends of said conductors on at least one axial end of said coil being arranged in one plane substantially normal to the coil axis and circumferentially spaced relative to one another at substantially equal angular spaces or increments.

4,129,847
CUT-BACK THERMOSTAT CONSTRUCTION

Allen L. Teichert, Placentia, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jun. 6, 1977, Ser. No. 803,978
Int. Cl.² H01H *37/62*
U.S. Cl. 337—301 **20 Claims**

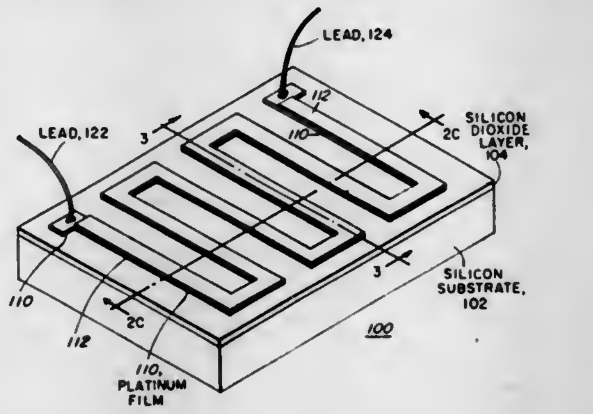


1. In a cut-back thermostat construction having a thermostat arrangement and a timer means carried by a housing means in such a manner that said timer means will cut-back the temperature setting of said thermostat arrangement by moving an electrical switch means of said thermostat arrangement relative to a temperature responsive switch operator of said thermostat arrangement when a predetermined time is reached by said timer means, said construction also having movable actuator means that is carried by said housing means and is operatively associated with said switch means to be adapted to cause a certain movement of said switch means relative to said switch operator when said actuator means is moved from a first position thereof to a second position thereof by said timer means when said predetermined time is reached by said timer means, said construction also having adjustable means that is carried by said housing means and is separate from said actuator means for selecting the amount of movement of said switch means relative to said switch operator when said actuator means is moved from said first position thereof to said second position thereof whereby said adjustable means selects the cut-back temperature of said thermostat arrangement, the improvement comprising stop means carried inside said housing means for limiting the degree of adjustment of said adjustable means and, thus, the amount of movement of said switch means relative to said switch operator.

4,129,848
PLATINUM FILM RESISTOR DEVICE

Robert I. Frank, Cambridge, and Thomas E. Salzer, Bedford, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 610,012, Sep. 3, 1975, abandoned. This application Jul. 5, 1977, Ser. No. 812,866
Int. Cl.² H01C *7/02;* **G01F** *23/24;* **G01K** *7/18;* **C23C** *15/00*
U.S. Cl. 338—308 **6 Claims**



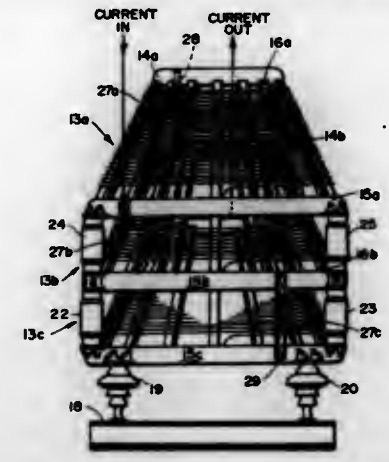
1. The product comprising a platinum film resistor produced by the process comprising the steps of:
providing a silicon substrate;
growing a layer of silicon dioxide upon at least one surface of said substrate;
sputter etching said layer of silicon dioxide to produce a plurality of etch pits upon one surface thereof;
sputtering depositing a first quantity of platinum upon said surface of said layer of silicon dioxide at a first sputter power level and first time period;
sputter depositing a second quantity of platinum upon said first quantity of platinum at a second sputter power level and second time period;
sputter depositing a layer of quartz over said platinum;
producing openings in said layer of quartz in a predetermined configuration;
sputter etching portions of said platinum through said openings in said layer of quartz; and
attaching one or more leads to the remaining portions of said platinum.

4,129,849
FAULT CURRENT LIMITING RESISTOR

Steven Welk, Lansdale, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 3, 1977, Ser. No. 793,306
Int. Cl.² H61C *7/13*
U.S. Cl. 338—21 **7 Claims**

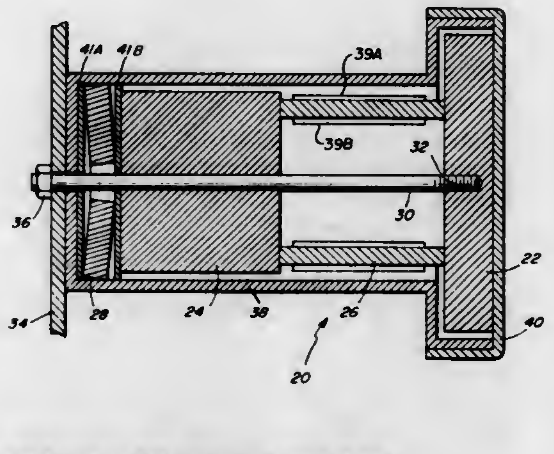
1. A fault current limiting resistor comprising a relatively long resistive element of a predetermined resistance for providing high energy dissipation; means for supporting said element in a frustro-conical configuration, said support means including a large diameter base ring, a spaced small diameter support ring, a plurality of insulator elements joining said rings and having a frustro-conical configuration, and means for affixing said resistive element to said insulator elements.



4,129,850
BALANCED TRANSDUCER

James E. Mumper, Newport, R.I., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 415,056, Nov. 12, 1973, abandoned. This application Feb. 3, 1975, Ser. No. 546,361
Int. Cl.² H04B *13/00*
U.S. Cl. 340—10 **4 Claims**

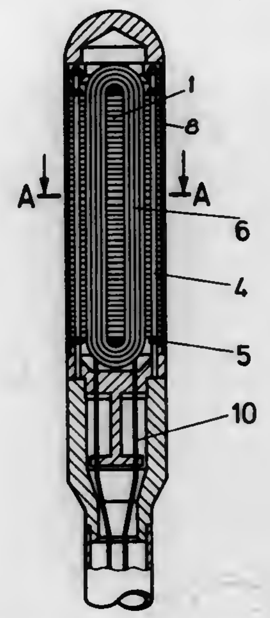


1. A transducer assembly comprising:
a transducer element;
a first mass element and a second mass element positioned contiguous to and at opposite ends of said transducer element;
a compliant spring positioned between said second mass element and a first side of a base, said base having an aperture therein; and
a compliant tie rod means urging said first mass element, said transducer element and said second mass element towards one side of said compliant spring, said compliant tie rod means passing freely through said aperture in said base and contacting said base on a side thereof opposite said first side thereof for urging said base toward a side of said compliant spring opposite said one side thereof to counteract a force exerted by said second mass element against said compliance spring, the compliance of said spring being of a value to resonate with said second mass element at a frequency approximately equal to the frequency of a resonance of said first mass element with the compliance of said tie rod means.

4,129,851
ELECTROACOUSTIC TRANSDUCER WITH A MAGNETOSTRICTIVE CORE

Jan Podgorski, Bensberg, Germany, assignor to INTERATOM, International Atomreaktorbau GmbH, Bensberg, Koeln, Germany

Filed Jan. 18, 1977, Ser. No. 760,221
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1976, 7602347[U]
Int. Cl.² H04B *13/00*
U.S. Cl. 340—11 **3 Claims**

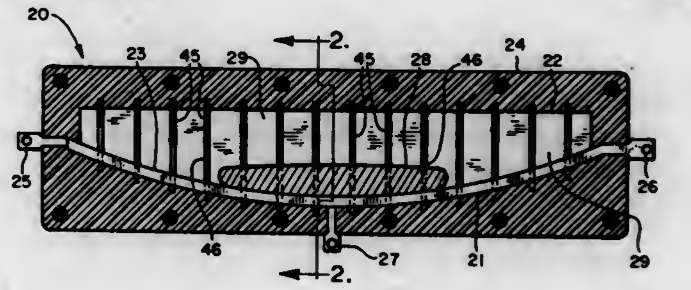


1. Electromechanical transducer having a magnetostrictive core formed of a superimposed stack of individual plates disposed within a cylindrical protective sheath and having a coil wound thereon in longitudinal direction thereof, the improvement wherein the plates have the shape of a circular disc formed with slots therein which leave open an area central to said disc that corresponds to the cross section of the coil and are disposed alternatingly offset from one another by 180° so that the stack formed by the individual plates is in contact with the inner surface of the protective sheath over the entire circumference thereof, as seen in the axial direction, including a tube secured to and forming an extension of the protective sheath, and leads for the transducer disposed in said tube, said tube being formed alternatingly of corrugated tube members having a given wall thickness and of tube members having a greater wall thickness than said given wall thickness, and including a guide tube within said first-mentioned tube extending coaxially thereto and to said corrugated tube members for maintaining rigidity of said first-mentioned tube.

4,129,852
SLOPE DETECTOR FOR INDICATING FLAT TIRES AND THE LIKE

John E. Knecht, R.R. #3, St. Anne, Ill. 60964

Filed Mar. 25, 1977, Ser. No. 781,291
Int. Cl.² G01C *9/18*
U.S. Cl. 340—58 **10 Claims**



1. In a vehicle having an axle and an inflatable tire disposed at each end of the axle, a device for detecting when one of the tires becomes underinflated, comprising:

a slope detector, mounted to the axle, including a curved chamber, an electrically conducting fluid partly filling the chamber, and a resistance element disposed in the chamber in partial contact with the fluid, said resistance element characterized by a resistance between one end of the element and an intermediate node which varies in a predetermined manner with the position of the fluid in the chamber;

means for damping the flow of the fluid to reduce the rate of change of the resistance of the detector caused by movement of the axle and thereby to render the detector substantially insensitive to axle vibration associated with road travel; and

means responsive to the resistance of the detector for detecting variations in the slope of the axle.

4,129,853

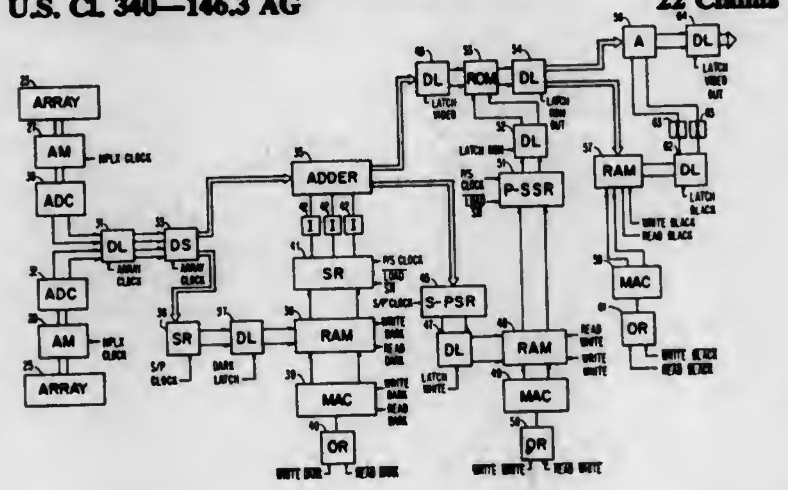
METHOD AND APPARATUS FOR PRODUCING COMPENSATED SIGNALS FOR INDIVIDUAL LIGHT SENSORS ARRANGED IN A PREDETERMINED RELATION

William E. Althauser, Longmont, Colo., and Richard A. Barnes, Lompoc, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 26, 1977, Ser. No. 836,882

Int. Cl.² G06K *9/00*

U.S. Cl. 340—146.3 AG **22 Claims**



1. A method for compensating for noise level variations in individual light sensors arranged in a predetermined relation and for variations in light conditions to which the sensors are subjected including:

producing a separate output signal from each of the individual light sensors in accordance with the level of light received by each of the individual light sensors;

correcting each of the separate output signals from each of the individual light sensors for a noise level variation of the same individual light sensor to produce a sensitivity compensated signal for each of the individual light sensors;

correcting each of the sensitivity compensated signals for variations in light conditions to which each of the individual light sensors is subjected to produce a compensated signal for each of the individual light sensors;

and changing the compensated signal for each of the individual light sensors in accordance with the variation caused by a black area in the presence of illumination.

4,129,854

CELL CLASSIFICATION METHOD

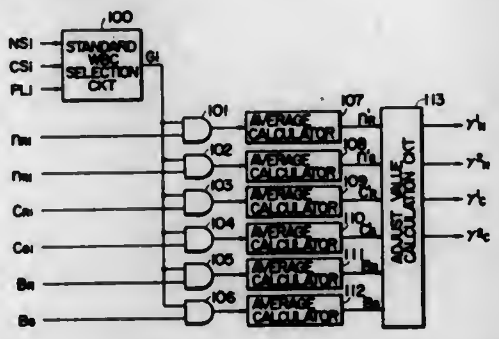
Ryuichi Suzuki, Kokubunji; Akihide Hashizume, Hachioji; Hideyuki Horiuchi, Kokubunji; Shinji Yamamoto, and Hisatake Yokouchi, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 21, 1977, Ser. No. 844,312

Claims priority, application Japan, Oct. 25, 1976, 51-127240; Oct. 25, 1976, 51-127245

Int. Cl.² G06K *9/00*; G01N *33/16*

U.S. Cl. 340—146.3 CA **10 Claims**



1. A cell classification method having a first step of obtaining as video signals, images of a plurality of sorts cells existent in a cell sample, a second step of calculating a plurality of characteristic parameters of each of the cells from the video signals, and a third step of recognizing the sort of said each cell with the characteristic parameters, characterized in that said second step comprises:

the step of selecting at least one cell of a specific sort (at least one standard cell),

the step of evaluating unstable characteristic parameters of said standard cell,

the step of comparing the values of said unstable characteristic parameters with predetermined standard values of the corresponding characteristic parameters of the standard cell of said specific sort,

the step of calculating adjustment values of said unstable characteristic parameters in the cell sample on the basis of the comparisons, and

the step of obtaining first characteristic parameters with said unstable characteristic parameters adjusted by the use of said adjustment values.

4,129,855

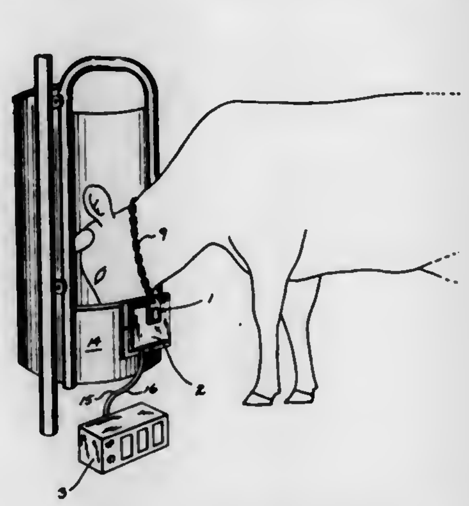
ANIMAL IDENTIFICATION SYSTEM

James A. Rodrian, N61 W15846 Edgemont Dr., Menomonee Falls, Wis. 53051

Filed Jul. 15, 1977, Ser. No. 815,796

Int. Cl.² H04Q *9/00*; G08G *1/00*; G01S *9/56*

U.S. Cl. 340—152 T **12 Claims**



11. An identification system which comprises:

an oscillator for generating a pulse train at an output terminal;

first counter means connected to the oscillator output terminal for counting the number of pulses generated thereat, said first counter having an output at which the total count is indicated when a signal is received at an enable terminal;

means including a first transmitter coil connected to the oscillator output terminal for establishing an electromagnetic field at said oscillator frequency;

second counter means for counting the number of pulses received at its input terminal, said second counter being operable when a preselected count is reached to generate a reset signal at its output terminal;

means connected to said second counter means input terminal including a first receive coil for converting the electromagnetic field established by said first transmitter coil to a pulse train of the same frequency; and

second coupling means including a reset pulse transmitter coil and a reset pulse receive coil for coupling the second counter means reset signal to the enable terminal on the first counter means.

4,129,856

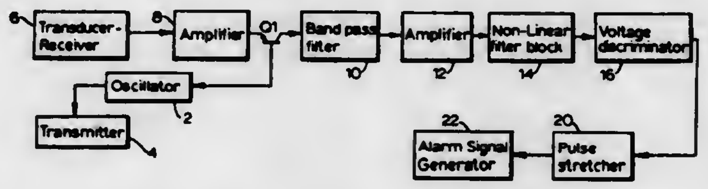
FILTER SYSTEM AND METHOD FOR INTRUSION ALARM

Peter E. Humphries, King, Canada, assignor to Contronic Controls Limited, Mississauga, Canada

Filed Nov. 15, 1976, Ser. No. 742,048

Int. Cl.² G01S *9/02*; G08B *13/16*

U.S. Cl. 340—554 **9 Claims**



1. An intrusion alarm comprising:

(1) means for transmitting a radiation field in an area to be supervised,

(2) means for receving a portion of the radiation field which is reflected from objects in the supervised area,

(3) means for comparing the transmitted and received fields and for producing a comparison signal having pulsations the frequency of which is indicative of the speed of movement of an object in said supervised area,

(4) means connected to said comparison means for generating an output pulse train of constant peak amplitude, said output pulse train having an average level, said means for generating including means for controlling the duty cycle of said output pulse train for said average level of said output pulse train to increase as the frequency of said comparison signal increases, until the frequency of said comparison signal reaches a selected frequency, and then to decrease as the frequency of said comparison signal increases beyond said selected frequency,

(5) integrating means, connected to said means for generating (4), for integrating said output pulse train to produce an integrated d.c. signal therefrom, said d.c. signal having an average level,

(6) and means connected to said integrating means and responsive to said average level of said integrated d.c. signal for producing an alarm signal when such average level rises above a preselected level.

4,129,857

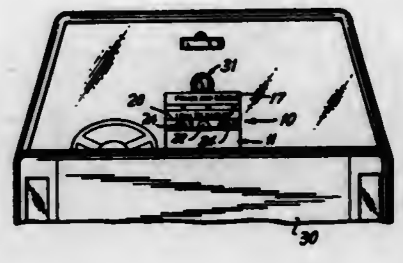
PORTABLE DRIVER EMERGENCY DEVICE

Albert Espinosa, 838 Riverside Dr., New York, N.Y. 10032

Filed May 26, 1977, Ser. No. 800,974

Int. Cl.² B60Q *7/00*

U.S. Cl. 340—321 **8 Claims**



8. A portable emergency signaling device comprising:

a relatively lightweight, hollow housing having an opening therein, said housing having a generally L-shaped, elongated configuration and including a generally rectangular, hollow base, having a top face, the forward portion of which serves as a ledge, and a generally rectangular, hollow member connected to, and extending upwardly from the rear portion of the top face of said base, said member having a top face which serves as a ledge and a front face disposed adjacent to said forward portion of said top face of said base, in which said opening is defined;

a translucent message board slidably mounted on said housing across said front face of said opening thereof and having an emergency message imprinted thereon;

clock dial means mounted on the top face of said member of said housing for use in association with said message board and for establishing a time reference relative to the message on said message board;

a first light source mounted within said member of said housing and disposed behind said message board for effecting illumination thereof;

at least two dome-covered second light sources mounted in spaced-apart relationship on said forward portion of said top face of said base for signaling a distress signal, and connected in parallel with said first light source:

a flasher mounted within said base of said housing and serially connected to said second light sources;

an electrical power source comprising a battery mounted within said base of housing and serially connected to said flasher and light sources; and

switch means mounted on the top face of said member of said housing and serially connected to said power source, light sources and flasher for activating and deactivating the device.

4,129,858

PARTITIONED DISPLAY CONTROL SYSTEM

Toshitaka Hara, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 23, 1977, Ser. No. 780,497

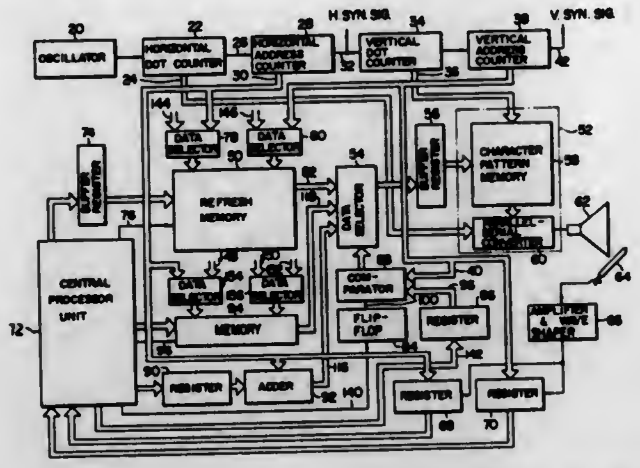
Claims priority, application Japan, Mar. 25, 1976, 51-32997

Int. Cl.² G06F *3/14*

U.S. Cl. 340—324 AD **8 Claims**

1. A system for controlling display of characters on a display surface comprising display means for sequentially displaying characters on said display surface in response to continuous receipt of input data, a refresh memory having a capacity sufficient to store application display data for producing an application display of characters on the entire area of said display surface in an application display mode of operation, a special display data source supplying special display data for producing a special display of characters on a limited region of

said display surface in a special display mode of operation, and data selection control means connected to said refresh memory and said special display data source for effecting alternative selection of the application display data read out from said refresh memory to produce an application display on the entire area of said display surface or the sequential selection of said application display data and said special display data to produce a special display on said limited region and an application display only on the remaining region of said display surface.



4,129,859
RASTER SCAN TYPE CRT DISPLAY SYSTEM HAVING AN IMAGE ROLLING FUNCTION

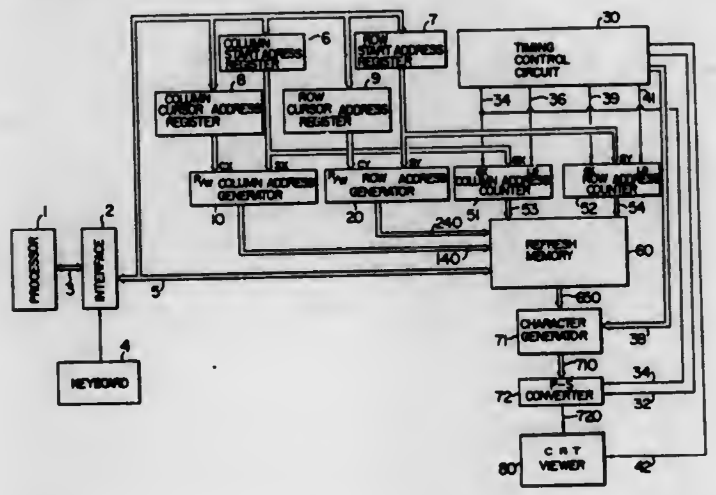
Masahiro Iwamura; Nagaharu Hamada; Toshitaka Hara, all of Hitachi, and Nobuo Sato, Iwaki, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 8, 1977, Ser. No. 766,728

Claims priority, application Japan, Feb. 12, 1976, 51-13183

Int. Cl.^{2} G06F *3/14*

U.S. Cl. 340—324 AD 5 Claims



1. A raster scan type CRT display system having an image rolling function wherein coded data stored in a refresh memory is read out in synchronism with the scan of a CRT display and is displayed on a CRT viewer in accordance with a sequence of display column and row addresses, said CRT viewer having a display capacity of m columns by n rows and said refresh memory can be accessed by a processor for read/write operation, said display system comprising:

said refresh memory being randomly accessable and having a storage capacity of at least m x n characters;

a timing control circuit for generating timing signals which include character clock pulses and line clock pulses;

column and row start address registers for defining a read start address for said refresh memory;

column and row cursor address registers for defining an address for the read/write operation by said processor to said refresh memory;

a modulo m address counter to which the content of said column start address register is preset for each horizontal scan and which counts up the character clock pulses from said timing control circuit starting from the preset count to produce a sequence of display column addresses; and

a modulo n address counter to which the content of said row start address register is preset for each vertical scan and which counts up the line clock pulses from said timing control circuit starting from the preset count to produce a sequence of display row addresses.

4,129,860
APPARATUS FOR FORMING A CHARACTER BY A MATRIX PATTERN OF PICTURE ELEMENTS

Setsuo Yonezawa; Tsuneta Kawakami; Tatsuo Shimada, and Yoshinori Chida, all of Tokyo, Japan, assignors to Kabushiki Kaisha Seikosha, Japan

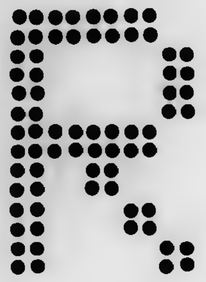
Filed Sep. 13, 1976, Ser. No. 723,291

Claims priority, application Japan, Sep. 12, 1975, 50-110596

The portion of the term of this patent subsequent to Mar. 14, 1995, has been disclaimed.

Int. Cl.^{2} G06F *3/14*

U.S. Cl. 340—324 AD 8 Claims



1. An apparatus for expanding an original character formed by a matrix of display components and non-display components comprising;

first means for storing a bit pattern in which the display components and the non-display components forming an original character are converted into bits of the first logical value and bits of the second logical value respectively;

second means for selecting the respective bits which constitute the aforementioned bit pattern in accordance with a predetermined order;

first storage means for storing the number of row magnification of the original character;

second storage means for storing the number of column magnification of the original character independently of said first storage means whereby said number of column magnification may be arbitrarily different from said number of row magnification;

third means for converting the respective bits selected by said second means into a bit matrix in which the number of bits arranged in the respective rows coincides with said number of row magnification stored in said first storage means and the number of bits arranged in the respective columns coincides with that said number of column magnification independently stored in said second storage means, and

fourth means for forming dots in accordance with the output of said third means and thereby forming a magnified character.

4,129,861
MULTIPLEX ADDRESSING OF ELECTROCHROMIC DISPLAYS

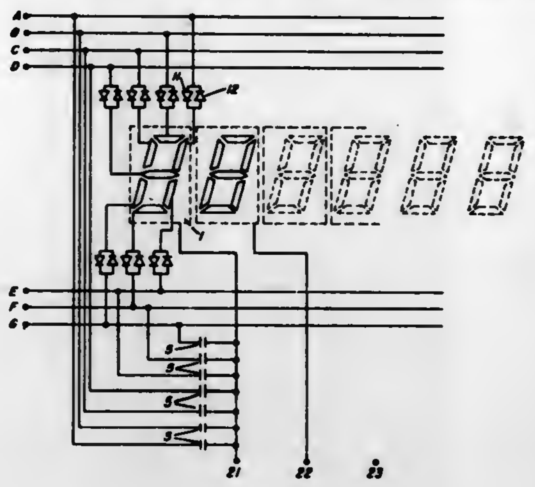
Robert D. Giglia, Rye, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 27, 1976, Ser. No. 652,935

Int. Cl.^{2} G02F *1/13*

U.S. Cl. 340—324 R 6 Claims

1. A display system comprising a plurality of persistent electrochromic display elements and means to multiplex said display elements, said means comprising diode means to provide a sufficient threshold voltage only to each display element to be displayed or erased and voltage threshold conduction means connected to each display element so that only a directly addressed element will be activated.



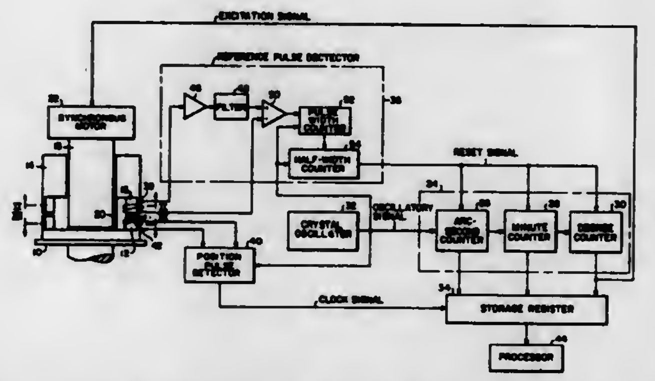
4,129,862
APPARATUS FOR DIGITALLY ENCODING THE ANGULAR POSITION OF A SHAFT WITH RESPECT TO A REFERENCE BEARING

Irving I. Kaplan, 712 Kahn Dr., Baltimore, Md. 21208, and Daniel J. Lincoln, 12002 Terra La., Bowie, Md. 20715

Filed Mar. 10, 1976, Ser. No. 665,649

Int. Cl.^{2} H03K *13/02;* G01D *5/34*

U.S. Cl. 340—347 P 20 Claims



1. Apparatus for digitally encoding the angular position of a first shaft with respect to a reference position, said apparatus comprising:

a second shaft having an indicating element, said second shaft being concentrically disposed with respect to said first shaft;

signal generating means for generating an output signal of a predetermined frequency;

counting means for providing an excitation signal and an incremental angle signal in response to the output signal of said signal generating means;

motive means for rotating said second shaft at a predetermined average rate in response to the excitation signal of said counting means;

reference position detector means responsive to the indicating element of said second shaft to provide a reset signal as a function of the angular position of the second shaft with respect to said reference position, said reset signal being provided to said counting means to initialize the incremental angle signal;

shaft position detector means responsive to the indicating element of said second shaft to provide a clock signal as a function of the angular position of said second shaft with respect to said first shaft; and

storage means responsive to the angle incremental signal and to the clock signal, said storage means storing the incremental angle signal in response to the clock signal to provide an angular position signal.

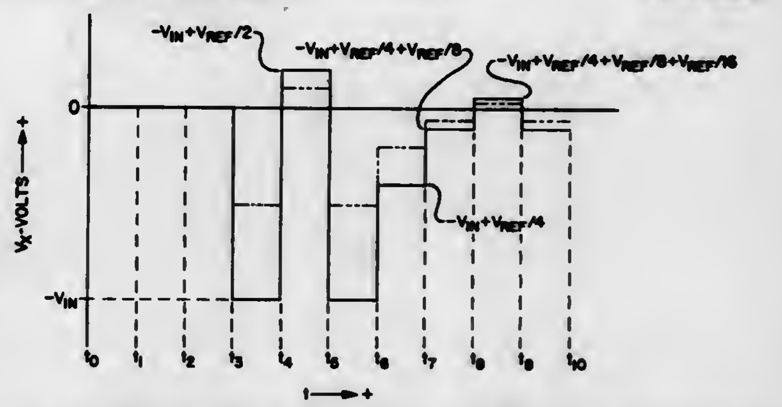
4,129,863
WEIGHTED CAPACITOR ANALOG/DIGITAL CONVERTING APPARATUS AND METHOD

Paul R. Gray, Orinda, Calif.; James L. McCreary, Red Bank, N.J., and David A. Hodges, Berkeley, Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed Oct. 3, 1977, Ser. No. 838,908

Int. Cl.^{2} H03K *13/02*

U.S. Cl. 340—347 AD 16 Claims



1. An analog/digital converter for converting between an analog and a digital signal, comprising an array of binary weighted capacitors having capacitance values corresponding to a predetermined number of binary bits ranging from a most to a least significant bit, a common plate node within said array, a voltage comparator having first and second input terminals and an output terminal, said common plate node being connected to said first input terminal, said second input terminal being connected to a first predetermined reference, a digital control circuit coupled to said output terminal, a first switch operated by said digital control circuit to selectively connect said common plate node to said first predetermined reference, a second switch operated by said digital control to alternately select the analog signal and a second predetermined reference, and a plurality of additional switches operated by said digital control circuit, each of said plurality of additional switches being configured to selectively connect ones of said array of binary weighted capacitors to said first predetermined reference and said second switch, said digital control circuit being responsive to a serial digit input sequence so that said array of binary weighted capacitors sequentially samples and holds the analog signal, divides said second predetermined reference signal into binary weighted portions, combines the binary weighted portions with the analog signal to provide combined signal levels, and said comparator comprises each of said combined signal levels with said first predetermined reference, whereby said voltage comparator quantizes said analog signal as a serial digit output at said output terminal.

4,129,864
HIGH SPEED, WIDE DYNAMIC RANGE ANALOG-TO-DIGITAL CONVERSION

Robert J. Carpenter, and Kenneth W. Yee, both of Rockville, Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Division of Ser. No. 663,401, Mar. 3, 1976, Pat. No. 4,069,479. This application Nov. 3, 1977, Ser. No. 848,041

Int. Cl.^{2} H03K *13/02*

U.S. Cl. 340—347 AD 1 Claim

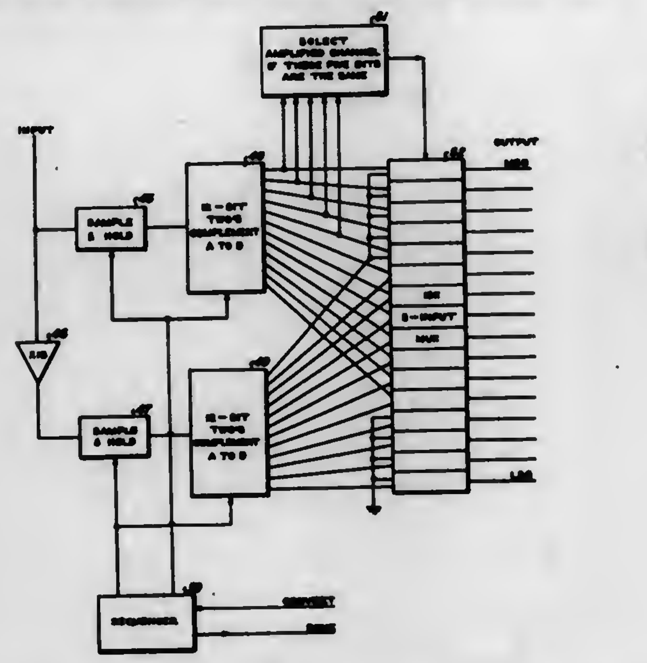
1. An analog-to-digital conversion system for outputting an N bit word, comprising,

an input for receiving an analog input signal,

a pair of two's complement analog-to-digital converters, one being a higher range converter and the other being a lower range converter, each converter having a resolution of K bits where K is a number which is smaller than N, a unit gain path between said input and said higher range converter,

amplification means between said input and said lower range converter, said amplification means having a gain equal to the desired ratio of the full-scale ranges of said two converters,

means for selecting said higher range converter when there are more than N-2(N-K) significant bits in its output and for otherwise selecting said lower range converter, and,



means for providing an N bit output word which is comprised of the output bits of said selected converter and N-K higher output bits having the same level as the most significant bit of said lower range converter when said lower range converter is said selected converter, and which is comprised of the output bits of said selected converter and N-K lower output bits having a zero level when said higher range converter is said selected converter.

4,129,865

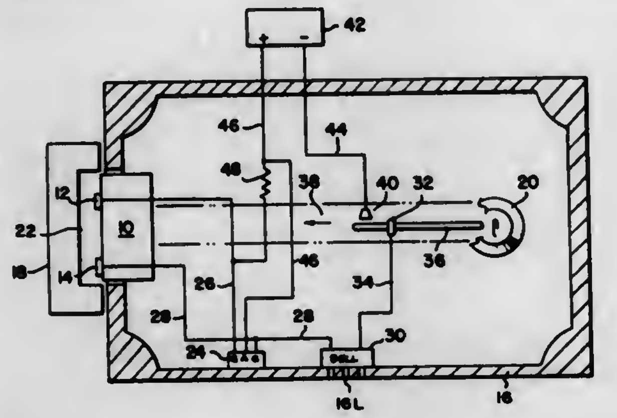
ALARM CIRCUIT FOR A DOOR LOCK

Lawrence Randall, 2339 N. Commonwealth, Chicago, Ill. 60614

Filed Sep. 19, 1977, Ser. No. 834,830

Int. Cl.² E05B *45/12*

U.S. Cl. 340—542 **3 Claims**



1. In a lock of the type having a latch tongue which is received within a latch tongue housing by rotating a key in a tumbler assembly, the improvement comprising: a voltage source;

a first contact connected to said tumbler assembly for movement in response to a rotation of said key;

a second contact which is stationary, said contacts being in an abutting relationship when said latch tongue is received within said housing;

a pair of contact points insulated from each other and mounted upon said latch tongue, said contact points being electrically connected together when said latch tongue is received within said housing;

a silicon controlled rectifier with the gate thereof connected to one of said contact points and the cathode thereof connected to the other of said contact points; and

an electrically activated alarm connected in series with the anode and the cathode of said rectifier, said first and second contacts and said voltage source.

4,129,866

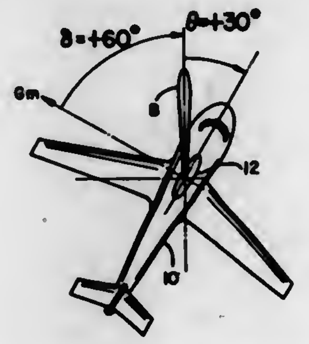
METHOD OF SCANNING A RADAR ANTENNA TO EFFECT IMPROVED RADAR OPERATION

Joseph Turco, 412 Edgewood Dr., Ambler, Pa. 19002

Filed Mar. 21, 1977, Ser. No. 779,681

Int. Cl.² G01S *9/00*

U.S. Cl. 343—5 R **2 Claims**



1. A method of enhancing the scan capability of a radar afixed to an aircraft comprising:

compelling the aircraft to follow a predetermined sinusoidal path; and

synchronizing the scan angle of the radar to the predetermined path to at least assure that the radar looks in a first direction along the average heading of the aircraft when the aircraft is pointing a predetermined angle to the right of its average heading and to at least assure that the radar looks in a second direction, opposite to the first direction, along the average heading of the aircraft when the aircraft is pointing a predetermined angle to the left of its average heading.

4,129,867

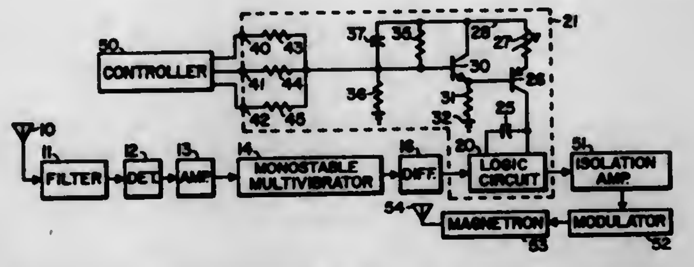
MULTI-PULSE MODULATOR FOR RADAR TRANSPONDER

Gary L. Schrack, Tempe, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Apr. 28, 1977, Ser. No. 791,666

Int. Cl.² H03K *5/13;* G01S *9/56*

U.S. Cl. 343—6.8 R **11 Claims**



7. A pulse coding system adapted to respond to regularly recurring pulses and to provide output pulses which simulate closely spaced pulses to provide information, such as an identifying code, said coding system comprising variable delay means connected to be activated by the recurring pulses and providing an output pulse in response to each recurring pulse, said variable delay means being preprogrammed to provide predetermined delays between each recurring pulse and the subsequently provided output pulse.

4,129,868

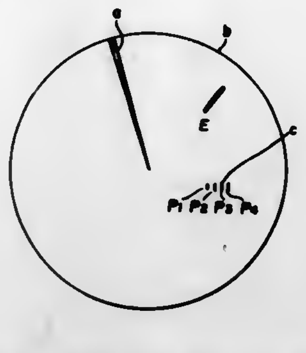
RADAR BEACON APPARATUS

Kiyokazu Tahara, and Keigo Kotoh, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1977, Ser. No. 763,115

Int. Cl.² G01S *9/56*

U.S. Cl. 343—6.8 R **5 Claims**



1. In a radar beacon apparatus used to communicate position location to a search radar during an emergency rescue operation, said search radar transmitting radar pulse waves of a particular pulse repitition period, detecting received beacon signals having frequencies within a specific bandwidth, and displaying said received beacon signals on a search radar PPI, the improvement comprising:

receiver means for detecting said radar pulse waves of said search radar,

gate signal generating means coupled to said receiver means for producing a gate signal in response to the detection by said receiver means of said radar pulse waves, said gate signal having a time interval less than said search radar pulse repetition period,

transmitter means coupled to said gate signal generating means for generating and repetitively transmitting during said interval of said gate signal a frequency modulated signal which linearly sweeps frequency over a predetermined frequency band, said predetermined frequency band encompassing and overlapping said bandwidth of said search radar, said transmitter means furthermore maintaining a constant phase and frequency relationship between said frequency modulated signals generated during successive gate signals,

whereby said radar beacon repetitively transmits during said gate period a plurality of beacon signals through said bandwidth of said search radar, said search radar detecting said plurality of beacon signals and integrating effects thereof to produce on said search radar PPI a bright pattern indicative of the position of said radar beacon.

4,129,869

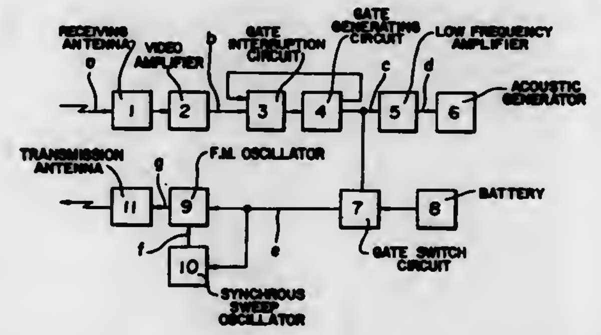
AUTOMATICAL SIGNALLING APPARATUS

Akiyoshi Morinaka, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1977, Ser. No. 763,235

Int. Cl.² G01S *9/56*

U.S. Cl. 343—6.8 R **4 Claims**



1. In an automatic rescue signalling apparatus for generating and transmitting a return signal upon the reception of a radar pulse wave from a rescue ship, the improvement comprising:

gate signal generation means for converting said received radar pulse wave into an ON-OFF gate signal at the repeat frequency of the radar pulse wave;

gating means coupled to said gate signal generation means for interrupting the input to said gate signal generation means during the generation of said ON-OFF gate signal;

acoustic generator means coupled to said gate signal generation means for converting said amplified ON-OFF signal into repeating audible sound having a frequency equal to the repeat frequency of the received radar pulse wave and a time period which is increased by the side lobe of the rescue ship radar antenna whereby received radar pulse waves of a plurality of rescue ships can be discriminated either by noting the difference in pulse repetition frequencies of the rescue ship radars or the difference in the rescue ship radar antenna rotating rates, and the approach of a rescue ship can be noted when the repeating sound is present for increasing time periods;

distress signalling means coupled to said gate signal generation means for generating and transmitting a synchronous frequency sweeping FM radio frequency return signal during the generation of said ON-OFF gate signal, said distress signalling means comprising a synchronous sweep oscillator;

whereby said audible sound produced by said acoustic generator means alerts of the approach of a marine search party.

4,129,870

APPARATUS FOR SYNTHESIS OF SCANNING BEAM

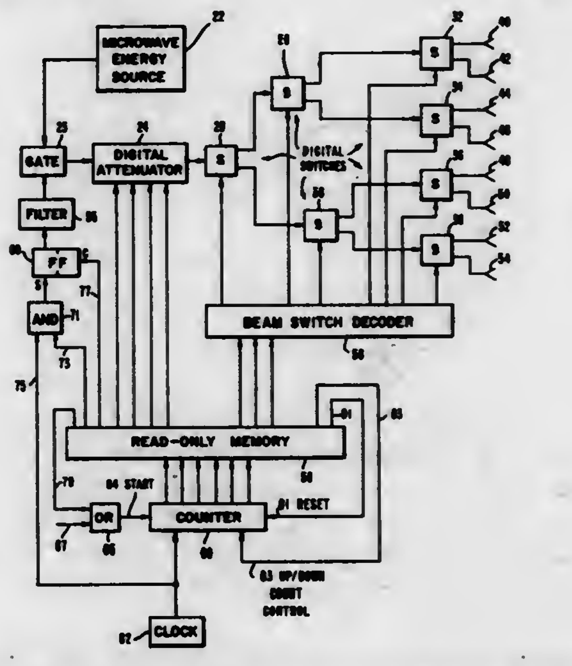
Donald J. Toman, Pleasantville, N.Y., assignor to Tull Aviation Corporation, Kansas City, Mo.

Filed Sep. 30, 1977, Ser. No. 838,094

The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.

Int. Cl.² G01S *1/16, 1/54*

U.S. Cl. 343—106 R **8 Claims**



1. Apparatus for synthesizing a continuous scanning beam of radio energy comprising

an array of fixed antenna elements providing radiation beam ports aimed radially outwardly to different angles in an arc over which the scanning beam is to be scanned,

a source of microwave radio frequency energy,

switching means connected between said energy source and said antenna elements and operable for rapidly switching the radio frequency energy in a repeating sequence of bursts of energy to illuminate the different ones of the radiation beam ports at a switching frequency which is substantially greater than the rate of successive interception of the scanning beam to be synthesized with the individual radiation beam port positions,

means connected for modulating the energy levels of the individual bursts of radio frequency energy in a predetermined program to provide a composite beam energy profile which is a synthesized directional beam which is moving at a predetermined desired scanning rate,

said modulating means being operable to provide energy levels of the successive individual bursts of radio frequency energy from each radiation beam port producing a composite energy profile from that port which is representative of the impulse function of a low pass filter.

4,129,871

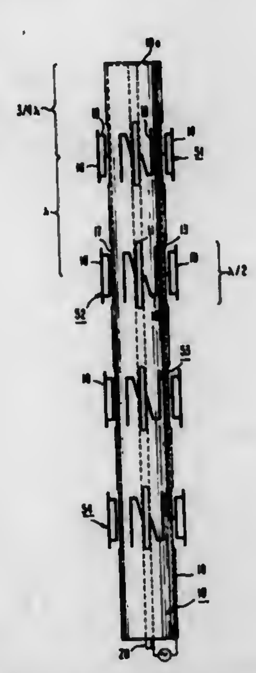
CIRCULARLY POLARIZED ANTENNA USING SLOTTED CYLINDER AND CONDUCTIVE RODS

McKinley R. Johns, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 12, 1977, Ser. No. 832,460

Int. Cl.^{2} H01O *13/12*

U.S. Cl. 343—727 8 Claims



1. A circularly polarized antenna system comprising:

a conductive cylindrical mast having longitudinally extending slots, each of said slots being about one-half wavelength long at an operating frequency of the antenna,

means for feeding each of said slots for exciting horizontally polarized waves, and

a pair of conductive elements associated with each of said slots for exciting vertically polarized waves, each of said conductive elements being approximately one wavelength resonant elements at said operating frequency, one of the conductive elements of each pair being fixed at one end to a feed point near the midpoint of one elongated side of said slot and having a free end portion extending parallel to the slots and in one longitudinal direction and the other of said conductive elements of each pair being fixed at one end to a feed point near the midpoint of the opposite elongated side of said slot and having a corresponding free end portion extending parallel to the slots and in longitudinal direction opposite said first direction.

4,129,872

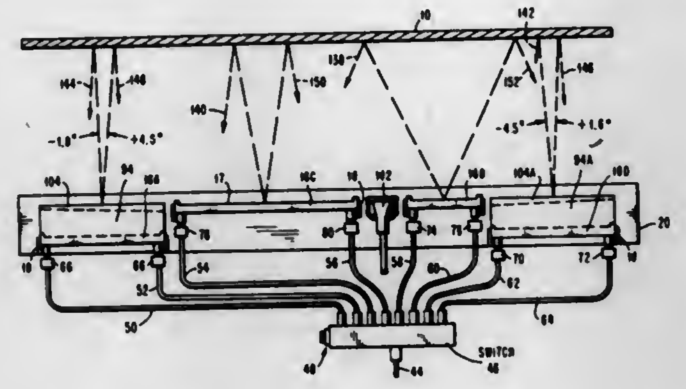
MICROWAVE RADIATING ELEMENT AND ANTENNA ARRAY INCLUDING LINEAR PHASE SHIFT PROGRESSION ANGULAR TILT

Donald J. Toman, Pleasantville, N.Y., assignor to Tull Aviation Corporation, Kansas City, Mo.

Filed Nov. 4, 1976, Ser. No. 738,659

Int. Cl.^{2} H01Q *13/10, 19/14*

U.S. Cl. 343—768 23 Claims



1. A line source microwave radiation element for feeding a reflector for radiating two shaped beams at selected angles comprising

a slotted waveguide arranged to receive signal inputs at either end and having loading slots arranged in the face of one wall thereof and spaced transversely with respect to the longitudinal axial center line thereof to produce beams of a desired shape within a central plane containing said axial center line,

said loading slots having predetermined center-to-center spacings in the longitudinal dimension to provide a predetermined squint angle within said central plane for each radiated beam with respect to the plane of said slotted face and related to the direction in which energy is fed to the waveguide,

and means for providing a linear phase shift progression in the signal components radiated from the slots from one end of said waveguide to the other to thereby provide a predetermined angular tilt to each radiated beam within said central plane which is independent of the direction in which energy is fed to the waveguide and which is algebraically added to said squint angle.

4,129,873

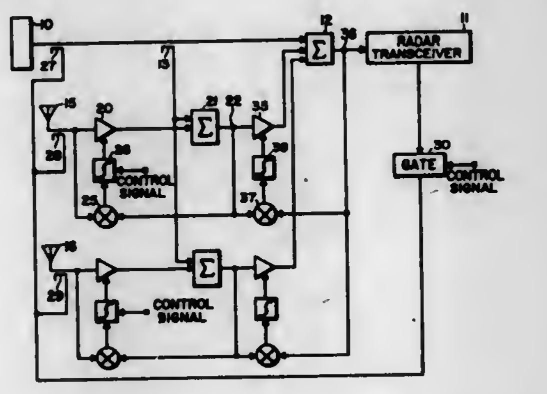
MAIN LOBE SIGNAL CANCELLER IN A NULL STEERING ARRAY ANTENNA

Peter D. Kennedy, Mesa, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Nov. 15, 1976, Ser. No. 741,922

Int. Cl.^{2} H01Q *3/26*

U.S. Cl. 343—854 9 Claims



1. In a null steering array antenna having a main antenna characterized by a radiation pattern with a relatively narrow main lobe and a plurality of secondary antennas forming a sub-array for providing a null in the direction of an undesired signal without substantially affecting the main lobe, a main lobe signal canceller comprising:

(a) A plurality of first feedback means one each coupled to each secondary antenna for removing the main lobe signal from the output signal thereof, each first feedback means including first adjustable weighting means for varying the phase and amplitude of signals from the associated secondary antenna and providing an output signal indicative of the varied signal, first summing means coupled to receive the output signal from said first weighting means and at least a portion of the output signal from the main antenna and provide an output signal indicative of the sum thereof, and first correlating means connected to correlate the output signal of said first summing means with the signal from the associated secondary antenna and provide an output signal coupled to said first weighting means for adjusting the phase and amplitude of the output signal thereof to remove main lobe signals therefrom; and

(b) second feedback means including a plurality of second adjustable weighting means one each connected to receive the output signal from each of said first summing means for varying the phase and amplitude thereof and providing an output signal indicative of the varied signal, second summing means connected to receive the output signals from said second weighting means and the signal from the main antenna and provide an output signal indicative of the sum thereof, and a plurality of second correlating means each connected to correlate the output signal of said second summing means with the output signal of the associated first summing means and providing an output signal coupled to said associated second weighting means for adjusting the phase and amplitude of the output signal thereof to provide a null in the direction of an undesired signal.

4,129,874

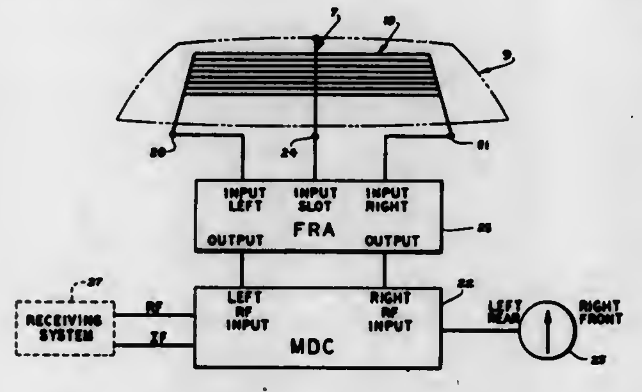
ANTENNA PATTERN COMBINER

Arthur Luedtke, Marietta, and William F. Bentley, Smyrna, both of Ga., assignors to The United States of America as represented by the Field Operations Bureau of the Federal Communications Commission, Washington, D.C.

Filed Sep. 19, 1977, Ser. No. 834,203

Int. Cl.^{2} H01Q *3/26;* G01S *5/04*

U.S. Cl. 343—854 5 Claims



1. An antenna combiner comprising a left cardioid pattern antenna input, a right cardioid pattern antenna input, a means for combining said left and said right inputs into an omnidirectional pattern, a means for impedance matching said omnidirectional pattern, a third front-rear figure eight pattern antenna input, with means for matching said figure eight input, means for taking the sum and difference of the said omnidirectional patterns and said figure eight pattern with outputs for said sum and said difference, means for bypassing all combining means and passing the said left cardioid antenna input and said right cardioid antenna input to said sum output and said difference output respectively.

4,129,875

PHASE CONTROL FOR INK JET PRINTER

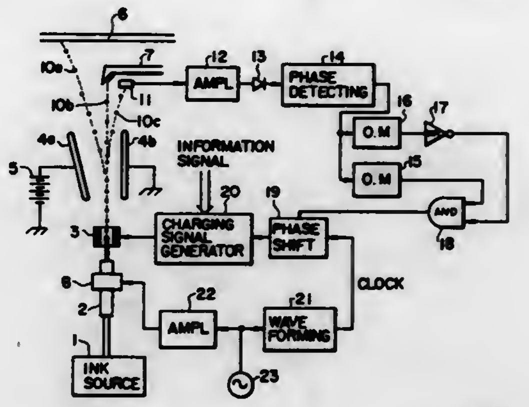
Syoichi Ito, Ibaraki, and Takahiro Yamada, Hitachi, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 10, 1976, Ser. No. 722,032

Claims priority, application Japan, Sep. 19, 1975, 50-112612

Int. Cl.^{2} G01D *18/00*

U.S. Cl. 346—75 4 Claims



1. In an ink jet printer including means for producing a stream of ink under pressure from a nozzle along a predetermined path at a point of which said stream separates into ink droplets to be directed towards a recording medium; an electromechanical transducer coupled to said nozzle for imparting vibrations to said ink under pressure in order to control the separation of said ink droplets to occur at regular intervals; a high frequency power supply for applying a vibration voltage to said electromechanical transducer; a charging electrode disposed along said predetermined path at the point of drop separation for applying voltages to said ink droplets; deflection means for generating a deflecting electric field along the path of said ink droplets downstream of said charging electrode; charging signal generator means for applying charging signals to said charging electrodes for recording and for phase detection in response to applied clock signals synchronized to the output of said high frequency power supply; a sensor disposed at a point adjacent said predetermined path for intercepting deflected ink droplets properly charged on the basis of the phase detecting signal and for producing a signal indicative thereof; phase detecting means for discriminating the relation between the phases of said charging signal and the generation of said ink droplet on the basis of an output signal of said sensor; and phase shift adjusting means responsive to a trigger signal for changing the relation between the phases of said vibration voltage to be applied to said electromechanical transducer and the generation of said charging signal; the improvement comprising a trigger circuit means responsive to the output signal of said phase detecting means for applying said trigger signal to said phase shift adjusting means, and inhibit circuit means which inhibits said trigger circuit means from operating for a prescribed period of time after the generation of a trigger signal,

wherein said inhibit circuit means comprises an AND gate which is connected between said trigger circuit means and said phase shift adjusting means, and a one-shot multivibrator which is connected between said phase detecting means and said AND gate.

4,129,876

APPARATUS FOR MOUNTING A MARKER PEN TO A TUBULAR RECORDER PEN ARM

James R. Hubbard, Moorestown, N.J., assignor to Graphic Controls Corporation, Cherry Hill, N.J.

Filed Jun. 2, 1977, Ser. No. 802,738

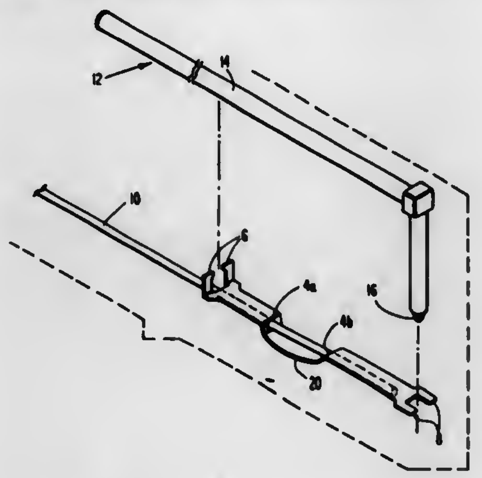
Int. Cl.^{2} G01D *15/16*

U.S. Cl. 346—140 A 8 Claims

1. A clip for mounting a marker pen to a tubular recorder arm comprising:

(a) an elongated resilient clip member having at least two apertures formed therein, said apertures axially alignable with each other so that a tubular recorder arm may be inserted therethrough against the resilient urging of the clip; and

(b) fastening and positioning means located on said clip for securing a marker pen to said clip member,



said fastening and positioning means comprise at least two sets of pronged projections, displaced lengthwise along said clip, one set of projections extending at an angle from the portion of said clip adjacent thereto, the other set coplanar with the clip portion adjacent thereto.

4,129,877
PHOTOGRAPHIC CAMERA HAVING ELECTROMAGNETIC OPERATION CONTROL

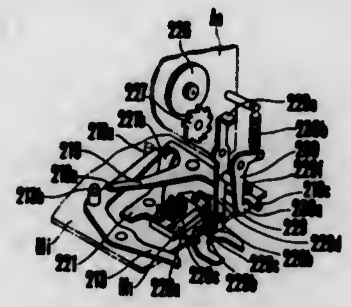
Masayoshi Yamamichi, Kawasaki; Yukio Iura, Yokosuka; Nobuo Tezuka, Tokyo; Satoshi Watanabe, Inagi; Masanori Uchidoi, Kawasaki, and Hiroshi Aizawa, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1976, Ser. No. 710,889

Claims priority, application Japan, Aug. 5, 1975, 50-95120

Int. Cl.^{2} G03B *9/06*

U.S. Cl. 354—271 **6 Claims**



1. An electromagnetic control system comprising:
(a) an electromagnet;
(b) movable means arranged to be movable between a position where it is in contact with said electromagnet and a position where it is spaced apart from said electromagnet;
(c) first resilient means connected to said movable means to urge said movable means for movement to said contacting position;
(d) driving means for driving said movable means wherein said driving means is shifted between a first position at which said movable means remains at a contacting position and a second position at which said movable means is driven by said driving means to a spaced position;
(e) second resilient means connected to said driving means to urge said driving means for movement to the second position;
(f) resetting means for moving said driving means to the first position against the force of said second resilient means;
(g) latching means for latching said driving means in the first position;
(h) release means for releasing said latching means from its latching position; and
(i) transmitting means arranged between said movable means and said driving means, wherein said transmitting means releases the associated state between the driving means and the movable means as the driving means is shifted from the second position to the first and retains said associated state as the driving means is shifted from the first position to the second position, said transmitting means being provided with position-adjusting means arranged to adjust the spacing relation between said driving means latched in the first position and said movable means;

whereby when said driving means is moved to the first position, said movable means is caused to move to the contacting position by said first resilient means, while when said driving means is moved to the second position, said movable means is caused to move to the spaced apart position under the action of said second resilient means which overcomes said first resilient means.

4,129,878
MULTI-ELEMENT AVALANCHE PHOTODIODE HAVING REDUCED ELECTRICAL NOISE

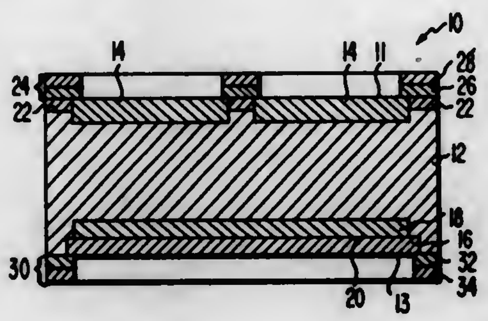
Paul P. Webb, Quebec, Canada, assignor to RCA Limited, Ste. Anne de Bellevue, Canada

Filed Oct. 17, 1977, Ser. No. 843,041

Claims priority, application Canada, Sep. 21, 1977, 287176

Int. Cl.^{2} H01L *29/90, 27/14*

U.S. Cl. 357—13 **8 Claims**



1. A multi-element avalanche photodiode comprising:
a substrate of a semiconductor material having a resistivity in the range of 500 to 20,000 ohm-cm, said substrate being of one conductivity type having first and second opposed surfaces;
a plurality of spaced regions in said substrate and at said first surface, said spaced regions being of the same conductivity type as said substrate;
a discontinuous layer in said substrate and substantially occupying that area at said first surface not occupied by said spaced regions, said discontinuous layer having a conductivity concentration lower than the lowest conductivity concentration of said spaced regions,
a first layer in said substrate and at said second surface, said first layer of a conductivity type opposite that of said substrate;
a second layer in said substrate spaced from said second surface and contiguous to said first layer, said second layer of the opposite conductivity type as said first layer thereby forming an avalanche junction therebetween;
a first passivation region on said first surface covering said discontinuous layer and slightly overlapping said spaced regions; and
a second passivation region extending along the periphery of said second surface and slightly overlapping said first layer.

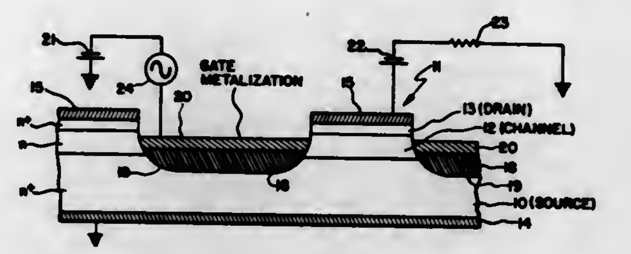
4,129,879
VERTICAL FIELD EFFECT TRANSISTOR

Wirojana Tantraporn, and Se P. Yu, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 789,516, Apr. 21, 1977, abandoned. This application May 22, 1978, Ser. No. 908,508

Int. Cl.^{2} H01L *29/80*

U.S. Cl. 357—22 **6 Claims**



1. A field effect transistor comprising
a first outer heavily doped semiconductor layer upstanding from which is a mesa structure comprising an inner moderately doped semiconductor layer and a second outer heavily doped semiconductor layer, all of said semiconductor layers being of the same conductivity type and one of said outer layers being the source region while the other is the drain region and said inner layer is the channel region,
contact metallizations on the external opposing surfaces of the outer semiconductor layers,
an insulating layer attached to the inner surface of said first outer layer surrounding said mesa structure, and
gate metallization on said insulating layer and surrounding said mesa structure so as to be adjacent to the side edges of said inner semiconductor layer and define an electronically blocking contact to the channel region, said channel region consisting of the entire inner semiconductor layer and extending from edge to edge of the mesa structure without interruption.

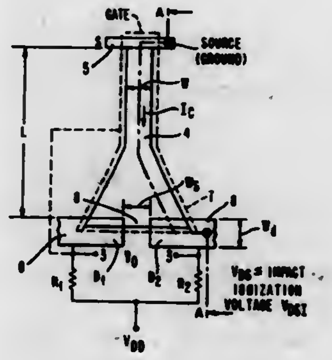
4,129,880
CHANNEL DEPLETION BOUNDARY MODULATION MAGNETIC FIELD SENSOR

Albert W. Vinal, Cary, N.C., assignor to International Business Machines Incorporated, Armonk, N.Y.

Filed Jul. 1, 1977, Ser. No. 812,298

Int. Cl.^{2} H01L *27/22, 29/82, 29/96*

U.S. Cl. 357—27 **10 Claims**



1. In a semiconductive, channel conduction, field sensor device having a substrate of semiconductive material, a source region and at least two separated drain regions in said substrate and a conductive channel in said substrate connecting said source and said drains, the improvement comprising:
said channel of conducting material having a filamentary form defined by having a Vinhall width to channel width ratio in the vicinity of said source that is greater than 0 and less than 0.98.

4,129,881
HEAT SINK COOLED, SEMICONDUCTOR DEVICE ASSEMBLY HAVING LIQUID METAL INTERFACE

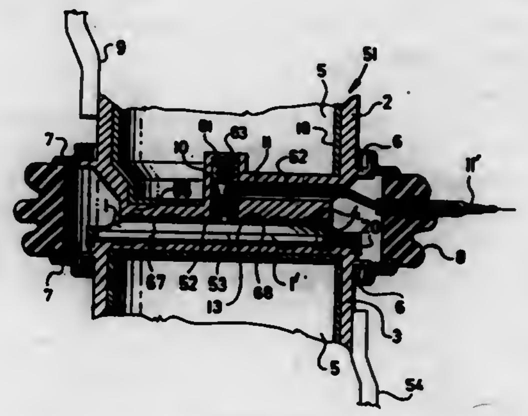
Pavel Reichel; Pavel Kafunek; Jiří Kovář; Oldrich Pokorný; Jaroslav Zåma; Jindřich Kratina, and Michal Pellant, all of Prague, Czechoslovakia, assignors to CKD Praha, oborovy podnik, Prague, Czechoslovakia

Filed Mar. 18, 1977, Ser. No. 778,869

Claims priority, application Czechoslovakia, Mar. 18, 1976, 1759-76

Int. Cl.^{2} H01L *23/48, 29/40, 25/04*

U.S. Cl. 357—82 **9 Claims**



1. In a power semiconductor device construction, a substantially circular semiconductive wafer having first and second opposed planar surfaces, first and second cylindrical electrodes each having a first end wall and an internal, heat-dissipating wall partially bounded by a portion of the first end wall, the outer surfaces of the first end walls of the respective first and second electrodes bring individually disposed in confronting spaced relation to and coaxial with the first and second surfaces of the wafer, the outer surface of each first end wall of the respective electrodes having at least two reservoirs in the form of spaced concentric annular recesses disposed in a radially outer region thereof, and a highly conductive, flowable metallic layer disposed within each reservoir and filling the space between the outer surface of each first end wall and the confronting surface of the wafer over a considerable radial extent to effect efficient electrical and heat conduction between the wafer and the wells in the respective first electrodes, an insulating member disposed concentric with and radially outward of the peripheries of the respective first electrodes, and support means carried by the periphery of each first electrode for joining such electrode to the insulating member.

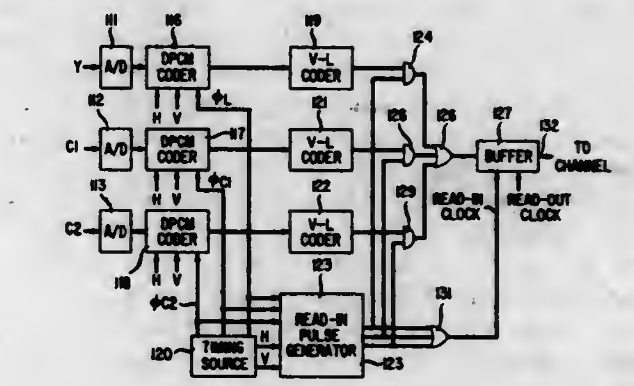
4,129,882
VIDEO CODER FOR COLOR SIGNALS

John O. Limb, Tinton Falls, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 6, 1977, Ser. No. 794,361

Int. Cl.^{2} H04N *9/02*

U.S. Cl. 358—13 **6 Claims**



1. A video encoder for use with a video information signal

including a luminance signal component and at least one chrominance signal component, the encoder comprising:

first means connected to receive and encode differences in the luminance signal component between successive samples along horizontal scan lines, and

second means connected to receive and encode differences in the chrominance signal component between samples in corresponding positions of two different horizontal scan lines that are alternating scan lines separated by an intermediate scan line, said second means indicating each quantum level by a signal representation;

third means for encoding the differences in the chrominance signal component between samples in corresponding positions of the intermediate scan line and one of the alternate scan lines into a predetermined number of quantum levels, said third means indicating each quantum level by a signal representation, and

gating means responsive to the signal representations corresponding to at least the quantum levels having the largest value magnitude, said gating means replacing the signal representation of said second means with that of said third means when the latter more accurately indicates the value of the corresponding sample of said intermediate scan line than one-half of the difference between corresponding samples of the alternate scan lines.

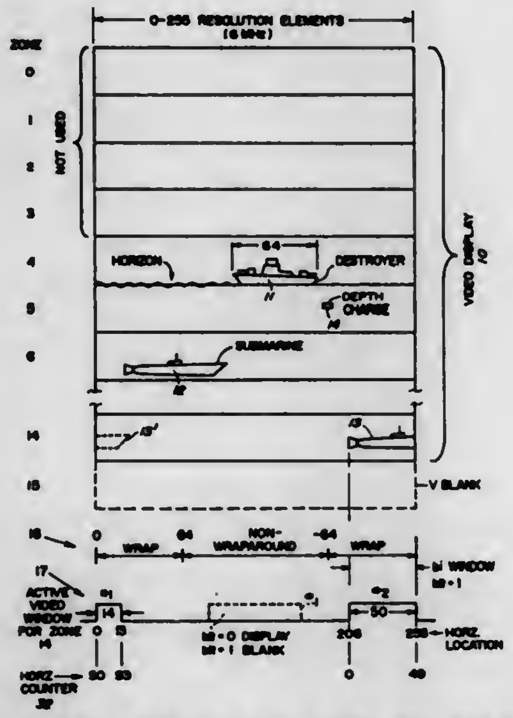
4,129,883
APPARATUS FOR GENERATING AT LEAST ONE MOVING OBJECT ACROSS A VIDEO DISPLAY SCREEN WHERE WRAPAROUND OF THE OBJECT IS AVOIDED

David R. Stubben, Santa Clara, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Dec. 20, 1977, Ser. No. 862,680

Int. Cl.² H04N *7/18*

U.S. Cl. 358—104 **5 Claims**



1. Apparatus for generating at least one moving object across a video display screen scanned in successive frames by an image forming beam transversing said screen along a plurality of horizontal lines, where undesired wraparound of said object may occur if its location near an edge of such screen requires only the display of a portion of such object said apparatus comprising: horizontal memory means for storing multibit data indicative of the desired horizontal location of said object and other bits indicative of the type of object to be displayed said other bits including only one of which is indicative of which portion of a wrapped around object is to be displayed; means including horizontal counting means responsive to said stored horizontal location and the location of said beam for providing an active video window signal indicative of the location of said object; and decoding logic means responsive to said window signal and said one bit to control the display of said object.

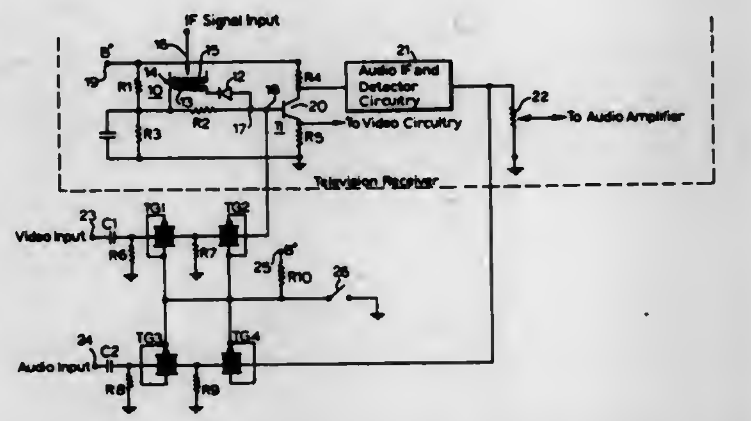
4,129,884
SYSTEMS FOR SUPPLYING UNMODULATED BASEBAND SIGNALS TO TELEVISION RECEIVERS

Patrick R. Anthony, Kitchener, Canada, assignor to Electrohome Limited, Kitchener, Canada

Filed Nov. 28, 1977, Ser. No. 855,381

Int. Cl.² H04N *5/44*

U.S. Cl. 358—188 **6 Claims**



1. In combination with a television receiver having a video detector for pocessing video I.F. signals, said detector including a detector diode and an output terminal at which a detected video signal is derived, an amplifier having an input terminal, means connecting said input and output terminals, whereby said amplifier amplifies signals detected by said diode, apparatus for selectively supplying unmodulated video signals to said receiver from an external source, said apparatus including a signal input terminal adapted to receive said unmodulated video signals, a variable impedance device having a relatively high impedance in a first state thereof and a relatively low impedance in a second state thereof, means connecting said variable impedance device in circuit between said signal input terminal and said output terminal of said video detector, means for selectively varying the impedance of said variable impedance device between said first and second states thereof and means responsive to said variable impedance device being in said second state thereof for developing and applying to said detector diode a bias signal that biases said detector diode off, whereby when said variable impedance device is in said second state thereof said detector is clamped off and thus is unable to process said video I.F. signals while said unmodulated video signals are applied to said input terminal of said amplifier, in said first state of said variable impedance device said detector diode being biased for processing said video I.F. signals and said unmodulated video signals being isolated from said amplifier by the high impedance of said variable impedance device.

4,129,885
WARM-UP COMPENSATION SYSTEM FOR PICTURE TUBE

Donald D. Chovanec, Schaumberg, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 3, 1977, Ser. No. 838,695

Int. Cl.² H04N *3/18*

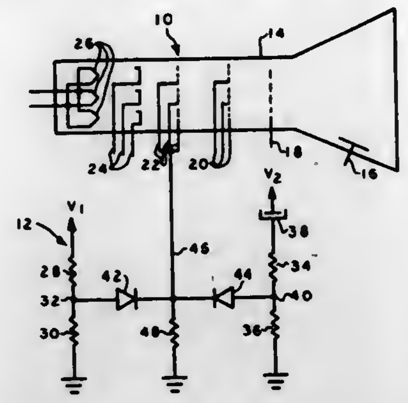
U.S. Cl. 358—190 **10 Claims**

1. In a television receiver having a cathode ray tube whose brightness is a function of the bias potential between a control electrode and a cathode of the cathode ray tube, a device for reducing the interval between the initial energization of the cathode ray tube and the time at which the cathode ray tube reaches full brightness capability, comprising:

means for generating a nominal bias control voltage for application to the cathode ray tube;

means for generating a start-up bias control voltage for application to the cathode ray tube, said start-up bias control voltage having at least an initial magnitude greater than the magnitude of said nominal bias control voltage; and

means for automatically coupling first and start-up bias control voltage to the cathode ray tube and, after substantially full brightness capability has been achieved, decoupling the start-up bias control voltage and coupling the nominal bias control voltage thereto, whereby the cathode ray tube is quickly brought to substantially full brightness capability by the starting bias control voltage.



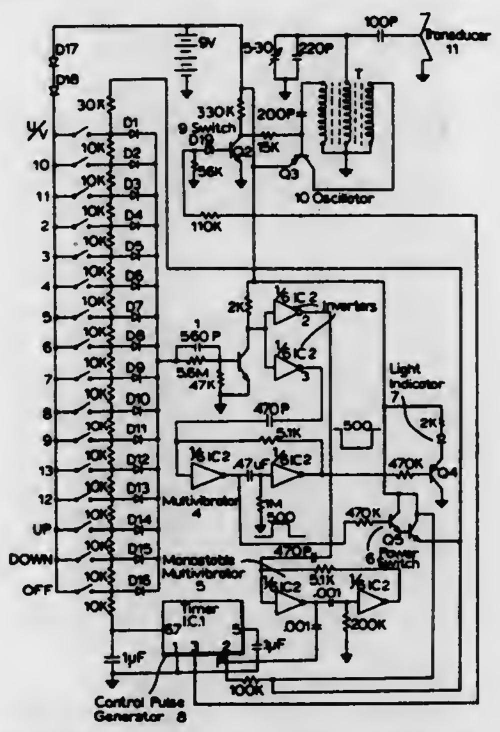
4,129,886
DIGITAL REMOTE CONTROL SYSTEM

Martin K. S. Shih, Kitchener, Canada, assignor to Electrohome Limited, Kitchener, Canada

Filed Mar. 1, 1976, Ser. No. 662,291

Int. Cl.² H04B *1/00*

U.S. Cl. 358—194 **7 Claims**



1. In combination, signal receiving equipment adapted to receive and translate broadcast signals, said signal receiving equipment including information receiving and detecting means, said signal receiving equipment being operable in a plurality of different modes; a transmitter remotely located with respect to said signal receiving equipment, said transmitter including means for generating pulses having different discrete pulse widths, each pulse having a leading edge and a trailing edge, each pulse width corresponding to a different desired mode of operation of said signal receiving equipment, and means for transmitting said pulses; said information receiving and detecting means comprising means for receiving and detecting said pulses, trailing edge noise eliminating means and means for applying said received and detected pulses to said trailing edge noise eliminating means for eliminating noise pulses that may follow the trailing edges of the received and detected pulses; and means for controlling the mode of operation of said signal receiving equipment comprising means responsive to detection of pulses having different discrete pulse widths for automatically changing the mode of operation of said signal receiving equipment to modes of operation that are predetermined by the widths of said pulses detected by said detecting means.

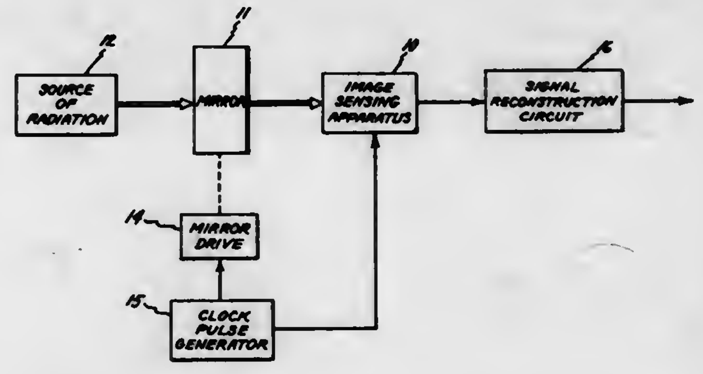
4,129,887
SOLID STAGE IMAGING APPARATUS

Gerald J. Michon, Waterford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 31, 1977, Ser. No. 847,167

Int. Cl.² H04N *5/30, 5/33, 3/14*

U.S. Cl. 358—213 **4 Claims**



1. In combination,

a substrate of semiconductor material of one type conductivity having a major surface,

first means forming a first plurality of charge storage sites for opposite type carriers adjacent said major surface of said substrate,

second means forming a second plurality of charge storage sites for opposite type carriers adjacent said major surface of said substrate, each coupled to a respective charge storage site of said first plurality to form a plurality of coupled pairs of charge storage sites,

said couple pairs of charge storage sites being arranged in an array of rows and columns,

a plurality of row conductor lines and a plurality of column conductor lines,

said first means including a first plurality of electrodes each insulatingly overlying a respective one of said storage sites of said first plurality, each of the electrodes of said first plurality in a respective row of sites being connected to a respective row line,

said second means including a second plurality of electrodes, each insulatingly overlying a respective one said storage sites of said second plurality, each of the electrodes of said second plurality in a respective column of sites being connected to a respective column line,

means for scanning a two-dimensional pattern of radiation having elements located in a matrix of columns and rows across said substrate in the column direction thereof at a substantially constant rate to produce a pattern of opposite type carriers of variable quantity in said plurality of storage sites,

said pattern of radiation having the same number of elements in a row as the number of storage sites in a row of storage sites, said pattern having a number of elements in a column exceeding the number of storage sites in a column of storage sites, the column to column spacing of said elements being equal to the column to column spacing of said storage sites, the row to row spacing of said elements being equal to the row to row spacing of said storage sites, a row of elements of said pattern of radiation scanning from a row of storage sites to an adjacent row of storage sites in a predetermined interval of time, means for algebraically summing at the end of a predetermined interval of scan the quantities of opposite type carriers stored in each of said rows of storage sites with an agebraic summation code to derive a respective summation signal and thereafter injecting said quantities of opposite type carriers into said substrate, the quantity of opposite type carriers in each storage site being proportional to a respective element of said pattern of radiation,

the algebraic summation at the end of each successive interval of scan being in accordance with a respective successive algebraic summation code, said successive algebraic summation codes constituting a repeating one-dimensional transform.

4,129,888

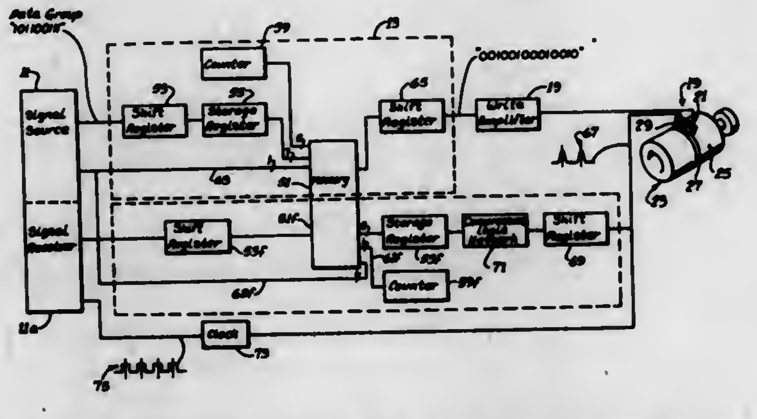
DATA RECORDING AND/OR REPRODUCING SYSTEM

William H. Reinholtz, San Gabriel, Calif., assignor to General Instrument Corporation, Hawthorne, Calif.

Continuation of Ser. No. 375,511, Jul. 2, 1973, abandoned. This application Mar. 24, 1975, Ser. No. 561,306

Int. Cl.² G11B *5/09*

U.S. Cl. 360—40 31 Claims



1. In combination for recording a data group having characteristics for expressing one of a particular number of first digital combinations, the data group including a first plurality of data bits each having digital information of first or second digital characteristics, comprising:

first means responsive to the data group for encoding the data group to provide for a second plurality of encoded signals greater in number by a particular factor than the data bits of the first plurality and including at least one data bit of the first digital characteristics with each digital bit of the first digital characteristics followed by a particular number of data bits of the second digital characteristics at least equal to the particular factor; and

second means responsive to the first means for recording the data bits produced by the first means.

4,129,889

MAGNETIC RECORDING/REPRODUCING APPARATUS USING CASSETTE

Itsuki Ban, 829, Higashioizumimachi, Nerimaku, Tokyo, and Kazunori Mochizuki, 6673 Oazahodaka, Hodakacho, Minamiazumi-gun, Nagano-gun, both of Japan

Filed May 23, 1977, Ser. No. 799,278

Claims priority, application Japan, May 29, 1976, 51-61794; Sep. 10, 1976, 51-107906; Nov. 1, 1976, 51-130471

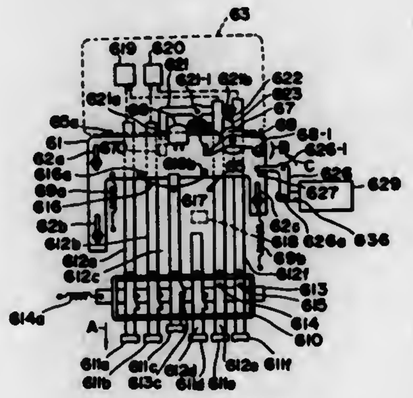
Int. Cl.² G11B *21/02, 15/46, 21/22*

U.S. Cl. 360—75 10 Claims

1. In a magnetic recording/reproducing apparatus for a cassette magnetic tape which includes a non-reproduction mode including que and review operations, the apparatus comprising a deck, a movable plate mounted on the deck, means for moving the plate between reproduction and non-reproduction positions, first spring means for biasing the plate toward the reproduction position, a magnetic head mounted on the movable plate at a position where the magnetic head, when the movable plate is at the reproduction position, is in sliding contact with the magnetic tape, a capstan, a pinch roller mounted on the movable plate, mounting means on the movable plate for mounting the pinch roller for movement between a reproduction position in contact with the capstan and a non-reproduction position out of contact with the capstan, second spring means for biasing the pinch roller to the reproduction position, tape drive means for driving the tape at a play speed when the pinch roller is in its reproduction position and at a fast speed when the pinch roller is in its non-reproduction position, and means for supplying electric current to the tape drive means, the improvement comprising:

manually actuated que and review actuator slides for change-over to the que and review operations, respectively, means for mounting the actuator slides on the deck for reciprocating movement in a direction parallel to the moving direction of the movable plate, third spring means for biasing the actuator slides toward a position in the reproduction mode, the actuator slides being positioned to shift the movable plate to the non-reproduction position when one of the slides has been manually moved to a position in the non-reproduction mode,

a reciprocating magnetic actuator movable in one direction when the movable plate has been moved to the non-reproduction position by one of the actuating slides, the magnetic actuator being operatively connected with said movable plate,



an electromagnetic coil surrounding the magnetic actuator for holding the magnetic actuator in its non-reproduction position by electromagnetic force when supplied with an electric current, means for supplying electric current to the coil upon the movement of the movable plate to the non-reproduction position for causing the movable plate to be held in its non-reproduction position,

means for locking the manually pushed actuator slide together with the held movable plate,

switch means for switching a signal received from the magnetic head to the electromagnetic coil when the actuating slide is moved to its non-reproduction mode position,

circuit means including a time constant circuit interposed between the switch means and the electromagnetic coil for detecting blank zones on the magnetic tape when the switch means has been switched to the electromagnetic coil side,

means responsive to the detection of the blank zones on the magnetic tape for turning off the electric current to said coil, and

means for releasing the actuating slide so that the third spring means will cause the slide to return to the reproduction position when the movable plate has been returned to the reproduction position by the first spring means when the electric current to said coil is turned off.

4,129,890

MAGNETIC RECORDING AND REPRODUCING APPARATUS

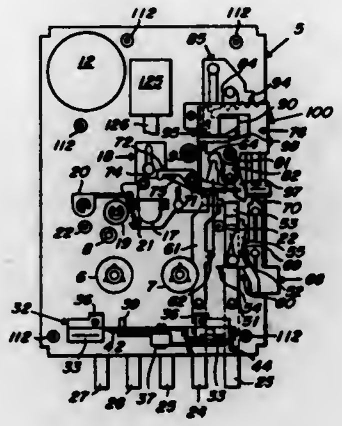
Shoji Suzuki, Iwaki, Japan, assignor to Alps Motorola, Tokyo, Japan

Filed Sep. 26, 1977, Ser. No. 836,266

Claims priority, application Japan, Sep. 29, 1976, 51-116797

Int. Cl.² G11B *15/18*

U.S. Cl. 360—94 11 Claims



1. A magnetic recording and/or reproducing apparatus which is selectively applicable to utilize either a tape carrier of a first or second type and includes first and second tape capstans, said apparatus comprising:

an entryway into which tape carriers of said first and second type are to be inserted;

a first magnetic tape head located within said entryway for playing the tape contained in said first type tape carriers;

a second magnetic tape head located out of said entryway for reproducing the tape contained in said second type tape carriers;

a holder for receiving and conveying a second type tape carrier; and

means for positioning said holder in said entryway prior to the insertion of tape carriers into said entryway, said means responsive to a first type tape carrier being inserted into said entryway for moving said holder out of said entryway thereby permitting said first tape carrier to be pushed deeper into said entryway so that the tape in said first type tape carrier comes into cooperative engagement with said first magnetic tape head and said first capstan, and said means responsive to said second type tape carrier being received in said holder for moving said holder and second type carrier into a predetermined position substantially out of said entryway where the tape in said second type tape carrier comes into cooperative engagement with said second magnetic tape head and said second tape capstan out of said entryway.

4,129,891

DOUBLE PARTITIONING OF FLEXIBLE DISK PACK AND ASSOCIATED APPARATUS

Herbert U. Ragle, Thousand Oaks, and Dean DeMoss, Camarillo, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 766,288, Feb. 7, 1977, which is a continuation-in-part of Ser. No. 720,905, Sep. 7, 1976. This application May 2, 1977, Ser. No. 792,589

The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.

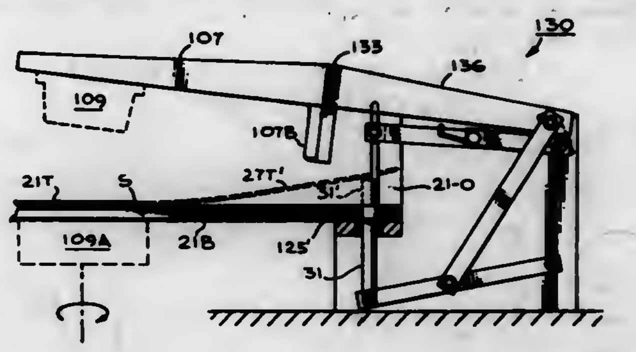
Int. Cl.² G11B *23/02, 25/04*

U.S. Cl. 360—98 18 Claims

1. In combination:

a partitionable, flexible disk pack comprising a stack of disks, each disk having an encoded arrangement of partition apertures and being arrayed in the stack so that predetermined apertures are registered from disk-to-disk, thereby generating at least two sets of "partition bores", each set originating from an opposite respective end of the stack and comprising bores of varying depths distributed circumferentially about the stack to terminate uniquely at a different respective disk surface; drive means adapted to rotate the stack; and

improved double-partitioning/centering means adapted to project at least one pair of thrust forces opposingly, to effect an "end-wise partitioning", axially of the stack and normal to a major surface of the disks, each force being directed against a selected disk surface from an opposite respective end of the stack and adpated to be applied through at least a selected one of the bores in the associated bore set when the stack is rotated to register this bore with this force, and impacting the associated terminating disk-surface deflectingly whereby to partition the stack and open a gap adjacent this surface;



said partitioning/centering means thus being adapted to so deflect the disks divergingly as to define a partition-gap as well as to "center" the "selected" disk diposed in this gap intermediate the impacted disk;

said drive means being arranged and controlled to accommodate this partitioning.

4,129,892

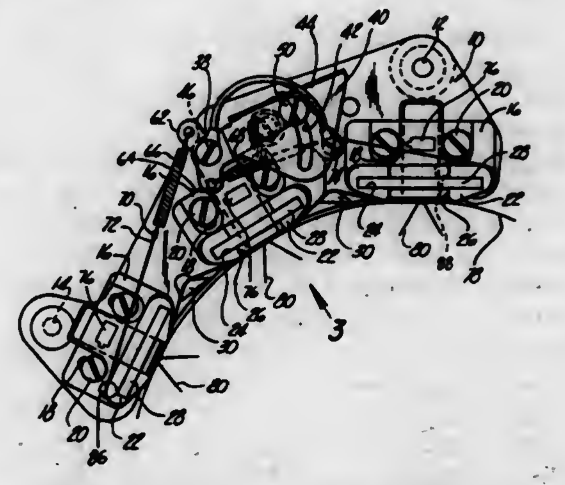
BACK-UP PRESSURE MECHANISM WITH TENSIONED ELONGATED MEMBER

Abdul L. Kasu, Livonia, and Jerry I. Tustaniwskyj, Warren, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 19, 1977, Ser. No. 861,978

Int. Cl.² G11B *15/60, 5/10*

U.S. Cl. 360—130 6 Claims



1. A demountable back-up pressure mechanism for a high speed read/write device having two or more acruately displaced electromagnetic read/with transducer members comprising:

an elongated, flexible, non-magnetic member including means mounting said elongated member adjacent said transducer members effective thereby to provide constant uniform back-up pressure for the active portion of said transducers,

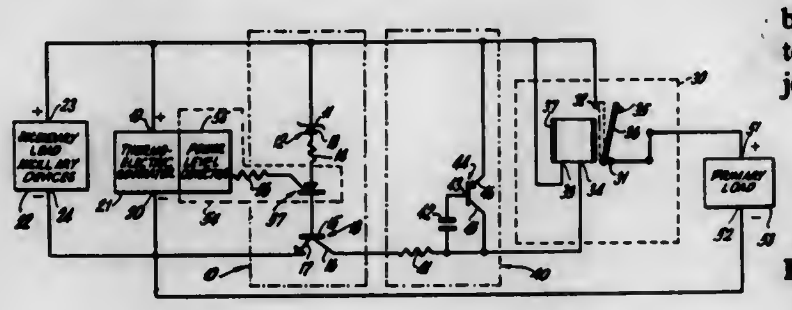
means operably associated with said elongated non-magnetic member for selectively placing said member under tension effective to rigidify and flatten said member adjacent to said transducer members, and

means for locking said elongated member in said tensioned condition and for releasing said elongated member from said tensioned condition for repair or replacement.

4,129,893
THERMOELECTRIC GENERATOR OVERLOAD PROTECTIVE DEVICE USING HYSTERISIS CONTROL

Joseph P. Angello, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 31, 1977, Ser. No. 801,938
Int. Cl.² H02H *7/06, 3/24*
U.S. Cl. 361—21 **10 Claims**



1. An overload protection system including a generator, a load switch protective device and a primary load to which the generator is normally connected and from which it is disconnected upon an overload condition by the load switch protective device, and a secondary load,

wherein the generator has first and second output terminals connected to the protective device and connected to the secondary load to which secondary load said output terminals remain connected even after being disconnected from the primary load by the protective device,

wherein said protective device is connected to the primary load,

wherein the load switch protective device comprises a relay having a control coil and a set of contacts having open and close positions and controlled by the control coil, the close contact position of the set of contacts connecting the primary load to the generator and their open contact position disconnecting the generator from the primary load,

characterized in that the load switch protective device further comprises

a transistor switch having a base control electrode, a collector and an emitter and

a voltage selectable breakdown diode having one terminal connected to the first generator terminal and its other terminal connected to said transistor base electrode,

wherein said transistor emitter is connected to the second generator terminal and said transistor collector is connected to the relay control coil;

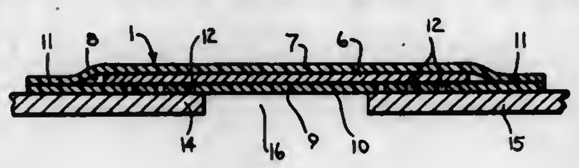
further comprising an anti-clatter circuit to prevent clatter of the relay contacts and comprising a second transistor and a time delay device connected to the control electrode of said second transistor, said second transistor having its collector-emitter in parallel with said relay coil.

4,129,894
LAMINATED CURRENT SURGE PROTECTOR

Keith A. Chen, Milwaukee, Wis., assignor to Wisconsin Gas Company, Milwaukee, Wis.

Filed Jul. 7, 1977, Ser. No. 813,536
Int. Cl.² H01T *1/00*
U.S. Cl. 361—117 **6 Claims**

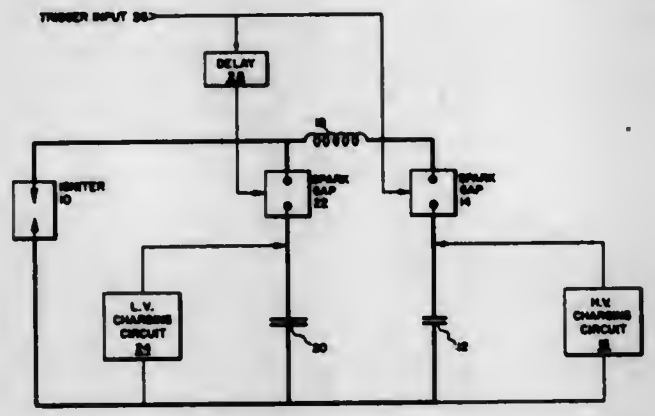
1. A laminated current surge protector to protect metal members separated at a joint therebetween by an insulating medium, which comprises a flexible, conformable arrestor extending across the joint and adhered to the outer surfaces of the respective metal members, said arrestor having a metal conductor, a weather resistant coating adhered to the outer surface of the conductor, a durable tape adhered to the inner surface of the conductor and said coating and tape being disposed to encapsulate the metal conductor, and a plurality of perforations disposed in the durable tape exposed to each of the respective metal members to provide a gap through which excessive surges of current flowing through the metal members can pass through the metal conductor from one member to the other and thereby prevent flow of current through the joint and injury to the latter.



4,129,895
CURRENT WAVE SHAPES FOR JET ENGINE FUEL IGNITERS

Harald L. Witting, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 22, 1977, Ser. No. 770,508
Int. Cl.² H01T *15/02*
U.S. Cl. 361—257 **11 Claims**



1. An exciter for energizing a fuel igniter comprising:

means for initiating an electric discharge pulse across contacts of the igniter at an initial current level of sufficient magnitude to cause the discharge to separate and move away from a surface of the igniter; and

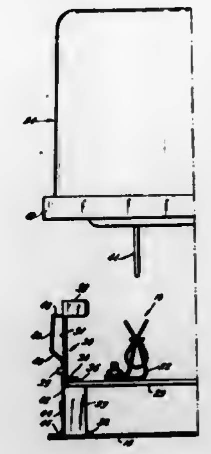
means for increasing the power in the discharge, which means function to increase the current level in the discharge following a time delay of between approximately 20 microseconds and approximately 40 microseconds after initiation of the discharge, said level being sufficient to insure ignition of an air-fuel mixture.

4,129,896
METER RETAINER

John W. Young, Lawrenceville, Ga., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Nov. 1, 1977, Ser. No. 847,554
Int. Cl.² H02B *9/00*
U.S. Cl. 361—371 **11 Claims**

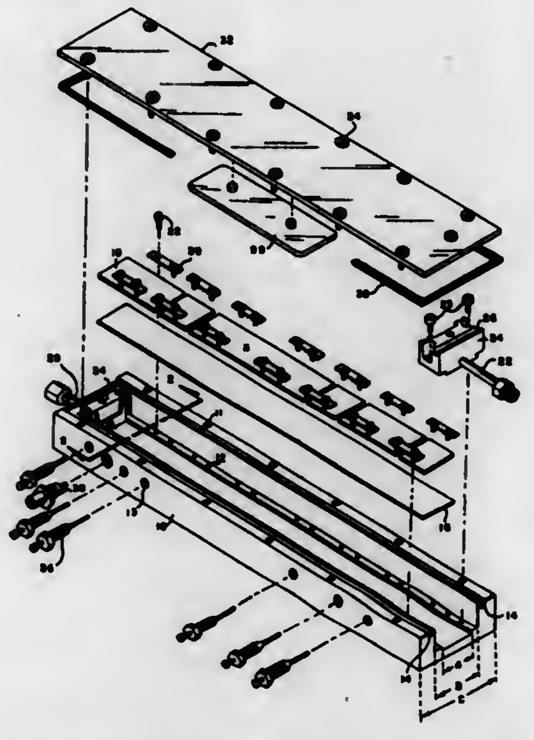
1. A ringless-type socket device for a watt hour meter or the like, said socket including a plurality of plug-in contacts operatively positioned at a contact region to be engaged by rearwardly extending cooperating plug-in contacts of a watt hour meter when same is mounted to said device in front of said contact region, said socket also including support means having at its forward end seat means operatively positioned to be engaged by a watt hour meter when same is mounted to said device to limit rearward movement of the latter, spring retainer means mounted on said support means and having at its forward end holding means operable to a holding position forward of said seat means to block forward movement of a watt hour when same is mounted to said device, said retainer means being deflectable for outward movement of said holding means to a releasing position thereby permitting a watt hour meter when same is mounted to said device to be dismounted therefrom.



4,129,897
MODULAR MOUNTING APPARATUS FOR SUBSTRATE MEANS BEARING PLANAR CIRCUIT MEANS

Fred J. Telewski; Carlos L. Beeck, and Philip B. Snow, all of Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 633,742, Nov. 20, 1975, abandoned. This application Jan. 18, 1978, Ser. No. 870,302
Int. Cl.² H05K *1/04*
U.S. Cl. 361—399 **4 Claims**



1. A modular package in which planar circuit means are mounted, comprising:

housing means having side walls and a bottom defining a channel-shaped configuration and having a predetermined variable length;

elastomeric conduction means in engagement with said bottom and extending substantially along the length thereof;

substrate means containing planar circuit means on at least the upper surface means thereof and ground circuit means provided on the bottom surface thereof, said ground circuit means electrically engaging said elastomeric conduction means;

removable substrate securing means extending between said housing means and said substrate means urging said ground circuit means into electrical connection with said elastomeric conduction means and said elastomeric conduction means providing cushion means therefor;

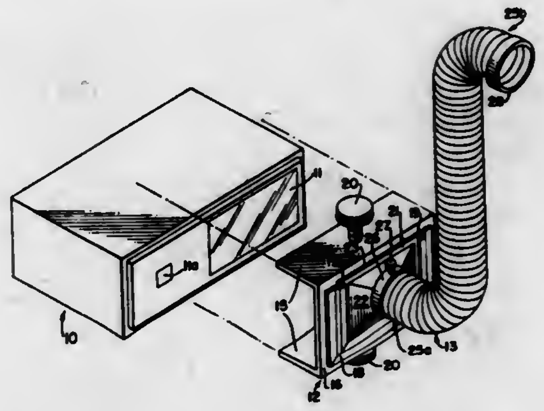
removable connection means provided by said housing means electrically connected respectively to said planar circuit means on said upper surface means and to said ground circuit means on said lower surface means; and

means sealing said substrate means so as to be free from interfering signals.

4,129,898
LIGHT-DIVERTING ATTACHMENT FOR PHOTOGRAPHIC FLASH UNITS

Charles L. Ohrstedt, 66 E. Tulane Rd., Columbus, Ohio 43202

Filed Dec. 6, 1976, Ser. No. 747,555
Int. Cl.² G03B *15/02*
U.S. Cl. 362—7 **1 Claim**



1. A light-diverting attachment for a photoflash unit having a light-emitting aperture, comprising:

(a) a mounting bracket for quickly detachable external connection to a photoflash unit and having an opening for registration with the light-emitting aperture of the photoflash unit and a channel-forming flange disposed in surrounding relation to said opening; and

(b) an elongated, hollow, bendable tube having an open, light-transmitting passage extending therethrough and a proximal end portion provided with a connector frame detachably engaged with the channel-forming flange of said mounting bracket in surrounding relation to the opening thereof and a distal, light-projecting end portion extending remotely from said mounting bracket, said tube being normally shape-retentive, but being manually bendable to locate the light-projecting end portion thereof at various axially offset positions with respect to the opening of said mounting bracket and the light-emitting aperture of the photoflash unit.

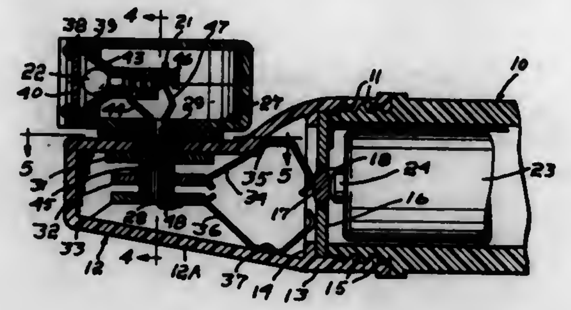
4,129,899
FLASHLIGHT WITH A ROTATABLE LAMP HOLDER

George W. Dunbar, P.O. Box 8072, J.F.K. Sta., Boston, Mass. 02108

Continuation-in-part of Ser. No. 629,506, Nov. 6, 1975, abandoned. This application Oct. 6, 1977, Ser. No. 840,020
Int. Cl.² F21V *33/00*
U.S. Cl. 362—109 **12 Claims**

1. A flashlight including a battery-receiving hollow casing including a head portion and rear portion dimensioned to accommodate at least one battery, a lamp holder having an optically open end and including a lamp socket, and a rotatable connection between said head portion and said holder enabling said holder to turn in a fore and aft direction with said optically open end at right angles to the axis of said connection, said flashlight including a switch controlled battery circuit in

which a battery, when within the rear portion, is included and which includes sections in the head portion, each section including a contact, and said lamp holder including a pair of sections each including first and second contacts, the first contacts placing the lamp in the battery circuit when the lamp in said socket and the second contacts are in engagement with the appropriate one of said contacts of said sections as the holder turns, said second lamp socket contacts carried by said rotatable connection.



4,129,900

APPARATUS FOR LIGHTING WITH FLUORESCENT TUBES OF AUTOMATIC FIXING AND CONNECTION

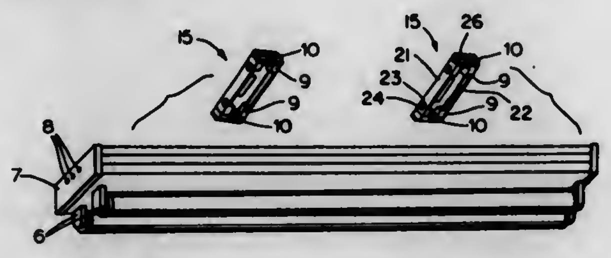
Eduardo P. Sanz, Avenida de Pablo Gargallo, 46-48 (Sector Quimica), Zaragoza, Spain

Filed Feb. 24, 1977, Ser. No. 771,648

Claims priority, application Spain, Feb. 24, 1976, 219042

Int. Cl.² H05B *33/02;* F21V *21/08*

U.S. Cl. 362—217 1 Claim



1. An apparatus for fluorescent lighting, comprising an elongated channellike housing having a pair of side flanges, said housing being adapted to be disposed in a first orientation wherein same opens upwardly for mounting on a ceiling, said housing being adapted to be mounted in a second orientation wherein it opens downwardly, a pair of lampholders slidably disposed within the housing adjacent the opposite ends thereof, a pair of end covers receivable within the opposite ends of said housing, said lampholders and said covers coacting with the opposite side flanges for holding the covers and the lampholders on the housing, said covers and said lampholders being inverted relative to said housing when the latter is converted for use from said first orientation to said second orientation and vice versa, and a pair of mounting racks adapted to be secured to the ceiling for releasably supporting said housing when the latter is in said first orientation, each mounting rack including a pair of insulated lugs spring urged outwardly in opposite directions and having camming means on the outer ends thereof adapted for engagement with the flanges of said housing, each of said lugs having electrical contact means associated therewith and positioned for engaging a cooperating electrical contact means mounted on the inside of the flanges of said housing.

4,129,901

PLURAL-SEQUENCE CONTROL SYSTEM

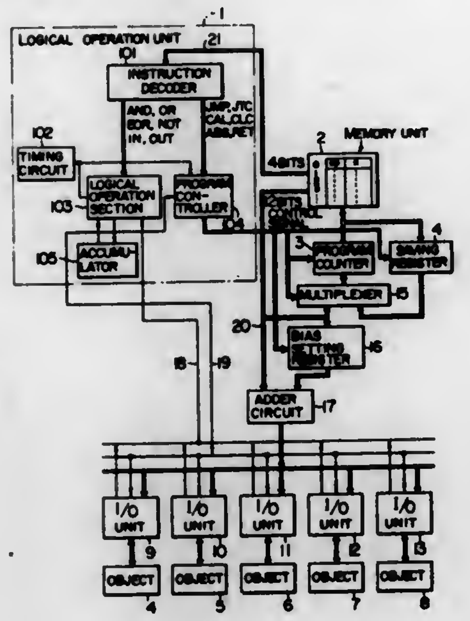
Ikuro Masuda, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Apr. 5, 1977, Ser. No. 784,810

Claims priority, application Japan, Apr. 9, 1976, 51-39197

Int. Cl.² G05B *11/00;* G06F *9/16*

U.S. Cl. 364—104 5 Claims



1. A sequence control system for controlling a plurality of external devices, comprising:

a plurality of input/output units for receiving, as inputs, quantities representative of states of said devices and providing outputs to said devices, said objects being assigned with predetermined input and output addresses respectively;

a logical operation unit for receiving said quantities representative of the states of the respective devices to perform logical operations on said quantities, the results of the logical operations being supplied to said input/output units;

a memory unit for storing a group of programmed instructions including logical operation instructions for performing the logical operations by said logical operation unit, the logical operation instructions being selectively associated with the input and output addresses of said input/output units so that each of the logical operations by said logical operation unit is carried out with respect to the input and output unit having the associated input/output address, said instructions being stored at predetermined program addresses in said memory unit respectively;

a program counter for designating the program addresses for readout of the program address designated instructions from said memory unit;

a bias value register for storing values of bias for the input and output addresses of said input/output units in accordance with a first predetermined one of said instructions from said memory unit other than the logical operation instructions under the control of said logical operation unit;

selecting means for biasing in accordance with the contents of said bias value register the input and output address associated with the logical operation instruction from said memory unit to select one of said input/output units corresponding to the biased input and output address; and

a saving register for temporarily saving during an interrupt the contents of said program counter for later return under the control of said logical operation unit.

DESIGNS

DECEMBER 12, 1978

250,496

HEAD SEAL FOR AN ANTI-DUST HELMET

Raymond Odell, 184 Mutton La., Potters Bar, Herts., and Brian A. Lowe, 6 Beaumont View, Appleby St., Cheshunt, Herts., both of England

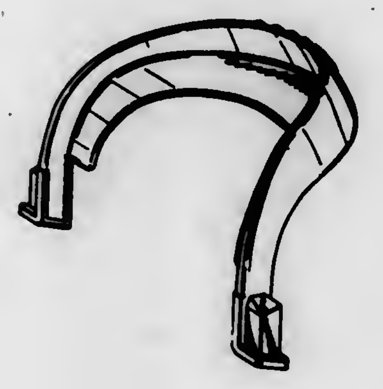
Filed Jan. 7, 1977, Ser. No. 757,562

Claims priority, application United Kingdom, Aug. 8, 1976, 976849/76

Term of patent 14 years

Int. Cl. D2—*03*

U.S. Cl. D2—233



250,497

HAT

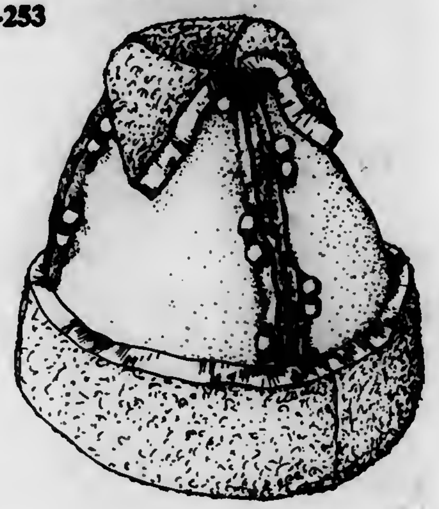
Georges A. Rocheleau, R.R. No. 1, and Florien Rouillard, R.R. No. 1, P.O. Box 541, both of Bedford, Quebec, Canada

Filed Mar. 30, 1977, Ser. No. 783,058

Term of patent 14 years

Int. Cl. D2—*03*

U.S. Cl. D2—253



250,498

FOLDING STOOL

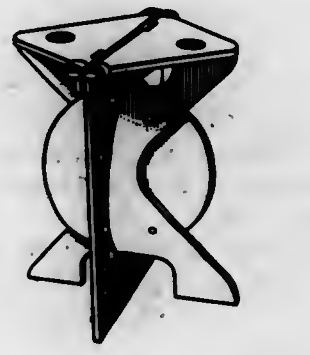
Charles D. Hosford, and Barry Simpson, both of R.R. 1, Box 122, Waitsfield, Va. 05673

Filed Feb. 22, 1977, Ser. No. 770,892

Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—32



250,499

BUNK BED

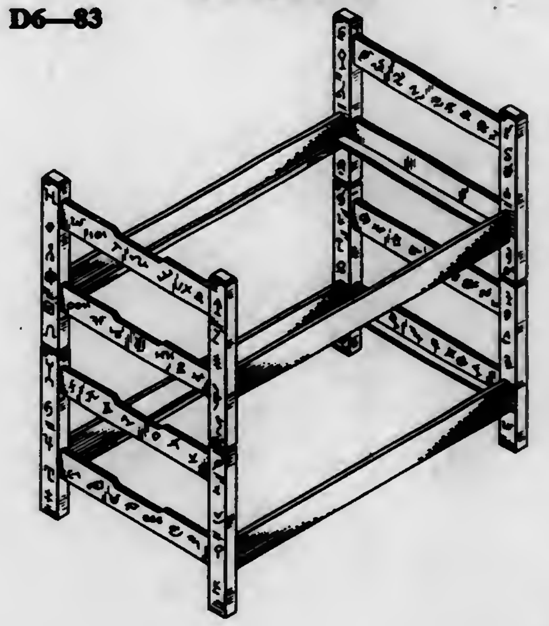
Ray J. O'Gwin, Jr., 4201 Dyer, El Paso, Tex. 79930, and Emmett D. McIntyre, 412 Butte Cir., El Paso, Tex. 79902

Filed Aug. 1, 1975, Ser. No. 601,216

Term of patent 14 years

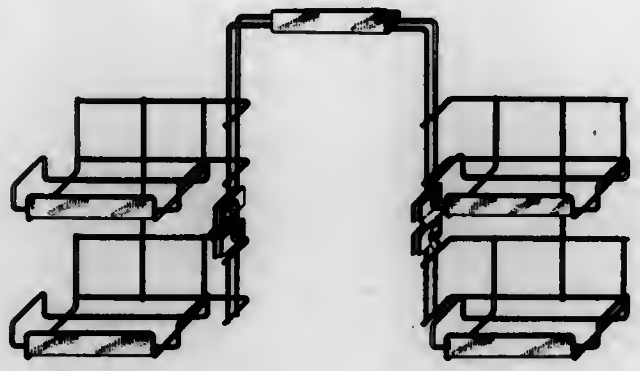
Int. Cl. D6—*01*

U.S. Cl. D6—83



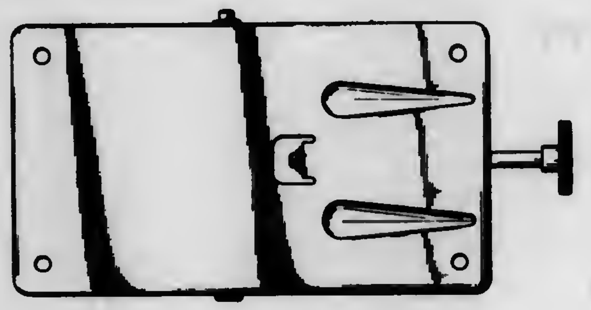
250,500
DISPLAY RACK

Philip Marks, 1009 Fifth Ave., New York, N.Y. 10028
Filed Sep. 20, 1976, Ser. No. 725,050
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—85



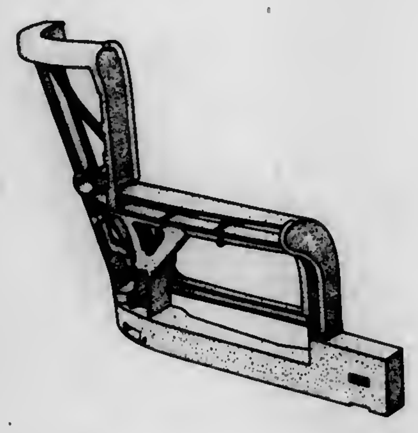
250,501
COMPACT CHAIR-TILTING CONTROL

Lon W. Pinaire, Prospect, Ky., and Robert H. Godwin, Evansville, Ind., assignors to Bliss & Laughlin Industries Incorporated, Oak Brook, Ill.
Filed Jun. 2, 1975, Ser. No. 582,643
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



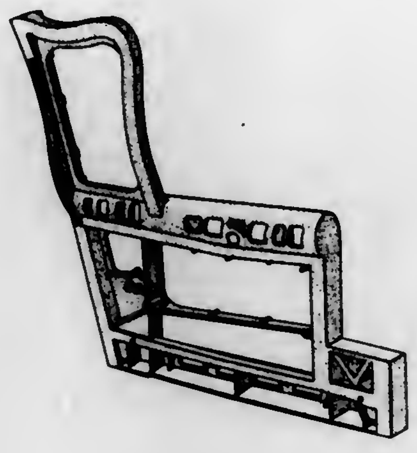
250,502
FURNITURE SUBFRAME

David C. Trimble, Yorklyn, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Apr. 12, 1977, Ser. No. 786,901
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—195



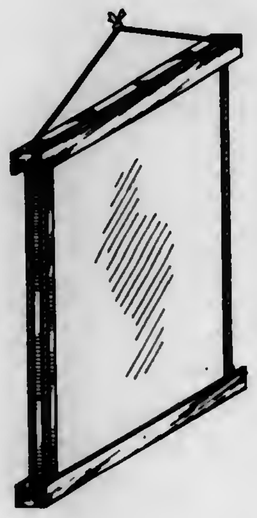
250,503
FURNITURE SUBFRAME

William M. Colatriano, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed May 4, 1977, Ser. No. 793,695
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—195



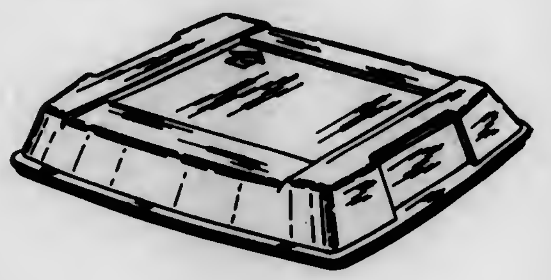
250,504
PICTURE FRAME

Jules Kliot, 2150 Stuart St., Berkeley, Calif. 94705
Filed Feb. 3, 1977, Ser. No. 765,278
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—242



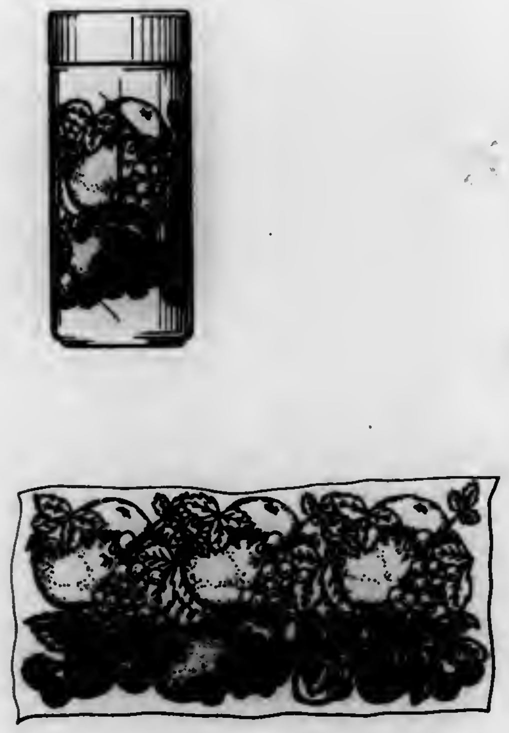
250,505
INSULATED COVER FOR A FOOD TRAY OR THE LIKE

Richard H. Seager, Manchester, Conn., assignor to King-Seeley Thermos Company
Filed Oct. 18, 1976, Ser. No. 733,040
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—40



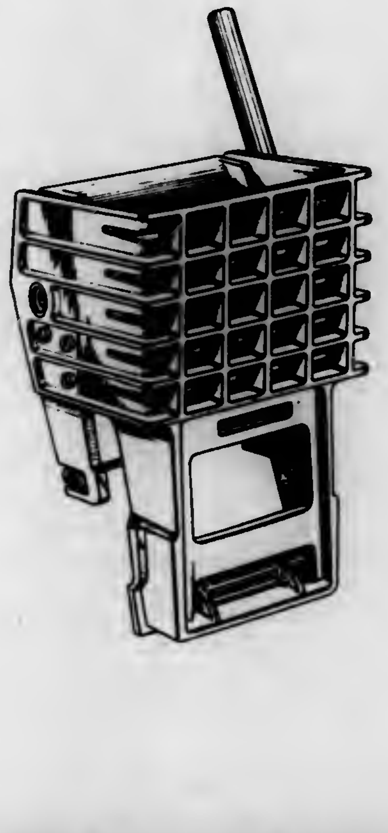
250,506
CONDIMENT SHAKER OR SIMILAR ARTICLE

Peter A. Gobleck, Jr., Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 659,966, Feb. 20, 1976. This application Mar. 14, 1977, Ser. No. 776,969
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—54



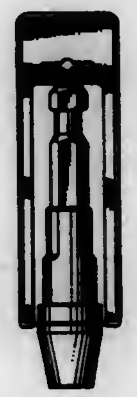
250,507
MOP WRINGER

William B. Raftery, 4089-9 Pine Creek Rd., Grandville, Mich. 49418; Dale T. Maza, 144 Fox Dr., and Glen E. Tomblin, 141 Allison Ave., both of Winchester, Va. 22601
Filed Dec. 9, 1976, Ser. No. 748,811
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—187



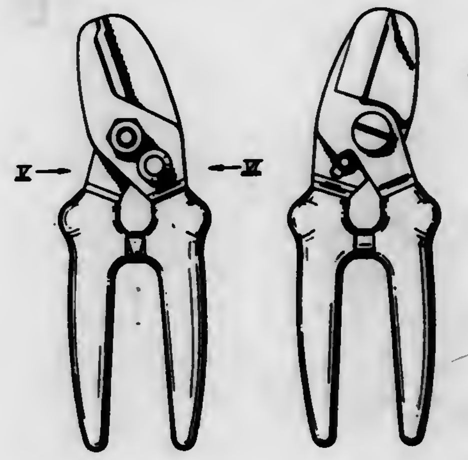
250,508
SHAFT COUPLING FOR GARDEN TOOLS

Franco Clivio, and Dieter Raffler, both of Ulm, Fed. Rep. of Germany, assignors to Gardena kress & Kastner GmbH, Fed. Rep. of Germany
Filed Dec. 15, 1976, Ser. No. 750,763
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1976, M744
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—1

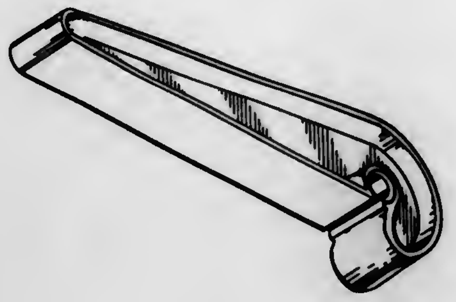


250,509
PAIR OF SECATEURS

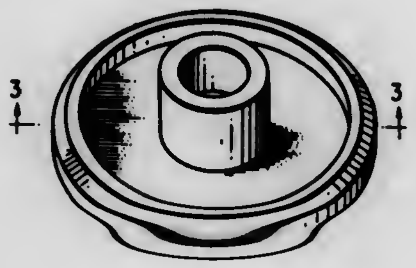
Frederick W. Plimmer, Cowbridge, Wales, assignor to Wilkinson Sword Limited
Filed Aug. 6, 1976, Ser. No. 712,316
Claims priority, application United Kingdom, Feb. 6, 1976, 974376/76; May 11, 1976, 975585/76
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—5



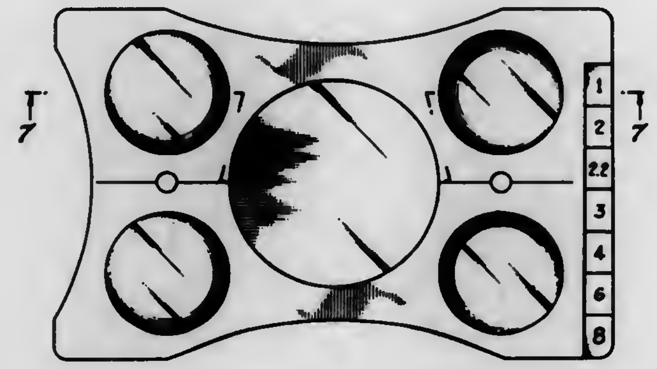
250,510
OPENING TOOL FOR TEAR-OPEN-TYPE CONTAINERS
Albert F. Bujan, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Jul. 29, 1976, Ser. No. 709,759
Term of patent 14 years
Int. Cl. D7—*99, 06*
U.S. Cl. D8—40



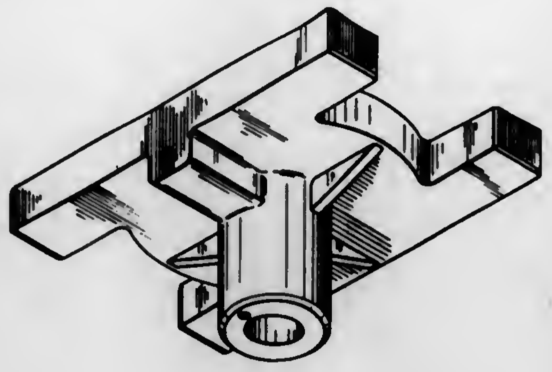
250,511
SEALING LINER FOR A CLOSURE
Lyle C. Affleck, 47 Ormond St., Ashfield, New South Wales 2131, Australia
Filed Mar. 15, 1976, Ser. No. 667,783
Claims priority, application Australia, Sep. 26, 1975, 67839/75
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—254



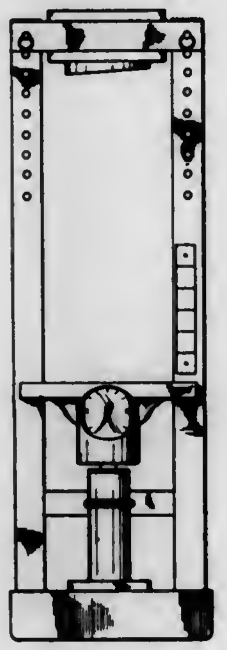
250,512
LENS CALIBRATION GAUGE
Irving Rips, Beverly Hills, and Kemper H. Vine, Santa Monica, both of Calif., assignors to Younger Manufacturing Company, Los Angeles, Calif.
Filed Oct. 28, 1976, Ser. No. 736,438
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—64



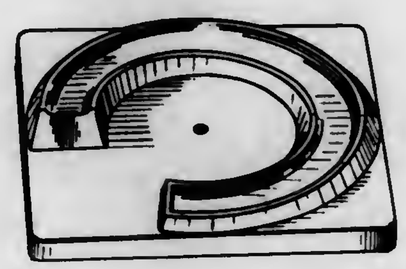
250,513
GAUGE MOUNT SLIDE FOR TEST STAND
Richard C. Etchison, Rte. 6, Box 342, Anderson, Ind. 46011
Filed Mar. 14, 1977, Ser. No. 777,091
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—83



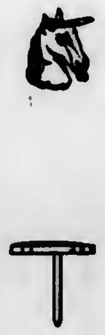
250,514
COIL SPRING TEST STAND
Richard C. Etchison, Rte. 6, Box 342, Anderson, Ind. 46011
Filed Mar. 14, 1977, Ser. No. 777,092
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—83



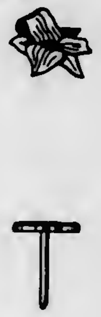
250,515
SPRING SEAT FOR TEST STAND
Richard C. Etchison, Rte. 6, Box 342, Anderson, Ind. 46011
Filed Mar. 14, 1977, Ser. No. 777,093
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—83



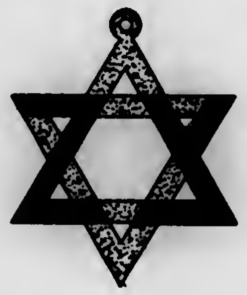
250,516
EARRING
Martin B. Fishman, 765 Massachusetts Ave., Cambridge, Mass. 02139
Filed Dec. 2, 1977, Ser. No. 856,924
Term of patent 7 years
Int. Cl. D11—*01*
U.S. Cl. D11—49



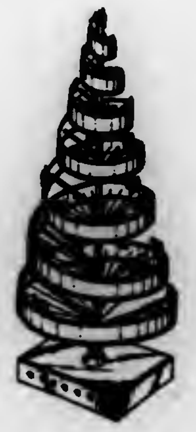
250,517
EARRING
Martin Fishman, 765 Massachusetts Ave., Cambridge, Mass. 02139
Filed Dec. 2, 1977, Ser. No. 856,921
Term of patent 7 years
Int. Cl. D11—*01*
U.S. Cl. D11—67



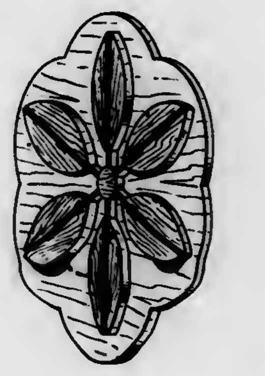
250,518
JEWELRY MEDALLION OR SIMILAR ARTICLE
David Friedman, 22, Gush Etzion St., Givatayim, Israel
Filed Aug. 4, 1976, Ser. No. 711,524
Claims priority, application Israel, Mar. 5, 1976, 6334
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—108



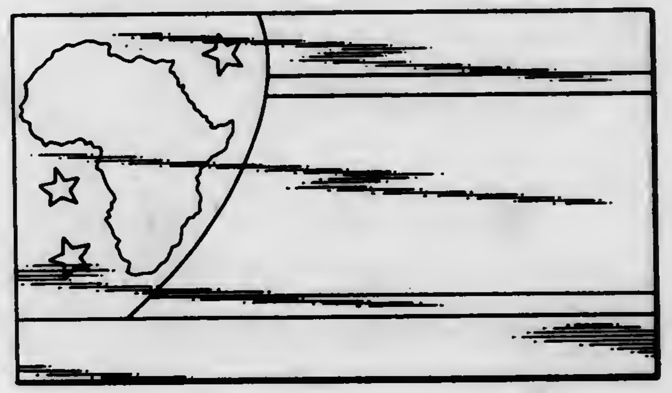
250,519
ARTIFICIAL TREE
Hideo Hashimoto, P.O. Box 1182, 2618 Desert St., 12, Rosamond, Calif. 93560
Filed Oct. 14, 1976, Ser. No. 732,363
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—118



250,520
PLAQUE
Paul R. Heavener, 1122 W. 166th St., Gardena, Calif. 90247
Filed May 31, 1977, Ser. No. 795,318
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—140



250,521
FLAG
Charles E. McCraney, 1831 S. 22nd Ave., Maywood, Ill. 60153
Filed Jul. 1, 1976, Ser. No. 701,544
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—176



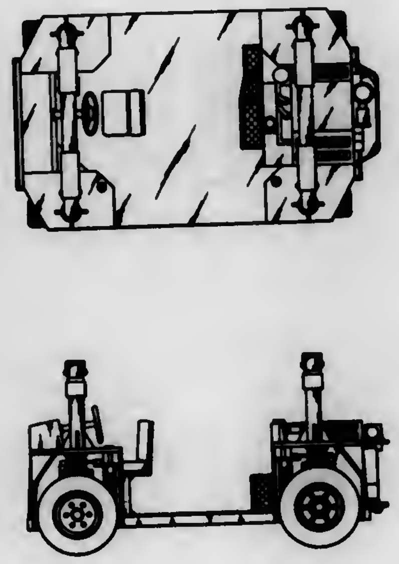
250,522

SELF-PROPELLED PERSONNEL AND MATERIAL CARRYING VEHICLE

Earl L. Miner, Long Lane, and Harold G. Jones, Lebanon, both of Mo., assignors to Detroit Tool and Engineering Company, Lebanon, Mo.

Filed Dec. 20, 1976, Ser. No. 752,256
Term of patent 14 years
Int. Cl. D12—*14*

U.S. Cl. D12—1

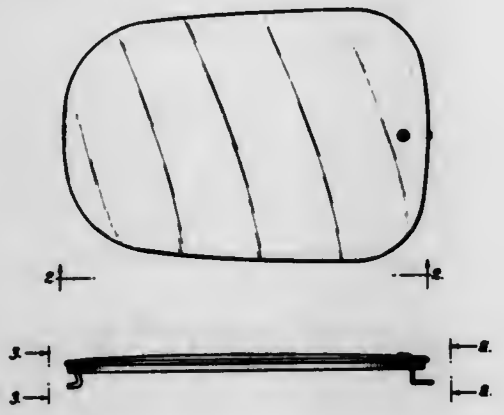


250,523

PROTECTIVE SECURITY HATCH COVER FOR SAILBOATS OR THE LIKE

John A. MacIntyre, 305 E. Prospect Ave., Lake Bluff, Ill. 60044
Filed Jul. 19, 1976, Ser. No. 706,692
Term of patent 14 years
Int. Cl. D12—*06*

U.S. Cl. D12—70



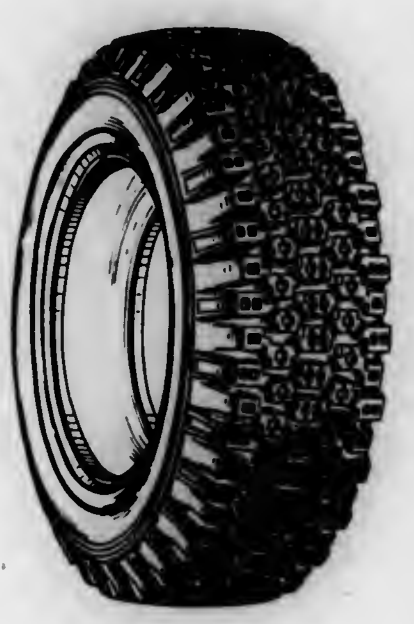
250,524

TIRE

Raimo Nyblom, Nokia, Finland, assignor to Oy Nokia AB, Helsinki, Finland

Filed Oct. 28, 1977, Ser. No. 846,400
Claims priority, application Finland, Apr. 28, 1977, 291/77
Term of patent 14 years
Int. Cl. D12—*15*

U.S. Cl. D12—146

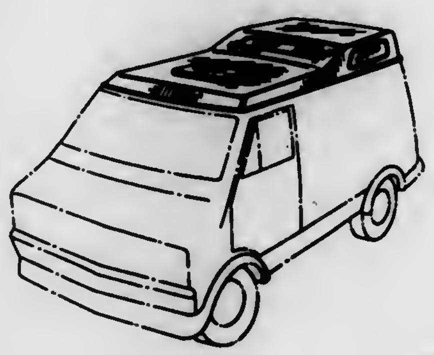


250,525

VAN TOP

Stanley G. Snyder, 1993 Belmont Ct., El Cajon, Calif. 92020
Filed Nov. 30, 1977, Ser. No. 855,980
Term of patent 14 years
Int. Cl. D12—*16*

U.S. Cl. D12—156



250,526

CAR TOP CARRIER FOR WINTER SPORTS EQUIPMENT

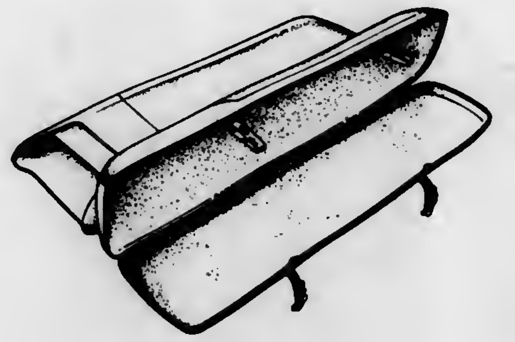
Werner Breitschwerdt, Stuttgart, and Andreas Langenbeck, Sindelfingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Sep. 14, 1977, Ser. No. 833,382

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 4635

Term of patent 14 years
Int. Cl. D12—*16*

U.S. Cl. D12—157



250,527

AIR GUIDE FOR MOTOR VEHICLE REAR WINDOWS

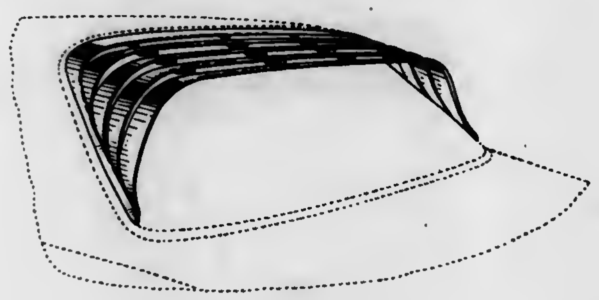
Bruno Sacco, Sindelfingen, and Hans Götz, Böblingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Mar. 16, 1977, Ser. No. 778,142

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 4568

Term of patent 14 years
Int. Cl. D12—*16*

U.S. Cl. D12—181



250,528

ELECTRIC CARTRIDGE BATTERY

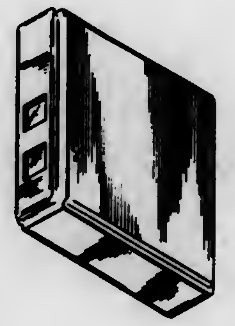
Gordon E. Kaye, Garrison, N.Y., assignor to P.R. Mallory & Co. Inc., Indianapolis, Ind.

Filed May 5, 1977, Ser. No. 793,825

The portion of the term of this patent subsequent to Mar. 18, 1991, has been disclaimed.

Term of patent 14 years
Int. Cl. D13—*02*

U.S. Cl. D13—8



250,529

ELECTRIC CARTRIDGE BATTERY

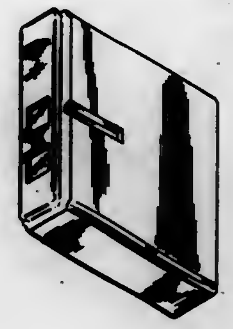
Gordon E. Kaye, Garrison, N.Y., assignor to P.R. Mallory & Co. Inc., Indianapolis, Ind.

Filed May 5, 1977, Ser. No. 793,826

The portion of the term of this patent subsequent to Mar. 18, 1991, has been disclaimed.

Term of patent 14 years
Int. Cl. D13—*02*

U.S. Cl. D13—8



250,530

ELECTRIC CARTRIDGE BATTERY

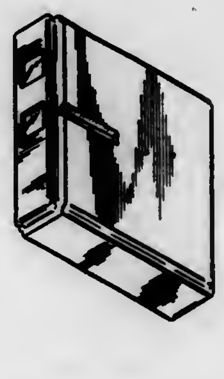
Gordon E. Kaye, Garrison, N.Y., assignor to P.R. Mallory & Co. Inc., Indianapolis, Ind.

Filed May 5, 1977, Ser. No. 793,999

The portion of the term of this patent subsequent to Mar. 18, 1991, has been disclaimed.

Term of patent 14 years
Int. Cl. D13—*02*

U.S. Cl. D13—8

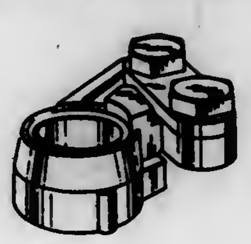


250,531

BATTERY TERMINAL CONNECTOR

James Demetreon, 5704 Hillside Dr., Kansas City, Mo. 64151
Filed Nov. 10, 1976, Ser. No. 740,611
Term of patent 14 years
Int. Cl. D13—*02*

U.S. Cl. D13—10



250,532
DICTATION STATION OR THE LIKE

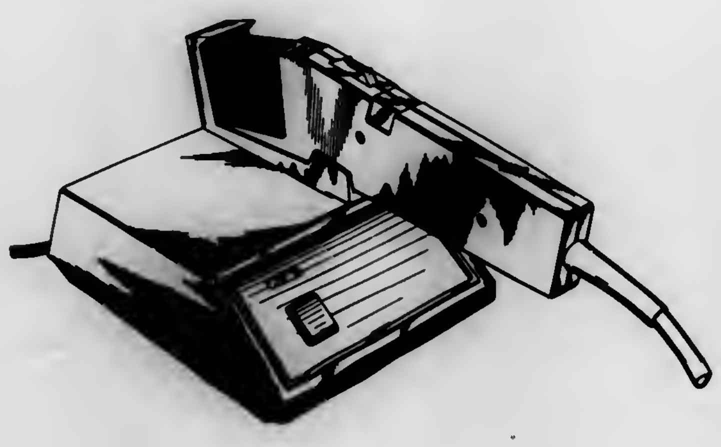
David K. Walz, Atlanta, Ga., assignor to Lanier Business Products, Inc., Atlanta, Ga.

Filed Sep. 24, 1976, Ser. No. 726,253

Term of patent 14 years

Int. Cl. D14—*01*

U.S. Cl. D14—3



250,533
AUTOMATIC TELEPHONE DIALER

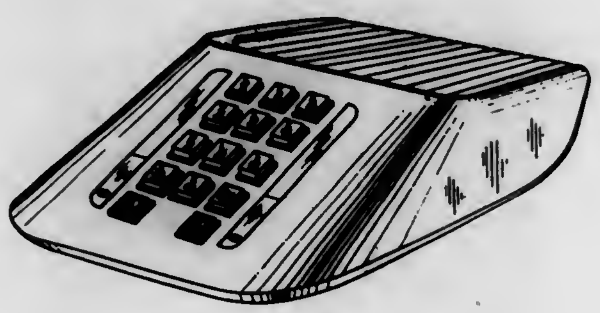
Marc Renard, Pierrefitte, France, assignor to Societe Peritel S.A.R.L., Boulogne, France

Filed Jan. 26, 1977, Ser. No. 762,638

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—66



250,534
COMBINED TUNER AND AMPLIFIER

Akira Kato, Chofu, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

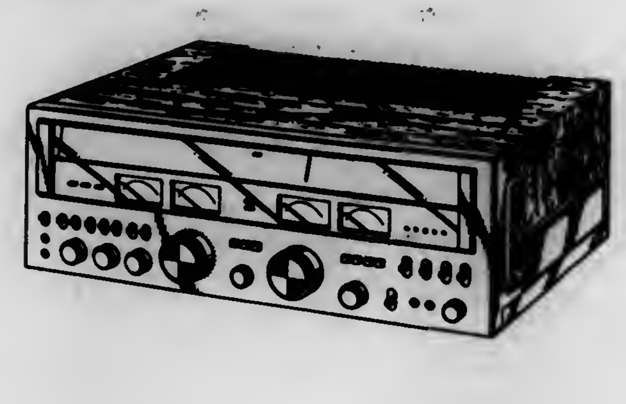
Filed Mar. 9, 1977, Ser. No. 776,045

Claims priority, application Japan, Sep. 13, 1976, 51/36208

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—96



250,535
COMBINED TUNER AND AMPLIFIER

Akira Kato, Chofu, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

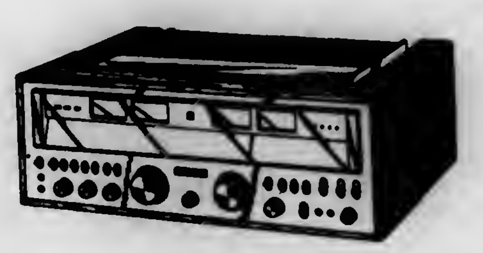
Filed Mar. 9, 1977, Ser. No. 776,049

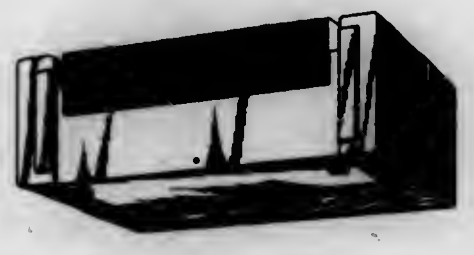
Claims priority, application Japan, Sep. 13, 1976, 51/36207

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—96





250,536
BEVERAGE DISPENSER

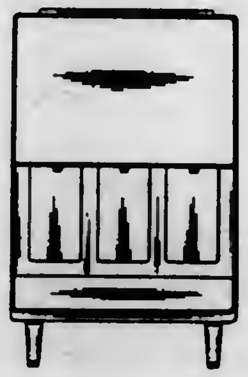
Robert E. Bourke, Westport, Conn., assignor to Lykes Pasco Packing Co., Dade City, Fla.

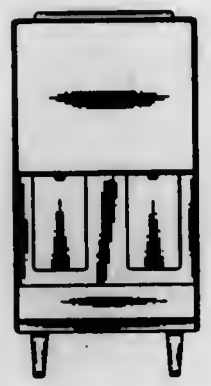
Filed Aug. 27, 1976, Ser. No. 718,150

Term of patent 14 years

Int. Cl. D15—*08*

U.S. Cl. D15—116





250,537
MOISTENER FOR STAMP OR THE LIKE

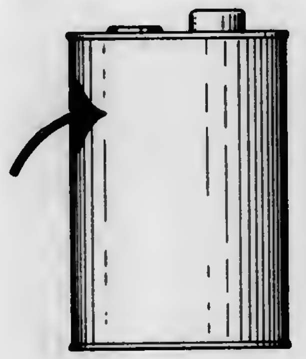
Ronald M. Stephens, 305 - 1400 Camosun, Victoria, B. C., Canada (V8V 4L4)

Filed Dec. 8, 1976, Ser. No. 748,775

Term of patent 14 years

Int. Cl. D19—*02*

U.S. Cl. D19—70



250,538
HANDLE FOR A FAUCET

Victor R. Hart, 156 Camden High St., London NW1 one, England

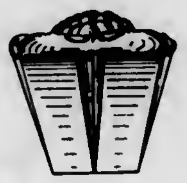
Filed May 31, 1977, Ser. No. 802,288

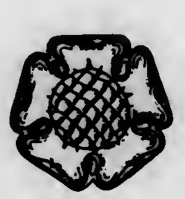
Claims priority, application United Kingdom, Dec. 10, 1976, 978209/76

Term of patent 14 years

Int. Cl. D23—*01*

U.S. Cl. D23—28





250,539
FREE STANDING STOVE

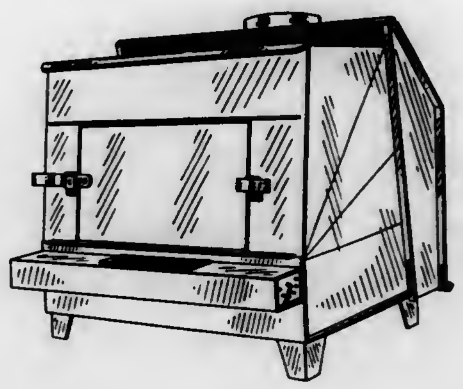
Norman W. Twiss, Box 486, Star Route, and Norman W. Twiss, Box 525, Star Route, both of Gales Creek, Oreg. 97117

Filed Jul. 11, 1977, Ser. No. 811,521

Term of patent 14 years

Int. Cl. D23—*03*

U.S. Cl. D23—97



250,540
WOOD-BURNING STOVE

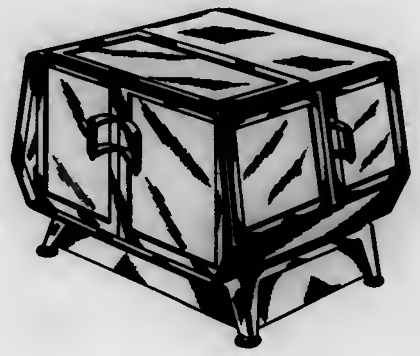
Arthur J. Luscombe, Dolliver, Iowa 50531

Filed Jun. 30, 1977, Ser. No. 811,998

Term of patent 14 years

Int. Cl. D23—*03*

U.S. Cl. D23—97



250,541
WOOD BURNING STOVE WITH DOOR

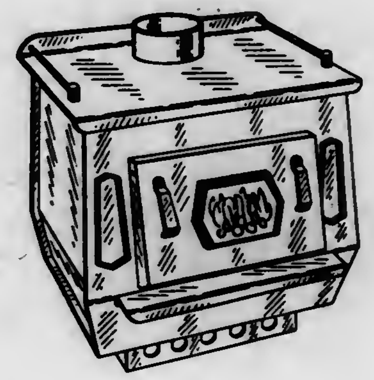
Roger A. Chinn; Edna A. Chinn, both of Tigard; John E. Blaser, Tualatin, and Keith N. Bender, Aloha, all of Oreg., assignors to Woodcutter's Manufacturing, Inc.

Filed Oct. 14, 1977, Ser. No. 842,376

Term of patent 14 years

Int. Cl. D23—*03*

U.S. Cl. D23—97



250,542

CONTAINER FOR SOLID AIR FRESHENER

Hisao Murakami, Fukae-minamimachi, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

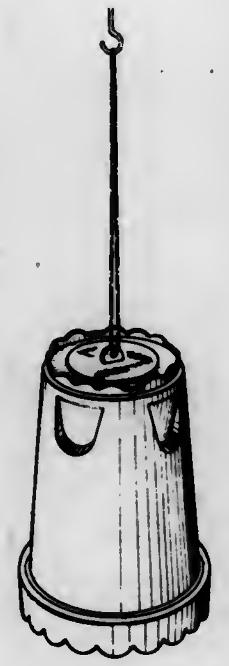
Filed Nov. 14, 1977, Ser. No. 851,421

Claims priority, application Japan, May 13, 1977, 52/18399

Term of patent 14 years

Int. Cl. D23—*04*

U.S. Cl. D23—150



250,543

LIQUID STERILIZER ASSEMBLY

James H. Lewis, 68 Glass Ave., London, Ontario, N5W 1Z7, Canada

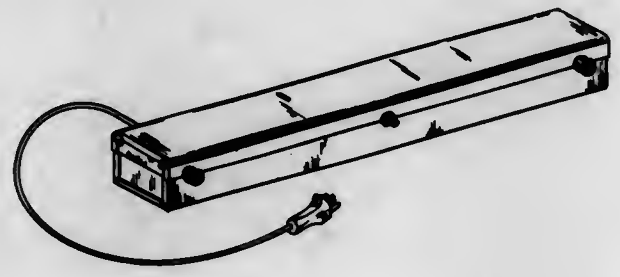
Filed Aug. 2, 1976, Ser. No. 710,362

Claims priority, application Canada, Feb. 5, 1976, 05-02-76-3

Term of patent 14 years

Int. Cl. D24—*01*

U.S. Cl. D24—9



250,544

DENTAL ROOT-CANAL BROACH

Henri Leonard, Besancon, France, assignor to Micro-Mega S.A.

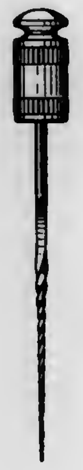
Filed Jan. 4, 1977, Ser. No. 756,606

Claims priority, application France, Jul. 9, 1976, 76 1117

Term of patent 14 years

Int. Cl. D24—*02*

U.S. Cl. D24—10



250,545

TEAT

Eric K. Hurst, London, England, assignor to Lewis Woolf Griptight Limited, Birmingham, England

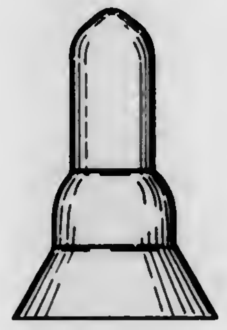
Filed Sep. 5, 1975, Ser. No. 610,896

Claims priority, application United Kingdom, Jun. 14, 1975, 971493/75

Term of patent 14 years

Int. Cl. D28—*01;* D24—*04*

U.S. Cl. D24—47



250,546

DOUCHE APPLIANCE

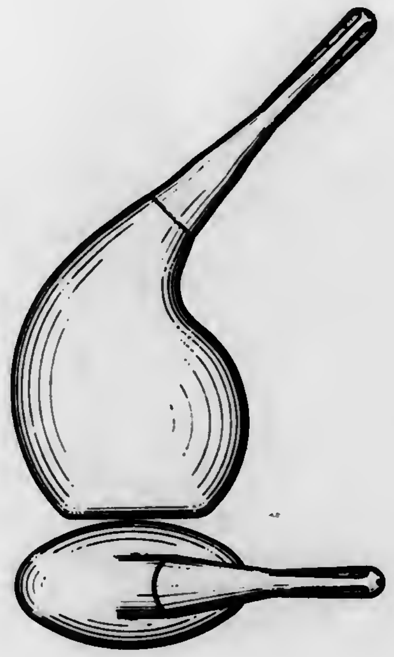
Ernest W. Pick, Cos Cob; Joseph M. Denaro, Stamford, and Henry R. Goerke, Norwalk, all of Conn., assignors to The Purdue Frederick Company, New York, N.Y.

Filed Sep. 8, 1977, Ser. No. 831,596

Term of patent 14 years

Int. Cl. D24—*04*

U.S. Cl. D24—60



250,547

RAZOR

Thomas E. Palmer, Cramlington, England, assignor to Wilkinson Sword Limited

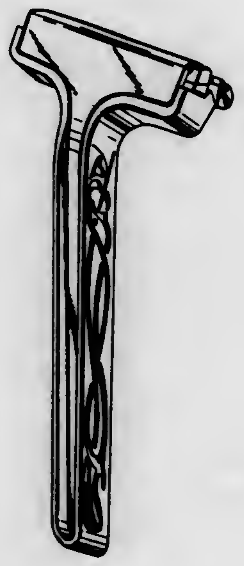
Filed Mar. 8, 1977, Ser. No. 775,570

Claims priority, application United Kingdom, Sep. 9, 1976, 977078/76

Term of patent 14 years

Int. Cl. D28—*03*

U.S. Cl. D28—46



250,548

MAKE-UP CASE

Gabriele Rost, Elisabethenstr. 62, D-6050 Offenbach, Fed. Rep. of Germany

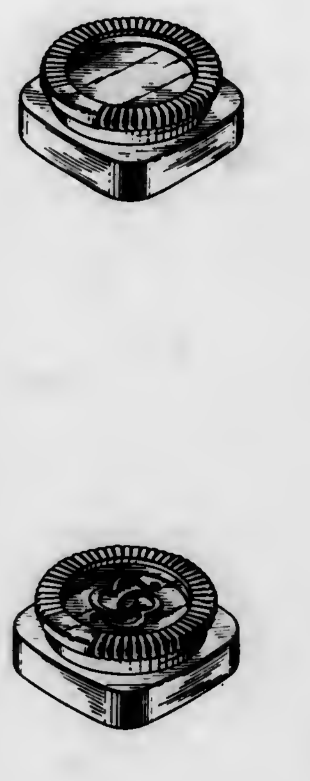
Filed Mar. 17, 1977, Ser. No. 778,568

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1976, 73MR8545

Term of patent 7 years

Int. Cl. D3—*01*

U.S. Cl. D28—79



250,549

SADDLE

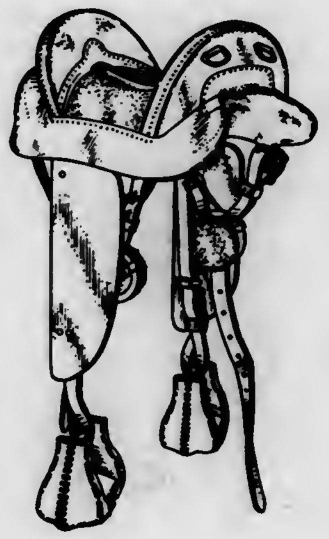
Charles W. Stoddard, 1040 Fitzgerald Ave., Gilroy, Calif. 95020

Filed Oct. 4, 1976, Ser. No. 729,080

Term of patent 14 years

Int. Cl. D30—*04*

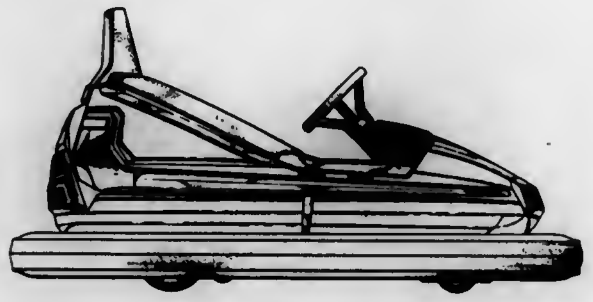
U.S. Cl. D30—20



250,550

AMUSEMENT BUMPER CAR

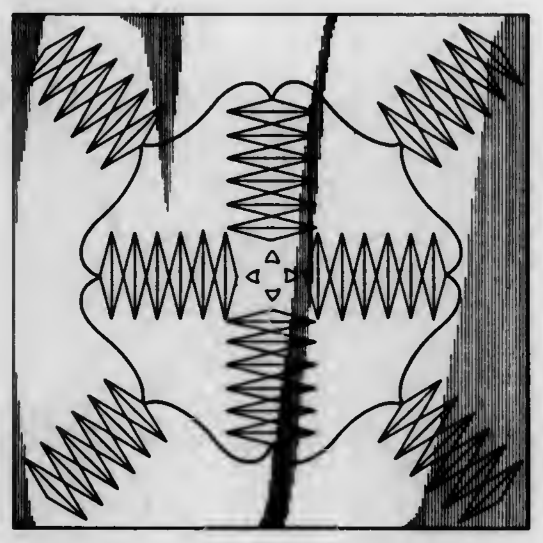
Gaston Reverchon, Route de Courbuisson, Samois 77920, France
Filed Sep. 8, 1976, Ser. No. 721,415
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 L



250,551

GAMEBOARD

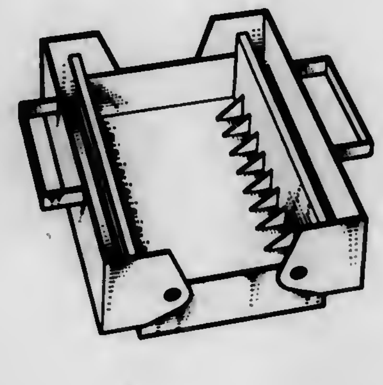
Martin Normart, 36 Garfield Ave., Norwood, Pa. 19074
Filed Feb. 23, 1977, Ser. No. 771,192
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



250,552

CARRYING CASE FOR TAPE CASSETTES

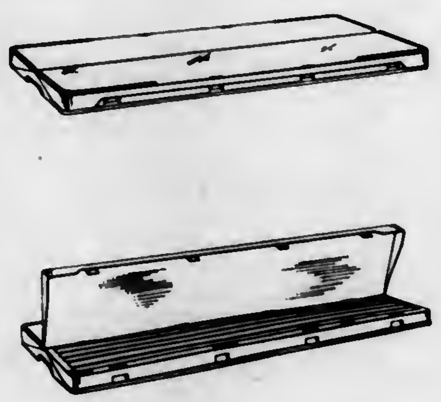
Ole Winther, Helsingör, Denmark, assignor to Esselte Obergs AB, Stockholm, Sweden
Filed Aug. 11, 1976, Ser. No. 713,551
Claims priority, application Sweden, Feb. 16, 1976, 760362
The portion of the term of this patent subsequent to Apr. 18, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



250,553

GEOLOGICAL SPECIMEN CASE

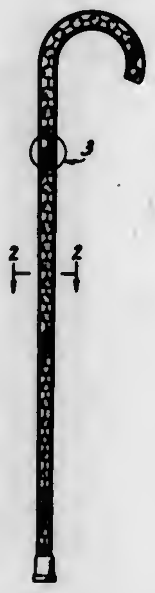
Jon Myhre, Stjordal, Norway, assignor to Fangel & Co. A/S, Oslo, Norway
Continuation-in-part of Ser. No. 822,830, Aug. 8, 1977, abandoned. This application Jan. 16, 1978, Ser. No. 869,925
Claims priority, application Norway, Feb. 9, 1977, 7758062
Term of patent 3½ years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



250,554

CANE

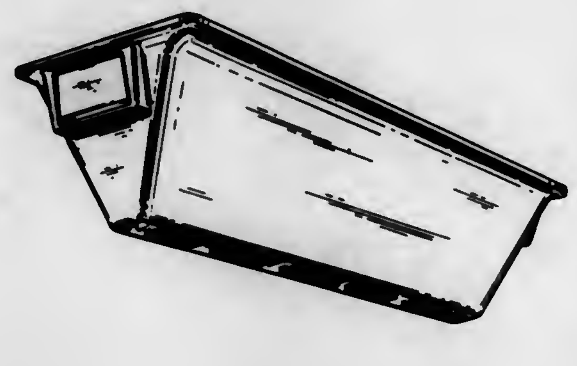
Sheila Hardy, 106 S. Western Ave., Bartlett, Ill. 60103
Filed Jun. 17, 1976, Ser. No. 696,885
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—5



250,555

ILLUMINATED OVERHEAD ADVERTISING DISPLAY

Paul Belokin, Jr., R.R. #4, Hayward, Wis. 54843
Filed Jul. 20, 1977, Ser. No. 817,127
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF DECEMBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Nattermann & Cie. GmbH: *See*—
  Betzing, Hans; and Lekim, Dac, 4,129,650, Cl. 424-211.000.
AB Volvo Penta: *See*—
  Pichl, Heinz, 4,129,103, Cl. 123-52.00R.
AB Ziristor: *See*—
  Knutsson, Kent I., 4,129,467, Cl. 156-84.000.
Abate, Giorgio, to Solai Vignola di Fabiani Orlando e C. - Societa in nome collettivo. Prefabricated building components of expanded material and cement. 4,128,975, Cl. 52-125.000.
Abdallah, Nessib, to Civil & Civic Pty. Limited. Reinforced concrete construction. 4,128,980, Cl. 52-251.000.
Abex Corporation: *See*—
  Ridenour, Charles E.; Fabert, Herman A., Jr.; Tasker, John; and Larson, Hugo R., 4,129,773, Cl. 219-146.230.
Accumulatorenwerk Hoppecke: *See*—
  Lahme, Norbert; and Sassmannshausen, Gunter, 4,129,687, Cl. 429-86.000.
ACF Industries, Inc.: *See*—
  Shocklee, James L.; and Tayloe, Edward H., 4,129,048, Cl. 74-612.000.
Adams, Harold E.; Boutsicaris, Stephen P.; and Halasa, Adel F., to Firestone Tire & Rubber Company, The. Process for the hydrohalogenation of buta-diene-containing polymers. 4,129,699, Cl. 526-42.000.
Adcock, Thomas P. Solar heating and cooling system. 4,129,177, Cl. 165-48.00S.
Addressograph-Multigraph Corporation: *See*—
  Masiello, Felix R., 4,129,266, Cl. 242-68.400.
Adorney, Charles S. Safety razor with serpentine handle. 4,128,937, Cl. 30-47.000.
ADS Systems, Inc.: *See*—
  Dolan, James P., 4,129,030, Cl. 73-23.000.
Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
  Deflandre, Jean; Matarasso, Pierre; and Traisnel, Jean-Pierre, 4,129,360, Cl. 350-289.000.
  Warolin, Christian J.; Chabrier de Lassauniere, Pierre; and Thuong, Nguyen T., 4,129,660, Cl. 424-203.000.
Agency of Industrial Science & Technology: *See*—
  Shikata, Nobuo; and Ito, Sukemitsu, 4,129,485, Cl. 204-144.500.
AGFA-Gevaert Aktiengesellschaft: *See*—
  Lohmann, Joachim W.; Lapp, Otto; and Kuhn, Gerhard, 4,129,446, Cl. 96-74.000.
Ahlgren, Nils H. Methods for guiding slip-forms in slip-form concreting. 4,129,631, Cl. 264-33.000.
Aida Engineering, Ltd.: *See*—
  Oishi, Yoshihiro, 4,129,071, Cl. 100-53.000.
Aizawa, Hiroshi: *See*—
  Yamamichi, Masayoshi; Iura, Yukio; Tezuka, Nobuo; Watanabe, Satoshi; Uchidoi, Masanori; and Aizawa, Hiroshi, 4,129,877, Cl. 354-271.000.
Akashi, Teruo; Watanabe, Kazuaki; and Terakura, Yukio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Gear means of an automatic transmission for automobiles. 4,129,050, Cl. 74-750.00R.
Aketa, Kan: *See*—
  Taguchi, Kazumasa; Nishida, Tsutomu; Kitajima, Masaharu; Aketa, Kan; Fujita, Isao; Onoda, Mamoru; Imanishi, Nobuyuki; and Watanabe, Ryo, 4,129,437, Cl. 75-5.000.
Aktiebolaget Electrolux: *See*—
  Hammar, John R., 4,129,408, Cl. 431-251.000.
Aktiebolaget Fellingsbro Verkstader: *See*—
  Brehmer, Roland; and Sorberg, Bengt, 4,129,149, Cl. 137-599.100.
Aktiebolgatet Svenska Flaktfabriken: *See*—
  Andersson, Rune S.; and Berglund, Svante O., 4,129,428, Cl. 55-379.000.
Akzona Incorporated: *See*—
  Praetorius, Heinz; Seibert, Karl; and Holtvoigt, Werner, 4,129,717, Cl. 528-421.000.
  Rauwendaal, Christiaan J., 4,129,386, Cl. 366-88.000.
  Schwartzkopff, Udo; and Fischer, Horst, 4,129,097, Cl. 119-28.000.
  Zengel, Hans; and Bergfeld, Manfred, 4,129,740, Cl. 560-48.000.
Alberto-Culver Company: *See*—
  Dasher, George F.; and Fiebig, August E., Jr., 4,129,505, Cl. 252-8.800.
Alles, Harold G., to Bell Telephone Laboratories, Incorporated. PCM data throttle. 4,129,751, Cl. 179-15.0BW.
Allgeier, Michael, to Vivitar Corporation. Light mixing apparatus and photographic enlarger embodying same. 4,129,372, Cl. 355-1.000.
Alliages Frittes S.A.: *See*—
  Pinettes, Jacques; and Chaix, Jean, 4,129,771, Cl. 219-104.000.
Allied Chemical Corporation: *See*—
  Baker, Josefina T.; Pisanchyn, John; and Sifniades, Stylianos, 4,129,594, Cl. 260-544.00D.
  Fitch, Robert H.; Kurtz, Bruce E.; and Smura, Bronislaw B., 4,129,495, Cl. 204-279.000.
  Garner, Eugene F.; and Hamilton, Brian K., 4,128,996, Cl. 60-205.000.
  Marshall, Robert M.; Pak, Sung K.; and Dardoufas, Kimon C., 4,129,507, Cl. 252-8.900.
Allis-Chalmers Corporation: *See*—
  Bliemeister, Robert M., 4,129,036, Cl. 73-140.000.
Alps Electric Co., Ltd.: *See*—
  Miyata, Hiroyasu; and Iwasaki, Sadayoshi, 4,129,766, Cl. 200-308.000.
  Murata, Taneo, 4,129,763, Cl. 200-159.00A.
  Ohkita, Masao; and Sato, Hidetoshi, 4,129,764, Cl. 200-159.00R.
Alps Motorola: *See*—
  Suzuki, Shoji, 4,129,890, Cl. 360-94.000.
Althauser, William E.; and Barnes, Richard, A., to International Business Machines Corporation. Method and apparatus for producing compensated signals for individual light sensors arranged in a predetermined relation. 4,129,853, Cl. 340-146.3AG.
Aluminum Company of America: *See*—
  Deveney, Charles H., 4,129,024, Cl. 72-329.000.
Amagami, Keizo; Nakamura, Masatatsu; Kominami, Hideyuki; Funakoshi, Kouji; Kiuchi, Mitsuyuki; and Mizukawa, Takumi, to Matsushita Electric Industrial Company, Limited. Induction heating apparatus having timing means responsive to temporary removal of cooking implement. 4,129,767, Cl. 219-10.49R.
Amanita Sound, Inc.: *See*—
  Griffin, Timothy L., Jr., 4,129,752, Cl. 179-146.00E.
American Chemical Consulting Corp.: *See*—
  Stockel, Richard F., 4,129,094, Cl. 119-1.000.
American Cyanamid Company: *See*—
  Bernstein, Seymour; Lenhard, Robert H.; and Conrow, Ransom B., 4,129,591, Cl. 260-506.000.
  Conrow, Ransom B.; and Bernstein, Seymour, 4,129,590, Cl. 260-506.000.
  Franz, Curtis A., 4,129,452, Cl. 106-243.000.
  Giglia, Robert D., 4,129,861, Cl. 340-324.00R.
  Kaplan, Earl; and Pinto, Frank G., 4,129,538, Cl. 260-23.70M.
  Mino, Guido; and Behrens, Rudolf A., 4,129,708, Cl. 526-218.000.
  Panzer, Hans P.; O'Connor, Michael N. D.; and Baccei, Louis J., 4,129,532, Cl. 526-75.000.
  Westman, Morton A., 4,129,415, Cl. 8-102.000.
American Home Products Corporation: *See*—
  Sellstedt, John H.; and Klaubert, Dieter H., 4,129,735, Cl. 544-132.000.
  Stein, Reinhardt P.; and Delecki, Daniel J., 4,129,561, Cl. 260-239.0BB.
AMF Incorporated: *See*—
  Cupp, William A., 4,129,207, Cl. 198-445.000.
Ampex Corporation: *See*—
  Harshberger, Robert P., Jr., 4,129,810, Cl. 318-317.000.
Amrine, Bruce A., to Sarns, Inc. Venous return catheter and a method of using the same. 4,129,129, Cl. 128-214.00R.
AMSTED Industries Incorporated: *See*—
  Polanin, Walter R., 4,129,219, Cl. 213-100.00R.
Anderson, Andrew W.; and Mateyka, Milan, to Scandia Packaging Machinery Company. Method and assembly for feeding articles. 4,129,205, Cl. 198-358.000.
Anderson, Eldon E., to Gerling Moore, Inc. Method and apparatus for microwave heating of flowable material. 4,129,768, Cl. 219-10.55A.
Anderson, George J.; Desmond, Timothy F.; and Santer, J. Owen, to Monsanto Company. Coating compositions comprising alkoxymethylaminotriazines, polyols and polyhydroxy oligomers. 4,129,681, Cl. 428-524.000.
Anderson, Paul R. Bubble discharging device. 4,128,962, Cl. 46-7.000.
Andersson, Bo Allan; and Callahan, Richard P. Stabilizing check valve. 4,129,144, Cl. 137-541.000.
Andersson, Rune S.; and Berglund, Svante O., to Aktiebolgatet Svenska Flaktfabriken. Compact filter mounted in a cassette frame. 4,129,428, Cl. 55-379.000.
Ando, Hisashi: *See*—
  Soeno, Ko; Iizuka, Tomio; Doi, Toshio; Ando, Hisashi; Oyama, Testuo; Sakamoto, Hiroshi; and Misumi, Akira, 4,129,801, Cl. 313-346.00R.
Anell, Wolfgang, to August Bilstein, Firma. Lifting jack for vehicles. 4,129,286, Cl. 254-103.000.
Angello, Joseph P., to United States of America, Army. Thermoelectric generator overload protective device using hysterisis control. 4,129,893, Cl. 361-21.000.
Ango, Alvino J. Bi-directional, multiple range torque measuring device. 4,129,035, Cl. 73-136.00B.

Anthony, James R.: *See*—
Happel, Hermann E.; and Anthony, James R., 4,128,924, Cl. 24-230.0AL.
Anthony, Patrick R., to Electrohome Limited. Systems for supplying unmodulated baseband signals to television receivers. 4,129,884, Cl. 358-188.000.
Anton Steinecker Maschinenfabrik GmbH: *See*—
Wolfseder, Alfons; Urban, Hans; and Redl, Simon, 4,129,504, Cl. 210-247.000.
Applied Research Commodities Ind., Inc.: *See*—
Spector, Donald, 4,128,966, Cl. 47-69.000.
Araki, Kunio: *See*—
Makuuchi, Keizo; Araki, Kunio; Takagi, Tohru; Nakayama, Hiroyuki; and Kozu, Haruo, 4,129,487, Cl. 204-159.140.
ARCO Polymers, Inc.: *See*—
Fava, Ronald A., 4,129,614, Cl. 260-876.00B.
Fava, Ronald A., 4,129,615, Cl. 260-876.00B.
Fava, Ronald A., 4,129,619, Cl. 260-901.000.
Wright, Harold A., 4,129,707, Cl. 526-204.000.
Arendt, Armin, to Robert Bosch GmbH. Voltage regulator circuit for motor vehicle generator with feedback to oppose regulator transients. 4,129,819, Cl. 322-28.000.
Argentine, Jeffery C.; and Minton, Darrell B., to National Controls, Inc. Postal meter actuator. 4,129,815, Cl. 318-601.000.
Argus Chemical Corporation: *See*—
Lewis, Roger N.; Pastorino, Ronald L.; and Wilts, James F., 4,129,613, Cl. 260-861.000.
Armond, John W., to BOC Limited. Gas separation. 4,129,424, Cl. 55-25.000.
Armstrong Cork Company: *See*—
Bennett, Roxanne L.; and Tshudy, James A., 4,129,416, Cl. 8-115.000.
Kennedy, Wayne C., 4,129,637, Cl. 264-112.000.
Arthur D. Little, Inc.: *See*—
McCullough, John E., 4,129,405, Cl. 418-55.000.
Asahi-Dow Limited: *See*—
Yasuike, Akio; Kataoka, Hiroshi; and Toyouchi, Kaoru, 4,129,635, Cl. 264-45.500.
Asano, Koichi: *See*—
Machi, Sueo; Matsui, Yasushi; Sugishita, Akio; Sugo, Takanobu; Taniguchi, Hiroaki; Asano, Koichi; and Fujiwara, Hiroshi, 4,129,617, Cl. 260-879.000.
Ashland Oil, Inc.: *See*—
Michelson, Anatol, 4,129,168, Cl. 164-159.000.
Moore, William P., Jr., 4,129,533, Cl. 521-117.000.
Astech: *See*—
Fage, Etienne, 4,129,269, Cl. 244-110.00B.
Atari, Inc.: *See*—
Stubben, David R., 4,129,883, Cl. 358-104.000.
Atlantic Richfield Company: *See*—
Stover, Dennis E., 4,129,334, Cl. 299-4.000.
Atlas Copco Aktiebolag: *See*—
Lavon, Erik V.; Lemcke, Bo; and Karlfors, Levi J., 4,129,335, Cl. 299-17.000.
Atobe, Daisuke: *See*—
Awaji, Toshio; and Atobe, Daisuke, 4,129,609, Cl. 260-837.00R.
Aubert, Jacques; Carles, Maurice; and Neige, Roger, to Commissariat A l'Energie Atomique. Uranium isotopic enrichment. 4,129,481, Cl. 204-1.500.
August Bilstein, Firma: *See*—
Anell, Wolfgang, 4,129,286, Cl. 254-103.000.
Auxilec: *See*—
Bregeault, Marc; Lecoeuche, Jacques; and Margrain, Pierre, 4,129,808, Cl. 318-254.000.
Aversano, Frank J.; Carver, Leon; and Seifert, Ludwik I., to Sperry Rand Corporation. Wide angle anamorphic display projection system. 4,129,365, Cl. 353-99.000.
Awaji, Toshio; and Atobe, Daisuke, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Method for improving storage stability of epoxy ester thermosetting resins with thiuram compounds. 4,129,609, Cl. 260-837.00R.
Axelrod, Robert J.; Mark, Victor; and Wilson, Phillip S., to General Electric Company. Plasticized with a minor amount of an oligomeric polymeric polycarbonate. 4,129,546, Cl. 260-31.80T.
B. F. Goodrich Company, The: *See*—
Kroenke, William J., 4,129,540, Cl. 260-28.50A.
Riew, Changkiu K., 4,129,670, Cl. 427-386.000.
Skillicorn, Douglas E., 4,129,713, Cl. 526-320.000.
Babcock & Wilcox Limited: *See*—
Campbell, John W. E., 4,129,098, Cl. 122-4.00D.
Baccei, Louis J.: *See*—
Panzer, Hans P.; O'Connor, Michael N. D.; and Baccei, Louis J., 4,129,532, Cl. 526-75.000.
Bacotti, Peter A.; and Kraft, Frederick M. Eye testing device for prescribing eyeglasses. 4,129,361, Cl. 351-22.000.
Bader, Ernest, Jr.; Deckard, John I.; and Kuiper, Dan B., to General Motors Corporation. Electromagnetic unit fuel injector. 4,129,253, Cl. 239-88.000.
Bader, Ernest, Jr.; Deckard, John I.; and Kuiper, Dan B., to General Motors Corporation. Electromagnetic unit fuel injector. 4,129,254, Cl. 239-96.000.
Bader, Ernest, Jr.; Deckard, John I.; and Kuiper, Dan B., to General Motors Corporation. Electromagnetic unit fuel injector. 4,129,255, Cl. 239-96.000.
Bader, Ernest, Jr.; Deckard, John I.; and Kuiper, Dan B., to General Motors Corporation. Electromagnetic unit fuel injector. 4,129,256, Cl. 239-96.000.
Bahr, Gunter F.: *See*—
Wied, George L.; Bahr, Gunter F.; and Puls, James H., 4,129,381, Cl. 356-36.000.
Bailey, Edward L., to Owens-Illinois, Inc. Variable strength plastic wrap on glass bottles. 4,129,225, Cl. 215-12.00R.
Baker, Josefina T.; Pisanchyn, John; and Sifniades, Stylianos, to Allied Chemical Corporation. Process for the manufacture of aromatic dicarboxylic acid chlorides. 4,129,594, Cl. 260-544.00D.
Baker, Joseph. Kite parachute launcher. 4,129,274, Cl. 244-155.00R.
Baker, Marlin J. Garbage disposal. 4,129,260, Cl. 241-46.00A.
Baker Perkins Holdings Limited: *See*—
Edwards, Albert, 4,129,165, Cl. 164-7.000.
Baker Perkins Inc.: *See*—
Todd, David B., 4,129,249, Cl. 233-7.000.
Balatan, Sergio E., to M&T Chemicals Inc. Interpolymers, method of preparing the same and emulsions thereof, and metal cans coated with the interpolymers. 4,129,712, Cl. 526-304.000.
Bales, O. Sherman: *See*—
Rustin, Rudolph B., Jr.; and Bales, O. Sherman, 4,129,246, Cl. 229-23.00R.
Ban, Itsuki; and Mochizuki, Kazunori. Magnetic recording/reproducing apparatus using cassette. 4,129,889, Cl. 360-75.000.
Bandurco, Victor T.; and Levine, Seymour, to Ortho Pharmaceutical Corporation. Substituted pyrrolo [1,2-c] quinazolines and pharmaceutical compositions and methods employing them. 4,129,653, Cl. 424-251.000.
Bandy, Clarence L., Jr., to Westvaco Corporation. Reeled web unwind stand. 4,129,265, Cl. 242-58.200.
Banke, Kerry O., to Samuel G. Dawson. Method and apparatus for providing differential temperature thermostat control for solar hot water systems. 4,129,118, Cl. 126-271.000.
Bar, Ulrich: *See*—
Tschunt, Edgar; Platz, Winfried; Bar, Ulrich; and Heinz, Lothar, 4,129,784, Cl. 250-505.000.
Barnes, Richard A.: *See*—
Althauser, William E.; and Barnes, Richard A., 4,129,853, Cl. 340-146.3AG.
Barnett, Gabriel; Gershaw, Nathan; and Mausner, Jack J., to Helena Rubinstein, Inc. Sunscreen compositions. 4,129,645, Cl. 424-60.000.
Barritt, Murrell R. Easily attachable and detachable gauge for re-locating tested bevel gears on a gear-cutting machine. 4,128,945, Cl. 33-181.00R.
Barth, Wayne E., to Pfizer Inc. 4(Tetrazol-5-yl)-Δ^3-cephem compounds. 4,129,732, Cl. 544-23.000.
Baruzzi, Giovanni: *See*—
Credali, Lino; Baruzzi, Giovanni; and Guidotti, Vincenzo, 4,129,559, Cl. 528-337.000.
BASF Aktiengesellschaft: *See*—
Keppler, Hans G.; Stahnecker, Erhard; and Moeller, Rolf, 4,129,706, Cl. 526-201.000.
Kiehs, Karl; and Huber, Rolf, 4,129,601, Cl. 568-593.000.
Patsch, Manfred; and Hettche, Albert, 4,129,563, Cl. 260-239.900.
BASF Wyandotte Corporation: *See*—
Cenker, Moses; and Kan, Peter T., 4,129,693, Cl. 521-106.000.
Muzzio, John A., 4,129,718, Cl. 536-4.000.
Basi, Jagtar S., to International Business Machines Corporation. Post-polishing cleaning of semiconductor surfaces. 4,129,457, Cl. 134-2.000.
Batelle Memorial Institute: *See*—
Walker, Ray A.; Reich, Fred R.; and Russell, James T., 4,129,384, Cl. 356-381.000.
Baudin, Bernard, to Etablissements P. Ferbeck & Vincent. Rotary injector for liquid residue incinerating furnace. 4,129,081, Cl. 10-238.000.
Bauer, Josef; Krause, Herbert; and Meltsch, Hans-Juergen, to Siemens Aktiengesellschaft. Tool for opening cable fittings. 4,128,931, Cl. 29-239.000.
Bayer Aktiengesellschaft: *See*—
Boden, Heinrich; and Knipp, Ulrich, 4,129,636, Cl. 264-51.000.
Dhein, Rolf; and Fleiter, Lothar, 4,129,537, Cl. 260-23.0EP.
Markusch, Peter; Dieterich, Dieter; and Dietrich, Manfred, 4,129,696, Cl. 521-154.000.
Schapel, Dietmar; and von Gizycki, Ulrich, 4,129,697, Cl. 521-176.000.
Serini, Volker; Friedhofen, Gerhard; Frietag, Dieter; and Heuser, Jurgen, 4,129,612, Cl. 260-860.000.
Baylis, Anthony B.: *See*—
Slinkard, William E.; and Baylis, Anthony B., 4,129,592, Cl. 562-549.000.
Bazile, Yves: *See*—
Pigerol, Charles; de Cointet de Fillain, Paul; and Bazile, Yves, 4,129,572, Cl. 260-326.12R.
Beard, Colin C.: *See*—
Roszkowski, Adolph P.; Beard, Colin C.; Dvorak, Charles; and Weinhardt, Klaus, 4,129,661, Cl. 424-273.00R.
Beaver, Millard B.; Johnson, Leonard L.; Hart, Harry L.; and Mahoney, Tennis, to Lincoln Logotype Co., Inc. Multi-line imprinting wheel apparatus. 4,129,074, Cl. 101-35.000.
Beck, Orville F.: *See*—
Theurer, John; Guenzel, William C.; and Beck, Orville F., 4,129,395, Cl. 403-317.000.
Beck, Wilfried: *See*—
Ruegg, Andre; and Beck, Wilfried, 4,129,280, Cl. 248-183.000.
Bedall, Hans; and Rentzsch, Max, to DIEHL. Fragmentation casing for shells, warheads and the like and method of making same. 4,129,061, Cl. 86-20.00B.

Beeck, Carlos L.: *See*—
Telewski, Fred J.; Beeck, Carlos L.; and Snow, Philip B., 4,129,897, Cl. 361-399.000.
Begrich, Rainer, to Ciba-Geigy Corporation. Triazinyl-antraquinone dyestuffs. 4,129,736, Cl. 544-189.000.
Behrens, Rudolf A.: *See*—
Mino, Guido; and Behrens, Rudolf A., 4,129,708, Cl. 526-218.000.
Beilfuss, Wolfgang: *See*—
Eggensperger, Heinz; and Beilfuss, Wolfgang, 4,129,517, Cl. 252-186.000.
Bell, Edward L.: *See*—
Fick, Edwin O., Jr.; and Bell, Edward L., 4,128,916, Cl. 17-52.000.
Bell, Stephen L., to Imperial Chemical Industries Limited. Manufacture of halogenated compounds. 4,129,603, Cl. 260-653.000.
Bell Telephone Laboratories, Incorporated: *See*—
Alles, Harold G., 4,129,751, Cl. 179-15.0BW.
Duttweiler, Donald L., 4,129,753, Cl. 179-170.200.
Jaeger, Raymond E.; and Presby, Herman M., 4,129,433, Cl. 65-2.000.
Knab, Emil D., 4,129,468, Cl. 156-148.000.
Limb, John O., 4,129,882, Cl. 358-13.000.
von Roesgen, Charles A., 4,129,349, Cl. 339-17.00C.
Bell, Theodore F. Bicycle. 4,129,317, Cl. 280-281.00R.
Belli, Johann B.: *See*—
van der Pool, Kees; Rosinski, Louis S., Jr.; and Belli, Johann B., 4,129,823, Cl. 324-20.00R.
Bellus, Daniel; Fory, Werner; and Tobler, Hans, to Ciba-Geigy Corporation. Compositions for and method of influencing plant growth and novel 1-phenyl-2-oxo-pyrrolidine-4-carboxylic acid derivatives. 4,129,573, Cl. 260-326.450.
Bendibercia, S.A.: *See*—
Trenc, Ramon B., 4,129,340, Cl. 303-6.00R.
Bendix Corporation, The: *See*—
Johannesen, Donald D., 4,129,200, Cl. 188-71.100.
Pauwels, Edward M., 4,129,341, Cl. 303-6.00R.
Winters, Harry K.; and Chambers, Warren D., 4,129,202, Cl. 188-181.00T.
Benke, Frank W., to Electric Power Research Institute, Inc. Vaporization cooled electrical apparatus. 4,129,845, Cl. 336-57.000.
Bennelli, Dore D. Electronic device for controlling the winding off of material wound up on a core by tensiometric control. 4,129,154, Cl. 139-110.000.
Bennett, Roxanne L.; and Tshudy, James A., to Armstrong Cork Company. Process for shrinking nylon fabrics. 4,129,416, Cl. 8-115.000.
Benson, James L. Ski device. 4,129,313, Cl. 280-12.00H.
Bentley Engineering Group, Ltd.: *See*—
Bonetti, Danillo, 4,129,153, Cl. 139-28.000.
Bentley, William F.: *See*—
Luedtke, Arthur; and Bentley, William F., 4,129,874, Cl. 343-854.000.
Bergfeld, Manfred: *See*—
Zengel, Hans; and Bergfeld, Manfred, 4,129,740, Cl. 560-48.000.
Berglund, Svante O.: *See*—
Andersson, Rune S.; and Berglund, Svante O., 4,129,428, Cl. 55-379.000.
Bergmann, Klaus W.; Steffen, Gunther B. H.; and Monkemoller, Herbert, to Bergmann & Steffen OhG. Machine for machining tubes having helical weld seams. 4,129,062, Cl. 90-11.00R.
Bergmann & Steffen OhG: *See*—
Bergmann, Klaus W.; Steffen, Gunther B. H.; and Monkemoller, Herbert, 4,129,062, Cl. 90-11.00R.
Bergstrom, Theodore R., to Thermograte, Inc. Combination glass door and heat-exchanging grate for fireplaces. 4,129,113, Cl. 126-121.000.
Berman, Nelson. Roadway vehicle. 4,129,203, Cl. 191-48.000.
Bernstein, Seymour; Lenhard, Robert H.; and Conrow, Ransom B., to American Cyanamid Company. Ureidophenylenebis(substituted imino)multianionic substituted dinaphthalene sulfonic acids and salts. 4,129,591, Cl. 260-506.000.
Bernstein, Seymour: *See*—
Conrow, Ransom B.; and Bernstein, Seymour, 4,129,590, Cl. 260-506.000.
Berry, Samuel M.: *See*—
Pierce, William C.; Berry, Samuel M.; and Johnson, Arthur D., 4,129,026, Cl. 72-367.000.
Berthier, Pierre, to Manufacture de Vilebrequins de Lorette S.A. Hole-cutting tool with a free central portion and ejector apparatus for the core of metal formed by the tool. 4,129,401, Cl. 408-59.000.
Berthold, Richard, to Sandoz Ltd. 4-Styryl-hexahydro-4-indolinols. 4,129,658, Cl. 424-274.000.
Bertin & Cie: *See*—
Rouquie, Georges, 4,129,668, Cl. 427-57.000.
Bertschy, Pierre Y.: *See*—
Kruseman, Jan; Bertschy, Pierre Y.; and Hidalgo, Jaime, 4,129,664, Cl. 426-7.000.
Betitschke, Bruce A.: *See*—
Bulanda, John J.; Guzay, Casimir M.; and Betitschke, Bruce A., 4,128,919, Cl. 24-20.0TT.
Betulius, Gilbert E., to Chem-Farm Inc. Earth working and fluid distribution apparatus. 4,129,082, Cl. 111-7.000.
Betzing, Hans; and Lekim, Dac, to A. Nattermann & Cie. GmbH. Novel phospholipid derivatives of prostaglandins and process of their preparation. 4,129,650, Cl. 424-211.000.
Beynon, John O., to Ceiling & Drywall Products Limited. Controlled expansion suspended ceiling grid beam. 4,128,978, Cl. 52-232.000.
Bickel, Wolf, to Krautkramer-Branson, Incorporated. Method and apparatus for receiving ultrasonic waves by optical means. 4,129,041, Cl. 73-657.000.
Biddick, Royce E., to Gould Inc. Process and apparatus for manufacture of an electrode. 4,129,633, Cl. 264-40.300.
Bieberich, Paul, to Fort Wayne Wire Die, Inc. Wire drawing die and method of making the same. 4,129,052, Cl. 76-107.00A.
Biedacha, Roman; Kurdziel, Wladyslaw; Kaczor, Janusz; Smeder, Adam; Kolaczkowski, Jacek; Olszowski, Tadeusz; Nawrocki, Adam; and Rzeszut, Janina, to Przedsiebiorstwo Projektowania I Realizacji Inwestycji przemyslu Maszynowego "Bipromasz", Instytut Odlewnictwa. Apparatus for making shells from thermosetting liquid compounds. 4,129,169, Cl. 164-166.000.
Bigarella, Federico. Vial-syringe. 4,129,130, Cl. 128-218.00P.
Bigelow, John E.; and Peroutky, Donald C., to General Electric Company. Stacked blade matrix printer heads. 4,129,390, Cl. 400-121.000.
Billett, Ronald J.; and Harper, Bruce M., to FMC Corporation. Tablet dispenser. 4,129,230, Cl. 221-268.000.
Bilow, Norman; Landis, Abraham L.; and Miller, Leroy J., to Hughes Aircraft Company. Nitrile substituted polyimide oligomers. 4,129,570, Cl. 528-128.000.
Bird, Thomas L.: *See*—
Jones, Ivor W.; Robinson, Graham; and Bird, Thomas L., 4,129,690, Cl. 429-104.000.
Bisbing, Robert H., to Southco, Inc. Snap-in receptacle assembly for fastener. 4,128,923, Cl. 24-221.00R.
Bittler, Dieter: *See*—
Wiechert, Rudolf; Bittler, Dieter; Kerb, Ulrich; Casals-Stenzel, Jorge; and Losert, Wolfgang, 4,129,564, Cl. 260-239.570.
Black Clawson Company, The: *See*—
Vokes, Robert F., 4,129,259, Cl. 241-20.000.
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Armond, John W., 4,129,424, Cl. 55-25.000.
Bochner, Barry R. Device, composition and method for identifying microorganisms. 4,129,483, Cl. 195-100.000.
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Gerstine, Milton I.; Goldberg, Joshua I.; Futatsugi, Setsuo; Ueda, Kazuo; Seo, Ryozo; Iwasaki, Koji; and Uemura, Makoto, 4,129,275, Cl. 244-181.000.
Robinson, Ronald H.; and Weiland, Richard H., 4,129,270, Cl. 244-135.00A.
Boerman, Lee D.: *See*—
Shneider, David; and Boerman, Lee D., 4,129,126, Cl. 128-80.00A.
Boggs, Roger L.: *See*—
Vanlandingham, Harold W.; Boggs, Roger L.; Bullock, David A.; and Maytum, James N., 4,128,932, Cl. 29-401.00R.
Boisserand, Marc. Fluid distributor and fluid distributor cell. 4,129,150, Cl. 137-872.000.
Bomberger, Howard B., Jr., to RMI Company. Method of adding trace elements to base metals. 4,129,438, Cl. 75-10.00C.
Bond, Ronald L.; Daughdrill, E. Chris; Brice, Henry T.; and Horton, Phineas E., III, to Swacars, Inc. Towing vehicle with elevated ramp. 4,129,314, Cl. 280-425.00R.
Bonetti, Danillo, to Bentley Engineering Group, Ltd. Loom for weaving. 4,129,153, Cl. 139-28.000.
Bonin, Yves, to Rhone-Poulenc Industries. Process for preparing foams from polyisocyanates and polyepoxides. 4,129,695, Cl. 521-108.000.
Bonvallet, Duane J. Acceleration compensated device for ski bindings. 4,129,245, Cl. 280-628.000.
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Roberts, Philip D.; Randall, Geoffrey L. P.; Simon, David G.; and Booth, Jeffrey, 4,129,702, Cl. 526-71.000.
Booth, Stuart E.: *See*—
Grange, Arthur; and Booth, Stuart E., 4,129,387, Cl. 366-119.000.
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Matheson, Alister F.; Tosh, Douglas J.; and Borr, Mitchell, 4,129,542, Cl. 260-28.5AS.
Bourguignon, Ludwig. Magnetic closure device. 4,128,920, Cl. 24-201.00B.
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Bowerman, William J.; James, Stanley L.; and Vixie, Dennis E., to BRS, Inc. Multilayered sole athletic shoe with improved foam midsole. 4,128,950, Cl. 36-30.00R.
Boyer, James A., to General Motors Corporation. Magnetic pickup type ignition distributor. 4,129,107, Cl. 123-146.50A.
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Park, Anthony J.; and Sturt, Alan C., 4,129,698, Cl. 526-3.000.
Bradley, Steven A.: *See*—
Janowski, Kenneth R.; Shum, Ming S.; and Bradley, Steven A., 4,129,181, Cl. 165-133.000.
Bregeault, Marc; Lecoeuche, Jacques; and Margrain, Pierre, to Auxilec. Electronic control arrangement which can be used in particular for driving a brushless and slip-ringless motor and an installation incorporating such an arrangement. 4,129,808, Cl. 318-254.000.
Brehmer, Roland; and Sorberg, Bengt, to Aktiebolaget Fellingsbro Verkstader; and Erik Sorberg Armaturfabrik Aktiebolag. Control valve means. 4,129,149, Cl. 137-599.100.
Brentini, Attilio. Closure device. 4,129,021, Cl. 70-456.00R.

- Bressler, Peter W., to Edmund Scientific Company. Tripod. 4,129,278, Cl. 248-165.000.
- Brice, Henry T.: *See*—
  - Bond, Ronald L.; Daughdrill, E. Chris; Brice, Henry T.; and Horton, Phineas E., III, 4,129,314, Cl. 280-425.00R.
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  - Tamura, Yoshitaka, 4,129,201, Cl. 188-76.000.
- Brinegar, Paul E. Electrical conductor and short circuit locator. 4,129,825, Cl. 324-52.000.
- British Gas Corporation: *See*—
  - Wood, Andrew, 4,129,422, Cl. 48-62.00R.
- British Petroleum Company Limited, The: *See*—
  - Cairns, Roger J. R.; and Howard nee Murtagh, Joan M., 4,129,499, Cl. 210-23.00R.
  - Harvey, Lawrence, 4,129,117, Cl. 126-271.000.
  - Kisselow, Alexander W.; and Wulk, Peter K., 4,129,512, Cl. 252-51.50A.
- Brock, Elwood M., to Hunterdon Transformer Company. Improved variable reactance transformer. 4,129,820, Cl. 323-56.000.
- Brolund, Theodore F.; and Scott, William B., to W. A. Whitney Corp. Method for coping I-beams. 4,129,460, Cl. 148-9.00R.
- Bromley, James E.; Mowe, Wayne T.; and Stutz, Frank, to Monsanto Company. Deep-dyeing polyester spinning process. 4,128,989, Cl. 57-247.000.
- Broussely, Michel, to Saft-Societe des Accumulateurs Fixes et de Traction. Organic solvent electrolytes for high specific energy primary cells. 4,129,691, Cl. 429-197.000.
- Brown, Boveri & Company Limited: *See*—
  - Korischum, Fritz, 4,129,745, Cl. 174-209.000.
- Brown, David A.; and Carmean, E. A., Jr. Doll display receptacle. 4,129,210, Cl. 206-45.310.
- Brown, John M.: *See*—
  - Kooi, John H.; Schure, Ralph M.; and Brown, John M., 4,129,607, Cl. 260-835.000.
- Brown, William L., to SI Handling Systems, Inc. Article dispensing apparatus. 4,129,229, Cl. 221-129.000.
- BRS, Inc.: *See*—
  - Bowerman, William J.; James, Stanley L.; and Vixie, Dennis E., 4,128,950, Cl. 36-30.00R.
- Bruchet, Michel, to Societe Anonyme dite: UNELEC. Circuit-breaker operating mechanism. 4,129,762, Cl. 200-153.00G.
- Bruno Albrecht KG: *See*—
  - Dietz, Bernhard, 4,129,364, Cl. 353-99.000.
- Brusselle, Victor. Machine for the shaping of meat dishes. 4,128,915, Cl. 17-32.000.
- Bryant, Duane K.: *See*—
  - Colburn, Samuel E.; Bryant, Duane K.; Platz, Gerald M.; and Vetter, Clarence J., Jr., 4,129,714, Cl. 526-331.000.
- Buccellato, Joseph L.: *See*—
  - Hern, John F.; and Buccellato, Joseph L., 4,129,325, Cl. 292-127.000.
- Buchan, John D.: *See*—
  - France, James R.; Buchan, John D.; Tyrer, Richard G.; De Ceuleneer, Adolf; and Van Steenkiste, Robert, 4,129,091, Cl. 118-50.000.
- Bucking, Hans-Walter: *See*—
  - Wallhausser, Karl H.; Cuntze, Ulrich; May, Adolf; and Bucking, Hans-Walter, 4,129,506, Cl. 252-8.800.
- Buder, Wolfgang; Pletka, Hans-Dieter; Michel, Rudolf; Schwarz, Rudolf; and Dusing, Gerhard, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of sulfur containing organosilicon compounds. 4,129,585, Cl. 260-448.80R.
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- Bulanda, John J.; Guzay, Casimir M.; and Betitschke, Bruce A., to Panduit Corp. Metal tie. 4,128,919, Cl. 24-20.0TT.
- Bullock, David A.: *See*—
  - Vanlandingham, Harold W.; Boggs, Roger L.; Bullock, David A.; and Maytum, James N., 4,128,932, Cl. 29-401.00R.
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- Burkholder, Harvey Z., to Favorite Manufacturing, Inc. Truss clip. 4,129,279, Cl. 248-165.000.
- Burlington Industries, Inc.: *See*—
  - Greer, James E., 4,129,017, Cl. 68-15.000.
- Burns, Timothy L.: *See*—
  - Whittington, Billy J.; Burns, Timothy L.; and Welsh, Alan B., 4,129,055, Cl. 84-1.010.
- Burroughs Corporation: *See*—
  - Kasu, Abdul L.; and Tustaniwskyj, Jerry I., 4,129,892, Cl. 360-130.000.
  - Ragle, Herbert U.; and DeMoss, Dean, 4,129,891, Cl. 360-98.000.
- Busch, Theodore N., to Caswell Equipment Company. Apparatus for hit scoring targets. 4,129,299, Cl. 273-102.20S.
- Butterworth, George A. M.; Elias, Robert T.; and Miller, Wayne D., to Johnson & Johnson. Fibrous material and method of making the same. 4,129,132, Cl. 128-287.000.
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  - Dreyer, Dennis G.; Foley, Edward M.; and Rogers, Herbert E., Jr., 4,129,444, Cl. 75-251.000.
  - Matthews, Steven J.; Klein, H. Joseph; and Hodge, Frank G., 4,129,464, Cl. 148-162.000.
- Caffarel, Jean-Claude; Papillon, Bernard; and Neel, Jean, to Rhone-Poulenc Industries. Surface-active composition based on non-ionic surfactants. 4,129,514, Cl. 252-89.00R.
- Cahill, Charles A. Bicycle carry aid. 4,129,318, Cl. 280-289.00A.
- Cairns, Roger J. R.; and Howard nee Murtagh, Joan M., to British Petroleum Company Limited, The. Oil separation material. 4,129,499, Cl. 210-23.00R.
- Callahan, Richard P.: *See*—
  - Andersson, Bo Allan; and Callahan, Richard P., 4,129,144, Cl. 137-541.000.
- Calspan Corporation: *See*—
  - Daiber, John W.; and Raymonda, John W., 4,129,835, Cl. 331-94.50G.
  - Schneider, Clayton J., Jr.; and Ruda, Ernest V., 4,129,078, Cl. 102-89.0CD.
- Camin Research Corp.: *See*—
  - Lester, Robert W.; and Hotto, Robert, 4,129,125, Cl. 128-2.05R.
- Campbell, John W. E., to Babcock & Wilcox Limited. Fluidized beds. 4,129,098, Cl. 122-4.00D.
- Campbell, Kenneth S.: *See*—
  - Clement, Carl J.; Stengel, Fred H.; and Campbell, Kenneth S., 4,129,211, Cl. 206-213.100.
- Campbell, Talmage D. Portable spray painting station. 4,129,217, Cl. 211-95.000.
- Canon Kabushiki Kaisha: *See*—
  - Fujii, Motoharu; Muramatsu, Takao; Koumura, Noboru; Sugiura, Susumu; Takekawa, Nobuhiro; and Tsukada, Syusei, 4,129,072, Cl. 101-1.000.
  - Komine, Yoshio, 4,129,363, Cl. 352-29.000.
  - Miyamoto, Koichi; Tohyama, Yoshikuni; Sagara, Seiji; Kimura, Yoshimasa; and Ishida, Masato, 4,129,377, Cl. 355-14.000.
  - Momiyama, Kikuo, 4,129,359, Cl. 350-183.000.
  - Yamamichi, Masayoshi; Iura, Yukio; Tezuka, Nobuo; Watanabe, Satoshi; Uchidoi, Masanori; and Aizawa, Hiroshi, 4,129,877, Cl. 354-271.000.
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- Carding Specialists (Canada) Limited: *See*—
  - Varga, John M. J., 4,128,917, Cl. 19-105.000.
- Carey, Lee F.; and Friona, Anthony J., to Textron Inc. Method of fabricating an expulsion tank diaphragm. 4,129,025, Cl. 72-348.000.
- Carl Hurth Maschinen- und Zahnradfabrik: *See*—
  - Eichinger, Johann; and Hirt, Manfred, 4,129,394, Cl. 403-57.000.
- Carles, Maurice: *See*—
  - Aubert, Jacques; Carles, Maurice; and Neige, Roger, 4,129,481, Cl. 204-1.500.
- Carlin, Richard D. Automatic flushing device. 4,129,140, Cl. 137-124.000.
- Carmean, E. A., Jr.: *See*—
  - Brown, David A.; and Carmean, E. A., Jr., 4,129,210, Cl. 206-45.310.
- Carpenter, Robert J.; and Yee, Kenneth W., to United States of America, Commerce. High speed, wide dynamic range analog-to-digital conversion. 4,129,864, Cl. 340-347.0AD.
- Carrow, Guy E.: *See*—
  - Scott, John N., Jr.; and Carrow, Guy E., 4,129,282, Cl. 249-137.000.
- Carter, William C.: *See*—
  - Fordyce, Homer E.; and Carter, William C., 4,129,625, Cl. 261-111.000.
- Carver, Leon: *See*—
  - Avernano, Frank J.; Carver, Leon; and Seifert, Ludwik I., 4,129,365, Cl. 353-99.000.
- Casals-Stenzel, Jorge: *See*—
  - Wiechert, Rudolf; Bittler, Dieter; Kerb, Ulrich; Casals-Stenzel, Jorge; and Losert, Wolfgang, 4,129,564, Cl. 260-239.570.
- Casutt, Toni. Folding box for containing and displaying articles such as fruits and vegetables. 4,129,248, Cl. 229-41.00B.
- Caswell Equipment Company: *See*—
  - Busch, Theodore N., 4,129,299, Cl. 273-102.20S.
- Cataldo, John B.: *See*—
  - Keller, Frank R.; Cataldo, John B.; Kussy, Frank W.; and DiMarco, Bernard, 4,129,843, Cl. 335-174.000.
- Caterpillar Mitsubishi Ltd.: *See*—
  - Kishitani, Keisuke, 4,129,045, Cl. 74-255.00R.
- Caterpillar Tractor Co.: *See*—
  - Hasselbacher, Roland E., 4,129,185, Cl. 169-62.000.
  - Hedgcock, Richard L., 4,129,204, Cl. 192-89.00B.
  - Lemcke, Howard R., Jr., 4,129,046, Cl. 74-473.00P.
  - Niles, Albert B.; Franzen, Larry H.; Gardner, William J.; and Grob, Russel W., 4,129,034, Cl. 73-117.300.
  - Vanlandingham, Harold W.; Boggs, Roger L.; Bullock, David A.; and Maytum, James N., 4,128,932, Cl. 29-401.00R.
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  - Peterson, Anders A.; and Catlin, Francis D., 4,129,220, Cl. 214-1.400.
- Cecka, Andrew M.; Dano, Pol; and Pawling, Paul G., to Fansteel, Inc. Method for preparing a composite high strength to weight structure having shell and sleeved core. 4,129,634, Cl. 264-45.300.
- Ceiling & Drywall Products Limited: *See*—
  - Beynon, John O., 4,128,978, Cl. 52-232.000.

- Celanese Corporation: *See*—
  - Slinkard, William E.; and Baylis, Anthony B., 4,129,592, Cl. 562-549.000.
- Celmer, Walter D.; Cullen, Walter P.; Jefferson, Mark T.; Moppett, Charles E.; Routien, John B.; and Sciavolino, Frank C., to Pfizer Inc. Polycyclic ether antibiotic. 4,129,578, Cl. 260-345.70R.
- Celtite, Inc.: *See*—
  - Rausch, Paul G., 4,129,007, Cl. 405-261.000.
- Cenker, Moses; and Kan, Peter T., to BASF Wyandotte Corporation. Urethane-modified isocyanurate foams having enhanced physical properties. 4,129,693, Cl. 521-106.000.
- Ceramic Cooling Tower Company: *See*—
  - Furr, Dale D., 4,129,627, Cl. 261-151.000.
- Chabrier de Lassauniere, Pierre: *See*—
  - Warolin, Christian J.; Chabrier de Lassauniere, Pierre; and Thuong, Nguyen T., 4,129,660, Cl. 424-203.000.
- Chaikin, Malcolm; and Nossar, Mstiślav S., to Unisearch Limited. Relative humidity control. 4,129,250, Cl. 236-44.00A.
- Chaix, Jean: *See*—
  - Pinettes, Jacques; and Chaix, Jean, 4,129,771, Cl. 219-104.000.
- Chambers, Warren D.: *See*—
  - Winters, Harry K.; and Chambers, Warren D., 4,129,202, Cl. 188-181.00T.
- Charbonneau, Robert R.; and Spatafore, Robert M., to Minnesota Mining and Manufacturing Company. Method of constructing a sloped roof. 4,128,984, Cl. 52-746.000.
- Charvat, Vernon K., to Osborn Manufacturing Corporation, The. Flexible polishing wheel and method for producing same. 4,128,972, Cl. 51-298.00R.
- Chavannes, Theodore E., to Dracon Industries. High efficiency DC to DC converter. 4,129,788, Cl. 307-11.000.
- Chem-Farm Inc.: *See*—
  - Betulius, Gilbert E., 4,129,082, Cl. 111-7.000.
- Chemische Werke Huels Aktiengesellschaft: *See*—
  - Rueter, Joern; and Grundamann, Raban, 4,129,551, Cl. 260-45.70R.
- Chen, Augustin T.; Farrissey, William J., Jr.; and Nelb, Robert G., II, to Upjohn Company, The. Polyester amides suitable for injection molding. 4,129,715, Cl. 528-67.000.
- Chen, Keith A., to Wisconsin Gas Company. Laminated current surge protector. 4,129,894, Cl. 361-117.000.
- Cheng, Dah Y., to International Power Technology, Inc. Regenerative parallel compound dual-fluid heat engine. 4,128,994, Cl. 60-39.050.
- Cheng, Richard M. H.: *See*—
  - Fahim, Atef E. F.; and Cheng, Richard M. H., 4,129,064, Cl. 92-129.000.
- Chestnov, Valery F.; and Shibanov, Mikhail V. Arrangement for assembling vacuum tube bases. 4,128,925, Cl. 29-25.200.
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  - Hutchison, Stanley O., 4,129,308, Cl. 277-188.00R.
  - Messner, Harold D., 4,129,821, Cl. 324-8.000.
  - Olson, Carl B.; Weisner, Carl S.; and Parker, Phillip H., 4,129,632, Cl. 264-40.100.
  - Simic, Milutin, 4,129,453, Cl. 106-287.320.
  - Suzuki, Shigeto, 4,129,595, Cl. 260-544.00Y.
  - Tamm, Paul W., 4,129,497, Cl. 208-138.000.
- Chiba, Seishi: *See*—
  - Okutomi, Tsutomu; Yoshino, Hisashi; and Chiba, Seishi, 4,129,760, Cl. 200-144.00B.
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  - Yonezawa, Setsuo; Kawakami, Tsuneta; Shimada, Tatsuo; and Chida, Yoshinori, 4,129,860, Cl. 340-324.0AD.
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  - King, Walter J.; Snook, James C.; and Peters, Kenneth, 4,129,692, Cl. 429-234.000.
- Chloride Incorporated: *See*—
  - Malinowski, William J., 4,129,383, Cl. 356-439.000.
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- Christenson, Roger M.; Dowbenko, Rostyslaw; and Makhlouf, Joseph M., to PPG Industries, Inc. Preparation of polymer based powder coatings by ionizing radiation. 4,129,489, Cl. 204-159.220.
- Chubb, Talbot A. Refrigeration storage and cooling tank. 4,129,014, Cl. 62-333.000.
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  - Kobayashi, Kengo; Mogami, Masayuki; Tanaka, Shigeyoshi; Nakao, Manabu; and Tamura, Sadao, 4,129,610, Cl. 260-837.00R.
- Ciba-Geigy Corporation: *See*—
  - Begrich, Rainer, 4,129,736, Cl. 544-189.000.
  - Bellus, Daniel; Fory, Werner; and Tobler, Hans, 4,129,573, Cl. 260-326.450.
  - Huebner, Charles F., 4,129,655, Cl. 424-267.000.
  - Zondler, Helmut; and Moser, Roland, 4,129,556, Cl. 528-97.000.
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  - Capecchi, Floriano, 4,129,406, Cl. 425-46.000.
- Civil & Civic Pty. Limited: *See*—
  - Abdallah, Nessib, 4,128,980, Cl. 52-251.000.
- CKD Praha, oborovy podnik: *See*—
  - Reichel, Pavel; Kafunek, Pavel; Kovar, Jiri; Pokorny, Oldrich; Zuna, Jaroslav; Kratina, Jindrich; and Pellant, Michal, 4,129,881, Cl. 357-82.000.
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- Clark, Norman O.; and Watson, James H. P., to English Clays Lovering Pochin & Co. Limited. Magnetic separation. 4,129,498, Cl. 209-213.000.
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  - Clark, Frederick P.; Johnson, Robert C.; and Topolewski, John, 4,129,527, Cl. 252-547.000.
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  - Fieldhouse, John W.; Graves, Daniel F.; Cole, William M.; Stayer, Mark L.; and Fenske, Steven L., 4,129,529, Cl. 528-168.000.
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  - Wrycraft, Norman E.; and Collins, Alistair K., 4,129,236, Cl. 222-570.000.
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  - Aubert, Jacques; Carles, Maurice; and Neige, Roger, 4,129,481, Cl. 204-1.500.
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  - Galaj, Stanislas; Hochon, Bernard; and Lerner, Pierre, 4,129,552, Cl. 260-45.9QB.
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  - de Zarauz, Yves, 4,129,705, Cl. 526-175.000.
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  - Ondetti, Miguel A.; and Condon, Michael E., 4,129,571, Cl. 260-326.200.
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  - Halm, Hans, 4,129,215, Cl. 209-610.000.
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  - Bernstein, Seymour; Lenhard, Robert H.; and Conrow, Ransom B., 4,129,591, Cl. 260-506.000.
- Contraves AG: *See*—
  - Ruegg, Andre; and Beck, Wilfried, 4,129,280, Cl. 248-183.000.
- Control Process, Inc.: *See*—
  - Kent, David P., 4,129,053, Cl. 83-69.000.
- Contronic Controls Limited: *See*—
  - Humphries, Peter E., 4,129,856, Cl. 340-554.000.
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  - Talbott, Roblee L., 4,129,206, Cl. 198-377.000.
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  - Ishiguro, Yasuo; and Wakazono, Kenji, 4,129,370, Cl. 354-234.000.
  - Okabe, Katsuhiko, 4,129,075, Cl. 101-99.000.
- Corbett, John M.: *See*—
  - Park, Chung P.; Corbett, John M.; and Griffin, Warren H., 4,129,530, Cl. 521-79.000.
- Corley, John C. Basting device. 4,129,066, Cl. 99-345.000.
- Corrie, John D.: *See*—
  - Walker, Clarence H., Jr.; and Corrie, John D., 4,129,459, Cl. 148-4.000.
- Corse, Louis G., to Machines Chambon. Apparatus for grooving sheet material. 4,129,065, Cl. 93-58.0ST.
- Coupar, Robert B. Fluid substance transporting and storage tanks. 4,129,232, Cl. 222-173.000.
- Courtaulds Limited: *See*—
  - Woodings, Calvin R., 4,129,679, Cl. 428-398.000.
- Coutin, Pierre F.: *See*—
  - Hasquenoph, Jean H.; and Coutin, Pierre F., 4,129,271, Cl. 244-137.00R.
- Cowan Plastic Products Corporation: *See*—
  - Marra, Michael R.; and Del Deo, Joseph, 4,128,955, Cl. 40-489.000.

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Credali, Lino; Baruzzi, Giovanni; and Guidotti, Vincenzo, to Montedison S.p.A. Reverse osmosis anisotropic membranes based on polypiperazine amides. 4,129,559, Cl. 528-337.000.
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  Wakeman, Alden H.; and Heiliger, Leonard R., 4,129,389, Cl. 366-144.000.
Cricchio, Renato, to Gruppo Lepetit S.p.A. Thiazolo-rifamycin derivatives and a method for their preparation. 4,129,562, Cl. 260-239.30P.
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  Kaufman, Michael P.; Kochenderfer, Randal S.; and Crivello, Frank A., 4,129,135, Cl. 131-243.000.
Cryer, Edward, to Lucas Industries Limited. Electrical switch assembly. 4,129,757, Cl. 200-4.000.
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Cunningham, Thomas J.; Schwartzberg, Harold L., deceased; and McGlynn, Joseph L., Jr., executor, to RCA Corporation. Solder connection between copper and aluminum conductors. 4,129,744, Cl. 174-94.00R.
Cunningham, Virginia L., to Rohm and Haas Company. Poly(dimethylaminoethyl methacrylate) and method of preparation. 4,129,534, Cl. 521-38.000.
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  Wallhausser, Karl H.; Cuntze, Ulrich; May, Adolf; and Bucking, Hans-Walter, 4,129,506, Cl. 252-8.800.
Cupp, William A., to AMF Incorporated. Product alignment mechanism. 4,129,207, Cl. 198-445.000.
Cusano, Dominic A.; Loughran, James A.; and Sun, Yen S. E. Double side cooled, pressure mounted semiconductor package and process for the manufacture thereof. 4,129,243, Cl. 228-122.000.
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  Golls, John W.; and Griep, Peter, 4,129,407, Cl. 425-87.000.
Cyprane North America, Inc.: *See*—
  Jones, Wilfred; Jones, Keith W.; and Sweatman, Travers F., 4,129,621, Cl. 261-39.00R.
Czech, James I.; and Ruble, Ernest B., to Whirlpool Corporation. Assembly method for a motor. 4,128,935, Cl. 29-596.000.
Dabbous, Mahmoud K., to Standard Oil Company (Indiana). Miscible drive in heterogeneous reservoirs. 4,129,182, Cl. 166-263.000.
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  Hoffmann, Rudiger, 4,129,143, Cl. 137-496.000.
  Korner, Wolf-Dietrich; and Hartmann, Otto, 4,129,404, Cl. 417-364.000.
  Schwuchow, Norbert, 4,129,330, Cl. 296-28.00F.
Damiano, Paul J., to United Technologies Corp. Fuel cell structure. 4,129,685, Cl. 429-38.000.
Dano, Pol, to Fansteel, Inc. Method for preparing a composite high strength to weight structure with fray resistance. 4,128,963, Cl. 264-46.600.
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  Cecka, Andrew M.; Dano, Pol; and Pawling, Paul G., 4,129,634, Cl. 264-45.300.
Dardoufas, Kimon C.: *See*—
  Marshall, Robert M.; Pak, Sung K.; and Dardoufas, Kimon C., 4,129,507, Cl. 252-8.900.
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  Bond, Ronald L.; Daughdrill, E. Chris; Brice, Henry T.; and Horton, Phineas E., III, 4,129,314, Cl. 280-425.00R.
Davis, Paul K., to Pacific Roller Die Co., Inc. Double wall helical pipe and strip configuration for forming same. 4,129,152, Cl. 138-154.000.
Davis, William D., to General Electric Company. Discriminating halogen sensor. 4,129,418, Cl. 422-98.000.
Davis, William E. Nut-cracking implement. 4,128,938, Cl. 30-120.300.
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  Walther, William D., 4,129,336, Cl. 301-12.00R.
de Bakker, Jacques: *See*—
  Irnich, Werner; and de Bakker, Jacques, 4,129,133, Cl. 128-419.0PG.
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  Bader, Ernest, Jr.; Deckard, John I.; and Kuiper, Dan B., 4,129,253, Cl. 239-88.000.
  Bader, Ernest, Jr.; Deckard, John I.; and Kuiper, Dan B., 4,129,254, Cl. 239-96.000.
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  Pigerol, Charles; de Cointet de Fillain, Paul; and Bazile, Yves, 4,129,572, Cl. 260-326.12R.
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Defranould, Philippe, to Thomson-CSF. Piezo-resistive device for the electrical read-out of an optical image. 4,129,798, Cl. 310-313.000.
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  Nowick, Chester R.; and de Franza, Alfred, 4,129,410, Cl. 432-31.000.
Degras, James C.; and Lee, David N., to General Motors Corporation. Adjusting method and clip for retractor lock bar. 4,129,267, Cl. 242-107.40A.
deGuzman, Norberto T.: *See*—
  Pressman, Berton C.; and deGuzman, Norberto T., 4,129,659, Cl. 424-283.000.
Dehn Holding A/S: *See*—
  Hoeholt, Steffen, 4,129,332, Cl. 297-440.000.
Del Norte Technology, Inc.: *See*—
  Parker, William H., 4,129,184, Cl. 166-315.000.
Del Deo, Joseph: *See*—
  Marra, Michael R.; and Del Deo, Joseph, 4,128,955, Cl. 40-489.000.
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Demers, Arthur S.; and Hilz, Lloyd A., to Montreal Engineering Company, Limited. Under ice pipelaying. 4,129,011, Cl. 405-169.000.
DeMoss, Dean: *See*—
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DeMusis, Ralph T. Method of restoring worn turbine components. 4,128,929, Cl. 29-156.80B.
Dennis, Richard: *See*—
  Deutsch, Albert A.; Dennis, Richard; and Gumbinner, Robert, 4,129,486, Cl. 204-159.190.
Depouilly, Bernard M. H.; and Issenmann, Edouard M. J. A. I., to Le Material Telephonique. Telephone exchange signalling unit. 4,129,756, Cl. 179-175.20R.
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  Thelen, Franz; and Weber, Henning, 4,129,004, Cl. 60-652.000.
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  Buder, Wolfgang; Pletka, Hans-Dieter; Michel, Rudolf; Schwarz, Rudolf; and Dusing, Gerhard, 4,129,585, Cl. 260-448.80R.
  Maierhofer, Alfred; and Wagner, Hans, 4,129,593, Cl. 562-557.000.
Deveney, Charles H., to Aluminum Company of America. Method and apparatus for forming elongated, tapered wall shells. 4,129,024, Cl. 72-329.000.
Deverell, Christopher; and Wells, Ronald W., to Imperial Chemical Industries Limited. Splicing process and apparatus. 4,129,469, Cl. 156-157.000.
Devine, Thomas M., Jr., to General Electric Company. Inertia welding process for making an anode assembly. 4,129,241, Cl. 228-113.000.
de Wit, Hendrik, to Hunter Douglas International N.V. Weight and weight end piece for vertical slat blind. 4,128,914, Cl. 16-1.00R.
DeWitt, Marion A., to Goodyear Tire & Rubber Company, The. Pneumatic tire. 4,129,162, Cl. 152-354.0RB.
de Zarauz, Yves, to Compagnie Generale des Etablissements Michelin. Polymerization process. 4,129,705, Cl. 526-175.000.
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  Moll, Manfred; D'Hardmemare, Christian; and Midoux, Nicolas, 4,129,029, Cl. 73-19.000.
Dhein, Rolf; and Fleiter, Lothar, to Bayer Aktiengesellschaft. Air-drying acrylate lacquer binders. 4,129,537, Cl. 260-23.0EP.
D'Hondt, August J. Plant stake. 4,128,965, Cl. 47-47.000.
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  Longo, James J., 4,129,456, Cl. 134-1.000.
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  Pohto, Gerald R.; and Olson, Richard O., 4,129,292, Cl. 269-126.000.
  Tighe, Michael R.; and McCutchen, Hugh L., 4,129,493, Cl. 204-228.000.
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Dickson, Jocelyn: *See*—
  Hermann, William J., Jr., 4,129,419, Cl. 422-64.000.
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DIEHL: *See*—
  Bedall, Hans; and Rentzsch, Max, 4,129,061, Cl. 86-20.00B.
Dieterich, Dieter: *See*—
  Markusch, Peter; Dieterich, Dieter; and Dietrich, Manfred, 4,129,696, Cl. 521-154.000.

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Dietz, Bernhard, to Bruno Albrecht KG. Film projector. 4,129,364, Cl. 353-99.000.
DiMarco, Bernard: *See*—
  Keller, Frank R.; Cataldo, John B.; Kussy, Frank W.; and DiMarco, Bernard, 4,129,843, Cl. 335-174.000.
Dimmick, Joseph G.; Weingartner, William J.; Fields, Alan S.; Fairhead, Donald L.; and Musson, Rosemary, to United States of America, Navy. Combination pursuit and compensatory display system. 4,129,087, Cl. 114-144.00E.
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  Soeno, Ko; Iizuka, Tomio; Doi, Toshio; Ando, Hisashi; Oyama, Testuo; Sakamoto, Hiroshi; and Misumi, Akira, 4,129,801, Cl. 313-346.00R.
Dolan, James P., to ADS Systems, Inc. Sensing apparatus and method. 4,129,030, Cl. 73-23.000.
Dolan, John W. Arm wrestling device. 4,129,297, Cl. 272-67.000.
Doring, Gerhard, to Julius & August Erbsloh, Firma. Method of making a thermally insulated window frame. 4,128,934, Cl. 29-460.000.
Dorius, John O., to Elsters, Inc. Exhaust hood canopy having a multi slot venturi outlet. 4,129,121, Cl. 126-299.00D.
Dornan, Arthur E., to Massey-Ferguson Inc. Control arrangement. 4,129,047, Cl. 74-474.000.
Dout, James A.; and Foreman, Robert E., to Sterilaire Medical, Inc. Patient isolation room with laminar flow feature. 4,129,122, Cl. 128-1.00R.
Dow Chemical Company, The: *See*—
  Childress, David L.; Hayes, William V.; and Poppe, Richard L., 4,129,600, Cl. 260-604.00R.
  McKendry, Lennon H., 4,129,733, Cl. 544-131.000.
  McKendry, Lennon H., 4,129,734, Cl. 544-131.000.
  Park, Chung P.; Corbett, John M.; and Griffin, Warren H., 4,129,530, Cl. 521-79.000.
Dowbenko, Rostyslaw: *See*—
  Christenson, Roger M.; Dowbenko, Rostyslaw; and Makhlouf, Joseph M., 4,129,489, Cl. 204-159.220.
Downer, John M.; Rodway, William G.; and Shipp, Lawrence S. J., to Imperial Chemical Industries Limited. Tetrafluoroethylene polymers. 4,129,618, Cl. 260-884.000.
Doyle, Walter M. Film thickness measuring apparatus and method. 4,129,781, Cl. 250-341.000.
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  Chavannes, Theodore E., 4,129,788, Cl. 307-11.000.
Draiswerke GmbH: *See*—
  Engels, Kaspar; and Wilhelm, Karlheinz, 4,129,261, Cl. 241-46.110.
Dreikorn, Hans W.: *See*—
  Hannes, George J.; Rohweder, Theodore R.; Dreikorn, Hans W.; and Shepherd, Philip B., 4,129,674, Cl. 428-285.000.
Dreyer, Dennis G.; Foley, Edward M.; and Rogers, Herbert E., Jr., to Cabot Corporation. Power metallurgy compacts and products of high performance alloys. 4,129,444, Cl. 75-251.000.
Du-Al Manufacturing Company: *See*—
  Mott, Richard H.; and Pritchard, Clyde L., 4,129,258, Cl. 239-650.000.
Dubois, Grant E.: *See*—
  Escher, Sina; and Dubois, Grant E., 4,129,599, Cl. 260-586.00E.
Duke, Edward D.; and Riordan, Joan M., to International Harvester Company. Mechanical chain adjuster for scraper elevator chains. 4,128,952, Cl. 37-8.000.
Dunbar, George W. Flashlight with a rotatable lamp holder. 4,129,899, Cl. 362-109.000.
Dunker, Gerhard: *See*—
  Hildebrand, Helmut; and Dunker, Gerhard, 4,129,841, Cl. 333-84.00L.
Dunnington, Bruce W.; and Gernert, William B., to Glennel Corporation. Abrasive drill. 4,128,971, Cl. 51-204.000.
Duo-Fast Corporation: *See*—
  Geist, Bernard W., 4,129,240, Cl. 227-8.000.
Du Pont de Nemours, E. I., and Company: *See*—
  Craig, John D., 4,129,544, Cl. 260-29.300.
  Noyes, Paul R., 4,129,547, Cl. 260-33.40R.
  Scott, Paul T., 4,129,675, Cl. 428-288.000.
Dupont, John A.: *See*—
  Greenfield, Stanley A.; and Dupont, John A., 4,129,448, Cl. 106-15.00R.
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., to Smith, Kline & French Laboratories Limited. Imidazole guanidines and use as inhibitors of histamine activity. 4,129,657, Cl. 424-273.00R.
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  Buder, Wolfgang; Pletka, Hans-Dieter; Michel, Rudolf; Schwarz, Rudolf; and Dusing, Gerhard, 4,129,585, Cl. 260-448.80R.
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Dvorak, Charles: *See*—
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  Lowry, John A., 4,129,262, Cl. 241-197.000.
E. R. Squibb & Sons, Inc.: *See*—
  Hoehn, Hans, 4,129,738, Cl. 544-281.000.
  Ondetti, Miguel A.; and Natarajan, Sehsea I., 4,129,566, Cl. 546-326.000.
  Ondetti, Miguel A.; and Condon, Michael E., 4,129,571, Cl. 260-326.200.
  Slusarchyk, William A.; Gordon, Eric M.; and Koster, William H., 4,129,731, Cl. 544-21.000.
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  Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., 4,129,723, Cl. 542-416.000.
Eaton Corporation: *See*—
  Hammond, Howard A.; and Sardina, John F., 4,129,194, Cl. 180-68.500.
Ebara Corporation: *See*—
  Konno, Daisuke; and Tanaka, Tetsuo, 4,129,306, Cl. 277-30.000.
Ebauches SA: *See*—
  Robert-Grandpierre, Jean-Claude, 4,128,991, Cl. 58-23.00R.
Ebbert, LeRoy W. Steerable wheel vehicle suspension system. 4,129,316, Cl. 280-96.100.
Eberhardt, Harry A., to Hale Fire Pump Company. Self-priming centrifugal trash pump. 4,129,402, Cl. 415-53.00R.
Eby, Robert S.: *See*—
  Stephenson, Michael J.; and Eby, Robert S., 4,129,425, Cl. 55-44.000.
Eda, Tadahiro: *See*—
  Miyakawa, Seiichi; and Eda, Tadahiro, 4,129,375, Cl. 355-10.000.
Edmund Scientific Company: *See*—
  Bressler, Peter W., 4,129,278, Cl. 248-165.000.
Edwards, Albert, to Baker Perkins Holdings Limited. Preparation of foundry moulds and cores. 4,129,165, Cl. 164-7.000.
Eggensperger, Heinz; and Beilfuss, Wolfgang, to Sterling Drug Inc. Aqueous peroxy-containing concentrate. 4,129,517, Cl. 252-186.000.
Egger, Joseph; Mayer, Franz; Schwartz, Herbert; Sodler, Walter; Suard, Jean; and Tilse, Wilhelm, to Timex Corporation. Rocking motor for low cost quartz watch. 4,128,992, Cl. 58-23.00D.
Egger, Kurt: *See*—
  Ogrisek, Harriet H.; and Egger, Kurt, 4,129,379, Cl. 355-57.000.
Eggert, Uwe. Jet mouth piece. 4,129,257, Cl. 239-458.000.
Eichinger, Johann; and Hirt, Manfred, to Carl Hurth Maschinen- und Zahnradfabrik. Pivot pin for joints, particularly universal joints or the like. 4,129,394, Cl. 403-57.000.
Eigenmann, Ludwig. Snowplowing resisting road surface marking tape material. 4,129,673, Cl. 428-172.000.
Ekman, Lars; and Norman, Helge, to Norman, Helge. Bath equipment for disabled persons. 4,128,904, Cl. 4-185.00L.
Elcik, Robert G., to Stauffer Chemical Company. Fire retardant polyvinyl chloride containing compositions. 4,129,535, Cl. 260-23.0XA.
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  Benke, Frank W., 4,129,845, Cl. 336-57.000.
  Welk, Steven, 4,129,849, Cl. 338-21.000.
Electricity Council, The: *See*—
  Jones, Ivor W.; Robinson, Graham; and Bird, Thomas L., 4,129,690, Cl. 429-104.000.
Electrohome Limited: *See*—
  Anthony, Patrick R., 4,129,884, Cl. 358-188.000.
  Shih, Martin K. S., 4,129,886, Cl. 358-194.000.
Elektro-Apparatebau Olten A.G.: *See*—
  Thalmann, Rene A., 4,129,124, Cl. 128-2.05T.
Eli Lilly and Company: *See*—
  Michel, Karl H.; and Higgens, Calvin E., 4,129,721, Cl. 536-17.000.
Eliades, Theo I.; Muir, Ronald J.; and Horner, James D., to Surpass Chemicals Limited. Over-based magnesium salts of sulphonic acids. 4,129,589, Cl. 260-504.00A.
Elias, Robert T.: *See*—
  Butterworth, George A. M.; Elias, Robert T.; and Miller, Wayne D., 4,129,132, Cl. 128-287.000.
Ellison, Francis D. Method of making a surgical cast. 4,129,127, Cl. 128-89.00R.
Ellison, Robert A.; and Kotsonis, Frank N., to Wisconsin Alumni Research Foundation. Derivative of T-2 toxin and anguidine. 4,129,577, Cl. 260-345.200.
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  Elsbett, Ludwig; and Elsbett, Gunter, 4,129,108, Cl. 123-193.00P.
Elsbett, Ludwig; and Elsbett, Gunter. Piston for internal combustion engines. 4,129,108, Cl. 123-193.00P.
El-Souessi, Monti; Laffay, Gilbert; and Neuschwander, Jean-Christian. Impact device for marking, punching, stamping, forming, riveting and other related operations. 4,129,188, Cl. 173-120.000.
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  Dorius, John O., 4,129,121, Cl. 126-299.00D.
Emary, Robert J.: *See*—
  Rosencwaig, Allan; and Emary, Robert J., 4,129,385, Cl. 356-244.000.
Emmett, John C.: *See*—
  Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,129,657, Cl. 424-273.00R.
Endo, Shunzo: *See*—
  Murayama, Naohiro; Nakamura, Kenichi; and Endo, Shunzo, 4,129,608, Cl. 260-836.000.
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Engels, Kaspar; and Wilhelm, Karlheinz, to Draiswerke GmbH. Agitating mill. 4,129,261, Cl. 241-46.110.
English Clays Lovering Pochin & Co. Limited: *See*—
  Clark, Norman O.; and Watson, James H. P., 4,129,498, Cl. 209-213.000.

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  Gunther, Dieter; Schinzel, Erich; Erckel, Rudiger; and Rosch, Gunter, 4,129,412, Cl. 8-1.00W.
Erickson, Marlo W. V.; and Volk, Stanley W. Variable gear ratio chain drive system for bicycles. 4,129,044, Cl. 74-244.000.
Erik Sorberg Armaturfabrik Aktiebolag: *See—*
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  Francke, Erwin, 4,129,814, Cl. 318-577.000.
Escher, Sina; and Dubois, Grant E., to Leland Stanford Jr. University, The Board of Trustees of. A-Norsteroids. 4,129,599, Cl. 260-586.00E.
Escher Wyss Limited: *See—*
  Miller, Helmut, 4,129,786, Cl. 290-52.000.
Espinosa, Albert. Portable driver emergency device. 4,129,857, Cl. 340-321.000.
Etablissement Dentaire Ivoclar: *See—*
  Schleich, Hans B., 4,128,942, Cl. 32-32.000.
Etablissements P. Ferbeck & Vincent: *See—*
  Baudin, Bernard, 4,129,081, Cl. 10-238.000.
Etchu, Masami; Yamaguchi, Takao; and Takagi, Norio, to Teijin Limited. Process for producing thermoplastic resin films having reduced thickness unevenness. 4,129,630, Cl. 264-22.000.
Etoh, Motoaki, to Fuji Jukogyo Kabushiki Kaisha. Fuel changeover system for multi-fuel engines. 4,129,620, Cl. 261-18.00R.
Eurotungstene: *See—*
  Walrave, Jean, 4,128,933, Cl. 29-420.500.
Everett, Wilhelm S. Fluid acoustic silencer. 4,129,196, Cl. 181-280.000.
Exxon Research & Engineering Co.: *See—*
  Horowitz, Harold S.; Longo, John M.; and Lewandowski, Joseph T., 4,129,525, Cl. 252-518.000.
  Moss, Gerald, 4,129,411, Cl. 432-58.000.
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  Ridenour, Charles E.; Fabert, Herman A., Jr.; Tasker, John; and Larson, Hugo R., 4,129,773, Cl. 219-146.230.
Fage, Etienne, to Astech. Single-skin thrust reverser for aircraft jet engines. 4,129,269, Cl. 244-110.00B.
Fahim, Atef E. F.; and Cheng, Richard M. H. Fluid operated stepping motor. 4,129,064, Cl. 92-129.000.
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  Dimmick, Joseph G.; Weingartner, William J.; Fields, Alan S.; Fairhead, Donald L.; and Musson, Rosemary, 4,129,087, Cl. 114-144.00E.
Fakla, Istvan E.; and Grote, Reinhard, to USM Corporation. Hot melt adhesives for cellulosic material. 4,129,539, Cl. 260-27.00R.
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  Tansill, Horace A., 4,128,951, Cl. 36-44.000.
Fancy, Richard E., to General Motors Corporation. Seat belt securing device. 4,129,320, Cl. 280-744.000.
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  Huppert, Karl-Ludwig; and Fang, Dieter, 4,129,518, Cl. 252-301.10W.
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  Cecka, Andrew M.; Dano, Pol; and Pawling, Paul G., 4,129,634, Cl. 264-45.300.
  Dano, Pol, 4,128,963, Cl. 264-46.600.
Farrissey, William J., Jr.: *See—*
  Chen, Augustin T.; Farrissey, William J., Jr.; and Nelb, Robert G., II, 4,129,715, Cl. 528-67.000.
Fava, Ronald A., to ARCO Polymers, Inc. Thermoplastic molding composition of polymethyl methacrylate and rubber modified styrene-maleimide. 4,129,614, Cl. 260-876.00B.
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Favorite Manufacturing, Inc.: *See—*
  Burkholder, Harvey Z., 4,129,279, Cl. 248-165.000.
Fazis, Harald, to Ludwig Boschert, Maschinen- und Apparatebau GmbH & Co. KG. Punching press. 4,129,054, Cl. 83-165.000.
Feldy, Edmund C.; and Stephens, Dennis L., to Teletype Corporation. Stepping motor control circuit. 4,129,816, Cl. 318-696.000.
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  Fieldhouse, John W.; Graves, Daniel F.; Cole, William M.; Stayer, Mark L.; and Fenske, Steven L., 4,129,529, Cl. 528-168.000.
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  Keyzer, Carl A., 4,129,001, Cl. 60-403.000.
Fick, Edwin O., Jr.; and Bell, Edward L., to Madison Foods, Inc. Method and apparatus for processing pork sides. 4,128,916, Cl. 17-52.000.
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  Dasher, George F.; and Fiebig, August E., Jr., 4,129,505, Cl. 252-8.800.
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Firestone Tire & Rubber Company, The: *See—*
  Adams, Harold E.; Boutsicaris, Stephen P.; and Halasa, Adel F., 4,129,699, Cl. 526-42.000.
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  Kang, Jung W.; and Hergenrother, William L., 4,129,579, Cl. 260-346.110.
Fischer, Hermann, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft (M.A.N.). Dual feed inking system for offset printing machines. 4,129,077, Cl. 101-350.000.
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  Schwartzkopff, Udo; and Fischer, Horst, 4,129,097, Cl. 119-28.000.
Fischer, Karl; and Matetschlager, Walter, to U.S. Philips Corporation. Battery compartment in portable apparatus. 4,129,688, Cl. 429-97.000.
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  Morrow, James J., 4,129,479, Cl. 204-1.00T.
Fitch, Robert H.; Kurtz, Bruce E.; and Smura, Bronislaw B., to Allied Chemical Corporation. Support structure for plural cell electrolyzer. 4,129,495, Cl. 204-279.000.
Flagg, John G. Cubic game board. 4,129,303, Cl. 273-241.000.
Flanigen, Edith M.; Lok, Brent M.; and Mumbach, Norbert R., to Union Carbide Corporation. Acetylene vessel filler composition. 4,129,450, Cl. 106-120.000.
Fleig, William C. Portable craft and hobby unit. 4,129,213, Cl. 206-575.000.
Fleischer, Robert L., to General Electric Company. Detection of subsurface air flow. 4,129,776, Cl. 250-253.000.
Fleiter, Lothar: *See—*
  Dhein, Rolf; and Fleiter, Lothar, 4,129,537, Cl. 260-23.0EP.
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  Furasen, Willy, 4,129,426, Cl. 55-217.000.
FMC Corporation: *See—*
  Billett, Ronald J.; and Harper, Bruce M., 4,129,230, Cl. 221-268.000.
  McKenzie, Elton L., 4,129,068, Cl. 99-538.000.
  Solowy, Jean, 4,129,142, Cl. 137-492.000.
Fohl, Timothy, to GTE Sylvania Incorporated. Copy apparatus using chemical flashlamp. 4,129,380, Cl. 355-113.000.
Foley, Edward M.: *See—*
  Dreyer, Dennis G.; Foley, Edward M.; and Rogers, Herbert E., Jr., 4,129,444, Cl. 75-251.000.
Foley, John D., Jr., to Ram-Trol, Inc. Divided cap hinge bracket. 4,129,088, Cl. 115-18.00E.
Foote, John P. Single shot rifle having falling breechblock integral with stock. 4,128,956, Cl. 42-23.000.
Ford Motor Company: *See—*
  Kaufman, Sydney M., 4,129,443, Cl. 75-212.000.
  Rogerson, Jerry B.; and Harrison, Robert S., 4,129,623, Cl. 261-52.000.
Fordyce, Homer E.; and Carter, William C., to Marley Company, The. Selectively controllable water curtain damper for inlet face of circular water cooling tower. 4,129,625, Cl. 261-111.000.
Foreman, Robert E.: *See—*
  Dout, James A.; and Foreman, Robert E., 4,129,122, Cl. 128-1.00R.
Fort Wayne Wire Die, Inc.: *See—*
  Bieberich, Paul, 4,129,052, Cl. 76-107.00A.
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  Bellus, Daniel; Fory, Werner; and Tobler, Hans, 4,129,573, Cl. 260-326.450.
Foseco International Limited: *See—*
  Jeffreys, Godfrey V.; Mumford, Clive J.; Ravault, Frank E. G.; and Washbourne, Colin, 4,129,500, Cl. 210-23.00R.
Foster, Gregory S., to Procter & Gamble Company, The. Heavy-duty liquid detergent and process. 4,129,515, Cl. 252-117.000.
France, James R.; Buchan, John D.; Tyrer, Richard G.; De Ceuleneer, Adolf; and Van Steenkiste, Robert. Impregnation apparatus having bias-opening means. 4,129,091, Cl. 118-50.000.
Francke, Erwin, to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik. Process for the formation of a comparison square wave signal. 4,129,814, Cl. 318-577.000.
Frank, Robert I.; and Salzer, Thomas E., to Raytheon Company. Platinum film resistor device. 4,129,848, Cl. 338-308.000.
Frank, Robert I.: *See—*
  Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel L., 4,129,458, Cl. 136-89.0PC.
Franz, Curtis A., to American Cyanamid Company. Stabilization of N,N'-[(thiocarbonyl)thio]dimorpholine. 4,129,452, Cl. 106-243.000.
Franzen, Larry H.: *See—*
  Niles, Albert B.; Franzen, Larry H.; Gardner, William J.; and Grob, Russel W., 4,129,034, Cl. 73-117.300.
Frenkin, Ernest I.: *See—*
  Nametkin, Nikolai S.; Vinogradov, Georgy V.; Podolsky, Jury Y.; Pavlovskaya, Nina T.; Frenkin, Ernest I.; and Yanovsky, Jury G., 4,129,550, Cl. 260-42.220.
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  Serini, Volker; Friedhofen, Gerhard; Frietag, Dieter; and Heuser, Jurgen, 4,129,612, Cl. 260-860.000.
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Friona, Anthony J.: *See—*
  Carey, Lee F.; and Friona, Anthony J., 4,129,025, Cl. 72-348.000.

Friz, Walter, to Hay, Louis E. Traveling wave device with cast slow wave interaction structure and method for forming. 4,129,803, Cl. 315-3.500.
Fuji Jukogyo Kabushiki Kaisha: *See—*
  Etoh, Motoaki, 4,129,620, Cl. 261-18.00R.
Fuji Photo Film Co., Ltd.: *See—*
  Fujiwara, Masato; Takeda, Keiji; and Tsuboi, Masayoshi, 4,129,445, Cl. 96-29.00R.
  Noguchi, Masaru, 4,129,355, Cl. 350-6.700.
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  Torii, Kenichi; and Fujimori, Shigeo, 4,129,842, Cl. 334-15.000.
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Fujiwara, Hiroshi: *See—*
  Machi, Sueo; Matsui, Yasushi; Sugishita, Akio; Sugo, Takanobu; Taniguchi, Hiroaki; Asano, Koichi; and Fujiwara, Hiroshi, 4,129,617, Cl. 260-879.000.
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  Koike, Sakae; Matsunami, Shoichi; and Fujiwara, Yasuo, 4,129,651, Cl. 423-235.000.
Fukuda, Mitsuhisa: *See—*
  Ogura, Yukio; and Fukuda, Mitsuhisa, 4,129,373, Cl. 355-1.000.
Fukushima, Hideo; and Suzuki, Yoshikuni, to Nisshin Flour Milling Co., Ltd. Isocarbostyril derivatives. 4,129,565, Cl. 546-142.000.
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Furasen, Willy, to Flex Ake Wennberg AB. Device for cleaning workshop air. 4,129,426, Cl. 55-217.000.
Furr, Dale D., to Ceramic Cooling Tower Company. Tornado protected cooling tower. 4,129,627, Cl. 261-151.000.
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  Watakabe, Yuichi, 4,129,684, Cl. 429-27.000.
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  Gerstine, Milton I.; Goldberg, Joshua I.; Futatsugi, Setsuo; Ueda, Kazuo; Seo, Ryozo; Iwasaki, Koji; and Uemura, Makoto, 4,129,275, Cl. 244-181.000.
Fuxe, Kjell, to Nelson Research & Development Company. Method for potentiating neuroleptic drugs. 4,129,652, Cl. 424-247.000.
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  Taylor, Harry E., 4,128,974, Cl. 52-11.000.
Gaenge, Friedrich J.; Utner, Ferdinand; Vetter, Harald; and Vilsmeier, Gerhart, to Siemens Aktiengesellschaft. Method for the production of an electric stack capacitor of metallized synthetic material films. 4,128,926, Cl. 29-25.420.
GAF Corporation: *See—*
  Lorenz, Donald H.; Tu, Shu-Tung; and Wyman, Donald P., 4,129,667, Cl. 427-44.000.
  Lorenz, Donald H.; and Tu, Shu-Tung, 4,129,709, Cl. 526-264.000.
  Strobel, Albert F., 4,129,521, Cl. 252-403.000.
  Tracy, David J.; and Hoffstadt, Walter F., 4,129,739, Cl. 560-21.000.
Galaj, Stanislas; Hochon, Bernard; and Lerner, Pierre, to Compagnie General d'Electricite S.A. Insulation material for high voltage electric power cable. 4,129,552, Cl. 260-45.9QB.
Galani, Zvi; and Temple, Steven J., to Raytheon Company. Radio frequency energy combiner or divider. 4,129,839, Cl. 333-9.000.
Gamacher, Robert J. Integral applicator structure. 4,129,391, Cl. 401-208.000.
Gander, Robert J.; and Gurney, John A., to Johnson & Johnson. Retinoic acid derivatives for the treatment of acne. 4,129,662, Cl. 424-305.000.
Ganellin, Charon R.: *See—*
  Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,129,657, Cl. 424-273.00R.
Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Sarre, Olga; and Reimann, Hans, to Schering Corporation. Aminoeverninomicin and derivatives thereof. 4,129,720, Cl. 536-17.000.
Gani, Venkappa L.; and Montegari, Frank A., to International Business Machines Corporation. High density integrated logic circuit. 4,129,790, Cl. 307-203.000.
Gardiner, Kenneth W.: *See—*
  Hori, Tatsu; Gardiner, Kenneth W.; and Mangal, Norman F., 4,129,295, Cl. 271-186.000.
Gardner, Robert F. Color-keyed fabric for screen printing. 4,129,076, Cl. 101-127.000.
Gardner, William J.: *See—*
  Niles, Albert B.; Franzen, Larry H.; Gardner, William J.; and Grob, Russel W., 4,129,034, Cl. 73-117.300.
Garner, Eugene F.; and Hamilton, Brian K., to Allied Chemical Corporation. Chlorite containing pyrotechnic composition and method of inflating an inflatable automobile safety restraint. 4,128,996, Cl. 60-205.000.
Garrett, Donald E., to Occidental Petroleum Corporation. Process for disposal of solid wastes. 4,129,440, Cl. 75-63.000.
Garrett, Michael E.; and Keene, Richard M. Liquid treatment process. 4,129,502, Cl. 210-60.000.
Garside, David, to Garwall Cooling Limited. Expendable refrigeration system. 4,129,432, Cl. 62-222.000.
Garvey, Louis P., to General Motors Corporation. Seat belt utilization recorder. 4,129,321, Cl. 280-744.000.
Garwall Cooling Limited: *See—*
  Garside, David, 4,129,432, Cl. 62-222.000.
Geiger, Friedrich, to Kleindienst & Co. Maschinenfabrik, Firma. Ironing mangle with pneumatically pressurizable roller covering. 4,128,953, Cl. 38-56.000.
Geist, Bernard W., to Duo-Fast Corporation. Electric nailer. 4,129,240, Cl. 227-8.000.
Gelbart, Bernard. Mattress foundation apparatus. 4,128,907, Cl. 5-200.00R.
Gendron, Wilfred H., to Westvaco Corporation. Two compartmented envelope. 4,129,214, Cl. 206-629.000.
General Dynamics Corporation: *See—*
  Schuler, Alan L., 4,129,146, Cl. 137-587.000.
General Electric Company: *See—*
  Axelrod, Robert J.; Mark, Victor; and Wilson, Phillip S., 4,129,546, Cl. 260-31.80T.
  Bigelow, John E.; and Peroutky, Donald C., 4,129,390, Cl. 400-121.000.
  Davis, William D., 4,129,418, Cl. 422-98.000.
  Devine, Thomas M., Jr., 4,129,241, Cl. 228-113.000.
  Fleischer, Robert L., 4,129,776, Cl. 250-253.000.
  Hallgren, John E., 4,129,574, Cl. 260-340.200.
  Houston, John M., 4,129,783, Cl. 250-445.00T.
  Johansson, Eric B.; Klahn, Dale H.; and Marlowe, Mickey O., 4,129,477, Cl. 176-73.000.
  Kingsley, Jack D.; and Yang, Kei-Hsiung, 4,129,779, Cl. 250-315.00A.
  Michon, Gerald J., 4,129,887, Cl. 358-213.000.
  Schaeffer, Robert L., 4,128,939, Cl. 30-123.000.
  Shotts, L. D.; Wisbey, Raymond W.; and Sears, Albert W., 4,128,928, Cl. 29-156.80B.
  Sigsbee, Raymond A., 4,129,166, Cl. 164-46.000.
  Sigsbee, Raymond A., 4,129,167, Cl. 164-46.000.
  Tantraporn, Wirojana; and Yu, Se P., 4,129,879, Cl. 357-22.000.
  Tehon, Stephen W.; and Pruski, Edward M., 4,129,031, Cl. 73-32.00A.
  Toot, Peter D., 4,128,995, Cl. 60-204.000.
  White, Dwain M., 4,129,555, Cl. 260-823.000.
  Witting, Harald L., 4,129,895, Cl. 361-257.000.
General Instrument Corporation: *See—*
  Reinholtz, William H., 4,129,888, Cl. 360-40.000.
General Motors Corporation: *See—*
  Bader, Ernest, Jr.; Deckard, John I.; and Kuiper, Dan B., 4,129,253, Cl. 239-88.000.
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  Bader, Ernest, Jr.; Deckard, John I.; and Kuiper, Dan B., 4,129,256, Cl. 239-96.000.
  Boyer, James A., 4,129,107, Cl. 123-146.50A.
  Degras, James C.; and Lee, David N., 4,129,267, Cl. 242-107.40A.
  Fancy, Richard E., 4,129,320, Cl. 280-744.000.
  Garvey, Louis P., 4,129,321, Cl. 280-744.000.
  Howarth, David S., 4,129,099, Cl. 123-32.0EE.
  Rashid, Moinuddin S., 4,129,461, Cl. 148-12.300.
  Yew, Ming-Chih; and Jones, Trevor O., 4,129,817, Cl. 320-18.000.
General Signal Corporation: *See—*
  Polimine, Robert F., 4,129,354, Cl. 339-265.00F.
  Svet, Frank A., 4,129,276, Cl. 246-169.00S.
General Tire & Rubber Company, The: *See—*
  Gormish, Kenneth J.; and Hofelt, Clarence, Jr., 4,128,969, Cl. 51-106.00R.
Georg Spiess GmbH: *See—*
  Marass, Josef, 4,129,294, Cl. 271-93.000.
Gerling Moore, Inc.: *See—*
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  Barnett, Gabriel; Gershaw, Nathan; and Mausner, Jack J., 4,129,645, Cl. 424-60.000.
Gerstine, Milton I.; Goldberg, Joshua I.; Futatsugi, Setsuo; Ueda, Kazuo; Seo, Ryozo; Iwasaki, Koji; and Uemura, Makoto, to Boeing Company, The; and Kawasaki Jukogyo Kabushiki Kaisha. Automatic flight control apparatus for aircraft. 4,129,275, Cl. 244-181.000.
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  Huppert, Karl-Ludwig; and Fang, Dieter, 4,129,518, Cl. 252-301.10W.
Gewartowski, Steve A., to UOP Inc. Temperature control of integrated fractionation column and reaction zone. 4,129,606, Cl. 260-674.00R.
Giglia, Robert D., to American Cyanamid Company. Multiplex addressing of electrochromic displays. 4,129,861, Cl. 340-324.00R.
Gilano, Michael N.; and Hayes, James C., to Telaris Telecommunications, Inc. Keyboard switch assembly having flexible contact carry-

- ing member between contact carrying substrate and flexible, resilient, key-depressible bubble protrusions. 4,129,758, Cl. 200-5.00A.
- Gilbert, John R. B.: *See*—
  - Morton, Peter H.; Gilbert, John R. B.; and Wortley, John P. A., 4,129,492, Cl. 204-212.000.
- Gilford Instrument Laboratories: *See*—
  - Rosencwaig, Allan; and Emary, Robert J., 4,129,385, Cl. 356-244.000.
- Girijavallabhan, Viyyoor M.: *See*—
  - Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Sarre, Olga; and Reimann, Hans, 4,129,720, Cl. 536-17.000.
- Giudicelli, Don P. R. L.; and Najer, Henry, to Synthelabo. Phenylethylamine derivatives. 4,129,598, Cl. 260-570.80R.
- Gladwin, Floyd R. Continuous slab casting mold. 4,129,175, Cl. 164-444.000.
- Glasser, Alan; Schwarz, Jens P.; and Glasser, Lance A., to Glasser, Alan; and Schwarz, Jens P. Heat exchange apparatus. 4,129,112, Cl. 126-121.000.
- Glasser, Lance A.: *See*—
  - Glasser, Alan; Schwarz, Jens P.; and Glasser, Lance A., 4,129,112, Cl. 126-121.000.
- Glaverbell: *See*—
  - Plumat, Emile; and Posset, Robert, 4,129,434, Cl. 65-60.00D.
- Glennel Corporation: *See*—
  - Dunnington, Bruce W.; and Gernert, William B., 4,128,971, Cl. 51-204.000.
- Glunz, Louis J.; and Dickson, Donald E., to Thomas C. Elder, Inc. 8-Methoxypsoralen. 4,129,575, Cl. 260-343.210.
- Glunz, Louis J.; and Dickson, Donald E., to Thomas C. Elder, Inc. Process for making ω-chloro-2,3,4-trihydroxyacetophenone. 4,129,576, Cl. 260-343.210.
- Godtschalck, Lucien J., to Krieg & Zivy Industries. Structure for supporting and guiding a drawer. 4,129,347, Cl. 312-330.00R.
- Gogolin, Robert L.; and Spisak, Steve, to TRW Inc. Plunge dampener. 4,129,770, Cl. 219-98.000.
- Gogolok, Konrad: *See*—
  - Roth, Michael; and Gogolok, Konrad, 4,129,447, Cl. 106-2.000.
- Goldberg, Joshua I.: *See*—
  - Gerstine, Milton I.; Goldberg, Joshua I.; Futatsugi, Setsuo; Ueda, Kazuo; Seo, Ryozo; Iwasaki, Koji; and Uemura, Makoto, 4,129,275, Cl. 244-181.000.
- Goldman, Stephen R. Radio telephone communications system. 4,129,749, Cl. 179-2.0EB.
- Goldsby, Claude W.; and Sandau, Roray J. Heat extractor for stoves. 4,129,251, Cl. 237-51.000.
- Golls, John W.; and Griep, Peter, to Custom Tool & Die Ltd. Curvature and pressure regulator for trowelling bars of mastic applicator and finishing tools. 4,129,407, Cl. 425-87.000.
- Gonzalez, Neil. Vehicular trunk lock replacement plate. 4,129,020, Cl. 70-417.000.
- Goodrich, Joel L.: *See*—
  - Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel L., 4,129,458, Cl. 136-89.0PC.
- Goodyear Tire & Rubber Company, The: *See*—
  - DeWitt, Marion A., 4,129,162, Cl. 152-354.0RB.
- Gordon, Eric M.: *See*—
  - Slusarchyk, William A.; Gordon, Eric M.; and Koster, William H., 4,129,731, Cl. 544-21.000.
- Gordon, Wolfgang, to Hoechst Aktiengesellschaft. Process for making hydrophilic polyolefin fibers containing clay. 4,129,629, Cl. 264-13.000.
- Gore, Thomas A. Reporting device. 4,129,754, Cl. 179-188.000.
- Gormish, Kenneth J.; and Hofelt, Clarence, Jr., to General Tire & Rubber Company, The. Apparatus for reducing tangential force variation in pneumatic tires. 4,128,969, Cl. 51-106.00R.
- Goto, Masuo; Isono, Akira; Momochi, Yasushi; and Kai, Takaaki, to Hitachi, Ltd. Excitation control apparatus suited for normal stop operation of synchronous generators. 4,129,818, Cl. 322-10.000.
- Gould Inc.: *See*—
  - Biddick, Royce E., 4,129,633, Cl. 264-40.300.
  - Scapes, John N.; and Speckmann, Donald R., 4,129,284, Cl. 251-205.000.
  - Young, John W., 4,129,896, Cl. 361-371.000.
- Gould, William, to Nyltite Corporation. Screw head cover. 4,129,060, Cl. 85-53.000.
- Graham, John P. Chain and tightening binder assembly. 4,129,285, Cl. 254-78.000.
- Grange, Arthur; and Booth, Stuart E., to Ultrasonics, Ltd. Apparatus for the homogenization of liquids. 4,129,387, Cl. 366-119.000.
- Graphic Controls Corporation: *See*—
  - Hubbard, James R., 4,129,876, Cl. 346-140.00A.
- Graves, Daniel F.: *See*—
  - Fieldhouse, John W.; Graves, Daniel F.; Cole, William M.; Stayer, Mark L.; and Fenske, Steven L., 4,129,529, Cl. 528-168.000.
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- Greed, Robert B.: *See*—
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  - Hodgson, David A.; and Grey, James S., 4,129,311, Cl. 280-11.37E.
- Griep, Peter: *See*—
  - Golls, John W.; and Griep, Peter, 4,129,407, Cl. 425-87.000.
- Griffin, Timothy L., Jr., to Amanita Sound, Inc. Shock resistant loudspeaker enclosure. 4,129,752, Cl. 179-146.00E.
- Griffin, Warren H.: *See*—
  - Park, Chung P.; Corbett, John M.; and Griffin, Warren H., 4,129,530, Cl. 521-79.000.
- Grinder, Charles E. Golfer's aid. 4,129,237, Cl. 224-5.00C.
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  - Niles, Albert B.; Franzen, Larry H.; Gardner, William J.; and Grob, Russel W., 4,129,034, Cl. 73-117.300.
- Grote, Reinhard: *See*—
  - Fakla, Istvan E.; and Grote, Reinhard, 4,129,539, Cl. 260-27.00R.
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  - Leftheris, Basil P.; Mainhardt, Joseph H.; and Schwenk, Walter, 4,129,028, Cl. 72-430.000.
- Grundamann, Raban: *See*—
  - Rueter, Joern; and Grundamann, Raban, 4,129,551, Cl. 260-45.70R.
- Gruppo Lepetit S.p.A.: *See*—
  - Cricchio, Renato, 4,129,562, Cl. 260-239.30P.
- GTE Sylvania Incorporated: *See*—
  - Fohl, Timothy, 4,129,380, Cl. 355-113.000.
  - Karlotski, Robert J., 4,129,348, Cl. 316-20.000.
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  - Rattin, Luciano; and Guelfo, Roberto, 4,129,378, Cl. 355-14.000.
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  - Credali, Lino; Baruzzi, Giovanni; and Guidotti, Vincenzo, 4,129,559, Cl. 528-337.000.
- Guild International, Inc.: *See*—
  - Morris, Terrence P., 4,129,244, Cl. 228-170.000.
- Gumbinner, Robert: *See*—
  - Deutsch, Albert A.; Dennis, Richard; and Gumbinner, Robert, 4,129,486, Cl. 204-159.190.
- Gunther, Dieter; Schinzel, Erich; Erckel, Rudiger; and Rosch, Gunter, to Hoechst Aktiengesellschaft. Brightener mixtures and their use. 4,129,412, Cl. 8-1.00W.
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  - Gander, Robert J.; and Gurney, John A., 4,129,662, Cl. 424-305.000.
- Guzay, Casimir M.: *See*—
  - Bulanda, John J.; Guzay, Casimir M.; and Betitschke, Bruce A., 4,128,919, Cl. 24-20.0TT.
- Gym-Kin Inc.: *See*—
  - Siebert, Gary R., 4,128,902, Cl. 2-2.000.
- Gyromat Corporation: *See*—
  - Wiggins, Richard F., 4,129,092, Cl. 118-323.000.
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  - Juba, Bernard T., 4,128,981, Cl. 52-309.300.
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- Haferl, Peter E., to RCA Corporation. Correction circuit for load dependent raster distortion. 4,129,806, Cl. 315-370.000.
- Halasa, Adel F.: *See*—
  - Adams, Harold E.; Boutsicaris, Stephen P.; and Halasa, Adel F., 4,129,699, Cl. 526-42.000.
- Hale Fire Pump Company: *See*—
  - Eberhardt, Harry A., 4,129,402, Cl. 415-53.00R.
- Hall, John B.: *See*—
  - Schreiber, William L.; Siano, James N.; and Hall, John B., 4,129,569, Cl. 260-307.0FA.
- Hallgren, John E., to General Electric Company. Method for making cyclic carbonates and polymers therefrom. 4,129,574, Cl. 260-340.200.
- Halm, Hans, to Confon AG, Firma. Data register. 4,129,215, Cl. 209-610.000.
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  - Iwamura, Masahiro; Hamada, Nagaharu; Hara, Toshitaka; and Sato, Nobuo, 4,129,859, Cl. 340-324.0AD.
- Hamilton, Brian K.: *See*—
  - Garner, Eugene F.; and Hamilton, Brian K., 4,128,996, Cl. 60-205.000.
- Hammar, John R., to Aktiebolaget Electrolux. Gas burner lighting device for an absorption refrigerating apparatus. 4,129,408, Cl. 431-251.000.

- Hammond, Howard A.; and Sardina, John F., to Eaton Corporation. Hold-down device for storage batteries. 4,129,194, Cl. 180-68.500.
- Hannes, George J.; Rohweder, Theodore R.; Dreikorn, Hans W.; and Shepherd, Philip B., to Johns-Manville Corporation. Fibrous mat especially suitable for roofing products and a method of making the mat. 4,129,674, Cl. 428-285.000.
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  - Heyn, Fred M.; Yin, Ching-Feng; Hanson, Gordon L.; and Schreck, Robert C., 4,129,176, Cl. 165-7.000.
- Happel, Hermann E.; and Anthony, James R., to Indiana Mills & Manufacturing Inc. Laminated seat belt buckle. 4,128,924, Cl. 24-230.0AL.
- Hara, Masahiro: *See*—
  - Horiuchi, Kaoru; Matsui, Akio; Hara, Masahiro; and Takahashi, Hiroshi, 4,129,442, Cl. 75-126.00C.
- Hara, Toshifumi: *See*—
  - Kurita, Tetsuya; and Hara, Toshifumi, 4,129,137, Cl. 134-144.000.
- Hara, Toshitaka, to Hitachi, Ltd. Partitioned display control system. 4,129,858, Cl. 340-324.0AD.
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- Hardinge Brothers, Inc.: *See*—
  - Peterson, Anders A.; and Catlin, Francis D., 4,129,220, Cl. 214-1.400.
- Hargassner, Reinhard: *See*—
  - Holleis, Gunter; and Hargassner, Reinhard, 4,129,174, Cl. 164-443.000.
  - Scheurecker, Werner; and Hargassner, Reinhard, 4,129,173, Cl. 164-442.000.
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  - Kamath, Vasanth R.; and Harpell, Gary A., 4,129,703, Cl. 526-73.000.
- Harper, Bruce M.: *See*—
  - Billett, Ronald J.; and Harper, Bruce M., 4,129,230, Cl. 221-268.000.
- Harris Corporation: *See*—
  - Neal, Gary W.; and Montgomery, Robert M., 4,129,832, Cl. 331-44.000.
  - Schriber, Louis; and Stephens, Robert E., 4,129,293, Cl. 270-52.000.
- Harris, James L., to R. J. Reynolds Tobacco Company. Apparatus for contacting an aerosol stream with a liquid. 4,129,427, Cl. 55-247.000.
- Harrison, Robert S.: *See*—
  - Rogerson, Jerry B.; and Harrison, Robert S., 4,129,623, Cl. 261-52.000.
- Harshberger, Robert P., Jr., to Ampex Corporation. Switching motor control system. 4,129,810, Cl. 318-317.000.
- Hart, Harry L.: *See*—
  - Beaver, Millard B.; Johnson, Leonard L.; Hart, Harry L.; and Mahoney, Tennis, 4,129,074, Cl. 101-35.000.
- Hartemann, Pierre, to Thomson-CSF. Elastic surface wave oscillator. 4,129,837, Cl. 331-107.00A.
- Hartmann, Otto: *See*—
  - Korner, Wolf-Dietrich; and Hartmann, Otto, 4,129,404, Cl. 417-364.000.
- Harvester Center Italiana S.r.l.: *See*—
  - Santarelli, Mario, 4,128,986, Cl. 56-328.0TS.
- Harvey, Lawrence, to British Petroleum Company Limited, The. Solar energy collector. 4,129,117, Cl. 126-271.000.
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- Hasquenoph, Jean H.; and Coutin, Pierre F., to R. Alkan & Cie. Automatic hanging and wedging device for aircraft loads. 4,129,271, Cl. 244-137.00R.
- Hasselbacher, Roland E., to Caterpillar Tractor Co. Fire suppression system. 4,129,185, Cl. 169-62.000.
- Hatch, Edmond K., to Osborn Manufacturing Company, The. Horizontal stack molding machine and method. 4,129,208, Cl. 198-626.000.
- Hattori, Tadashi; Nakase, Takamichi; Tsubouchi, Hideo; and Iwata, Toshiharu, to Nippon Soken, Inc. Overheat preventing system for exhaust gas purifier of vehicles. 4,128,998, Cl. 60-277.000.
- Haws Corporation, The: *See*—
  - Johnson, Bernard L., 4,129,163, Cl. 160-135.000.
- Hay, Louis E.: *See*—
  - Friz, Walter, 4,129,803, Cl. 315-3.500.
- Hayden, Joseph C., Jr. Engine overspeed control system. 4,129,040, Cl. 73-507.000.
- Hayes, James C.: *See*—
  - Gilano, Michael N.; and Hayes, James C., 4,129,758, Cl. 200-5.00A.
- Hayes, William V.: *See*—
  - Childress, David L.; Hayes, William V.; and Poppe, Richard L., 4,129,600, Cl. 260-604.00R.
- Haynes, Edward M. Method and apparatus for detecting water in oil. 4,129,501, Cl. 210-23.00R.
- Hedgcock, Richard L., to Caterpillar Tractor Co. Spring operated clutch with small and large bolts. 4,129,204, Cl. 192-89.00B.
- Heiliger, Leonard R.: *See*—
  - Wakeman, Alden H.; and Heiliger, Leonard R., 4,129,389, Cl. 366-144.000.
- Heinz, Lothar: *See*—
  - Tschunt, Edgar; Platz, Winfried; Bar, Ulrich; and Heinz, Lothar, 4,129,784, Cl. 250-505.000.
- Heinze, Horst; Stierle, Gunter; and Sach, Ernst D., to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Tension strap with movable tension blocks. 4,128,921, Cl. 24-279.000.
- Heiss, Herbert L., to Mobay Chemical Corporation. Thermoplastic polyurethanes of mixtures of hard and soft thermoplast polymers. 4,129,611, Cl. 260-858.000.
- Helena Rubinstein, Inc.: *See*—
  - Barnett, Gabriel; Gershaw, Nathan; and Mausner, Jack J., 4,129,645, Cl. 424-60.000.
- Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See*—
  - Rose, David; Weinrich, Erwin; and Lieske, Edgar, 4,129,413, Cl. 8-10.200.
  - Rose, David; Saygin, Ferdi; and Lieske, Edgar, 4,129,414, Cl. 8-10.200.
- Henri Muhlethaler S.A.: *See*—
  - Muhlethaler, Henri, 4,128,943, Cl. 33-174.00Q.
- Henriksen, Ole: *See*—
  - Marsh, Gunnar; Henriksen, Ole; and Sjoblum, Urban C. S., 4,128,903, Cl. 3-19.000.
- Henson, F. Gene. Cap for releasably covering well casings. 4,129,151, Cl. 138-89.000.
- Henson, Kenneth, to Unigate Limited. Electro-chemical cells. 4,129,689, Cl. 429-101.000.
- Hercules Incorporated: *See*—
  - Jamison, Joel D.; Towle, Gordon A.; and Vermeychuk, J. Gregory, 4,129,663, Cl. 426-602.000.
- Herd, Josef, to Maschinenfabrik GOEBEL GmbH. Apparatus for feeding a web in registry between web passes through a processing machine. 4,129,238, Cl. 226-29.000.
- Hergenrother, William L.: *See*—
  - Kang, Jung W.; and Hergenrother, William L., 4,129,579, Cl. 260-346.110.
- Herklotz, Gunther; and Reichelt, Walter, to W. C. Heraeus GmbH. Electrical switching contact. 4,129,765, Cl. 200-268.000.
- Hermann, William J., Jr., to Dickson, Jocelyn, a part interest. Disposable laboratory device for transfer of fluids to a centrifugal analyzer head. 4,129,419, Cl. 422-64.000.
- Hern, John F.; and Buccellato, Joseph L., to Massey-Ferguson Inc. Door latch. 4,129,325, Cl. 292-127.000.
- Hettche, Albert: *See*—
  - Patsch, Manfred; and Hettche, Albert, 4,129,563, Cl. 260-239.900.
- Heuser, Jurgen: *See*—
  - Serini, Volker; Friedhofen, Gerhard; Frietag, Dieter; and Heuser, Jurgen, 4,129,612, Cl. 260-860.000.
- Hewlett-Packard Company: *See*—
  - Dias, J. Fleming; Karrer, Henry E.; and Tykulsky, Alexander, 4,129,242, Cl. 228-121.000.
- Heyn, Fred M.; Yin, Ching-Feng; Hanson, Gordon L.; and Schreck, Robert C., to Thermal Transfer, division of Kleinewefers. Heat recovery systems. 4,129,176, Cl. 165-7.000.
- Hi-Tech Industries, Inc.: *See*—
  - Kaplan, Neil, 4,129,543, Cl. 260-29.15B.
- Hidalgo, Jaime: *See*—
  - Kruseman, Jan; Bertschy, Pierre Y.; and Hidalgo, Jaime, 4,129,664, Cl. 426-7.000.
- Higelin, Jean-Claude: *See*—
  - Racine, Philippe; Higelin, Jean-Claude; Engelhardt, Roland; and Mindt, Wolfgang, 4,129,478, Cl. 204-1.00T.
- Higgens, Calvin E.: *See*—
  - Michel, Karl H.; and Higgens, Calvin E., 4,129,721, Cl. 536-17.000.
- Hildebrand, Helmut; and Dunker, Gerhard, to Kabel-und Metallwerke Gutehoffnungshutte A.G. Radiating cable having spaced radiating sleeves. 4,129,841, Cl. 333-84.00L.
- Hill, Donald R. Kite control mechanism. 4,129,273, Cl. 244-155.00A.
- Hilz, Lloyd A.: *See*—
  - Demers, Arthur S.; and Hilz, Lloyd A., 4,129,011, Cl. 405-169.000.
- Hind, John D.; and Hopkins, William C., to Philip Morris Incorporated. Smoking article. 4,129,134, Cl. 131-2.000.
- Hine, Louis P., Jr., to Westinghouse Electric Corp. Air-conditioning unit with multi-position coil. 4,129,013, Cl. 62-285.000.
- Hirose, Shintaro: *See*—
  - Ishii, Yasuhiro; Hirose, Shintaro; and Kawasaki, Ryoichi, 4,129,195, Cl. 181-167.000.
- Hirt, Manfred: *See*—
  - Eichinger, Johann; and Hirt, Manfred, 4,129,394, Cl. 403-57.000.
- Hiser, William H., to Lighthouse Fireplaces, Inc. Fireplace-furnace system. 4,129,114, Cl. 126-122.000.
- Hitachi Cable, Ltd.: *See*—
  - Seki, Masatoshi; Sato, Moriichi; Tsukioka, Hideo; Ohe, Etuo; Ogata, Masatsugu; and Mitsuoka, Akio, 4,129,678, Cl. 428-383.000.
- Hitachi Chemical Co., Ltd.: *See*—
  - Karasawa, Yoshiharu; Koyama, Tohru; and Narahara, Toshikazu, 4,129,554, Cl. 528-48.000.
  - Kobayashi, Kengo; Mogami, Masayuki; Tanaka, Shigeyoshi; Nakao, Manabu; and Tamura, Sadao, 4,129,610, Cl. 260-837.00R.
- Hitachi Heating Appliances Co., Ltd.: *See*—
  - Inano, Tozaburo; Yamazaki, Katsuhiro; and Otake, Minoru, 4,129,774, Cl. 219-552.000.
- Hitachi, Ltd.: *See*—
  - Goto, Masuo; Isono, Akira; Momochi, Yasushi; and Kai, Takaaki, 4,129,818, Cl. 322-10.000.
  - Hara, Toshitaka, 4,129,858, Cl. 340-324.0AD.
  - Hosaka, Nobuyoshi; Ishikawa, Yuichi; Nishida, Osamu; and Sakamoto, Masakatsu, 4,129,337, Cl. 302-2.00R.
  - Inaniwa, Keizo; and Ryugo, Noboru, 4,129,090, Cl. 118-49.000.
  - Ito, Syoichi; and Yamada, Takahiro, 4,129,875, Cl. 346-75.000.
  - Iwamura, Masahiro; Hamada, Nagaharu; Hara, Toshitaka; and Sato, Nobuo, 4,129,859, Cl. 340-324.0AD.

Karasawa, Yoshiharu; Koyama, Tohru; and Narahara, Toshikazu, 4,129,554, Cl. 528-48.000.

Kato, Shigeo; Morita, Osamu; and Matuoka, Sadao, 4,129,291, Cl. 269-73.000.

Kawakami, Kazuhiko, 4,129,104, Cl. 123-117.00A.

Masuda, Ikuro, 4,129,901, Cl. 364-104.000.

Seki, Masatoshi; Sato, Moriichi; Tsukioka, Hideo; Ohe, Etuo; Ogata, Masatsugu; and Mitsuoka, Akio, 4,129,678, Cl. 428-383.000.

Soeno, Ko; Iizuka, Tomio; Doi, Toshio; Ando, Hisashi; Oyama, Testuo; Sakamoto, Hiroshi; and Misumi, Akira, 4,129,801, Cl. 313-346.00R.

Suzuki, Ryuichi; Hashizume, Akihide; Horiuchi, Hideyuki; Yamamoto, Shinji; and Yokouchi, Hisatake, 4,129,854, Cl. 340-146.3CA.

Yotsukura, Teruo, 4,129,376, Cl. 355-11.000.

Hitesman, Roderick H.: *See—*

Kunda, Wasyl; and Hitesman, Roderick H., 4,129,441, Cl. 75-118.00R.

Hobes, John; and Payer, Wolfgang, to Ruhrchemie Aktiengesellschaft. Composition and use of ethylene copolymerizates as fusible adhesive. 4,129,472, Cl. 156-331.000.

Hobo, Nobuhito: *See—*

Ito, Osamu; Hobo, Nobuhito; Suzuki, Yutaka; Kawamoto, Itsushi; Naitou, Takashi; Shiozaki, Makoto; and Konishi, Yoshimune, 4,129,105, Cl. 123-119.0EC.

Hochon, Bernard: *See—*

Galaj, Stanislas; Hochon, Bernard; and Lerner, Pierre, 4,129,552, Cl. 260-45.9QB.

Hodge, Frank G.: *See—*

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Hodges, David A.: *See—*

Gray, Paul R.; McCreary, James L.; and Hodges, David A., 4,129,863, Cl. 340-347.0AD.

Hodgson, David A.; and Grey, James S., to International Power Pole, Ltd. Illuminated ski pole. 4,129,311, Cl. 280-11.37E.

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Gordon, Wolfgang, 4,129,629, Cl. 264-13.000.

Gunther, Dieter; Schinzel, Erich; Erckel, Rudiger; and Rosch, Gunter, 4,129,412, Cl. 8-1.00W.

Haberlein, Harald; Nies, Herbert; and Scheidl, Franz, 4,129,553, Cl. 260-45.85R.

Lang, Hans-Jochen; and Muschaweck, Roman, 4,129,656, Cl. 424-263.000.

Wallhausser, Karl H.; Cuntze, Ulrich; May, Adolf; and Bucking, Hans-Walter, 4,129,506, Cl. 252-8.800.

Zoltobrocki, Manfred, 4,129,560, Cl. 260-112.00R.

Hoehn, Hans, to E. R. Squibb & Sons, Inc. 5-Phenylpyrazolo[1,5-a]pyrimidin-7(1H)-ones. 4,129,738, Cl. 544-281.000.

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Hofelt, Clarence, Jr.: *See—*

Gormish, Kenneth J.; and Hofelt, Clarence, Jr., 4,128,969, Cl. 51-106.00R.

Hoffmann-La Roche Inc.: *See—*

Racine, Philippe; Higelin, Jean-Claude; Engelhardt, Roland; and Mindt, Wolfgang, 4,129,478, Cl. 204-1.00T.

Westley, John, 4,129,580, Cl. 260-347.700.

Hoffmann, Rudiger, to Daimler-Benz Aktiengesellschaft. Check valve, especially for vacuum-operated installations in motor vehicles. 4,129,143, Cl. 137-496.000.

Hoffstadt, Walter F.: *See—*

Tracy, David J.; and Hoffstadt, Walter F., 4,129,739, Cl. 560-21.000.

Hofman, Bernard L. Paint and tool case. 4,129,346, Cl. 312-324.000.

Hofmann, Harald: *See—*

Rauer, Kurt; Hofmann, Harald; Schiller, Heidelinde; and Sheppard, Chester S., 4,129,531, Cl. 521-94.000.

Hollandsche Beton Groep N.V.: *See—*

Jansz, Joost W., 4,129,009, Cl. 405-227.000.

Holleis, Gunter; and Hargassner, Reinhard, to Vereinigte Osterreichische Eisen-und Stahlwerke - Alpine Montan Aktiengesellschaft. Arrangement for adjusting and securing a bottomless mould. 4,129,174, Cl. 164-443.000.

Holsapple, Earle T., III. Sheathed razor blade. 4,128,941, Cl. 30-151.000.

Holtvoigt, Werner: *See—*

Praetorius, Heinz; Seibert, Karl; and Holtvoigt, Werner, 4,129,717, Cl. 528-421.000.

Homsy, Charles A. Method of preparing a porous implantable material from polytetrafluoroethylene and carbon fibers. 4,129,470, Cl. 156-155.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*

Sato, Makoto; Takamatsu, Hiroshi; Miyagawa, Yoshitaka; and Fujii, Etsuo, 4,129,342, Cl. 303-105.000.

Hooker Chemicals & Plastics Corp.: *See—*

Sendlak, Lawrence P., 4,129,602, Cl. 260-651.00F.

Hopkins, Jack M. Carrier and storage binder for fabric samples. 4,129,212, Cl. 206-450.000.

Hopkins, William C.: *See—*

Hind, John D.; and Hopkins, William C., 4,129,134, Cl. 131-2.000.

Hori, Tatsu; Gardiner, Kenneth W.; and Mangal, Norman F., to Savin Business Machines Corporation. Semiautomatic document feeder. 4,129,295, Cl. 271-186.000.

Horiuchi, Hideyuki: *See—*

Suzuki, Ryuichi; Hashizume, Akihide; Horiuchi, Hideyuki; Yamamoto, Shinji; and Yokouchi, Hisatake, 4,129,854, Cl. 340-146.3CA.

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Hormann, Karl; and Weigand, Hans, to Kugelfischer Georg Schafer & Co. Bearing race ring with lubricant and cooling channels. 4,129,344, Cl. 308-187.000.

Horner, James D.: *See—*

Eliades, Theo I.; Muir, Ronald J.; and Horner, James D., 4,129,589, Cl. 260-504.00A.

Horowitz, Harold S.; Longo, John M.; and Lewandowski, Joseph T., to Exxon Research & Engineering Co. Method of making lead-rich and bismuth-rich pyrochlore compounds using an alkaline medium. 4,129,525, Cl. 252-518.000.

Horton, Phineas E., III: *See—*

Bond, Ronald L.; Daughdrill, E. Chris; Brice, Henry T.; and Horton, Phineas E., III, 4,129,314, Cl. 280-425.00R.

Hosaka, Nobuyoshi; Ishikawa, Yuichi; Nishida, Osamu; and Sakamoto, Masakatsu, to Hitachi, Ltd. Method for preventing erosion-corrosion of hydraulic capsule transportation apparatus. 4,129,337, Cl. 302-2.00R.

Hoshi, Yoshitomo, to Kabushikigaisha Kawaigakkiseisakusho. Keyboard support mechanism for electronic organs. 4,129,057, Cl. 84-434.000.

Hotto, Robert: *See—*

Lester, Robert W.; and Hotto, Robert, 4,129,125, Cl. 128-2.05R.

Houbion, John A., to Monsanto Company. 3-Phenacyl and phenacylidene phthalimidines and corresponding naphthoyl derivatives. 4,129,729, Cl. 542-439.000.

Houston, John M., to General Electric Company. High speed computerized tomography imaging system. 4,129,783, Cl. 250-445.00T.

Howard nee Murtagh, Joan M.: *See—*

Cairns, Roger J. R.; and Howard nee Murtagh, Joan M., 4,129,499, Cl. 210-23.00R.

Howarth, David S., to General Motors Corporation. Galvanic exhaust gas sensor with solid electrolyte. 4,129,099, Cl. 123-32.0EE.

Howe, Robert K., to Monsanto Company. 2-[3-Aryl-2-isoxazolin-5-yl]benzoates. 4,129,568, Cl. 260-307.00F.

Howes, Edward P. Electronic hydrometer. 4,129,824, Cl. 324-29.500.

Hubbard, James R., to Graphic Controls Corporation. Apparatus for mounting a marker pen to a tubular recorder pen arm. 4,129,876, Cl. 346-140.00A.

Hubbard, Leo J., to Precision Handling Devices, Inc. Clamping devices for document tractors. 4,129,239, Cl. 226-75.000.

Huber, Rolf: *See—*

Kiehs, Karl; and Huber, Rolf, 4,129,601, Cl. 568-593.000.

Hucke, Hans. Heat exchange installation for heating and cooling a liquid heat carrier medium. 4,129,178, Cl. 165-61.000.

Hudson Products Corporation: *See—*

Larinoff, Michael W., 4,129,180, Cl. 165-113.000.

Hudson, Thomas H.: *See—*

Wells, William M., 4,129,844, Cl. 335-268.000.

Huebner, Charles F., to Ciba-Geigy Corporation. Neuroleptic 2-piperidinoalkyl-1,4-benzodioxans. 4,129,655, Cl. 424-267.000.

Hug, Alfred J. T. Pressure responsive circuit interrupter. 4,129,759, Cl. 200-83.00R.

Hughes Aircraft Company: *See—*

Bilow, Norman; Landis, Abraham L.; and Miller, Leroy J., 4,129,570, Cl. 528-128.000.

O'Meara, Thomas R., 4,129,775, Cl. 250-203.00R.

Humbert, Kingsley E., Jr.; and Judah, Lewis J., to Wix Corporation. Dual element air filter. 4,129,429, Cl. 55-484.000.

Humphries, Peter E., to Contronic Controls Limited. Filter system and method for intrusion alarm. 4,129,856, Cl. 340-554.000.

Hunter, Alex E. Pole seat and ladder. 4,129,198, Cl. 182-187.000.

Hunter Douglas International N.V.: *See—*

de Wit, Hendrik, 4,128,914, Cl. 16-1.00R.

Hunterdon Transformer Company: *See—*

Brock, Elwood M., 4,129,820, Cl. 323-56.000.

Hunts, Barney D.; and Waugh, John B. S., to Singer Company, The. Method and apparatus for adaptive control of a stepper motor. 4,129,813, Cl. 318-561.000.

Huppert, Karl-Ludwig; and Fang, Dieter, to Gesellschaft zur Wiederaufarbeitung von Kernbrennstoffen mbH. Method for conditioning metallic waste shells made of zirconium or zirconium alloys. 4,129,518, Cl. 252-301.10W.

Husted, Royce H., to Saroy Engineering. Propulsion system for a snow going device. 4,129,193, Cl. 180-5.00R.

Hutchison, Charles L. Sealing device. 4,128,922, Cl. 24-30.50R.

Hutchison, Stanley O., to Chevron Research Company. Packer cup assembly. 4,129,308, Cl. 277-188.00R.

I-T-E Imperial Corporation: *See—*

Keller, Frank R.; Cataldo, John B.; Kussy, Frank W.; and DiMarco, Bernard, 4,129,843, Cl. 335-174.000.

ICI Americas Inc.: *See—*

Ferrarini, James; and Kuehn, Erich, 4,129,641, Cl. 264-294.000.

IDR, Inc.: *See—*

Saylor, Richard, 4,129,748, Cl. 178-69.100.

Ifield Engineering Pty. Limited: *See—*

Ifield, Richard J., 4,129,063, Cl. 91-506.000.

Ifield, Richard J., to Ifield Engineering Pty. Limited. Bent axis pumps and motors. 4,129,063, Cl. 91-506.000.

Ignashev, Evgeny P.; Konovalov, Evmeny G., deceased; by Konovalov, Georgy E., administrator; and by Zaitseva, Nina E., administrator. Apparatus for making metal strip. 4,129,027, Cl. 72-429.000.

Iizuka, Akichika, to Iizuka Electric Industry Company Limited. Pin plug. 4,129,352, Cl. 339-177.00R.

Iizuka Electric Industry Company Limited: *See—*

Iizuka, Akichika, 4,129,352, Cl. 339-177.00R.

Iizuka, Tomio: *See—*

Soeno, Ko; Iizuka, Tomio; Doi, Toshio; Ando, Hisashi; Oyama, Testuo; Sakamoto, Hiroshi; and Misumi, Akira, 4,129,801, Cl. 313-346.00R.

Imai, Kiyoshi: *See—*

Kawabe, Hirokazu; Imai, Kiyoshi; and Miyakoshi, Masanobu, 4,128,909, Cl. 15-104.00A.

Imaizumi, Hiroyuki: *See—*

Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,129,730, Cl. 544-21.000.

Imanishi, Nobuyuki: *See—*

Taguchi, Kazumasa; Nishida, Tsutomu; Kitajima, Masaharu; Aketa, Kan; Fujita, Isao; Onoda, Mamoru; Imanishi, Nobuyuki; and Watanabe, Ryo, 4,129,437, Cl. 75-5.000.

Imperial Chemical Industries Limited: *See—*

Bell, Stephen L., 4,129,603, Cl. 260-653.000.

Deverell, Christopher; and Wells, Ronald W., 4,129,469, Cl. 156-157.000.

Downer, John M.; Rodway, William G.; and Shipp, Lawrence S. J., 4,129,618, Cl. 260-884.000.

Jennings, James R.; and Sen, Dipankar, 4,129,587, Cl. 260-465.80D.

Roberts, Philip D.; Randall, Geoffrey L. P.; Simon, David G.; and Booth, Jeffrey, 4,129,702, Cl. 526-71.000.

Snowden, Paul, 4,129,523, Cl. 252-475.000.

Thompson, Morice W.; and Topham, Arthur, 4,129,455, Cl. 106-308.00N.

Imperial Metal Industries (Kynoch) Limited: *See—*

Morton, Peter H.; Gilbert, John R. B.; and Wortley, John P. A., 4,129,492, Cl. 204-212.000.

Imura, Toshinori: *See—*

Kobayashi, Haruo; and Imura, Toshinori, 4,129,369, Cl. 354-197.000.

Inaniwa, Keizo; and Ryugo, Noboru, to Hitachi, Ltd. Apparatus for diffusion into semiconductor wafers. 4,129,090, Cl. 118-49.000.

Inano, Tozaburo; Yamazaki, Katsuhiro; and Otake, Minoru, to Hitachi Heating Appliances Co., Ltd. Filling materials for heating elements. 4,129,774, Cl. 219-552.000.

Indiana Mills & Manufacturing Inc.: *See—*

Happel, Hermann E.; and Anthony, James R., 4,128,924, Cl. 24-230.0AL.

Industrie Pirelli Societa per Azioni: *See—*

Portinari, Antonio; and Lavezzari, Piero, 4,129,466, Cl. 156-48.000.

Infante, Carlo, to Xerox Corporation. Current regulating circuit for magnetic deflection systems. 4,129,807, Cl. 315-387.000.

Ing. C. Olivetti & C., S.p.A.: *See—*

Rattin, Luciano; and Guelfo, Roberto, 4,129,378, Cl. 355-14.000.

Inoue, Akira; and Oka, Minori, to Kabushiki Kaisha Daini Seikosha. Method and apparatus for measuring the thickness of a non-metallic coating on a plated metal plate. 4,129,778, Cl. 250-272.000.

Inoue, Sho; Kawamata, Masanobu; Ushimaru, Hirokazu; Nakamichi, Koichi; and Takahashi, Yutaka, to Nippon Shinyaku Co. Ltd. Process for producing easily absorbable amorphous steryl glucoside monopalmitates and preparations thereof. 4,129,649, Cl. 424-182.000.

INTERATOM, International Atomreaktorbau GmbH: *See—*

Podgorski, Jan, 4,129,851, Cl. 340-11.000.

Interbrev S. A.: *See—*

Taccani, Riccardo, 4,129,639, Cl. 264-157.000.

International Business Machines Corporation: *See—*

Althauser, William E.; and Barnes, Richard A., 4,129,853, Cl. 340-146.3AG.

Basi, Jagtar S., 4,129,457, Cl. 134-2.000.

Bula, John; and Martin, Larry C., 4,129,793, Cl. 307-270.000.

Gani, Venkappa L.; and Montegari, Frank A., 4,129,790, Cl. 307-203.000.

International Business Machines Incorporated: *See—*

Vinal, Albert W., 4,129,880, Cl. 357-27.000.

International Dynetics Corporation: *See—*

Longo, Joseph F., 4,129,329, Cl. 294-70.000.

International Flavors & Fragrances Inc.: *See—*

Schreiber, William L.; Siano, James N.; and Hall, John B., 4,129,569, Cl. 260-307.0FA.

International Harvester Company: *See—*

Duke, Edward D.; and Riordan, Joan M., 4,128,952, Cl. 37-8.000.

Lech, Richard J., 4,129,148, Cl. 137-596.000.

International Power Pole, Ltd.: *See—*

Hodgson, David A.; and Grey, James S., 4,129,311, Cl. 280-11.37E.

International Power Technology, Inc.: *See—*

Cheng, Dah Y., 4,128,994, Cl. 60-39.050.

Iovine, Carmine P.; and Ray-Chaudhuri, Dilip K., to National Starch and Chemical Corporation. Process for the preparation of high D. S. polysaccharides. 4,129,722, Cl. 536-43.000.

Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., to Eastman Kodak Company. Bichromophoric benzoxazole-styrene ester and amide ultraviolet stabilizers and their use in organic compositions. 4,129,723, Cl. 542-416.000.

Irnich, Werner; and de Bakker, Jacques. Interference-detecting demand heart pacemaker. 4,129,133, Cl. 128-419.0PG.

Ishida, Masato: *See—*

Miyamoto, Koichi; Tohyama, Yoshikuni; Sagara, Seiji; Kimura, Yoshimasa; and Ishida, Masato, 4,129,377, Cl. 355-14.000.

Ishiguro, Yasuo; and Wakazono, Kenji, to Copal Company Limited. Controlling circuit for electric shutters. 4,129,370, Cl. 354-234.000.

Ishii, Yasuhiro; Hirose, Shintaro; and Kawasaki, Ryoichi, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Diaphragm for speaker. 4,129,195, Cl. 181-167.000.

Ishikawa, Yoshikazu, to Nissan Motor Company, Limited. Accessory drive. 4,129,043, Cl. 74-219.000.

Ishikawa, Yuichi: *See—*

Hosaka, Nobuyoshi; Ishikawa, Yuichi; Nishida, Osamu; and Sakamoto, Masakatsu, 4,129,337, Cl. 302-2.00R.

Ishimoto, Kameki: *See—*

Sugimoto, Kazuyasu; Yamaya, Hiroshi; and Ishimoto, Kameki, 4,129,351, Cl. 339-176.0MP.

Isobe, Toshiaki: *See—*

Shigenobu, Hiromichi; Isobe, Toshiaki; and Kondo, Minoru, 4,129,812, Cl. 318-484.000.

Isono, Akira: *See—*

Goto, Masuo; Isono, Akira; Momochi, Yasushi; and Kai, Takaaki, 4,129,818, Cl. 322-10.000.

Issenmann, Edouard M. J. A. I.: *See—*

Depouilly, Bernard M. H.; and Issenmann, Edouard M. J. A. I., 4,129,756, Cl. 179-175.20R.

Ito, Hiroshi: *See—*

Shindo, Yoshio; and Ito, Hiroshi, 4,129,051, Cl. 74-867.000.

Ito, Osamu; Hobo, Nobuhito; Suzuki, Yutaka; Kawamoto, Itsushi; Naitou, Takashi; Shiozaki, Makoto; and Konishi, Yoshimune, to Nippondenso Co., Ltd. Air-to-fuel ratio control system for internal combustion engines. 4,129,105, Cl. 123-119.0EC.

Ito, Ryuji: *See—*

Umeda, Haruhiko; Ito, Ryuji; Yokoyama, Akinori; and Komatsu, Mitsuaki, 4,129,000, Cl. 60-361.000.

Ito, Sukemitsu: *See—*

Shikata, Nobuo; and Ito, Sukemitsu, 4,129,485, Cl. 204-144.500.

Ito, Syoichi; and Yamada, Takahiro, to Hitachi, Ltd. Phase control for ink jet printer. 4,129,875, Cl. 346-75.000.

ITW Fastex Italia, Sp.A: *See—*

Sciolotto, Alessandro, 4,129,157, Cl. 140-123.600.

Iura, Yukio: *See—*

Yamamichi, Masayoshi; Iura, Yukio; Tezuka, Nobuo; Watanabe, Satoshi; Uchidoi, Masanori; and Aizawa, Hiroshi, 4,129,877, Cl. 354-271.000.

Iwamura, Masahiro; Hamada, Nagaharu; Hara, Toshitaka; and Sato, Nobuo, to Hitachi, Ltd. Raster scan type CRT display system having an image rolling function. 4,129,859, Cl. 340-324.0AD.

Iwasaki, Koji: *See—*

Gerstine, Milton I.; Goldberg, Joshua I.; Futatsugi, Setsuo; Ueda, Kazuo; Seo, Ryozo; Iwasaki, Koji; and Uemura, Makoto, 4,129,275, Cl. 244-181.000.

Iwasaki, Sadayoshi: *See—*

Miyata, Hiroyasu; and Iwasaki, Sadayoshi, 4,129,766, Cl. 200-308.000.

Iwata, Toshiharu: *See—*

Hattori, Tadashi; Nakase, Takamichi; Tsubouchi, Hideo; and Iwata, Toshiharu, 4,128,998, Cl. 60-277.000.

Jackson, Harry C. Process and apparatus for drying textile stock and the like. 4,128,947, Cl. 34-12.000.

Jacquet, Bernard: *See—*

Kalopissis, Gregoire; Jacquet, Bernard; and Lang, Gerard, 4,129,644, Cl. 424-59.000.

Jaeger, Raymond E.; and Presby, Herman M., to Bell Telephone Laboratories, Incorporated. Fabrication of an optical fiber waveguide with periodic variations in diameter. 4,129,433, Cl. 65-2.000.

James, Stanley L.: *See—*

Bowerman, William J.; James, Stanley L.; and Vixie, Dennis E., 4,128,950, Cl. 36-30.00R.

Jamison, Joel D.; Towle, Gordon A.; and Vermeychuk, J. Gregory, to Hercules Incorporated. Pourable salad dressing composition. 4,129,663, Cl. 426-602.000.

Janowski, Kenneth R.; Shum, Ming S.; and Bradley, Steven A., to UOP Inc. Heat transfer surface. 4,129,181, Cl. 165-133.000.

Janssen, Pierre A., to Nadella. Unitary self-aligning bearing assembly. 4,129,343, Cl. 308-35.000.

Jansz, Joost W., to Hollandsche Beton Groep N.V. Anchoring construction on the sea bottom. 4,129,009, Cl. 405-227.000.

Japan Atomic Energy Research Institute: *See—*

Kinbara, Setsuro, 4,129,830, Cl. 324-186.000.

Machi, Sueo; Matsui, Yasushi; Sugishita, Akio; Sugo, Takanobu; Taniguchi, Hiroaki; Asano, Koichi; and Fujiwara, Hiroshi, 4,129,617, Cl. 260-879.000.

Makuuchi, Keizo; Araki, Kunio; Takagi, Tohru; Nakayama, Hiroyuki; and Kozu, Haruo, 4,129,487, Cl. 204-159.140.

Jeddeloh Bros. Sweed Mills, Inc.: *See—*

Larson, Charles L., 4,129,231, Cl. 222-145.000.

Jefferson, Mark T.: *See—*

Celmer, Walter D.; Cullen, Walter P.; Jefferson, Mark T.; Moppett, Charles E.; Routien, John B.; and Sciavolino, Frank C., 4,129,578, Cl. 260-345.70R.

Jeffreys, Godfrey V.; Mumford, Clive J.; Ravault, Frank E. G.; and Washbourne, Colin, to Foseco International Limited. Treatment of droplet dispersions. 4,129,500, Cl. 210-23.00R.

Jennings, James R.; and Sen, Dipankar, to Imperial Chemical Industries Limited. Dimerization process. 4,129,587, Cl. 260-465.80D.

Jensen, Richard W.; and Peterson, Richard H. Pedal control circuits for electronic piano. 4,129,056, Cl. 84-1.260.
Jezl, James L.; and Peters, Edwin F., to Standard Oil Company (Indiana). Horizontal reactor for the vapor phase polymerization of monomers. 4,129,701, Cl. 526-65.000.
Jin, Jung I., to Stauffer Chemical Company. Fire retardant copolymer of triallyl phosphate and a bis (hydrocarbyl) vinylphosphonate. 4,129,710, Cl. 526-278.000.
Jindrick, James A., to Snap-On Tools Corporation. Oscilloscope pretrigger circuit. 4,129,828, Cl. 324-16.00S.
Johannesen, Donald D., to Bendix Corporation, The. Disc brake and mounting therefor. 4,129,200, Cl. 188-71.100.
Johansson, Eric B.; Klahn, Dale H.; and Marlowe, Mickey O., to General Electric Company. Axially alignable nuclear fuel pellets. 4,129,477, Cl. 176-73.000.
Johns-Manville Corporation: *See—*
  Hannes, George J.; Rohweder, Theodore R.; Dreikorn, Hans W.; and Shepherd, Philip B., 4,129,674, Cl. 428-285.000.
Johns, McKinley R., to RCA Corporation. Circularly polarized antenna using slotted cylinder and conductive rods. 4,129,871, Cl. 343-727.000.
Johnsen & Jorgensen (Plastics) Ltd.: *See—*
  Percival, Stephen J., 4,129,226, Cl. 215-235.000.
Johnson, Arthur D.: *See—*
  Pierce, William C.; Berry, Samuel M.; and Johnson, Arthur D., 4,129,026, Cl. 72-367.000.
Johnson, Bernard L., to Haws Corporation, The. Panel assembly and components thereof. 4,129,163, Cl. 160-135.000.
Johnson, Bruce K.: *See—*
  Whiteside, George D.; and Johnson, Bruce K., 4,129,368, Cl. 354-128.000.
Johnson, Duane M.; and Webster, Henry A., III, to United States of America, Navy. Smoke-generating composition. 4,129,465, Cl. 149-19.300.
Johnson & Johnson: *See—*
  Butterworth, George A. M.; Elias, Robert T.; and Miller, Wayne D., 4,129,132, Cl. 128-287.000.
  Gander, Robert J.; and Gurney, John A., 4,129,662, Cl. 424-305.000.
Johnson, Leighton C., to Miles Laboratories, Inc. Staining apparatus. 4,129,093, Cl. 118-401.000.
Johnson, Leonard L.: *See—*
  Beaver, Millard B.; Johnson, Leonard L.; Hart, Harry L.; and Mahoney, Tennis, 4,129,074, Cl. 101-35.000.
Johnson, Marvin M.: *See—*
  Tabler, Donald C.; and Johnson, Marvin M., 4,129,605, Cl. 260-669.00A.
Johnson, Robert C.: *See—*
  Clark, Frederick P.; Johnson, Robert C.; and Topolewski, John, 4,129,527, Cl. 252-547.000.
Jones, Andrew W.; and Merry, Raymond. Aerofoil structure. 4,129,272, Cl. 244-153.00R.
Jones, Earl O., Jr. Tube coupling. 4,129,324, Cl. 285-107.000.
Jones, Ivor W.; Robinson, Graham; and Bird, Thomas L., to Electricity Council, The. Sodium sulphur cells. 4,129,690, Cl. 429-104.000.
Jones, Keith W.: *See—*
  Jones, Wilfred; Jones, Keith W.; and Sweatman, Travers F., 4,129,621, Cl. 261-39.00R.
Jones, Robert A., to Perkin-Elmer Corporation, The. Optical surface polisher. 4,128,968, Cl. 51-54.000.
Jones, Trevor O.: *See—*
  Yew, Ming-Chih; and Jones, Trevor O., 4,129,817, Cl. 320-18.000.
Jones, Wilfred; Jones, Keith W.; and Sweatman, Travers F., to Cyprane North America, Inc. Volatile anesthetic vaporizing apparatus. 4,129,621, Cl. 261-39.00R.
Joseph, A. David, to Sealed Power Corporation. Oil pump inlet screen assembly. 4,129,503, Cl. 210-232.000.
Juba, Bernard T., to H.B. Fuller Company. Burial vault. 4,128,981, Cl. 52-309.300.
Judah, Lewis J.: *See—*
  Humbert, Kingsley E., Jr.; and Judah, Lewis J., 4,129,429, Cl. 55-484.000.
Julius & August Erbsloh, Firma: *See—*
  Doring, Gerhard, 4,128,934, Cl. 29-460.000.
Kabel-und Metallwerke Gutehoffnungshutte A.G.: *See—*
  Hildebrand, Helmut; and Dunker, Gerhard, 4,129,841, Cl. 333-84.00L.
Kabushiki Kaisha Daini Seikosha: *See—*
  Inoue, Akira; and Oka, Minori, 4,129,778, Cl. 250-272.000.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
  Umeda, Haruhiko; Ito, Ryuji; Yokoyama, Akinori; and Komatsu, Mitsuaki, 4,129,000, Cl. 60-361.000.
  Yokoyama, Akinori; and Morinaka, Iwao, 4,128,999, Cl. 60-347.000.
Kabushiki Kaisha Seikosha: *See—*
  Yonezawa, Setsuo; Kawakami, Tsuneta; Shimada, Tatsuo; and Chida, Yoshinori, 4,129,860, Cl. 340-324.0AD.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
  Shigenobu, Hiromichi; Isobe, Toshiaki; and Kondo, Minoru, 4,129,812, Cl. 318-484.000.
Kabushikigaisha Kawaigakkiseisakusho: *See—*
  Hoshi, Yoshitomo, 4,129,057, Cl. 84-434.000.
Kaczor, Janusz: *See—*
  Biedacha, Roman; Kurdziel, Wladyslaw; Kaczor, Janusz; Smeder, Adam; Kolaczkowski, Jacek; Olszowski, Tadeusz; Nawrocki, Adam; and Rzeszut, Janina, 4,129,169, Cl. 164-166.000.
Kadah, Zagloul B., to Monsanto Company. Solid state switch. 4,129,785, Cl. 250-551.000.
Kaduboski, Mitchell J., to Union Carbide Corporation. Pronged anode collector for internally shorting galvanic cells. 4,129,686, Cl. 429-61.000.
Kaffka, Dietmar, to Lindemann Maschinenfabrik GmbH. Baling presses for the production of bound bales. 4,129,070, Cl. 100-17.000.
Kafunek, Pavel: *See—*
  Reichel, Pavel; Kafunek, Pavel; Kovar, Jiri; Pokorny, Oldrich; Zuna, Jaroslav; Kratina, Jindrich; and Pellant, Michal, 4,129,881, Cl. 357-82.000.
Kahane, Lucien, to Union Minerale. Method of grafting a polymer to filler materials. 4,129,549, Cl. 260-40.00R.
Kai, Takaaki: *See—*
  Goto, Masuo; Isono, Akira; Momochi, Yasushi; and Kai, Takaaki, 4,129,818, Cl. 322-10.000.
Kajima Kensetsu Kabushiki Kaisha: *See—*
  Nakahara, Yasushi; Ohtomo, Tadasuke; Yokota, Shinichi; and Usui, Kazuo, 4,129,008, Cl. 405-303.000.
Kalfoglou, George, to Texaco Inc. Use of organic acid chrome complexes to treat clay containing formations. 4,129,183, Cl. 166-300.000.
Kali & Salz AG: *See—*
  Neitzel, Ulrich, 4,129,642, Cl. 423-199.000.
Kalopissis, Gregoire; Jacquet, Bernard; and Lang, Gerard, to L'Oreal. Protecting skin and hair with cosmetic compositions containing superoxide dismutase. 4,129,644, Cl. 424-59.000.
Kamath, Vasanth R.; and Harpell, Gary A., to Pennwalt Corporation. Free-radical polymerizations using mixed initiator systems at two thermally distinct polymerization stages. 4,129,703, Cl. 526-73.000.
Kamoshita, Katsuzo: *See—*
  Takemoto, Ichiki; Yoshida, Ryo; Sumida, Seizo; and Kamoshita, Katsuzo, 4,129,436, Cl. 71-120.000.
Kan, Peter T.: *See—*
  Cenker, Moses; and Kan, Peter T., 4,129,693, Cl. 521-106.000.
Kanagawa, Shuichi: *See—*
  Kudo, Ken-ichi; Kitawaga, Yoshihiko; Koyama, Teruhisa; Takata, Akira; Kanagawa, Shuichi; and Yamaguchi, Tetsuo, 4,129,557, Cl. 526-283.000.
Kang, Jung W.; and Hergenrother, William L., to Firestone Tire & Rubber Company, The. Preparation of 2,3-dihydrofuran. 4,129,579, Cl. 260-346.110.
Kanning, L. Neil, to Pitney-Bowes, Inc. Optical detector which compensates for nonlinearities in a weight measuring system. 4,129,191, Cl. 177-210.00R.
Kaplan, Earl; and Pinto, Frank G., to American Cyanamid Company. Peptizing agent for natural rubber and synthetic butadiene-styrene rubber. 4,129,538, Cl. 260-23.70M.
Kaplan, Irving I.; and Lincoln, Daniel J. Apparatus for digitally encoding the angular position of a shaft with respect to a reference bearing. 4,129,862, Cl. 340-347.00P.
Kaplan, Neil, to Hi-Tech Industries, Inc. Thermosetting molding resin compositions. 4,129,543, Cl. 260-29.15B.
Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel L., to Massachusetts Institute of Technology. Solar-cell array. 4,129,458, Cl. 136-89.0PC.
Kapoor, Devinder S., to Rank Xerox Limited. Rejuvenating electrostatographic carrier particles. 4,129,136, Cl. 134-2.000.
Karasawa, Yoshiharu; Koyama, Tohru; and Narahara, Toshikazu, to Hitachi Chemical Co., Ltd.; and Hitachi, Ltd. Thermosettable, polymerizable resin composition comprising a polyepoxide and a polyisocyanate stabilized by incorporating an organic electron acceptor. 4,129,554, Cl. 528-48.000.
Karlfors, Levi J.: *See—*
  Lavon, Erik V.; Lemcke, Bo; and Karlfors, Levi J., 4,129,335, Cl. 299-17.000.
Karlotski, Robert J., to GTE Sylvania Incorporated. Method of manufacturing tungsten halogen lamp. 4,129,348, Cl. 316-20.000.
Karrer, Henry E.: *See—*
  Dias, J. Fleming; Karrer, Henry E.; and Tykulsky, Alexander, 4,129,242, Cl. 228-121.000.
Kastinger, Hermann: *See—*
  Strohmeier, Helmut, 4,129,319, Cl. 280-615.000.
Kasu, Abdul L.; and Tustaniwskyj, Jerry I., to Burroughs Corporation. Back-up pressure mechanism with tensioned elongated member. 4,129,892, Cl. 360-130.000.
Kataoka, Hiroshi: *See—*
  Yasuike, Akio; Kataoka, Hiroshi; and Toyouchi, Kaoru, 4,129,635, Cl. 264-45.500.
Kates, Willard A., to W. A. Kates Company, The. Fluid mixer. 4,129,624, Cl. 261-76.000.
Kato, Shigeo; Morita, Osamu; and Matuoka, Sadao, to Hitachi, Ltd. Two-dimensional precision table. 4,129,291, Cl. 269-73.000.
Kaufman, Michael P.; Kochenderfer, Randal S.; and Crivello, Frank A. Smoker's tool. 4,129,135, Cl. 131-243.000.
Kaufman, Sydney M., to Ford Motor Company. Method for improving the sinterability of iron powder derived from comminuted scrap metal. 4,129,443, Cl. 75-212.000.
Kawabe, Hirokazu; Imai, Kiyoshi; and Miyakoshi, Masanobu, to Nagaoka Co. Ltd.; and Shin-Etsu Chemical Co., Ltd. Roller for cleaning phonograph records. 4,128,909, Cl. 15-104.00A.
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  Marumoto, Ryuji M.; Furukawa, Yoshiyasu; and Kawai, Kiyohisa, 4,129,654, Cl. 424-251.000.

Kawakami, Kazuhiko, to Hitachi, Ltd. Ignition timing control device of the negative pressure actuation type. 4,129,104, Cl. 123-117.00A.
Kawakami, Tsuneta: *See—*
  Yonezawa, Setsuo; Kawakami, Tsuneta; Shimada, Tatsuo; and Chida, Yoshinori, 4,129,860, Cl. 340-324.0AD.
Kawamata, Masanobu: *See—*
  Inoue, Sho; Kawamata, Masanobu; Ushimaru, Hirokazu; Nakamichi, Koichi; and Takahashi, Yutaka, 4,129,649, Cl. 424-182.000.
Kawamoto, Itsushi: *See—*
  Ito, Osamu; Hobo, Nobuhito; Suzuki, Yutaka; Kawamoto, Itsushi; Naitou, Takashi; Shiozaki, Makoto; and Konishi, Yoshimune, 4,129,105, Cl. 123-119.0EC.
Kawasaki Jukogyo Kabushiki Kaisha: *See—*
  Gerstine, Milton I.; Goldberg, Joshua I.; Futatsugi, Setsuo; Ueda, Kazuo; Seo, Ryozo; Iwasaki, Koji; and Uemura, Makoto, 4,129,275, Cl. 244-181.000.
  Horiuchi, Kaoru; Matsui, Akio; Hara, Masahiro; and Takahashi, Hiroshi, 4,129,442, Cl. 75-126.00C.
Kawasaki, Ryoichi: *See—*
  Ishii, Yasuhiro; Hirose, Shintaro; and Kawasaki, Ryoichi, 4,129,195, Cl. 181-167.000.
Keene, Richard M.: *See—*
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Kees, Ulrich: *See—*
  Stoll, Kurt; and Kees, Ulrich, 4,129,147, Cl. 137-596.100.
Kehr, Clifton L.: *See—*
  Cogliano, Joseph A.; and Kehr, Clifton L., 4,129,694, Cl. 521-107.000.
Keller, Frank R.; Cataldo, John B.; Kussy, Frank W.; and DiMarco, Bernard, to I-T-E Imperial Corporation. Magnetic trip means for circuit breaker. 4,129,843, Cl. 335-174.000.
Kelly, Charles A.: *See—*
  Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., 4,129,723, Cl. 542-416.000.
KemaNord AB: *See—*
  Larsson, Karl-Georg, 4,129,484, Cl. 204-101.000.
Kennedy, Peter D., to Motorola Inc. Main lobe signal canceller in a null steering array antenna. 4,129,873, Cl. 343-854.000.
Kennedy, Wayne C., to Armstrong Cork Company. Use of an open porous thermoplastic netting as the laminating adhesive in forming a mineral wool fiberboard product. 4,129,637, Cl. 264-112.000.
Kenney, Jerald R. Golf putting training device. 4,129,301, Cl. 273-186.00R.
Kent, David P., to Control Process, Inc. Bulk product slicing system. 4,129,053, Cl. 83-69.000.
Kent, Thomas B., to Solar Control Corporation. Solar air flow controller and system. 4,129,116, Cl. 126-270.000.
Keppler, Hans G.; Stahnecker, Erhard; and Moeller, Rolf, to BASF Aktiengesellschaft. Manufacture of styrene suspension polymers. 4,129,706, Cl. 526-201.000.
Kerb, Ulrich: *See—*
  Wiechert, Rudolf; Bittler, Dieter; Kerb, Ulrich; Casals-Stenzel, Jorge; and Losert, Wolfgang, 4,129,564, Cl. 260-239.570.
Kerbs, Reuben. Sleeping bag liner. 4,128,908, Cl. 5-334.00C.
Kerstens, Franciscus N. A., to U.S. Philips Corporation. Resonant cavity magnetron with choke structure for reducing harmonics in output system. 4,129,834, Cl. 331-91.000.
Keyzer, Carl A., to Fiat-Allis Construction Machinery, Inc. Engine air heater and starting circuits to by-pass auxiliary steering circuit. 4,129,001, Cl. 60-403.000.
Khazan, Alexander: *See—*
  Wengryn, Michael; and Khazan, Alexander, 4,129,187, Cl. 173-117.000.
Kidd, Archibald W. Tip-up vehicles. 4,129,333, Cl. 298-22.00R.
Kiehs, Karl; and Huber, Rolf, to BASF Aktiengesellschaft. Pyrocatechol derivatives. 4,129,601, Cl. 568-593.000.
Kihara, Yoshio, to Sanwa Industries, Ltd. Needle bar disengaging device for sewing machines. 4,129,084, Cl. 112-221.000.
Kimball International, Inc.: *See—*
  Whittington, Billy J.; Burns, Timothy L.; and Welsh, Alan B., 4,129,055, Cl. 84-1.010.
Kimura, Yoshimasa: *See—*
  Miyamoto, Koichi; Tohyama, Yoshikuni; Sagara, Seiji; Kimura, Yoshimasa; and Ishida, Masato, 4,129,377, Cl. 355-14.000.
Kinbara, Setsuro, to Japan Atomic Energy Research Institute. Counting process for time-to-digital converting circuits. 4,129,830, Cl. 324-186.000.
King, Walter J.; Snook, James C.; and Peters, Kenneth, to Chloride Group Limited. Electric storage batteries. 4,129,692, Cl. 429-234.000.
Kingsley, Jack D.; and Yang, Kei-Hsiung, to General Electric Company. Photocontrolled ion-flow electron radiography apparatus with multi-layered mesh structure. 4,129,779, Cl. 250-315.00A.
Kirsch, Bernhard. Windows and doors. 4,128,967, Cl. 49-318.000.
Kishitani, Keisuke, to Caterpillar Mitsubishi Ltd. Chain with bushing protective cover. 4,129,045, Cl. 74-255.00R.
Kisselow, Alexander W.; and Wulk, Peter K., to British Petroleum Company Limited, The. Lubricating greases. 4,129,512, Cl. 252-51.50A.
Kitajima, Masaharu: *See—*
  Taguchi, Kazumasa; Nishida, Tsutomu; Kitajima, Masaharu; Aketa, Kan; Fujita, Isao; Onoda, Mamoru; Imanishi, Nobuyuki; and Watanabe, Ryo, 4,129,437, Cl. 75-5.000.
Kitawaga, Yoshihiko: *See—*
  Kudo, Ken-ichi; Kitawaga, Yoshihiko; Koyama, Teruhisa; Takata, Akira; Kanagawa, Shuichi; and Yamaguchi, Tetsuo, 4,129,557, Cl. 526-283.000.
Kiuchi, Mitsuyuki: *See—*
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Klaubert, Dieter H.: *See—*
  Sellstedt, John H.; and Klaubert, Dieter H., 4,129,735, Cl. 544-132.000.
Klaus-Gerd Hoes, Firma: *See—*
  Ruge, Hans, 4,129,399, Cl. 404-118.000.
Klein, Edmund. Treatment of acne. 4,129,647, Cl. 424-92.000.
Klein, Gerald B. Gated can end with shear offset defining gate and method for manufacture of the same. 4,129,085, Cl. 113-121.00C.
Klein, H. Joseph: *See—*
  Matthews, Steven J.; Klein, H. Joseph; and Hodge, Frank G., 4,129,464, Cl. 148-162.000.
Kleindienst & Co. Maschinenfabrik, Firma: *See—*
  Geiger, Friedrich, 4,128,953, Cl. 38-56.000.
Knab, Emil D., to Bell Telephone Laboratories, Incorporated. Method and apparatus for manufacturing optical communication cables. 4,129,468, Cl. 156-148.000.
Knecht, John E. Slope detector for indicating flat tires and the like. 4,129,852, Cl. 340-58.000.
Knipp, Ulrich: *See—*
  Boden, Heinrich; and Knipp, Ulrich, 4,129,636, Cl. 264-51.000.
Knutsson, Kent I., to AB Ziristor. Method for making packing containers. 4,129,467, Cl. 156-84.000.
Kobayashi, Haruo; and Imura, Toshinori, to Minolta Camera Kabushiki Kaisha. Parallax compensating device for the view finder in a camera. 4,129,369, Cl. 354-197.000.
Kobayashi, Katsuyoshi: *See—*
  Miyasita, Satoru; Taniguchi, Masahiko; and Kobayashi, Katsuyoshi, 4,129,289, Cl. 266-195.000.
Kobayashi, Kengo; Mogami, Masayuki; Tanaka, Shigeyoshi; Nakao, Manabu; and Tamura, Sadao, to Hitachi Chemical Co., Ltd.; and Chugoku Marine Paints, Ltd. Water-soluble coating composition for ship bottoms. 4,129,610, Cl. 260-837.00R.
Kobe Steel, Ltd.: *See—*
  Taguchi, Kazumasa; Nishida, Tsutomu; Kitajima, Masaharu; Aketa, Kan; Fujita, Isao; Onoda, Mamoru; Imanishi, Nobuyuki; and Watanabe, Ryo, 4,129,437, Cl. 75-5.000.
Kochenderfer, Randal S.: *See—*
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Kodama, Yutaka: *See—*
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Koellner, Guido. Multiple hanger. 4,129,218, Cl. 211-116.000.
Kohnert, Hans J.; and Smetan, Herbert, to Mahle GmbH. Austenitic cast iron. 4,129,309, Cl. 277-189.500.
Koike, Sakae; Matsunami, Shoichi; and Fujiwara, Yasuo, to Mitsubishi Chemical Industries, Ltd. Method of removing nitrogen oxides in exhaust combustion gases. 4,129,651, Cl. 423-235.000.
Koizumi, Ken-ichi: *See—*
  Suzuki, Suzuo; Nakajima, Masayasu; Koizumi, Ken-ichi; and Ookubo, Yoshio, 4,128,997, Cl. 60-274.000.
Kojima, Shokichi. Soil-hardening composition. 4,129,449, Cl. 106-95.000.
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  Biedacha, Roman; Kurdziel, Wladyslaw; Kaczor, Janusz; Smeder, Adam; Kolaczkowski, Jacek; Olszowski, Tadeusz; Nawrocki, Adam; and Rzeszut, Janina, 4,129,169, Cl. 164-166.000.
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Komine, Yoshio, to Canon Kabushiki Kaisha. Sound motion picture camera. 4,129,363, Cl. 352-29.000.
Kondo, Minoru: *See—*
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Konishi, Yoshimune: *See—*
  Ito, Osamu; Hobo, Nobuhito; Suzuki, Yutaka; Kawamoto, Itsushi; Naitou, Takashi; Shiozaki, Makoto; and Konishi, Yoshimune, 4,129,105, Cl. 123-119.0EC.
Konno, Daisuke; and Tanaka, Tetsuo, to Ebara Corporation. Sealing means for tank mixer. 4,129,306, Cl. 277-30.000.
Konovalov, Evmeny G., deceased: *See—*
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  Ignashev, Evgeny P.; Konovalov, Evmeny G., deceased; Konovalov, Georgy E., administrator; and Zaitseva, Nina E., administrator, 4,129,027, Cl. 72-429.000.
Kooi, John H.; Schure, Ralph M.; and Brown, John M., to Unitech

- Chemical Inc. Hot melt adhesive having both high peel and tensile shear strength. 4,129,607, Cl. 260-835.000.
- Koppelman, Edward. Process for making coke from cellulosic materials and fuels produced therefrom. 4,129,420, Cl. 44-51.000.
- Korenko, Michael K., to United States of America, Energy. Gamma prime hardened nickel-iron based superalloy. 4,129,462, Cl. 148-31.000.
- Korischum, Fritz, to Brown, Boveri & Company Limited. Large insulator with particular cemented joint. 4,129,745, Cl. 174-209.000.
- Korner, Wolf-Dietrich; and Hartmann, Otto, to Daimler-Benz Aktiengesellschaft. Arrangement of air compressor at a reciprocating piston internal combustion engine. 4,129,404, Cl. 417-364.000.
- Koster, William H.: *See*—
  - Slusarchyk, William A.; Gordon, Eric M.; and Koster, William H., 4,129,731, Cl. 544-21.000.
- Kotoh, Keigo: *See*—
  - Tahara, Kiyokazu; and Kotoh, Keigo, 4,129,868, Cl. 343-6.80R.
- Kotsonis, Frank N.: *See*—
  - Ellison, Robert A.; and Kotsonis, Frank N., 4,129,577, Cl. 260-345.200.
- Koumura, Noboru: *See*—
  - Fujii, Motoharu; Muramatsu, Takao; Koumura, Noboru; Sugiura, Susumu; Takekawa, Nobuhiro; and Tsukada, Syusei, 4,129,072, Cl. 101-1.000.
- Kovar, Jiri: *See*—
  - Reichel, Pavel; Kafunek, Pavel; Kovar, Jiri; Pokorny, Oldrich; Zuna, Jaroslav; Kratina, Jindrich; and Pellant, Michal, 4,129,881, Cl. 357-82.000.
- Koyama, Teruhisa: *See*—
  - Kudo, Ken-ichi; Kitawaga, Yoshihiko; Koyama, Teruhisa; Takata, Akira; Kanagawa, Shuichi; and Yamaguchi, Tetsuo, 4,129,557, Cl. 526-283.000.
- Koyama, Tohru: *See*—
  - Karasawa, Yoshiharu; Koyama, Tohru; and Narahara, Toshikazu, 4,129,554, Cl. 528-48.000.
- Kozu, Haruo: *See*—
  - Makuuchi, Keizo; Araki, Kunio; Takagi, Tohru; Nakayama, Hiroyuki; and Kozu, Haruo, 4,129,487, Cl. 204-159.140.
- Kraft, Frederick M.: *See*—
  - Bacotti, Peter A.; and Kraft, Frederick M., 4,129,361, Cl. 351-22.000.
- Kratina, Jindrich: *See*—
  - Reichel, Pavel; Kafunek, Pavel; Kovar, Jiri; Pokorny, Oldrich; Zuna, Jaroslav; Kratina, Jindrich; and Pellant, Michal, 4,129,881, Cl. 357-82.000.
- Kraus, Hubert: *See*—
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- Krause, Herbert: *See*—
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- Krautkramer-Branson, Incorporated: *See*—
  - Bickel, Wolf, 4,129,041, Cl. 73-657.000.
- Kreutz, Werner, to M. Braun GmbH. Curved location-sensitive proportional counter tube. 4,129,782, Cl. 250-379.000.
- Krieg & Zivy Industries: *See*—
  - Godtschalck, Lucien J., 4,129,347, Cl. 312-330.00R.
- Kroenke, William J., to B. F. Goodrich Company, The. Smoke retarded polymer compositions containing amine molybdates. 4,129,540, Cl. 260-28.50A.
- Krude, Werner, to Uni-Cardan AG. Bearing assembly for a motor vehicle wheel. 4,129,345, Cl. 308-191.000.
- Kruseman, Jan; Bertschy, Pierre Y.; and Hidalgo, Jaime, to Societe d'Assistance Technique pour Produits Nestle S.A. Process for the production of a vegetable-based sweetened condensed milk. 4,129,664, Cl. 426-7.000.
- Kubrak, Ronald. Device for launching and retrieving a spherical ball. 4,129,110, Cl. 124-16.000.
- Kudo, Ken-ichi; Kitawaga, Yoshihiko; Koyama, Teruhisa; Takata, Akira; Kanagawa, Shuichi; and Yamaguchi, Tetsuo, to Sumitomo Chemical Company, Limited. Process for producing copolymerized resins. 4,129,557, Cl. 526-283.000.
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  - Ferrarini, James; and Kuehn, Erich, 4,129,641, Cl. 264-294.000.
- Kugelfischer Georg Schafer & Co.: *See*—
  - Hormann, Karl; and Weigand, Hans, 4,129,344, Cl. 308-187.000.
- Kuhla, Donald E., to Pfizer Inc. Quaternary salts as hypoglycemic agents. 4,129,567, Cl. 546-121.000.
- Kuhn, Gerhard: *See*—
  - Lohmann, Joachim W.; Lapp, Otto; and Kuhn, Gerhard, 4,129,446, Cl. 96-74.000.
- Kuiper, Dan B.: *See*—
  - Bader, Ernest, Jr.; Deckard, John I.; and Kuiper, Dan B., 4,129,253, Cl. 239-88.000.
  - Bader, Ernest, Jr.; Deckard, John I.; and Kuiper, Dan B., 4,129,254, Cl. 239-96.000.
  - Bader, Ernest, Jr.; Deckard, John I.; and Kuiper, Dan B., 4,129,255, Cl. 239-96.000.
  - Bader, Ernest, Jr.; Deckard, John I.; and Kuiper, Dan B., 4,129,256, Cl. 239-96.000.
- Kunda, Wasyl; and Hitesman, Roderick H., to Sherritt Gordon Mines Limited. Recovery of silver from silver containing solutions. 4,129,441, Cl. 75-118.00R.
- Kunstle, Gerhard; Spes, Hellmuth; and Siegl, Herbert, to Wacker-Chemie GmbH. Process for the continuous preparation of acetoacetamides. 4,129,596, Cl. 260-561.00K.
- Kuntz, Martin, Jr. Support device for a trailer. 4,129,322, Cl. 280-766.000.
- Kurdziel, Wladyslaw: *See*—
  - Biedacha, Roman; Kurdziel, Wladyslaw; Kaczor, Janusz; Smeder, Adam; Kolaczkowski, Jacek; Olszowski, Tadeusz; Nawrocki, Adam; and Rzeszut, Janina, 4,129,169, Cl. 164-166.000.
- Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
  - Murayama, Naohiro; Nakamura, Kenichi; and Endo, Shunzo, 4,129,608, Cl. 260-836.000.
- Kurita Machinery Manufacturing Company Limited: *See*—
  - Kurita, Tetsuya; and Hara, Toshifumi, 4,129,137, Cl. 134-144.000.
- Kurita, Tetsuya; and Hara, Toshifumi, to Kurita Machinery Manufacturing Company Limited. Washing apparatus for filter press. 4,129,137, Cl. 134-144.000.
- Kurtz, Bruce E.: *See*—
  - Fitch, Robert H.; Kurtz, Bruce E.; and Smura, Bronislaw B., 4,129,495, Cl. 204-279.000.
- Kussy, Frank W.: *See*—
  - Keller, Frank R.; Cataldo, John B.; Kussy, Frank W.; and DiMarco, Bernard, 4,129,843, Cl. 335-174.000.
- Kyowa Gas Chemical Industry Co., Ltd.: *See*—
  - Nagai, Haruo; Uehara, Hiroshi; and Nunokawa, Kunikazu, 4,129,524, Cl. 252-478.000.
- Labaz: *See*—
  - Pigerol, Charles; de Cointet de Fillain, Paul; and Bazile, Yves, 4,129,572, Cl. 260-326.12R.
- Laboratoire Roger Bellon: *See*—
  - Pesson, Marcel, 4,129,737, Cl. 544-279.000.
- Laffay, Gilbert: *See*—
  - El-Soueessi, Monti; Laffay, Gilbert; and Neuschwander, Jean-Christian, 4,129,188, Cl. 173-120.000.
- Lahme, Norbert; and Sassmannshausen, Gunter, to Accumulatorenwerk Hoppecke. Reaction catalyst for the elimination of oxyhydrogen gas in lead-acid storage batteries. 4,129,687, Cl. 429-86.000.
- Laimer, Friedrich; and Moser, Peter, to Vereinigte Osterreichische Eisen-und Stahlwerke - Alpine Montan Aktiengesellschaft. Hood to be used in a metal production plant. 4,129,288, Cl. 266-158.000.
- Lambden, Martin R., to Quest Automation Limited. Electrographic apparatus and hand rest for use therewith. 4,129,746, Cl. 178-18.000.
- Landis, Abraham L.: *See*—
  - Bilow, Norman; Landis, Abraham L.; and Miller, Leroy J., 4,129,570, Cl. 528-128.000.
- Landis & Gyr: *See*—
  - Greenaway, David L., 4,129,382, Cl. 356-71.000.
- Landstingens Inkopscentral Lic, Ekonomisk Forening: *See*—
  - Marsh, Gunnar; Henriksen, Ole; and Sjoblum, Urban C. S., 4,128,903, Cl. 3-19.000.
- Lang, Gerard: *See*—
  - Kalopissis, Gregoire; Jacquet, Bernard; and Lang, Gerard, 4,129,644, Cl. 424-59.000.
- Lang, Hans-Jochen; and Muschaweck, Roman, to Hoechst Aktiengesellschaft. Thiazolidine derivatives, salidiuretic compositions and methods of effecting salidiuresis employing them. 4,129,656, Cl. 424-263.000.
- Lang, Norbert D.: *See*—
  - Lawson, Herman L.; and Lang, Norbert D., 4,129,331, Cl. 296-100.000.
- Lanin, Jackob: *See*—
  - Lanin, Semyon; and Lanin, Jackob, 4,129,264, Cl. 241-285.00R.
- Lanin, Semyon; and Lanin, Jackob. Soundproof hopper. 4,129,264, Cl. 241-285.00R.
- Lapp, Otto: *See*—
  - Lohmann, Joachim W.; Lapp, Otto; and Kuhn, Gerhard, 4,129,446, Cl. 96-74.000.
- Larinoff, Michael W., to Hudson Products Corporation. Vapor condensing apparatus. 4,129,180, Cl. 165-113.000.
- Larson, Charles L., to Jeddeloh Bros. Sweed Mills, Inc. Portable, hand-held gun for dispensing multiple fluidic components to a mixer. 4,129,231, Cl. 222-145.000.
- Larson, Hugo R.: *See*—
  - Ridenour, Charles E.; Fabert, Herman A., Jr.; Tasker, John; and Larson, Hugo R., 4,129,773, Cl. 219-146.230.
- Larsson, Karl-Georg, to KemaNord AB. Process for regeneration of spent reaction solutions. 4,129,484, Cl. 204-101.000.
- Laserplane Corporation: *See*—
  - Teach, Ted L., 4,129,224, Cl. 214-763.000.
- Lash, Ronald J., to M&T Chemicals Inc. Electroplating iron group metal alloys. 4,129,482, Cl. 204-43.00T.
- Laughlin, Richard H., to Varo, Inc. Active imaging system using time programmed dwell. 4,129,780, Cl. 250-333.000.
- Lavezzari, Piero: *See*—
  - Portinari, Antonio; and Lavezzari, Piero, 4,129,466, Cl. 156-48.000.
- Lavon, Erik V.; Lemcke, Bo; and Karlfors, Levi J., to Atlas Copco Aktiebolag. Fluid jet method and device for breaking hard material. 4,129,335, Cl. 299-17.000.
- Lawson, Herman L.; and Lang, Norbert D. Retractable cover for open top container. 4,129,331, Cl. 296-100.000.
- Le Material Telephonique: *See*—
  - Depouilly, Bernard M. H.; and Issenmann, Edouard M. J. A. I., 4,129,756, Cl. 179-175.20R.
- Lech, Richard J., to International Harvester Company. Clutch modulator. 4,129,148, Cl. 137-596.000.
- Lechner, Hanspeter, to Mettler Instrumente AG. Weighing apparatus including display control means. 4,129,190, Cl. 177-155.000.

- Lecoeuche, Jacques: *See*—
  - Bregeault, Marc; Lecoeuche, Jacques; and Margrain, Pierre, 4,129,808, Cl. 318-254.000.
- Lee, David N.: *See*—
  - Degras, James C.; and Lee, David N., 4,129,267, Cl. 242-107.40A.
- Lee, Joseph L., to Lee, Stephen Andrew. Revolver-type hand gun. 4,128,957, Cl. 42-65.000.
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  - Lee, Joseph L., 4,128,957, Cl. 42-65.000.
- Leftheris, Basil P.; Mainhardt, Joseph H.; and Schwenk, Walter, to Grumman Aerospace Corporation. Method and apparatus for working a hole. 4,129,028, Cl. 72-430.000.
- Lehtovaara, Ritva M. Bearing assembly for barbecues. 4,129,111, Cl. 126-25.0AA.
- Lekim, Dac: *See*—
  - Betzing, Hans; and Lekim, Dac, 4,129,650, Cl. 424-211.000.
- Leland Stanford Jr. University, The Board of Trustees of: *See*—
  - Escher, Sina; and Dubois, Grant E., 4,129,599, Cl. 260-586.00E.
- Lemcke, Bo: *See*—
  - Lavon, Erik V.; Lemcke, Bo; and Karlfors, Levi J., 4,129,335, Cl. 299-17.000.
- Lemcke, Howard R., Jr., to Caterpillar Tractor Co. Gear shift control. 4,129,046, Cl. 74-473.00P.
- Lenglet, Henry, to Regie Nationale des Usines Renault. Nozzle for blowing molds or cores for sand casting. 4,129,160, Cl. 141-388.000.
- Lenhard, Robert H.: *See*—
  - Bernstein, Seymour; Lenhard, Robert H.; and Conrow, Ransom B., 4,129,591, Cl. 260-506.000.
- Lerner, Pierre: *See*—
  - Galaj, Stanislas; Hochon, Bernard; and Lerner, Pierre, 4,129,552, Cl. 260-45.9QB.
- Lester, Robert W.; and Hotto, Robert, to Camin Research Corp. Patient monitoring system. 4,129,125, Cl. 128-2.05R.
- Leutenegger, Bernhard, to Logotronic AG. Apparatus for indicating the level of liquids in the containers or watercraft. 4,129,038, Cl. 73-307.000.
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  - Rubin, Fred K., 4,129,423, Cl. 51-304.000.
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  - Bandurco, Victor T.; and Levine, Seymour, 4,129,653, Cl. 424-251.000.
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  - Horowitz, Harold S.; Longo, John M.; and Lewandowski, Joseph T., 4,129,525, Cl. 252-518.000.
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  - Rose, David; Weinrich, Erwin; and Lieske, Edgar, 4,129,413, Cl. 8-10.200.
  - Rose, David; Saygin, Ferdi; and Lieske, Edgar, 4,129,414, Cl. 8-10.200.
- Lighthouse Fireplaces, Inc.: *See*—
  - Hiser, William H., 4,129,114, Cl. 126-122.000.
- Lim-Holding, S.A.: *See*—
  - Schmidt, Oskar; and Sibral, Walter, 4,129,741, Cl. 560-50.000.
- Limb, John O., to Bell Telephone Laboratories, Incorporated. Video coder for color signals. 4,129,882, Cl. 358-13.000.
- Lincoln, Daniel J.: *See*—
  - Kaplan, Irving I.; and Lincoln, Daniel J., 4,129,862, Cl. 340-347.00P.
- Lincoln Logotype Co., Inc.: *See*—
  - Beaver, Millard B.; Johnson, Leonard L.; Hart, Harry L.; and Mahoney, Tennis, 4,129,074, Cl. 101-35.000.
- Lindemann Maschinenfabrik GmbH: *See*—
  - Kaffka, Dietmar, 4,129,070, Cl. 100-17.000.
- Lindner, Adolf, to Siemens Aktiengesellschaft. Brake device for drive motors. 4,129,797, Cl. 310-77.000.
- Lindsey, Keith E.; and Lindsey, L. E. Stringing block assembly adapted to be threaded by helicopter. 4,129,287, Cl. 254-134.3PA.
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  - Lindsey, Keith E.; and Lindsey, L. E., 4,129,287, Cl. 254-134.3PA.
- Lion Fat & Oil Co., Ltd., The: *See*—
  - Ogoshi, Toshiaki; Nakamura, Masayoshi; and Yamane, Izumi, 4,129,511, Cl. 252-140.000.
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- Littell, Edmund R. Plate handling apparatus with load deflection compensation. 4,129,328, Cl. 294-65.000.
- Loboda, Robert S., to UOP Inc. Hydrocarbon reforming process. 4,129,496, Cl. 208-134.000.
- Loffelholz, Eberhard. Ski pole. 4,129,312, Cl. 280-11.37Z.
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  - Leutenegger, Bernhard, 4,129,038, Cl. 73-307.000.
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- Lohsl, Gerald A., to Telephone Utility Terminal Co., Inc. Terminal box for underground electrical conductors. 4,129,743, Cl. 174-38.000.
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  - Flanigen, Edith M.; Lok, Brent M.; and Mumbach, Norbert R., 4,129,450, Cl. 106-120.000.
- Longo, James J., to DHP Corporation. Method of removing dental cement. 4,129,456, Cl. 134-1.000.
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  - Horowitz, Harold S.; Longo, John M.; and Lewandowski, Joseph T., 4,129,525, Cl. 252-518.000.
- Longo, Joseph F., to International Dynetics Corporation. Self-powered bucket arrangement. 4,129,329, Cl. 294-70.000.
- Lopez, Martha Z. Method of applying decorative designs to surfaces. 4,129,669, Cl. 427-282.000.
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  - Kalopissis, Gregoire; Jacquet, Bernard; and Lang, Gerard, 4,129,644, Cl. 424-59.000.
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- Losert, Wolfgang: *See*—
  - Wiechert, Rudolf; Bittler, Dieter; Kerb, Ulrich; Casals-Stenzel, Jorge; and Losert, Wolfgang, 4,129,564, Cl. 260-239.570.
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  - Cusano, Dominic A.; Loughran, James A.; and Sun, Yen S. E., 4,129,243, Cl. 228-122.000.
- Lowry, John A., to E & I Corporation. Pulverizer hammer for comminutating apparatus. 4,129,262, Cl. 241-197.000.
- Lubrizol Corporation, The: *See*—
  - Friihauf, Edward J., 4,129,508, Cl. 252-33.000.
  - Smith, Donald M., 4,129,510, Cl. 252-48.600.
- Lucas Industries Limited: *See*—
  - Cryer, Edward, 4,129,757, Cl. 200-4.000.
- Ludwig Boschert, Maschinen- und Apparatebau GmbH & Co. KG: *See*—
  - Fazis, Harald, 4,129,054, Cl. 83-165.000.
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  - Snee, William F., Jr., 4,129,172, Cl. 164-348.000.
- Lummus Company, The: *See*—
  - Tsao, Utah, 4,129,604, Cl. 260-656.00R.
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- M. Braun GmbH: *See*—
  - Kreutz, Werner, 4,129,782, Cl. 250-379.000.
- M&T Chemicals Inc.: *See*—
  - Balatan, Sergio E., 4,129,712, Cl. 526-304.000.
  - Lash, Ronald J., 4,129,482, Cl. 204-43.00T.
- MacDonald, Robert C., to Westinghouse Electric Corp. Elevator system. 4,129,199, Cl. 187-29.00R.
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- Machines Chambon: *See*—
  - Corse, Louis G., 4,129,065, Cl. 93-58.0ST.
- MacLeay, Ronald E.: *See*—
  - Sheppard, Chester S.; and MacLeay, Ronald E., 4,129,586, Cl. 260-465.00D.
- Madison Foods, Inc.: *See*—
  - Fick, Edwin O., Jr.; and Bell, Edward L., 4,128,916, Cl. 17-52.000.
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- Maffet, Vere, to UOP Inc. Organic waste drying process. 4,128,946, Cl. 34-12.000.
- Mageli, Orville L.; and Swarts, William A., to Pennwalt Corporation. Peroxy compounds and vulcanizable compositions thereof. 4,129,700, Cl. 260-823.000.
- Mager, Eric L. Self-limiting board game combining chance and skill. 4,129,304, Cl. 273-243.000.
- Maglecic, Steve C.; and Oberholtzer, Larry W., to Maglecic, Steve C. Weight control system. 4,129,189, Cl. 177-123.000.
- Magnuson, Arthur P. Compact golf course. 4,129,300, Cl. 273-176.00A.
- Mahle GmbH: *See*—
  - Kohnert, Hans J.; and Smetan, Herbert, 4,129,309, Cl. 277-189.500.
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- Maierhofer, Alfred; and Wagner, Hans, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of high purity S-carboxymethyl-L-cysteine. 4,129,593, Cl. 562-557.000.
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  - Leftheris, Basil P.; Mainhardt, Joseph H.; and Schwenk, Walter, 4,129,028, Cl. 72-430.000.
- Mairs, John H., to Newton, John, a part interest. Heat transfer method and apparatus. 4,129,012, Cl. 62-113.000.
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  - Christenson, Roger M.; Dowbenko, Rostyslaw; and Makhlouf, Joseph M., 4,129,489, Cl. 204-159.220.
- Makuuchi, Keizo; Araki, Kunio; Takagi, Tohru; Nakayama, Hiroyuki; and Kozu, Haruo, to Japan Atomic Energy Research Institute. Process for improving the properties of an aqueous emulsion type coating composition. 4,129,487, Cl. 204-159.140.

- Malinowski, William J., to Chloride Incorporated. Smoke detector and housing assembly therefore. 4,129,383, Cl. 356-439.000.
- Malivoir, Roger: *See—*
  - Pierrel, Michel; and Malivoir, Roger, 4,129,171, Cl. 164-292.000.
- Mangal, Norman F.: *See—*
  - Hori, Tatsu; Gardiner, Kenneth W.; and Mangal, Norman F., 4,129,295, Cl. 271-186.000.
- Mannesmann Aktiengesellschaft: *See—*
  - Thonnes, Horst; and Wunsche, Joachim, 4,129,022, Cl. 72-41.000.
- Mannuzza, Frank: *See—*
  - Collier, Harry O. J.; Saeed, Sheikh A.; Schneider, Cyril; and Mannuzza, Frank, 4,129,648, Cl. 424-101.000.
- Manufacture de Vilebrequins de Lorette S.A.: *See—*
  - Berthier, Pierre, 4,129,401, Cl. 408-59.000.
- Marason, Gabriel, Jr.; Melzian, John M.; and Pitkanen, Alan R., to Mattel, Inc. Toy clock using marbles. 4,128,949, Cl. 35-39.000.
- Marass, Josef, to Georg Spiess GmbH. Sheet-feeding mechanism acting on front corner regions of a sheet. 4,129,294, Cl. 271-93.000.
- Marconi Company Limited, The: *See—*
  - Wallington, John R.; and Greed, Robert B., 4,129,838, Cl. 333-7.00D.
- Marek, Larry L. Weight arrestor. 4,128,960, Cl. 43-27.400.
- Margrain, Pierre: *See—*
  - Bregeault, Marc; Lecoeuche, Jacques; and Margrain, Pierre, 4,129,808, Cl. 318-254.000.
- Maricle, Donald L., to United Technologies Corp. Anhydrous H_2/Cl_2 regenerative fuel cell. 4,129,683, Cl. 429-21.000.
- Mark, Victor: *See—*
  - Axelrod, Robert J.; Mark, Victor; and Wilson, Phillip S., 4,129,546, Cl. 260-31.80T.
- Markusch, Peter; Dieterich, Dieter; and Dietrich, Manfred, to Bayer Aktiengesellschaft. Process for the production of inorganic-organic plastic composites. 4,129,696, Cl. 521-154.000.
- Marley Company, The: *See—*
  - Fordyce, Homer E.; and Carter, William C., 4,129,625, Cl. 261-111.000.
- Marlowe, Mickey O.: *See—*
  - Johansson, Eric B.; Klahn, Dale H.; and Marlowe, Mickey O., 4,129,477, Cl. 176-73.000.
- Marra, Michael R.; and Del Deo, Joseph, to Cowan Plastic Products Corporation. Exhibiting device. 4,128,955, Cl. 40-489.000.
- Marrs, Oren L.; and Reusser, Robert E., to Phillips Petroleum Company. Asphaltic compositions containing conjugated diene-monovinyl-substituted aromatic hydrocarbon copolymers of particular structures. 4,129,541, Cl. 260-28.5AS.
- Marsh, Gunnar; Henriksen, Ole; and Sjoblum, Urban C. S., to Landstingens Inkopscentral Lic, Ekonomisk Forening. Temporary walking aid for use after lower leg amputations. 4,128,903, Cl. 3-19.000.
- Marshall, Robert M.; Pak, Sung K.; and Dardoufas, Kimon C., to Allied Chemical Corporation. Spin finish for polyamide yarn. 4,129,507, Cl. 252-8.900.
- Martin, Aubrey W., to Republic Rubber Industries (Prop.) Ltd. Retreading of tires. 4,129,474, Cl. 156-394.000.
- Martin, Carl J.; and Ryan, Robert J., to RCA Corporation. Vinyl chloride based injection molding composition. 4,129,536, Cl. 260-23.0XA.
- Martin, James C.: *See—*
  - Irick, Gether, Jr.; Kelly, Charles A.; and Martin, James C., 4,129,723, Cl. 542-416.000.
- Martin, Larry C.: *See—*
  - Bula, John; and Martin, Larry C., 4,129,793, Cl. 307-270.000.
- Marumoto, Ryuji M.; Furukawa, Yoshiyasu; and Kawai, Kiyohisa, to Takeda Chemical Industries, Ltd. Isoxazolo[3,4-D]pyrimidines useful as antiinflammatory-analgesic agents. 4,129,654, Cl. 424-251.000.
- Maruzen Oil Company Limited: *See—*
  - Machi, Sueo; Matsui, Yasushi; Sugishita, Akio; Sugo, Takanobu; Taniguchi, Hiroaki; Asano, Koichi; and Fujiwara, Hiroshi, 4,129,617, Cl. 260-879.000.
- Marvin Glass & Associates: *See—*
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- Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft (M.A.N.): *See—*
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- Maschinenfabrik GOEBEL GmbH: *See—*
  - Herd, Josef, 4,129,238, Cl. 226-29.000.
- Masiello, Felix R., to Addressograph-Multigraph Corporation. Paper cassette. 4,129,266, Cl. 242-68.400.
- Massachusetts Institute of Technology: *See—*
  - Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel L., 4,129,458, Cl. 136-89.0PC.
- Massey-Ferguson Inc.: *See—*
  - Dornan, Arthur E., 4,129,047, Cl. 74-474.000.
  - Hern, John F.; and Buccellato, Joseph L., 4,129,325, Cl. 292-127.000.
- Massey-Ferguson Services N.V.: *See—*
  - Quick, Donald J., 4,129,339, Cl. 302-21.000.
  - Todeschini, Eugenio; and Riganti, Gian P., 4,129,192, Cl. 180-6.480.
- Masuda, Fusayoshi: *See—*
  - Takematsu, Tetsuo; Masuda, Fusayoshi; Tanaka, Kenji; Nishida, Kazuo; and Nakamura, Akira, 4,129,435, Cl. 71-65.000.
- Masuda, Ikuro, to Hitachi, Ltd. Plural-sequence control system. 4,129,901, Cl. 364-104.000.
- Matarasso, Pierre: *See—*
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- Matetschlager, Walter: *See—*
  - Fischer, Karl; and Matetschlager, Walter, 4,129,688, Cl. 429-97.000.
- Mateyka, Milan: *See—*
  - Anderson, Andrew W.; and Mateyka, Milan, 4,129,205, Cl. 198-358.000.
- Mathes, Larry W. Basin receptacle. 4,128,905, Cl. 4-187.00R.
- Matheson, Alister F.; Tosh, Douglas J.; and Borr, Mitchell, to Uniroyal Ltd. Thermoplastic elastomeric blend of rubber and bituminous material. 4,129,542, Cl. 260-28.5AS.
- Matrix IV, Inc.: *See—*
  - Wenk, Raymond C., 4,128,918, Cl. 24-16.00R.
- Matsubara, Isamu, to Yoshida Kogyo K.K. Panel connector assembly. 4,128,983, Cl. 52-731.000.
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  - Horiuchi, Kaoru; Matsui, Akio; Hara, Masahiro; and Takahashi, Hiroshi, 4,129,442, Cl. 75-126.00C.
- Matsui, Yasushi: *See—*
  - Machi, Sueo; Matsui, Yasushi; Sugishita, Akio; Sugo, Takanobu; Taniguchi, Hiroaki; Asano, Koichi; and Fujiwara, Hiroshi, 4,129,617, Cl. 260-879.000.
- Matsumoto, Junichiro, to Nissan Motor Company, Limited. Variable displacement internal combustion engine with means for switching deactivated cylinder groups at appropriate timing. 4,129,109, Cl. 123-198.00F.
- Matsunami, Shoichi: *See—*
  - Koike, Sakae; Matsunami, Shoichi; and Fujiwara, Yasuo, 4,129,651, Cl. 423-235.000.
- Matsushima, Koji: *See—*
  - Sunamori, Takashi; Matsushima, Koji; and Tanaka, Susumu, 4,129,545, Cl. 260-29.6TA.
- Matsushita Electric Industrial Company, Limited: *See—*
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  - Sugimoto, Kazuyasu; Yamaya, Hiroshi; and Ishimoto, Kameki, 4,129,351, Cl. 339-176.0MP.
- Matsuzawa, Takashi, to Nemoto-Tokusho Kagaku Kabushiki Kaisha. Thermo-luminescent material. 4,129,519, Cl. 252-301.40H.
- Mattel, Inc.: *See—*
  - Marason, Gabriel, Jr.; Melzian, John M.; and Pitkanen, Alan R., 4,128,949, Cl. 35-39.000.
- Mattern, Alfred, to Siemens Aktiengesellschaft. Digital time division multiplex telecommunication network. 4,129,750, Cl. 179-15.0AL.
- Matthews, Steven J.; Klein, H. Joseph; and Hodge, Frank G., to Cabot Corporation. High yield strength Ni-Cr-Mo alloys and methods of producing the same. 4,129,464, Cl. 148-162.000.
- Matuoka, Sadao: *See—*
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- Maurer, Gerald L.: *See—*
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- Mausner, Jack J.: *See—*
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- May, Adolf: *See—*
  - Wallhausser, Karl H.; Cuntze, Ulrich; May, Adolf; and Bucking, Hans-Walter, 4,129,506, Cl. 252-8.800.
- Mayer, Franz: *See—*
  - Egger, Joseph; Mayer, Franz; Schwartz, Herbert; Sodler, Walter; Suard, Jean; and Tilse, Wilhelm, 4,128,992, Cl. 58-23.00D.
- Mayfeld, Friedrich. Bucket elevator. 4,129,209, Cl. 198-712.000.
- Maytum, James N.: *See—*
  - Vanlandingham, Harold W.; Boggs, Roger L.; Bullock, David A.; and Maytum, James N., 4,128,932, Cl. 29-401.00R.
- McAleer, William J.; and Wasmuth, Edward H., to Merck & Co., Inc. Isolating hepatitis B Dane particles. 4,129,646, Cl. 424-89.000.
- McCall, Richard J. Die-cut carton with built-in fillers. 4,129,247, Cl. 229-36.000.
- McCallum, David F. Play vehicle. 4,129,315, Cl. 280-87.010.
- McCreary, James L.: *See—*
  - Gray, Paul R.; McCreary, James L.; and Hodges, David A., 4,129,863, Cl. 340-347.0AD.
- McCullough, John E., to Arthur D. Little, Inc. Scroll-type liquid pump with transfer passages in end plate. 4,129,405, Cl. 418-55.000.
- McCutchen, Hugh L.: *See—*
  - Tighe, Michael R.; and McCutchen, Hugh L., 4,129,493, Cl. 204-228.000.
- McDonnell, Christopher R. S., to Metalife Molecular Belzona Limited. Hardenable resin compositions. 4,129,548, Cl. 260-37.00M.
- McFarlane, Richard H. Securing device for catheter placement assembly. 4,129,128, Cl. 128-133.000.
- McGinniss, Vincent D., to SCM Corporation. Ultraviolet curable epoxy-polyester powder paints. 4,129,488, Cl. 204-159.190.
- McGlynn, Joseph L., Jr., executor: *See—*
  - Cunningham, Thomas J.; Schwartzberg, Harold L., deceased; and McGlynn, Joseph L., Jr., executor, 4,129,744, Cl. 174-94.00R.
- McGraw-Edison Company: *See—*
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- McKee, Ronald H. Vibrator for flowing granular material. 4,129,388, Cl. 366-124.000.
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- McKendry, Lennon H., to Dow Chemical Company, The. Substituted pyridine carbonyl halides and derivatives. 4,129,734, Cl. 544-131.000.

- McKenzie, Elton L., to FMC Corporation. Citrus slicing apparatus. 4,129,068, Cl. 99-538.000.
- McLellan, Norvel J. Chronograph. 4,129,829, Cl. 324-178.000.
- Meisei Electric Co. Ltd.: *See—*
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- Mellbom, Marvin E., to UOP Inc. Vapor-liquid contacting apparatus. 4,129,626, Cl. 261-114.0JP.
- Meltsch, Hans-Juergen: *See—*
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- Melzian, John M.: *See—*
  - Marason, Gabriel, Jr.; Melzian, John M.; and Pitkanen, Alan R., 4,128,949, Cl. 35-39.000.
- Menault, Jacques; and Rodier, Henry, to Rhone Poulenc Textile. Spinnable cellulose solution and process for making same. 4,129,451, Cl. 106-168.000.
- Merck & Co., Inc.: *See—*
  - McAleer, William J.; and Wasmuth, Edward H., 4,129,646, Cl. 424-89.000.
- Merisio, Alberto, to Somet Societa' Meccanica Tessile S.p.A. Weft carrying gripper for shuttleless looms with stationary weft supply. 4,129,155, Cl. 139-448.000.
- Merry, Raymond: *See—*
  - Jones, Andrew W.; and Merry, Raymond, 4,129,272, Cl. 244-153.00R.
- Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
  - Heinze, Horst; Stierle, Gunter; and Sach, Ernst D., 4,128,921, Cl. 24-279.000.
- Messner, Harold D., to Chevron Research Company. Determination of remanent magnetization of an earth formation penetrated by a bore hole using a magnetometer-followed by processing of data including micropulsation data. 4,129,821, Cl. 324-8.000.
- Metalife Molecular Belzona Limited: *See—*
  - McDonnell, Christopher R. S., 4,129,548, Cl. 260-37.00M.
- Meteor AG: *See—*
  - Schmid, Hans, 4,129,158, Cl. 140-149.000.
- Mettler Instrumente AG: *See—*
  - Lechner, Hanspeter, 4,129,190, Cl. 177-155.000.
- Meyer, Burton C., to Marvin Glass & Associates. Riding toy with removable body portion. 4,129,296, Cl. 272-52.000.
- Michalko, Edward, to UOP Inc. Preparation of silica-alumina macrospheres. 4,129,522, Cl. 252-453.000.
- Michel, Karl H.; and Higgens, Calvin E., to Eli Lilly and Company. A-40104 antibiotics and process for production thereof. 4,129,721, Cl. 536-17.000.
- Michel, Rudolf: *See—*
  - Buder, Wolfgang; Pletka, Hans-Dieter; Michel, Rudolf; Schwarz, Rudolf; and Dusing, Gerhard, 4,129,585, Cl. 260-448.80R.
- Michelson, Anatol, to Ashland Oil, Inc. Catalyst gas generating circuit for rotary core making machine. 4,129,168, Cl. 164-159.000.
- Michon, Gerald J., to General Electric Company. Solid stage imaging apparatus. 4,129,887, Cl. 358-213.000.
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  - Moll, Manfred; D'Hardmemare, Christian; and Midoux, Nicolas, 4,129,029, Cl. 73-19.000.
- Miles Laboratories, Inc.: *See—*
  - Johnson, Leighton C., 4,129,093, Cl. 118-401.000.
  - White, William I., 4,129,417, Cl. 23-230.00B.
  - Wied, George L.; Bahr, Gunter F.; and Puls, James H., 4,129,381, Cl. 356-36.000.
- Miller, Helmut, to Escher Wyss Limited. Rim-type hydroelectric machine. 4,129,786, Cl. 290-52.000.
- Miller, Leroy J.: *See—*
  - Bilow, Norman; Landis, Abraham L.; and Miller, Leroy J., 4,129,570, Cl. 528-128.000.
- Miller, Wayne D.: *See—*
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- Mills, Chester R., to RCA Corporation. Circuit test apparatus. 4,129,826, Cl. 324-57.0SS.
- Mindt, Wolfgang: *See—*
  - Racine, Philippe; Higelin, Jean-Claude; Engelhardt, Roland; and Mindt, Wolfgang, 4,129,478, Cl. 204-1.00T.
- Minnesota Mining and Manufacturing Company: *See—*
  - Charbonneau, Robert R.; and Spatafore, Robert M., 4,128,984, Cl. 52-746.000.
- Mino, Guido; and Behrens, Rudolf A., to American Cyanamid Company. Polyacrylate elastomer compositions. 4,129,708, Cl. 526-218.000.
- Minolta Camera Kabushiki Kaisha: *See—*
  - Kobayashi, Haruo; and Imura, Toshinori, 4,129,369, Cl. 354-197.000.
- Minton, Darrell B.: *See—*
  - Argentine, Jeffery C.; and Minton, Darrell B., 4,129,815, Cl. 318-601.000.
- Misumi, Akira: *See—*
  - Soeno, Ko; Iizuka, Tomio; Doi, Toshio; Ando, Hisashi; Oyama, Testuo; Sakamoto, Hiroshi; and Misumi, Akira, 4,129,801, Cl. 313-346.00R.
- Mitsubishi Chemical Industries, Ltd.: *See—*
  - Koike, Sakae; Matsunami, Shoichi; and Fujiwara, Yasuo, 4,129,651, Cl. 423-235.000.
- Mitsubishi Denki Kabushiki Kaisha: *See—*
  - Morinaka, Akiyoshi, 4,129,869, Cl. 343-6.80R.
  - Tabuchi, Yasuhide, 4,129,353, Cl. 339-242.000.
  - Tahara, Kiyokazu; and Kotoh, Keigo, 4,129,868, Cl. 343-6.80R.
- Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
  - Torikai, Kiyoshige, 4,129,164, Cl. 164-7.000.
- Mitsubishi Rayon Co., Ltd.: *See—*
  - Sunamori, Takashi; Matsushima, Koji; and Tanaka, Susumu, 4,129,545, Cl. 260-29.6TA.
- Mitsuoka, Akio: *See—*
  - Seki, Masatoshi; Sato, Moriichi; Tsukioka, Hideo; Ohe, Etuo; Ogata, Masatsugu; and Mitsuoka, Akio, 4,129,678, Cl. 428-383.000.
- Mitsuyama, Akira: *See—*
  - Uchida, Katsuzo; Uchiyama, Hiroaki; and Mitsuyama, Akira, 4,129,374, Cl. 355-8.000.
- Miyada, Thomas S. Electromagnetic piston engine. 4,129,795, Cl. 310-24.000.
- Miyagawa, Yoshitaka: *See—*
  - Sato, Makoto; Takamatsu, Hiroshi; Miyagawa, Yoshitaka; and Fujii, Etsuo, 4,129,342, Cl. 303-105.000.
- Miyakawa, Seiichi; and Eda, Tadahiro, to Ricoh Company, Ltd. Method and apparatus for electrically biasing developing electrode of electrophotography device. 4,129,375, Cl. 355-10.000.
- Miyakoshi, Masanobu: *See—*
  - Kawabe, Hirokazu; Imai, Kiyoshi; and Miyakoshi, Masanobu, 4,128,909, Cl. 15-104.00A.
- Miyamoto, Koichi; Tohyama, Yoshikuni; Sagara, Seiji; Kimura, Yoshimasa; and Ishida, Masato, to Canon Kabushiki Kaisha. Variable magnification copying apparatus. 4,129,377, Cl. 355-14.000.
- Miyasita, Satoru; Taniguchi, Masahiko; and Kobayashi, Katsuyoshi, to Nippon Steel Corporation. Shaft furnace with bottom discharge device. 4,129,289, Cl. 266-195.000.
- Miyata, Hiroyasu; and Iwasaki, Sadayoshi, to Alps Electric Co., Ltd. Indicating mechanism for push button switches. 4,129,766, Cl. 200-308.000.
- Mizukawa, Takumi: *See—*
  - Amagami, Keizo; Nakamura, Masatatsu; Kominami, Hideyuki; Funakoshi, Kouji; Kiuchi, Mitsuyuki; and Mizukawa, Takumi, 4,129,767, Cl. 219-10.49R.
- Mobay Chemical Corporation: *See—*
  - Heiss, Herbert L., 4,129,611, Cl. 260-858.000.
- Mochizuki, Kazunori: *See—*
  - Ban, Itsuki; and Mochizuki, Kazunori, 4,129,889, Cl. 360-75.000.
- Moeller, Rolf: *See—*
  - Keppler, Hans G.; Stahnecker, Erhard; and Moeller, Rolf, 4,129,706, Cl. 526-201.000.
- Mogami, Masayuki: *See—*
  - Kobayashi, Kengo; Mogami, Masayuki; Tanaka, Shigeyoshi; Nakao, Manabu; and Tamura, Sadao, 4,129,610, Cl. 260-837.00R.
- Mok, Chuck K., to RCA Corporation. Array of directional filters. 4,129,840, Cl. 333-73.00W.
- Molitor, Victor D., to Stainless Equipment Company. Apparatus for utilization of waste energy. 4,129,179, Cl. 165-101.000.
- Moll, Manfred; D'Hardmemare, Christian; and Midoux, Nicolas, to Tepral. Device for measuring the amount of gas dissolved in a liquid. 4,129,029, Cl. 73-19.000.
- Moller, Walter H., to Western Gear Corporation. Pipe handling apparatus. 4,129,221, Cl. 214-2.500.
- Momiyama, Kikuo, to Canon Kabushiki Kaisha. Extending attachment lens. 4,129,359, Cl. 350-183.000.
- Momochi, Yasushi: *See—*
  - Goto, Masuo; Isono, Akira; Momochi, Yasushi; and Kai, Takaaki, 4,129,818, Cl. 322-10.000.
- Momura, Takao; Umemoto, Yoshiro; and Sakamoto, Tatsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Auto ceiling panel and its manufacturing process. 4,129,672, Cl. 428-138.000.
- Monkemoller, Herbert: *See—*
  - Bergmann, Klaus W.; Steffen, Gunther B. H.; and Monkemoller, Herbert, 4,129,062, Cl. 90-11.00R.
- Monsanto Company: *See—*
  - Anderson, George J.; Desmond, Timothy F.; and Santer, J. Owen, 4,129,681, Cl. 428-524.000.
  - Boe, Norman W., 4,129,677, Cl. 428-372.000.
  - Bromley, James E.; Mowe, Wayne T.; and Stutz, Frank, 4,128,989, Cl. 57-247.000.
  - Clement, Carl J.; Stengel, Fred H.; and Campbell, Kenneth S., 4,129,211, Cl. 206-213.100.
  - Houbion, John A., 4,129,729, Cl. 542-439.000.
  - Howe, Robert K., 4,129,568, Cl. 260-307.00F.
  - Kadah, Zagloul B., 4,129,785, Cl. 250-551.000.
  - Petrovich, John P.; and Van Eenam, Donald N., 4,129,528, Cl. 260-823.000.
  - Stewart, Walter P.; and Punte, Lawrence F., 4,129,682, Cl. 428-571.000.
- Montedison S.p.A.: *See—*
  - Credali, Lino; Baruzzi, Giovanni; and Guidotti, Vincenzo, 4,129,559, Cl. 528-337.000.
- Montegari, Frank A.: *See—*
  - Gani, Venkappa L.; and Montegari, Frank A., 4,129,790, Cl. 307-203.000.
- Montgomery, Robert M.: *See—*
  - Neal, Gary W.; and Montgomery, Robert M., 4,129,832, Cl. 331-44.000.
- Montreal Engineering Company, Limited: *See—*
  - Demers, Arthur S.; and Hilz, Lloyd A., 4,129,011, Cl. 405-169.000.
  - Owen, John A., 4,129,010, Cl. 405-169.000.
- Moore, Claud T., Jr. Shovel. 4,129,327, Cl. 294-58.000.
- Moore, William P., Jr., to Ashland Oil, Inc. Process for producing

stabilized high strength urea-aldehyde insulating foams. 4,129,533, Cl. 521-117.000.

Moppett, Charles E.: *See*—
  Celmer, Walter D.; Cullen, Walter P.; Jefferson, Mark T.; Moppett, Charles E.; Routien, John B.; and Sciavolino, Frank C., 4,129,578, Cl. 260-345.70R.

Morgan Construction Company: *See*—
  Sieurin, Donald, 4,129,023, Cl. 72-235.000.

Morihisa, Mitsuo: *See*—
  Maeda, Hidetoshi; Morihisa, Mitsuo; and Sasaki, Takehiko, 4,128,993, Cl. 58-23.00R.

Morinaka, Akiyoshi, to Mitsubishi Denki Kabushiki Kaisha. Automatical signalling apparatus. 4,129,869, Cl. 343-6.80R.

Morinaka, Iwao: *See*—
  Yokoyama, Akinori; and Morinaka, Iwao, 4,128,999, Cl. 60-347.000.

Morita, Hideo: *See*—
  Tamazawa, Tsuyoshi; Suematsu, Masayasu; and Morita, Hideo, 4,129,622, Cl. 261-39.00A.

Morita, Osamu: *See*—
  Kato, Shigeo; Morita, Osamu; and Matuoka, Sadao, 4,129,291, Cl. 269-73.000.

Morris, Terrence P., to Guild International, Inc. Strip shearing and joining method and apparatus. 4,129,244, Cl. 228-170.000.

Morris, William F., Jr. Ice storage and dispensing bin. 4,129,015, Cl. 62-344.000.

Morrow, James J., to Fischer & Porter Co. Method of analyzing residual chlorine. 4,129,479, Cl. 204-1.00T.

Morton, Peter H.; Gilbert, John R. B.; and Wortley, John P. A., to Imperial Metal Industries (Kynoch) Limited. Electrolytic cell. 4,129,492, Cl. 204-212.000.

Moser, Peter: *See*—
  Laimer, Friedrich; and Moser, Peter, 4,129,288, Cl. 266-158.000.

Moser, Roland: *See*—
  Zondler, Helmut; and Moser, Roland, 4,129,556, Cl. 528-97.000.

Moss, Gerald, to Exxon Research & Engineering Co. Fluid distributor. 4,129,411, Cl. 432-58.000.

Motorola Inc.: *See*—
  Kennedy, Peter D., 4,129,873, Cl. 343-854.000.
  Schrack, Gary L., 4,129,867, Cl. 343-6.80R.

Mott, Richard H.; and Pritchard, Clyde L., to Du-Al Manufacturing Company. Automatic hydraulic series-parallel shift device for implement. 4,129,258, Cl. 239-650.000.

Mowe, Wayne T.: *See*—
  Bromley, James E.; Mowe, Wayne T.; and Stutz, Frank, 4,128,989, Cl. 57-247.000.

Mudgett, Donald F., to U.S. Fiber Corporation. Cellulosic insulation blowing machine. 4,129,338, Cl. 302-2.00A.

Muhlethaler, Henri, to Henri Muhlethaler S.A. Apparatus for controlling inner and outer surfaces, of members of mechanics, and utilization of this apparatus. 4,128,943, Cl. 33-174.00Q.

Muir, Ronald J.: *See*—
  Eliades, Theo I.; Muir, Ronald J.; and Horner, James D., 4,129,589, Cl. 260-504.00A.

Mumbach, Norbert R.: *See*—
  Flanigen, Edith M.; Lok, Brent M.; and Mumbach, Norbert R., 4,129,450, Cl. 106-120.000.

Mumford, Clive J.: *See*—
  Jeffreys, Godfrey V.; Mumford, Clive J.; Ravault, Frank E. G.; and Washbourne, Colin, 4,129,500, Cl. 210-23.00R.

Mumper, James E., to Raytheon Company. Balanced transducer. 4,129,850, Cl. 340-10.000.

Murakami, Shuji, to Nippon Electric Co., Ltd. Frame synchronizing system for TDMA radio communications. 4,129,755, Cl. 179-15.0BS.

Murakami, Tadayoshi: *See*—
  Nakata, Yuichi; and Murakami, Tadayoshi, 4,128,910, Cl. 15-110.000.

Muramatsu, Takao: *See*—
  Fujii, Motoharu; Muramatsu, Takao; Koumura, Noboru; Sugiura, Susumu; Takekawa, Nobuhiro; and Tsukada, Syusei, 4,129,072, Cl. 101-1.000.

Murata, Taneo, to Alps Electric Co., Ltd. Push button switch assembly. 4,129,763, Cl. 200-159.00A.

Murayama, Naohiro; Nakamura, Kenichi; and Endo, Shunzo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Multi-component graft copolymer and thermoplastic resin composition thereof. 4,129,608, Cl. 260-836.000.

Muschaweck, Roman: *See*—
  Lang, Hans-Jochen; and Muschaweck, Roman, 4,129,656, Cl. 424-263.000.

Musson, Rosemary: *See*—
  Dimmick, Joseph G.; Weingartner, William J.; Fields, Alan S.; Fairhead, Donald L.; and Musson, Rosemary, 4,129,087, Cl. 114-144.00E.

Muzzio, John A., to BASF Wyandotte Corporation. Process for the removal of catalyst from polyether polyol. 4,129,718, Cl. 536-4.000.

Nadella: *See*—
  Janssen, Pierre A., 4,129,343, Cl. 308-35.000.

Naftulin, Henry. Method and apparatus for defibrination of blood. 4,129,131, Cl. 128-276.000.

Nagahata, Tsutomu: *See*—
  Nashiwa, Hajime; Tsuzita, Susumu; and Nagahata, Tsutomu, 4,129,439, Cl. 75-58.000.

Nagai, Haruo; Uehara, Hiroshi; and Nunokawa, Kunikazu, to Kyowa Gas Chemical Industry Co., Ltd. Radiation shielding material and a process for producing the same. 4,129,524, Cl. 252-478.000.

Nagaoka Co. Ltd.: *See*—
  Kawabe, Hirokazu; Imai, Kiyoshi; and Miyakoshi, Masanobu, 4,128,909, Cl. 15-104.00A.

Naitou, Takashi: *See*—
  Ito, Osamu; Hobo, Nobuhito; Suzuki, Yutaka; Kawamoto, Itsushi; Naitou, Takashi; Shiozaki, Makoto; and Konishi, Yoshimune, 4,129,105, Cl. 123-119.0EC.

Najer, Henry: *See*—
  Giudicelli, Don P. R. L.; and Najer, Henry, 4,129,598, Cl. 260-570.80R.

Nakahara, Yasushi; Ohtomo, Tadasuke; Yokota, Shinichi; and Usui, Kazuo, to Kajima Kensetsu Kabushiki Kaisha. Tremie tube. 4,129,008, Cl. 405-303.000.

Nakajima, Masayasu: *See*—
  Suzuki, Suzuo; Nakajima, Masayasu; Koizumi, Ken-ichi; and Ookubo, Yoshio, 4,128,997, Cl. 60-274.000.

Nakamichi, Koichi: *See*—
  Inoue, Sho; Kawamata, Masanobu; Ushimaru, Hirokazu; Nakamichi, Koichi; and Takahashi, Yutaka, 4,129,649, Cl. 424-182.000.

Nakamura, Akira: *See*—
  Takematsu, Tetsuo; Masuda, Fusayoshi; Tanaka, Kenji; Nishida, Kazuo; and Nakamura, Akira, 4,129,435, Cl. 71-65.000.

Nakamura, Kenichi: *See*—
  Murayama, Naohiro; Nakamura, Kenichi; and Endo, Shunzo, 4,129,608, Cl. 260-836.000.

Nakamura, Masatatsu: *See*—
  Amagami, Keizo; Nakamura, Masatatsu; Kominami, Hideyuki; Funakoshi, Kouji; Kiuchi, Mitsuyuki; and Mizukawa, Takumi, 4,129,767, Cl. 219-10.49R.

Nakamura, Masayoshi: *See*—
  Ogoshi, Toshiaki; Nakamura, Masayoshi; and Yamane, Izumi, 4,129,511, Cl. 252-140.000.
  Ogoshi, Toshiaki; Nakamura, Masayoshi; and Yazaki, Mituyoshi, 4,129,526, Cl. 252-536.000.

Nakao, Manabu: *See*—
  Kobayashi, Kengo; Mogami, Masayuki; Tanaka, Shigeyoshi; Nakao, Manabu; and Tamura, Sadao, 4,129,610, Cl. 260-837.00R.

Nakase, Takamichi: *See*—
  Hattori, Tadashi; Nakase, Takamichi; Tsubouchi, Hideo; and Iwata, Toshiharu, 4,128,998, Cl. 60-277.000.

Nakata, Yuichi; and Murakami, Tadayoshi, to Pigeon Kabushiki Kaisha. Toothbrush. 4,128,910, Cl. 15-110.000.

Nakayama, Hiroyuki: *See*—
  Makuuchi, Keizo; Araki, Kunio; Takagi, Tohru; Nakayama, Hiroyuki; and Kozu, Haruo, 4,129,487, Cl. 204-159.140.

Nametkin, Nikolai S.; Vinogradov, Georgy V.; Podolsky, Jury Y.; Pavlovskaya, Nina T.; Frenkin, Ernest I.; and Yanovsky, Jury G. Self-lubricating heat-resistant material and process for manufacturing same. 4,129,550, Cl. 260-42.220.

Narahara, Toshikazu: *See*—
  Karasawa, Yoshiharu; Koyama, Tohru; and Narahara, Toshikazu, 4,129,554, Cl. 528-48.000.

Nashiwa, Hajime; Tsuzita, Susumu; and Nagahata, Tsutomu, to Sumitomo Metal Industries, Ltd. Process for refining molten steel using ferroalloy. 4,129,439, Cl. 75-58.000.

Natarajan, Sehsea I.: *See*—
  Ondetti, Miguel A.; and Natarajan, Sehsea I., 4,129,566, Cl. 546-326.000.

National Controls, Inc.: *See*—
  Argentine, Jeffery C.; and Minton, Darrell B., 4,129,815, Cl. 318-601.000.

National Distillers and Chemical Corporation: *See*—
  Colburn, Samuel E.; Bryant, Duane K.; Platz, Gerald M.; and Vetter, Clarence J., Jr., 4,129,714, Cl. 526-331.000.

National Gypsum Company: *See*—
  Nowick, Chester R.; and de Franza, Alfred, 4,129,410, Cl. 432-31.000.

National Research Laboratories: *See*—
  Shringarpurey, Sudhir K.; and Maurer, Gerald L., 4,129,509, Cl. 252-49.500.

National Starch and Chemical Corporation: *See*—
  Iovine, Carmine P.; and Ray-Chaudhuri, Dilip K., 4,129,722, Cl. 536-43.000.

Natural Resources Guardianship International, Inc.: *See*—
  Webb, Harry M., 4,129,421, Cl. 44-56.000.

Navratil, Gerald A.; and Neil, George R., to Wisconsin Alumni Research Foundation. Electrode structures for high energy high temperature plasmas. 4,129,772, Cl. 219-121.00P.

Nawrocki, Adam: *See*—
  Biedacha, Roman; Kurdziel, Wladyslaw; Kaczor, Janusz; Smeder, Adam; Kolaczkowski, Jacek; Olszowski, Tadeusz; Nawrocki, Adam; and Rzeszut, Janina, 4,129,169, Cl. 164-166.000.

Neal, Gary W.; and Montgomery, Robert M., to Harris Corporation. Method and means for linearizing a voltage controlled oscillator sweep generator. 4,129,832, Cl. 331-44.000.

Neel, Jean: *See*—
  Caffarel, Jean-Claude; Papillon, Bernard; and Neel, Jean, 4,129,514, Cl. 252-89.00R.

Neige, Roger: *See*—
  Aubert, Jacques; Carles, Maurice; and Neige, Roger, 4,129,481, Cl. 204-1.500.

Neil, George R.: *See*—
  Navratil, Gerald A.; and Neil, George R., 4,129,772, Cl. 219-121.00P.

Neitzel, Ulrich, to Kali & Salz AG. Process for the production of potassium sulfate. 4,129,642, Cl. 423-199.000.

Nelb, Robert G., II: *See*—
  Chen, Augustin T.; Farrissey, William J., Jr.; and Nelb, Robert G., II, 4,129,715, Cl. 528-67.000.

Nelson Research & Development Company: *See*—
  Fuxe, Kjell, 4,129,652, Cl. 424-247.000.

Nemoto Tokusho Kagaku Kabushiki Kaisha: *See*—
  Matsuzawa, Takashi, 4,129,519, Cl. 252-301.40H.

Neuschwander, Jean-Christian: *See*—
  El-Souessi, Monti; Laffay, Gilbert; and Neuschwander, Jean-Christian, 4,129,188, Cl. 173-120.000.

Newton, John: *See*—
  Mairs, John H., 4,129,012, Cl. 62-113.000.

Nickel, Lonnie L. Sow feeding enclosure. 4,129,096, Cl. 119-27.000.

Nies, Herbert: *See*—
  Haberlein, Harald; Nies, Herbert; and Scheidl, Franz, 4,129,553, Cl. 260-45.85R.

Niles, Albert B.; Franzen, Larry H.; Gardner, William J.; and Grob, Russel W., to Caterpillar Tractor Co. Method and apparatus for checking engine performance. 4,129,034, Cl. 73-117.300.

Nippon Electric Co., Ltd.: *See*—
  Murakami, Shuji, 4,129,755, Cl. 179-15.0BS.

Nippon Kogaku K.K.: *See*—
  Watanabe, Sakuji, 4,129,366, Cl. 354-24.000.

Nippon Shinyaku Co. Ltd.: *See*—
  Inoue, Sho; Kawamata, Masanobu; Ushimaru, Hirokazu; Nakamichi, Koichi; and Takahashi, Yutaka, 4,129,649, Cl. 424-182.000.

Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See*—
  Awaji, Toshio; and Atobe, Daisuke, 4,129,609, Cl. 260-837.00R.

Nippon Soken, Inc.: *See*—
  Hattori, Tadashi; Nakase, Takamichi; Tsubouchi, Hideo; and Iwata, Toshiharu, 4,128,998, Cl. 60-277.000.

Nippon Steel Corporation: *See*—
  Miyasita, Satoru; Taniguchi, Masahiko; and Kobayashi, Katsuyoshi, 4,129,289, Cl. 266-195.000.

Nippondenso Co., Ltd.: *See*—
  Ito, Osamu; Hobo, Nobuhito; Suzuki, Yutaka; Kawamoto, Itsushi; Naitou, Takashi; Shiozaki, Makoto; and Konishi, Yoshimune, 4,129,105, Cl. 123-119.0EC.

Nishida, Kazuo: *See*—
  Takematsu, Tetsuo; Masuda, Fusayoshi; Tanaka, Kenji; Nishida, Kazuo; and Nakamura, Akira, 4,129,435, Cl. 71-65.000.

Nishida, Osamu: *See*—
  Hosaka, Nobuyoshi; Ishikawa, Yuichi; Nishida, Osamu; and Sakamoto, Masakatsu, 4,129,337, Cl. 302-2.00R.

Nishida, Tsutomu: *See*—
  Taguchi, Kazumasa; Nishida, Tsutomu; Kitajima, Masaharu; Aketa, Kan; Fujita, Isao; Onoda, Mamoru; Imanishi, Nobuyuki; and Watanabe, Ryo, 4,129,437, Cl. 75-5.000.

Nishiura, Taiji; and Shimamura, Kazutomi. Sealing device for coke oven doors. 4,129,307, Cl. 277-34.300.

Nissan Motor Company, Limited: *See*—
  Ishikawa, Yoshikazu, 4,129,043, Cl. 74-219.000.
  Matsumoto, Junichiro, 4,129,109, Cl. 123-198.00F.
  Suzuki, Suzuo; Nakajima, Masayasu; Koizumi, Ken-ichi; and Ookubo, Yoshio, 4,128,997, Cl. 60-274.000.
  Tamazawa, Tsuyoshi; Suematsu, Masayasu; and Morita, Hideo, 4,129,622, Cl. 261-39.00A.

Nisshin Flour Milling Co., Ltd.: *See*—
  Fukushima, Hideo; and Suzuki, Yoshikuni, 4,129,565, Cl. 546-142.000.

NJM, Inc.: *See*—
  White, Rollin T., 4,128,954, Cl. 40-310.000.

NM Uranium, Inc.: *See*—
  Stover, Dennis E., 4,129,334, Cl. 299-4.000.

Noguchi, Masaru, to Fuji Photo Film Co., Ltd. Light beam scanner with parallelism error correction. 4,129,355, Cl. 350-6.700.

Nordmark, Mikal. Hydraulic heeling stabilizers. 4,129,310, Cl. 280-6.00H.

Norman, Helge: *See*—
  Ekman, Lars; and Norman, Helge, 4,128,904, Cl. 4-185.00L.

Norman, Telfer E. Electrolytic cell for electrowinning of metals. 4,129,494, Cl. 204-268.000.

Norris Industries, Inc.: *See*—
  Tibbetts, Willis F., 4,129,268, Cl. 244-3.220.

Northern Telecom Limited: *See*—
  Wei, John S. S., 4,129,358, Cl. 350-173.000.

Nossar, Mstislav S.: *See*—
  Chaikin, Malcolm; and Nossar, Mstislav S., 4,129,250, Cl. 236-44.00A.

Nowick, Chester R.; and de Franza, Alfred, to National Gypsum Company. Method of drying gypsum wallboard and apparatus therefor. 4,129,410, Cl. 432-31.000.

Noyes, Paul R., to Du Pont de Nemours, E. I., and Company. High solids coating compositions for flexible substrates containing urea-formaldehyde. 4,129,547, Cl. 260-33.40R.

Nunokawa, Kunikazu: *See*—
  Nagai, Haruo; Uehara, Hiroshi; and Nunokawa, Kunikazu, 4,129,524, Cl. 252-478.000.

Nyltite Corporation: *See*—
  Gould, William, 4,129,060, Cl. 85-53.000.

Nystrom, Bror E. Systems for supplying treatment liquids to rotatable electroplating drums. 4,129,138, Cl. 134-145.000.

Oberholtzer, Larry W.: *See*—
  Maglecic, Steve C.; and Oberholtzer, Larry W., 4,129,189, Cl. 177-123.000.

Obiaya, Joseph O. Oxygen concentration analyzer. 4,129,491, Cl. 204-195.00S.

Occidental Petroleum Corporation: *See*—
  Garrett, Donald E., 4,129,440, Cl. 75-63.000.

Ochiai, Hirokazu: *See*—
  Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,129,730, Cl. 544-21.000.

O'Connor, Michael N. D.: *See*—
  Panzer, Hans P.; O'Connor, Michael N. D.; and Baccei, Louis J., 4,129,532, Cl. 526-75.000.

Oestreich, Ulrich, to Siemens Aktiengesellschaft. Optical transmission element having protective jacket to reduce attenuation. 4,129,356, Cl. 350-96.230.

Ogasawara, Toyotsugu, to Tomy Kogyo Co., Inc. Transfer mechanism intended for use in toys. 4,128,964, Cl. 46-43.000.

Ogata, Masatsugu: *See*—
  Seki, Masatoshi; Sato, Moriichi; Tsukioka, Hideo; Ohe, Etuo; Ogata, Masatsugu; and Mitsuoka, Akio, 4,129,678, Cl. 428-383.000.

Ogoshi, Toshiaki; Nakamura, Masayoshi; and Yamane, Izumi, to Lion Fat & Oil Co., Ltd., The. Method of spray drying detergents containing aluminosilicates. 4,129,511, Cl. 252-140.000.

Ogoshi, Toshiaki; Nakamura, Masayoshi; and Yazaki, Mituyoshi, to Lion Fat & Oil Co., Ltd., The. Granular detergent compositions and a process for producing same. 4,129,526, Cl. 252-536.000.

Ogrisek, Harriet H.; and Egger, Kurt. Optical system for electrostatic copiers. 4,129,379, Cl. 355-57.000.

Ogura, Yukio; and Fukuda, Mitsuhisa, to Ricoh Company, Ltd. Electrophotographic apparatus. 4,129,373, Cl. 355-1.000.

Ohe, Etuo: *See*—
  Seki, Masatoshi; Sato, Moriichi; Tsukioka, Hideo; Ohe, Etuo; Ogata, Masatsugu; and Mitsuoka, Akio, 4,129,678, Cl. 428-383.000.

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Ortho Pharmaceutical Corporation: *See*—
  Bandurco, Victor T.; and Levine, Seymour, 4,129,653, Cl. 424-251.000.

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  Hatch, Edmond K., 4,129,208, Cl. 198-626.000.

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  Charvat, Vernon K., 4,128,972, Cl. 51-298.00R.

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  - Inano, Tozaburo; Yamazaki, Katsuhiro; and Otake, Minoru, 4,129,774, Cl. 219-552.000.
- Otterbach, Paul M. System for determining the level of heat treatment. 4,129,033, Cl. 73-772.000.
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  - Rustin, Rudolph B., Jr.; and Bales, O. Sherman, 4,129,246, Cl. 229-23.00R.
- Owen, John A., to Montreal Engineering Company, Limited. Tunnel. 4,129,010, Cl. 405-169.000.
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  - Bailey, Edward L., 4,129,225, Cl. 215-12.00R.
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  - Soeno, Ko; Iizuka, Tomio; Doi, Toshio; Ando, Hisashi; Oyama, Testuo; Sakamoto, Hiroshi; and Misumi, Akira, 4,129,801, Cl. 313-346.00R.
- Pacific Roller Die Co., Inc.: *See—*
  - Davis, Paul K., 4,129,152, Cl. 138-154.000.
- Package Machinery Company: *See—*
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- Paidoussis, Michael P. Marine propulsion apparatus. 4,129,089, Cl. 115-28.00A.
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  - Marshall, Robert M.; Pak, Sung K.; and Dardoufas, Kimon C., 4,129,507, Cl. 252-8.900.
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  - Bulanda, John J.; Guzay, Casimir M.; and Betitschke, Bruce A., 4,128,919, Cl. 24-20.0TT.
- Panzer, Hans P.; O'Connor, Michael N. D.; and Baccei, Louis J., to American Cyanamid Company. Method of preparing imidozoline and tetrahydro pyrimidine polymers. 4,129,532, Cl. 526-75.000.
- Papayoanou, Aristotle, to United States of America, Army. Frequency stable boron nitride channel laser. 4,129,836, Cl. 331-94.50D.
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  - Caffarel, Jean-Claude; Papillon, Bernard; and Neel, Jean, 4,129,514, Cl. 252-89.00R.
- Papst, Georg, to Papst-Motoren KG. Stator winding mounting for an electric motor. 4,129,796, Cl. 310-43.000.
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- Park, Chung P.; Corbett, John M.; and Griffin, Warren H., to Dow Chemical Company, The. Soft ethylenic polymer foams. 4,129,530, Cl. 521-79.000.
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- Pasero, Regine: *See—*
  - Viout, Andre; and Pasero, Regine, 4,129,711, Cl. 526-286.000.
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- Pauwels, Edward M., to Bendix Corporation, The. Modulator valve assembly for a fluid braking system. 4,129,341, Cl. 303-6.00R.
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  - Nametkin, Nikolai S.; Vinogradov, Georgy V.; Podolsky, Jury Y.; Pavlovskaya, Nina T.; Frenkin, Ernest I.; and Yanovsky, Jury G., 4,129,550, Cl. 260-42.220.
- Pavonet, Wilhelm E., to Societe de Prayon. Iron oxide based pigment and process for preparing such a pigment. 4,129,454, Cl. 106-304.000.
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  - Cecka, Andrew M.; Dano, Pol; and Pawling, Paul G., 4,129,634, Cl. 264-45.300.
- Payer, Wolfgang: *See—*
  - Hobes, John; and Payer, Wolfgang, 4,129,472, Cl. 156-331.000.
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- Pearson, James E. Emergency door opening device. 4,129,811, Cl. 318-478.000.
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  - Kamath, Vasanth R.; and Harpell, Gary A., 4,129,703, Cl. 526-73.000.
  - Mageli, Orville L.; and Swarts, William A., 4,129,700, Cl. 260-823.000.
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  - Reifenberg, Gerald H., 4,129,584, Cl. 260-429.700.
  - Sanchez, Jose, 4,129,704, Cl. 526-73.000.
  - Sheppard, Chester S.; and MacLeay, Ronald E., 4,129,586, Cl. 260-465.00D.
- Pepper, William, Jr., to Peptek, Inc. Human-machine interface apparatus. 4,129,747, Cl. 178-19.000.
- Peptek, Inc.: *See—*
  - Pepper, William, Jr., 4,129,747, Cl. 178-19.000.
- Perard, Jean-Claude V., to Societe Francaise d'Equipements pour la Navigation Aerienne (S.F.E.N.A.). Power jack incorporating stress-responsive components. 4,129,049, Cl. 74-625.000.
- Percival, Stephen J., to Johnsen & Jorgensen (Plastics) Ltd. Hinged closures for containers. 4,129,226, Cl. 215-235.000.
- Perez, Africa P. Compound manual toothbrush. 4,128,911, Cl. 15-167.00R.
- Perkin-Elmer Corporation, The: *See—*
  - Jones, Robert A., 4,128,968, Cl. 51-54.000.
- Peroutky, Donald C.: *See—*
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- Perret, Jean Y. Apparatus for the automatic labelling of objects of differing shapes. 4,129,473, Cl. 156-364.000.
- Pesson, Marcel, to Laboratoire Roger Bellon. Process for the preparation of an 8-alkyl-5-oxo-5,8-dihydro-pyrido(2,3-d)pyrimidine-6-carboxylic acid. 4,129,737, Cl. 544-279.000.
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  - Jezl, James L.; and Peters, Edwin F., 4,129,701, Cl. 526-65.000.
- Peters, Kenneth: *See—*
  - King, Walter J.; Snook, James C.; and Peters, Kenneth, 4,129,692, Cl. 429-234.000.
- Peterson, Anders A.; and Catlin, Francis D., to Hardinge Brothers, Inc. Bar stock feed apparatus. 4,129,220, Cl. 214-1.400.
- Peterson, Donald J., to Procter & Gamble Company, The. Energy saving detergent manufacture. 4,129,516, Cl. 252-122.000.
- Peterson, Donald J., to Procter & Gamble Company, The. Soap making. 4,129,520, Cl. 252-367.000.
- Peterson, Richard H.: *See—*
  - Jensen, Richard W.; and Peterson, Richard H., 4,129,056, Cl. 84-1.260.
- Petrolite Corporation: *See—*
  - Thompson, Neil E. S., 4,129,597, Cl. 260-563.00P.
- Petrovich, John P.; and Van Eenam, Donald N., to Monsanto Company. Polyamine-epihalohydrin resinous reaction products. 4,129,528, Cl. 260-823.000.
- Pfaffle, Ernst, to Ricoh Company, Ltd. Method and construction for spiral wire binding of pads. 4,129,156, Cl. 140-92.400.
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  - Barth, Wayne E., 4,129,732, Cl. 544-23.000.
  - Celmer, Walter D.; Cullen, Walter P.; Jefferson, Mark T.; Moppett, Charles E.; Routien, John B.; and Sciavolino, Frank C., 4,129,578, Cl. 260-345.70R.
  - Kuhla, Donald E., 4,129,567, Cl. 546-121.000.
  - Plattner, Jacob J., 4,129,728, Cl. 542-429.000.
- Philip Morris Incorporated: *See—*
  - Hind, John D.; and Hopkins, William C., 4,129,134, Cl. 131-2.000.
- Phillips, James D. Tool load sensor and control circuit. 4,129,789, Cl. 307-118.000.
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  - Marrs, Oren L.; and Reusser, Robert E., 4,129,541, Cl. 260-28.5AS.
  - Scott, John N., Jr.; and Carrow, Guy E., 4,129,282, Cl. 249-137.000.
  - Selman, Charles M.; and Uraneck, Carl A., 4,129,558, Cl. 260-823.000.
  - Tabler, Donald C.; and Johnson, Marvin M., 4,129,605, Cl. 260-669.00A.
- Phillips, Velma L. Multiple purpose teaching device. 4,128,990, Cl. 58-2.000.
- Pichl, Heinz, to AB Volvo Penta. Module unit. 4,129,103, Cl. 123-52.00R.
- Pickering & Company, Inc.: *See—*
  - Wittenberg, Roland C., 4,129,305, Cl. 274-23.00R.
- Pierce, William C.; Berry, Samuel M.; and Johnson, Arthur D., to Pitts Industries, Inc. Method of making a pulley groove. 4,129,026, Cl. 72-367.000.
- Pierrel, Michel; and Malivoir, Roger, to Pont-a-Mousson S.A. Installation for handling socket cores for a centrifugal casting machine. 4,129,171, Cl. 164-292.000.
- Pigeon Kabushiki Kaisha: *See—*
  - Nakata, Yuichi; and Murakami, Tadayoshi, 4,128,910, Cl. 15-110.000.
- Pigerol, Charles; de Cointet de Fillain, Paul; and Bazile, Yves, to Labaz. Phenyl-2 indole derivatives. 4,129,572, Cl. 260-326.12R.
- Pignato, Gaetano. Dual gauge indicating device. 4,129,039, Cl. 73-310.000.
- Pinettes, Jacques; and Chaix, Jean, to Alliages Frittes S.A. Method for butt-welding cylindrical metallic rods. 4,129,771, Cl. 219-104.000.
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  - Kaplan, Earl; and Pinto, Frank G., 4,129,538, Cl. 260-23.70M.
- Pisanchyn, John: *See—*
  - Baker, Josefina T.; Pisanchyn, John; and Sifniades, Stylianos, 4,129,594, Cl. 260-544.00D.
- Pitkanen, Alan R.: *See—*
  - Marason, Gabriel, Jr.; Melzian, John M.; and Pitkanen, Alan R., 4,128,949, Cl. 35-39.000.

- Pitney-Bowes, Inc.: *See—*
  - Kanning, L. Neil, 4,129,191, Cl. 177-210.00R.
- Pitts Industries, Inc.: *See—*
  - Pierce, William C.; Berry, Samuel M.; and Johnson, Arthur D., 4,129,026, Cl. 72-367.000.
- Pizzuti, Donato F., to Polaroid Corporation. Electromagnet controlled scanning shutter blade arrangement. 4,129,371, Cl. 354-234.000.
- Platt, Clark I., to Whirlpool Corporation. One-piece agitator with clothes lifting cams. 4,129,018, Cl. 68-134.000.
- Plattner, Jacob J., to Pfizer Inc. 2-(Descarboxy)-2-(tetrazol-5-yl) 11-desoxy-15-thiaprostaglandins. 4,129,728, Cl. 542-429.000.
- Platz, Gerald M.: *See—*
  - Colburn, Samuel E.; Bryant, Duane K.; Platz, Gerald M.; and Vetter, Clarence J., Jr., 4,129,714, Cl. 526-331.000.
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- Plessey Handel und Investments AG: *See—*
  - Dickson, John F.; and Wilcock, John D., 4,129,794, Cl. 307-270.000.
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  - Buder, Wolfgang; Pletka, Hans-Dieter; Michel, Rudolf; Schwarz, Rudolf; and Dusing, Gerhard, 4,129,585, Cl. 260-448.80R.
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  - Nametkin, Nikolai S.; Vinogradov, Georgy V.; Podolsky, Jury Y.; Pavlovskaya, Nina T.; Frenkin, Ernest I.; and Yanovsky, Jury G., 4,129,550, Cl. 260-42.220.
- Pohto, Gerald R.; and Olson, Richard O., to Diamond Shamrock Corporation. Electrode sheet assembly apparatus. 4,129,292, Cl. 269-126.000.
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  - Reichel, Pavel; Kafunek, Pavel; Kovar, Jiri; Pokorny, Oldrich; Zuna, Jaroslav; Kratina, Jindrich; and Pellant, Michal, 4,129,881, Cl. 357-82.000.
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- Polaroid Corporation: *See—*
  - Pizzuti, Donato F., 4,129,371, Cl. 354-234.000.
  - Whiteside, George D., 4,129,367, Cl. 354-83.000.
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- Polimine, Robert F., to General Signal Corporation. Bus bar clamp. 4,129,354, Cl. 339-265.00F.
- Polychrome Corporation: *See—*
  - Deutsch, Albert A.; Dennis, Richard; and Gumbinner, Robert, 4,129,486, Cl. 204-159.190.
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  - Pierrel, Michel; and Malivoir, Roger, 4,129,171, Cl. 164-292.000.
- Poppe, Richard L.: *See—*
  - Childress, David L.; Hayes, William V.; and Poppe, Richard L., 4,129,600, Cl. 260-604.00R.
- Popper Engineering Ltd.: *See—*
  - Popper, Jakhin B., 4,129,290, Cl. 267-160.000.
- Popper, Jakhin B., to Popper Engineering Ltd. Compression and tension spring. 4,129,290, Cl. 267-160.000.
- Portinari, Antonio; and Lavezzari, Piero, to Industrie Pirelli Societa per Azioni. Method for impregnating stranded wires during stranding thereof. 4,129,466, Cl. 156-48.000.
- Posset, Robert: *See—*
  - Plumat, Emile; and Posset, Robert, 4,129,434, Cl. 65-60.00D.
- Pouring, Andrew A. Method and apparatus for production of seeding materials. 4,129,252, Cl. 239-2.00R.
- Powers, Betsy K. Baby gazebo. 4,129,139, Cl. 135-3.00E.
- PPG Industries, Inc.: *See—*
  - Christenson, Roger M.; Dowbenko, Rostyslaw; and Makhlouf, Joseph M., 4,129,489, Cl. 204-159.220.
  - Schimmel, Karl F., 4,129,490, Cl. 204-181.00C.
- Praetorius, Heinz; Seibert, Karl; and Holtvoigt, Werner, to Akzona Incorporated. Lubricants used in the processing of plastics. 4,129,717, Cl. 528-421.000.
- Precision Handling Devices, Inc.: *See—*
  - Hubbard, Leo J., 4,129,239, Cl. 226-75.000.
- Presby, Herman M.: *See—*
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- Price, Reginald S. Suspension assembly for partition panel. 4,128,979, Cl. 52-241.000.
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  - Mott, Richard H.; and Pritchard, Clyde L., 4,129,258, Cl. 239-650.000.
- Probst, Wallace P., to Robil Company. Bundle carrier attachment for fork lift trucks. 4,129,223, Cl. 214-620.000.
- Procter & Gamble Company, The: *See—*
  - Foster, Gregory S., 4,129,515, Cl. 252-117.000.
  - Peterson, Donald J., 4,129,516, Cl. 252-122.000.
  - Peterson, Donald J., 4,129,520, Cl. 252-367.000.
  - Ritze, Lyle W., 4,129,638, Cl. 264-117.000.
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  - Cofer, Daniel B.; Ward, George C.; and Proctor, Dale D., 4,129,170, Cl. 164-270.000.
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  - Schick, Henri, 4,129,216, Cl. 211-13.000.
- Pruski, Edward M.: *See—*
  - Tehon, Stephen W.; and Pruski, Edward M., 4,129,031, Cl. 73-32.00A.
- Przedsiebiorstwo Projektowania I Realizacji Inwestycji przemyslu Maszynowego "Bipromasz", Instytut Odlewnictwa: *See—*
  - Biedacha, Roman; Kurdziel, Wladyslaw; Kaczor, Janusz; Smeder, Adam; Kolaczkowski, Jacek; Olszowski, Tadeusz; Nawrocki, Adam; and Rzeszut, Janina, 4,129,169, Cl. 164-166.000.
- Puls, James H.: *See—*
  - Wied, George L.; Bahr, Gunter F.; and Puls, James H., 4,129,381, Cl. 356-36.000.
- Punte, Lawrence F.: *See—*
  - Stewart, Walter P.; and Punte, Lawrence F., 4,129,682, Cl. 428-571.000.
- Q Corporation: *See—*
  - Smith, E. Quimby, Jr., 4,129,003, Cl. 60-645.000.
- Quest Automation Limited: *See—*
  - Lambden, Martin R., 4,129,746, Cl. 178-18.000.
- Quick, Donald J., to Massey-Ferguson Services N.V. Trash removal apparatus for sugar cane harvesters. 4,129,339, Cl. 302-21.000.
- Quintana, Roberto. Traction device for tires. 4,129,161, Cl. 152-225.00R.
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  - Hasquenoph, Jean H.; and Coutin, Pierre F., 4,129,271, Cl. 244-137.00R.
- R. J. Reynolds Tobacco Company: *See—*
  - Harris, James L., 4,129,427, Cl. 55-247.000.
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- Ragan, Ralph L. Apparatus for twisting and winding strand material. 4,128,988, Cl. 57-66.000.
- Ragle, Herbert U.; and DeMoss, Dean, to Burroughs Corporation. Double partitioning of flexible disk pack and associated apparatus. 4,129,891, Cl. 360-98.000.
- Ram-Trol, Inc.: *See—*
  - Foley, John D., Jr., 4,129,088, Cl. 115-18.00E.
- Randall, Geoffrey L. P.: *See—*
  - Roberts, Philip D.; Randall, Geoffrey L. P.; Simon, David G.; and Booth, Jeffrey, 4,129,702, Cl. 526-71.000.
- Randall, Lawrence. Alarm circuit for a door lock. 4,129,865, Cl. 340-542.000.
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  - Kapoor, Devinder S., 4,129,136, Cl. 134-2.000.
- Rashid, Moinuddin S., to General Motors Corporation. Formable high strength low alloy steel. 4,129,461, Cl. 148-12.300.
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  - Jeffreys, Godfrey V.; Mumford, Clive J.; Ravault, Frank E. G.; and Washbourne, Colin, 4,129,500, Cl. 210-23.00R.
- Ray-Chaudhuri, Dilip K.: *See—*
  - Iovine, Carmine P.; and Ray-Chaudhuri, Dilip K., 4,129,722, Cl. 536-43.000.
- Raychem Corporation: *See—*
  - Zingheim, Steven C., 4,129,616, Cl. 260-878.00R.
- Raymonda, John W.: *See—*
  - Daiber, John W.; and Raymonda, John W., 4,129,835, Cl. 331-94.50G.
- Raytheon Company: *See—*
  - Frank, Robert I.; and Salzer, Thomas E., 4,129,848, Cl. 338-308.000.
  - Galani, Zvi; and Temple, Steven J., 4,129,839, Cl. 333-9.000.
  - Mumper, James E., 4,129,850, Cl. 340-10.000.
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- RCA Corporation: *See—*
  - Cunningham, Thomas J.; Schwartzberg, Harold L., deceased; and McGlynn, Joseph L., Jr., executor, 4,129,744, Cl. 174-94.00R.
  - Haferl, Peter E., 4,129,806, Cl. 315-370.000.
  - Johns, McKinley R., 4,129,871, Cl. 343-727.000.
  - Martin, Carl J.; and Ryan, Robert J., 4,129,536, Cl. 260-23.0XA.
  - Mills, Chester R., 4,129,826, Cl. 324-57.0SS.
  - Mok, Chuck K., 4,129,840, Cl. 333-73.00W.
  - Tamutus, Donald J., 4,129,628, Cl. 264-1.000.
  - Wiesbrod, Sherman, 4,129,804, Cl. 315-169.0TV.
- RCA Limited: *See—*
  - Webb, Paul P., 4,129,878, Cl. 357-13.000.
- Redl, Simon: *See—*
  - Wolfseder, Alfons; Urban, Hans; and Redl, Simon, 4,129,504, Cl. 210-247.000.

- Regie Nationale des Usines Renault: *See—*
  - Lenglet, Henry, 4,129,160, Cl. 141-388.000.
- Reich, Fred R.: *See—*
  - Walker, Ray A.; Reich, Fred R.; and Russell, James T., 4,129,384, Cl. 356-381.000.
- Reichel, Pavel; Kafunek, Pavel; Kovar, Jiri; Pokorny, Oldrich; Zuna, Jaroslav; Kratina, Jindrich; and Pellant, Michal, to CKD Praha, oborovy podnik. Heat sink cooled, semiconductor device assembly having liquid metal interface. 4,129,881, Cl. 357-82.000.
- Reichelt, Walter: *See—*
  - Herklotz, Gunther; and Reichelt, Walter, 4,129,765, Cl. 200-268.000.
- Reifenberg, Gerald H., to Pennwalt Corporation. Process for preparing dimethyltin dichloride. 4,129,584, Cl. 260-429.700.
- Reiland, Peter M. Bacon cooking apparatus. 4,129,067, Cl. 99-391.000.
- Reimann, Hans: *See—*
  - Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Sarre, Olga; and Reimann, Hans, 4,129,720, Cl. 536-17.000.
- Reinholtz, William H., to General Instrument Corporation. Data recording and/or reproducing system. 4,129,888, Cl. 360-40.000.
- Rentzsch, Max: *See—*
  - Bedall, Hans; and Rentzsch, Max, 4,129,061, Cl. 86-20.00B.
- Republic Rubber Industries (Prop.) Ltd.: *See—*
  - Martin, Aubrey W., 4,129,474, Cl. 156-394.000.
- Reusser, Robert E.: *See—*
  - Marra, Oren L.; and Reusser, Robert E., 4,129,541. Cl. 260-28.5AS.
- Rhone-Poulenc Industries: *See—*
  - Bonin, Yves, 4,129,695, Cl. 521-108.000.
  - Caffarel, Jean-Claude; Papillon, Bernard; and Neel, Jean, 4,129,514, Cl. 252-89.00R.
- Rhone Poulenc Textile: *See—*
  - Menault, Jacques; and Rodier, Henry, 4,129,451, Cl. 106-168.000.
  - Rodier, Henry, 4,129,640, Cl. 264-187.000.
- Richardson, Dwight; and Richardson, Jerome. Game apparatus. 4,129,298, Cl. 273-100.000.
- Richardson, Jerome: *See—*
  - Richardson, Dwight; and Richardson, Jerome, 4,129,298, Cl. 273-100.000.
- Richardsson, Dan. Device for emptying containers or similar. 4,129,222, Cl. 214-17.00D.
- Ricoh Company, Ltd.: *See—*
  - Miyakawa, Seiichi; and Eda, Tadahiro, 4,129,375, Cl. 355-10.000.
  - Ogura, Yukio; and Fukuda, Mitsuhisa, 4,129,373, Cl. 355-1.000.
  - Pfaffle, Ernst, 4,129,156, Cl. 140-92.400.
- Ridenour, Charles E.; Fabert, Herman A., Jr.; Tasker, John; and Larson, Hugo R., to Abex Corporation. Consumable guide tube assembly. 4,129,773, Cl. 219-146.230.
- Riew, Changkiu K., to B. F. Goodrich Company, The. Reaction products of non-cycloaliphatic epoxy resins and amine-terminated liquid polymers and process for preparation thereof. 4,129,670, Cl. 427-386.000.
- Riganti, Gian P.: *See—*
  - Todeschini, Eugenio; and Riganti, Gian P., 4,129,192, Cl. 180-6.480.
- Rigenmann, Ludwig. Road surface marking prefabricated tape material, having retroreflective composite elements associated thereto. 4,129,397, Cl. 404-14.000.
- Riordan, Joan M.: *See—*
  - Duke, Edward D.; and Riordan, Joan M., 4,128,952, Cl. 37-8.000.
- Ritze, Lyle W., to Procter & Gamble Company, The. Compositions of matter for coloring toothpaste and method of preparing same. 4,129,638, Cl. 264-117.000.
- Ritzerfeld, Gerhard. Duplicator machine with means for applying to the copies different markings. 4,129,073, Cl. 101-2.000.
- RMI Company: *See—*
  - Bomberger, Howard B., Jr., 4,129,438, Cl. 75-10.00C.
- Robert Bosch GmbH: *See—*
  - Arendt, Armin, 4,129,819, Cl. 322-28.000.
- Robert, Eric. Method and apparatus for determining the immersed surface area of one of the electrodes of an electro-chemical bath. 4,129,480, Cl. 204-1.00T.
- Robert-Grandpierre, Jean-Claude, to Ebauches SA. Electronic digital watch. 4,128,991, Cl. 58-23.00R.
- Roberts, Philip D.; Randall, Geoffrey L. P.; Simon, David G.; and Booth, Jeffrey, to Imperial Chemical Industries Limited. Polymerizing unsaturated halides with carbamate type metallic catalyst. 4,129,702, Cl. 526-71.000.
- Roberts, Thomas G.; Rust, Charles M.; and Witriol, Norman M. Self-aerating container. 4,129,095, Cl. 119-5.000.
- Robertshaw Controls Company: *See—*
  - Teichert, Allen L., 4,129,847, Cl. 337-301.000.
- Robil Company: *See—*
  - Probst, Wallace P., 4,129,223, Cl. 214-620.000.
- Robinson, Charles L. Method and apparatus for securing and stabilizing a lightweight, collapsible structure that is moving along a moving work site. 4,128,973, Cl. 52-2.000.
- Robinson, Graham: *See—*
  - Jones, Ivor W.; Robinson, Graham; and Bird, Thomas L., 4,129,690, Cl. 429-104.000.
- Robinson, Ronald H.; and Weiland, Richard H., to Boeing Company, The. Air refueling boom pivot gimbal arrangements. 4,129,270, Cl. 244-135.00A.
- Rockford Acromatic Products Co.: *See—*
  - Olson, Dean A., Sr., 4,129,016, Cl. 64-17.00A.
- Rodier, Henry, to Rhone Poulenc Textile. Process for producing shaped articles of cellulose. 4,129,640, Cl. 264-187.000.
- Rodier, Henry: *See—*
  - Menault, Jacques; and Rodier, Henry, 4,129,451, Cl. 106-168.000.
- Rodrian, James A. Animal identification system. 4,129,855, Cl. 340-152.00T.
- Rodway, William G.: *See—*
  - Downer, John M.; Rodway, William G.; and Shipp, Lawrence S. J., 4,129,618, Cl. 260-884.000.
- Rogers, Herbert E., Jr.: *See—*
  - Dreyer, Dennis G.; Foley, Edward M.; and Rogers, Herbert E., Jr., 4,129,444, Cl. 75-251.000.
- Rogerson, Jerry B.; and Harrison, Robert S., to Ford Motor Company. Carburetor with fast idle cam automatic release. 4,129,623, Cl. 261-52.000.
- Rohm and Haas Company: *See—*
  - Cunningham, Virginia L., 4,129,534, Cl. 521-38.000.
  - Greenfield, Stanley A.; and Dupont, John A., 4,129,448, Cl. 106-15.00R.
- Rohweder, Theodore R.: *See—*
  - Hannes, George J.; Rohweder, Theodore R.; Dreikorn, Hans W.; and Shepherd, Philip B., 4,129,674, Cl. 428-285.000.
- Rolff, Klaus-Peter, to Siemens Aktiengesellschaft. Method for the manufacture of contacts for gas-blast circuit breakers. 4,128,936, Cl. 29-630.00R.
- Rome, Bernard, to Rome Industries, Inc. Bookbinding technique. 4,129,471, Cl. 156-211.000.
- Rome Industries, Inc.: *See—*
  - Rome, Bernard, 4,129,471, Cl. 156-211.000.
- Rosa, John, to Westinghouse Electric Corp. Power factor corrected dual converter motor drive. 4,129,809, Cl. 318-293.000.
- Rosch, Gunter: *See—*
  - Gunther, Dieter; Schinzel, Erich; Erckel, Rudiger; and Rosch, Gunter, 4,129,412, Cl. 8-1.00W.
- Rose, David; Weinrich, Erwin; and Lieske, Edgar, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Oxidation hair dyes based upon tetraaminopyrimidine developers and mono- and dialkyl -m-dihydroxy benzene couplers. 4,129,413, Cl. 8-10.200.
- Rose, David; Saygin, Ferdi; and Lieske, Edgar, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Oxidation hair colorants containing water-soluble polyhalogen 3-aminophenols as couplers. 4,129,414, Cl. 8-10.200.
- Rose Shuffman, executrix u/w Oscar Shuffman, deceased: *See—*
  - Ross, Sigmund L.; and Shuffman, Oscar, deceased, 4,129,431, Cl. 62-66.000.
- Rosencwaig, Allan; and Emary, Robert J., to Gilford Instrument Laboratories. Photoacoustic sample cell. 4,129,385, Cl. 356-244.000.
- Rosinski, Louis S., Jr.: *See—*
  - van der Pool, Kees; Rosinski, Louis S., Jr.; and Belli, Johann B., 4,129,823, Cl. 324-20.00R.
- Ross, Leah M. Musical instrument teaching aid. 4,129,058, Cl. 84-485.00R.
- Ross, Sigmund L.; and Shuffman, Oscar, deceased, to Rose Shuffman, executrix u/w Oscar Shuffman, deceased. Cryothermal manipulation of petroleum. 4,129,431, Cl. 62-66.000.
- Rosvold, Warren C., to Signetics Corporation. Semiconductor transducer packaged assembly. 4,129,042, Cl. 73-727.000.
- Roszkowski, Adolph P.; Beard, Colin C.; Dvorak, Charles; and Weinhardt, Klaus, to Syntex (U.S.A.) Inc. 4,5-Dihydro-2-lower alkoxycarbonylamino-4-phenylimidazoles and substituted phenyl derivatives thereof. 4,129,661, Cl. 424-273.00R.
- Roth, Michael; and Gogolok, Konrad, to Wacker-Chemie GmbH. Process for the preparation of hydrophobic agents. 4,129,447, Cl. 106-2.000.
- Rouquie, Georges, to Bertin & Cie. Method of draining parts emerging from hot galvanizing baths. 4,129,668, Cl. 427-57.000.
- Routien, John B.: *See—*
  - Celmer, Walter D.; Cullen, Walter P.; Jefferson, Mark T.; Moppett, Charles E.; Routien, John B.; and Sciavolino, Frank C., 4,129,578, Cl. 260-345.70R.
- Rubin, Fred K., to Lever Brothers Company. Stable liquid abrasive composition suitable for removing manganese-ion derived discolorations from hard surfaces. 4,129,423, Cl. 51-304.000.
- Ruble, Ernest B.: *See—*
  - Czech, James I.; and Ruble, Ernest B., 4,128,935, Cl. 29-596.000.
- Ruda, Ernest V.: *See—*
  - Schneider, Clayton J., Jr.; and Ruda, Ernest V., 4,129,078, Cl. 102-89.0CD.
- Ruegg, Andre; and Beck, Wilfried, to Contraves AG. Pivot mechanism. 4,129,280, Cl. 248-183.000.
- Rueter, Joern; and Grundamann, Raban, to Chemische Werke Huels Aktiengesellschaft. Flame retardant polyesters. 4,129,551, Cl. 260-45.70R.
- Ruge, Hans, to Klaus-Gerd Hoes, Firma. Mounting bars for road making machines. 4,129,399, Cl. 404-118.000.
- Ruhrchemie Aktiengesellschaft: *See—*
  - Hobes, John; and Payer, Wolfgang, 4,129,472, Cl. 156-331.000.
- Russell, James T.: *See—*
  - Walker, Ray A.; Reich, Fred R.; and Russell, James T., 4,129,384, Cl. 356-381.000.
- Rust, Charles M.: *See—*
  - Roberts, Thomas G.; Rust, Charles M.; and Witriol, Norman M., 4,129,095, Cl. 119-5.000.
- Rustin, Rudolph B., Jr.; and Bales, O. Sherman, to Overton Company. Shipping carton. 4,129,246, Cl. 229-23.00R.
- Ryan, Robert J.: *See—*
  - Martin, Carl J.; and Ryan, Robert J., 4,129,536, Cl. 260-23.0XA.

- Ryugo, Noboru: *See—*
  - Inaniwa, Keizo; and Ryugo, Noboru, 4,129,090, Cl. 118-49.000.
- Rzeszut, Janina: *See—*
  - Biedacha, Roman; Kurdziel, Wladyslaw; Kaczor, Janusz; Smeder, Adam; Kolaczkowski, Jacek; Olszowski, Tadeusz; Nawrocki, Adam; and Rzeszut, Janina, 4,129,169, Cl. 164-166.000.
- Sach, Ernst D.: *See—*
  - Heinze, Horst; Stierle, Gunter; and Sach, Ernst D., 4,128,921, Cl. 24-279.000.
- Saeed, Sheikh A.: *See—*
  - Collier, Harry O. J.; Saeed, Sheikh A.; Schneider, Cyril; and Mannuzza, Frank, 4,129,648, Cl. 424-101.000.
- Saft-Societe des Accumulateurs Fixes et de Traction: *See—*
  - Broussely, Michel, 4,129,691, Cl. 429-197.000.
- Sagara, Seiji: *See—*
  - Miyamoto, Koichi; Tohyama, Yoshikuni; Sagara, Seiji; Kimura, Yoshimasa; and Ishida, Masato, 4,129,377, Cl. 355-14.000.
- Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, to Toyama Chemical Co., Ltd. 7α-Methoxycephalosporins. 4,129,730, Cl. 544-21.000.
- Sakamoto, Hiroshi: *See—*
  - Soeno, Ko; Iizuka, Tomio; Doi, Toshio; Ando, Hisashi; Oyama, Testuo; Sakamoto, Hiroshi; and Misumi, Akira, 4,129,801, Cl. 313-346.00R.
- Sakamoto, Masakatsu: *See—*
  - Hosaka, Nobuyoshi; Ishikawa, Yuichi; Nishida, Osamu; and Sakamoto, Masakatsu, 4,129,337, Cl. 302-2.00R.
- Sakamoto, Tatsuo: *See—*
  - Momura, Takao; Umemoto, Yoshiro; and Sakamoto, Tatsuo, 4,129,672, Cl. 428-138.000.
- Salmi, Albert E. Ribbon decoration and method of making the same. 4,129,032, Cl. 93-33.00R.
- Salzer, Thomas E.: *See—*
  - Frank, Robert I.; and Salzer, Thomas E., 4,129,848, Cl. 338-308.000.
- Sammarone, Dino G., to United States of America, Energy. Environment control system. 4,129,476, Cl. 176-37.000.
- Samuel G. Dawson: *See—*
  - Banke, Kerry O., 4,129,118, Cl. 126-271.000.
- Sanchez, Jose, to Pennwalt Corporation. Polymerization of vinyl monomers employing a diperoxyester mixture composition prepared by reacting dihydroperoxide and peroxyester forming carbonyl compounds. 4,129,704, Cl. 526-73.000.
- Sandau, Roray J.: *See—*
  - Goldsby, Claude W.; and Sandau, Roray J., 4,129,251, Cl. 237-51.000.
- Sanderson, William A., to United States of America, Agriculture. Selective manufacture of anhydrous modifications of methyl phosphonic acid and use thereof in making pure methyl phosphonic acid and salts thereof. 4,129,588, Cl. 260-502.40P.
- Sandoz Ltd.: *See—*
  - Berthold, Richard, 4,129,658, Cl. 424-274.000.
- Santarelli, Mario, to Harvester Center Italiana S.r.l. Apparatus particularly for the automatic harvesting of fruit. 4,128,986, Cl. 56-328.0TS.
- Santer, J. Owen: *See—*
  - Anderson, George J.; Desmond, Timothy F.; and Santer, J. Owen, 4,129,681, Cl. 428-524.000.
- Sanwa Industries, Ltd.: *See—*
  - Kihara, Yoshio, 4,129,084, Cl. 112-221.000.
- Sanyo Chemical Industries, Ltd.: *See—*
  - Takematsu, Tetsuo; Masuda, Fusayoshi; Tanaka, Kenji; Nishida, Kazuo; and Nakamura, Akira, 4,129,435, Cl. 71-65.000.
- Sanyo Electric Co., Ltd.: *See—*
  - Ishii, Yasuhiro; Hirose, Shintaro; and Kawasaki, Ryoichi, 4,129,195, Cl. 181-167.000.
- Sanz, Eduardo P. Apparatus for lighting with fluorescent tubes of automatic fixing and connection. 4,129,900, Cl. 362-217.000.
- Sardina, John F.: *See—*
  - Hammond, Howard A.; and Sardina, John F., 4,129,194, Cl. 180-68.500.
- Sarns, Inc.: *See—*
  - Amrine, Bruce A., 4,129,129, Cl. 128-214.00R.
- Saroy Engineering: *See—*
  - Husted, Royce H., 4,129,193, Cl. 180-5.00R.
- Sarre, Olga: *See—*
  - Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Sarre, Olga; and Reimann, Hans, 4,129,720, Cl. 536-17.000.
- Sasaki, Takehiko: *See—*
  - Maeda, Hidetoshi; Morihisa, Mitsuo; and Sasaki, Takehiko, 4,128,993, Cl. 58-23.00R.
- Sassmannshausen, Gunter: *See—*
  - Lahme, Norbert; and Sassmannshausen, Gunter, 4,129,687, Cl. 429-86.000.
- Sato, Hidetoshi: *See—*
  - Ohkita, Masao; and Sato, Hidetoshi, 4,129,764, Cl. 200-159.00R.
- Sato, Makoto; Takamatsu, Hiroshi; Miyagawa, Yoshitaka; and Fujii, Etsuo, to Honda Giken Kogyo Kabushiki Kaisha. Anti-skid brake control device. 4,129,342, Cl. 303-105.000.
- Sato, Moriichi: *See—*
  - Seki, Masatoshi; Sato, Moriichi; Tsukioka, Hideo; Ohe, Etuo; Ogata, Masatsugu; and Mitsuoka, Akio, 4,129,678, Cl. 428-383.000.
- Sato, Nobuo: *See—*
  - Iwamura, Masahiro; Hamada, Nagaharu; Hara, Toshitaka; and Sato, Nobuo, 4,129,859, Cl. 340-324.0AD.
- Sato, Ryuichi, to Omron Tateisi Electronics Co. Solid state switching circuit. 4,129,791, Cl. 307-252.00Q.
- Saunders, Norman B. Heating and ventilation system. 4,129,120, Cl. 126-271.000.
- Savin Business Machines Corporation: *See—*
  - Hori, Tatsu; Gardiner, Kenneth W.; and Mangal, Norman F., 4,129,295, Cl. 271-186.000.
- Sawrenko, Peter. Hone. 4,128,970, Cl. 51-170.0TL.
- Saygin, Ferdi: *See—*
  - Rose, David; Saygin, Ferdi; and Lieske, Edgar, 4,129,414, Cl. 8-10.200.
- Saylor, Richard, to IDR, Inc. Phase locked loop for providing continuous clock phase correction. 4,129,748, Cl. 178-69.100.
- Scandia Packaging Machinery Company: *See—*
  - Anderson, Andrew W.; and Mateyka, Milan, 4,129,205, Cl. 198-358.000.
- Scapes, John N.; and Speckmann, Donald R., to Gould Inc. Metering valve. 4,129,284, Cl. 251-205.000.
- Schaefer, William F.: *See—*
  - Spurgin, Anthony J.; and Schaefer, William F., 4,129,475, Cl. 176-22.000.
- Schaeffer, Robert L., to General Electric Company. Peeling cutter. 4,128,939, Cl. 30-123.000.
- Schapel, Dietmar; and von Gizycki, Ulrich, to Bayer Aktiengesellschaft. Process for the production of thermoformable polyisocyanurate foams. 4,129,697, Cl. 521-176.000.
- Scheidl, Franz: *See—*
  - Haberlein, Harald; Nies, Herbert; and Scheidl, Franz, 4,129,553, Cl. 260-45.85R.
- Schering, A.G. Patentabteilung: *See—*
  - Wiechert, Rudolf; Bittler, Dieter; Kerb, Ulrich; Casals-Stenzel, Jorge; and Losert, Wolfgang, 4,129,564, Cl. 260-239.570.
- Schering Corporation: *See—*
  - Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Sarre, Olga; and Reimann, Hans, 4,129,720, Cl. 536-17.000.
- Scheurecker, Werner; and Hargassner, Reinhard, to Vereinigte Osterreichische Eisen-und Stahlwerke - Alpine Montan Aktiengesellschaft. Continuous casting plant. 4,129,173, Cl. 164-442.000.
- Schick, Henri, to Promotion Etude Conditionnement d'Articles de Mercerie - PECAM Internat. Display stand for sewing-thread spools and like articles. 4,129,216, Cl. 211-13.000.
- Schiller, Heidelinde: *See—*
  - Rauer, Kurt; Hofmann, Harald; Schiller, Heidelinde; and Sheppard, Chester S., 4,129,531, Cl. 521-94.000.
- Schimmel, Karl F., to PPG Industries, Inc. Polymeric products. 4,129,490, Cl. 204-181.00C.
- Schinzel, Erich: *See—*
  - Gunther, Dieter; Schinzel, Erich; Erckel, Rudiger; and Rosch, Gunter, 4,129,412, Cl. 8-1.00W.
- Schlage Lock Company: *See—*
  - Urdal, Jan, 4,129,019, Cl. 70-107.000.
- Schleich, Hans B., to Etablissement Dentaire Ivoclar. Dental articulator. 4,128,942, Cl. 32-32.000.
- Schlumberger Technology Corporation: *See—*
  - Wahl, John S.; and Schuster, Nick A., 4,129,777, Cl. 250-264.000.
- Schmader, Richard W. Metering apparatus for flour and other materials that tend to bridge. 4,129,233, Cl. 222-227.000.
- Schmid, Hans, to Meteor AG. Apparatus for the reinforcement of lengths of coil wire. 4,129,158, Cl. 140-149.000.
- Schmidt, Ernst M.: *See—*
  - Van Benthem, Willem; and Schmidt, Ernst M., 4,129,800, Cl. 313-25.000.
- Schmidt, Oskar; and Sibral, Walter, to Lim-Holding, S.A. Novel polyethers having terminal amino groups, a process for their production and their application. 4,129,741, Cl. 560-50.000.
- Schneider, Clayton J., Jr.; and Ruda, Ernest V., to Calspan Corporation. Dispersive subprojectiles for chaff cartridges. 4,129,078, Cl. 102-89.0CD.
- Schneider, Cyril: *See—*
  - Collier, Harry O. J.; Saeed, Sheikh A.; Schneider, Cyril; and Mannuzza, Frank, 4,129,648, Cl. 424-101.000.
- Schnell, Hans G., to Van Kooten B.V. Cylinder piece for a pile driving ram. 4,129,002, Cl. 60-633.000.
- Schoelkopf, Walter. Method and apparatus for plastifying and tearing up of damaged road-surfaces and covers. 4,129,398, Cl. 404-95.000.
- Scholl, Albert S. Trim guide. 4,128,913, Cl. 15-246.000.
- Schrack, Gary L., to Motorola Inc. Multi-pulse modulator for radar transponder. 4,129,867, Cl. 343-6.80R.
- Schreck, Robert C.: *See—*
  - Heyn, Fred M.; Yin, Ching-Feng; Hanson, Gordon L.; and Schreck, Robert C., 4,129,176, Cl. 165-7.000.
- Schreiber, William L.; Siano, James N.; and Hall, John B., to International Flavors & Fragrances Inc. Cyclic oxazo derivatives. 4,129,569, Cl. 260-307.0FA.
- Schriber, Louis; and Stephens, Robert E., to Harris Corporation. Collating machine with large roll supply. 4,129,293, Cl. 270-52.000.
- Schubeis, Ewald I. E. Door frame, especially for fireproof doors. 4,128,977, Cl. 52-212.000.
- Schuler, Alan L., to General Dynamics Corporation. Liquefied gas tank and method of filling. 4,129,146, Cl. 137-587.000.
- Schulze, Heinz, to Texaco Development Corporation. Urea-aldehyde resins. 4,129,716, Cl. 528-68.000.
- Schure, Ralph M.: *See—*
  - Kooi, John H.; Schure, Ralph M.; and Brown, John M., 4,129,607, Cl. 260-835.000.

Schuster, Nick A.: *See—*
Wahl, John S.; and Schuster, Nick A., 4,129,777, Cl. 250-264.000.

Schwartz, Herbert: *See—*
Egger, Joseph; Mayer, Franz; Schwartz, Herbert; Sodler, Walter; Suard, Jean; and Tilse, Wilhelm, 4,128,992, Cl. 58-23.00D.

Schwartzberg, Harold L., deceased: *See—*
Cunningham, Thomas J.; Schwartzberg, Harold L., deceased; and McGlynn, Joseph L., Jr., executor, 4,129,744, Cl. 174-94.00R.

Schwartzkopff, Udo; and Fischer, Horst, to Akzona Incorporated. Floor covering sheet for stables. 4,129,097, Cl. 119-28.000.

Schwarz, Hans-Dieter. Method and means for the acoustical steering of submarine torpedoes. 4,129,086, Cl. 114-23.000.

Schwarz, Jens P.: *See—*
Glasser, Alan; Schwarz, Jens P.; and Glasser, Lance A., 4,129,112, Cl. 126-121.000.

Schwarz, Rudolf: *See—*
Buder, Wolfgang; Pletka, Hans-Dieter; Michel, Rudolf; Schwarz, Rudolf; and Dusing, Gerhard, 4,129,585, Cl. 260-448.80R.

Schwenk, Walter: *See—*
Leftheris, Basil P.; Mainhardt, Joseph H.; and Schwenk, Walter, 4,129,028, Cl. 72-430.000.

Schwuchow, Norbert, to Daimler-Benz Aktiengesellschaft. Understructure of a self-supporting motor vehicle body. 4,129,330, Cl. 296-28.00F.

Sciavolino, Frank C.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Jefferson, Mark T.; Moppett, Charles E.; Routien, John B.; and Sciavolino, Frank C., 4,129,578, Cl. 260-345.70R.

Sciolotto, Alessandro, to ITW Fastex Italia, Sp.A. Tool for tensioning and cutting self-locking straps. 4,129,157, Cl. 140-123.600.

SCM Corporation: *See—*
McGinniss, Vincent D., 4,129,488, Cl. 204-159.190.

Scott, John N., Jr.; and Carrow, Guy E., to Phillips Petroleum Company. Mold apparatus. 4,129,282, Cl. 249-137.000.

Scott, Paul T., to Du Pont de Nemours, E. I., and Company. Product comprising blend of hollow polyester fiber and crimped polyester binder fiber. 4,129,675, Cl. 428-288.000.

Scott, William B.: *See—*
Brolund, Theodore F.; and Scott, William B., 4,129,460, Cl. 148-9.00R.

Sealed Power Corporation: *See—*
Joseph, A. David, 4,129,503, Cl. 210-232.000.

Sears, Albert W.: *See—*
Shotts, L. D.; Wisbey, Raymond W.; and Sears, Albert W., 4,128,928, Cl. 29-156.80B.

Seibert, Karl: *See—*
Praetorius, Heinz; Seibert, Karl; and Holtvoigt, Werner, 4,129,717, Cl. 528-421.000.

Seifert, Ludwik I.: *See—*
Aversano, Frank J.; Carver, Leon; and Seifert, Ludwik I., 4,129,365, Cl. 353-99.000.

Seki, Masatoshi; Sato, Moriichi; Tsukioka, Hideo; Ohe, Etuo; Ogata, Masatsugu; and Mitsuoka, Akio, to Hitachi, Ltd.; and Hitachi Cable, Ltd. Self-bondable insulated wires comprising three coatings including a phenoxy resin outer layer. 4,129,678, Cl. 428-383.000.

Sellman, Donald L. Vapor lock and fuel vaporization controls. 4,129,106, Cl. 123-136.000.

Sellstedt, John H.; and Klaubert, Dieter H., to American Home Products Corporation. Process for preparing tetrazole-5-carboxamide derivatives. 4,129,735, Cl. 544-132.000.

Selman, Charles M.; and Uraneck, Carl A., to Phillips Petroleum Company. Preparation of functional polymers. 4,129,558, Cl. 260-823.000.

Sen, Dipankar: *See—*
Jennings, James R.; and Sen, Dipankar, 4,129,587, Cl. 260-465.80D.

Sendlak, Lawrence P., to Hooker Chemicals & Plastics Corp. Liquid phase fluorination process. 4,129,602, Cl. 260-651.00F.

Sensor Technology, Inc.: *See—*
van der Pool, Kees; Rosinski, Louis S., Jr.; and Belli, Johann B., 4,129,823, Cl. 324-20.00R.

Seo, Ryozo: *See—*
Gerstine, Milton I.; Goldberg, Joshua I.; Futatsugi, Setsuo; Ueda, Kazuo; Seo, Ryozo; Iwasaki, Koji; and Uemura, Makoto, 4,129,275, Cl. 244-181.000.

Serini, Volker; Friedhofen, Gerhard; Frietag, Dieter; and Heuser, Jurgen, to Bayer Aktiengesellschaft. 1,1,3,4,6-Pentamethyl-3-(3,5-dimethyl-4-hydroxyphenyl)-indan-5-ol polycarbonates. 4,129,612, Cl. 260-860.000.

Shannon, Montague W. Railroad car for highway trailers. 4,129,079, Cl. 105-368.00B.

Sharp Kabushiki Kaisha: *See—*
Maeda, Hidetoshi; Morihisa, Mitsuo; and Sasaki, Takehiko, 4,128,993, Cl. 58-23.00R.
Takagi, Yutaka; and Toyoda, Munemitsu, 4,129,769, Cl. 219-10.55B.
Uchida, Katsuzo; Uchiyama, Hiroaki; and Mitsuyama, Akira, 4,129,374, Cl. 355-8.000.

Sheathelm, Dorwin J. Bean puller. 4,129,186, Cl. 171-83.000.

Shepherd, Philip B.: *See—*
Hannes, George J.; Rohweder, Theodore R.; Dreikorn, Hans W.; and Shepherd, Philip B., 4,129,674, Cl. 428-285.000.

Sheppard, Chester S.; and MacLeay, Ronald E., to Pennwalt Corporation. Peroxide free radical initiators containing ultraviolet light stabilizing groups. 4,129,586, Cl. 260-465.00D.

Sheppard, Chester S.: *See—*
Rauer, Kurt; Hofmann, Harald; Schiller, Heidelinde; and Sheppard, Chester S., 4,129,531, Cl. 521-94.000.

Sherman, Eli H. Impulse generator for use with phosphor energizable lamps. 4,129,805, Cl. 315-219.000.

Sherritt Gordon Mines Limited: *See—*
Kunda, Wasyl; and Hitesman, Roderick H., 4,129,441, Cl. 75-118.00R.

Shibanov, Mikhail V.: *See—*
Chestnov, Valery F.; and Shibanov, Mikhail V., 4,128,925, Cl. 29-25.200.

Shibata, Toshiji, to Meisei Electric Co. Ltd. Multivibrator. 4,129,833, Cl. 331-66.000.

Shigenobu, Hiromichi; Isobe, Toshiaki; and Kondo, Minoru, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai Rika Denki Seisakusho. Electronic timer. 4,129,812, Cl. 318-484.000.

Shih, Martin K. S., to Electrohome Limited. Digital remote control system. 4,129,886, Cl. 358-194.000.

Shikata, Nobuo; and Ito, Sukemitsu, to Agency of Industrial Science & Technology. Method for electrolytic removal of scale from band steel. 4,129,485, Cl. 204-144.500.

Shimada, Tatsuo: *See—*
Yonezawa, Setsuo; Kawakami, Tsuneta; Shimada, Tatsuo; and Chida, Yoshinori, 4,129,860, Cl. 340-324.0AD.

Shimamura, Kazutomi: *See—*
Nishiura, Taiji; and Shimamura, Kazutomi, 4,129,307, Cl. 277-34.300.

Shin-Etsu Chemical Co., Ltd.: *See—*
Kawabe, Hirokazu; Imai, Kiyoshi; and Miyakoshi, Masanobu, 4,128,909, Cl. 15-104.00A.

Shindo, Yoshio; and Ito, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Oil pressure control means for an automatic transmission. 4,129,051, Cl. 74-867.000.

Shiozaki, Makoto: *See—*
Ito, Osamu; Hobo, Nobuhito; Suzuki, Yutaka; Kawamoto, Itsushi; Naitou, Takashi; Shiozaki, Makoto; and Konishi, Yoshimune, 4,129,105, Cl. 123-119.0EC.

Shipp, Lawrence S. J.: *See—*
Downer, John M.; Rodway, William G.; and Shipp, Lawrence S. J., 4,129,618, Cl. 260-884.000.

Shneider, David; and Boerman, Lee D. Orthopedic brace for use in treatment of legg perthes disease. 4,129,126, Cl. 128-80.00A.

Shocklee, James L.; and Tayloe, Edward H., to ACF Industries, Inc. Power press guard. 4,129,048, Cl. 74-612.000.

Shotts, L. D.; Wisbey, Raymond W.; and Sears, Albert W., to General Electric Company. Method of forming a curved trailing edge cooling slot. 4,128,928, Cl. 29-156.80B.

Shringarpurey, Sudhir K.; and Maurer, Gerald L., to National Research Laboratories. Metalworking fluid compositions and methods of stabilizing same. 4,129,509, Cl. 252-49.500.

Shuffman, Oscar, deceased: *See—*
Ross, Sigmund L.; and Shuffman, Oscar, deceased, 4,129,431, Cl. 62-66.000.

Shum, Ming S.: *See—*
Janowski, Kenneth R.; Shum, Ming S.; and Bradley, Steven A., 4,129,181, Cl. 165-133.000.

SI Handling Systems, Inc.: *See—*
Brown, William L., 4,129,229, Cl. 221-129.000.

Siano, James N.: *See—*
Schreiber, William L.; Siano, James N.; and Hall, John B., 4,129,569, Cl. 260-307.0FA.

Sibral, Walter: *See—*
Schmidt, Oskar; and Sibral, Walter, 4,129,741, Cl. 560-50.000.

Sickler, Jack R. Scaffold lumber clamps. 4,129,393, Cl. 403-49.000.

Siebert, Gary R., to Gym-Kin Inc. Protective gymnast pants. 4,128,902, Cl. 2-2.000.

Siegl, Herbert: *See—*
Kunstle, Gerhard; Spes, Hellmuth; and Siegl, Herbert, 4,129,596, Cl. 260-561.00K.

Siemens Aktiengesellschaft: *See—*
Bauer, Josef; Krause, Herbert; and Meltsch, Hans-Juergen, 4,128,931, Cl. 29-239.000.
Dahms, Georg; and Kraus, Hubert, 4,128,927, Cl. 29-25.420.
Fink, Helmuth; and Wess, Guenter, 4,129,831, Cl. 324-57.00H.
Gaenge, Friedrich J.; Utner, Ferdinand; Vetter, Harald; and Vilsmeier, Gerhart, 4,128,926, Cl. 29-25.420.
Lindner, Adolf, 4,129,797, Cl. 310-77.000.
Mattern, Alfred, 4,129,750, Cl. 179-15.0AL.
Oestreich, Ulrich, 4,129,356, Cl. 350-96.230.
Rolff, Klaus-Peter, 4,128,936, Cl. 29-630.00R.
Tschunt, Edgar; Platz, Winfried; Bar, Ulrich; and Heinz, Lothar, 4,129,784, Cl. 250-505.000.

Sieurin, Donald, to Morgan Construction Company. Rolling mill. 4,129,023, Cl. 72-235.000.

Sifniades, Stylianos: *See—*
Baker, Josefina T.; Pisanchyn, John; and Sifniades, Stylianos, 4,129,594, Cl. 260-544.00D.

Signetics Corporation: *See—*
Rosvold, Warren C., 4,129,042, Cl. 73-727.000.

Sigsbee, Raymond A., to General Electric Company. Nb_3Ge superconductive films grown with air. 4,129,166, Cl. 164-46.000.

Sigsbee, Raymond A., to General Electric Company. Nb_3Ge superconductive films grown with nitrogen. 4,129,167, Cl. 164-46.000.

Simic, Milutin, to Chevron Research Company. Sulfur composition. 4,129,453, Cl. 106-287.320.

Simmons, Charles J., to Package Machinery Company. Control system for package making machine. 4,128,985, Cl. 53-51.000.

Simon, David G.: *See—*
Roberts, Philip D.; Randall, Geoffrey L. P.; Simon, David G.; and Booth, Jeffrey, 4,129,702, Cl. 526-71.000.

Singer Company, The: *See—*
Hunts, Barney D.; and Waugh, John B. S., 4,129,813, Cl. 318-561.000.

Sjoblum, Urban C. S.: *See—*
Marsh, Gunnar; Henriksen, Ole; and Sjoblum, Urban C. S., 4,128,903, Cl. 3-19.000.

Sjobom, Axel H., to Sunds Aktiebolag. Device for refining fibrous material. 4,129,263, Cl. 241-248.000.

Skillicorn, Douglas E., to B. F. Goodrich Company, The. Liquid vinylidene terminated polymers. 4,129,713, Cl. 526-320.000.

Slinkard, William E.; and Baylis, Anthony B., to Celanese Corporation. Hydrocarbon oxidation process. 4,129,592, Cl. 562-549.000.

Slusarchyk, William A.; Gordon, Eric M.; and Koster, William H., to E. R. Squibb & Sons, Inc. Process for converting 3-methylene cephalosporins to 3-heterothiomethyl cephalosporins. 4,129,731, Cl. 544-21.000.

Smeder, Adam: *See—*
Biedacha, Roman; Kurdziel, Wladyslaw; Kaczor, Janusz; Smeder, Adam; Kolaczkowski, Jacek; Olszowski, Tadeusz; Nawrocki, Adam; and Rzeszut, Janina, 4,129,169, Cl. 164-166.000.

Smetan, Herbert: *See—*
Kohnert, Hans J.; and Smetan, Herbert, 4,129,309, Cl. 277-189.500.

Smidak, Emil F. Defined space having sound-insulated and light-impermeable walls, preferably intended to enclose a bed. 4,129,123, Cl. 128-1.00R.

Smith, Donald M., to Lubrizol Corporation, The. Sulfur-containing compounds and lubricants and fuels containing them. 4,129,510, Cl. 252-48.600.

Smith, E. Quimby, Jr., to Q Corporation. Engine operated by a non-polluting recyclable fuel. 4,129,003, Cl. 60-645.000.

Smith, Kline & French Laboratories Limited: *See—*
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,129,657, Cl. 424-273.00R.

Smura, Bronislaw B.: *See—*
Fitch, Robert H.; Kurtz, Bruce E.; and Smura, Bronislaw B., 4,129,495, Cl. 204-279.000.

Snap-On Tools Corporation: *See—*
Jindrick, James A., 4,129,828, Cl. 324-16.00S.

Snee, William F., Jr., to Lukens Steel Company. Mold for electroslag remelting process. 4,129,172, Cl. 164-348.000.

Snook, James C.: *See—*
King, Walter J.; Snook, James C.; and Peters, Kenneth, 4,129,692, Cl. 429-234.000.

Snow, Charles L. Filter assembly. 4,129,430, Cl. 55-485.000.

Snow, Marvin. Water fowl decoy. 4,128,958, Cl. 43-3.000.

Snow, Philip B.: *See—*
Telewski, Fred J.; Beeck, Carlos L.; and Snow, Philip B., 4,129,897, Cl. 361-399.000.

Snowden, Paul, to Imperial Chemical Industries Limited. Catalysts containing active metallic copper. 4,129,523, Cl. 252-475.000.

Societe Anonyme dite: UNELEC: *See—*
Bruchet, Michel, 4,129,762, Cl. 200-153.00G.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Clark, Brian, 4,129,665, Cl. 426-432.000.
Kruseman, Jan; Bertschy, Pierre Y.; and Hidalgo, Jaime, 4,129,664, Cl. 426-7.000.

Societe de Prayon: *See—*
Pavonet, Wilhelm E., 4,129,454, Cl. 106-304.000.

Societe Francaise d'Equipements pour la Navigation Aerienne (S.F.E.N.A.): *See—*
Perard, Jean-Claude V., 4,129,049, Cl. 74-625.000.

Sodler, Walter: *See—*
Egger, Joseph; Mayer, Franz; Schwartz, Herbert; Sodler, Walter; Suard, Jean; and Tilse, Wilhelm, 4,128,992, Cl. 58-23.00D.

Soeno, Ko; Iizuka, Tomio; Doi, Toshio; Ando, Hisashi; Oyama, Testuo; Sakamoto, Hiroshi; and Misumi, Akira, to Hitachi, Ltd. Cathode for cathode ray tube of directly heating type and process for producing the same cathode. 4,129,801, Cl. 313-346.00R.

Solai Vignola di Fabiani Orlando e C. - Societa in nome collettivo: *See—*
Abate, Giorgio, 4,128,975, Cl. 52-125.000.

Solar Control Corporation: *See—*
Kent, Thomas B., 4,129,116, Cl. 126-270.000.

Solowy, Jean, to FMC Corporation. Safety device for a relief valve with a controlled disk. 4,129,142, Cl. 137-492.000.

Somet Societa' Meccanica Tessile S.p.A.: *See—*
Merisio, Alberto, 4,129,155, Cl. 139-448.000.

Sorberg, Bengt: *See—*
Brehmer, Roland; and Sorberg, Bengt, 4,129,149, Cl. 137-599.100.

Southco, Inc.: *See—*
Bisbing, Robert H., 4,128,923, Cl. 24-221.00R.

Southwick, Roger A. Amplitude probability detector. 4,129,827, Cl. 324-77.00A.

Southwire Company: *See—*
Cofer, Daniel B.; Ward, George C.; and Proctor, Dale D., 4,129,170, Cl. 164-270.000.
Ward, George C., 4,129,742, Cl. 13-2.00P.

Spatafore, Robert M.: *See—*
Charbonneau, Robert R.; and Spatafore, Robert M., 4,128,984, Cl. 52-746.000.

Speckmann, Donald R.: *See—*
Scapes, John N.; and Speckmann, Donald R., 4,129,284, Cl. 251-205.000.

Spector, Donald, to Applied Research Commodities Ind., Inc. Inflatable terrarium assembly with controlled environment. 4,128,966, Cl. 47-69.000.

Spector, George: *See—*
Conklin, Harold E.; and Spector, George, 4,128,912, Cl. 15-257.700.
O'Neil, Theodore K.; and Spector, George, 4,129,227, Cl. 220-267.000.

Sperry Rand Corporation: *See—*
Aversano, Frank J.; Carver, Leon; and Seifert, Ludwik I., 4,129,365, Cl. 353-99.000.

Spes, Hellmuth: *See—*
Kunstle, Gerhard; Spes, Hellmuth; and Siegl, Herbert, 4,129,596, Cl. 260-561.00K.

Spisak, Steve: *See—*
Gogolin, Robert L.; and Spisak, Steve, 4,129,770, Cl. 219-98.000.

Spurgin, Anthony J.; and Schaefer, William F., to Westinghouse Electric Corp. Method of operating a nuclear reactor. 4,129,475, Cl. 176-22.000.

SRI International: *See—*
Green, Philip S., 4,129,799, Cl. 310-359.000.

Staaden, Adolf. Fishing planer. 4,128,959, Cl. 43-43.130.

Stahnecker, Erhard: *See—*
Keppler, Hans G.; Stahnecker, Erhard; and Moeller, Rolf, 4,129,706, Cl. 526-201.000.

Stainless Equipment Company: *See—*
Molitor, Victor D., 4,129,179, Cl. 165-101.000.

Standard Oil Company (Indiana): *See—*
Dabbous, Mahmoud K., 4,129,182, Cl. 166-263.000.
Jezl, James L.; and Peters, Edwin F., 4,129,701, Cl. 526-65.000.

Stangroom, James E., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Electric field responsive fluids. 4,129,513, Cl. 252-78.100.

Stanton, Martin G. Microscope assembly. 4,128,944, Cl. 33-180.00R.

Stauffer Chemical Company: *See—*
Elcik, Robert G., 4,129,535, Cl. 260-23.0XA.
Jin, Jung I., 4,129,710, Cl. 526-278.000.

Stayer, Mark L.: *See—*
Fieldhouse, John W.; Graves, Daniel F.; Cole, William M.; Stayer, Mark L.; and Fenske, Steven L., 4,129,529, Cl. 528-168.000.

Stecklow, James P. Loose leaf binder with rigid telescopic post assemblies and magnetically retained bar. 4,129,396, Cl. 402-46.000.

Steffen, Gunther B. H.: *See—*
Bergmann, Klaus W.; Steffen, Gunther B. H.; and Monkemoller, Herbert, 4,129,062, Cl. 90-11.00R.

Stein, Reinhardt P.; and Delecki, Daniel J., to American Home Products Corporation. Anti-ulcer methano-dibenzazocines derivatives. 4,129,561, Cl. 260-239.0BB.

Stengel, Fred H.: *See—*
Clement, Carl J.; Stengel, Fred H.; and Campbell, Kenneth S., 4,129,211, Cl. 206-213.100.

Stephens, Dennis L.: *See—*
Feldy, Edmund C.; and Stephens, Dennis L., 4,129,816, Cl. 318-696.000.

Stephens, Robert E.: *See—*
Schriber, Louis; and Stephens, Robert E., 4,129,293, Cl. 270-52.000.

Stephenson, Michael J.; and Eby, Robert S., to United States of America, Energy. Gas-absorption process. 4,129,425, Cl. 55-44.000.

Sterilaire Medical, Inc.: *See—*
Dout, James A.; and Foreman, Robert E., 4,129,122, Cl. 128-1.00R.

Sterling Drug Inc.: *See—*
Eggensperger, Heinz; and Beilfuss, Wolfgang, 4,129,517, Cl. 252-186.000.

Sterndent Corporation: *See—*
Vines, Raymond F., 4,129,680, Cl. 428-433.000.

Stewart, Walter P.; and Punte, Lawrence F., to Monsanto Company. High density led lead frame. 4,129,682, Cl. 428-571.000.

Stierle, Gunter: *See—*
Heinze, Horst; Stierle, Gunter; and Sach, Ernst D., 4,128,921, Cl. 24-279.000.

Stockel, Richard F., to American Chemical Consulting Corp. Animal litter composition. 4,129,094, Cl. 119-1.000.

Stoll, Kurt; and Kees, Ulrich. Control valve. 4,129,147, Cl. 137-596.100.

Stone, Gregory B. Game of skill. 4,129,302, Cl. 273-236.000.

Stoneback, John W. Medication container with quick release closure. 4,129,228, Cl. 220-293.000.

Stover, Dennis E., to Atlantic Richfield Company; NM Uranium, Inc.; and United States Steel Corporation, The. Method for locating the remaining recoverable mineral reserves during solution mining. 4,129,334, Cl. 299-4.000.

Strobel, Albert F., to GAF Corporation. Branched chain nonyl and dodecyl isomeric mixtures of 2-(5'-nonyl, or dodecyl-2'-hydroxyphenyl)benzotriazole as UV stabilizers. 4,129,521, Cl. 252-403.000.

Strohmeier, Helmut, to Kastinger, Hermann. Ski bindings. 4,129,319, Cl. 280-615.000.

Stubben, David R., to Atari, Inc. Apparatus for generating at least one moving object across a video display screen where wraparound of the object is avoided. 4,129,883, Cl. 358-104.000.

Sturt, Alan C.: *See—*
Park, Anthony J.; and Sturt, Alan C., 4,129,698, Cl. 526-3.000.

Stutz, Frank: *See—*
Bromley, James E.; Mowe, Wayne T.; and Stutz, Frank, 4,128,989, Cl. 57-247.000.

Suami, Tetsuo. 5,6-Epineamine and process for preparing the same. 4,129,719, Cl. 536-17.000.

Suard, Jean: *See*—

Egger, Joseph; Mayer, Franz; Schwartz, Herbert; Sodler, Walter; Suard, Jean; and Tilse, Wilhelm, 4,128,992, Cl. 58-23.00D.

Subterranean Tools Inc.: *See*—

Lupton, Homer B., 4,129,392, Cl. 403-25.000.

Suematsu, Masayasu: *See*—

Tamazawa, Tsuyoshi; Suematsu, Masayasu; and Morita, Hideo, 4,129,622, Cl. 261-39.00A.

Sugimoto, Kazuyasu; Yamaya, Hiroshi; and Ishimoto, Kameki, to Matsushita Electric Industrial Company, Limited. Connector assembly for printed circuit board. 4,129,351, Cl. 339-176.0MP.

Sugishita, Akio: *See*—

Machi, Sueo; Matsui, Yasushi; Sugishita, Akio; Sugo, Takanobu; Taniguchi, Hiroaki; Asano, Koichi; and Fujiwara, Hiroshi, 4,129,617, Cl. 260-879.000.

Sugiura, Susumu: *See*—

Fujii, Motoharu; Muramatsu, Takao; Koumura, Noboru; Sugiura, Susumu; Takekawa, Nobuhiro; and Tsukada, Syusei, 4,129,072, Cl. 101-1.000.

Sugo, Takanobu: *See*—

Machi, Sueo; Matsui, Yasushi; Sugishita, Akio; Sugo, Takanobu; Taniguchi, Hiroaki; Asano, Koichi; and Fujiwara, Hiroshi, 4,129,617, Cl. 260-879.000.

Sulzer Brothers Ltd.: *See*—

Vogeli, Ernst, 4,129,141, Cl. 137-462.000.

Sumida, Seizo: *See*—

Takemoto, Ichiki; Yoshida, Ryo; Sumida, Seizo; and Kamoshita, Katsuzo, 4,129,436, Cl. 71-120.000.

Sumitomo Chemical Company, Limited: *See*—

Kudo, Ken-ichi; Kitawaga, Yoshihiko; Koyama, Teruhisa; Takata, Akira; Kanagawa, Shuichi; and Yamaguchi, Tetsuo, 4,129,557, Cl. 526-283.000.

Takemoto, Ichiki; Yoshida, Ryo; Sumida, Seizo; and Kamoshita, Katsuzo, 4,129,436, Cl. 71-120.000.

Sumitomo Metal Industries, Ltd.: *See*—

Nashiwa, Hajime; Tsuzita, Susumu; and Nagahata, Tsutomu, 4,129,439, Cl. 75-58.000.

Sun Chemical Corporation: *See*—

Wengryn, Michael; and Khazan, Alexander, 4,129,187, Cl. 173-117.000.

Sun, Yen S. E.: *See*—

Cusano, Dominic A.; Loughran, James A.; and Sun, Yen S. E., 4,129,243, Cl. 228-122.000.

Sunamori, Takashi; Matsushima, Koji; and Tanaka, Susumu, to Mitsubishi Rayon Co., Ltd. Thermosetting acrylic copolymer usable as a powder paint and method for producing the same. 4,129,545, Cl. 260-29.6TA.

Sunds Aktiebolag: *See*—

Sjobom, Axel H., 4,129,263, Cl. 241-248.000.

Surpass Chemicals Limited: *See*—

Eliades, Theo I.; Muir, Ronald J.; and Horner, James D., 4,129,589, Cl. 260-504.00A.

Suzuki, Ryuichi; Hashizume, Akihide; Horiuchi, Hideyuki; Yamamoto, Shinji; and Yokouchi, Hisatake, to Hitachi, Ltd. Cell classification method. 4,129,854, Cl. 340-146.3CA.

Suzuki, Shigeto, to Chevron Research Company. Preparation of chloroacetyl chloride. 4,129,595, Cl. 260-544.00Y.

Suzuki, Shoji, to Alps Motorola. Magnetic recording and reproducing apparatus. 4,129,890, Cl. 360-94.000.

Suzuki, Suzuo; Nakajima, Masayasu; Koizumi, Ken-ichi; and Ookubo, Yoshio, to Nissan Motor Company, Limited. I.C.E. equipped with means for maintaining reactor temperature about a single temperature. 4,128,997, Cl. 60-274.000.

Suzuki, Yoshikuni: *See*—

Fukushima, Hideo; and Suzuki, Yoshikuni, 4,129,565, Cl. 546-142.000.

Suzuki, Yutaka: *See*—

Ito, Osamu; Hobo, Nobuhito; Suzuki, Yutaka; Kawamoto, Itsushi; Naitou, Takashi; Shiozaki, Makoto; and Konishi, Yoshimune, 4,129,105, Cl. 123-119.0EC.

Svet, Frank A., to General Signal Corporation. Technique for the detection of flat wheels on railroad cars by acoustical measuring means. 4,129,276, Cl. 246-169.00S.

Swacara, Inc.: *See*—

Bond, Ronald L.; Daughdrill, E. Chris; Brice, Henry T.; and Horton, Phineas E., III, 4,129,314, Cl. 280-425.00R.

Swarts, William A.: *See*—

Mageli, Orville L.; and Swarts, William A., 4,129,700, Cl. 260-823.000.

Sweatman, Travers F.: *See*—

Jones, Wilfred; Jones, Keith W.; and Sweatman, Travers F., 4,129,621, Cl. 261-39.00R.

Syntex (U.S.A.) Inc.: *See*—

Roszkowski, Adolph P.; Beard, Colin C.; Dvorak, Charles; and Weinhardt, Klaus, 4,129,661, Cl. 424-273.00R.

Synthelabo: *See*—

Giudicelli, Don P. R. L.; and Najer, Henry, 4,129,598, Cl. 260-570.80R.

t.h.e. Original Mirror Company: *See*—

Greenberg, Ronald C., 4,129,671, Cl. 428-48.000.

Tabler, Donald C.; and Johnson, Marvin M., to Phillips Petroleum Company. Recovering styrene by complexing with copper(I) sulfonates. 4,129,605, Cl. 260-669.00A.

Tabuchi, Yasuhide, to Mitsubishi Denki Kabushiki Kaisha. Terminal block. 4,129,353, Cl. 339-242.000.

Taccani, Riccardo, to Interbrev S. A. Method and apparatus for manufacturing open end sliding clasp fasteners. 4,129,639, Cl. 264-157.000.

Taguchi, Kazumasa; Nishida, Tsutomu; Kitajima, Masaharu; Aketa, Kan; Fujita, Isao; Onoda, Mamoru; Imanishi, Nobuyuki; and Watanabe, Ryo, to Kobe Steel, Ltd. Iron ore pellet having a specific shape and a method of making the same. 4,129,437, Cl. 75-5.000.

Tahara, Kiyokazu; and Kotoh, Keigo, to Mitsubishi Denki Kabushiki Kaisha. Radar beacon apparatus. 4,129,868, Cl. 343-6.80R.

Tai, Masaru: *See*—

Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,129,730, Cl. 544-21.000.

Takagi, Norio: *See*—

Etchu, Masami; Yamaguchi, Takao; and Takagi, Norio, 4,129,630, Cl. 264-22.000.

Takagi, Tohru: *See*—

Makuuchi, Keizo; Araki, Kunio; Takagi, Tohru; Nakayama, Hiroyuki; and Kozu, Haruo, 4,129,487, Cl. 204-159.140.

Takagi, Yutaka; and Toyoda, Munemitsu, to Sharp Kabushiki Kaisha. Timer arrangement in a combination microwave oven and electric heating oven. 4,129,769, Cl. 219-10.55B.

Takahashi, Hiroshi: *See*—

Horiuchi, Kaoru; Matsui, Akio; Hara, Masahiro; and Takahashi, Hiroshi, 4,129,442, Cl. 75-126.00C.

Takahashi, Yutaka: *See*—

Inoue, Sho; Kawamata, Masanobu; Ushimaru, Hirokazu; Nakamichi, Koichi; and Takahashi, Yutaka, 4,129,649, Cl. 424-182.000.

Takakura, Isamu: *See*—

Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,129,730, Cl. 544-21.000.

Takamatsu, Hiroshi: *See*—

Sato, Makoto; Takamatsu, Hiroshi; Miyagawa, Yoshitaka; and Fujii, Etsuo, 4,129,342, Cl. 303-105.000.

Takano, Shuntaro: *See*—

Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,129,730, Cl. 544-21.000.

Takata, Akira: *See*—

Kudo, Ken-ichi; Kitawaga, Yoshihiko; Koyama, Teruhisa; Takata, Akira; Kanagawa, Shuichi; and Yamaguchi, Tetsuo, 4,129,557, Cl. 526-283.000.

Takeda Chemical Industries, Ltd.: *See*—

Marumoto, Ryuji M.; Furukawa, Yoshiyasu; and Kawai, Kiyohisa, 4,129,654, Cl. 424-251.000.

Takeda, Keiji: *See*—

Fujiwara, Masato; Takeda, Keiji; and Tsuboi, Masayoshi, 4,129,445, Cl. 96-29.00R.

Takekawa, Nobuhiro: *See*—

Fujii, Motoharu; Muramatsu, Takao; Koumura, Noboru; Sugiura, Susumu; Takekawa, Nobuhiro; and Tsukada, Syusei, 4,129,072, Cl. 101-1.000.

Takematsu, Tetsuo; Masuda, Fusayoshi; Tanaka, Kenji; Nishida, Kazuo; and Nakamura, Akira, to Sanyo Chemical Industries, Ltd. Agricultural chemical/resin compositions. 4,129,435, Cl. 71-65.000.

Takemoto, Ichiki; Yoshida, Ryo; Sumida, Seizo; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. N'-[4-(substituted phenethyloxy)phenyl]-N-methyl-N-methoxyurea. 4,129,436, Cl. 71-120.000.

Taki, Hideo: *See*—

Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,129,730, Cl. 544-21.000.

Talbott, Roblee L., to Coors Container Company. Container rotating means in apparatus for curing inks and decorative coatings. 4,129,206, Cl. 198-377.000.

Tamazawa, Tsuyoshi; Suematsu, Masayasu; and Morita, Hideo, to Nissan Motor Company, Limited. Carburetor with an altitude compensator. 4,129,622, Cl. 261-39.00A.

Tamm, Paul W., to Chevron Research Company. Hydrocarbon catalytic reforming process. 4,129,497, Cl. 208-138.000.

Tamura, Sadao: *See*—

Kobayashi, Kengo; Mogami, Masayuki; Tanaka, Shigeyoshi; Nakao, Manabu; and Tamura, Sadao, 4,129,610, Cl. 260-837.00R.

Tamura, Yoshitaka, to Bridgestone Cycle Co., Ltd. Brake for vehicles. 4,129,201, Cl. 188-76.000.

Tamutus, Donald J., to RCA Corporation. Method of making a thermoplastic lens by vacuum forming. 4,129,628, Cl. 264-1.000.

Tanaka, Kenji: *See*—

Takematsu, Tetsuo; Masuda, Fusayoshi; Tanaka, Kenji; Nishida, Kazuo; and Nakamura, Akira, 4,129,435, Cl. 71-65.000.

Tanaka, Shigeyoshi: *See*—

Kobayashi, Kengo; Mogami, Masayuki; Tanaka, Shigeyoshi; Nakao, Manabu; and Tamura, Sadao, 4,129,610, Cl. 260-837.00R.

Tanaka, Susumu: *See*—

Sunamori, Takashi; Matsushima, Koji; and Tanaka, Susumu, 4,129,545, Cl. 260-29.6TA.

Tanaka, Tetsuo: *See*—

Konno, Daisuke; and Tanaka, Tetsuo, 4,129,306, Cl. 277-30.000.

Taniguchi, Hiroaki: *See*—

Machi, Sueo; Matsui, Yasushi; Sugishita, Akio; Sugo, Takanobu; Taniguchi, Hiroaki; Asano, Koichi; and Fujiwara, Hiroshi, 4,129,617, Cl. 260-879.000.

Taniguchi, Masahiko: *See*—

Miyasita, Satoru; Taniguchi, Masahiko; and Kobayashi, Katsuyoshi, 4,129,289, Cl. 266-195.000.

Tansill, Horace A., to Falk Construction, Inc. Custom-formed insert. 4,128,951, Cl. 36-44.000.

Tantraporn, Wirojana; and Yu, Se P., to General Electric Company. Vertical field effect transistor. 4,129,879, Cl. 357-22.000.

Tasker, John: *See*—

Ridenour, Charles E.; Fabert, Herman A., Jr.; Tasker, John; and Larson, Hugo R., 4,129,773, Cl. 219-146.230.

Tayloe, Edward H.: *See*—

Shocklee, James L.; and Tayloe, Edward H., 4,129,048, Cl. 74-612.000.

Taylor, Harry E., to G. W. Taylor Industries Limited. Fascia and gutter systems on buildings. 4,128,974, Cl. 52-11.000.

Taylor, Joseph W. Actuator. 4,129,283, Cl. 251-62.000.

Teach, Ted L., to Laserplane Corporation. Automatic control of backhoe digging depth. 4,129,224, Cl. 214-763.000.

Tehon, Stephen W.; and Pruski, Edward M., to General Electric Company. Immersible liquid densitometer. 4,129,031, Cl. 73-32.00A.

Teichert, Allen L.; to Robertshaw Controls Company. Cut-back thermostat construction. 4,129,847, Cl. 337-301.000.

Teijin Limited: *See*—

Etchu, Masami; Yamaguchi, Takao; and Takagi, Norio, 4,129,630, Cl. 264-22.000.

Tejima, Kouichi: *See*—

Okutomi, Tsutomu; Yoshino, Hisashi; Chiba, Seishi; Tsutsumi, Tadahito; and Tejima, Kouichi, 4,129,761, Cl. 200-144.00B.

Tektronix, Inc.: *See*—

Telewski, Fred J.; Beeck, Carlos L.; and Snow, Philip B., 4,129,897, Cl. 361-399.000.

Telaris Telecommunications, Inc.: *See*—

Gilano, Michael N.; and Hayes, James C., 4,129,758, Cl. 200-5.00A.

Telephone Utility Terminal Co., Inc.: *See*—

Lohal, Gerald A., 4,129,743, Cl. 174-38.000.

Teletype Corporation: *See*—

Feldy, Edmund C.; and Stephens, Dennis L., 4,129,816, Cl. 318-696.000.

Telewski, Fred J.; Beeck, Carlos L.; and Snow, Philip B., to Tektronix, Inc. Modular mounting apparatus for substrate means bearing planar circuit means. 4,129,897, Cl. 361-399.000.

Temple, Steven J.: *See*—

Galani, Zvi; and Temple, Steven J., 4,129,839, Cl. 333-9.000.

Tenniswood, David M., to McGraw-Edison Company. Retractable roller support for use with flexible rolling support for conductors or conduits. 4,129,277, Cl. 248-51.000.

Tepral: *See*—

Moll, Manfred; D'Hardmemare, Christian; and Midoux, Nicolas, 4,129,029, Cl. 73-19.000.

Terakura, Yukio: *See*—

Akashi, Teruo; Watanabe, Kazuaki; and Terakura, Yukio, 4,129,050, Cl. 74-750.00R.

Texaco Development Corporation: *See*—

Schulze, Heinz, 4,129,716, Cl. 528-68.000.

Texaco Inc.: *See*—

Kalfoglou, George, 4,129,183, Cl. 166-300.000.

Textron Inc.: *See*—

Carey, Lee F.; and Friona, Anthony J., 4,129,025, Cl. 72-348.000.

Tezuka, Nobuo: *See*—

Yamamichi, Masayoshi; Iura, Yukio; Tezuka, Nobuo; Watanabe, Satoshi; Uchidoi, Masanori; and Aizawa, Hiroshi, 4,129,877, Cl. 354-271.000.

Thalmann, Rene A., to Elektro-Apparatebau Olten A.G. Pulse-rate indicator. 4,129,124, Cl. 128-2.05T.

Thelen, Franz; and Weber, Henning, to Deutsche Babcock Aktiengesellschaft. Method and apparatus for the storage of energy in power plants. 4,129,004, Cl. 60-652.000.

Thermal Transfer, division of Kleinewefers: *See*—

Heyn, Fred M.; Yin, Ching-Feng; Hanson, Gordon L.; and Schreck, Robert C., 4,129,176, Cl. 165-7.000.

Thermograte, Inc.: *See*—

Bergstrom, Theodore R., 4,129,113, Cl. 126-121.000.

Theurer Atlantic Incorporated: *See*—

Theurer, John; Guenzel, William C.; and Beck, Orville F., 4,129,395, Cl. 403-317.000.

Theurer, John; Guenzel, William C.; and Beck, Orville F., to Theurer Atlantic Incorporated. Container lock assembly. 4,129,395, Cl. 403-317.000.

Thomas C. Elder, Inc.: *See*—

Glunz, Louis J.; and Dickson, Donald E., 4,129,575, Cl. 260-343.210.

Glunz, Louis J.; and Dickson, Donald E., 4,129,576, Cl. 260-343.210.

Thompson, Andy L. Breather bag apparatus. 4,129,069, Cl. 99-646.00S.

Thompson, Morice W.; and Topham, Arthur, to Imperial Chemical Industries Limited. Dispersions. 4,129,455, Cl. 106-308.00N.

Thompson, Neil E. S., to Petrolite Corporation. Amino compounds and use thereof as antioxidants. 4,129,597, Cl. 260-563.00P.

Thomson-CSF: *See*—

Defranould, Philippe, 4,129,798, Cl. 310-313.000.

Hartemann, Pierre, 4,129,837, Cl. 331-107.00A.

Thonnes, Horst; and Wunsche, Joachim, to Mannesmann Aktiengesellschaft. Piercing a solid billet. 4,129,022, Cl. 72-41.000.

Thuong, Nguyen T.: *See*—

Warolin, Christian J.; Chabrier de Lassauniere, Pierre; and Thuong, Nguyen T., 4,129,660, Cl. 424-203.000.

Tibbetts, Willis F., to Norris Industries, Inc. Rockets including trajectory controls. 4,129,268, Cl. 244-3.220.

Tighe, Michael R.; and McCutchen, Hugh L., to Diamond Shamrock Corporation. Swimming pool chlorinator system. 4,129,493, Cl. 204-228.000.

Tilse, Wilhelm: *See*—

Egger, Joseph; Mayer, Franz; Schwartz, Herbert; Sodler, Walter; Suard, Jean; and Tilse, Wilhelm, 4,128,992, Cl. 58-23.00D.

Timex Corporation: *See*—

Egger, Joseph; Mayer, Franz; Schwartz, Herbert; Sodler, Walter; Suard, Jean; and Tilse, Wilhelm, 4,128,992, Cl. 58-23.00D.

Title, Alan M.: *See*—

United States of America, National Aeronautics and Space Administration; and Title, Alan M., 4,129,357, Cl. 350-157.000.

Toalson, David C. Apparatus for wear detection. 4,129,037, Cl. 73-151.000.

Tobler, Hans: *See*—

Bellus, Daniel; Fory, Werner; and Tobler, Hans, 4,129,573, Cl. 260-326.450.

Todd, David B., to Baker Perkins Inc. Centrifuge for separating solids and liquids. 4,129,249, Cl. 233-7.000.

Todeschini, Eugenio; and Riganti, Gian P., to Massey-Ferguson Services N.V. Hydrostatic transmissions. 4,129,192, Cl. 180-6.480.

Tohyama, Yoshikuni: *See*—

Miyamoto, Koichi; Tohyama, Yoshikuni; Sagara, Seiji; Kimura, Yoshimasa; and Ishida, Masato, 4,129,377, Cl. 355-14.000.

Tokyo Sanyo Electric Co., Ltd.: *See*—

Ishii, Yasuhiro; Hirose, Shintaro; and Kawasaki, Ryoichi, 4,129,195, Cl. 181-167.000.

Tokyo Shibaura Electric Co., Ltd.: *See*—

Kawagai, Kenji; and Yoshida, Shigeki, 4,129,792, Cl. 307-270.000.

Okutomi, Tsutomu; Yoshino, Hisashi; and Chiba, Seishi, 4,129,760, Cl. 200-144.00B.

Okutomi, Tsutomu; Yoshino, Hisashi; Chiba, Seishi; Tsutsumi, Tadahito; and Tejima, Kouichi, 4,129,761, Cl. 200-144.00B.

Torii, Kenichi; and Fujimori, Shigeo, 4,129,842, Cl. 334-15.000.

Toman, Donald J., to Tull Aviation Corporation. Apparatus for synthesis of scanning beam. 4,129,870, Cl. 343-106.00R.

Toman, Donald J., to Tull Aviation Corporation. Microwave radiating element and antenna array including linear phase shift progression angular tilt. 4,129,872, Cl. 343-768.000.

Tomlinson, Thomas A. Plumbing tool with external shackle. 4,128,930, Cl. 29-213.00R.

Tomy Kogyo Co., Inc.: *See*—

Ogasawara, Toyotsugu, 4,128,964, Cl. 46-43.000.

Toot, Peter D., to General Electric Company. Method and apparatus for stabilizing an augmenter system. 4,128,995, Cl. 60-204.000.

Topham, Arthur: *See*—

Thompson, Morice W.; and Topham, Arthur, 4,129,455, Cl. 106-308.00N.

Topolewski, John: *See*—

Clark, Frederick P.; Johnson, Robert C.; and Topolewski, John, 4,129,527, Cl. 252-547.000.

Torii, Kenichi; and Fujimori, Shigeo, to Tokyo Shibaura Electric Co., Ltd. U-shaped microstrip resonant circuit. 4,129,842, Cl. 334-15.000.

Torikai, Kiyoshige, to Mitsubishi Jukogyo Kabushiki Kaisha. Vacuum forming or reduced-pressure moulding. 4,129,164, Cl. 164-7.000.

Tosh, Douglas J.: *See*—

Matheson, Alister F.; Tosh, Douglas J.; and Borr, Mitchell, 4,129,542, Cl. 260-28.5AS.

Towle, Gordon A.: *See*—

Jamison, Joel D.; Towle, Gordon A.; and Vermeychuk, J. Gregory, 4,129,663, Cl. 426-602.000.

Townsend Engineering Company: *See*—

Townsend, Ray T., 4,129,101, Cl. 123-41.560.

Townsend, Ray T., to Townsend Engineering Company. Internal combustion engine. 4,129,101, Cl. 123-41.560.

Toyama Chemical Co., Ltd.: *See*—

Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,129,730, Cl. 544-21.000.

Toyoda, Munemitsu: *See*—

Takagi, Yutaka; and Toyoda, Munemitsu, 4,129,769, Cl. 219-10.55B.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—

Akashi, Teruo; Watanabe, Kazuaki; and Terakura, Yukio, 4,129,050, Cl. 74-750.00R.

Habu, Nobuo, 4,129,100, Cl. 123-32.00L.

Momura, Takao; Umemoto, Yoshiro; and Sakamoto, Tatsuo, 4,129,672, Cl. 428-138.000.

Shigenobu, Hiromichi; Isobe, Toshiaki; and Kondo, Minoru, 4,129,812, Cl. 318-484.000.

Shindo, Yoshio; and Ito, Hiroshi, 4,129,051, Cl. 74-867.000.

Toyouchi, Kaoru: *See*—

Yasuike, Akio; Kataoka, Hiroshi; and Toyouchi, Kaoru, 4,129,635, Cl. 264-45.500.

Tracy, David J.; and Hoffstadt, Walter F., to GAF Corporation. Amidine compounds. 4,129,739, Cl. 560-21.000.

Traficante, Daniel D. Wide-band nuclear magnetic resonance spectrometer. 4,129,822, Cl. 324-0.5AH.

Trainel, Jean-Pierre: *See*—

Deflandre, Jean; Matarasso, Pierre; and Trainel, Jean-Pierre, 4,129,360, Cl. 350-289.000.

Transitube Project: *See*—

Conca, Gilbert G., 4,129,234, Cl. 222-235.000.

Trenc, Ramon B., to Bendibercia, S.A. Control device for a pneumatic braking system. 4,129,340, Cl. 303-6.00R.

TRW Inc.: *See*—

Gogolin, Robert L.; and Spisak, Steve, 4,129,770, Cl. 219-98.000.

Tsao, Utah, to Lummus Company, The. Reactor effluent quench system. 4,129,604, Cl. 260-656.00R.
Tschunt, Edgar; Platz, Winfried; Bar, Ulrich; and Heinz, Lothar, to Siemens Aktiengesellschaft. Gamma camera. 4,129,784, Cl. 250-505.000.
Tahudy, James A.: *See—*
Bennett, Roxanne L.; and Tahudy, James A., 4,129,416, Cl. 8-115.000.
Tsuboi, Masayoshi: *See—*
Fujiwara, Masato; Takeda, Keiji; and Tsuboi, Masayoshi, 4,129,445, Cl. 96-29.00R.
Tsubouchi, Hideo: *See—*
Hattori, Tadashi; Nakase, Takamichi; Tsubouchi, Hideo; and Iwata, Toshiharu, 4,128,998, Cl. 60-277.000.
Tsukada, Syusei: *See—*
Fujii, Motoharu; Muramatsu, Takao; Koumura, Noboru; Sugiura, Susumu; Takekawa, Nobuhiro; and Tsukada, Syusei, 4,129,072, Cl. 101-1.000.
Tsukioka, Hideo: *See—*
Seki, Masatoshi; Sato, Moriichi; Tsukioka, Hideo; Ohe, Etuo; Ogata, Masatsugu; and Mitsuoka, Akio, 4,129,678, Cl. 428-383.000.
Tsutsumi, Tadahito: *See—*
Okutomi, Tsutomu; Yoshino, Hisashi; Chiba, Seishi; Tsutsumi, Tadahito; and Tejima, Kouichi, 4,129,761, Cl. 200-144.00B.
Tsuzita, Susumu: *See—*
Nashiwa, Hajime; Tsuzita, Susumu; and Nagahata, Tsutomu, 4,129,439, Cl. 75-58.000.
Tu, Shu-Tung: *See—*
Lorenz, Donald H.; Tu, Shu-Tung; and Wyman, Donald P., 4,129,667, Cl. 427-44.000.
Lorenz, Donald H.; and Tu, Shu-Tung, 4,129,709, Cl. 526-264.000.
Tull Aviation Corporation: *See—*
Toman, Donald J., 4,129,870, Cl. 343-106.00R.
Toman, Donald J., 4,129,872, Cl. 343-768.000.
Turco, Joseph. Method of scanning a radar antenna to effect improved radar operation. 4,129,866, Cl. 343-5.00R.
Turner, Sam R., to Xerox Corporation. Monomers having pendant electron acceptor groups-process for preparation and use. 4,129,581, Cl. 260-348.450.
Tustaniwskyj, Jerry I.: *See—*
Kasu, Abdul L.; and Tustaniwskyj, Jerry I., 4,129,892, Cl. 360-130.000.
Tykulsky, Alexander: *See—*
Dias, J. Fleming; Karrer, Henry E.; and Tykulsky, Alexander, 4,129,242, Cl. 228-121.000.
Tyrer, Richard G.: *See—*
France, James R.; Buchan, John D.; Tyrer, Richard G.; De Ceuleneer, Adolf; and Van Steenkiste, Robert, 4,129,091, Cl. 118-50.000.
Uchida, Katsuzo; Uchiyama, Hiroaki; and Mitsuyama, Akira, to Sharp Kabushiki Kaisha. Electrophotographic copying machine having moving carrier for original. 4,129,374, Cl. 355-8.000.
Uchidoi, Masanori: *See—*
Yamamichi, Masayoshi; Iura, Yukio; Tezuka, Nobuo; Watanabe, Satoshi; Uchidoi, Masanori; and Aizawa, Hiroshi, 4,129,877, Cl. 354-271.000.
Uchiyama, Hiroaki: *See—*
Uchida, Katsuzo; Uchiyama, Hiroaki; and Mitsuyama, Akira, 4,129,374, Cl. 355-8.000.
Ueda, Kazuo: *See—*
Gerstine, Milton I.; Goldberg, Joshua I.; Futatsugi, Setsuo; Ueda, Kazuo; Seo, Ryozo; Iwasaki, Koji; and Uemura, Makoto, 4,129,275, Cl. 244-181.000.
Uehara, Hiroshi: *See—*
Nagai, Haruo; Uehara, Hiroshi; and Nunokawa, Kunikazu, 4,129,524, Cl. 252-478.000.
Uemura, Makoto: *See—*
Gerstine, Milton I.; Goldberg, Joshua I.; Futatsugi, Setsuo; Ueda, Kazuo; Seo, Ryozo; Iwasaki, Koji; and Uemura, Makoto, 4,129,275, Cl. 244-181.000.
Ultrasonics, Ltd.: *See—*
Grange, Arthur; and Booth, Stuart E., 4,129,387, Cl. 366-119.000.
Umeda, Haruhiko; Ito, Ryuji; Yokoyama, Akinori; and Komatsu, Mitsuaki, to Kabushiki Kaisha Komatsu Seisakusho. Hydraulic torque converter. 4,129,000, Cl. 60-361.000.
Umemoto, Yoshiro: *See—*
Momura, Takao; Umemoto, Yoshiro; and Sakamoto, Tatsuo, 4,129,672, Cl. 428-138.000.
Uni-Cardan AG: *See—*
Krude, Werner, 4,129,345, Cl. 308-191.000.
Unigate Limited: *See—*
Henson, Kenneth, 4,129,689, Cl. 429-101.000.
Union Carbide Corporation: *See—*
Flanigen, Edith M.; Lok, Brent M.; and Mumbach, Norbert R., 4,129,450, Cl. 106-120.000.
Kaduboski, Mitchell J., 4,129,686, Cl. 429-61.000.
Union Minerale: *See—*
Kahane, Lucien, 4,129,549, Cl. 260-40.00R.
Union Oil Company of California: *See—*
Young, Dean A., 4,129,409, Cl. 431-3.000.
Uniroyal Ltd.: *See—*
Matheson, Alister F.; Tosh, Douglas J.; and Borr, Mitchell, 4,129,542, Cl. 260-28.5AS.
Unisearch Limited: *See—*
Chaikin, Malcolm; and Nossar, Mstislav S., 4,129,250, Cl. 236-44.00A.
Unitech Chemical Inc.: *See—*
Kooi, John H.; Schure, Ralph M.; and Brown, John M., 4,129,607, Cl. 260-835.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Stangroom, James E., 4,129,513, Cl. 252-78.100.
U.S. Fiber Corporation: *See—*
Mudgett, Donald F., 4,129,338, Cl. 302-2.00A.
United States of America
Agriculture: *See—*
Sanderson, William A., 4,129,588, Cl. 260-502.40P.
Army: *See—*
Angello, Joseph P., 4,129,893, Cl. 361-21.000.
Papayoanou, Aristotle, 4,129,836, Cl. 331-94.50D.
Walker, Clarence H., Jr.; and Corrie, John D., 4,129,459, Cl. 148-4.000.
Commerce: *See—*
Carpenter, Robert J.; and Yee, Kenneth W., 4,129,864, Cl. 340-347.0AD.
Energy: *See—*
Cleland, John W.; Westbrook, Russell D.; Wood, Richard F.; and Young, Rosa T., 4,129,463, Cl. 148-33.000.
Korenko, Michael K., 4,129,462, Cl. 148-31.000.
Sammarone, Dino G., 4,129,476, Cl. 176-37.000.
Stephenson, Michael J.; and Eby, Robert S., 4,129,425, Cl. 55-44.000.
Federal Communications Commission: *See—*
Luedtke, Arthur; and Bentley, William F., 4,129,874, Cl. 343-854.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Title, Alan M. Partial polarizer filter. 4,129,357, Cl. 350-157.000.
Navy: *See—*
Dimmick, Joseph G.; Weingartner, William J.; Fields, Alan S.; Fairhead, Donald L.; and Musson, Rosemary, 4,129,087, Cl. 114-144.00E.
Johnson, Duane M.; and Webster, Henry A., III, 4,129,465, Cl. 149-19.300.
U.S. Philips Corporation: *See—*
Fischer, Karl; and Matetschlager, Walter, 4,129,688, Cl. 429-97.000.
Kerstens, Franciscus N. A., 4,129,834, Cl. 331-91.000.
Van Benthem, Willem; and Schmidt, Ernst M., 4,129,800, Cl. 313-25.000.
Vrenken, Louis E.; Oostvogels, Franciscus M. P.; and van der Wolf, Rein W., 4,129,802, Cl. 313-492.000.
United States Steel Corporation, The: *See—*
Stover, Dennis E., 4,129,334, Cl. 299-4.000.
United Technologies Corp.: *See—*
Damiano, Paul J., 4,129,685, Cl. 429-38.000.
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Walrave, Jean, to Eurotungstene. Process of making metallic non-skid studs for tires. 4,128,933, Cl. 29-420.500.
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Ward, George C., to Southwire Company. Plasma arc vertical shaft furnace. 4,129,742, Cl. 13-2.00P.
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Wei, John S. S., to Northern Telecom Limited. Optical system for imaging an elongate object in rearranged sections. 4,129,358, Cl. 350-173.000.
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- Weinhardt, Klaus: *See—*
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- Weinrich, Erwin: *See—*
  - Rose, David; Weinrich, Erwin; and Lieske, Edgar, 4,129,413, Cl. 8-10.200.
- Weisner, Carl S.: *See—*
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- Welk, Steven, to Electric Power Research Institute, Inc. Fault current limiting resistor. 4,129,849, Cl. 338-21.000.
- Wells, Ronald W.: *See—*
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- Wells, William M., to Hudson, Thomas H., a part interest. Multi-directional positioner. 4,129,844, Cl. 335-268.000.
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  - Whittington, Billy J.; Burns, Timothy L.; and Welsh, Alan B., 4,129,055, Cl. 84-1.010.
- Wengryn, Michael; and Khazan, Alexander, to Sun Chemical Corporation. Electro-mechanical vibrator. 4,129,187, Cl. 173-117.000.
- Wenk, Raymond C., to Matrix IV, Inc. Adjustable snap-on-clamp. 4,128,918, Cl. 24-16.00R.
- Wess, Guenter: *See—*
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- Westbrook, Russell D.: *See—*
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- Western Gear Corporation: *See—*
  - Moller, Walter H., 4,129,221, Cl. 214-2.500.
- Westinghouse Air Brake Company: *See—*
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- Westinghouse Electric Corp.: *See—*
  - Hine, Louis P., Jr., 4,129,013, Cl. 62-285.000.
  - MacDonald, Robert C., 4,129,199, Cl. 187-29.00R.
  - Ross, John, 4,129,809, Cl. 318-293.000.
  - Spurgin, Anthony J.; and Schaefer, William F., 4,129,475, Cl. 176-22.000.
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  - Watson, Kenneth, 4,129,403, Cl. 416-134.00A.
- Westley, John, to Hoffmann-La Roche Inc. Resolution of certain asymmetric primary amines using lasalocid. 4,129,580, Cl. 260-347.700.
- Westman, Morton A., to American Cyanamid Company. Method for removing permanent dyes from hair and other keratinaceous materials. 4,129,415, Cl. 8-102.000.
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  - Bandy, Clarence L., Jr., 4,129,265, Cl. 242-58.200.
  - Gendron, Wilfred H., 4,129,214, Cl. 206-629.000.
- Whetstone, Henry M. Charge forming and depositing method. 4,129,159, Cl. 141-1.000.
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  - Czech, James I.; and Ruble, Ernest B., 4,128,935, Cl. 29-596.000.
  - Platt, Clark I., 4,129,018, Cl. 68-134.000.
- White, Dwain M., to General Electric Company. Poly-phenylene oxide process employing aminophenol reactants. 4,129,555, Cl. 260-823.000.
- White, Rollin T., to NJM, Inc. Package label and manufacture of same. 4,128,954, Cl. 40-310.000.
- White, William I., to Miles Laboratories, Inc. Multisystem test means. 4,129,417, Cl. 23-230.00B.
- Whiteside, George D., to Polaroid Corporation. Exposure control system. 4,129,367, Cl. 354-83.000.
- Whiteside, George D.; and Johnson, Bruce K., to Polaroid Corporation. Last flash inhibit for magnet actuated scanning shutter blade arrangement. 4,129,368, Cl. 354-128.000.
- Whittington, Billy J.; Burns, Timothy L.; and Welsh, Alan B., to Kimball International, Inc. Electronic organ with chord and tab switch setting programming and playback. 4,129,055, Cl. 84-1.010.
- Wiechert, Rudolf; Bittler, Dieter; Kerb, Ulrich; Casals-Stenzel, Jorge; and Losert, Wolfgang, to Schering, A.G. Patentabteilung. Spirolactones. 4,129,564, Cl. 260-239.570.
- Wied, George L.; Bahr, Gunter F.; and Puls, James H., to Miles Laboratories, Inc. Apparatus and method for preparing a particle suspension. 4,129,381, Cl. 356-36.000.
- Wiesbrod, Sherman, to RCA Corporation. Image display device commutator. 4,129,804, Cl. 315-169.0TV.
- Wiggins, Richard F., to Gyromat Corporation. Apparatus for spray coating. 4,129,092, Cl. 118-323.000.
- Wilcock, John D.: *See—*
  - Dickson, John F.; and Wilcock, John D., 4,129,794, Cl. 307-270.000.
- Wilhelm, Karlheinz: *See—*
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- Wilson, Phillip S.: *See—*
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- Wilson, Richard L., to Westinghouse Air Brake Company. Lockable hose coupling. 4,129,323, Cl. 285-69.000.
- Wilts, James F.: *See—*
  - Lewis, Roger N.; Pastorino, Ronald L.; and Wilts, James F., 4,129,613, Cl. 260-861.000.
- Winn, Donald L. Electric cord receptacle. 4,129,350, Cl. 339-99.00R.
- Winters, Harry K.; and Chambers, Warren D., to Bendix Corporation, The. Aircraft brake torque limiter. 4,129,202, Cl. 188-181.00T.
- Wisbey, Raymond W.: *See—*
  - Shotts, L. D.; Wisbey, Raymond W.; and Sears, Albert W., 4,128,928, Cl. 29-156.80B.
- Wisconsin Alumni Research Foundation: *See—*
  - Ellison, Robert A.; and Kotsonis, Frank N., 4,129,577, Cl. 260-345.200.
  - Navratil, Gerald A.; and Neil, George R., 4,129,772, Cl. 219-121.00P.
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- Witriol, Norman M.: *See—*
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- Wittenberg, Roland C., to Pickering & Company, Inc. Phonograph turntable electro-thermal cueing control. 4,129,305, Cl. 274-23.00R.
- Witting, Harald L., to General Electric Company. Current wave shapes for jet engine fuel igniters. 4,129,895, Cl. 361-257.000.
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  - Humbert, Kingsley E., Jr.; and Judah, Lewis J., 4,129,429, Cl. 55-484.000.
- Wizerkaniuk, Walter. Method of providing pellets with a water insoluble coating using a melt. 4,129,666, Cl. 427-3.000.
- Wolfseder, Alfons; Urban, Hans; and Redl, Simon, to Anton Steinecker Maschinenfabrik GmbH. Vat for separating wort for spent grain. 4,129,504, Cl. 210-247.000.
- Wood, Andrew, to British Gas Corporation. Coal gasification plant. 4,129,422, Cl. 48-62.00R.
- Wood, Gary F. Method and apparatus for grain drying and storage. 4,128,948, Cl. 34-33.000.
- Wood, Richard F.: *See—*
  - Cleland, John W.; Westbrook, Russell D.; Wood, Richard F.; and Young, Ross T., 4,129,463, Cl. 148-33.000.
- Woodings, Calvin R., to Courtaulds Limited. Multi-limbed regenerated cellulose filaments. 4,129,679, Cl. 428-398.000.
- Woodstream Corporation: *See—*
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- Wortley, John P. A.: *See—*
  - Morton, Peter H.; Gilbert, John R. B.; and Wortley, John P. A., 4,129,492, Cl. 204-212.000.
- Wozar, T. M. Trepanning tool. 4,129,400, Cl. 408-56.000.
- Wright, Harold A., to ARCO Polymers, Inc. Bead size distribution in the suspension polymerization of vinyl aromatic monomers employing aminoalkanesulfonic acids. 4,129,707, Cl. 526-204.000.
- Wrycraft, Norman E.; and Collins, Alistair K., to Vulcan Industrial Packaging Limited. Container with spout connection. 4,129,236, Cl. 222-570.000.
- Wulk, Peter K.: *See—*
  - Kisselow, Alexander W.; and Wulk, Peter K., 4,129,512, Cl. 252-51.50A.
- Wunsche, Joachim: *See—*
  - Thonnes, Horst; and Wunsche, Joachim, 4,129,022, Cl. 72-41.000.
- Wyatt, William G. Radiant energy collector. 4,129,115, Cl. 126-270.000.
- Wyman, Donald P.: *See—*
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- Wynn, James M. Check valve assembly. 4,129,145, Cl. 137-541.000.
- Xerox Corporation: *See—*
  - Infante, Carlo, 4,129,807, Cl. 315-387.000.
  - Turner, Sam R., 4,129,581, Cl. 260-348.450.
- Yablochnikov, Boris A. Inductor for magnetic pulse working of tubular metal articles. 4,129,846, Cl. 336-84.00C.
- Yamada, Takahiro: *See—*
  - Ito, Syoichi; and Yamada, Takahiro, 4,129,875, Cl. 346-75.000.
- Yamaguchi, Takao: *See—*
  - Etchu, Masami; Yamaguchi, Takao; and Takagi, Norio, 4,129,630, Cl. 264-22.000.
- Yamaguchi, Tetsuo: *See—*
  - Kudo, Ken-ichi; Kitawaga, Yoshihiko; Koyama, Teruhisa; Takata, Akira; Kanagawa, Shuichi; and Yamaguchi, Tetsuo, 4,129,557, Cl. 526-283.000.
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- Yamamoto, Shinji: *See—*
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- Yamane, Izumi: *See—*
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- Yamaya, Hiroshi: *See—*
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- Yamazaki, Katsuhiro: *See—*
  - Inano, Tozaburo; Yamazaki, Katsuhiro; and Otake, Minoru, 4,129,774, Cl. 219-552.000.
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- Yankee, Ernest W., to Upjohn Company, The. Cis-4,5-didehydro-cis-13-PGE$_1$, compounds. 4,129,582, Cl. 260-408.000.
- Yanovsky, Jury G.: *See—*
  - Nametkin, Nikolai S.; Vinogradov, Georgy V.; Podolsky, Jury Y.; Pavlovskaya, Nina T.; Frenkin, Ernest I.; and Yanovsky, Jury G., 4,129,550, Cl. 260-42.220.

- Yasuda, Takashi: *See—*
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- Yasuike, Akio; Kataoka, Hiroshi; and Toyouchi, Kaoru, to Asahi-Dow Limited. Method for producing foamed moldings from synthetic resin materials. 4,129,635, Cl. 264-45.500.
- Yazaki, Mituyoshi: *See—*
  - Ogoshi, Toshiaki; Nakamura, Masayoshi; and Yazaki, Mituyoshi, 4,129,526, Cl. 252-536.000.
- Yee, Kenneth W.: *See—*
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- Yoke, James H. Solar energy collector. 4,129,119, Cl. 126-271.000.
- Yokota, Shinichi: *See—*
  - Nakahara, Yasushi; Ohtomo, Tadasuke; Yokota, Shinichi; and Usui, Kazuo, 4,129,008, Cl. 405-303.000.
- Yokouchi, Hisatake: *See—*
  - Suzuki, Ryuichi; Hashizume, Akihide; Horiuchi, Hideyuki; Yamamoto, Shinji; and Yokouchi, Hisatake, 4,129,854, Cl. 340-146.3CA.
- Yokoyama, Akinori; and Morinaka, Iwao, to Kabushiki Kaisha Komatsu Seisakusho. Hydraulic torque converter with a lock-up clutch and an axially retractable reactor. 4,128,999, Cl. 60-347.000.
- Yokoyama, Akinori: *See—*
  - Umeda, Haruhiko; Ito, Ryuji; Yokoyama, Akinori; and Komatsu, Mitsuaki, 4,129,000, Cl. 60-361.000.
- Yonezawa, Setsuo; Kawakami, Tsuneta; Shimada, Tatsuo; and Chida, Yoshinori, to Kabushiki Kaisha Seikosha. Apparatus for forming a character by a matrix pattern of picture elements. 4,129,860, Cl. 340-324.0AD.
- Yoshida Kogyo K.K.: *See—*
  - Matsubara, Isamu, 4,128,983, Cl. 52-731.000.
- Yoshida, Ryo: *See—*
  - Takemoto, Ichiki; Yoshida, Ryo; Sumida, Seizo; and Kamoshita, Katsuzo, 4,129,436, Cl. 71-120.000.
- Yoshida, Shigeki: *See—*
  - Kawagai, Kenji; and Yoshida, Shigeki, 4,129,792, Cl. 307-270.000.
- Yoshino, Hisashi: *See—*
  - Okutomi, Tsutomu; Yoshino, Hisashi; and Chiba, Seishi, 4,129,760, Cl. 200-144.00B.
  - Okutomi, Tsutomu; Yoshino, Hisashi; Chiba, Seishi; Tsutsumi, Tadahito; and Tejima, Kouichi, 4,129,761, Cl. 200-144.00B.
- Yotsukura, Teruo, to Hitachi, Ltd. Electrophotographic apparatus. 4,129,376, Cl. 355-11.000.
- Young, Dean A., to Union Oil Company of California. Arsenic containing fuels. 4,129,409, Cl. 431-3.000.
- Young, John W., to Gould Inc. Meter retainer. 4,129,896, Cl. 361-371.000.
- Young, Ross T.: *See—*
  - Cleland, John W.; Westbrook, Russell D.; Wood, Richard F.; and Young, Ross T., 4,129,463, Cl. 148-33.000.
- Yu, Se P.: *See—*
  - Tantraporn, Wirojana; and Yu, Se P., 4,129,879, Cl. 357-22.000.
- Zaitseva, Nina E., administrator: *See—*
  - Ignashev, Evgeny P.; Konovalov, Evmeny G., deceased; Konovalov, Georgy E., administrator; and Zaitseva, Nina E., administrator, 4,129,027, Cl. 72-429.000.
- Zengel, Hans; and Bergfeld, Manfred, to Akzona Incorporated. Process for the preparation of para-nitroso-diphenylhydroxylamines. 4,129,740, Cl. 560-48.000.
- Zenith Radio Corporation: *See—*
  - Chovanec, Donald D., 4,129,885, Cl. 358-190.000.
- Zingheim, Steven C., to Raychem Corporation. Polymeric compositions containing brominated flame retardants. 4,129,616, Cl. 260-878.00R.
- Zoltobrocki, Manfred, to Hoechst Aktiengesellschaft. Process for the purification of high molecular weight peptides using non-ionic detergents. 4,129,560, Cl. 260-112.00R.
- Zondek, Klaus. Process for separating crystallizable fractions from mixtures thereof. 4,129,583, Cl. 260-428.500.
- Zondler, Helmut; and Moser, Roland, to Ciba-Geigy Corporation. Curable epoxide resin mixtures. 4,129,556, Cl. 528-97.000.
- Zuna, Jaroslav: *See—*
  - Reichel, Pavel; Kafunek, Pavel; Kovar, Jiri; Pokorny, Oldrich; Zuna, Jaroslav; Kratina, Jindrich; and Pellant, Michal, 4,129,881, Cl. 357-82.000.
- Zweegers, Petrus W. Agricultural implements. 4,128,987, Cl. 56-377.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF DECEMBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Perkin-Elmer Corporation, The: *See*—
  - Scott, Larkin B., Re. 29,860, Cl. 323-43.50R.
- Scott, Larkin B., to Perkin-Elmer Corporation, The. Rotary potentiometer with speed reduction gearing. Re. 29,860, Cl. 323-43.50R.

LIST OF PLANT PATENTEES

- Framptons Nurseries Limited: *See*—
  - Machin, Barrie J., 4,346, Cl. 80.000.
- Hope, Claude, to Pan-American Plant Company. Kalanchoe plant named Toltec. 4,342, 12-12-78, Cl. 68.000.
- Hope, Claude, to Pan-American Plant Company. Kalanchoe plant named Goddess. 4,343, 12-12-78, Cl. 68.000.
- Hope, Claude, to Pan-American Plant Company. Kalanchoe named Montezuma. 4,344, 12-12-78, Cl. 68.000.
- Hope, Claude, to Pan-American Plant Company. Kalanchoe named Tabasco. 4,345, 12-12-78, Cl. 68.000.
- Machin, Barrie J., to Framptons Nurseries Limited. Chrysanthemum plant. 4,346, 12-12-78, Cl. 80.000.
- Pan-American Plant Company: *See*—
  - Hope, Claude, 4,342, Cl. 68.000.
  - Hope, Claude, 4,343, Cl. 68.000.
  - Hope, Claude, 4,344, Cl. 68.000.
  - Hope, Claude, 4,345, Cl. 68.000.
- Ranks Hovis McDougall Limited: *See*—
  - Solomons, Gerald L.; and Scammell, Gerald W., 4,347, Cl. 89.000.
- Scammell, Gerald W.: *See*—
  - Solomons, Gerald L.; and Scammell, Gerald W., 4,347, Cl. 89.000.
- Solomons, Gerald L.; and Scammell, Gerald W., to Ranks Hovis McDougall Limited. Non-toxic strain of *Fusarium graminearum*. 4,347, 12-12-78, Cl. 89.000.

LIST OF DESIGN PATENTEES

- Abbott Laboratories: *See*—
  - Bujan, Albert F., 250,510, Cl. D8-40.000.
- Affleck, Lyle C. Sealing liner for a closure. 250,511, 12-12-78, Cl. D9-254.000.
- Anchor Hocking Corporation: *See*—
  - Gobleck, Peter A., Jr., 250,506, Cl. D7-54.000.
- Belokin, Paul, Jr. Illuminated overhead advertising display. 250,555, 12-12-78, Cl. D96-12.00R.
- Bender, Keith N.: *See*—
  - Chinn, Roger A.; Chinn, Edna A.; Blaser, John E.; and Bender, Keith N., 250,541, Cl. D23-97.000.
- Blaser, John E.: *See*—
  - Chinn, Roger A.; Chinn, Edna A.; Blaser, John E.; and Bender, Keith N., 250,541, Cl. D23-97.000.
- Bliss & Laughlin Industries Incorporated: *See*—
  - Pinaire, Lon W.; and Godwin, Robert H., 250,501, Cl. D6-191.000.
- Bourke, Robert E., to Lykes Pasco Packing Co. Beverage dispenser. 250,536, 12-12-78, Cl. D15-116.000.
- Breitschwerdt, Werner; and Langenbeck, Andreas, to Daimler-Benz Aktiengesellschaft. Car top carrier for winter sports equipment. 250,526, 12-12-78, Cl. D12-157.000.
- Bujan, Albert F., to Abbott Laboratories. Opening tool for tear-open-type containers. 250,510, 12-12-78, Cl. D8-40.000.
- Chinn, Edna A.: *See*—
  - Chinn, Roger A.; Chinn, Edna A.; Blaser, John E.; and Bender, Keith N., 250,541, Cl. D23-97.000.
- Chinn, Roger A.; Chinn, Edna A.; Blaser, John E.; and Bender, Keith N., to Woodcutter's Manufacturing, Inc. Wood burning stove with door. 250,541, 12-12-78, Cl. D23-97.000.
- Clivio, Franco; and Raffler, Dieter, to Gardena kress & Kastner GmbH. Shaft coupling for garden tools. 250,508, 12-12-78, Cl. D8-1.000.
- Colatriano, William M., to Hercules Incorporated. Furniture subframe. 250,503, 12-12-78, Cl. D6-195.000.
- Daimler-Benz Aktiengesellschaft: *See*—
  - Breitschwerdt, Werner; and Langenbeck, Andreas, 250,526, Cl. D12-157.000.
  - Sacco, Bruno; and Gotz, Hans, 250,527, Cl. D12-181.000.
- Demetreon, James. Battery terminal connector. 250,531, 12-12-78, Cl. D13-10.000.
- Denaro, Joseph M.: *See*—
  - Pick, Ernest W.; Denaro, Joseph M.; and Goerke, Henry R., 250,546, Cl. D24-60.000.
- Detroit Tool and Engineering Company: *See*—
  - Miner, Earl L.; and Jones, Harold G., 250,522, Cl. D12-1.000.
- Esselte Obergs AB: *See*—
  - Winther, Ole, 250,552, Cl. D87-1.00D.
- Etchison, Richard C. Gauge mount slide for test stand. 250,513, 12-12-78, Cl. D10-83.000.
- Etchison, Richard C. Coil spring test stand. 250,514, 12-12-78, Cl. D10-83.000.
- Etchison, Richard C. Spring seat for test stand. 250,515, 12-12-78, Cl. D10-83.000.
- Fangel & Co. A/S: *See*—
  - Myhre, Jon, 250,553, Cl. D87-1.00R.
- Fishman, Martin. Earring. 250,517, 12-12-78, Cl. D11-67.000.
- Fishman, Martin B. Earring. 250,516, 12-12-78, Cl. D11-49.000.
- Friedman, David. Jewelry medallion or similar article. 250,518, 12-12-78, Cl. D11-108.000.
- Fujisawa Pharmaceutical Co., Ltd.: *See*—
  - Murakami, Hisao, 250,542, Cl. D23-150.000.
- Gardena kress & Kastner GmbH: *See*—
  - Clivio, Franco; and Raffler, Dieter, 250,508, Cl. D8-1.000.
- Gobleck, Peter A., Jr., to Anchor Hocking Corporation. Condiment shaker or similar article. 250,506, 12-12-78, Cl. D7-54.000.
- Godwin, Robert H.: *See*—
  - Pinaire, Lon W.; and Godwin, Robert H., 250,501, Cl. D6-191.000.
- Goerke, Henry R.: *See*—
  - Pick, Ernest W.; Denaro, Joseph M.; and Goerke, Henry R., 250,546, Cl. D24-60.000.
- Gotz, Hans: *See*—
  - Sacco, Bruno; and Gotz, Hans, 250,527, Cl. D12-181.000.
- Hardy, Sheila. Cane. 250,554, 12-12-78, Cl. D88-5.000.
- Hart, Victor R. Handle for a faucet. 250,538, 12-12-78, Cl. D23-28.000.
- Hashimoto, Hideo. Artificial tree. 250,519, 12-12-78, Cl. D11-118.000.
- Heavener, Paul R. Plaque. 250,520, 12-12-78, Cl. D11-140.000.
- Hercules Incorporated: *See*—
  - Colatriano, William M., 250,503, Cl. D6-195.000.
  - Trimble, David C., 250,502, Cl. D6-195.000.
- Hosford, Charles D.; and Simpson, Barry. Folding stool. 250,498, 12-12-78, Cl. D6-32.000.
- Hurst, Eric K., to Lewis Woolf Griptight Limited. Teat. 250,545, 12-12-78, Cl. D24-47.000.
- Jones, Harold G.: *See*—
  - Miner, Earl L.; and Jones, Harold G., 250,522, Cl. D12-1.000.
- Kato, Akira, to Sansui Electric Co., Ltd. Combined tuner and amplifier. 250,534, 12-12-78, Cl. D14-96.000.
- Kato, Akira, to Sansui Electric Co., Ltd. Combined tuner and amplifier. 250,535, 12-12-78, Cl. D14-96.000.
- Kaye, Gordon E., to P.R. Mallory & Co. Inc. Electric cartridge battery. 250,528, 12-12-78, Cl. D13-8.000.
- Kaye, Gordon E., to P.R. Mallory & Co. Inc. Electric cartridge battery. 250,529, 12-12-78, Cl. D13-8.000.
- Kaye, Gordon E., to P.R. Mallory & Co. Inc. Electric cartridge battery. 250,530, 12-12-78, Cl. D13-8.000.
- King-Seeley Thermos Company: *See*—
  - Seager, Richard H., 250,505, Cl. D7-40.000.

- Kliot, Jules. Picture frame. 250,504, 12-12-78, Cl. D6-242.000.
- Langenbeck, Andreas: *See*—
  - Breitschwerdt, Werner; and Langenbeck, Andreas, 250,526, Cl. D12-157.000.
- Lanier Business Products, Inc.: *See*—
  - Walz, David K., 250,532, Cl. D14-3.000.
- Leonard, Henri, to Micro-Mega S.A. Dental root-canal broach. 250,544, 12-12-78, Cl. D24-10.000.
- Lewis, James H. Liquid sterilizer assembly. 250,543, 12-12-78, Cl. D24-9.000.
- Lewis Woolf Griptight Limited: *See*—
  - Hurst, Eric K., 250,545, Cl. D24-47.000.
- Lowe, Brian A.: *See*—
  - Odell, Raymond; and Lowe, Brian A., 250,496, Cl. D2-233.000.
- Luscombe, Arthur J. Wood-burning stove. 250,540, 12-12-78, Cl. D23-97.000.
- Lykes Pasco Packing Co.: *See*—
  - Bourke, Robert E., 250,536, Cl. D15-116.000.
- MacIntyre, John A. Protective security hatch cover for sailboats or the like. 250,523, 12-12-78, Cl. D12-70.000.
- Marks, Philip. Display rack. 250,500, 12-12-78, Cl. D6-85.000.
- Maza, Dale T.: *See*—
  - Raftery, William B.; Maza, Dale T.; and Tomblin, Glen E., 250,507, Cl. D7-187.000.
- McCraney, Charles E. Flag. 250,521, 12-12-78, Cl. D11-176.000.
- McIntyre, Emmett D.: *See*—
  - O'Gwin, Ray J., Jr.; and McIntyre, Emmett D., 250,499, Cl. D6-83.000.
- Micro-Mega S.A.: *See*—
  - Leonard, Henri, 250,544, Cl. D24-10.000.
- Miner, Earl L.; and Jones, Harold G., to Detroit Tool and Engineering Company. Self-propelled personnel and material carrying vehicle. 250,522, 12-12-78, Cl. D12-1.000.
- Murakami, Hisao, to Fujisawa Pharmaceutical Co., Ltd. Container for solid air freshener. 250,542, 12-12-78, Cl. D23-150.000.
- Myhre, Jon, to Fangel & Co. A/S. Geological specimen case. 250,553, 12-12-78, Cl. D87-1.00R.
- Normart, Martin. Gameboard. 250,551, 12-12-78, Cl. D34-5.0SS.
- Nyblom, Raimo, to Oy Nokia AB. Tire. 250,524, 12-12-78, Cl. D12-146.000.
- Odell, Raymond; and Lowe, Brian A. Head seal for an anti-dust helmet. 250,496, 12-12-78, Cl. D2-233.000.
- O'Gwin, Ray J., Jr.; and McIntyre, Emmett D. Bunkbed. 250,499, 12-12-78, Cl. D6-83.000.
- Oy Nokia AB: *See*—
  - Nyblom, Raimo, 250,524, Cl. D12-146.000.
- P.R. Mallory & Co. Inc.: *See*—
  - Kaye, Gordon E., 250,528, Cl. D13-8.000.
  - Kaye, Gordon E., 250,529, Cl. D13-8.000.
  - Kaye, Gordon E., 250,530, Cl. D13-8.000.
- Palmer, Thomas E., to Wilkinson Sword Limited. Razor. 250,547. 12-12-78, Cl. D28-46.000.
- Pick, Ernest W.; Denaro, Joseph M.; and Goerke, Henry R., to Purdue Frederick Company, The. Douche appliance. 250,546, 12-12-78, Cl. D24-60.000.
- Pinaire, Lon W.; and Godwin, Robert H., to Bliss & Laughlin Industries Incorporated. Compact chair-tilting control. 250,501, 12-12-78, Cl. D6-191.000.
- Plimmer, Frederick W., to Wilkinson Sword Limited. Pair of secateurs. 250,509, 12-12-78, Cl. D8-5.000.
- Purdue Frederick Company, The: *See*—
  - Pick, Ernest W.; Denaro, Joseph M.; and Goerke, Henry R., 250,546, Cl. D24-60.000.
- Raffler, Dieter: *See*—
  - Clivio, Franco; and Raffler, Dieter, 250,508, Cl. D8-1.000.
- Raftery, William B.; Maza, Dale T.; and Tomblin, Glen E. Mop wringer. 250,507, 12-12-78, Cl. D7-187.000.
- Renard, Marc, to Societe Peritel S.A.R.L. Automatic telephone dialer. 250,533, 12-12-78, Cl. D14-66.000.
- Reverchon, Gaston. Amusement bumper car. 250,550, 12-12-78, Cl. D34-5.00L.
- Rips, Irving; and Vine, Kemper H., to Younger Manufacturing Company. Lens calibration gauge. 250,512, 12-12-78, Cl. D10-64.000.
- Rocheleau, Georges A.; and Rouillard, Florien. Hat. 250,497, 12-12-78, Cl. D2-253.000.
- Rost, Gabriele. Make-up case. 250,548, 12-12-78, Cl. D28-79.000.
- Rouillard, Florien: *See*—
  - Rocheleau, Georges A.; and Rouillard, Florien, 250,497, Cl. D2-253.000.
- Sacco, Bruno; and Gotz, Hans, to Daimler-Benz Aktiengesellschaft. Air guide for motor vehicle rear windows. 250,527, 12-12-78, Cl. D12-181.000.
- Sansui Electric Co., Ltd.: *See*—
  - Kato, Akira, 250,534, Cl. D14-96.000.
  - Kato, Akira, 250,535, Cl. D14-96.000.
- Seager, Richard H., to King-Seeley Thermos Company. Insulated cover for a food tray or the like. 250,505, 12-12-78, Cl. D7-40.000.
- Simpson, Barry: *See*—
  - Hosford, Charles D.; and Simpson, Barry, 250,498, Cl. D6-32.000.
- Snyder, Stanley G. Van top. 250,525, 12-12-78, Cl. D12-156.000.
- Societe Peritel S.A.R.L.: *See*—
  - Renard, Marc, 250,533, Cl. D14-66.000.
- Stephens, Ronald M. Moistener for stamp or the like. 250,537, 12-12-78, Cl. D19-70.000.
- Stoddard, Charles W. Saddle. 250,549, 12-12-78, Cl. D30-20.000.
- Tomblin, Glen E.: *See*—
  - Raftery, William B.; Maza, Dale T.; and Tomblin, Glen E., 250,507, Cl. D7-187.000.
- Trimble, David C., to Hercules Incorporated. Furniture subframe. 250,502, 12-12-78, Cl. D6-195.000.
- Twiss, Norman W.; and Twiss, Norman W. Free standing stove. 250,539, 12-12-78, Cl. D23-97.000.
- Twiss, Norman W.: *See*—
  - Twiss, Norman W.; and Twiss, Norman W., 250,539, Cl. D23-97.000.
- Vine, Kemper H.: *See*—
  - Rips, Irving; and Vine, Kemper H., 250,512, Cl. D10-64.000.
- Walz, David K., to Lanier Business Products, Inc. Dictation station or the like. 250,532, 12-12-78, Cl. D14-3.000.
- Wilkinson Sword Limited: *See*—
  - Palmer, Thomas E., 250,547, Cl. D28-46.000.
  - Plimmer, Frederick W., 250,509, Cl. D8-5.000.
- Winther, Ole, to Esselte Obergs AB. Carrying case for tape cassettes. 250,552, 12-12-78, Cl. D87-1.00D.
- Woodcutter's Manufacturing, Inc.: *See*—
  - Chinn, Roger A.; Chinn, Edna A.; Blaser, John E.; and Bender, Keith N., 250,541, Cl. D23-97.000.
- Younger Manufacturing Company: *See*—
  - Rips, Irving; and Vine, Kemper H., 250,512, Cl. D10-64.000.

CLASSIFICATION OF PATENTS

ISSUED DECEMBER 12, 1978

NOTE.—First number, class; second number, subclass; third number, patent number

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867	4,129,051
CLASS 75	
5	4,129,437
10 C	4,129,438
58	4,129,439
63	4,129,440
118 R	4,129,441
126 C	4,129,442
212	4,129,443
251	4,129,444
CLASS 76	
107 A	4,129,052
CLASS 83	
69	4,129,053
165	4,129,054
CLASS 84	
1.01	4,129,055
1.26	4,129,056
434	4,129,057
485 R	4,129,058
CLASS 85	
49	4,129,059
53	4,129,060
CLASS 86	
20 B	4,129,061
CLASS 90	
11 R	4,129,062
CLASS 91	
506	4,129,063
CLASS 92	
129	4,129,064
CLASS 93	
33 R	4,129,032
58 ST	4,129,065
CLASS 96	
29 R	4,129,445
74	4,129,446
CLASS 99	
345	4,129,066
391	4,129,067
538	4,129,068
646 S	4,129,069
CLASS 100	
17	4,129,070
53	4,129,071
CLASS 101	
1	4,129,072
2	4,129,073
35	4,129,074
99	4,129,075
127	4,129,076
350	4,129,077
CLASS 102	
89 CD	4,129,078
CLASS 105	
368 B	4,129,079
CLASS 106	
2	4,129,447
15 R	4,129,448
95	4,129,449
120	4,129,450
168	4,129,451
243	4,129,452
287.32	4,129,453
304	4,129,454
308 N	4,129,455
CLASS 108	
149	4,129,080
CLASS 111	
7	4,129,082
CLASS 112	
178	4,129,083
221	4,129,084
CLASS 113	
121 C	4,129,085
CLASS 114	
23	4,129,086
144 E	4,129,087
CLASS 115	
18 E	4,129,088
28 A	4,129,089
CLASS 118	
49	4,129,090
50	4,129,091
323	4,129,092
401	4,129,093
CLASS 119	
1	4,129,094
5	4,129,095
27	4,129,096
28	4,129,097
CLASS 122	
4 D	4,129,098
CLASS 123	
32 EE	4,129,099
32 L	4,129,100
41.56	4,129,101
51 B	4,129,102
52 R	4,129,103
117 A	4,129,104
119 EC	4,129,105
136	4,129,106
146.5 A	4,129,107
193 P	4,129,108
198 F	4,129,109
CLASS 124	
16	4,129,110
CLASS 126	
25 AA	4,129,111
121	4,129,112
	4,129,113
122	4,129,114
270	4,129,115
	4,129,116
271	4,129,117
	4,129,118
	4,129,119
	4,129,120
299 D	4,129,121
CLASS 128	
1 R	4,129,122
	4,129,123
2.05 R	4,129,125
2.05 T	4,129,124
80 A	4,129,126
89 R	4,129,127
133	4,129,128
214 R	4,129,129
218 P	4,129,130
276	4,129,131
287	4,129,132
419 PG	4,129,133
CLASS 131	
2	4,129,134
243	4,129,135
CLASS 134	
1	4,129,456
2	4,129,136
	4,129,457
144	4,129,137
145	4,129,138
CLASS 135	
3 E	4,129,139
CLASS 136	
89 PC	4,129,458
CLASS 137	
124	4,129,140
462	4,129,141
492	4,129,142
496	4,129,143
541	4,129,144
	4,129,145
587	4,129,146
596	4,129,148
596.1	4,129,147
599.1	4,129,149
872	4,129,150
CLASS 138	
89	4,129,151
154	4,129,152
CLASS 139	
28	4,129,153
110	4,129,154
448	4,129,155
CLASS 140	
92.4	4,129,156
123.6	4,129,157
149	4,129,158
CLASS 141	
1	4,129,159
388	4,129,160
CLASS 148	
4	4,129,459
9 R	4,129,460
12.3	4,129,461
31	4,129,462
33	4,129,463
162	4,129,464
CLASS 149	
19.3	4,129,465
CLASS 152	
225 R	4,129,161
354 RB	4,129,162
CLASS 156	
48	4,129,466
84	4,129,467
148	4,129,468
155	4,129,470
157	4,129,469
211	4,129,471
331	4,129,472
364	4,129,473
394	4,129,474
CLASS 160	
135	4,129,163
CLASS 164	
7	4,129,164
	4,129,165
46	4,129,166
	4,129,167
159	4,129,168
166	4,129,169
270	4,129,170
292	4,129,171
348	4,129,172
442	4,129,173
443	4,129,174
444	4,129,175
CLASS 165	
7	4,129,176
48 S	4,129,177
61	4,129,178
101	4,129,179
113	4,129,180
133	4,129,181
CLASS 166	
263	4,129,182
300	4,129,183
315	4,129,184
CLASS 169	
62	4,129,185
CLASS 171	
83	4,129,186
CLASS 173	
117	4,129,187
120	4,129,188
CLASS 174	
38	4,129,743
94 R	4,129,744
209	4,129,745
CLASS 176	
22	4,129,475
37	4,129,476
73	4,129,477
CLASS 177	
123	4,129,189
155	4,129,190
210 R	4,129,191
CLASS 178	
18	4,129,746
19	4,129,747
69.1	4,129,748
CLASS 179	
2 EB	4,129,749
15 AL	4,129,750
15 BS	4,129,755
15 BW	4,129,751
146 E	4,129,752
170.2	4,129,753
175.2 R	4,129,756
188	4,129,754
CLASS 180	
.5 R	4,129,193
6.48	4,129,192
68.5	4,129,194

CLASS 181	
167	4,129,195
280	4,129,196
CLASS 182	
82	4,129,197
187	4,129,198
CLASS 187	
29 R	4,129,199
CLASS 188	
71.1	4,129,200
76	4,129,201
181 T	4,129,202
CLASS 191	
48	4,129,203
CLASS 192	
89 B	4,129,204
CLASS 195	
100	4,129,483
CLASS 198	
358	4,129,205
377	4,129,206
445	4,129,207
626	4,129,208
712	4,129,209
CLASS 200	
4	4,129,757
5 A	4,129,758
83 R	4,129,759
144 B	4,129,760
	4,129,761
153 G	4,129,762
159 A	4,129,763
159 R	4,129,764
268	4,129,765
308	4,129,766
CLASS 204	
1 T	4,129,478
	4,129,479
	4,129,480
1.5	4,129,481
43 T	4,129,482
101	4,129,484
144.5	4,129,485
159.14	4,129,487
159.19	4,129,486
	4,129,488
159.22	4,129,489
181 C	4,129,490
195 S	4,129,491
212	4,129,492
228	4,129,493
268	4,129,494
279	4,129,495
CLASS 206	
45.31	4,129,210
213.1	4,129,211
450	4,129,212
575	4,129,213
629	4,129,214
CLASS 208	
134	4,129,496
138	4,129,497
CLASS 209	
213	4,129,498
610	4,129,215
CLASS 210	
23 R	4,129,499
	4,129,500
	4,129,501
60	4,129,502
232	4,129,503
247	4,129,504
CLASS 211	
13	4,129,216
95	4,129,217
116	4,129,218
CLASS 213	
100 R	4,129,219
CLASS 214	
1.4	4,129,220
2.5	4,129,221
17 D	4,129,222
620	4,129,223
763	4,129,224
CLASS 215	
12 R	4,129,225
235	4,129,226
CLASS 217	
55	4,129,787
CLASS 219	
10.49 R	4,129,767
10.55 A	4,129,768
10.55 B	4,129,769
98	4,129,770
104	4,129,771
121 P	4,129,772
146.23	4,129,773
552	4,129,774
CLASS 220	
267	4,129,227
293	4,129,228
CLASS 221	
129	4,129,229
268	4,129,230
CLASS 222	
145	4,129,231
173	4,129,232
227	4,129,233
235	4,129,234
321	4,129,235
570	4,129,236
CLASS 224	
5 C	4,129,237
CLASS 226	
29	4,129,238
75	4,129,239
CLASS 227	
8	4,129,240
CLASS 228	
113	4,129,241
121	4,129,242
122	4,129,243
170	4,129,244
CLASS 229	
23 R	4,129,246
36	4,129,247
41 B	4,129,248
CLASS 233	
7	4,129,249
CLASS 236	
44 A	4,129,250
CLASS 237	
51	4,129,251
CLASS 239	
2 R	4,129,252
88	4,129,253
96	4,129,254
	4,129,255
	4,129,256
458	4,129,257
650	4,129,258
CLASS 241	
20	4,129,259
46 A	4,129,260
46.11	4,129,261
197	4,129,262
248	4,129,263
285 R	4,129,264
CLASS 242	
58.2	4,129,265
68.4	4,129,266
107.4 A	4,129,267
CLASS 244	
3.22	4,129,268
110 B	4,129,269
135 A	4,129,270
137 R	4,129,271
153 R	4,129,272
155 A	4,129,273
155 R	4,129,274
181	4,129,275
CLASS 246	
169 S	4,129,276
CLASS 248	
51	4,129,277
165	4,129,278
	4,129,279
183	4,129,280
CLASS 249	
54	4,129,281
137	4,129,282
CLASS 250	
203 R	4,129,775
253	4,129,776
264	4,129,777
272	4,129,778
315 A	4,129,779
333	4,129,780
341	4,129,781
379	4,129,782
445 T	4,129,783
505	4,129,784
551	4,129,785
CLASS 251	
62	4,129,283
205	4,129,284
CLASS 252	
8.8	4,129,505
	4,129,506
8.9	4,129,507
33	4,129,508
48.6	4,129,510
49.5	4,129,509
51.5 A	4,129,512
78.1	4,129,513
89 R	4,129,514
117	4,129,515
122	4,129,516
140	4,129,511
186	4,129,517
301.1 W	4,129,518
301.4 H	4,129,519
367	4,129,520
403	4,129,521
453	4,129,522
475	4,129,523
478	4,129,524
518	4,129,525
536	4,129,526
547	4,129,527
CLASS 254	
78	4,129,285
103	4,129,286
134.3 PA	4,129,287
CLASS 260	
23 EP	4,129,537
23 XA	4,129,535
	4,129,536
23.7 M	4,129,538
27 R	4,129,539
28.5 A	4,129,540
28.5 AS	4,129,541
	4,129,542
29.15 B	4,129,543
29.3	4,129,544
29.6 TA	4,129,545
31.8 T	4,129,546
33.4 R	4,129,547
37 M	4,129,548
40 R	4,129,549
42.22	4,129,550
45.7 R	4,129,551
45.85 R	4,129,553
45.9 QB	4,129,552
112 R	4,129,560
239 BB	4,129,561
239.3 P	4,129,562
239.57	4,129,564
239.9	4,129,563
307 F	4,129,568
307 FA	4,129,569
326.12 R	4,129,572
326.2	4,129,571
326.45	4,129,573
340.2	4,129,574
343.21	4,129,575
	4,129,576
345.2	4,129,577
345.7 R	4,129,578
346.11	4,129,579
347.7	4,129,580
348.45	4,129,581
408	4,129,582
428.5	4,129,583
429.7	4,129,584
448.8 R	4,129,585
465 D	4,129,586
465.8 D	4,129,587
502.4 P	4,129,588
504 A	4,129,589
506	4,129,590
	4,129,591
544 D	4,129,594
544 Y	4,129,595
561 K	4,129,596
563 P	4,129,597
570.8 R	4,129,598
586 E	4,129,599
604 R	4,129,600
651 F	4,129,602
653	4,129,603
656 R	4,129,604
669 A	4,129,605
674 R	4,129,606
823	4,129,528
	4,129,555
	4,129,558
	4,129,700
835	4,129,607
836	4,129,608
837 R	4,129,609
	4,129,610
858	4,129,611
860	4,129,612
861	4,129,613
876 B	4,129,614
	4,129,615
878 R	4,129,616
879	4,129,617
884	4,129,618
901	4,129,619
CLASS 261	
18 R	4,129,620
39 A	4,129,622
39 R	4,129,621
52	4,129,623
76	4,129,624
111	4,129,625
114 JP	4,129,626
151	4,129,627
CLASS 264	
1	4,129,628
13	4,129,629
22	4,129,630
33	4,129,631
40.1	4,129,632
40.3	4,129,633
45.3	4,129,634
45.5	4,129,635
46.6	4,128,963
51	4,129,636
112	4,129,637
117	4,129,638
157	4,129,639
187	4,129,640
294	4,129,641
CLASS 266	
158	4,129,288
195	4,129,289
CLASS 267	
160	4,129,290
CLASS 269	
73	4,129,291
126	4,129,292
CLASS 270	
52	4,129,293
CLASS 271	
93	4,129,294
186	4,129,295
CLASS 272	
52	4,129,296
67	4,129,297
CLASS 273	
100	4,129,298
102.2 S	4,129,299
176 A	4,129,300
186 R	4,129,301
236	4,129,302
241	4,129,303
243	4,129,304
CLASS 274	
23 R	4,129,305
CLASS 277	
30	4,129,306
34.3	4,129,307
188 R	4,129,308
189.5	4,129,309
CLASS 280	
6 H	4,129,310
11.37 E	4,129,311
11.37 Z	4,129,312
12 H	4,129,313
87.01	4,129,315
96.1	4,129,316
281 R	4,129,317
289 A	4,129,318
425 R	4,129,314
615	4,129,319
628	4,129,245
744	4,129,320
	4,129,321
766	4,129,322
CLASS 285	
69	4,129,323
107	4,129,324
CLASS 290	
52	4,129,786
CLASS 292	
127	4,129,325
CLASS 294	
8.6	4,129,326
58	4,129,327
65	4,129,328
70	4,129,329
CLASS 296	
28 F	4,129,330
100	4,129,331
CLASS 297	
440	4,129,332
CLASS 298	
22 R	4,129,333
CLASS 299	
4	4,129,334
17	4,129,335
CLASS 301	
12 R	4,129,336
CLASS 302	
2 A	4,129,338
2 R	4,129,337
21	4,129,339
CLASS 303	
6 R	4,129,340
	4,129,341
105	4,129,342
CLASS 307	
11	4,129,788
118	4,129,789
203	4,129,790
252 Q	4,129,791
270	4,129,792
	4,129,793
	4,129,794
CLASS 308	
35	4,129,343
187	4,129,344
191	4,129,345
CLASS 310	
24	4,129,795
43	4,129,796
77	4,129,797
313	4,129,798
359	4,129,799
CLASS 312	
324	4,129,346
330 R	4,129,347
CLASS 313	
25	4,129,800
346 R	4,129,801
492	4,129,802
CLASS 315	
3.5	4,129,803
169 TV	4,129,804
219	4,129,805
370	4,129,806
387	4,129,807
CLASS 316	
20	4,129,348
CLASS 318	
254	4,129,808
293	4,129,809
317	4,129,810
478	4,129,811
484	4,129,812
561	4,129,813
577	4,129,814
601	4,129,815
696	4,129,816
CLASS 320	
18	4,129,817
CLASS 322	
10	4,129,818
28	4,129,819
CLASS 323	
43.5 R	Re.29,860
56	4,129,820
CLASS 324	
0.5 AH	4,129,822
8	4,129,821
16 S	4,129,828
20 R	4,129,823
29.5	4,129,824
52	4,129,825
57 H	4,129,831
57 SS	4,129,826
77 A	4,129,827
178	4,129,829
186	4,129,830
CLASS 331	
44	4,129,832
66	4,129,833
91	4,129,834
94.5 D	4,129,836
94.5 G	4,129,835
107 A	4,129,837
CLASS 333	
7 D	4,129,838
9	4,129,839
73 W	4,129,840
84 L	4,129,841
CLASS 334	
15	4,129,842
CLASS 335	
174	4,129,843
268	4,129,844
CLASS 336	
57	4,129,845
84 C	4,129,846
CLASS 337	
301	4,129,847
CLASS 338	
21	4,129,849
308	4,129,848
CLASS 339	
17 C	4,129,349
99 R	4,129,350
176 MP	4,129,351
177 R	4,129,352
242	4,129,353
265 F	4,129,354
CLASS 340	
10	4,129,850
11	4,129,851
58	4,129,852
146.3 AG	4,129,853
146.3 CA	4,129,854
152 T	4,129,855
321	4,129,857
324 AD	4,129,858
	4,129,859
	4,129,860
324 R	4,129,861
347 AD	4,129,863
	4,129,864
347 P	4,129,862
542	4,129,865
554	4,129,856
CLASS 343	
5 R	4,129,866
6.8 R	4,129,867
	4,129,868
	4,129,869
106 R	4,129,870
727	4,129,871
768	4,129,872
854	4,129,873
	4,129,874
CLASS 346	
75	4,129,875
140 A	4,129,876
CLASS 350	
6.7	4,129,355
96.23	4,129,356
157	4,129,357
173	4,129,358
183	4,129,359
289	4,129,360
CLASS 351	
22	4,129,361
123	4,129,362
CLASS 352	
29	4,129,363
CLASS 353	
99	4,129,364
	4,129,365
CLASS 354	
24	4,129,366
83	4,129,367
128	4,129,368
197	4,129,369
234	4,129,370
	4,129,371
271	4,129,877
CLASS 355	
1	4,129,372
	4,129,373
8	4,129,374
10	4,129,375
11	4,129,376
14	4,129,377
	4,129,378
57	4,129,379
113	4,129,380
CLASS 356	
36	4,129,381

71	4,129,382
244	4,129,385
381	4,129,384
439	4,129,383
CLASS 357	
13	4,129,878
22	4,129,879
27	4,129,880
82	4,129,881
CLASS 358	
13	4,129,882
104	4,129,883
188	4,129,884
190	4,129,885
194	4,129,886
213	4,129,887
CLASS 360	
40	4,129,888
75	4,129,889
94	4,129,890
98	4,129,891
130	4,129,892
CLASS 361	
21	4,129,893
117	4,129,894
257	4,129,895
371	4,129,896
399	4,129,897
CLASS 362	
7	4,129,898
109	4,129,899
217	4,129,900
CLASS 364	
104	4,129,901
CLASS 366	
88	4,129,386
119	4,129,387
124	4,129,388
144	4,129,389
CLASS 400	
121	4,129,390
CLASS 401	
208	4,129,391
CLASS 402	
46	4,129,396
CLASS 403	
25	4,129,392
49	4,129,393
57	4,129,394
317	4,129,395
CLASS 404	
14	4,129,397
95	4,129,398
118	4,129,399
CLASS 405	
31	4,129,006
169	4,129,010
	4,129,011
227	4,129,009
261	4,129,007
303	4,129,008
CLASS 408	
56	4,129,400
59	4,129,401
CLASS 415	
53 R	4,129,402
CLASS 416	
134 A	4,129,403
CLASS 417	
364	4,129,404
CLASS 418	
55	4,129,405
CLASS 422	
64	4,129,419
98	4,129,418
CLASS 423	
199	4,129,642
235	4,129,651
CLASS 424	
1	4,129,643
59	4,129,644
60	4,129,645
89	4,129,646
92	4,129,647
101	4,129,648
182	4,129,649
203	4,129,660
211	4,129,650
247	4,129,652
251	4,129,653
	4,129,654
263	4,129,656
267	4,129,655
273 R	4,129,657
	4,129,661
274	4,129,658
283	4,129,659
305	4,129,662
CLASS 425	
46	4,129,406
87	4,129,407
CLASS 426	
7	4,129,664
432	4,129,665
602	4,129,663
CLASS 427	
3	4,129,666
44	4,129,667
57	4,129,668
282	4,129,669
386	4,129,670
CLASS 428	
48	4,129,671
138	4,129,672
172	4,129,673
285	4,129,674
288	4,129,675
315	4,129,676
372	4,129,677
383	4,129,678
398	4,129,679
433	4,129,680
524	4,129,681
571	4,129,682
CLASS 429	
21	4,129,683
27	4,129,684
38	4,129,685
61	4,129,686
86	4,129,687
97	4,129,688
101	4,129,689
104	4,129,690
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For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT): Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of October 3, 1978.

DONALD W. BANNER,
Nov. 7, 1978. *Commissioner of Patents and Trademarks.*

Examination

Due to budgetary constraints, only one examination for registration to practice before the United States Patent and Trademark Office as patent attorneys or agents will be given in FY 1979 which ends on September 30, 1979. Pursuant to the provisions of Rule 341(c), the FY 1979 examination for persons seeking registration before the United States Patent and Trademark Office as patent attorneys or agents will be held on April 9, 1979.

All persons registered to practice in patent cases before the Patent and Trademark Office must, pursuant to the noted rule, take and pass the examination, with the exception of former patent examiners for whom the examination is waived. Those passing the examination do not thereby qualify for recognition for practice before the Patent and Trademark Office in trademark cases. Recognition for practice in *trademark* cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

The examination will be given under the supervision of the Civil Service Commission, and may be taken in any of the cities in which the Civil Service Commission regularly conducts examinations. Applications to take the April 9, 1979 examination must be filed in the Patent and Trademark Office together with a $85 fee not later than January 31, 1979.

Application blanks may be obtained from the Clerk of the Patent and Trademark Office Committee on Enrollment, Bldg. 3, 11th Floor, Room C16, Crystal Plaza, Arlington, Va. or by mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and directed to the attention of the Clerk of the Committee on Enrollment.

LUTRELLE F. PARKER,
Nov. 22, 1978. *Chairman, Committee on Enrollment.*

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before January 6, 1979.

Asbury, Walter M., 1311 Hancock Ave., Alexandria, Va. 22301
Nelson, Juanita D., 3902 21st Ave., Hillcrest Hgts., Md. 20031
Schaefer, Robert K., 7735 Falstaff Rd., McLean, Va. 22102

LUTRELLE F. PARKER,
Nov. 16, 1978. *Chairman, Committee on Enrollment.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,753,535, Re. S.N. 952,937, Filed Oct. 19, 1978, Cl. 242/152.1, YARN TENSIONING DEVICE AND METHOD, Otto Zollinger, Owner of Record: *Otto Zollinger Inc., Spartanburg, S.C.,* Attorney or Agent: Wellington M. Manning Jr., et al., Ex. Gp.: 242

3,874,613, Re. S.N. 952,939, Filed Oct. 19, 1978, Cl. 242/152.1, YARN TENSIONING DEVICE, Otto Zollinger, Owner of Record: *Ottc Zollinger Inc., Spartanburg, S.C.,* Attorney or Agent: Wellington M. Manning Jr., et al., Ex. Gp.: 242

3,892,371, Re. S.N. 952,938, Filed Oct. 19, 1978, Cl. 242/152.1, YARN TENSIONING DEVICE, Otto Zollinger, Owner of Record: *Otto Zollinger Inc., Spartanburg, S.C.,* Attorney or Agent: Wellington M. Manning Jr., et al., Ex. Gp.: 242

3,924,989, Re. S.N. 952,527, Filed Oct. 18, 1978, Cl. 425/130, MACHINE FOR PRODUCING MOLDINGS FROM CHEMICAL COMPONENTS WHICH REACT QUICKLY WITH ONE ANOTHER, Ferdinand Althausen, et al., Owner of Record: *Bayer Aktiengesellschaft; Maschinefabrik Hennecke GmbH; both of Leverkusen, Bayerwerk, Germany,* Attorney or Agent: Gene Harsh, et al., Ex. Gp.: 322

3,951,490, Re. S.N. 953,288, Filed Oct. 20, 1978, Cl. 339/17 C, CABLE SYSTEM DISTRIBUTION SUBSTATION WITH NOVEL CENTER CONDUCTOR SEIZURE APPARATUS, Alan E. Devendorf, Owner of Record: *The Magnavox Company, Fort Wayne, Ind.,* Attorney or Agent: Jack Oisher, Ex. Gp.: 322

3,976,115, Re. S.N. 953,653, Filed Oct. 23, 1978, Cl. 152/361 R, PNEUMATIC TIRE, Henri J. Mirtain, et al., Owner of Record: *Uniroyal, Inc., Clairoix, France,* Attorney or Agent: Jack Posin, Ex. Gp.: 314

3,979,437, Re. S.N. 952,918, Filed Oct. 19, 1978, Cl. 260/471 R, SUBSTITUTED PHENOXYBENZOIC ACIDS AND DERIVATIVES THEREOF, Robert J. Theissen, Owner of Record: *Mobil Oil Corp., New York, N.Y.,* Attorney or Agent: Michael G. Gilman, Ex. Gp.: 126

4,030,026, Re. S.N. 949,004, Filed Oct. 5, 1978, Cl. 324/3, SAMPLING METAL DETECTOR, George Calvin Payne, Owner of Record: *White's Electronics, Inc., Sweet Home, Oreg.,* Attorney or Agent: Kenneth S. Klarquist, et al., Ex. Gp.: 252

4,087,702, Re. S.N. 946,823, Filed Sep. 28, 1978, Cl. 307/252 B, DIGITAL ELECTRONIC DIMMER, James P. Kirby, et al., Owner of Record: *Inventor,* Attorney or Agent: Jerry M. Keys, Ex. Gp.: 254

4,089,419, Re. S.N. 953,106, Filed Oct. 20, 1978, Cl. 206/632, REVERSIBLE ENVELOPE, Robert S. Yale, Owner of Record: *Inventor,* Attorney or Agent: Leo A. Rosetta, et al., Ex. Gp.: 241

4,099,416, Re. S.N. 945,597, Filed Sep. 25, 1978, Cl. 73/602, RESOLUTION REAL-TIME ULTRASONIC IMAGING APPARATUS, Ludwig Niklas, Owner of Record: *Krautkramer-Branson, Incorporated, Stamford, Conn.,* Attorney or Agent: Ervin B. Steinberg, et al., Ex. Gp.: 244

PATENT NOTICES

Certificates of Correction for the Week of Dec. 19, 1978

Re. 29,689
Re. 29,690
Re. 29,691
D. 248,330
3,695,554
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Patents Available for Licensing or Sale

3,688,257. AUTOMOBILE ANTI-THEFT DEVICE. Thomas A. Mann, 73 Hosford Ave., Leonardo, N.J. 07737.

3,924,001. PARTICLE BUILD-UP SUPPRESSOR. Woodrow W. Phillips, 815 North Gilmore Ave., #105, Lakeland, Fla. 33801.

3,970,423. OXIDATIVE HAIR DYE COMPOSITIONS. Frederick Brody and Stanley Pohl. Correspondence to: Irving Holtzman, Bristol-Myers Company, 345 Park Ave., New York, N.Y. 10022.

4,071,004. ELECTRO-STATIC FUEL MIXTURE SYSTEM. Neil Ostergaard, 1454 East Gateway Circle, Apt. 12, Fargo, N. Dak. 58103.

4,107,967. ACCESS LIMITING APPARATUS. William C. Grabb, 325 Barton Shore Drive, Ann Arbor, Mich. 48105.

The following two patents are offered by Blanche A. Morley, 3401 N. Franklin Ave., Stockton, Calif. 95204.

D. 249,662. SINGLE BOWLING BALL CADDY.
D. 249,492. DUAL BOWLING BALL CADDY.

The following five patents are offered for sale. Inquiries should be directed to David C. Jacobson, Esq., 8000 Sears Tower, Chicago, Ill. 60606.

3,960,313. AUTOMATIC SETUP CARTON CONSTRUCTIONS.
3,964,374. CARTON FOLDING AND GLUEING DEVICE.
4,007,869. CORRUGATED CARTON CONSTRUCTIONS.
4,012,996. APPARATUS FOR FOLDING AND COMPRESSION OF CORRUGATED CONTAINER BLANKS.
Re. 29,442. APPARATUS FOR PRODUCING CARTONS.

The following patents are offered by: Henry C. Kovar, % The Cornelius Company, 2727 North Ferry St., Anoka, Minn. 55303.

3,283,947. BOTTLE CARRIER.
3,297,196. BOTTLE CARRIER.
3,317,081. BOTTLE CARRIER.
3,334,767. BOTTLE CARRIER FOR SIX-PACKS.
3,363,802. LARGE CAPACITY MOLDED PLASTIC BOTTLE CARRIER.
3,376,998. MOLDED PLASTIC BOTTLE CARRIER.
3,384,261. BOTTLE CARRIER.
3,456,344. PLURAL DRINKING STRAWS INTEGRALLY CONNECTED FUNCTIONING AS A STICK-LIKE SPOON.
3,578,194. THROW-AWAY BEVERAGE BOTTLES.

The following patents are offered by: Jackson and Chovanes, 1 Bala-Cynwyd Plaza, Suite 319, Bala-Cynwyd, Pa. 19004.

4,080,225. LOW TEMPERATURE, WELDABLE, LOW ALLOY STEEL.
4,065,331. ROLLED LOW CARBON NIOBIUM STEEL.
3,738,874. LOW TEMPERATURE STEEL PROCESS.
3,721,587. LOW CARBON, NIOBIUM AND ALUMINUM CONTAINING STEEL SHEETS AND PLATES AND PROCESS.
3,672,595. DRAG WIPE.
3,619,303. LOW ALLOY AGE-HARDENABLE STEEL AND PROCESS.
3,559,862. DRAG WIPE.

The General Electric Company is prepared to grant nonexclusive licenses under the following patents on reasonable terms to domestic manufacturers.

Application for licenses may be addressed to: General Electric Company, Component Products Group 101 E. Carmel Drive, Suite 205, Carmel, Ind. 46032.

3,077,570. INDUCTIVE DEVICE.
3,350,572. HIGH FREQUENCY CHOPPER CIRCUIT.
3,600,668. TIME RATIO SOLID STATE VOLTAGE REGULATOR.
3,700,960. METAL HALIDE LAMP SYSTEM.
3,731,179. ADJUSTABLE HIGH VOLTAGE POWER SUPPLY WITH OUTPUT POLARITY SWITCHING.
3,766,467. INVERTER-OSCILLATOR.
3,767,970. TURN ON/TURN OFF CIRCUIT FOR THE DIRECT CURRRENT OPERATION OF GASEOUS DISCHARGE LAMPS.

Application for license may be addressed to Patent Counsel, Gas Turbine Division, General Electric Company, 1 River Road, Building #500, Room 218, Schenectady, N.Y. 12345.

4,081,956. COMBINED GAS TURBINE AND STEAM TURBINE POWER PLANT.

Application for licenses should be addressed to: Division Patent Counsel, Space Division General Electric Company, P.O. Box 8555, Philadelphia, Pa. 19101.

4,085,425. PRECISE CONTROL OF TELEVISION PICTURE SIZE AND POSITION.
4,089,576. INSULATED CONNECTION OF PHOTOVOLTAIC DEVICES.
4,117,344. CONTROL SYSTEM FOR A RANKINE CYCLE POWER UNIT.
4,118,643. COMPLAINT MHD ELECTRODE STRUCTURE.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $4.00 ($8.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patent
Washington, D.C. 20545

Patent 4,062,404. Method for in Situ Combustion. Filed Sept. 30, 1976. Patented Dec. 13, 1977. Not available NTIS.

Patent 4,063,090. Method for Isotope Separation by Photodeflection. Filed Oct. 30, 1974. Patented Dec. 13, 1977. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch
Westwood Building, Bethesda, Md. 20014

Patent application 885,340. Improved Procedure for the Preparation of 9-Beta-D-Arabinofuranosyl - 2 - Fluoroadenine. Filed Mar. 10, 1978.

Patent application 886,119. A Cobalt-Catalyzed One-Step Synthesis of Annulated Pyridines and Novel Products. Filed Mar. 13, 1978.

Patent application 900.641. Scanning Flow Indicator for Rotameters. Filed Apr. 25, 1978.

Patent application 916,209. Portable Instrument for Measuring Neutron Energy Spectra and Neutron Dose in a Mixed N-Gamma Field. Filed June 16, 1978.

Patent application 928,155. Multifinger Photocell Plethysmography System. Filed July 26, 1978.

Patent 4,078,628. Double-Wheel Automotive Hand Control System. Filed Aug. 16, 1976. Patented Mar. 14, 1978. Not available NTIS.

Patent 4,084,266. Artificial Implant With Fiber-Flocked Blood-Contacting Surface. Filed Nov. 1, 1976. Patented Apr. 18, 1978. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 804,193. Method of Inhibiting Fungal Growth With Obtusastyrene. Filed June 6, 1977.

Patent application 884,075. Automatic Electrical Load Matching Device for Wind Generators. Filed Mar. 6, 1978.

Patent application 888,122. A Method of Lasing With 7-Hydroxy-Coumarin-8–Methyleneiminobisacetic Acid and Metal Complexes Thereof. Filed Mar. 20, 1978.

Patent application 903,464. Coal Liquefaction. Filed May 8, 1978.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

Patent application 916,654. Supercritical Fuel Injection System. Filed June 19, 1978.

Patent application 918,534. Apparatus for Measuring Semiconductor Device Resistance. Filed June 23, 1978.

Patent application 928,133. Method of Fabricating a Photovoltaic of a Substantially Transparent Construction. Filed July 26, 1978.

Patent application 928,137. A Signal Attenuator. Filed July 26, 1978.

Patent application 929,084. Method of Cold Welding Using Ion Beam Technology. Filed July 28, 1978.

Patent application 929,086. Structural Wood Panels With Improved Fire Resistance. Filed July 28, 1978.

Patent application 931,217. Redundant Motor Drive System. Filed Aug. 4, 1978.

Patent 4,085,004. Control for Nuclear Thermionic Power Source. Filed Nov. 21, 1975. Patented Apr. 18, 1978. Not available NTIS.

Patent 4,088,291. Rotary Leveling Base Platform. Filed Nov. 2, 1976. Patented May 9, 1978. Not available NTIS.

Patent 4,088,951. Microcomputerized Electric Field Meter Diagnostic and Calibration System. Filed Mar. 24, 1977. Patented May 9, 1978. Not available NTIS.

Patent 4,088,999. RF Beam Center Location Method and Apparatus for Power Transmission System. Filed May 21, 1976. Patented Mar. 9, 1978. Not available NTIS.

Patent application 928,128. Driver for Solar Cell I-V Characteristic Plots. Filed July 26, 1978.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, Washington, D.C. 20314

Patent 3,986,149. High Power Reciprocal Co-Planar Waveguide Phase Shifter. Filed Aug. 29, 1975. Patented Oct. 12, 1976.

Patent 3,986,688. Variable Effectiveness Stabilizing/Controlling Surface. Filed June 16, 1975. Patented Oct. 19, 1976.

Patent 3,987,003. Thermally Stable Dioxo and Dithio-Benzisoquinoline Compositions and Process of Synthesizing Same. Filed June 6, 1975. Patented Oct. 19, 1976.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patent
Washington, D.C. 20545

Patent 3,949,596. Leak Test Fixture and Method for Using Same. Filed Dec. 11, 1974. Patented Apr. 13, 1976 .

Patent 3,950,216. Falling Film Evaporator. Filed Jan. 18, 1974. Patented Apr. 13, 1976.

Patent 3,951,074. Secondary Lift for Magnetically Levitated Vehicles. Filed Sept. 27, 1974. Patented Apr. 20, 1976.

Patent 3,951,082. Countercurrent Flow Afterburner. Filed Apr. 22, 1975. Patented Apr. 20, 1976.

Patent 3,951,327. Ceramic to Metal Seal. Filed Jan. 28, 1975. Patented Apr. 20, 1976.

Patent 3,952,263. Fission Fragment Excited Laser System. Filed Oct. 4, 1974. Patented Apr. 20, 1976.

Patent 3,953,285. Nickel-Chromium-Silicon Brazing Filler Metal. Filed Apr. 25, 1973. Patented Apr. 27, 1976.

Patent 3.953,355. Preparation of Uranium Nitride. Filed May 29, 1974. Patented Apr. 27, 1976.

Patent 3,954.321. Miniature Electrical Connector. Filed Aug. 13, 1975. Patented May 4, 1976.

Patent 3.955,150. Active-R Filter. Filed Jan. 15, 1975. Patented May 4, 1976.

Patent 3,955,505. Detonating Apparatus. Filed May 31, 1950. Patented May 11, 1976.

Patent 3,955,509. Fuel-Air Munition and Device. Filed Mar. 21, 1969. Patented May 11, 1976.

Patent 3,955,755. Closed Continuous-Flow Centrifuge Rotor. Filed Apr. 25, 1975. Patented May 11, 1976.

Patent 3,956,039. High Explosive Compound. Filed Jan. 13, 1956. Patented May 11, 1976.

Patent 3,957,197. Centrifuge Apparatus. Filed Apr. 25, 1975. Patented May 18, 1976.

Patent 3,957,460. Oxidation of Coal—Water Slurry Feed to Hycrogasifier. Filed Sept. 9, 1975. Patented May 18, 1976.

Patent 3,957,496. Molybdenum Sealing Glass-Ceramic Composition. Filed Sept. 23, 1975. Patented May 18, 1976.

Patent 3,957,532. Method of Preparing an Electrode Material of Lithium—Aluminum Alloy. Filed June 20, 1974. Patented May 18, 1976.

Patent 3,960,083. Igniter Containing Titanium Hydride and Potassium Perchlorate. Filed Mar. 6, 1975. Patented June 1, 1976.

Patent 3,961,016. Method of Removing Carbon Monoxide From Gases. Filed Apr. 26, 1974. Patented June 1, 1976.

Patent 3,963,598. Flash Hydrogenation of Coal. Filed Oct. 15, 1974. Patented June 15, 1976.

Patent 3,963,626. Fire Extinguishant for Fissionable Material. Filed Mar. 22. 1974. Patented June 15, 1976.

Patent 3,963,826. Low Temperature, Low Pressure Hydrogen Gettering. Filed Mar. 21, 1975. Patented June 15, 1976.

Patent 3,963,994. Slit Injection Device. Filed Jan. 15, 1975. Patented June 15, 1976.

Patent 3,964,792. Explosive Fluid Transmitted Shock Method for Mining Deeply Buried Coal. Filed Jan. 28, 1975. Patented June 22, 1976.

Patent 3,964,014. Electromarking Solution. Filed Aug. 16, 1974. Patented June 22, 1976.

Patent 3,965,351. Differential Auger Spectrometry. Filed Oct. 30, 1974. Patented June 22, 1976.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent 3,925,648. Apparatus for the Generation of a High Capacity Chirp-Z Transform. Filed July 11, 1974. Patented Dec. 9, 1975.

Patent 3,986,681. Cylindrical Manifold for EGD Channels of a Static Discharge System. Filed Sept. 15, 1975. Patented Oct. 19, 1976.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, Washington, D.C. 20314

Patent 3,993,269. Toroidal Tail Structure for Tethered Aeroform Balloon. Filed Dec. 18, 1975. Patented Nov. 23, 1976.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patent
Washington, D.C. 20545

Patent 3,953,288. Gas Venting. Filed Mar. 24, 1970. Patented Apr. 27, 1976.

Patent 3,952,204. Film Holder for Radiographing Tubing. Filed Jan. 14, 1975. Patented Apr. 20, 1976.

Patent 3,953,922. Method of Eliminating the Training Effect in Superconducting Coils by Post-Wind Preload. Filed Feb. 24, 1975. Patented May 4, 1976.

Patent 3,955,757. Ultracentrifuge for Separating Fluid Mixtures. Filed Sept. 28, 1960. Patented May 11, 1976.

Patent 3,955,943. Diffusion Method of Separating Gaseous Mixtures. Filed June 16, 1948. Patented May 11, 1976.

Patent 3,958,096. Welding Arc Gap Ionization Device. Filed Dec. 23, 1974. Patented May 18, 1976.

Patent 3,959,172. Process for Encapsulating Radionuclides. Filed Sept. 26, 1973. Patented May 25, 1976.

Patent 3,961,197. X-Ray Generator. Filed Aug. 21, 1974. Patented June 1, 1976.

Patent 3,961,917. Method of Independently Operating a Group of Stages Within a Diffusion Cascade. Filed July 13, 1949. Patented June 8, 1976.

Patent 3,962,082. Liquid Metal Cold Trap. Filed Mar. 28, 1975. Patented June 8, 1976.

Patent 3,963,921. Method for Producing Uranium Atomic Beam Source. Filed Apr. 16, 1974. Patented June 15, 1976.

Patent 3,964,667. Diffusion Bonding. Filed Jan. 19, 1966. Patented June 22, 1976.

Patent 3,965,250. Separation of Sulfur Isotopes. Filed July 3, 1974. Patented June 22, 1976.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts. NW.
Washington, D.C. 20240

Patent 3,992,153. Dosimeter for Oxides of Nitrogen. Filed May 20, 1976. Patented Nov. 16, 1976.

Patent 3,992,327. Catalysts and Adsorbents Having High Surface Area to Weight. Filed Nov. 11, 1974. Patented Nov. 16, 1976.

Patent 3,993,517. Thin Cell Electromembrane Separator. Filed Oct. 31, 1975. Patented Nov. 23, 1976.

Patent 3,993,838. Wax or Plastic Coated Phosphor Grains. Filed Mar. 3, 1975. Patented Nov. 23, 1976.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent 3,976,274. Permanent Attachment for Suction Cups. Filed May 27, 1975. Patented Aug. 24, 1976.

Patent 3,984,673. External Lighting System for Hypobaric and Hyperbaric Chambers. Filed June 30, 1975. Patented Oct. 5, 1976.

Patent 3,989,475. Composite Superconductors. Filed May 30, 1975. Patented Nov. 2, 1976.

TENNESSEE VALLEY AUTHORITY

Division of Law, Muscle Shoals, Ala. 35660

Patent 3,985,538. Pipe Reactor-Continuous Ammoniator Process for Production of Granular Phosphates. Filed May 16, 1975. Patented Oct. 12, 1976.

Patent 3,991,225. Method for Applying Coatings to Solid Particles. Filed Dec. 12, 1974. Patented Nov. 9, 1976.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

Patent 3,750,035. Frequency Discriminator and Phase Detector Circuit. Patented July 31, 1973.

Patent 3,990,860. High Temperature Oxidation Resistant Cermet Compositions. Patented Nov. 9, 1976.

Patent 3,990,987. Smoke Generator. Patented Nov. 9, 1976.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, Washington, D.C. 20314

Patent 4,000,697. Mechanical Retention System for Use With Caseless Ammunition. Filed Aug. 10, 1972. Patented Jan. 4, 1977.

Patent 4,000,776. Heat Pipe System. Filed Dec. 3, 1974. Patented Jan. 4, 1977.

Patent 4,000,855. Bellcrank Assembly, Nozzle Actuator. Filed Apr. 14, 1975. Patented Jan. 4, 1977.

Patent 4,001,135. Fluorine Generating Solid Formulation for Use in Chemical Lasers. Filed July 1, 1975. Patented Jan. 4, 1977.

Patent 4,001,136. Fluorine Generating Formulation for Use in Chemical Lasers. Filed July 1, 1975. Patented Jan. 4, 1977.

Patent 4,001,821. High Power Microwave Radar Pulse Shaping System. Filed June 16, 1975. Patented Jan. 4, 1977.

Patent 4,003,658. Triangular Interferometric Light-Source Tracker. Filed July 26, 1974. Patented Jan. 18, 1977.

Patent 4,004,465. Optical Window Protective Shutter Mechanism. Filed Jan. 20, 1976. Patented Jan. 25, 1977.

U.S. DEPARTMENT OF AGRICULTURE

Research Agreements and Patent Branch General Service
Division, Federal Bldg., Agricultural Research Service
Hyattsville, Md. 20782

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U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patent
Washington, D.C. 20545

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Patent 3,958,079. Real Time, TV Based, Point-Image Quantizer and Sorter. Filed Apr. 25, 1975. Patented May 18, 1976.

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U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patent
Washington, D.C. 20545

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch
Westwood Building, Bethesda, Md. 20014

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U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts. NW.
Washington, D.C. 20240

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Patent 3,991,419. Receiver System for Locating Transmitters. Filed Jan. 26, 1976. Patented Nov. 9, 1976.

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U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, Washington, D.C. 20314

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U.S. DEPARTMENT OF AGRICULTURE

Research Agreements and Patent Branch General Service
Division, Federal Bldg., Agricultural Research Service
Hyattsville, Md. 20782

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U.S. DEPARTMENT OF TRANSPORTATION

Patent Counsel, 400 7th St. SW, Washington, D.C. 20590

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U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patent
Washington, D.C. 20545

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U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

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Patent 3,913,060. Thermooptic Sonar System. Filed Mar. 4, 1974. Patented Oct. 14, 1975.

Patent 3,915,219. Metal Forming Apparatus for Producing Metal Ribbon Fibers. Filed May 1, 1974. Patented Oct. 28, 1975.

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U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, Washington, D.C. 20314

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U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

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U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts. NW.
Washington, D.C. 20240

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Patent 3,993,455. Removal of Mineral Matter Including Pyrite From Coal. Filed June 25, 1973. Patented Nov. 23, 1976.

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U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents. Office of Naval Research
Code 302, Arlington, Va. 22217

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Patent 3,944,117. Rollonet Assembly. Filed Apr. 18, 1975. Patented Mar. 16, 1976.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

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Patent 3,995,522. Precision Alinement Apparatus for Cutting a Workpiece. Patented Dec. 7, 1976.

Patent 3,995,621. Liquid Cooled Brassiere and Method of Diagnosing Malignant Tumors Therewith. Patented Dec. 7, 1976.

Patent 3,995,960. Method and Apparatus for Background Signal Reduction in Opto-Acoustic Absorption Measurement. Patented Dec. 7, 1976.

Patent 3,996,067. Silicon Nitride Coated, Plastic Covered Solar Cell. Patented Dec. 7, 1976.

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Patent 3,996,532. Phase Modulating With Odd and Even Finite Power Series of a Modulating Signal. Patented Dec. 7, 1976.

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Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 18, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	12-19-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-16-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	5-1-78
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-29-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-19-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-16-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-17-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-22-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-1-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	1-17-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-3-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-16-78
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-11-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission: Fluid Handling and Control; Lubrication.	10-6-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—G. M. FORLENZA, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors: Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-2-77

Expiration of patents: The patents within the range of numbers indicated below expire during November 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,007,169 to 3,001,168, inclusive
Plant Patents	Numbers 2,101 to 2,107, inclusive

REISSUES

DECEMBER 19, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,861

STITCH PRESSER FOR KNITTING MACHINE

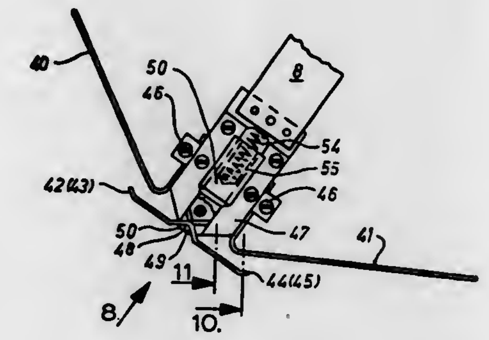
Robert Dietschy, and Georges Hexel, both of Couvet, Switzerland, assignors to Edouard Dubied et Cie, Neuchatel, Switzerland

Original No. 4,027,504, dated Jun. 7, 1977, Ser. No. 704,171, Jul. 12, 1976. Application for reissue Sep. 12, 1977, Ser. No. 832,495

Claims priority, application Switzerland, Nov. 25, 1975, 15251/75

Int. Cl.^{2} D04B *7/04*

U.S. Cl. 66—64 10 Claims



1. An improved stitch presser for a knitting machine equipped with the following:
- at least two needle beds arranged in an inverted V-shape;
- needles capable of intersecting during their upward movement;
- a carriage movable above the needle beds;
- a system for control of the needles during their displacement in alternate directions;
- a stitch presser which acts between the two needle beds on the stitches held by the needles; and
- means for alternate control of the stitch presser in a position adequate for the movement of said stitch presser along a row of needles and in another position adequate for the movement in the opposite direction;
- wherein the stitch presser comprises a slide thread for pressing the knitwear and a supplementary means for pressing the stitches against the needle beds, the field of action of the supplementary means being at least partially superimposed over the field of action of the slide thread and whose field of action starts ahead of the first point of crossing of the needles, seen in the moving direction of the carriage.

3. The stitch presser of claim 1 wherein the supplementary means is a nozzle through which a fluid is ejected to press the stitches against the needle beds.

4. The stitch presser of claim 3 wherein the nozzle ejects the fluid in a direction which is not perpendicular to the movement of the carriage.

Re. 29,862

IGNITION SYSTEM DEPENDENT UPON ENGINE SPEED

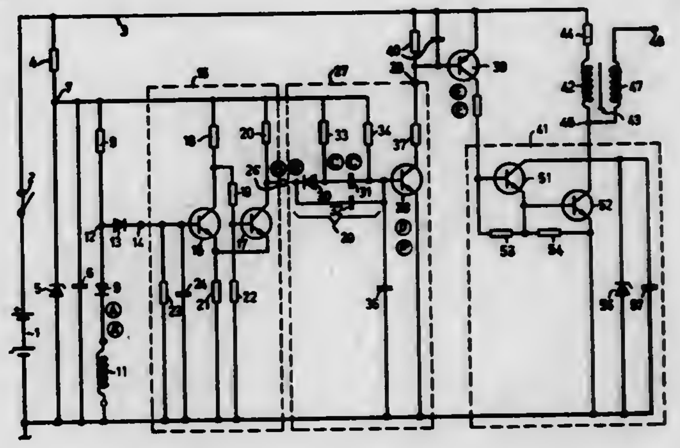
Herman Roozenbeek, Schwieberdingen; Bernd Bodig, Leinfelden; Klaus Meyer, Daverden, and Adolf Fritz, Suttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Original No. 3,881,458, dated May 6, 1975, Ser. No. 396,517, Sep. 12, 1973. Application for reissue May 5, 1977, Ser. No. 793,953

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1972, 2244781

Int. Cl.^{2} F02P *1/00, 5/06*

U.S. Cl. 123—148 E 28 Claims

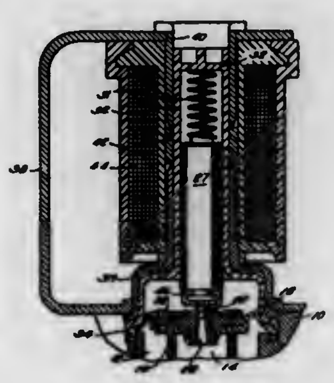


1. In the ignition system of an internal combustion engine comprised of at least one electrical igniting element operative for producing an ignition spark once per ignition cycle, in combination, an ignition transformer having a secondary winding connected across said igniting element and having a primary winding; means for establishing a flow of current through said primary winding and including electronic switch means in the current path of said primary winding operative for controlling the flow of current through said primary winding; crankshaft-synchronized triggering means operative for generating a train of crankshaft-synchronized triggering pulses; monostable control means connected to said electronic switch means and having a trigger input connected to said triggering means for receipt of said triggering pulses, and operative when triggered into the unstable state thereof for rendering and maintaining said switch means non-conductive for the duration of said unstable state, whereby to interrupt the flow of current through said primary winding and induce across said secondary winding a voltage surge causing said igniting element of produce an ignition spark, and operative upon reverting to the stable state thereof for rendering and maintaining said switch means conductive for the duration of said stable state, whereby to establish a build-up of current flow in said primary winding in preparation for the next interruption of current flow, said monostable control means including timing means operative with increasing engine speed within a predetermined range of engine speeds for automatically and progressively [increasing] *decreasing* the ratio of the duration of said unstable state to the duration of said ignition cycle, and wherein said timing means comprises energy-storing means, means for effecting a first change of stored energy of said energy-storing means during the intervals between said triggering pulses and thereby for time periods dependent upon engine speed, and means operative upon generation of a triggering pulse by said triggering means for causing said monostable control means to undergo a transition to said unstable state and initiating an opposite second change of stored energy of

said energy-storing means and maintaining said monostable control means in said unstable state [until the completion of] *during* said second change of stored energy.

Re. 29,863
ANTI-CONTAMINANT DIAPHRAGM VALVE

James A. Kozel, Elmhurst, and Charles A. De Lew, Des Plaines, both of Ill., assignors to The Singer Company, New York, N.Y.
Original No. 3,872,878, dated Mar. 25, 1975, Ser. No. 425,266, Dec. 17, 1973. Application for reissue Oct. 26, 1976, Ser. No. 735,448
Int. Cl.² F16K *31/385*
U.S. Cl. 137—242 **5 Claims**

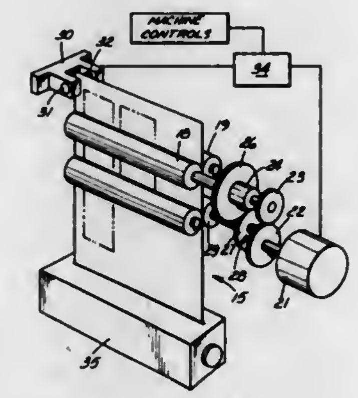


1. A solenoid valve comprising
a valve body having an annular inlet and an outlet centrally located relative to the inlet,
a diaphragm mounted in the body overlying both the inlet and the outlet,
a valve seat between the inlet and the outlet[and] ,
said diaphragm having a resilient face adapted to close on said seat,
a rigid insert molded in the diaphragm,
a central valve hole through the diaphragm and insert,
a solenoid assembly including a watertight plunger guide and a coil surrounding the guide,
 the guide cooperating with the diaphragm to define a chamber the contents of which may flow through the vent hole when the hole is open,
a plunger slidable in the guide and having a valve portion normally closing the vent hole but movable upon energization of said coil to open the vent hole,
a bleed hole in said insert outside the portion overlying said valve seat,
a groove in said resilient face communicating with said bleed hole whereby fluid may flow from the inlet through the groove into the bleed hole and then into said chamber,
the width of said groove being less than the diameter of the bleed hole whereby entrained particles which pass through the groove will pass through the bleed hole while larger particles are rejected or lodge in the groove.

5. A solenoid valve comprising
a valve body having an annular inlet and an outlet centrally located relative to the inlet,
a valve seat between the inlet and the outlet,
a diaphragm mounted in the body overlying both the inlet and the outlet, said diaphragm having a substantially inflexible central portion of greater diameter than the valve seat surrounded by an annular flexible portion, the central portion having resilient face adapted to close on said seat,
a cental vent hole through the diaphragm,
a solenoid assembly including a watertight plunger guide and a coil surrounding the guide,
 the guide cooperating with the diaphragm to define a chamber the contents of which may flow through the vent hole when the hole is open,
a plunger slidable in the guide and having a valve portion normally closing the vent hole but movable upon energization of said coil to open the vent hole,
a bleed hole in said central portion outside the portion overlying said valve seat,
a groove in said resilient face communicating with said bleed hole whereby fluid may flow from the inlet through the groove into the bleed hole and then into said chamber,
the width of said groove being less than the diameter of the bleed hole whereby entrained particles which pass through the groove will pass through the bleed hole while larger particles are rejected or lodge in the groove.

Re. 29,864
METHOD OF AND APPARATUS FOR MULTI-GALLEY COMPOSITION

Francis S. Szabo, Morristown, N.J., assignor to Addressograph-Multigraph Corporation, Los Angeles, Calif.
Original No. 3,905,699, dated Sep. 16, 1975, Ser. No. 482,849, Jun. 25, 1974. Application for reissue Mar. 17, 1976, Ser. No. 667,850
Int. Cl.² G03B *27/52*
U.S. Cl. 355—41 **9 Claims**



1. A method of multi-column composition, comprising the steps of:
providing a means for detecting a reference feature of a paper sheet advancing along a path and for producing a control signal from such reference feature when detected;
providing a power-driven paper feed means for advancing a photosensitive sheet along said path;
advancing a sheet along said path until the reference feature thereof is detected by said means, and a control signal is generated;
applying said signal to stop said power-driven paper feed means;
composing characters to produce at least one character in a first column position;
thereafter reversing said paper feed to withdraw the paper to a position retracted from said means for detecting the desired reference feature; and
re-advancing said sheet until another control signal is produced by said means for detecting the reference feature, and,
finally, composing a second at least one character on the same page in a lateral position to the first character and in a predetermined relationship thereto by a relationship to said reference feature;
whereby a multiple column galley is obtained in registration from a common reference.

Re. 29,865
CAST CEMENTED REFRACTORY METAL CARBIDES HAVING IMPROVED SINTERED DENSITY

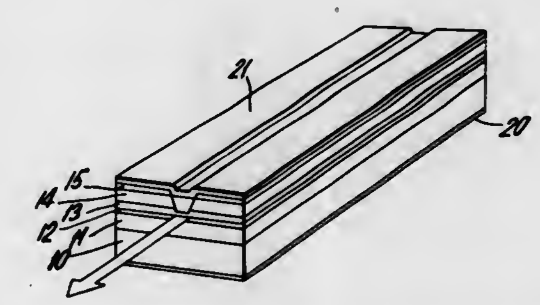
James Q. Steigelman, Athens; Joseph J. Cleveland, Dushore; Richard N. Kleiner, Towanda, all of Pa., and Frank Rymas, St. Clair Shores, Mich., assignors to GTE Sylvania Incorporated, Stamford, Conn.
Original No. 4,003,716, dated Jan. 18, 1977, Ser. No. 488,727, Jul. 15, 1974. Application for reissue Dec. 14, 1977, Ser. No. 860,395
Int. Cl.² B22F *3/00;* **C22C** *29/00*
U.S. Cl. 75—240 **13 Claims**

1. A cemented refractory metal carbide article consisting essentially of from about 75 to 97 weight % of discrete particles of at least one refractory metal carbide distributed in a matrix of from about 3 to about 25 weight % of a lower melting binder metal, said article having a predetermined configuration including at least a portion having a thickness of from about 0.004 inch to about 0.08 inch defined by at least 2 uneroded formed surfaces, characterized in that said article exhibits A-type, B-type and C-type porosities in accordance with ASTM specification #B-276-54 of up to and including A_3, B_3 and C_3.

8. A process for producing a flexible self-supporting article containing discrete particles of a refractory metal carbide, and a lower melting binder metal suspended in an organic portion, the process comprising:
 (a) forming a slurry consisting essentially of from about 60 to 94 weight % of an inorganic portion consisting essentially of the carbide particles and particles of the lower melting binder metal, from about 2 to about 10 weight % of a solid organic portion consisting essentially of at least one plasticizer, at least one thermoplastic binder resin and at least one deflocculant, and from about 4 to about 30 weight percent of an organic solvent for said solid organic portion, (b) casting said slurry in the form of a relatively thin sheet, and (c) evaporating said solvent from said mixture to thereby form a flexible self-supporting article, characterized in that said organic portion upon heating to a temperature up to about 1000° is substantially completely removed from the article.

Re. 29,866
DOUBLE HETEROSTRUCTURE STRIPE GEOMETRY SEMICONDUCTOR LASER DEVICE

Hiroo Yonezu, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan
Original No. 3,993,964, dated Nov. 23, 1976, Ser. No. 605,550, Aug. 18, 1975. Division of Ser. No. 492,262, Jul. 26, 1974, which is a continuation of Ser. No. 413,923, Nov. 8, 1973, abandoned, which is a continuation of Ser. No. 267,068, Jun. 28, 1972, abandoned. Application for reissue Feb. 14, 1978, Ser. No. 878,187
Claims priority, application Japan, Jul. 30, 1971, 46-57665
Int. Cl.² H01S *3/19*
U.S. Cl. 331—94.5 H **1 Claim**



1. A GaAs-$Al_xGa_{1-x}As$ double heterostructure injection laser comprising an N-type GaAs substrate, a first layer made of N-type $Al_xGa_{1-x}As$ epitaxially grown on one major surface of said substrate, a second layer made of GaAs epitaxially grown on said first layer, a third layer made of P-type $Al_2Ga_{1-x}As$ epitaxially grown on said second layer, a fourth layer made of N-type GaAs epitaxially grown on said third layer, a silicon dioxide film formed on said fourth layer and having a stripe-shaped opening formed therein, and a thin elongated P-type region formed on the surface of said [forth] *fourth* layer through the selective diffusion of P-type impurities through said stripe-shaped opening and into said fourth layer and extending past the junction between said third and fourth layers and into a portion of said third layer, a first electrode covering said silicon dioxide film and said [elongaged] *elongated* region, and a second electrode in ohmic contact with the other major surface of said substrate; wherein excitation current supplied through said first electrode is allowed to flow substantially only through the deepest portion of said thin elongated p-type region as the result of a reverse bias developed between said third and fourth layers.

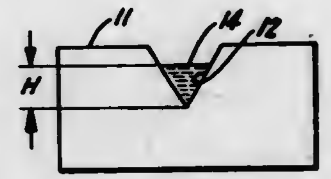
Re. 29,867
PRESSURE SENSITIVE DIAPHRAGMS WITH STRESS NULL ZONE ORIENTED BRIDGE PATTERNS

Cecil K. Stedman, New Denver, Canada, assignor to Gould, Incorporated, Rolling Meadows, Ill.
Reissued No. Re. 25,924, dated Dec. 7, 1965, Ser. No. 420,470, Oct. 22, 1964.
Original No. 3,071,745, dated Jan. 1, 1963, Ser. No. 134,070, Aug. 25, 1961. Application for reissue Mar. 21, 1977, Ser. No. 779,893
Int. Cl.² G01L *1/22*
U.S. Cl. 338—2 **51 Claims**

1. A pressure responsive device comprising [an edge restrained diaphragm having an] *a diaphragm and means restraining the edge of said diaphragm, said diaphragm having an electrically non-conductive surface to which is bonded an* integral bridge pattern with a plurality of active segments interconnected [at] *by* juncture areas in turn having *connected thereto* relatively low resistance conductor segments [extending beyond the restrained edge of the diaphragm]; said juncture areas lying substantially in the radial stress null zone of the diaphragm, with one active segment connected to each juncture area disposed near-center from said radial stress null zone *of said diaphragm* and the other active segment connected thereto disposed near-edge from said radial *stress* null zone *of near diaphragm.*

Re. 29,868
FLUID FLOW MEASURING SYSTEM AND METHOD

James G. Schontzler; Wendall C. Gates, both of Santa Cruz, and Victor L. Dagragnano, Redwood City, all of Calif., assignors to Manning Environmental Corporation, Santa Cruz, Calif.
Original No. 3,866,028, dated Feb. 11, 1975, Ser. No. 383,269, Jul. 27, 1973. Application for reissue Dec. 15, 1975, Ser. No. 640,411
Int. Cl.² G01F *1/00;* **G06G** *9/00*
U.S. Cl. 364—510 **21 Claims**



1. A total flow measuring system for liquid flow through a channel having a predetermined cross section shape comprising, means for detecting a fluid surface level in the channel, *first* means *coupled to said means for detecting* for providing a signal related to fluid surface level relative to a predetermined reference level *second means coupled to said means for detecting for visually indicating existing surface height,* computer means for receiving said signal related to surface level and converting said signal to a digital signal, and program means for receiving said digital signal and providing output indicative of total flow volume.

PLANT PATENTS

GRANTED DECEMBER 19, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,348

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gessellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Isselburg, Fed. Rep. of Germany
Filed Feb. 22, 1978, Ser. No. 880,052
Int. Cl.^{2} A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet known by the cultivar name Louisiana and characterized by the combined features of light pink, single, non-dropping flowers having frilled edges and carried on upright and relatively short stems, with the flowers appearing just above the rosette of dark green leaves; and by its compact habit and excellent growth characteristics.

4,349

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gessellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Isselburg, Fed. Rep. of Germany
Filed Feb. 22, 1978, Ser. No. 880,053
Int. Cl.^{2} A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet known by the varietal name Kansas and characterized by the combined features of strong upright flower stems each of which carries 4–5 flowers; large, star-shaped, non-dropping flowers pure white in color, with red hue in center; continuous flowering, and fast growing and compact growth habit.

4,350

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gessellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Issellburg, Fed. Rep. of Germany
Filed Feb. 22, 1978, Ser. No. 880,054
Int. Cl.^{2} A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet known by the cultivar name Maine and characterized by the combined characteristics of large, single star-shaped flowers white in color, with violet-blue centers; strong, upright flower stems each of which carries 4–5 flowers, and small, relatively light green foliage having serrated edges, with the flowers appearing just above the foliage crown.

4,351

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gessellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Isselburg, Fed. Rep. of Germany
Filed Feb. 22, 1978, Ser. No. 880,211
Int. Cl.^{2} A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet known by the cultivar name Montana and characterized by the combined features of white flowers, having blue centers, the flowers being carried on strong, upright flower stems; fast growing and compact growing habit, with initial flowering being on 5–7 stems 7–8 weeks after potting, and oblong leaves having smooth edges and hairy and velvety texture.

4,352

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gessellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Isselburg, Fed. Rep. of Germany
Filed Feb. 22, 1978, Ser. No. 880,328
Int. Cl.^{2} A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet known by the cultivar name Kentucky and having the combined characteristics of strong and upright stems each carrying up to 10 flowers; non-dropping, blue-violet and durable flowers regular in shape; dark green leaves, and sturdy growth habit.

4,353

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gessellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Isselburg, Fed. Rep. of Germany
Filed Feb. 22, 1978, Ser. No. 880,329
Int. Cl.^{2} A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet known by the cultivar name Wisconsin and characterized by the combined features of intensive blue-violet flower color, with the flowers being long lasting and non-dropping; uniform flowering; vigorous and fast growing growth habit, producing up to 11 or more flower stems, each carrying four to six flowers, thereby providing a full bouquet when the plant is in full bloom, and soft and velvety leaves, medium to light green in color.

PATENTS

GRANTED DEC. 19, 1978

ERRATA

For CLASS	See PATENT NO.
405-070	4,129,989
405-299	4,129,990
405-150	4,129,991
405-164	4,129,992
297-046	4,130,316
355-026	4,130,354
422-031	4,130,393
422-168	4,130,397
528-092	4,130,511
521-031	4,130,512
521-107	4,130,513
528-326	4,130,521
528-125	4,130,543
528-215	4,130,544
528-073	4,130,546
528-197	4,130,548
528-093	4,130,549
528-481	4,130,551
528-285	4,130,552
544-302	4,130,560
546-204	4,130,561
562-448	4,130,582
568-645	4,130,591
568-604	4,130,592
528-305	4,130,719

PATENTS

GRANTED DECEMBER 19, 1978

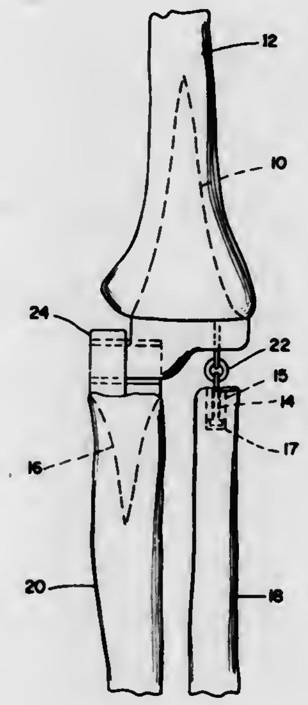
NOTE—A cross reference listing of applications published under the second Trial Voluntary Protest Program is located in the back of this Issue. These entries will be in numerical order by document publication number.

GENERAL AND MECHANICAL

4,129,902
ELBOW PROSTHESIS

Stanley D. Harmon, 10511 Royal Oak Rd., Oakland, Calif. 94605

Filed Jul. 11, 1977, Ser. No. 814,362
Int. Cl.^{2} A61F *1/24*
U.S. Cl. 3—1.91 **4 Claims**

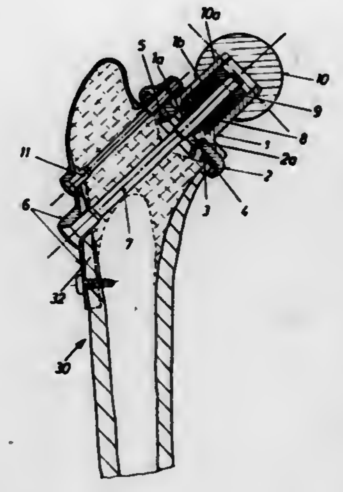


1. An elbow prosthesis comprising:
(a) a humeral implant having a radial and an ulnar segment at one end contiguous to each other, said ulnar segment having a shaft extending medially;
(b) a radial implant;
(c) an ulnar implant having a bearing surface which interlocks with said shaft of said humeral implant to form a shaft and bearing joint; and
(d) a three-link chain which connects said radial segment of said humeral implant with said radial implant.

4,129,903
HINGE PROSTHETIC JOINT WITH BALL HEAD

Arnold H. Huggler, Steigstrasse 181a, Maienfeld, Switzerland
Filed May 31, 1977, Ser. No. 802,144
Claims priority, application Switzerland, Jun. 3, 1976, 7065/76
Int. Cl.^{2} A61F *1/24*
U.S. Cl. 3—1.913 **13 Claims**

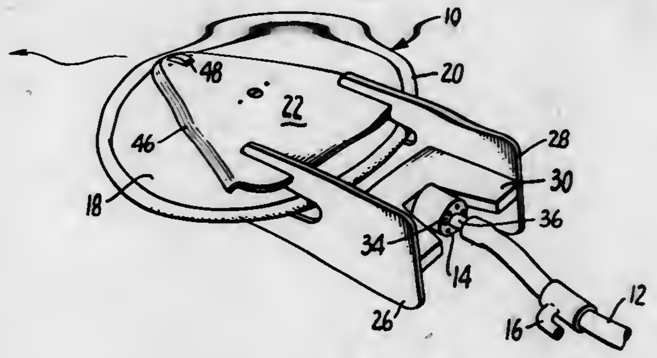
1. A hinge prosthetic joint for a bone, especially a proximal femur-endoprosthetic joint, comprising:
a ball;
a tension device for anchoring the ball at an end of the bone where the prosthetic joint is implanted, said tension device comprising a tension rod insertable through the bone, a pressure disc which can be placed upon the bone at the side of the ball, and a counter plate which can be placed at the opposite side of the bone;
a substantially sleeve-shaped hollow pin for mounting the ball at the pressure disc, said tension rod extending into the hollow interior of said sleeve-shaped pin; and
a nut member for threadably connecting said tension rod within said sleeve-shaped pin.



4,129,904
SWIMMING POOL CLEANER

Andrew L. Pansini, 200 Golden Gate Ave., Belvedere, Calif. 94920

Filed Nov. 14, 1977, Ser. No. 851,441
Int. Cl.^{2} B08B *3/02, 9/08*
U.S. Cl. 4—172 **8 Claims**



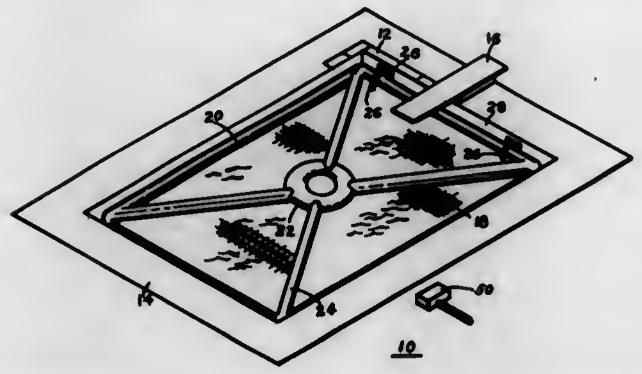
1. In a swimming pool cleaner, a carrier and means associated therewith operable to drive said carrier in a submerged condition above the bottom of a pool, said carrier comprising a wheel member, a wheel carrier and wheel fender member disposed in closely adjacent and overlying relation to said wheel member inwardly of the periphery thereof, said carrier and fender member having a leading end and a trailing end, said wheel member being attached to said carrier and fender member for substantially free rotational movement relative thereto, a guidance roller element carried at the leading end of said carrier and fender member, and guidance fin means attached to the trailing end of said carrier and fender member.

4,129,905
SWIMMING POOL RESCUE NET

Jerzy Niemirow, Riverside, N.J. 08075
Filed Jun. 30, 1977, Ser. No. 811,546
Int. Cl.^{2} E04H *3/19*
U.S. Cl. 4—172.13 **4 Claims**

1. Swimming pool rescue apparatus which is completely submerged in its inoperable position and comprising:
an inflatable bladder including an inflatable peripheral portion which mates the configuration of the pool walls and a substantially centrally disposed inflatable hub portion,

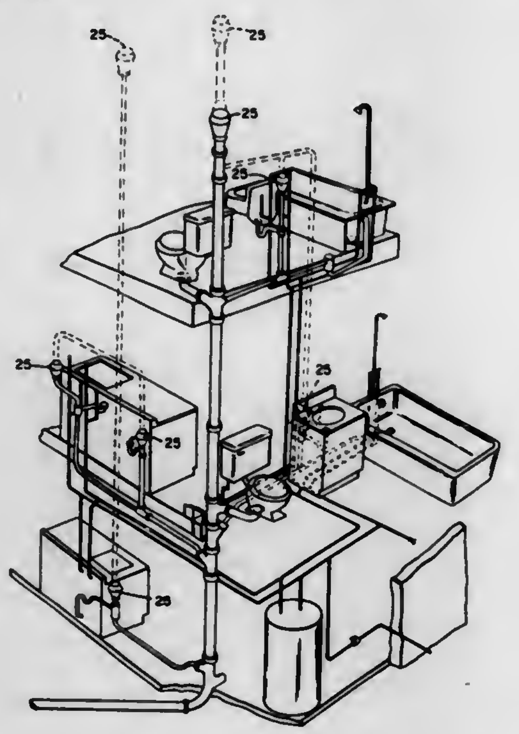
said peripheral and hub portions having a plurality of inflatable ribs communicating there between,
a netting generally coextensive with said peripheral portions and firmly secured to said bladder,
a supply means including a supply hose of approximately the same size and material of said ribs and connected to said peripheral portion for rapidly inflating said bladder to cause said bladder and netting to rise to water's surface in said pool in a few seconds, and to mate the configuration of said pool walls, and spaced vertical guide rods having curved top ends which are secured to said pool wall at said curved ends and spaced therefrom at a deep end of said pool to guide the vertical movement of said peripheral portions of said bladder between said guide rods.



4,129,906

NORMALLY CLOSED SEWAGE VENTING SYSTEM

Jack G. Ohringer, 1435 Dolores St., San Francisco, Calif. 94110
Filed Nov. 28, 1973, Ser. No. 419,559
Int. Cl.^{2} E03D *9/04*
U.S. Cl. 4—211 **4 Claims**

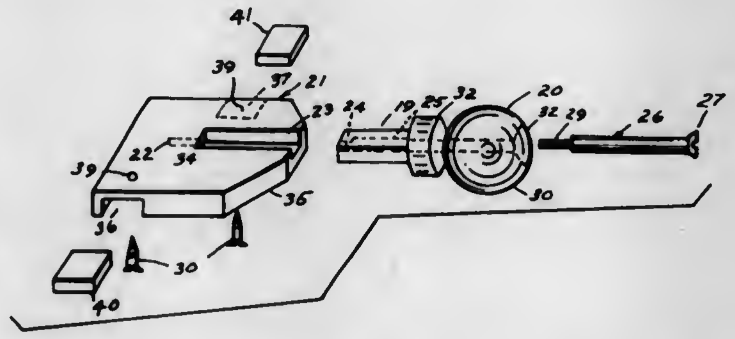


1. A normally closed sewage venting system for operation in a surrounding open environment having an atmosphere comprising:
(a) a closed environment;
(b) a sewer main;
(c) at least one plumbing fixture located in said closed environment, said closed environment being surrounded by said surrounding open environment and said atmosphere;
(d) a drain line, connecting means for operatively connecting said drain line between said plumbing fixture and said sewer main;
(e) a trap positioned within said drain line;
(f) a two way breather valve having first and second ends, first means for operatively connecting said first end of said breather valve to said drain line downstream of said trap and to said sewer main, said second end of said breather valve in communication with said atmosphere of said open surrounding environment;
(g) said sewer main and drain line for conducting and containing solids, liquids and gases; and
(h) said breather valve including breather means for permitting the escape of said gases to atmosphere when the pressure of said gases exceeds the pressure of said atmosphere by a first predetermined amount and permitting said atmosphere to enter said drain line and sewer main when the pressure of said atmosphere exceeds the pressure of said gases by a second predetermined amount, said first predetermined amount being greater than said second predetermined amount and said second predetermined amount being about zero.

4,129,907

TOILET SEAT HANDLE

Paul R. Vaughan, and Susan E. Vaughan, both of 4646 Budd Dr., Erie, Pa. 16506
Filed Jul. 25, 1977, Ser. No. 818,405
Int. Cl.^{2} A47L *13/10*
U.S. Cl. 4—251 **1 Claim**

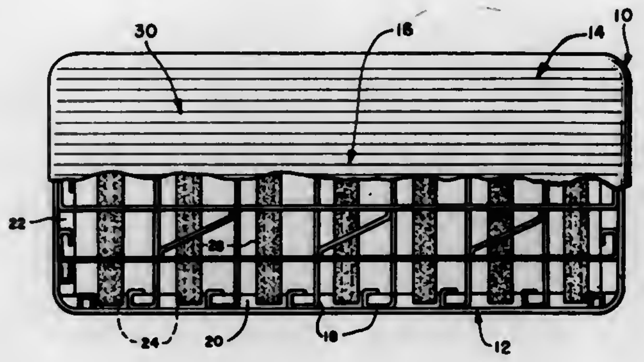


1. In combination, a water closet having a seat and a handle assembly attached to one side of said seat for lifting said seat,
said handle assembly comprising,
a mounting plate having two flat sides, two edges and two ends,
a rectangular groove in one said flat side and extending through one end and two spaced rectangular notches in the side of said plate opposite said groove,
said groove and said notches each extending approximately half-way through said mounting plate,
spaced countersunk holes in said mounting plate extending from the bottom of each said notch through said plate,
one end of each said hole terminating at said notches in a countersunk hole,
a flat-head screw in each said hole attaching said mounting plate to said seat,
a rectangular block fitted into each said notch,
an arm received in said groove between said mounting plate and said seat,
a counterbored hole in said arm,
said arm terminating at the end remote from said mounting plate in a cylindrical member,
a spherical member,
said spherical member having a bore therethrough,
one end of said bore in said spherical member being countersunk,
a pin extending through said bore in said spherical member, through said counterbored hole in said arm and having a threaded end engaging a threaded hole in said mounting plate,
said pin having a shoulder adjacent said threaded end engaging a shoulder on said arm holding said arm to said mounting plate in fixed position.

4,129,908

FOUNDATION UNIT WITH CUSHIONED CROSS RAILS

Robert F. Wagner, Lombard, Ill., assignor to Sealy, Inc., Chicago, Ill.
Filed Nov. 7, 1977, Ser. No. 849,170
Int. Cl.^{2} A47C *23/04*
U.S. Cl. 5—35 **16 Claims**

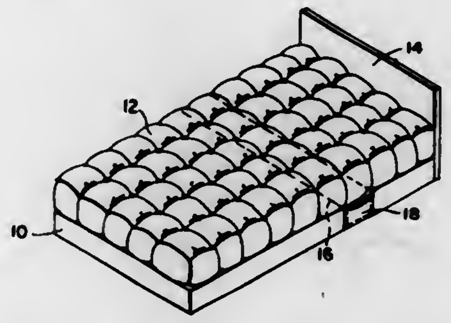


1. A foundation unit having an upper surface for supporting a mattress or the like comprising:
a substantially rectangular frame;
a resilient border region; and
a center region including a plurality of cross rails extending transversely of the unit, means for cushioning a plurality of said cross rails, said cushioning means overlying the upper surface of said cross rails, and
means for supporting said cross rails so that said cushioning means substantially immediately underlies said upper surface of the unit,
wherein the cushioning means has sufficient resiliency to allow the center region to be resiliently functional when subject to normal loads and the unit does not have any member overlying said cushioning means of sufficient rigidity and dimensions to substantially obstruct said functional resiliency of the center region.

4,129,909

BED STORAGE ARTICLE

Angela Riehl, 3420 Avenue J., Brooklyn, N.Y. 11210
Continuation-in-part of Ser. No. 687,704, May 19, 1976, abandoned. This application Sep. 14, 1977, Ser. No. 833,362
Int. Cl.^{2} A47C *11/00*
U.S. Cl. 5—317 R **3 Claims**

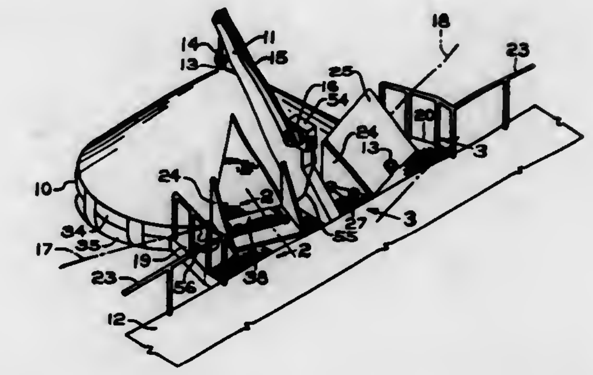


1. A bedding storage article for use with a mattress and a mattress supporting member of a bed, comprising an elongated rectangular fabric-like sheet, said sheet having a length at least as great as the width of said mattress, said sheet having a width less than the length of said mattress, said sheet including a pair of portions adjacent the ends thereof, said pair of portions extending outwardly and downwardly from a lowermost lateral surface of said mattress when said mattress is disposed juxtaposed resting on an equisized supporting member and when the remaining portion of said sheet is disposed residing on an uppermost lateral surface of said mattress supporting member, a first portion of each of said pair of portions being disposed having a U-shaped cross section, a second portion of each of said pair of portions contiguous with and extending adjacent to one free end of one leg of said U-shaped cross section, the free end of said second portion being disposed intermediate the legs of said U-shaped cross section, means to secure said first portion and said second portion of said each of said pair of portions adjacent the marginal edges thereof defining a pocket having said free end of said second portion forming an entranceway into an interior pocket, said pocket having an open mouth portion, said open mouth portion being disposed intermediate said remaining portion and said legs of said U-shaped cross-section, wherein said pair of portions and said remaining portion comprise a unitary structure.

4,129,910

LAUNCHING SYSTEM FOR INFLATABLE RAFT

David V. Edwards, Goring-by-Sea, Worthington, England; Harvey B. Lesh, Jr., N. Canton, and Ronald W. Phillips, II, Akron, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio
Continuation-in-part of Ser. No. 777,501, Mar. 14, 1977, abandoned. This application Sep. 8, 1977, Ser. No. 831,585
Int. Cl.^{2} B63B *23/00*
U.S. Cl. 9—42 **14 Claims**

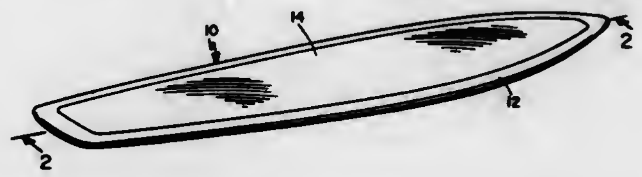


1. A launching system for a collapsible passenger escape conveyance supported on an elevated platform comprising an overhead supporting member, an apron on said conveyance, a releasable connecting means between said apron and said platform for stabilizing said conveyance during loading, a cable member connected to said conveyance and to said overhead supporting member for supporting said conveyance in a loading position and lowering said conveyance after loading, cable control means engageable with said cable member for lowering and braking said cable member and sequential release means operatively connected to said cable control means and to said connecting means between said apron and said platform, said sequential release means being inoperative to release the brake of said cable control means until said apron is disconnected from said platform to avoid tilting of said conveyance during lowering from the loading position.

4,129,911

SOFT DECK SURFBOARD

Michael D. McDonald, 960 Scott St., and Stanley A. Pleskunas, 3725 Pio Pico St., both of San Diego, Calif. 92106
Filed Feb. 22, 1977, Ser. No. 770,438
Int. Cl.^{2} A63C *5/00, 9/00, 11/00, 15/00*
U.S. Cl. 9—310 E **10 Claims**



1. A soft deck surfboard comprising:
(a) a lower body including:
(i) a core having a general outward surfboard configuration defining an upper surface, a bottom surface and a pair of side rails; and

(ii) a smooth, hardened impervious shell covering at least the bottom surface and rails of said core to provide said surfboard with generally rigid control surfaces and low-drag characteristics in its water-contacting surfaces; and

(b) an upper body comprising a yielding, resilient foam pad secured to the top of said lower body and covering a substantial portion of same to define a soft, tractable deck to enhance the comfort and stability of a surfer using said surfboard in both the kneeling and standing mode; and

(c) the upper surface of said lower body being relieved to define a longitudinally extended cavity, and said upper body fitting within said cavity to define a deep yielding deck and is contoured to define a continuous, smooth transition to the contiguous cavity-defining portions of the upper surface of said lower body.

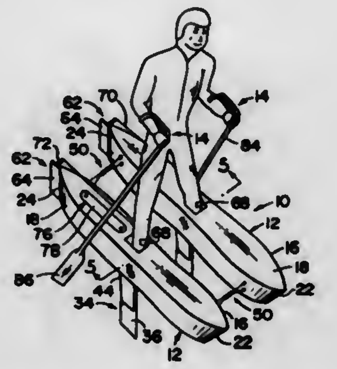
4,129,912
AQUATIC DEVICE

Walter L. Robinson, P.O. Box 642, Ft. Bragg, Fayetteville, N.C. 28302

Continuation-in-part of Ser. No. 461,637, Apr. 17, 1974, abandoned. This application Apr. 11, 1977, Ser. No. 786,069

Int. Cl.² A63C *15/04*

U.S. Cl. 9—310 D **14 Claims**



1. An aquatic device comprising in combination:

a pair of flotation means for supporting the legs of an operator on a liquid such as water;

each of said flotation means comprising an outer shell for receiving the feet of the operator;

flotation interconnection means including a coupling for interconnecting the pair of flotation means to control the separation between said flotation means;

said coupling means comprising a resilient coupling element;

a pair of paddles specifically configured for use in combination with the floats;

each of said paddles comprising an elongated substantially tubular shaft having a blade formed at one end of said shaft;

an upper arm engaging rest rigidly extending in substantially perpendicular relationship to the longitudinal axis of the elongated shaft and disposed at the opposite ends of the elongated shafts relative to said paddles;

an arm support mounted at the terminal end of each of said arm engaging rest and disposed to be remote relative to the elongated shafts;

said arm supports being partially circular for receiving the lower arm region of the operator while the operator grasps the elongated shafts adjacent the juncture of the upper arm engage rest and the elongated shaft thereby forming a triangle between said arm support and said tubular shaft and the lower arm region of the operator; and

said arm supports being removably mounted to said tubular shafts enabling said arm supports to be positioned to either contact the upper or lower side of the lower arm region of the operator.

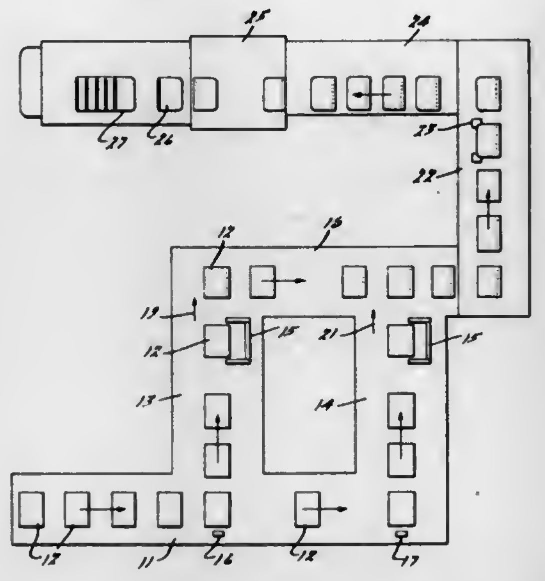
4,129,913
ARRANGEMENT FOR PERFORATING AND SPIRAL BINDING OF RELATIVELY THICK GROUPS OF SHEETS

Ernst Pfaffle, Neuffen, Germany, assignor to Hans Sickinger Co., Pontiac, Mich.

Filed Aug. 11, 1977, Ser. No. 823,633

Int. Cl.² B42C *19/08*

U.S. Cl. 11—1 A **2 Claims**



1. A perforating and coil binding system for relatively thick groups of sheets, comprising a first leg along which groups of sheets are moved with a predetermined spacing, first and second perforating station legs extending transversely from said first leg and spaced from each other along said first leg, means for shifting alternate groups from said first leg onto the first of said perforating station legs and the remaining groups onto said second perforating station leg, said two perforating station legs having means for perforating said groups, a receiving leg extending transversely past the exit ends of said two perforating station legs with said first perforating station leg being upstream of said second perforating station leg, means for alternately placing perforated groups from said first and second perforating station legs onto said receiving leg whereby the perforated groups form a single line, said lastmentioned means including means for feeding the perforated groups from said first perforating station leg, in spaced relation, onto said receiving leg and synchronized means for feeding the perforated groups from said second perforating station leg into the spaces between groups coming from said first perforating station leg, a coil binding station spaced from said receiving leg, and means for transporting said single line of perforated groups to said coil binding station.

4,129,914
AUTOMATIC LOADING TRAY

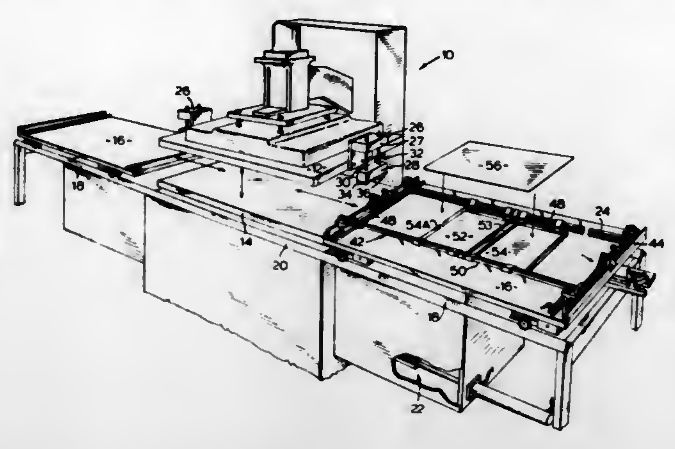
Gerhard Jahn, Apartment 1907, 655 Broadview Ave., Toronto, Ontario, Canada

Filed Dec. 9, 1976, Ser. No. 748,928

Int. Cl.² B42C *15/00*

U.S. Cl. 11—2 **22 Claims**

1. Suitable for use in an Automatic Loading Tray, comprising a frame having lateral side rails and a pair of longitudinal cross-bar arrangements spaced from each other and secured to the lateral side rails for reciprocal movement therealong, each cross-bar arrangement including two laterally spaced substantially parallel bars, and inner and outer bar, said inner bar nearer said other cross-bar arrangement than said outer bar, and means to limit maximum separation between said two spaced bars, rotatable spacer means for positioning between said spaced bars, said rotatable means being of substantially uniform non-cicular or non-square cross-section, looking downwardly thereon for causing the bars to abut said means to limit their maximum separation when said rotatable means is positioned between said bars in a first position and for causing said bar to loosely seat between said means to limit maximum separtion when said rotatable means is in a second position, and means to rotate said rotatable spacer means.



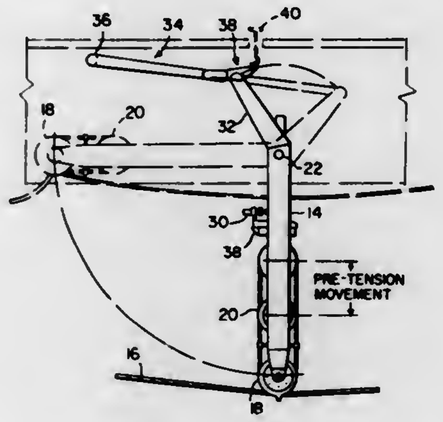
4,129,915
CABLE TENSIONING MEANS FOR KING POST STRUCTURING

William R. Abell, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 14, 1978, Ser. No. 896,528

Int. Cl.² E01D *9/02*

U.S. Cl. 14—10 **2 Claims**



1. A bridge structure having at least one tensioning cable attached thereto at two longitudenally spaced points, at least one post pivoted to said bridge structure at a location between said spaced points, an end of said post spaced from the pivot connection to said bridge structure adapted to engage the cable; means associated with and attached to said bridge structure and said post for rotating said post about the pivot connection to said bridge structure into its operative position, said operative position being substantially perpendicular to the span of said bridge structure; sheave means associated with and attached to said post; said tensioning cable being threaded around said sheaves and means associated with said sheaves for causing separation of said sheaves whereby tension is introduced to said cable for reinforcing the bridge structure.

4,129,916
ADJUSTABLE SKATEBOARD RAMP

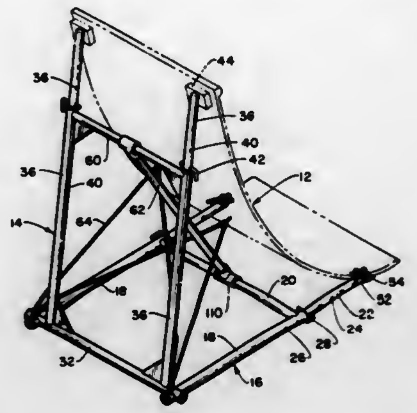
Todd R. Schlesinger, 147-½ Virginia Pl., Costa Mesa, Calif. 92627, and William L. Shaffer, 3235 Nebraska St., Costa Mesa, Calif. 92626

Filed Mar. 27, 1978, Ser. No. 890,454

Int. Cl.² E01D *1/00*

U.S. Cl. 14—69.5 **11 Claims**

10. In an adjustable, demountable ramp for use in conjunction with wheeled sporting devices, the combination of: an elongated resilient ramp member having its lower extremity juxtaposable to a supporting surface and its upper extremity disposable in spaced relationship with respect to said supporting surface; a suspensory frame for said ramp member, said suspensory frame including adjustment means to permit adjustment thereof and corresponding adjustment of said ramp member; and movable connections between said frame and said ramp member whereby said frame maintains said ramp member in a flexed, curvilinear position on said frame and whereby adjustment of said frame causes the elevation of the upper extremity of said ramp member to change the angle of incidence of said ramp member and its curvilinear aspect with respect to said frame and said supporting surface.



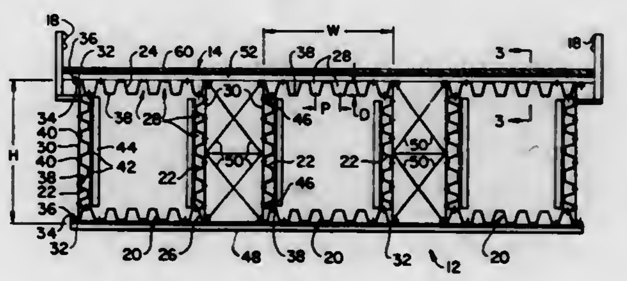
4,129,917
BRIDGE STRUCTURE

Eugene W. Sivachenko, 6471 Riverside Dr., Redding, Calif. 96001, and Firoze H. Broacha, Lakewood, Colo., assignors to Eugene W. Sivachenko, Redding, Calif.

Filed Mar. 27, 1978, Ser. No. 890,439

Int. Cl.² E01D *19/12*

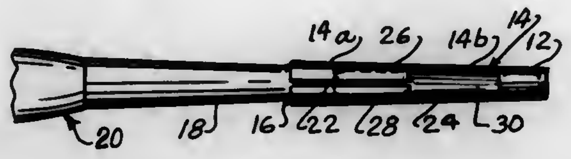
U.S. Cl. 14—73 **53 Claims**



45. A long span bridge comprising in combination: a plurality of side-by-side, generally parallel box beams, the box beams having transverse dimensions at least one of which does not substantially exceed about 8 feet and being further defined by generally upright, spaced apart box beam sides and generally parallel, upper and lower chord plates, proximate edge portions of the sides and the chord plates being rigidly secured to each other, the sides and the chord plates being constructed of relatively thin walled corrugated plate made of a corrosion resisting material, corrugations of the plate having a generally trapezoidal cross-section and being arranged parallel to a longitudinal axis of the beams, the corrugations further having a pitch of at least about 16 inches and a depth of at least about 5 inches; means for rigidly securing the box beams to each other; a relatively thin shear plate attached to each box beam side, the shear plates being substantially flat and placed against the corresponding box beam sides so as to contact corrugation troughs of the side protruding towards the shear plate; means for rigidly securing the shear plates to at least some of the corrugation troughs over substantially the full height of the box beam sides to rigidify the shear plates and to prevent their buckling when subjected to vertically acting shear loads; a bridge deck constructed of corrugated plate carried by the box beams, the corrugations of the deck being oriented transversely to the corrugations of the chord plates; and a road bed placed on top of and carried by the bridge deck.

4,129,918
ADJUSTABLE SLEEVE FOR ARTISTS PAINT BRUSHES

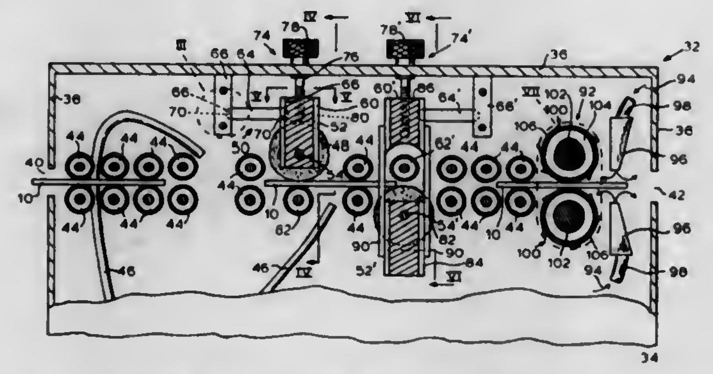
Robert Lee, 41-12 29th St., Long Island City, N.Y. 11101
Filed Aug. 29, 1977, Ser. No. 828,894
Int. Cl.² A46B *9/10*
U.S. Cl. 15—169 **5 Claims**



1. An adjustable sleeve for adjusting the effective length of the hairs or bristles of artists' paint brushes having a tapered ferrule securing the hairs or bristles to the handle, said adjustable sleeve comprising:
- (a) a conical structure having a circumferentially continuous tubular tip and a longitudinally split body extending upwardly from said tip, coaxially therewith,
- (b) said longitudinally split body defining a relatively narrow slit at its upper portion and a relatively wide cutout at its lower portion,
- (c) said narrow slit merging into and being continuous with said wide cutout,
- (d) said tubular tip having a circular cross section,
- (e) said lower portion of the body having a C-shaped cross-section, and
- (f) said upper portion of the body having a C-shaped cross-section,
- (g) said adjustable sleeve being conically tapered from a relatively small diameter at its tubular tip to a relatively large diameter at its longitudinally slit upper body portion to conform to the taper of a paint brush ferrule,
- (h) the upper body portion of said adjustable sleeve comprising a conical C-clip to grip the paint brush ferrule at selected positions along its length,
- (i) the length of the adjustable sleeve being sufficient to enable it to fully enclose the paint brush hairs or bristles when the upper body portion of the sleeve is clipped to the lower end of the paint brush ferrule.

4,129,919
PRINTED CIRCUIT BOARD SCRUBBER AND DRYER

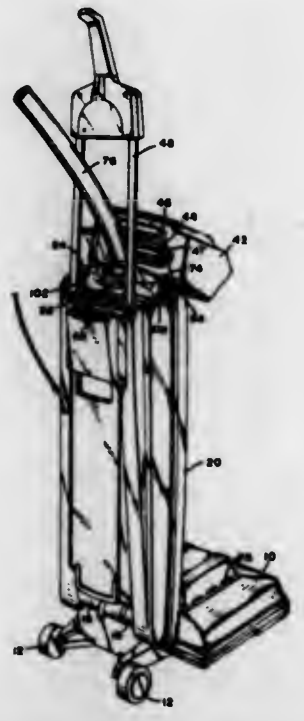
Lawrence R. Fitch, 9224 Kirkwood, Cucamonga, Calif. 91730, and Jerry L. Swenson, Upland, Calif., assignors to Lawrence R. Fitch, Cucamonga, Calif.
Filed Feb. 27, 1978, Ser. No. 881,633
Int. Cl.² A46B *13/04;* **F26B** *13/26*
U.S. Cl. 15—302 **13 Claims**



4. In scrubbing and drying apparatus having an enclosure containing a plurality of equally spaced driven rollers mounted thereto defining a pathway for moving a flat article therethrough and having a source of water directed on a surface of the article, a scrubbing roller mounted between a pair of movable members for scrubbing the surface of the article, a partial-drying assembly for removing a portion of the water on the article following the scrubbing thereof, and a source of drying air for drying the remaining water from the partially dried article, the improvement comprising:
- (a) anti-sway means connected to the movable members for holding the movable members in positional synchronization as said members are moved whereby the scrubbing roller is always maintained parallel to the surface of the article being scrubbed thereby; and,
- (b) adjusting means interconnected between the enclosure and said anti-sway means for positionally adjusting said anti-sway means whereby the parallel distance from said roller to the pathway through which the articles are moved is adjusted.

4,129,920
HOSE COUPLING FOR UPRIGHT VACUUM CLEANER

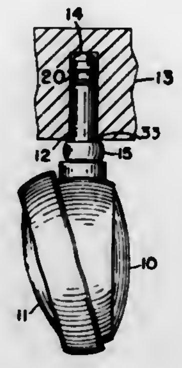
Robert A. Evans, and James W. Momberg, both of Stamford, Conn., assignors to Consolidated Foods Corporation, Old Greenwich, Conn.
Filed Dec. 12, 1977, Ser. No. 859,888
Int. Cl.² A47L *5/32*
U.S. Cl. 15—337 **5 Claims**



1. In a vacuum cleaner of the upright type, a base member, means for movably supporting said member on a substantially horizontal surface, an elongated enclosure pivotally secured to said base member, said enclosure having an upper end wall formed with an opening to the interior of the enclosure, a dust bag insertable into and removable from said enclosure through said opening, said bag having a stiff end member larger than said opening to thereby rest on the exterior of said wall and being formed with an inlet to the interior of said bag, a conduit within said enclosure having an upper end terminating in a second opening in said end wall, a cover hinged to one edge of said wall and formed with a passageway connecting said second opening to said inlet when the cover is closed, an adaptor, means for securing said adaptor to said end wall when said cover is open, said adaptor having a passage therethrough communicating with said inlet and a portion covering said second opening, and means for connecting a flexible suction hose to said adaptor and in communication with the outer end of said passage.

4,129,921
PLASTIC GRIP RING

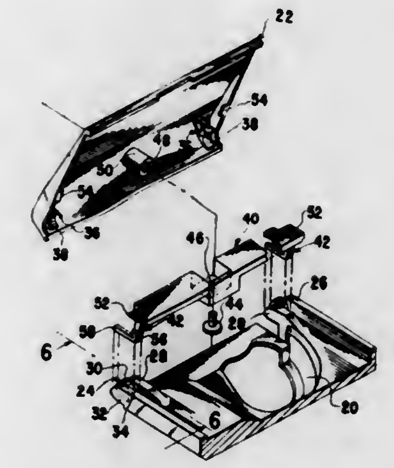
Frederick C. Greene, St. Joseph, Mich., assignor to Shepherd Products U.S. Inc., St. Joseph, Mich.
Filed Jan. 5, 1978, Ser. No. 867,138
Int. Cl.² B60B *33/00*
U.S. Cl. 16—38 **6 Claims**



1. A non-metallic grip ring for a caster assembly including a caster stem and a caster mounting socket, said grip ring comprising an annular member mounted between said stem and said socket and having an outer bearing surface of some vertical extent located more closely adjacent to the bottom of the member than the top, said annular member having a tapered perimeter diminishing upwardly from a maximum diameter at said outer bearing surface to a minimum diameter at the top of the member, said outer bearing surface engaging the inner wall in said mounting socket, a cylindrical inner collar adjacent the top of said annular member having an inner bearing surface mounted about said stem, a cylindrical opening adjacent the bottom of the annular member of larger internal diameter than that of said inner bearing at the top collar, a bell-shaped internal surface merging with the internal surface of said cylindrical opening connecting the opening with the annular internal surface of said cylindrical bearing collar, and an interior notch extending vertically of said internal surfaces of the annular member defining a break area in the annular member to provide a split ring on the caster stem.

4,129,922
ARM TOP COVER HINGE FOR SEWING MACHINES

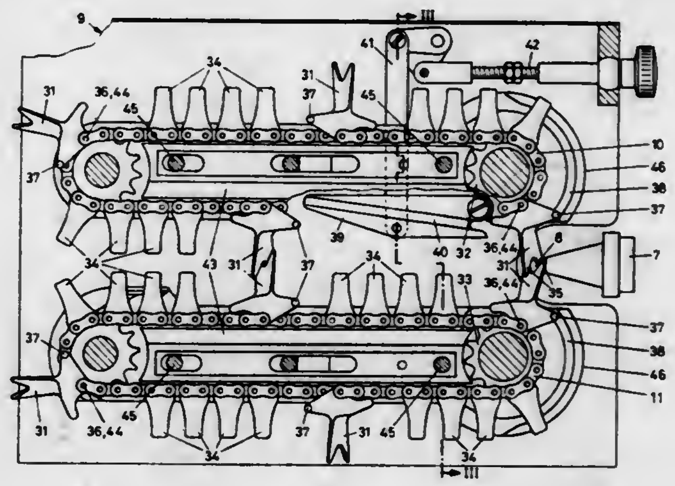
Joseph P. Law, Scotch Plains, and Alfred R. Mack, Bayonne, both of N.J., assignors to The Singer Company, New York, N.Y.
Filed Feb. 24, 1978, Ser. No. 880,736
Int. Cl.² E05D *11/10*
U.S. Cl. 16—139 **3 Claims**



1. A hinge mechanism for a lid of a sewing machine arm top cover comprising a pair of pivot pins attached to said arm top cover and having a substantially vertical and a substantially horizontal surface formed thereon for defining an open and a closed position of said lid, as a lobe joining said surfaces at one end and an arcuate cylindrical surface joining said surfaces at a second end, a pair of concave saddles formed on said lid for rotatably engaging said arcuate cylindrical portion of said pivot pins, a spring means embracing said pivot pins and fastened to said lid, said spring means being so disposed to be unbiased by said horizontal surface of said pivot pins when said lid is in a closed position and unbiased by said vertical surface of said pivot pins when said lid is in an open position, said spring means being biased by said lobes of said pivot pins when said lid is in an intermediate position, thereby causing said lid to arcuately pivot to a position whereby the bias applied to said spring means by said lobes is relieved.

4,129,923
CONTINUAL SAUSAGE STUFFING APPARATUS

Cornel Hoegger, Flawil, Switzerland, assignor to C. Hoegger & Cie. AG., Gossau, Switzerland
Filed Nov. 23, 1977, Ser. No. 854,083
Claims priority, application Switzerland, Nov. 29, 1976, 15008/76
Int. Cl.² A22C *11/02, 11/10*
U.S. Cl. 17—33 **10 Claims**



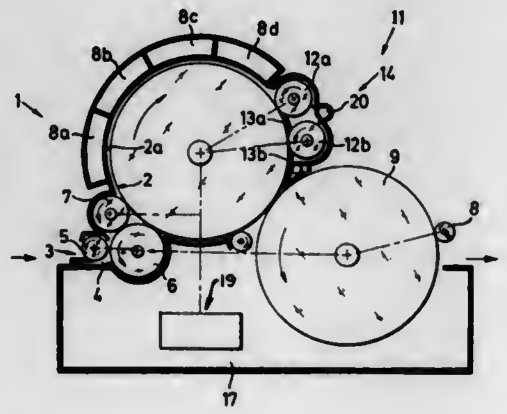
1. In a sausage stuffing apparatus including means for pushing a sausage mixture at a steady and constant forward motion into a sausage casing for forming a sausage strand; and said apparatus including a gripper apparatus having rotating chains, and contricting forks fastened to said chains adapted to intermittently engage into said sausage strand to divide the latter into regular portions, the improvement comprising: said constricting forks being pivotably fastened to said chains; at least one guide means on said gripper apparatus for the displaceable guidance of said constricting forks; and end core forming a constriction in said sausage strand, said guide means causing said forks to divide and successively release said sausage strand immediately at said constriction formed by said end cone; and means for adjustably positioning said guide means so as to vary the extent of engagement of said forks into said sausage strand.

4,129,924
APPARATUS FOR SEPARATING CARD STRIPS DURING CARDING OF FIBROUS MATERIALS

Walter Wirth, Gausebrok, Fed. Rep. of Germany, assignor to Hergeth KG Maschinenfabrik und Apparatebau, Dulmen, Fed. Rep. of Germany
Continuation of Ser. No. 632,791, Nov. 17, 1975, abandoned. This application Aug. 11, 1977, Ser. No. 823,690
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1974, 2459781
Int. Cl.² D01G *15/76*
U.S. Cl. 19—99 **6 Claims**

1. Apparatus for removing card strips, such as fiber naps, fiber adhesions, short fibers, foreign particles, waste fibers and the like from fibrous material during a carding operation comprising a carding cylinder carrying carding means in opposed relationship to carding means disposed about the exterior of

said carding cylinder, means for rotating said carding cylinder whereby said carding means cooperatively perform a carding operation upon fibrous material conveyed through the apparatus by said rotating carding cylinder, means for directly removing card strips from the fibrous material carried by the rotating carding cylinder independent of said carding means but during the performance of said carding operation by said carding means, said removing means including a strips roller disposed adjacent said carding cylinder and defining therewith a gap through which said fibrous material is carried by said rotating carding cylinder, means for rotating said strips roller, vacuum means for removing card strips from said strips roller, stripper plate means contiguous said gap for dividing the fibrous material into two portions from only one portion of which is removed the card strips by said strips roller, means for adjusting the position of said stripper plate means to selectively alter the amount of fibrous material in each of said two portions whereby a select precentage of card strips are removed from said fibrous material depending upon the amount of fibrous material in said only one portion, said removing means includes another strips roller disposed adjacent said first-mentioned strips roller and adjacent said carding cylinder, said another strips roller and carding cylinder define another gap through which said fibrous material is carried by said rotating carding cylinder, means for rotating said another strips roller, said vacuum means being operative to remove card strips from said another strips roller, and said stripper plate means being disposed between said first-mentioned and another strips roller.



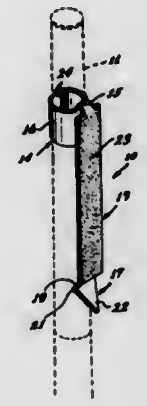
4,129,925
COMBINED NAIL FILE AND WRITING IMPLEMENT CLIP ATTACHMENT

Lorin B. Brown, 1501 S. Manhattan Pl., Los Angeles, Calif. 90019

Filed May 16, 1977, Ser. No. 797,260

Int. Cl.² B43K ***25/00***

U.S. Cl. 24—11 CC **1 Claim**



1. A removable clip attachment for a writing implement or the like formed from a single piece of sheet metal, said clip attachment comprising:

a rectangularly shaped flat longitudinal strip portion having a pointed portion on the lower end thereof;

a split circular holder portion having an opening the diameter of which is substantially equal to the width of said longitudinal strip portion, said circular holder portion disposed opposite the back of the upper end of said longitudinal strip portion with its sidewall offset from and extending parallel to the plane of said longitudinal strip portion; and

a connecting link portion integrally joining the upper end of said longitudinal strip portion to the upper end of said circular holder portion, said connecting link portion having a width and length dimension on the order of one-half to one-third the width dimension of said longitudinal strip portion and having its sides forming substantially square corners where they join the upper end of said circular holder portion, and said connecting link portion having the shape of a semicircle with the upper end of said longitudinal strip portion and the upper end of said circular holder portion lying tangent to the ends thereof;

said longitudinal strip portion having the pointed portion on the lower end thereof bent sharply inwardly toward the axis of said circular holder portion and then sharply outwardly to form a bearing corner with the terminating end of said pointed lower end portion extending angularly outwardly;

whereby when said circular holder portion is fitted on the writing implement said bearing corner contacts the outer surface of the writing implement with a slight bearing pressure while said longitudinal strip portion is supported parallel to but offset from the surface of said writing implement; and

the outer surface of said longitudinal strip portion is abraded for use as a fingernail file.

4,129,926
FASTENING CLIP

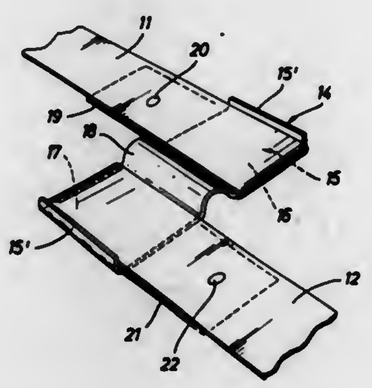
Wolfgang H. Henning, Duetlingstal, 3538 Niedermarsberg, Nordrhein-Westfalen, Fed. Rep. of Germany

Filed Dec. 9, 1976, Ser. No. 749,112

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1976, 2600226

Int. Cl.² B65D ***63/06***

U.S. Cl. 24—22 **4 Claims**



1. In a clip for fastening around a spirally-ribbed hose, of the kind comprising a band which encircles the hose and a bridge portion for tightening the band on the hose, the improvement wherein the band is overlapped, the overlapped parts lying side-by-side, the bridge portion connects the said overlapped parts together and means on said bridge portion for engaging the band between adjacent ribs of the hose.

4,129,927
TENSIONING OF METAL WIRES

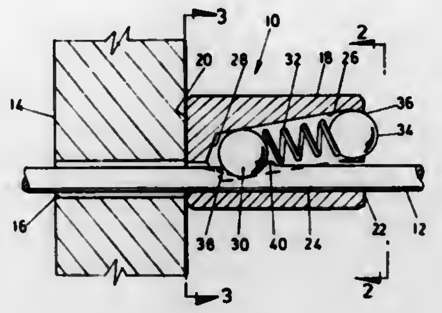
Nigel I. Anderson, Morgenzicht, Sloane St., Witkoppen, Transvaal, South Africa

Filed Jan. 6, 1977, Ser. No. 760,141

Claims priority, application South Africa, Jan. 22, 1976, 76/0364

Int. Cl.² F16G ***11/00***

U.S. Cl. 24—136 A **13 Claims**



1. A device for holding under tension a length of wire having not more than two strands, said device comprising a body formed with a first passage to receive the wire and a second passage extending to a zone of intersection with the first passage at an angle of intersection less than 15°, a locking member located in the second passage and having a cross-sectional shape substantially similar to a cross-sectional shape of said second passage, a spring urging the locking member towards the zone of intersection, and means securing the spring in the body, the locking member and the second passage being of such a size relatively to the first passage that the locking member cannot enter any part of the first passage except that part included in the zone of intersection, the locking member being a body of revolution about an axis and being adapted to roll about that axis along the second passage and, on attempted withdrawal of the wire in one direction from the body, to lock between the wire and the surface of the second passage to prevent such withdrawal, the second passage terminating at the zone of intersection in a stop surface of the body inclined at an angle greater than 15° to the surface of the first passage on which the wire bears when locked and positioned so that the locking member, when engaging the stop surface, obturates only a part of the first passage, said body further having a third passage formed therein for receiving another length of wire, and a ferrule formed integrally with the body and providing an extension of the first and second passages.

4,129,928
SLIDE FASTENER

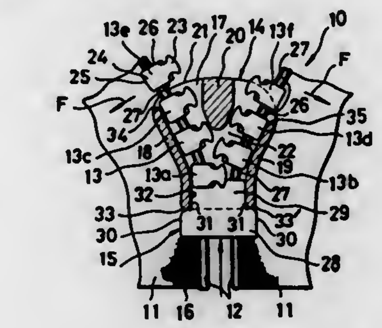
Takayuki Sugiyama, Kurobe, and Kihei Takahashi, Uozu, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Mar. 9, 1977, Ser. No. 775,976

Claims priority, application Japan, Mar. 17, 1976, 51/32103[U]

Int. Cl.² A44B ***19/26, 19/36***

U.S. Cl. 24—205.11 R **3 Claims**



1. In a slide fastener comprising a pair of oppositely disposed stringer tapes carrying on and along their confronting longitudinal edges a pair of series of uniformly spaced interengageable fastener elements, a slider movable upwardly and downwardly along said fastener elements for respectively coupling and uncoupling the same, and a bottom end stop member interconnecting said stringer tapes adjacent to the bottom ends thereof, said slider including a body having a pair of spaced apart upper and lower wings each having a pair of guide flanges on and along the lateral edges thereof, said guide flanges extending between respective upward front ends and downward rear ends, said upper and lower wings being interconnected by a neck located at the front end of said slider to define together with said guide flanges a generally Y-shaped guide channel therethrough for guiding the movement of said fastener elements therethrough, and each of said fastener elements including a body of generally rectangular configuration having a pair of upward front and downward rear side faces and an outer end face, the improvement which comprises said end end stop members having a base portion against which the rear end of said slider abuts in its lowermost position to restrict the downward movement of said slider, said end stop member having a plug portion which extends from said base portion in a direction away from the bottom ends of said stringer tapes, and said plug portion being snugly receivable in the rear end portion of said Y-shaped guide channel for preventing said slider from tilting relative to said end stop member when said slider is in its lowermost position, and said slider having guide flanges of respective lengths so related to the pitch of said fastener elements and to the longitudinal offset spacing as between fastener elements that interengage, that when the slider is in its lowermost position, those two opposed fastener elements that are the uppermost fastener elements located within the guide channel, have their respective central axes located downwardly of the front ends of said guide flanges to reduce pivotal reaction forces on said uppermost fastener elements when oppositely directed lateral forces are applied to said stringer tapes; one of each pair of guide flanges having its front end extended beyond that of the other in the longitudinal direction of said slide fastener.

4,129,929
PROCESS FOR THE MANUFACTURE OF ELECTRICAL STACK OR LAYER CAPACITORS

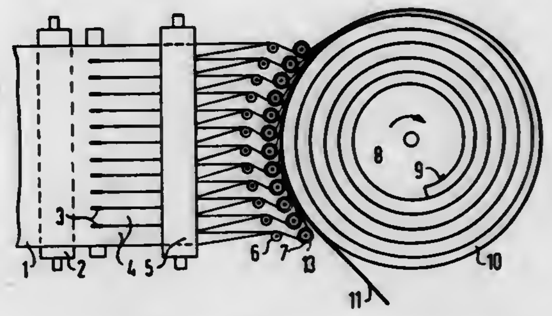
Hartmut Kessler, Regensburg, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jul. 25, 1977, Ser. No. 818,674

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1976, 2639184

Int. Cl.² H01G ***4/30***

U.S. Cl. 29—25.42 **14 Claims**



1. A method for manufacturing electrical stack and layer capacitors in which master capacitors several times the length of a single capacitor are produced, comprising the steps of:

(a) providing at least one metallized synthetic band of a width many times that of capacitors to be manufactured, said band comprising a stretched synthetic film with elastic memory;

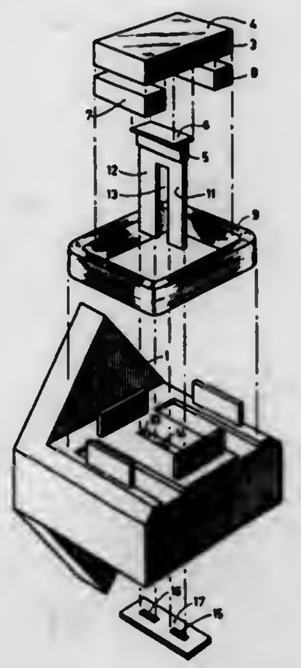
(b) cutting the synthetic band lengthwise into capacitor films corresponding to the width of a single capacitor;

(c) providing first and second guide means whose axes are perpendicular to one another;

(d) twisting each of the cut capacitor films by guiding them over the first and second guide means;
(e) stacking the cut capacitor films each upon the other in a laterally offset manner at a collector means and pressing them against each other to form a film packet unit; and
(f) frontally contacting the film packet unit by sprayed-on metal and sawing away individual capacitors, the heat from the sawing destretching the synthetic film in the region of the saw edges to rip the metal layers open into islands which are insulated from one another.

4,129,930
METHOD OF MANUFACTURING AN ELECTRICALLY CONTROLLABLE PIVOTING MIRROR DEVICE

Jan C. W. Dragt, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 25, 1977, Ser. No. 762,430
Claims priority, application Netherlands, Jan. 13, 1977, 7700294
Int. Cl.^{2} B21D *53/10*
U.S. Cl. 29—149.5 R **8 Claims**

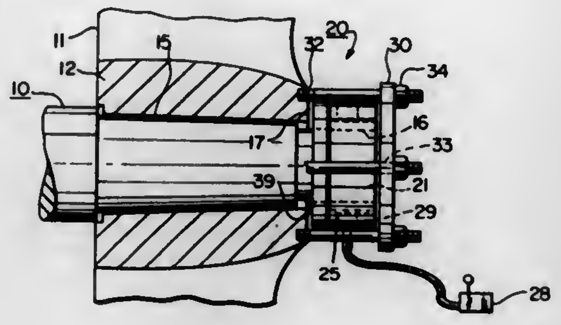


1. A method of manufacturing an electrically controllable pivoting mirror assembly of the type having a frame, a mirror pivotable about a given axis and having a reflecting front surface and an opposed rear surface, a rigid bearing support and a rubber-like elastic bearing; the method comprising the steps of

forming the elastic bearing with at least one portion thereof having a T-shaped cross-section;
affixing the elastic bearing to an end of the rigid bearing support at such a location that the mirror is pivotable about said given axis, said axis being spaced from the back surface of said mirror and extending through the T-shaped portion of the elastic bearing, said bearing consisting of a substantially rectangular portion and a single rib projecting from one side thereof;
affixing a side of the rectangular portion of the elastic bearing opposite the side from which the rib projects to the rear surface of the mirror subsequent to the formation of the bearing; and
affixing the rigid bearing support to said frame by said rib at a location such that the end of the rigid bearing support and the rear surface of the mirror project above a surface of the frame adjacent thereto to permit pivotal motion of the mirror.

4,129,931
REMOVAL OF PROPELLERS FROM TAPERED SHAFTS

Eugene F. Carrigan, Louisville, Ky., assignor to Jeffboat, Incorporated, Jeffersonville, Ind.
Continuation of Ser. No. 763,131, Jan. 27, 1977, abandoned. This application Feb. 24, 1978, Ser. No. 880,954
Int. Cl.^{2} B23P *19/04*
U.S. Cl. 29—252 **1 Claim**



1. Apparatus for removal of a propeller force fit upon a tapered shaft having screw threads on the end thereof extending at least to the outer end of the propeller hub when force fit in mounted position on said taper, said apparatus comprising in combination, a threaded nut fitted upon the shaft threads, said nut having a cylindrical body with a flange extending therefrom at the inner end spaced from the propeller by a predetermined small distance thereby to provide a stop for limiting movement of said propeller off said tapered shaft away from mounted position, a cylindrical axially expandible jack assembly mounted about said cylindrical nut body adjacent said flange axially expandible from a position near the end of said nut opposite said flange a distance greater than said predetermined small distance, a puller plate abutting the end of said jack at the outer end of said nut, said plate extending beyond the cylindrical dimensions of said flange and jack, a set of stud bolts affixed to said propeller hub and extending through mated apertures defined in said puller plates outside the periphery of said cylindrical jack assembly, and a set of nuts affixed to said stud bolts holding said puller plate firmly against said jack, whereby when said jack is axially expanded said propeller is moved down the taper on the shaft and against said stop by pressure exerted by said jack against said puller plate which in turn is transmitted to said propeller hub by said stud bolts and said stop limits the movement of the propeller while axial forces are being exerted by said jack.

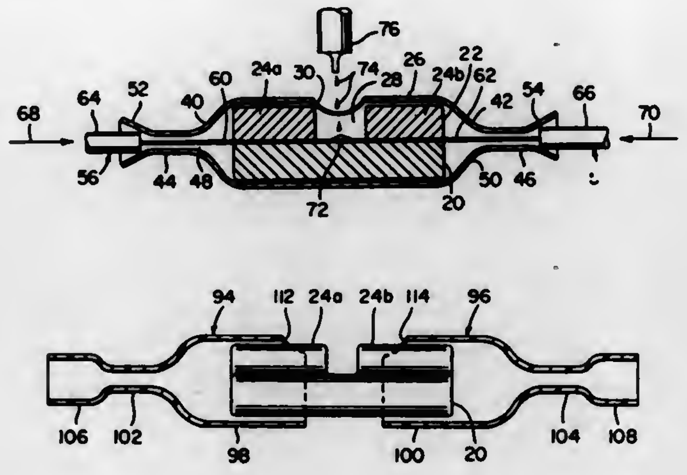
4,129,932
METHOD AND MEANS FOR JOINING ELONGATE MEMBERS

Nicholas Stancati, Mountainside, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Nov. 14, 1977, Ser. No. 851,484
Int. Cl.^{2} B23Q *17/00*
U.S. Cl. 29—407 **18 Claims**

1. A connector for elongate members comprising: a bundle of at least three elongate cylindrical elements juxtaposed in parallel orientation to provide an interior passageway coincident with the central axis of said bundle; and a heat contractable member disposed about said bundle for holding said cylindrical elements in close proximate relationship and having end portions extending beyond each end of said bundle, said end portions of said contractable member being heat contracted to provide a reduced interior opening therethrough for guiding said elongate members into said interior passageway.

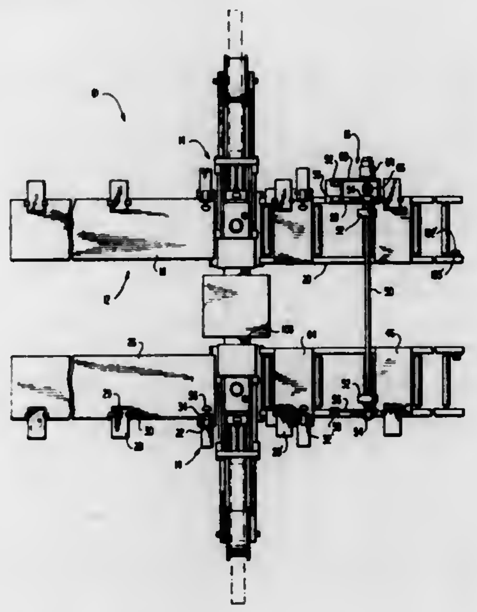
10. A method of maintaining selective portions of two elongate members in axial alignment with one another comprising the steps of: providing a bundle of at least three elongate cylindrical elements arranged in parallel axial orientation; providing a heat contractable sleeve having a length greater than said bundle and an inner diameter slightly larger than the diameter of a circle tangentially encompassing said bundle; selectively

disposing said sleeve over said bundle so that each end of said sleeve extends beyond a respective end of said bundle; selectively heating each of said ends of said sleeve while applying a longitudinally directed outward force thereto to partially laterally contract and lengthen said ends; guiding the ends of said elongate members through the respective contracted ends of said sleeve; disposing said ends of said elongate members in end-to-end facing disposition adjacent one another within the axial center of said bundle; selectively heating said contractable sleeve along its length to contract said sleeve about said bundle and to further contract said ends of said sleeve about said elongate members.



4,129,933
METHOD AND APPARATUS FOR JOINING WOODEN MEMBERS USING ROLLED NAIL STRIPS PACKED WITHOUT ROLLS

J. Calvin Jureit, Coral Gables; Andrew G. Seipos, Miami, and William J. Langevin, North Miami Beach, all of Fla., assignors to Automated Building Components, Inc., Miami, Fla.
Filed Sep. 14, 1977, Ser. No. 833,059
Int. Cl.^{2} B23P *17/00, 11/00;* B27F *7/02*
U.S. Cl. 29—417 **18 Claims**



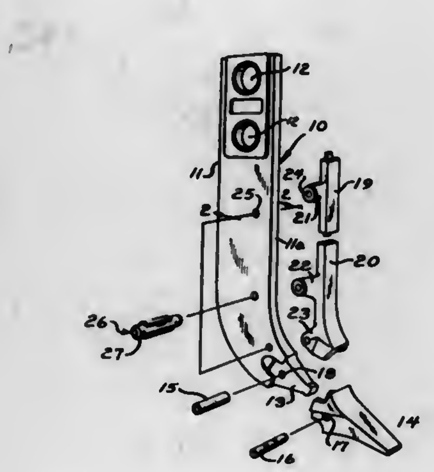
1. A method of joining wooden members at their junctures with sheet metal connector plates of the type having integrally struck teeth projecting from one side of the metal plate, comprising:
(1) placing wooden members to be joined between first and second pressheads, at least one of which is compressively movable towards the other presshead and at least one of which is retractably movable away from the other presshead;
(2) providing a coiled composite of connector plate stock wherein first and second lengths of connector stock are in juxtaposition and the teeth of each length of connector stock are essentially completely intermeshed with the teeth of the other length of connector stock, whereby outer surfaces of the composite of connector stock have no teeth projecting therefrom;
(3) feeding the first length of connector stock to the first presshead and orienting the first length of connector stock so that the teeth thereof are pointed towards the wooden members to be joined and in the path of the relative movement of the pressheads;
(4) feeding the second length of connector stock to the second presshead and orienting the second length of connector stock so that the teeth thereof are pointed towards the wooden members to be joined and in the path of the relative movement of the pressheads;
(5) operating cutting means operatively associated with the pressheads for cutting connector plates from the connector stock, whereby predetermined lengths of connector plates are cut and positioned on opposite sides of the wooden members and at the junctures of the wooden members to be joined; and
(6) moving at least one of the pressheads to press the teeth of the connector plates into the wooden members and join the wooden members together.

18. Apparatus for joining wooden members at their junctures with sheet metal connector plates of the type having integrally struck teeth projecting from one side of the metal plate, comprising:
(1) first and second pressheads, at least one of which is compressively movable towards the other presshead and at least one of which is retractably movable away from the other presshead;
(2) receiving means for receiving and holding the wooden members to be joined together between the pressheads;
(3) support means for supporting a coiled composite of connector plate stock wherein first and second lengths of connector stock are in juxtaposition and the teeth of each length of connector stock are essentially completely intermeshed with the teeth of the other length of connector stock whereby outer surfaces of the composite of connector stock have no teeth projecting therefrom;
(4) feeding means for feeding the first length of connector stock to the first presshead and orienting the first length of connector stock so that the teeth thereof are pointed towards the wooden members held in the receiving means and in the path of the relative movement of the pressheads;
(5) feeding means for feeding the second length of connector stock to the second presshead and orienting the second length of connector stock so that the teeth thereof are pointed towards the wooden members held in the receiving means and in the path of the relative movement of the pressheads;
(6) cutting means operatively associated with the pressheads for cutting connector plates from the connector stock, whereby predetermined lengths of connector plates are cut and positioned on opposite sides of the wooden members and at the junctures of the wooden members to be joined; and
(7) moving means for moving at least one of the pressheads to press the teeth of the connector plates into the wooden members and join the wooden members together.

4,129,934

METHOD OF INSTALLING AND REMOVING LOCKING DEVICE FOR EARTH WORKING TOOL

Herman W. Gettman, Portland, Oreg., assignor to ESCO Corporation, Portland, Oreg.
Continuation-in-part of Ser. No. 683,175, May 4, 1976, abandoned. This application Oct. 4, 1977, Ser. No. 839,183
Int. Cl.^{2} A01B *15/00;* F16B *19/02*
U.S. Cl. 29—427 3 Claims



1. A method of installing and removing the wearable part of a two part excavating tool comprising the steps of

providing a locking pin having resiliently enthickened portions disposed symmetrically relative to the longitudinal center line of said pin, said pin including a unitary relatively elongated body of generally cylindrical transverse section having diametrically opposed, longitudinally extending peripheral portions removed to provide a pair of recesses inwardly of the body ends to receive and support said resiliently enthickened portions, said resiliently enthickened portions including an elongated bearing piece in each of said recesses having a generally clyindrical outer wall portion and a pad for resilient material bonding each of said bearing pieces in its associated notch, said resilient material when not under compression being sized and arranged to position said outer wall portion radially outward of said generally cylindrical body,

providing a holder part having a bore constructed to receive said locking pin, said wearable part having spaced apart walls, said walls having aligned openings also being constructed to receive said locking pin,

installing said wearable part on said holder part so that said bore in said holder part and said openings in said wearable part are in alignment,

driving said locking pin into said aligned bore and openings with the driving force being transmitted along the longitudinal center line of said pin,

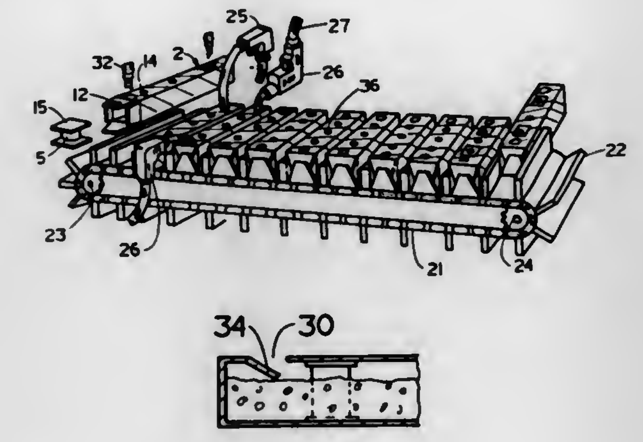
said openings in said wearable part being of a diameter slightly less than the width of said locking pin measured across said resiliently enthickened portions so as to cause equal compressive forces in said resiliently enthickened portions as said locking pin is driven through said openings in said wearable part,

driving said locking pin out of said aligned bore and openings at a later point in time with the driving force being transmitted along the longitudinal center line of said pin, whereby shearing of said locking pin is substantially precluded because of equal compressive forces being exerted on said resiliently enthickened portions, and removing said excavating tool from said tool holder.

4,129,935

METHOD OF MAKING A MOLDED SUPPORT FOR AN OBJECT USING A SELF-CLOSING VALVE

Thomas G. Daley, 9716 Lanesboro Way, Louisville, Ky. 40222
Filed Aug. 18, 1977, Ser. No. 825,663
Int. Cl.^{2} B23P *3/00, 19/04*
U.S. Cl. 29—460 7 Claims



1. A method for making a support for an object comprising the steps of:
- (a) providing a hollow member having closed ends for addition of a resilient foam mix therein;
- (b) cutting an opening in said hollow member leaving a flap therein over said opening;
- (c) adding a predetermined amount of said resilient foam mix through said opening; and,
- (d) curing said resin mix whereby rising foam during said curing forces said flap into its original position prior to cutting thereby closing said opening.

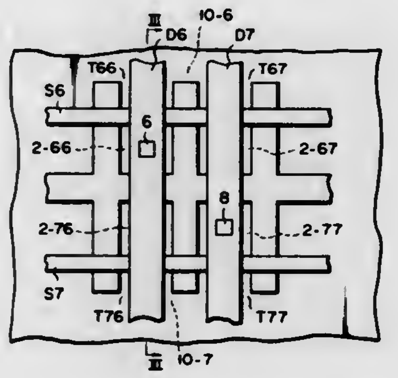
4. A method for making a support for an object comprising the steps of:
- (a) providing a hollow member having open ends for addition of a resilient foam mix therein;
- (b) inserting into said hollow member at preselected positions therein inserts with an opening therethrough, the axes of said opening and said hollow member being at right angles to one another;
- (c) cutting an opening in said hollow member leaving a flap therein over said opening;
- (d) closing the ends of said hollow member;
- (e) adding a predetermined amount of said resilient foam mix through said opening; and,
- (f) curing said resin mix whereby rising foam during said curing forces said flap into its original position prior to cutting thereby closing said opening.

4,129,936

METHOD FOR MANUFACTURING MONOLITHIC SEMICONDUCTOR MASK PROGRAMMABLE ROM'S

Sakae Takei, 1028 Kami Nakazato-cho, Isogo-ku, Yokohama-shi, Japan
Filed Sep. 8, 1977, Ser. No. 831,512
Claims priority, application Japan, Sep. 9, 1976, 51-107238
Int. Cl.^{2} B01J *17/00*
U.S. Cl. 29—571 8 Claims

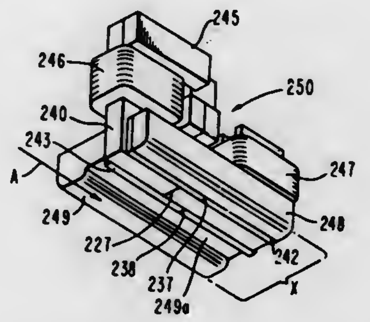
1. A method for manufacturing a monolithic semiconductor mask programmable ROM composed of a plurality of matrix-arranged IGFET's, comprising:
- (a) a process for manufacturing a semiconductor device with no information yet written therein, including steps of
  - (i) forming a plurality of relatively thick rectangular oxide layers for separating said IGFET's from one another at intervals on a substrate,
  - (ii) forming a relatively thin gate oxide layer all over said substrate and further forming a number of selective lines to be supplied with input signals, said selective lines being arranged across said relatively thick separating oxide layers at intervals on said gate oxide layer, and
  - (iii) forming a number of source and drain regions by removing said relatively thin gate oxide film in regions surrounded by said selective lines and said relatively thick separating oxide layers and diffusing an impurity with conductivity opposite to that of said substrate; and
- (b) a process for completing said ROM by writing information in said semiconductor device, including steps of
  - (iv) applying an impurity to portions of said substrate under gate regions between the source regions and their corresponding drain regions forming specified IGFET's selected from a number of IGFET's to form said semiconductor device according to an order from user through the gate oxide layer and the selective lines on said portions of the substrate, thereby changing the impurity concentration of said portions of the substrate with respect to that inherent in said substrate, and
  - (v) covering the whole surface of said semiconductor device with an oxide layer, boring contact holes through said oxide layer on said drain regions, and forming a number of data lines to produce a plurality of data, said data lines passing over said contact holes at intervals across said selective lines and connected to said drain regions through said contact holes.



4,129,937

METHOD OF MAKING GROUNDED TRANSDUCER FOR MAGNETIC RECORD DISKS

Gerald R. Knutson, and Karl A. Shidler, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 698,235, Jun. 21, 1976, Pat. No. 4,058,846. This application Aug. 25, 1977, Ser. No. 827,530
Int. Cl.^{2} G11B *5/42*
U.S. Cl. 29—603 5 Claims



1. In a method of making a magnetic head assembly, the steps which comprise,

making a ferrite core having a transducer gap in a working surface of the ferrite core,

making an outrigger of ceramic material,

plating the outrigger on at least a pair of contiguous surfaces thereof with a layer of electrically conducting material,

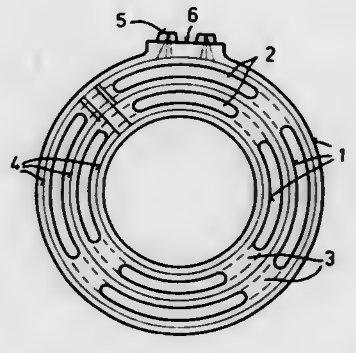
bonding said outrigger to said ferrite core with one of said plated surfaces being disposed between the ferrite core and said outrigger and with the other of said plates surfaces forming a continuation of said working surface of said ferrite core, and

lapping said working surface of said ferrite core and the continuation thereof provided by said outrigger so as to form an accurate working surface of the magnetic head assembly and to remove the plating on said surface of said outrigger forming a continuation of said working surface of said ferrite core leaving the conductive plating between said ferrite core and said outrigger which may provide a conductive path for static electricity carried by a magnetic medium contacting or lying in close proximity to said working surface.

4,129,938

METHOD OF MAKING TUBULAR COILS WITH COOLING AND INSULATING CHANNELS

Hariolf Hagenbucher, Zimmersmühlenweg 10/11, D-637 Oberursel, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 607,426, Aug. 25, 1975, abandoned, which is a continuation of Ser. No. 407,189, Oct. 17, 1973, abandoned. This application Oct. 5, 1976, Ser. No. 729,798
Int. Cl.^{2} H01F *41/06*
U.S. Cl. 29—605 2 Claims



1. A method of making a hollow dry insulated multi-layer series-connected air-cooled coil, which is highly resistant to impulse voltages, the steps comprising:
- a. on a form, winding a predetermined number of alternate layers of thin sheet insulation capable of absorbing liquid resin and turns of a single conductor;
- b. supporting on the thus-wound layers, a plurality of elongated equi-circumferentially spaced duct forming cloth-wrapped molds each having a cross-section which is a section of a torus with the section having rounded ends;
- c. continuing winding alternate layers of said thin sheet insulation and additional turns of said conductor around the assembly of molds and underlying layers of insulation and conductor;
- d. repeating the foregoing steps until the desired number of layers and molds is complete;
- e. vacuum casting the completed assembly with a high dielectric constant high quality resin to completely permeate the sheet insulation and cloth wrapping;
- f. curing said resin to form a unitary laminate with said cloth and insulation; and
- g. removing said form and molds, the radial dimension of said ducts defining the radial air spacing between layers of the coil and being about ten to twenty times the solid insulation spacing between adjacent conductors in the same layer and the solid insulation between the coils and the adjacent duct which latter dimension is held to between 0.5 and 1.0 mm.

4,129,939

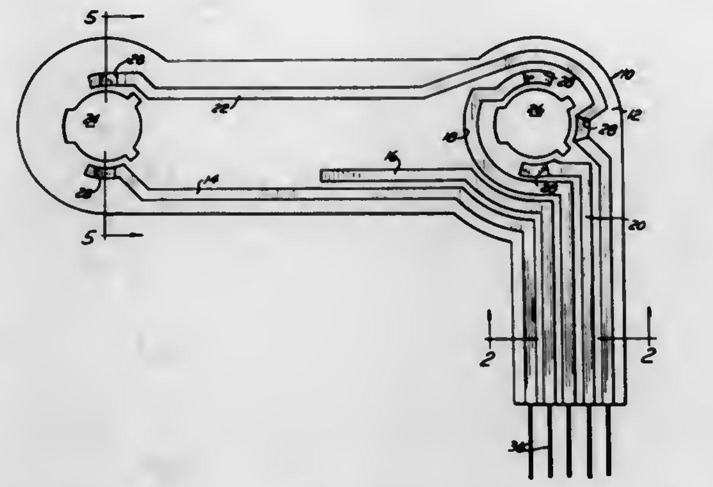
METHOD OF MAKING PRINTED CIRCUIT

Joseph W. Baldyga, Mt. Clemens, Mich., assignor to Diamond Die & Mold Co., Mt. Clemens, Mich.

Filed Aug. 22, 1977, Ser. No. 826,514

Int. Cl.^{2} H05K *3/10*

U.S. Cl. 29—625 **14 Claims**



1. The method of making the equivalent of a printed circuit comprising a sheet of insulating material having thereon a plurality of separated insulating strips adapted to be connected into electrical circuitry, which comprises shaping a plurality of circular cross-section conducting wire to the shape of the desired conducting strips, fixing the shaped wires in the desired pattern on a thin sheet of insulating material, and finally pressing the assembly of wires and sheet between flat opposed die surfaces to reduce the wires to thin flat flexible strips.

4,129,940

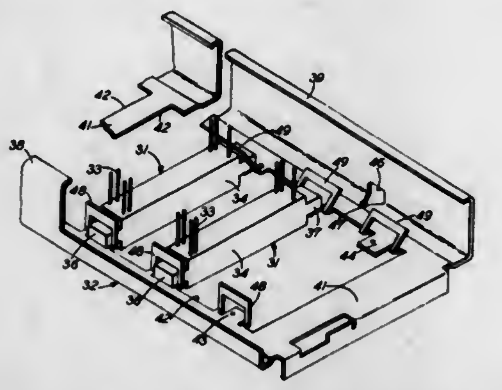
METHODS OF AND APPARATUS FOR ASSEMBLING CONNECTORS WITH A BACK PLATE

Henry D. Mitchell, Jr., Winston-Salem, N.C., assignor to Western Electric Co., Incorporated, New York, N.Y.

Filed Aug. 30, 1977, Ser. No. 829,161

Int. Cl.^{2} H02G *15/00*

U.S. Cl. 29—629 **16 Claims**



1. A method of assembling a connector with a support plate where the connector includes a first end and a second end; and the support plate includes a connector-receiving opening, a fixed connector-securing clasp on one side of the plate adjacent to a first edge of the opening and a bendable connector-securing clasp on the same side of the plate adjacent to a second edge of the opening opposite to and spaced from the first edge thereof, which comprises the steps of:

moving a connector-receiving nest at least partially through the opening in the support plate to the side of the plate which includes the clasps with the fixed clasp located at one end of the nest;

feeding the connector into the nest with the first end of the connector extending from one end of the nest and into the fixed clasp and the second end of the connector extending from the opposite end of the nest;

moving the nest back through the opening of the plate to position the connector partially into the opening and the second end of the connector adjacent to the bendable clasp of the plate; and

bending the bendable clasp over the second end of the connector to secure the connector with the support plate.

4,129,941

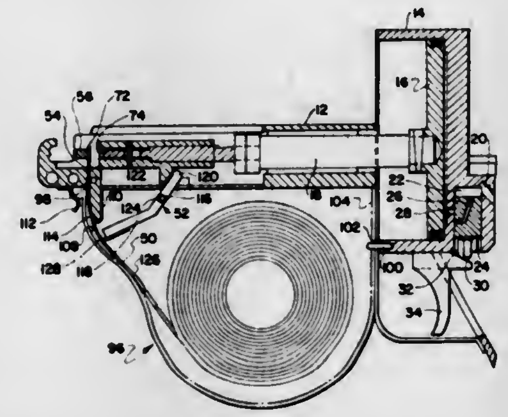
SPLICE GUN

Irwin Zahn, New York, N.Y., assignor to General Staple Company, Inc., New York, N.Y.

Filed Oct. 17, 1977, Ser. No. 842,572

Int. Cl.^{2} H01R *43/04*

U.S. Cl. 29—753 **17 Claims**



1. Apparatus for forming electrical splices from a continuous supply band; said apparatus comprising:

feeding means for feeding a preselected length of said supply band to a forming station;

clinching means positioned beneath said forming station;

forming means for forming said preselected length into a generally U-shaped configuration;

driving means for driving said U-shaped configuration into said clinching means, said driving means being disposed within said forming means;

operating means for simultaneously moving said forming means and said driving means is a forward direction for a preselected length of travel sufficient to effect formation of said U-shaped configuration by said forming means and for thereafter moving only said driving means in said forward direction to drive said U-shaped configuration into said clinching means; and

said operating means including piston means extending through said forming means and being directly connected to said driving means disposed within said forming means.

4,129,942

SHAVING IMPLEMENT

Nejat H. Denizman, 676 W. Diversey Ave., Chicago, Ill. 60614

Filed Sep. 12, 1977, Ser. No. 832,586

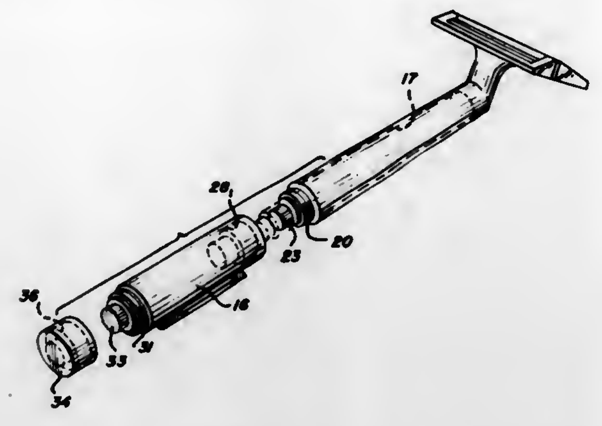
Int. Cl.^{2} B26B *21/44*

U.S. Cl. 30—41 **22 Claims**

1. In a shaving implement having means defining a shaving head, the improvement comprising

a handle having a first portion carrying said shaving head suitably to permit the implement to be used as a manually operable razor, said handle first portion defining a chamber removably holding dispensable shaving-associated material, said handle further including an extension portion removably secured to said first portion and defining a second chamber removably holding a different shaving-

associated material, said extension portion further defining means for selectively retaining the shaving-associated material in said first chamber to permit selective dispensing thereof as desired.



4,129,943

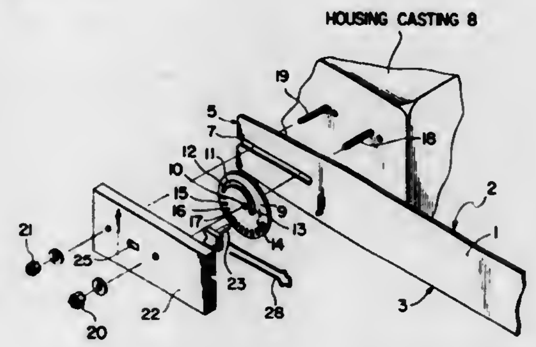
CHAIN SAW BAR TIGHTENER

Norman C. Bricker, R.R. #2, Coleman Rd., Courtenay, B. C., Canada (V9N 5M9)

Filed Nov. 25, 1977, Ser. No. 854,732

Int. Cl.^{2} B27B *17/14*

U.S. Cl. 30—386 **1 Claim**



1. A chain saw bar tightener for a chain saw having a chain bar of substantially elongated plate-like configuration having elongated top and bottom edges with a groove formed therein for guiding a chain, front and back edges with a groove for guiding the chain and a slot extending into the chain bar substantially parallel to the top and bottom edges from the back edge, and a housing casting, said chain saw bar tightener comprising

a disc having an axial bore therethrough, a substantially semiannular slot having a diameter smaller than that of the disc formed through the disc with its ends substantially on a diameter of the disc, the semiannular slot having one end adjacent the circumference of the disc and the other end adjacent the axial bore between said bore and a point diametrically opposite that adjacent the one end of the slot, and a plurality of spaced accommodation slots extending radially in mutually spaced relation in the area of approximately half the circumference of the disc;

disc mounting means for rotatably mounting the disc for rotation via a stud passing through the slot of the chain bar and affixed to the housing casting; and

a bar pin passing through the semiannular slot of the disc and into the chain bar slot in a manner whereby when the disc is rotated by a tool in the accommodation slots of the disc in a manner whereby when the bar pin is given a forward thrust, said bar pin is moved forward thereby moving the chain bar to tighten the chain of the saw and when said bar pin is given a backward thrust, said bar pin is moved backward thereby permitting the chain bar to loosen the chain of the saw.

4,129,944

DENTAL CONSTRUCTIONS AND DENTAL ALLOYS

Pei Sung, Lawrenceville; Irving Klaus, Highland Park Borough, and James Lee-You, Cranbury, all of N.J., assignors to Johnson & Johnson, New Brunswick, N.Y.

Continuation-in-part of Ser. No. 546,642, Feb. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 376,767, Jul. 5, 1973, abandoned. This application Feb. 24, 1977, Ser. No. 771,507

Int. Cl.^{2} A61C *13/00*

U.S. Cl. 32—8 **6 Claims**

1. A dental restorative construction comprising a metal core of a non-precious metal alloy contoured in a desired form and a porcelain covering bonded thereto, said metal core being an alloy consisting essentially of, on a weight basis, about 65 to 75 percent nickel, about 15 to 23.5 percent chromium, about 3.5 to 6 percent silicon, about 3 to 5 percent molybdenum, and about 0.2 to 2 percent boron, said alloy having a fusion temperature within the range of 2050° F. to 2350° F. and a coefficient of expansion in the range of from about 13.0×10^{-6} in/in/° C. to about 13.8×10^{-6} in/in.°C.

4,129,945

CLAMPING DEVICE FOR DENTAL HANDPIECE

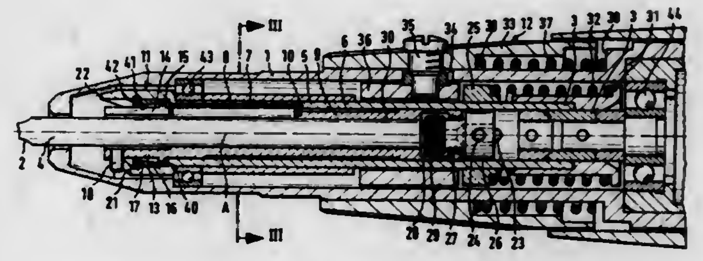
Eugen Eibofner, Biberach, Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach, Germany

Filed Jun. 29, 1977, Ser. No. 810,990

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1977, 2718750

Int. Cl.^{2} A61C *1/10*

U.S. Cl. 32—26 **12 Claims**



1. In a clamping device for clamping a dental tool to a dental handpiece, said handpiece having an elongated handpiece sleeve containing a drive shaft to drive a tooth treatment tool and having a hollow end portion on the output side to receive the shank of said dental tool, said hollow end portion having inner and outer circumferential walls and having depressions distributed over said inner circumferential wall said depressions being of decreasing depth as viewed in radial section, roll bodies being externally suspended from the interior of said drive shaft at said depressions to form a roll clamping lock retaining the tool during rotation of the drive shaft, a bushing in said hollow end portion of said drive shaft, said bushing having suspension openings to suspend said roll bodies, said suspension openings comprising a roll body or anti-friction cage, said openings permitting application of said roll bodies against the tool shank into a clamping position of said roll bodies, and said bushing including a pre-clamping element into which the shank is inserted for retention thereof prior to commencement of the rotation of said drive shaft, the improvement comprising:

a ring having a wedge-shaped axial section mounted in said hollow end portion of said drive shaft and held thereto against rotational and axial movement relative thereto, said ring including and inclined inner wall which tapers in a direction away from the tool side end; and,

said bushing including a collet axially movable in said cavity relative to said drive shaft;

an external grip coupled with said collet for axially moving thereof along a longitudinal axis thereof into tool clamping and release positions;

said collet including at a tool receiving end thereof said pre-clamping element, said pre-clamping element comprising a plurality of radially flexible clamping tongues having slots between each pair of adjacent tongues starting from the tool receiving end of said collet, each of said tongues including an outer radial hump, and at least one outer radial guide pin protruding from said collet into a triangular recess, said pin having a tip pointing in a direction of the longitudinal axis of symmetry of said drive shaft;

said drive shaft having said triangular recess disposed in said circumferential wall of said drive shaft, said triangular recess including a pair of oppositely disposed inclined flanks meeting at a point forming a triangle apex;

said guide pin being movable with said collet to abut one of said inclined flanks of said triangular recess and said roll bodies being moved to their tool shaft clamping position during mutual rotation of said drive shaft and said collet as a unit, and said guide pin engaging one of said inclined flanks when said roll bodies are in their clamping position and being cammed along said inclined flank to said triangle apex when said external grip moves said collet to its release position, and thereby also release said roll bodies from their clamping position.

4,129,946

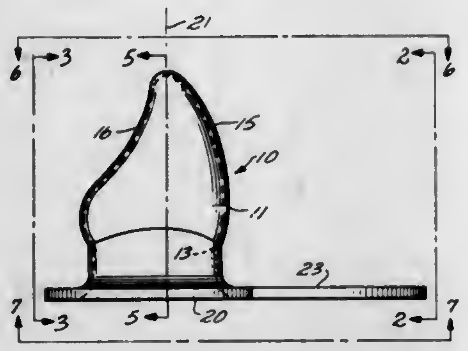
DENTAL CROWN FORM

Brian G. Kennedy, Claremont, Calif., assignor to Unitek Corporation, Monrovia, Calif.

Filed Feb. 17, 1977, Ser. No. 769,549

Int. Cl.^{2} A61C *5/12*

U.S. Cl. 32—63 **5 Claims**



1. In a dental crown form for holding and shaping a restoration material being applied to a prepared damaged tooth, the crown form being a hollow body with an incisal end, an open gingival end, and interior labial, lingual, and interproximal surfaces forming a continuous sidewall conforming in shape to a desired final restored state of the damaged tooth, the improvement comprising a tab secured to the crown form adjacent the gingival end of the body to provide a handle by which the crown form can be held during insertion of the restoration material and when the crown form is installed on the damaged tooth, the tab being integrally formed with the hollow body of the crown form, and extending substantially perpendicularly to an occluso-apical axis of the crown form.

4,129,947

GAUGE AND METHOD FOR DETERMINING THE NUMBER OF WORDS PER PRINTED PAGE

Carl F. Brown, Jr., 105 Fernbrook Cir., Spartanburg, S.C. 29302

Filed Nov. 18, 1977, Ser. No. 852,618

Int. Cl.^{2} B42D *15/00;* G01B *5/00*

U.S. Cl. 33—1 B **3 Claims**

1. A gauge for determining the number of words per line on a printed page:

(a) a rectangular transparent sheet adapted for having measuring indicia inscribed thereon and for being superimposed on a page of printed material; and

(b) measuring indicia inscribed thereon including:

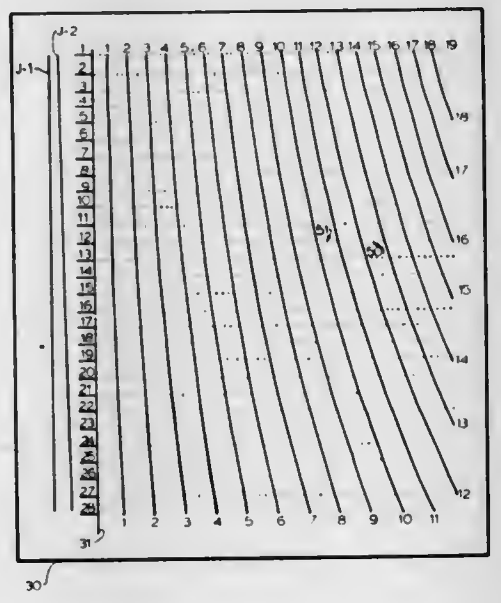
(i) a pair of opposing substantially vertically oriented measuring lines positioned along the left side of said transparent sheet and spaced such that the distance between them gradually increases in a downward direction, said lines being adapted to measure the width of a selected word having a high frequency occurrence in the English language by vertically moving said opposed measuring lines over said word on the printed page until said word fits the space between said lines;

(ii) a vertically extending reference line juxtaposed to the right of said pair of vertically oriented guidelines;

(iii) a plurality of equally spaced parallel guidelines extending from and to the right of said reference line in perpendicular relation thereto to form horizontally disposed guidelines along the length of said reference line;

(iv) a series of spaced, generally vertically oriented guidelines positioned to the right of said reference line and intersecting said horizontally disposed guidelines to form a grid therewith, said generally vertically oriented guidelines being spatially arranged such that the distance between adjacent points of intersection with said horizontally disposed guidelines at any vertical level bears a constant proportional relation to the distance between said pair of opposing substantially vertically oriented measuring lines at the same vertical level; and

(v) a first scale in which each horizontally disposed guideline is identified by a reference indicia and a second scale wherein each generally vertically oriented guideline is likewise identified by a numerical value representative of the average number of words in a line, thereby adapting said gauge to be employed for determining the number of words per line on a printed page to be determined by locating and jamming the selected word between said pair of opposing vertical lines, noting the corresponding reference indicia on said first scale, aligning said reference line with the left vertical edge of the printing on said printed page and with the said horizontal guideline corresponding to said first scale indicia beneath a line of print on said page and finally noting where the line of print above said horizontal guideline terminates in reference to the closest of said vertical guidelines and using the numerical values of said scale assigned to indicate said number of words per line.



4,129,948

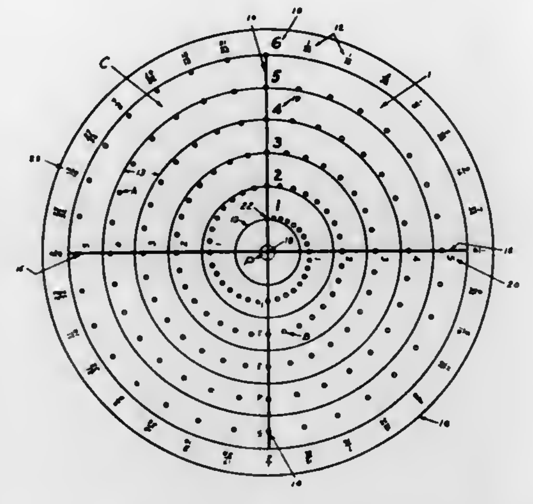
CIRCLE DRAWING AND MEASURING DEVICE

Edward E. Hatter, 25892 Serenata Dr., Mission Viejo, Calif. 92675, and Richard H. Taylor, 13691 Gershon Pl., Santa Ana, Calif. 92705

Continuation-in-part of Ser. No. 771,014, Feb. 22, 1977, abandoned. This application Mar. 15, 1978, Ser. No. 886,877

Int. Cl.^{2} B43L *9/04*

U.S. Cl. 33—27 C **35 Claims**



1. A drafting and measuring compass for the drafting and measuring of circles, which comprises:

(a) a template adapted to be disposed on a sheet of paper in parallel relationship to said paper and adjacent thereto,

(b) centering means associated with said template to enable the same to be rotated about a predetermined center which is fixed relative to said paper,

(c) zone means provided on said template to indicate concentric and generally annular zones centered at said predetermined center,

each of said zones having its boundary relatively adjacent said predetermined center located a first predetermined distance from said predetermined center, and having its boundary relatively remote from said predetermined center located at a second and higher predetermined distance from said predetermined center,

said boundaries and predetermined distances being such that the user may quickly and easily know that a particular point on said template is located more than a certain distance from said predetermined center and less than the next higher distance therefrom, and may also know the magnitudes of said distances on the particular distance sacle being employed on said compass,

(d) a multiplicity of holes provided in said template and each adapted to receive a drafting instrument which will make a line on said paper in response to rotation of said template about said predetermined center so that a circle is drawn on said paper,

said holes lying generally along radial lines from said predetermined center and also lying in various ones of said annular zones,

all the holes located a first predetermined fraction of each whole number of said particular distance scale being employed on said compass being disposed generally along one such radial line,

all the holes located a second predetermined fraction of each whole number of said particulr distance scale being employed on said compass being disposed generally along another such radial line,

all of the holes located various additional predetermined fractions of each said whole number being respectively located generally along various additional radial lines, and

(e) indicating means on said template to indicate which one of said fractions each of said radial lines represents,

whereby the relationship of any one of said holes to said predetermined center may be rapidly known by using (1) said indicating means and the radial line for the particular fraction and (2) said zone means indicating zones.

4,129,949

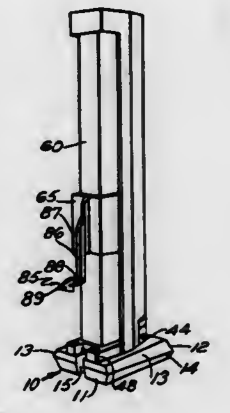
HEIGHT GAGE

Robert P. Callaghan, Jr., Westerly, R.I., assignor to Brown & Sharpe Manufacturing Company, North Kingstown, R.I.

Continuation-in-part of Ser. No. 673,727, Apr. 5, 1976. This application Dec. 19, 1977, Ser. No. 861,957

Int. Cl.^{2} G01B *5/14*

U.S. Cl. 33—169 R **5 Claims**



1. In a height gage, a generally horizontally disposed base and a generally vertically disposed column extending upwardly therefrom, said column having a plurality of vertically disposed surfaces, a slide embracing said column and presenting slide surfaces to the surfaces of said column, characterized by said slide being expandible and formed by a plurality of plates, resilient means connecting said plates, said means of a character to flex and cause expansion of the embracing slide upon the existence of fluid pressure between the surfaces of said slide and column to form a frictionless fluid bearing and subsequent contraction in the absence of such fluid pressure to grip the column, said slide surfaces having a plurality of fluid openings and means to supply fluid to said fluid openings to expand said slide.

4,129,950

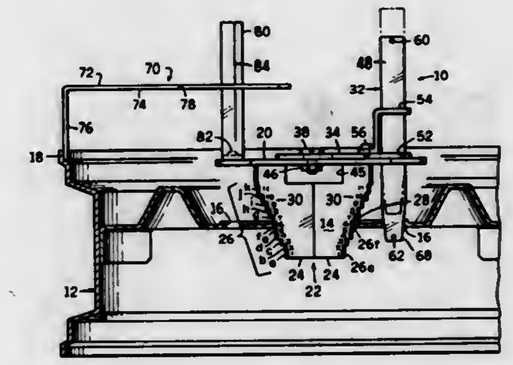
WHEEL GAUGE

Theodore Weinhaus, 7 Heartwoods, St. Louis, Mo. 63132, and Allen Fischer, St. Louis, Mo., assignors to Theodore Weinhaus, St. Louis, Mo.

Filed Jul. 25, 1977, Ser. No. 818,448

Int. Cl.^{2} G01B *5/08*

U.S. Cl. 33—178 R **10 Claims**



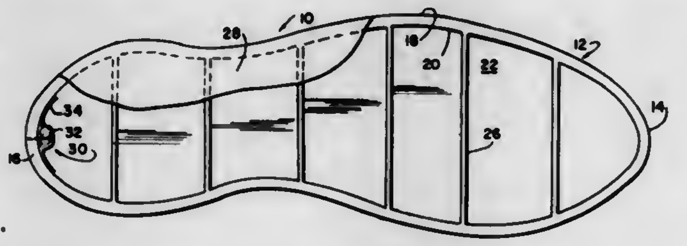
1. A wheel gauge comprising:

(a) base means,

(b) hub opening diameter indicator means attached to the base means and adapted to axially interfit a selected hub opening and including reference means indicating the diameter thereof, and

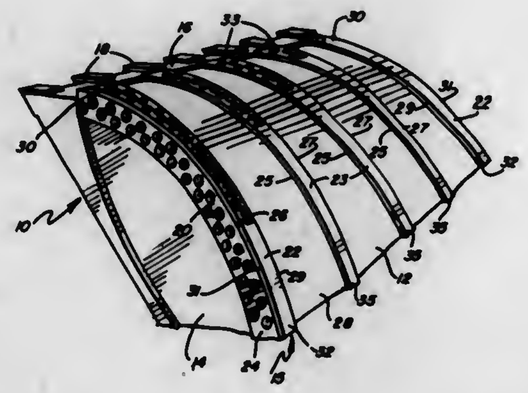
(c) bolt circle diameter indicator means attached to the base means and adapted to axially interfit a selected wheel bolt opening while the hub opening indicator means is in position, and including reference means indicating the bolt circle diameter thereof.

4,129,951
AIR CUSHION SHOE BASE
Charles Petrosky, 1118 N. Jefferson St., Arlington, Va. 22205
Filed Apr. 20, 1976, Ser. No. 678,658
Int. Cl.² A43B *13/20*
U.S. Cl. 36—29 **9 Claims**



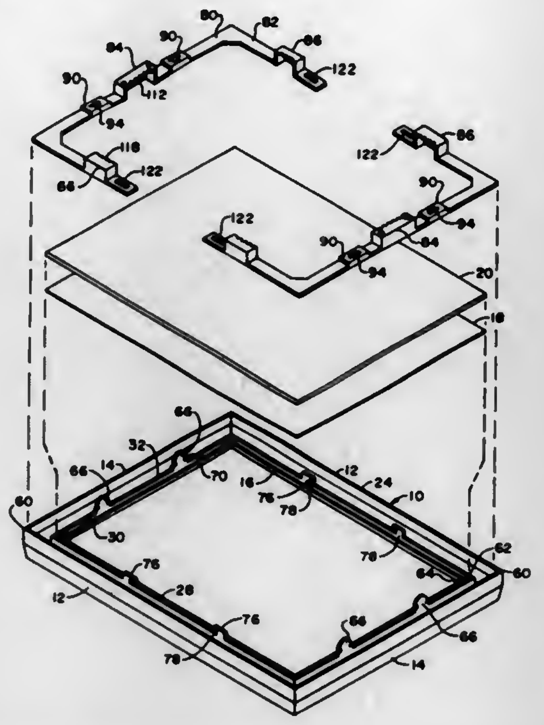
1. An air cushion shoe base comprising a flexible sole for contacting the floor, a flexible insole positioned above the sole for contacting a foot of a wearer, a rim extending around a periphery of the sole and insole for connecting the sole and insole in airtight relationship, and flexible partitions extending transversely across the rim from side to side between the sole and the insole for dividing the shoe base into plural inflatable transverse compartments, each of the partitions having a small metering orifice for flowing fluid through the metering orifice from one section to another section, and means joining the sole, the rim, the insole and the partitions in airtight relationship.

4,129,952
WEAR STRIPS FOR EARTHMOVING BUCKETS
Harris S. Olson, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Oct. 27, 1977, Ser. No. 846,005
Int. Cl.² E02F *3/00*
U.S. Cl. 37—118 R **15 Claims**



1. A wear-resistant bucket having a bottom wrapper sheet joined with a pair of spaced apart side plates, a side strip carried by each side plate and mounted near said bottom wrapper sheet, at least two bottom strips carried by said bottom wrapper sheet, said bottom strips being mounted near said side plates, and a plurality of wear-resistant inserts bonded into said side strips and said bottom strips.

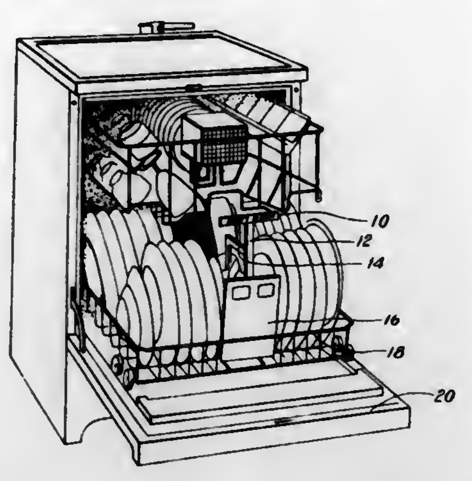
4,129,953
POSTER FRAME AND MOLDING METHOD
Ronald P. Eckert, Northbrook, Ill., assignor to DLM Inc., Niles, Ill.
Filed Sep. 29, 1977, Ser. No. 837,740
Int. Cl.² G09F *1/12*
U.S. Cl. 40—156 **7 Claims**



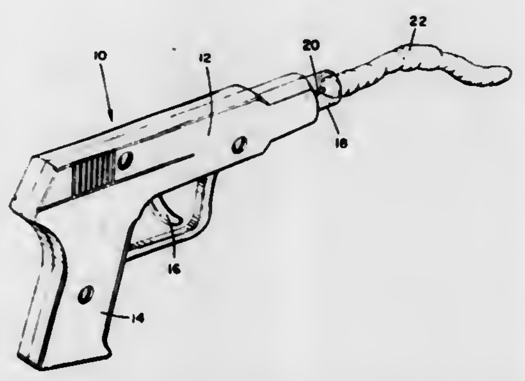
1. A picture frame comprising:
a unitary frame having end and side portions of U-shaped cross-section defined by an outer trim wall, a peripheral wall and an inner wall;
said outer wall having a width greater than said inner wall;
an intermediate wall extending between and in spaced relationship with said peripheral and inner walls;
said intermediate wall having a width greater than said inner wall to provide a rimmed recess to receive the edge of said picture;
an end and a side of said frame each having a pair of tab members extending in the plane of and from said intermediate wall;
said tab members on said end of said frame having opposed notches on the sides thereof;
said tab members in said side of said frame having notches on a side away from said end of said frame; and
at least one U-shaped clamp member adapted to hold said edge of said picture within said rimmed recess;
said clamp member having a body portion and a pair of leg members having slots registrable with said tab members and engageable into said notches whereby to snap-fit against the edges of said picture.

4,129,954
DISHWASHER INDICATING DEVICE
James M. Hulteen, Antelope Hill, Austin, Colo. 81410
Filed Jul. 5, 1977, Ser. No. 812,848
Int. Cl.² G09F *7/20*
U.S. Cl. 40—607 **3 Claims**

1. A dishwasher indicating device for indicating the condition of items in a dishwasher, said dishwasher having a movably mounted rack for supporting dishes, tableware, eating utensils, and the like, to be washed, said dishwasher indicating device comprising
a support member affixed to the rack of a dishwasher and extending upright from said rack, said support member comprising a substantially tubular member having an upper free end and an axial bore of substantially square cross-section formed therein at said upper free end; and
an indicator having a support rod of substantially square cross-section with spaced opposite first and second ends and a sign member affixed to the first end of said support rod and extending substantially perpendicularly with said support rod to form a T-shaped member, the second end of said support rod being removably seated in the bore of said support member, said sign member having a pair of opposite surfaces, one of said surfaces indicating that the items in the dishwasher are dirty and the other of said surfaces indicating that the items in said dishwasher are clean.



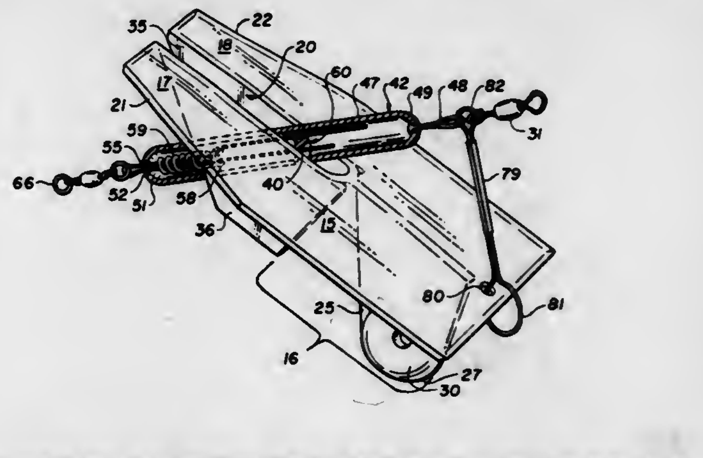
4,129,955
ARTICLE FOR INJECTING AIR INTO LIVE BAIT
John Schommer, 17204 McFadden, Apt. B, Tustin, Calif. 92680
Filed Aug. 13, 1977, Ser. No. 824,433
Int. Cl.² A01K *85/00*
U.S. Cl. 43—4 **6 Claims**



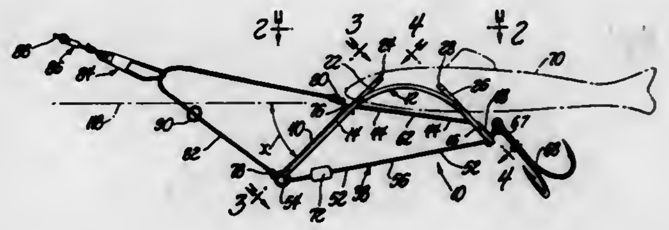
1. In a device for injecting a fluid or the like into live bait, the combination comprising:
a body member having a cavity formed therein;
a barrel member supported partially within said cavity and having an opening extending therethrough;
plunger means within said cavity in sliding engagement within one end of said opening;
hypodermic needle means within said opening adjacent the other end of said barrel, said hypodermic needle means including a hypodermic needle centrally disposed with respect to said opening and recessed within said barrel; and
means for actuating said plunger member to force fluid from within said barrel member.

4,129,956
DIVING PLANE FOR FISHING
Joseph F. Neary, Novato, Calif., assignor to Troller Corporation, Corte Madera, Calif.
Filed May 17, 1977, Ser. No. 778,829
Int. Cl.² H01K *95/00*
U.S. Cl. 43—43.13 **3 Claims**

1. In diving apparatus useful for fishing including a release member serially connectable to a towed fishing line, said release member having a first end connected to the leading end of said line, a second end connected to the trailing end of said line, a first catch member therebetween for opening from a closed position upon a predetermined amount of tension in said release member between said ends, and a central portion of predetermined transverse dimension adjacent said first catch member, a planar diving platform being formed with a leading base area, first and second trailing flukes separated to define first and second edges of a slot rearwardly extending from the leading base member; a connector having a first end mounted to said platform at said base and a second end mounted to the first end of said release member to permanently attach said platform to said first end of said release member; a second catch member spanning said slot for maintaining said release member at said first catch member within said slot to releasably attach said release member to said platform whereby said platform and release member between said first end and said first catch member together form a towing bridle on one side of said platform for pulling said platform through water at a preselected and constant diving angle, the improvement comprising: first and second fin members formed from and supported on said first and second flukes respectively at said slot extending normally to the planar platform; wherein said first and second fins are juxtaposed to the first and second side edges of said slot to form first and second uninterrupted planar surfaces defining a channel of a width generally that of the predetermined transverse dimension of said release members; said fins allowing said release member to slide into and out of said channel along said slot, but preventing said release member from undergoing side-to-side rotation and translation relative to said diving platform; said fins further inhibiting side-to-side movement of said diving platform relative to said water; such that said release member is held with respect to said connector to form a three-dimensional spaced towing bridle for said platform whereby said platform dives in a substantially vertical plane.



4,129,957
FISHING BAIT HARNESS, FISHING LURE, AND ATTACHMENT MEANS
Thomas E. Thirlby, Traverse City, Mich., assignor to Edward W. TenHonten, Cadillac, Mich., a part interest
Filed Nov. 19, 1976, Ser. No. 743,138
Int. Cl.² A01K *85/00, 83/06*
U.S. Cl. 43—42.49 **16 Claims**



1. Apparatus for towing through a related body of water fishing lure means having a relatively forward end and a relatively rearward end, comprising sling-like attachment means

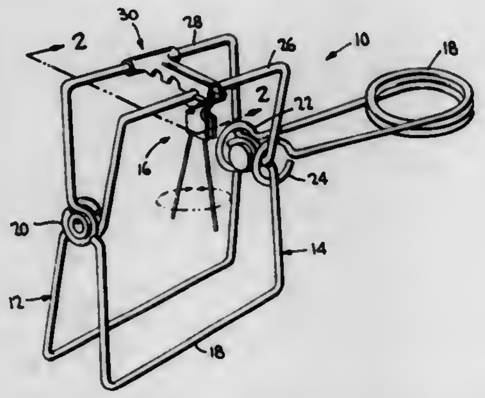
operatively secured to said relatively forward end of said lure means, said attachment means comprising a generally elongate flexible body having at least first and second ends, said first end being operatively secured to said relatively forward end of said lure means as to be situated at a relatively higher elevation, said second end being operatively secured to said relatively forward end of said lure means as to be situated at a relatively lower elevation, said elongate flexible body being connectible to related fishing line means at a location generally anywhere along said elongate flexible body between said first and second ends, said elongate flexible body being of an effective length causing said elongate flexible body to form a looped configuration extending a substantial distance forwardly of said first and second ends and a substantial distance forwardly of said relatively forward end of said lure means, said looped configuration defining generally first and second loop leg portions respectively terminating in said first and second ends, said flexibility of said elongate flexible body enabling said looped configuration to undergo changes in configuration whereby said loop leg portions change in length as the point of connection between said fishing line and said elongate flexible body is moved closer to either of said first and second ends thereby automatically compensating for changes in the angle between the direction of movement of said lure means through said related body of water and the direction of a pulling force applied by said fishing line to said elongate flexible body, and said second loop leg portion being positioned forwardly of said relatively forward end of said lure means as to be effective to engage any obstruction in said related body of water forwardly of said relatively forward end of said lure means and cause relative deflection therebetween thereby preventing undesirable snagging as between said obstruction and said lure means.

4,129,958
OMNI-DIRECTIONAL TRIGGER MECHANISM FOR ANIMAL TRAPS

Frank R. Conibear, Victoria, Canada, assignor to Woodstream Corporation, Lititz, Pa.

Filed Aug. 11, 1977, Ser. No. 823,862
Int. Cl.^{2} A01M *23/24*

U.S. Cl. 43—92 **10 Claims**



1. In an animal trap having similar first and second frames, each frame having side members serving as jaws and end portions extending therebetween, the end portion being pivotally connected for relative rotation of the frames between set and closed positions about a common pivot axis, and at least one actuator slidably carried on the frame to effect rapid and forceful rotation of said frames about said pivot axis, an improved trigger means for releasably maintaining the trap in a set position, comprising, when the trap is in the set position:

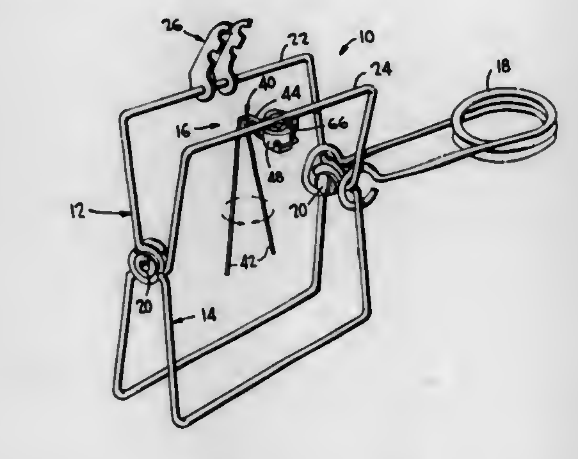
- a latch pivotally carried on one of said frames, the latch comprising an arm member having at least one notch spaced along said arm member and adapted to receive a portion of the other frame in said notch to hold the frames in a set position; and,
- a trigger mechanism pivotally carried on the other frame, portions of the trigger mechanism engaging said latch and being angularly displaceable about said other frame in any direction to release said other frame from said notch and thereby to release said frames for relative rotation.

4,129,959
UNIVERSAL TRIGGER MECHANISM FOR ROTATING FRAME ANIMAL TRAPS

Anthony J. Souza, Lancaster, Pa., assignor to Woodstream Corporation, Lititz, Pa.

Filed Sep. 6, 1977, Ser. No. 830,885
Int. Cl.^{2} A01M *23/24*

U.S. Cl. 43—92 **12 Claims**



1. In an animal trap having similar first and second frames, each frame having side members serving as jaws and end portions extending therebetween, the end portions being pivotally connected for relative rotation of the frames between set and closed positions about a common pivot axis, and at least one actuator slidably carried on the frames to effect rapid and forceful rotation of said frames about said pivot axis, an improved trigger means for releasably maintaining the trap in set position, comprising, when the trap is in the set position:

- a latch pivotally carried on one of said frames, the latch comprising an arm member having at least one notch spaced along said arm member and adapted to receive a portion of the other frame in said notch to hold the frame in a set position; and,
- a trigger mechanism pivotally carried on the other frame, the trigger mechanism comprising,
- a frame engaging member having a recess formed in an upper surface thereof, the recess receiving a portion of the other frame therein for pivotal movement of the frame engaging member about said portion of the other frame,
- a body member having a recess formed therein, at least a portion of the frame engaging member being loosely received within the recess in the body member,
- means for mounting the frame engaging member within the recess of the body member for relative rotation therebetween; and
- cam means on at least a portion of the body member for engaging at least portions of the latch, the body member being angularly displaceable about said portion of said other frame in any direction to release said other frame from said notch and thereby to release said frames for relative rotation.

4,129,960
INTERLOCKING BLOCKS

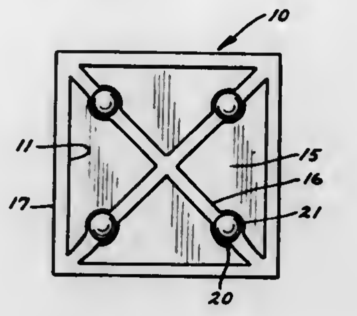
John A. Gale, Excelsior, Minn., assignor to American Guidance Service, Inc., Circle Pines, Minn.

Filed Jun. 9, 1976, Ser. No. 694,170
Int. Cl.^{2} A63H *33/08*

U.S. Cl. 46—25 **8 Claims**

7. Interlocking educational and recreational hollow cubic blocks each having:

(A) four vertical square side walls,
(B) a horizontal square top wall,
(C) a flat square bottom surface, said bottom surface defining an open face of said hollow block, said bottom surface further comprising the edges of intersecting diagonal ribs extending vertically down from said top wall within said hollow block,
(D) four male interlock members on said ribs projecting perpendicularly therefrom, one member adjacent each of the corners thereof, each of said members being spaced equidistantly inwardly from the adjacent pair of edges defining the corner, and



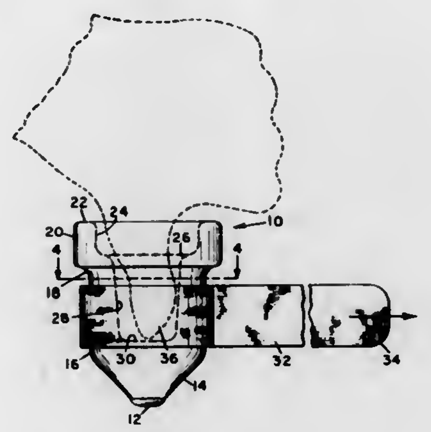
(E) four female interlock members engageable with the male members of an abutting block of equal size and recessed into each of the remaining wall faces, one member adjacent each of the corners thereof, each of said female interlock members being spaced equidistantly inwardly from the edges of the faces by the same distance said male interlock members are spaced inwardly from the edges and being of a depth sufficient to receive the length of a male member.

4,129,961
SPINNING TOP AND BELT

Arnold E. Parodi, 1950 NW. 85th Way, Pembroke Pines, Fla. 33024

Filed Jun. 8, 1977, Ser. No. 804,503
Int. Cl.^{2} A63H *1/00*

U.S. Cl. 46—64 **3 Claims**



1. A spinning top and flat flexible belt in combination comprising:

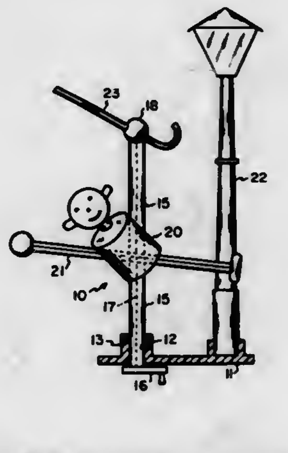
- a spinning top comprising a cone-shaped bottom surface merging into a top convex spinning bottom surface, said cone-shaped bottom surface merging into an upwardly extending cylindrical main body portion having a first outer circumference, then merging outwardly and upwardly into a second cylindrical area having a second outer circumference with a radius less than twice the radius of said first outer circumference, said second cylindrical area having inner wall portions approximately coextensive with said second cylindrical area defining a first hollow cylindrical interior having a circumference merging internally into a second hollow interior area being slightly tapered inwardly and having a circumference less than said circumference of said first hollow cylindrical interior and being disposed within the main body cylindrical portion, said first and second hollow interior areas being contoured to receive therewithin a rod or a human finger; and
- a flat flexible belt means having a width approximately the height of said main body cylindrical portion for being overlappingly wrapped around the main body cylindrical portion and pulling to provide rotation to the spinning top.

4,129,962
DEVICE ADAPTED FOR SELF-DETERMINING, UNPREDICTABLE VARIATIONS IN MOVEMENT

Richard Goldner, 3717 Toad Lake Rd., Bellingham, Wash. 98225

Filed Sep. 22, 1976, Ser. No. 725,465
Int. Cl.^{2} A63H *13/00*

U.S. Cl. 46—120 **10 Claims**



1. A device for self-determining, unpredictable movement comprising:

a. a base having at least one opening therein;
b. a deformable, flexible member rotatably mounted to and extending from said base, said member being readily deformable and adapted to retain any deformation until a subsequent deformation occurs;
c. means mounted to said base for rotating said deformable, flexible member relative to said base and operably connected to said deformable, flexible member through said opening;
d. a body member mounted on said deformable, flexible member and frictionally engaging at least a portion of said deformable, flexible member so that, when said deformable flexible member is rotated, said body member will rotate therewith if not obstructed but may remain stationary relative thereto if obstructed; and
e. obstruction means mounted to said base and positioned in the path of rotation of said deformable, flexible member or said body member to deform said deformable, flexible member.

4,129,963
TOY ARTICLE HAVING CHANGEABLE EXPRESSION GRAPHICS

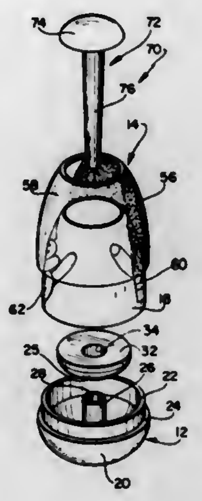
Francis V. Perry, Jr., Foxboro, Mass.; Richard P. Barlik, Cumberland, R.I.; William P. Richardson, South Easton, Mass.; Robert H. Hudson, Seekonk, Mass., and Leonard Gray, South Attleboro, Mass., assignors to Hasbro Development Corp., Pawtucket, R.I.

Filed Sep. 2, 1977, Ser. No. 830,350
Int. Cl.^{2} A63H *1/22*

U.S. Cl. 46—155 **10 Claims**

1. A toy article comprising a base having a rounded bottom wall in which a cavity is defined and including an upwardly extending flange that defines the uppermost portion of said base, a central tubular section having a portion thereof that has an upwardly reducing diameter, the lowermost portion of said central section engaging a flange of said base, a portion of said central section being opaque and a portion thereof being clear to provide for visual access therethrough, an interior band

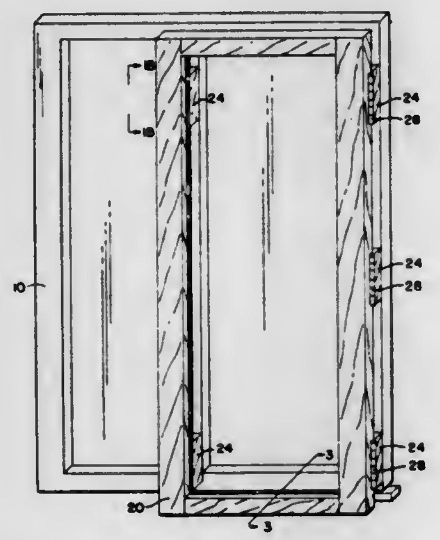
located within said central section and having graphic material imprinted thereon that is visible when the clear portion of said central section is aligned therewith, a top portion having a shaft that extends downwardly through the interior of said central section for engagement with said base for assembling the base, central section and top portion as a unit, said central section being moveable relative to said base and top portion to selectively locate a part of said graphic material in alignment with the clear portion of said central section for visual access thereto.



4,129,964
DOUBLE WINDOW HAVING IMPROVED WEATHER SEALED VENTILATION

Lee E. Farr, 1940 Broadway #5, San Francisco, Calif. 94109

Filed Nov. 25, 1977, Ser. No. 854,958
Int. Cl.^{2} E05B *65/04*
U.S. Cl. 49—67 7 Claims

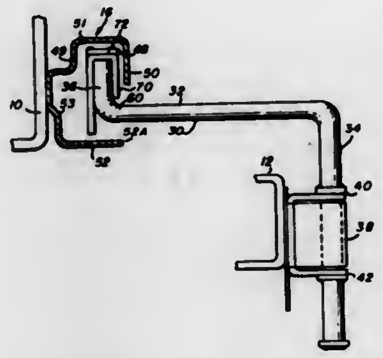


1. A double window comprising in combination a conventional window at least a portion of which is capable of being opened to admit air; a confronting pane of transparent material overlying said portion of said conventional window that is capable of being opened; and, means for maintaining said confronting pane in a plane that is parallel to the plane in which said conventional window lies and exterior the structure of which said conventional window is a part, such that a gap between said conventional window and said confronting pane exists at the entire periphery of said confronting pane, said gap being in the range between 1.5 and 2.25 inches.

4,129,965
SAFETY CRANK ASSEMBLY FOR RAILROAD BOX CAR PLUG-TYPE DOORS

Clarke Reynolds, 16 St. Bernard La., Tiburon, Calif. 94920, and Richard J. Quigley, 25538 Adobe La., Los Altos Hills, Calif. 94022

Filed Mar. 13, 1978, Ser. No. 885,485
Int. Cl.^{2} E05D *15/10*
U.S. Cl. 49—220 11 Claims



1. For a plug-type railroad box car door which is supported for movement in and out of a door opening in the car by means of a pair of spaced apart operating crank assembly means higher lower operating crank assemblies for engaging a roller track and upper operating crank assemblies for engaging a retainer track having an upper U-shaped channel and a lower horizontal shelf, the improvement of a safety crank assembly mounted between said door, intermediary of said operating crank assembly, and said retainer track to prevent said door from disengaging from the car in the event of failure of said operating crank assembly means, said safety crank assembly comprising;

- a crank arm having a substantially horizontal center portion and two oppositely extending vertical end portions;
- door means for rotatably securing one vertical end portion of said crank arm to said door;
- shuttle means rotatably engaging the other vertical end portion of said crank arm for slidingly supporting said other vertical end portion within said retainer track;
- said shuttle means including a rearwardly positioned and downwardly depending load bearing skirt having a length selected such that, in case of failure of said operative crank assemblies, the lower end of said skirt bears on the upper surface to the lower horizontal shelf of said retainer track at a point which is spaced closer to the side wall of the car than the edge of said shelf to exert a substantially smaller bending movement on said shelf than would be exerted by the horizontal portion of said crank arm in the absence of said shuttle means; and
- the upper end of said shuttle means being shaped and dimensioned to slidingly and nonrotatably engage the upper U-shaped channel of said retainer track to maintain said skirt in substantially the same rearward position independent of the rotational position of said crank arm.

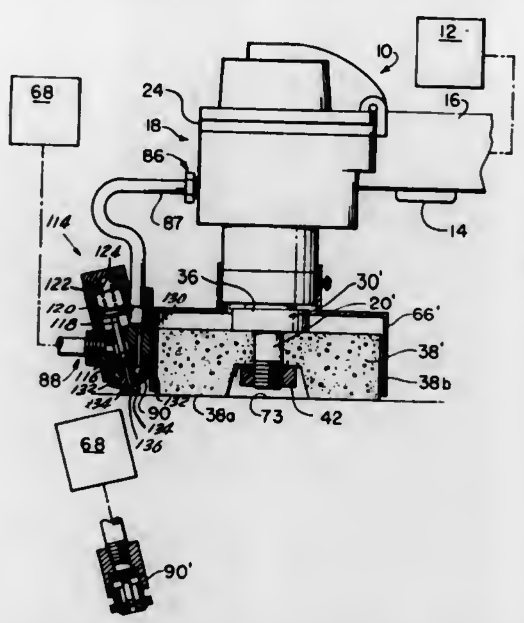
4,129,966
GRINDER APPARATUS WITH POLLUTION CONTROL FLUID DISPENSING MEANS

William L. Smart, Indianapolis, Ind.; Stuart A. Hoenig, Tucson, Ariz.; Christian W. Savitz, Tucson, Ariz., and Douglas K. Darlington, Tucson, Ariz., assignors to Ransburg Corporation, Indianapolis, Ind.

Filed Aug. 25, 1977, Ser. No. 827,459
Int. Cl.^{2} B24B *23/02, 55/02*
U.S. Cl. 51—170 T 5 Claims

1. A hand-held grinder comprising a housing, a pneumatic motor housed within the housing, handle means provided on the housing for holding the grinder, means for connecting the motor to a source of compressed gas, and grinding means driven by the motor, the grinding means being connected to an

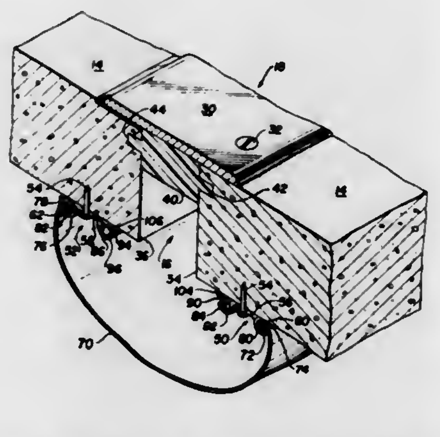
output shaft of the motor and including a grinding surface, a source of pollution control fluid, means for atomizing the pollution control fluid and for dispensing the pollution control fluid adjacent the grinding surface to capture particulate contaminants generated during grinding operations, means for coupling the atomizing means to the source of pollution control fluid, the motor including an exhaust port and means for coupling the exhaust port to the atomizing means, gas from the source being passed through the pneumatic motor at a first superatmospheric pressure to cause rotation of the shaft, then exhausted from the motor at a second, relatively lower superatmospheric pressure to control dispensing of the pollution control fluid in the atomizing means.



4,129,967
APPARATUS FOR COLLECTING FLUID SEEPAGE IN A BUILDING STRUCTURE

Robert M. Barlow, Great Falls, Va., assignor to John D. VanWagoner, a part interest

Filed Jun. 10, 1977, Ser. No. 805,318
Int. Cl.^{2} E04D *13/04;* E04B *1/68*
U.S. Cl. 52—15 8 Claims



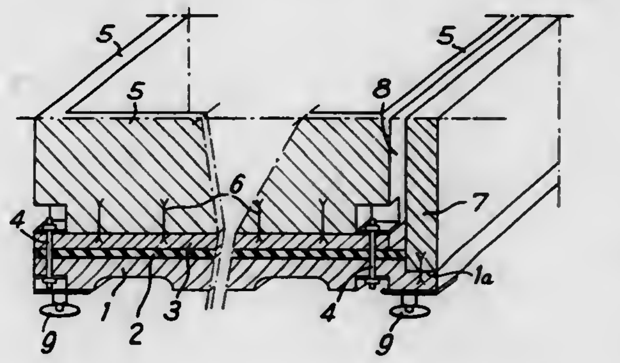
1. Apparatus for collecting fluid seepage in a building structure or the like wherein said structure is constructed, at least in part, with generally horizontal slabs having separations therein such as expansion joints and/or stress developed cracks which occasionally permit fluid seepage through said slabs, said apparatus comprising:

- a first elongated barrier strip means operably positioned completely beneath a bottom surface of a generally horizontal slab along one edge of a separation therein;
- mounting means connected to said first barrier strip means for fixedly connecting said first barrier strip to the bottom surface of said slab;
- a second elongate barrier strip means operably positioned completely beneath a bottom surface of said generally horizontal slab along the other edge of the separation therein;
- mounting means connected to said first barrier strip means for fixedly connecting said second barrier strip to the bottom surface of said slab;
- flexible receiving means connected between said first and second elongate barrier strip means and operably extending coextensively with said barrier strip means and beneath the separation in said slab;
- said first elongate barrier strip means having,
  - a first elongate base member operably connected completely beneath the bottom surface of the generally horizontal slab,
  - a first retaining means fashioned along one edge of said first base member for engaging and holding one edge of said flexible receiving means, and
  - a first drip contour means fashioned along the other edge of said first base member and being operable to be mounted upon the bottom surface of said slab with said first drip contour means disposed beneath said slab and adjacent one side of the separation in said slab; and
- said second elongate barrier strip means having,
  - a second elongated base member operably connected completely beneath the bottom surface of the generally horizontal slab,
  - a second retaining means fashioned along one edge of said second base member for engaging and holding the other edge of said flexible receiving means, and
  - a second drip contour means fashioned along the other edge of said second base member and being operable to be mounted upon the bottom surface of said slab with said second drip countour means disposed beneath said slab and adjacent the other side of the separation in said slab wherein fluid seeping through the separation in said slab will encounter either said first or said second contour means and drip downwardly therefrom into said receiving means.

4,129,968
MODULAR CONSTRUCTION ELEMENT

Fernand Royer, 15 Grand'rue, Sarry, 51000 Chalons sur Marne, France

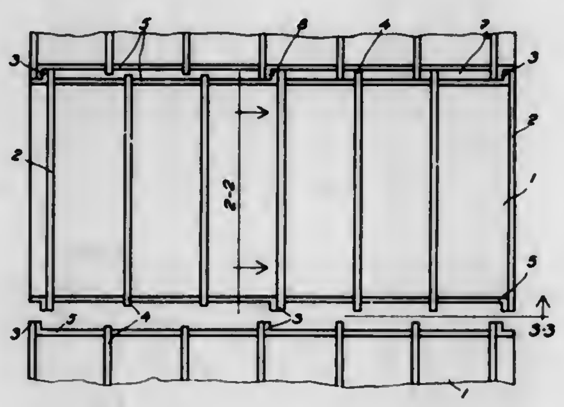
Filed Jun. 21, 1977, Ser. No. 808,443
Claims priority, application France, Jun. 28, 1976, 76 19617
Int. Cl.^{2} E04H *1/12;* E04B *1/36*
U.S. Cl. 52—79.1 16 Claims



1. A modular element for use in the construction of dwellings comprising, a floor, a ceiling and vertical walls extending between the floor and the ceiling to define at least one parallelepipedic box-shaped compartment, said floor having a plurality of corners and comprising a reinforced concrete slab, a layer of supple material placed on and covering said slab, and a false floor positioned on said supple material for relative movement with respect to said slab, said vertical walls being rigidly connected at their base to said flase floor for movement therewith, and releasable fixing means connected between said slab and said false floor, at least in each of the corners of the element, for selectively fixing the slab to the false floor when the element is in its final position in use and for permitting

limited relative movement therebetween when the element is being transported to a construction site whereby excess loads imposed on the floor slab during transport are absorbed in said supple material without being transmitted to said false floor or said vertical walls.

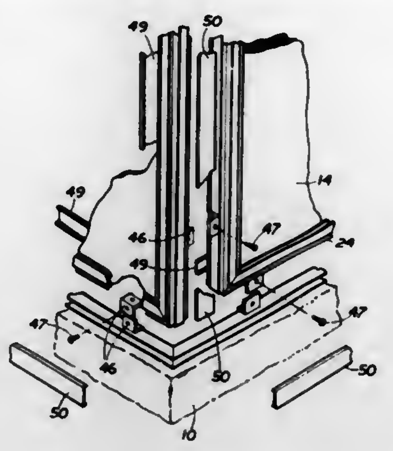
4,129,969
STRUCTURAL SPACE ELEMENT
Jalo Haapala, Temppelikatu 8 A 23, Helsinki, Finland
Filed Jun. 15, 1976, Ser. No. 696,333
Claims priority, application Finland, Jun. 27, 1975, 751913; Nov. 17, 1975, 753231
Int. Cl.² E04B *5/48;* E04C *1/30*
U.S. Cl. 52—79.9 **10 Claims**



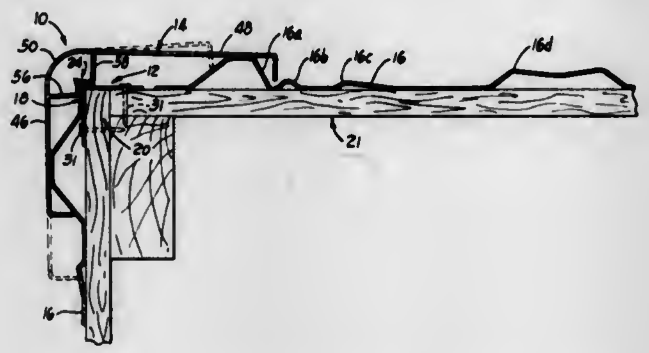
1. A building structure comprising a plurality of mated spaced elements, each of said space elements comprising a tube element having two generally vertical walls along with a generally horizontal floor and ceiling, each of said tube elements having a longitudinal axis, each of said tube elements having collar means transversely circumscribing the outside of the respective tube element at fixed intervals to define beam-pillar-rings, said collar means having vertical pillar portions disposed along said two vertical walls and horizontal beam portions disposed along said general horizontal floor and ceiling, said pillar portions having a cross-sectional area greater than said beam portions, said tube element being mated such that the collar means of one tube element mates with the collar means of the other tube elements, said tube elements being mated side-by-side and one upon and beneath the other by inverting one tube element end-to-end relative to an adjacent tube element such that the collar means on one tube element overlaps with the collar means on the other mating tube element, whereby said overlapping collar means form double overlapping collars, steel reinforcement means anchored in the corners of said collar means, said steel reinforcement means forming at the corners of said collar means closed loops to make said corners structurally stiff, and elongated steel concrete means located at the outer corners of said tube elements and interconnecting the collars of mated tube elements.

4,129,970
BUILDING CONSTRUCTION
Franklyn L. Whitney, R.D. 1, Box 447-A, Stockton, N.J. 08559
Filed Nov. 14, 1977, Ser. No. 851,160
Int. Cl.² E04B *2/08*
U.S. Cl. 52—285 **12 Claims**

1. In a building unit having a plurality of panels interconnected to comprise a building module, a sandwich panel having a pair of spaced parallel surface sheets and an intermediate filler material, and a reinforcing, load-carrying framing element extending about the periphery of said sandwich panel, said framing element comprising an elongated member of generally U-shaped cross-section having spaced parallel extending leg portions and an intermediate transverse leg portion, each of said three leg portions having a wide base portion, and a flange portion mounted in outwardly-spaced-parallel relation to said base portion by a pedestal, the width of said pedestal being less than the width of said flange portion to provide clearance between the inner side of each free margin of the flange and the outer side of the base portion confronting said flange, the extending leg portions being mounted with the inner surface of said base disposed flush against the exposed surface sheet of said sandwich panel, and means to anchor said U-shaped member in place.

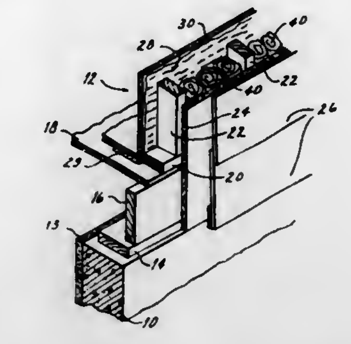


4,129,971
EDGE COVER TRIM
Hans E. Reusser, Westlake, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio
Filed Apr. 29, 1977, Ser. No. 792,256
Int. Cl.² E04B *5/00, 7/00*
U.S. Cl. 52—288 **6 Claims**



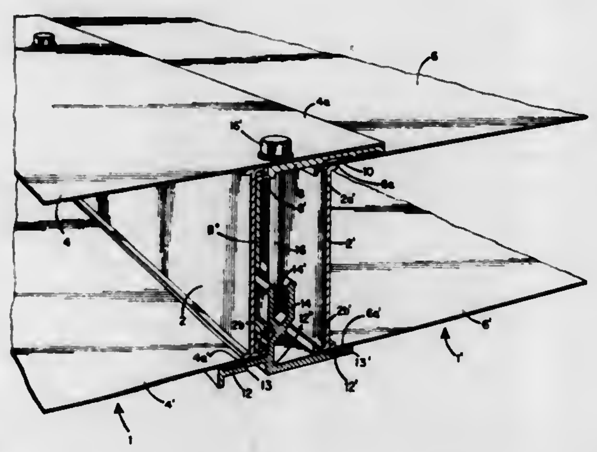
1. Corner trim structure for use with formed metal sheet roofing and siding, comprising a snap together support and resilient cover; said support comprising an elongated angle member formed of first and second planar parts meeting at a first apex, and an integral cover-retainer portion along the apex externally of the angle member, said cover-retainer portion comprising an elongated member with a second apex and diverging surfaces that terminate in flange-like marginal portions that define side edges extending longitudinally of the angle member, the second apex, marginal portions and side edges being spaced from the planar parts of the angle member; and said cover comprising first and second elongated sides, the general extents of which form an acute included angle therebetween, a portion along the distal edge of each side extending inwardly of the included angle, and first and second retaining elements extending inwardly of the included angle from the first and second sides, respectively, of the cover, each retaining element terminating along its distal edge in a portion that fits between one of the planar parts of the angle member and the overlying flange-like marginal portion of the cover-retainer portion of the support, when the cover and support are assembled.

4,129,972
TOP VENTED INSULATING STRUCTURE
Morton Sherman, and James A. Berry, both of St. Petersburg, Fla., assignors to The Celotex Corporation, Tampa, Fla.
Filed Feb. 8, 1977, Ser. No. 766,649
Int. Cl.² E04B *1/70*
U.S. Cl. 52—303 **15 Claims**



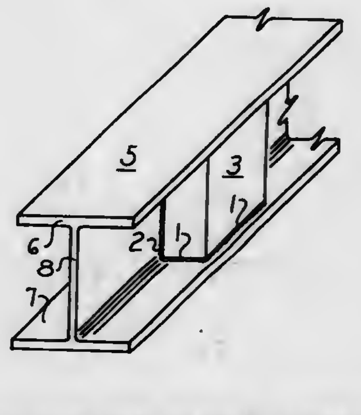
1. A top-vented, insulating wall in a building structure comprising spaced vertical framing members and interior and exterior face-forming layers, a first substantially moisture- and air-impervious barrier located on one side of said framing members, a second substantially moisture- and air-impervious barrier located on the other side of said framing members, a substantially moisture- and air-impervious closure substantially sealing said barriers at the bottom of said wall and a venting structure located only at the top of said wall to permit release of water vapor from the interior of said wall.

4,129,973
JOINING CLAMP ASSEMBLY WITH OVERLAPPING SEALS FOR TRANSLUCENT WALL PANELS AND THE LIKE
Richard R. Keller, Bedford, N.H., assignor to Kalwall Corporation, Manchester, N.H.
Filed May 4, 1977, Ser. No. 793,522
Int. Cl.² E04B *7/00;* E04D *1/16, 3/38*
U.S. Cl. 52—308 **4 Claims**



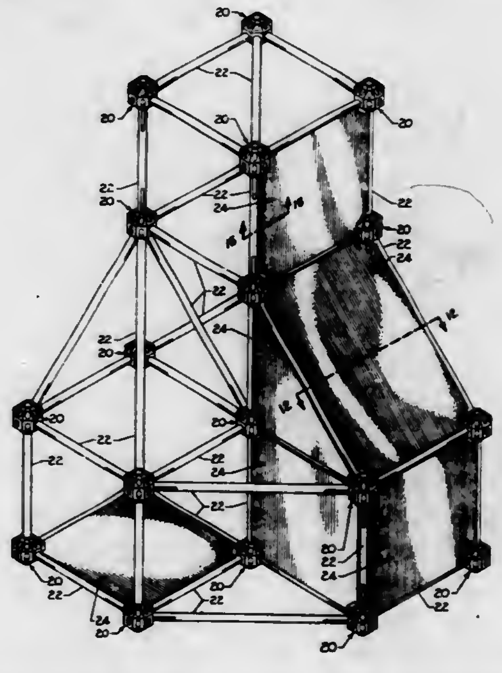
1. An overlapping panel structure comprising, in combination, first and second sandwich type panels having longitudinal peripheral portions positioned in edge-to-edge relation and carrying sheets of material on opposed surfaces thereof, and a clamp assembly, said clamp assembly comprising opposed first and second longitudinally extending clamping structures, the first clamping structure being permanently fixed to the first panel and having a member extending from the peripheral portion of the first panel, said member overlapping an adjacent sheet of the second panel and staggering the second panel out of the plane of the first panel, the second clamping structure having oppositely directed members and being assembled with said panels so that said oppositely directed members overlap adjacent sheets of the first and second panels, respectively, said oppositely directed members being offset to accommodate said staggering of the panels, recesses being provided between each of said members and the sheets overlapped thereby, said recesses receiving weather-sealing means therein contacting the corresponding overlapped sheets, locking means connected with the second clamping structure and extending in the space between the clamping structures, and securing means passed from the first clamping structure into said space, engaging the locking means, and drawing said clamping structures together and clamping said panels therebetween.

4,129,974
WARP-RESTRAINING DEVICE AND IMPROVEMENT TO BEAMS, GIRDERS, ARCH RIBS, COLUMNS AND STRUTS
Morris Ojalvo, 2258 Wickliffe Rd., Columbus, Ohio 43221
Filed Jun. 18, 1974, Ser. No. 480,513
Int. Cl.² E04C *3/06*
U.S. Cl. 52—729 **3 Claims**



2. An improved structural member comprising:
At least two substantially parallel flanges;
At least one rectangular web interconnecting said flanges;
At least one element having the shape of a trough with open ends positioned between an opposing pair of said flanges with the end edges of said element connected in a continuous or substantially continuous manner to the inner faces of said flanges and with said longitudinal edges of said element in contact with and connected to the web in a continuous or substantially continuous manner.

4,129,975
CONSTRUCTION SET HAVING CLIP FASTENERS
Richard J. Gabriel, Portland, Oreg., assignor to Matrix Toys, Inc., Portland, Oreg.
Continuation-in-part of Ser. No. 775,916, Mar. 9, 1977, abandoned. This application Oct. 19, 1977, Ser. No. 843,580
Int. Cl.² E04H *12/10*
U.S. Cl. 52—648 **6 Claims**



1. A construction set for forming three-dimensional models comprising:

(a) hollow joint elements having multiple joint openings located therein, some of said joint openings being circular and some of said joint openings being elongate with substantially straight parallel sides and arcuate ends having a diameter equal to the diameter of said circular joint openings;
(b) elongate struts adapted for interconnecting two of said joint elements, each strut having a clip located at each end, said clip being generally cylindrical in cross section with truncated side walls, for snug releasable joinder with said elongate joint openings when properly aligned therewith and rotatable joinder with said circular openings; and
(c) the clips being elastically depressable for insertion into the joint openings, and having means for interlocking with the joint elements upon return to their relaxed positions when seated in the openings.

4,129,976
APPARATUS FOR FORMING, FILLING AND CLOSING BAGS

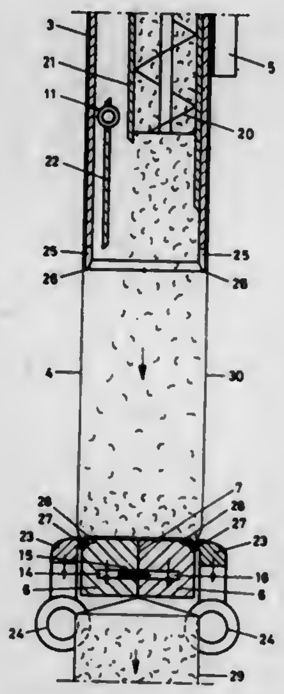
Bruno Gründler, Neuhausen am Rheinfall; Hans Heinzer, Beringen, and Werner Müller, Neuhausen am Rheinfall, all of Switzerland, assignors to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Sep. 21, 1977, Ser. No. 835,426

Claims priority, application Switzerland, Sep. 30, 1976, 12370/76

Int. Cl.² B65B *9/12*

U.S. Cl. 53—552 **6 Claims**



1. In an apparatus for forming, filling and closing bags in a continuous, cyclic operation, including a substantially vertically oriented hollow mandrel of rectangular cross section having two opposite long sides, two opposite short sides and low terminal edges defining a lower mandrel terminus; means for continuously forming a hose about the mandrel from a sheet being advanced thereto; two transverse shoes arranged for vertical reciprocation between an upper location at the lower terminus of the mandrel and a location spaced vertically downwardly from the upper location; the transverse shoes being further arranged for horizontal reciprocation towards and away from one another for pressing together a first hose portion in the upper location, providing a transverse seam thereon and subsequently releasing the hose at a location spaced vertically downwardly from the upper location; a dispensing device filling a hose portion, terminating at the transverse seam, with goods by gravity; and a cutting device for cutting through the transverse seam at a location spaced vertically downwardly from the upper location for severing a filled and sealed hose portion, constituting a bag, from the hose; the improvement comprising
(a) folding means for engaging, at said upper location, opposite sides of a second hose portion situated immediately above the first hose portion for forming inwardly oriented bottom flaps of the second hose portion;
(b) means defining openings provided in said long sides of said mandrel in the vicinity of said terminal edges;
(c) means defining grooves provided in said transverse shoes; said grooves being in alignment with a respective said opening when said transverse shoes are in said upper location;
(d) clamping means arranged for vertical reciprocation between said upper location and a location spaced vertically downwardly from said upper location; said clamping means including a clamping finger arranged laterally of either of said long sides and arranged to be movable to project through the respective opening in said mandrel and engage into the respective groove in said transverse shoe for clamping the hose thereagainst; the clamping fingers and the grooves constituting means for firmly grasping the hose at the bottom flaps thereof and pulling downwardly said hose upon movement of said clamping means and said transverse shoes downwardly from said upper location; and
(e) backup means arranged for vertical reciprocation between said upper location and a location spaced vertically downwardly from said upper location for maintaining said bottom flaps in a spread-out state along the entire cross section of the hose during the downward movement of said clamping means.

4,129,977
LOW SPEED ROTARY MOWER

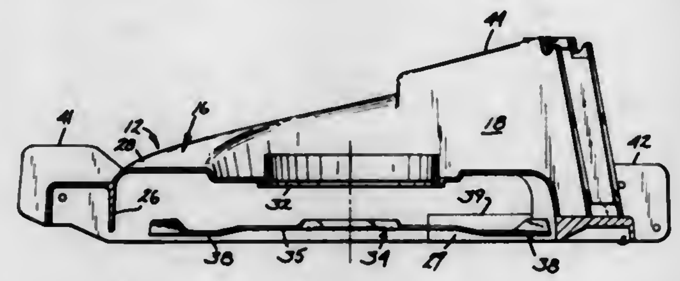
Robert C. Comer, Hopkins, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Aug. 2, 1974, Ser. No. 494,167

Disclosure was also published under second Trial Voluntary Protest Program on Mar. 23, 1976

Int. Cl.² A01D *35/262*

U.S. Cl. 56—13.4 **12 Claims**



1. Rotary mowing and bagging apparatus, comprising, in combination:
a. a cutting blade mounted for rotation about a substantially vertical axis, said blade having a pair of cutting tips at opposite ends thereof, with each tip including a leading cutting edge and a trailing sail portion having a front surface thereon, each of said front surfaces being inwardly raked at an angle in the range of 25° to 60° with respect to a line parallel to a radial line from said axis of blade rotation, said front surfaces each having an upward rake angle in the range of 18° to 35°, said upward rake angle being defined as the angle between said front surface and a line perpendicular to a cutting plane defined by rotation of said cutting edges about said axis;
b. a mower housing in which said blade is mounted, having an expansion portion with an expansion top wall with a substantial rise therein leading to a discharge opening, said housing also having a continuous exterior side wall surrounding said blade at the height thereof and extending above said sail portions;
c. means for rotatably driving said blade at a tip speed in the range of 5,000 FPM–14,000 FPM;

d. front and rear wheels mounted on said housing to enable movement of said mower over a ground surface at a controlled height thereabove; and
e. a grass-catching bag attached to said housing at said discharge opening.

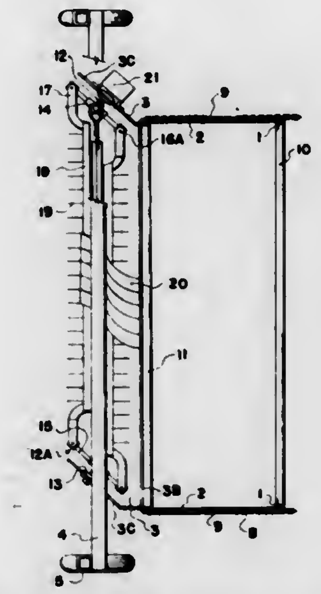
4,129,978
HARVESTER SWATH PICKUP

David Friesen, Box 154, Plum Coulee, Manitoba, Canada

Continuation-in-part of Ser. No. 640,887, Dec. 15, 1975, abandoned. This application Jan. 23, 1978, Ser. No. 871,705

Int. Cl.² A01D *89/00*

U.S. Cl. 56—364 **2 Claims**



1. In a grain pickup for attachment to a harvester which includes a transverse frame bar and a source of power, said pickup being supported within said frame bar, said pickup comprising in combination a pair of spaced and parallel spiders journalled for rotation one upon each end of said frame bar and operatively connected to said source of power for rotation thereby, said spiders being inclined at an angle to the direction of travel and having a plurality of radially extending arms thereon, a transversely extending member extending between the outer ends of each arm on one of said spiders and the outer end of the corresponding arm on the other of said spiders, pickup teeth extending radially from the outer side of each of said members and universal joint means operatively connecting each end of each of said members to the corresponding outer ends of the arms of the spiders to which it is attached, said outer ends of each member being offset inwardly from the outer ends of the spiders, towards the rotational axis of each spider, said members and said teeth reciprocating transversely of said frame bar, when rotating, each universal joint including a block journalled to the outer end of each arm of said spider, each offset outer end of said member including a forked end pivotally connected to the associated block.

4,129,979
APPARATUS FOR TWISTING A YARN

Edmund Hamel, Romanshorn, Switzerland, assignor to Evolution S.A., Rorschach, Switzerland

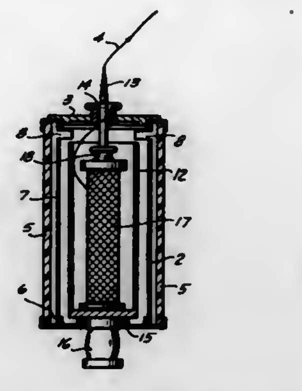
Filed Mar. 7, 1977, Ser. No. 775,404

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1976, 2609758; Jul. 6, 1976, 2630357

Int. Cl.² D01H *1/16, 1/42, 7/82*

U.S. Cl. 57—59 **17 Claims**

1. A device for twisting a yarn, comprising:
a spindle adapted to receive a supply spool of a yarn to be twisted and rotatable about an axis;
means for rotating said spindle about said axis;
a can surrounding said spindle and a spool adapted to be carried thereby and coupled with said spindle for rotation therewith about said axis;
a stationary housing closely surrounding said can; and
a closure member on at least one axial end of said housing reaching inwardly toward said axis and closing the space between said housing and said can at said one end to reduce power consumption in the twisting of a yarn paid off from said spool and emerging from said can and said housing at and end thereof, said axis being generally upright and said yarn emerging from the upper end of said can, said closure member being a cover displaceably mounted upon said housing, formed with an opening traversed by said yarn, and openable to afford access to the interior of said housing and said can, said can and said housing being cylindrical and coaxial with one another and said cover being a circular disk, said opening being provided at the center of said disk.



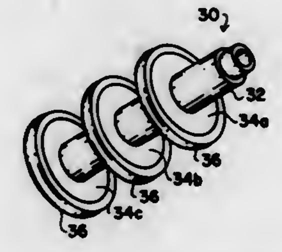
4,129,980
FRICTION DISCS FOR FALSE-TWIST HEAD

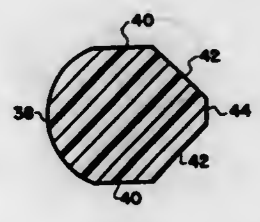
Roy E. Dillon, Stoneville, N.C., assignor to Macfield Texturing, Inc., Madison, N.C.

Filed Jan. 18, 1978, Ser. No. 870,374

Int. Cl.² D02G *1/04*

U.S. Cl. 57—339 **5 Claims**





1. In a friction- or false-twist head construction of the type having a plurality of rotatably mounted spindles, each carrying a plurality of friction discs which overlap and through which head a thread is passed along a zig-zag path between the spindles and over the bearing edges of the friction discs, the improvement whereby the friction discs comprise:
(a) a circular base member having means associated therewith for mounting of said base on one of said spindles;
(b) said base member including an inwardly extending groove around the periphery thereof;
(c) a separate, ring-shaped member formed of a resilient material having a relatively high coeffecient of friction and also having a radially extending interior protrusion of such size and shape as to be releasably snap-fit into said groove in said base member;
(d) whereby no other securing technique is necessary to hold the ring-shape member on said base member and when worn out may be easily replaced, thereby repeatedly utilizing the same base member with a plurality of successively usable ring-shaped members.

4,129,981
ELECTRONIC TIMEPIECE

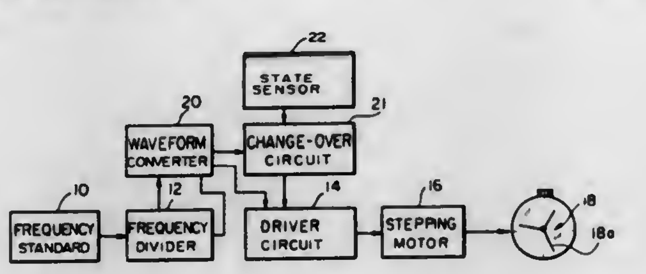
Yasushi Nomura, Tokorozawa; Fumio Nakajima, Tokyo; Kenji Yamada, Koganei, and Takayasu Machida, Iruma, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Feb. 2, 1977, Ser. No. 764,790

Claims priority, application Japan, Feb. 6, 1976, 51-11973; Feb. 9, 1976, 51-13093

Int. Cl.^{2} G04C *3/00*

U.S. Cl. 58—23 D **6 Claims**



1. An electronic timepiece, in combination, comprising:
- a frequency standard providing a relatively high frequency signal;
- a frequency divier providing relatively low frequency signals in response to said relatively high frequency signals;
- a waveform converter including first circuit means responsive to said relatively low frequency signals to provide a single output pulse each unit of time, second circuit means for producing composite output pulses each unit of time in response to said relatively low frequency signals which composite output pulses are delayed in phase from said single output pulse, and synthesizing circuit means for providing a synthesized signal composed of said single output pulse and said composite output pulses appearing each unit of time;
- a driver circuit for producing a first drive signal composed of said single output pulses each unit of time and a second driving signal composed of said synthesized signal;
- means for selectively rendering said second circuit means operative in dependence on an operational state of the timepiece;
- a reversible stepping motor including a driving coil, a rotor, and a stator including means for driving said rotor in a forward step each unit of time when said first driving signal is applied to said driving coil and driving said rotor several steps in forward and backward directions each unit of time when said second driving signal is applied to said driving coil; and
- display means including at least one hand adapted to be driven by said rotor and normally rotating forward step each unit of time in response to each forward rotation of said rotor, to indicate time data, while rotating several steps in forward and backward directions in response to each forward and backward rotation of said rotor, to indicate said operational state of the timepiece.

4,129,982
MERCURY SWITCH ARRANGEMENT FOR DIGITAL WATCH

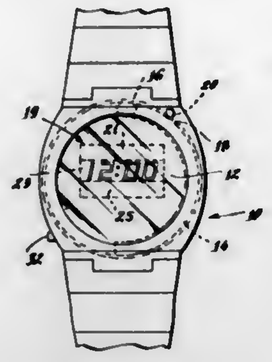
Virgil de la Cruz, 67 Byram Shore Rd., Greenwich, Conn. 06830

Filed Mar. 8, 1977, Ser. No. 775,448

Int. Cl.^{2} G04C *3/00;* **G04B** *19/24*

U.S. Cl. 58—23 R **14 Claims**

1. In a digital wrist watch a watch housing, a display means in said housing, a mercury switch for automatically activating the various display circuits for the functions of the digital watch, said mercury switch including a curved tube having a droplet of mercury therein, means for moving said curved tube to a limited degree in a curved plane to thereby adjust for individual viewing angles of said digital wrist watch, and electrical contacts in predetermined location in said tube whereby when the wearer of the wrist watch raises and turns his hand and forearm to a normal viewing position, said mercury droplet, in response to a gravitational pull, moves to a position into engagement with said electrical contacts thereby activating one of said functions and said display means.



4,129,983
LIQUID CRYSTAL DIGITAL DISPLAY ELECTRONIC WRISTWATCH

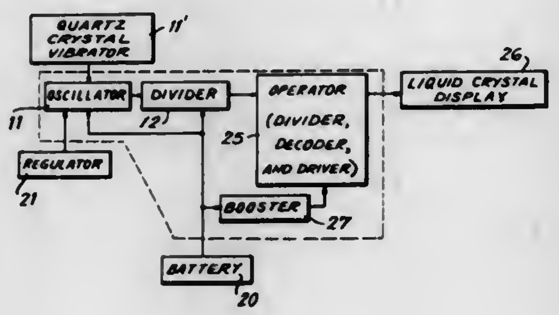
Yoshio Yamazaki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

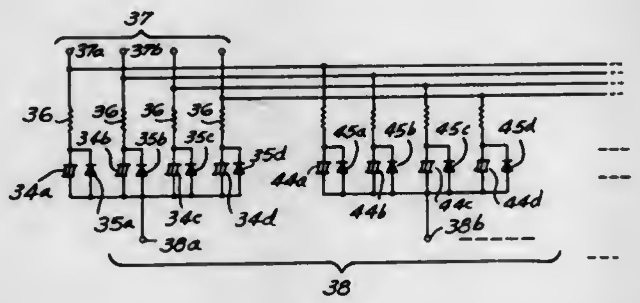
Filed Nov. 20, 1975, Ser. No. 633,734

Claims priority, application Japan, Nov. 21, 1974, 49-133920

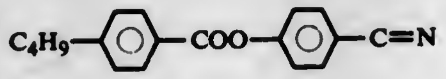
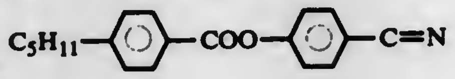
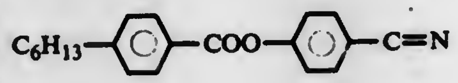
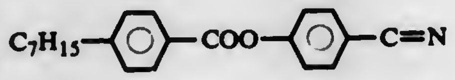
Int. Cl.^{2} G04B *19/30;* **G02F** *1/13;* **C09K** *3/34*

U.S. Cl. 58—50 R **1 Claim**





1. An electronic wristwatch, comprising oscillator means for producing a high frequency time standard signal, divider means for producing low frequency signals in response to said high frequency standard signal, decoder means for producing decoded signals representative of present time in response to said timekeeping signals applied thereto, a liquid crystal display means containing a liquid crystal composition consisting essentially of

	11.5 wt. %
	11.6 wt. %
	17.4 wt. %
	19.5 wt. %

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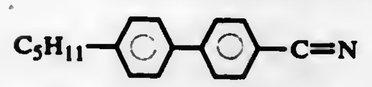
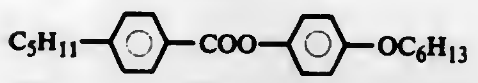
	20.0 wt. %
	20.0 wt. %

except for minor quantities of impurities, and driver means for driving said liquid crystal display means to display present time in response to said decoder signals being applied thereto, said oscillator means, divider means, decoder means, liquid crystal display means and driver means being operable by a single electrochemical cell power source without booster circuitry, said single electrochemical cell power source having a voltage of about 1.5V.

4,129,984
GAS TURBINE ENGINE WITH ANTI-ICING FACILITY

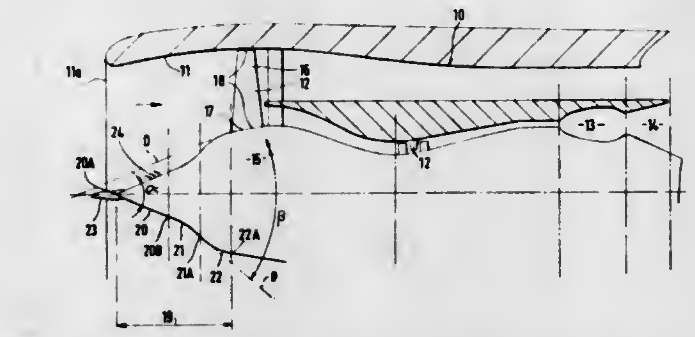
Michael E. Nelson, N. Avon, England, assignor to Rolls-Royce Limited, London, England

Filed May 25, 1977, Ser. No. 800,327

Claims priority, application United Kingdom, Jun. 1, 1976, 22510/76

Int. Cl.^{2} F02C *7/04;* **B04C** *11/14*

U.S. Cl. 60—39.09 D **6 Claims**



1. Gas turbine engine comprising an air intake duct, a compressor duct, a compressor having a rotor hub defining the radially inner surface of the compressor duct, the hub having at the upstream end thereof a nose whereby, in operation, to divide a stream of air entering the intake duct and spreading said stream outwardly toward said hub surface, said nose being secured to said hub and being rotatable therewith, said nose comprising an upstream part having a conical surface defining a pointed upstream end and a circular downstream end whose diameter is substantially less than that of said hub, said nose further comprising an intermediate part defining a concave surface of revolution contiguous with the upstream part and a downstream part defining a convex surface of revolution arranged contiguously between the intermediate part and said hub.

4,129,985
COMBUSTOR DEVICE OF GAS TURBINE ENGINE

Shinichi Kajita, Kobe; Kenji Mori, Ashiya, and Junichi Kitajima, Minoo, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

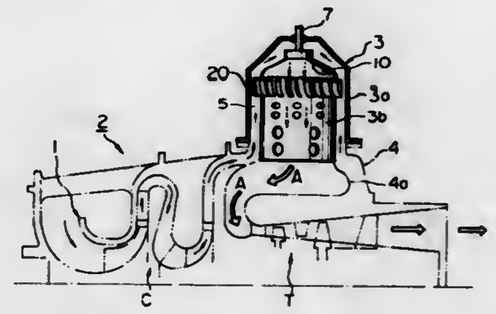
Filed Nov. 9, 1976, Ser. No. 739,863

Claims priority, application Japan, Nov. 17, 1975, 50/156614[U]; May 8, 1976, 51/52530

Int. Cl.^{2} F02C *7/18*

U.S. Cl. 60—39.37 **8 Claims**

1. In a combustor device for a gas turbine engine having a compressor for supplying compressed air into the combustor device and a turbine driven by combustion gas from the combustor device, said combustor device comprising a cylindrical outer casing having a closed axial end and an open axial end, a cylindrical inner casing coaxially provided in the outer casing to define between the outer and inner casings an annular passage for taking therein the compressed air from the compressor, said inner casing defining therein a combustion chamber and having in one axial end thereof facing the closed axial end of the outer casing a swirler opening which is coaxial with said outer and inner casings and through which the compressed air in the annular passage flows into the combustion chamber, said outer and inner casings being disposed in such a manner that the common axis of the casings extends substantially transverse to the rotational axis of the turbine, and fuel injection means for injecting fuel into the combustion chamber:



the improvement comprising a number of swirl preventing vanes fixedly provided in the space between said outer and inner casings, each of said swirl preventing vanes having a tangentially sloping upstream portion and an axially extending downstream portion to eliminate or reduce swirling motion of the compressed air around said swirler opening thereby to prevent static pressure drop of the compressed air at the inlet of the swirling opening.

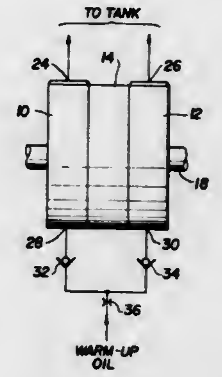
4,129,986
METHOD OF AND MEANS FOR PREVENTING THERMAL SHOCK TO A HYDRAULIC MOTOR IN AN OPEN-LOOP HYDRAULIC SYSTEM

Allan E. Heinrich, Oconomowoc, Wis., assignor to Dynex/-Rivett Inc., Pewaukee, Wis.

Filed Jul. 13, 1977, Ser. No. 815,455

Int. Cl.^{2} F15B *21/04*

U.S. Cl. 60—327 **10 Claims**

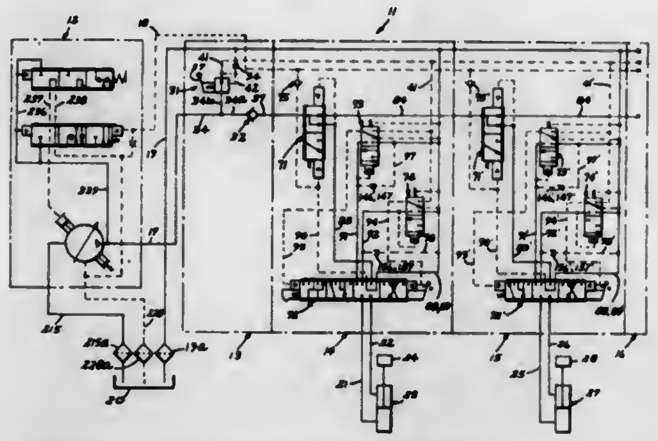


1. A method of preventing thermal shock to a hydraulic vane motor in an open-loop hydraulic system comprising a tank, a pump, at least one directional control valve, and the hydraulic vane motor, said hydraulic vane motor comprising a cam and motor housing containing a rotor mounted on a shaft, said housing having end cover portions, said method comprising the step of continuously circulating warm oil from a source of consistently warm oil through the end cover portions of the hydraulic vane motor when it is not in use.

4,129,987

HYDRAULIC CONTROL SYSTEM

Nicholas C. Blume, Spring Lake Park, Minn., assignor to Gresen Manufacturing Company, Minneapolis, Minn.
Filed Oct. 17, 1977, Ser. No. 842,453
Int. Cl.^{2} F15B *11/16;* F16H *39/46*
U.S. Cl. 60—445 **6 Claims**

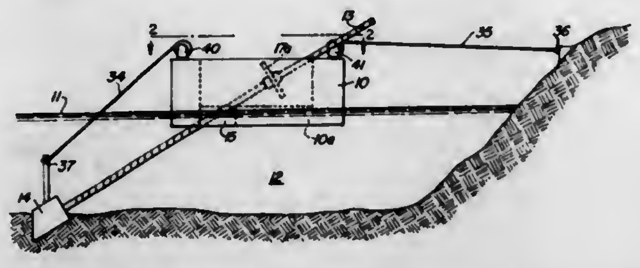


1. Hydraulic control apparatus comprising:
- (a) a plurality of valve control sections each of which comprises
  - (i) a valve body defining an inlet adapted for connection to variable output pumping means, at least one work port adapted for connection to a hydraulically actuated device, and a signal pressure outlet;
  - (ii) power spool means for selectively blocking and establishing fluid communication under variable pressure between the inlet and the associated work port;
  - (iii) a signal pressure chamber;
  - (iv) control means for establishing fluid communication between the work port and signal pressure chamber when the power spool means connects the inlet to the work port;
  - (v) and check valve means constructed and arranged to permit the flow of hydraulic fluid only from the signal pressure chamber to the signal pressure outlet;
- (b) the signal pressure outlets of the respective valve sections being commonly connected to define a signal pressure line for transmitting the largest of the plurality of signal pressures.

4,129,988

TIDAL POWER PLANT OR THE LIKE

Sayles A. Turney, Rancho Grande, North Fork, Nev. 89801
Filed Jul. 25, 1977, Ser. No. 818,554
Int. Cl.^{2} F03B *13/12*
U.S. Cl. 60—499 **10 Claims**

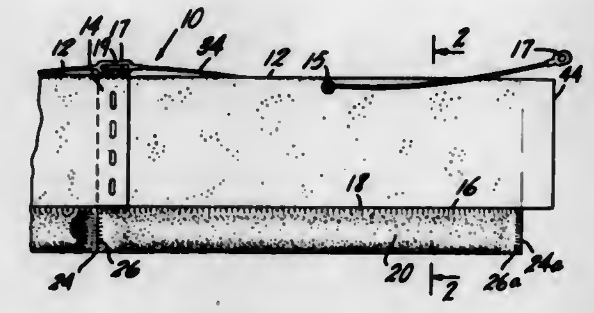


1. Apparatus for obtaining energy from a body of water whose surface level varies with time, comprising a buoyant body adapted to float in the water and to rise and fall with variations in the surface level of the water; at least one stationary shaft extending freely from securement adjacent to an end or ends thereof and obliquely through at least a portion of the depth of the body of water that comprehends the variations in surface level; means encircling said shaft and interconnecting the buoyant body therewith for movement longitudinally therealong; and means for converting into rotational energy the longitudinal travel of the buoyant body along the shaft as such buoyant body rises and falls with variations in water level.

4,129,989

BALLASTED FLOATING BARRIER BOOM

Ilmer I. Niemi, and Kenneth S. Peterson, both of Cloquet, Minn., assignors to Conwed Corporation, St. Paul, Minn.
Filed Apr. 19, 1977, Ser. No. 788,761
Int. Cl.^{2} E02B *15/04*
U.S. Cl. 405—70 **15 Claims**

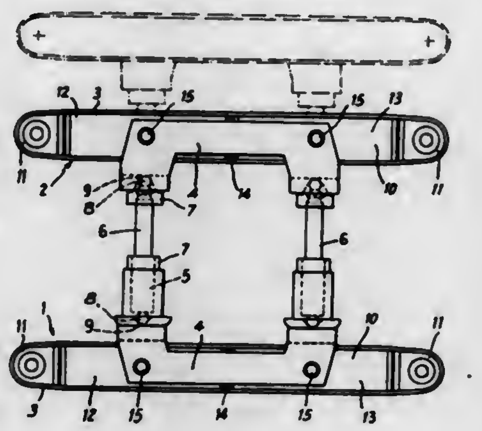


1. A boom for containing pollutants floating on water comprising:
- (a) at least two boom elements;
- (b) each of said at least two boom elements comprising:
  - (i) a sheet of flexible buoyant polyethylene foam material;
  - (ii) said polyethylene foam having a thickness of from about ⅛ to about 1 inch;
  - (iii) said polyethylene foam having a density of from about 2 to about 10 pounds per cubic foot;
  - (iv) a lower longitudinal pocket formed in said sheet;
  - (v) an upper longitudinal pocket formed in said sheet;
  - (vi) said upper and lower longitudinal pockets being continuous whereby they form a figure-eight cross section;
  - (vii) granular ballast material at least partly filling said lower longitudinal pocket;
  - (viii) a first end of said upper longitudinal pocket extending beyond said lower longitudinal pocket;
  - (ix) said first end of said upper longitudinal pocket being unsealed;
- (c) the second end of a first boom element being fitted into said unsealed first end of a second boom element;
- (d) means attaching said first and second ends in their fitted relationship.

4,129,990

ADVANCING SUPPORT

Alfred Valantin, Clermont, France, assignor to Charbonnages de France, Paris, France
Filed Jan. 25, 1977, Ser. No. 762,798
Claims priority, application France, Jan. 26, 1976, 76 01961
Int. Cl.^{2} E02D *15/44*
U.S. Cl. 405—299 **12 Claims**

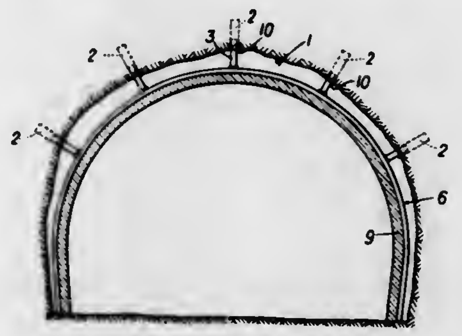


1. An advancing support for providing a continuous propping and comprising at least two carriages for articulated tracks, each of said carriages including a beam having rounded ends and an articulated track closely surrounding the beam mounted for sliding friction on the beam, each of said carriages extending along a longitudinal axis, each beam having at least two longitudinal elements spaced-apart in end to end relation along said longitudinal axis, a connecting element pivotally attached to each of said longitudinal elements of a said beam for joining said longitudinal elements together, said carriages being disposed one above the other to be applied respectively against the floor and roof of a gallery; at least one jack attached to the connecting element of the upper carriage and the connecting element of the lower carriage thereby joining said carriages together.

4,129,991

METHOD OF PRODUCING A CONCRETE LINED TUNNEL OR OTHER UNDERGROUND EXCAVATION

Karl Schaden, Hameaustrasse 59, Wien 19, Austria
Filed Oct. 28, 1977, Ser. No. 846,522
Int. Cl.^{2} E21D *11/15*
U.S. Cl. 405—150 **7 Claims**

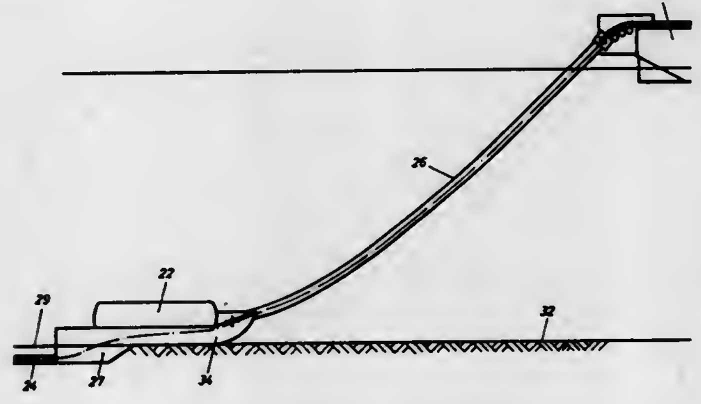


1. A method of producing a concrete lined tunnel or other concrete lined underground excavation, comprising the steps of first excavating a rough tunnel of a cross-section defined by an inner surface thereof which is greater than that of a tunnel to be lined with concrete; connecting a lost form by support members to the inner surface of said rough tunnel at a distance spaced from said inner surface corresponding to the expected maximum settlement of said inner surface under the influence of the rock pressure acting thereon; applying a concrete lining to a surface of said lost form facing away from said inner surface; and making the rigidity of said support members relative to the rock pressure smaller than the rigidity of the concrete lining so that said support members may yield during the settlement of said rough tunnel.

4,129,992

LAYING TOOL FOR LAYING OF SUBMARINE CABLES INTO A SEA-BOTTOM

Stig T. Carlsson, Spånga; Bo M. Rasmusson, Handen, and Viktor Scuka, Upplands Bälinge, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Apr. 20, 1977, Ser. No. 789,148
Claims priority, application Sweden, May 3, 1976, 7605035
Int. Cl.^{2} E02F *5/02*
U.S. Cl. 405—164 **23 Claims**

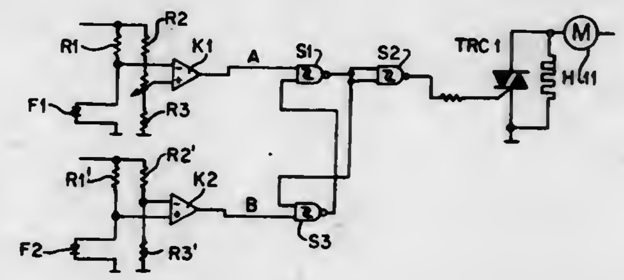


1. A tool for laying submarine cables comprising a drag unit for dragging along the sea-bottom and a pulling vessel, the drag unit comprising a body and a ploughing means supported by the body for ploughing a trench in a sea or ocean bottom, a pulling tube on said drag unit for guiding submarine cables from the pulling vessel to said drag unit and down into said trench, the underside surface of the body being substantially planar and having at the rear end of the body a central notch in the central part of which said ploughing means is disposed, said ploughing means being shaped as a keel the front part of which is in the form of two ploughs, inclusive of an upper broad plough and a lower narrow plough, the lower plough being placed behind the upper plough, said body having an inner part which occupies a part of the pulling tube which opens into the ploughing means somewhat spaced from the very back of the ploughing means, said ploughing means further comprising a stern frame having a leading edge extending from said notch in said body past the front of said upper plough to the front of said lower plough.

4,129,993

REFRIGERATION EQUIPMENT, PARTICULARLY HOUSEHOLD REFRIGERATION OR THE LIKE

Henno Schotten, Glengen, Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Germany
Filed Mar. 29, 1977, Ser. No. 782,403
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1976, 2616175
Int. Cl.^{2} F25D *21/00*
U.S. Cl. 62—156 **3 Claims**



1. In refrigeration equipment, particularly household refrigerator or the like, with a heat-insulated refrigation chamber having a heat exchanger for cooling, and a refrigation unit which is switched-on imtermittently by a temperature-dependent control, and the heat exchanger of which, arranged in the refrigeration chamber, is defrosted between the cooling periods through the supply of heat by thermal energy and natural incidence of heat from the environment of the refrigeration equipment, the control being equipped with two sensors with switching functions one sensor of which measures the air temperature in the refrigeration chamber and the other, the temperature at the heat exchanger, the improvement comprising coupling the switching functions of the sensors by a mutually interlocking electronic circuit in which the switching function actuated by the temperature at one sensor must run down completely before the switching function actuated at the other sensor is set in motion.

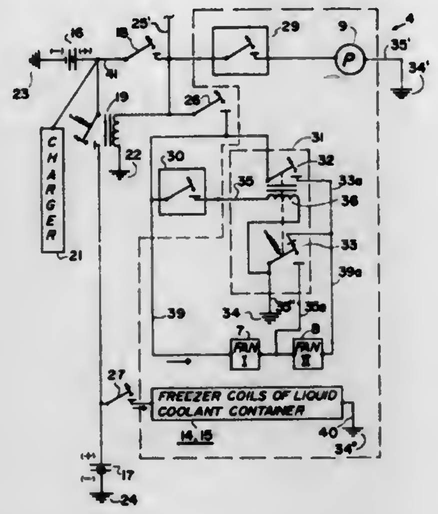
4,129,994

INSTANT-COOLING ICE-MAKER AIR CONDITIONER

Paul H. Y. Ku, 47-50 59th St./Apt. 6E, Woodside, N.Y. 11377
Filed Oct. 18, 1976, Ser. No. 733,090
Int. Cl.^{2} F25D *17/02*
U.S. Cl. 62—179 **10 Claims**

1. An ice-making air-conditioner device comprising in combination: a coolant vessel; an air-cooling structure forming a partial enclosure with inlet and outlet ports; coolant conducts mounted to circulate coolant from the coolant vessel through space of the partial enclosure of the air-cooling structure, and back to the coolant vessel; a pump connected to pump and circulate coolant through said coolant conduits; freezer means for freezing coolant when provided with electrical power, the

freezer means including freezer coils within the coolant vessel; fan means for circulating air into the inlet port through space of the partial enclosure and out of the outlet port of the coolant vessel; circuitry means for providing electrical power and switches for the pump, the freezer means, and the fan means, and for providing interconnected circuitry therefor such that ice is formed from the coolant during perods of non-use of the pump; and two separate first and second electrical power sources interconnected by said circuitry means, the first electrical power source having circuitry adapted to provide electrical power to the freezer means during at-least periods of non-use and disconnection of the second electrical power source from the freezer means, and the second electrical power source having circuitry adapted to intermittently provide electrical power in electrical parallel with the first electrical power source, to the freezer means, and the second electrical power source having further circuitry adapted to provide electrical power to said pump and to said fan means, the circuitry means providing the circuitries.



4,129,995

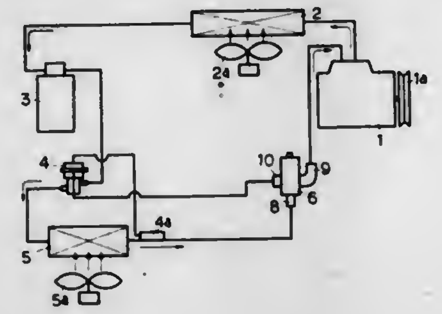
EVAPORATION PRESSURE CONTROL DEVICE

Kiyoshi Usami, Ohbu, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 9, 1977, Ser. No. 767,147

Int. Cl.^{2} F25B *41/04;* **B60H** *3/04;* **F16K** *31/12, 31/36*

U.S. Cl. 62—217 **6 Claims**



1. An air conditioning system for an automotive vehicle comprising:
   a compressor operatively coupled to and driven by an internal combustion engine for compressing refrigerant;
   a condensor connected to said compressor for cooling and condensing the compressed refrigerant;
   a receiver connected to said condensor for storing the condensed refrigerant;
   an expansion valve connected to said receiver for expanding the refrigerant flowing therethrough,
   said expansion valve also controlling the amount of the refrigerant flowing therethrough;
   an evaporator connected to said expansion valve for evaporating the refrigerant therein to thereby cool the air passing through the evaporator;
   temperature sensing means disposed on an outlet side of said evaporator for detecting the temperature of the refrigerant out of said evaporator and also for actuating said expansion valve to control the amount of the refrigerant flowing to said evaporator in response to the detected temperature; and
   an evaporation pressure control device connected between said evaporator and said compressor for detecting the pressure of the refrigerant out of said evaporator and also actuating said expansion valve to control the amount of the refrigerant flowing to said evaporator in response to the detected pressure in addition to the flow control of the refrigerant in response to the temperature of the refrigerant by said temperature sensing means,
   said evaporation pressure control device being responsive to an extreme decrease of the pressure of the refrigerant out of said evaporator as an indication of leakage of the refrigerant, in order to return the refrigerant to said compressor, when said leakage occurs, to thereby prevent said compressor from seizure.

4,129,996

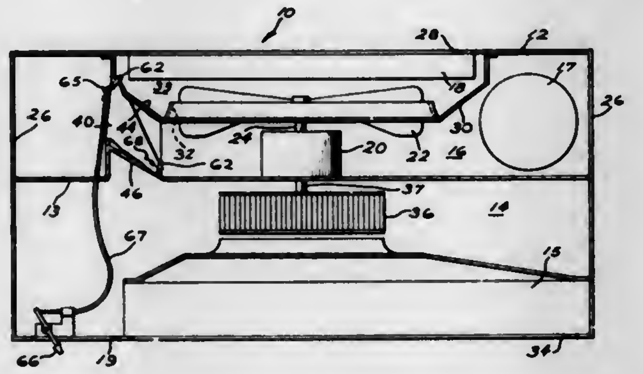
VENT SYSTEM FOR A SELF-CONTAINED AIR CONDITIONER

Louis W. Hardin, and Lawrence D. Taylor, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Sep. 19, 1977, Ser. No. 834,562

Int. Cl.^{2} F25D *23/12, 17/06*

U.S. Cl. 62—262 **7 Claims**



1. In a self-contained air conditioning unit, including a housing, a partition within said housing dividing said housing into interior and exterior chambers; a condenser disposed within said exterior chamber adjacent an outlet in said casing and said evaporator being disposed in said interior chamber; a condenser shroud member including an opening forming a condenser compartment; a fan in said opening to pass exterior air between an inlet in said housing through said condenser to said outlet and for compressing air in said condenser compartment; a second fan in said interior chamber to recirculate interior air through said evaporator, the improvement comprising:
   a duct providing a first passageway extending between an opening in said condenser shroud and an opening in said partition, pressure of air in said condenser compartment being sufficient to force a portion of exterior air through said first passageway into the interior evaporator chamber wherein said second fan moves said portion of exterior air through said evaporator with said recirculating interior air;
   said duct being provided with first and second openings arranged to provide a second passageway for an air flow path transversely through said duct between said inlet and said opening in said shroud member;
   air directional control means associated with said duct including air valve means movably arranged relative to said passageways for alternatively permitting air flow through said first or second passageway.

4,129,997

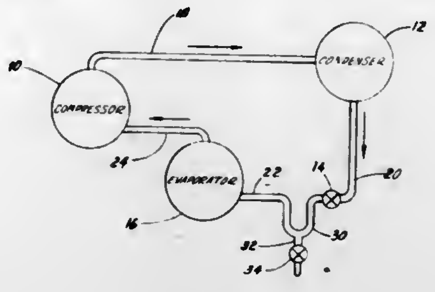
PERMANENT REFRIGERANT DEHYDRATOR

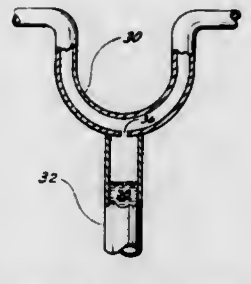
Robert J. Kunkle, c/o Lyle J. Schlyer Attorney at Law, 20951 Brookhurst, Suite 3, Huntington Beach, Calif. 92646

Filed Aug. 12, 1977, Ser. No. 824,079

Int. Cl.^{2} F25B *43/04*

U.S. Cl. 62—475 **9 Claims**





1. A refrigerant dehydrator, in combination with a refrigeration system of the type including a compressor, a condenser, a refrigerant expansion device, and an evaporator, comprising:
   a body member, generally describing a U-shape configuration, the body member incorporating walls surrounding and describing a refrigerant conducting bore operationally interposed between said refrigerant expansion device and said evaporator;
   a sump member incorporating walls surrounding and describing a bore, the sump member communicating with the lower portion of the body member and extending downward therefrom such that the bore of the body member communicates with the bore of the sump member; and
   A drain valve sealably connected to the lower portion of the sump member whereby water accumulated in the sump member may be drained therefrom.

4,129,998

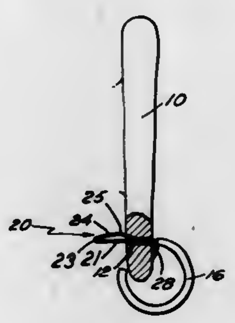
EARRING

Nicholas J. Ferro, Johnston, R.I., assignor to Ferro Novelty Company, Inc., Johnston, R.I.

Filed Jun. 7, 1977, Ser. No. 804,301

Int. Cl.^{2} A44C *7/00*

U.S. Cl. 63—12 **4 Claims**



1. In an earring the combination with an ornament therefor of an ear attaching means for mounting such ornament on the outer side of a pierced ear lobe and including means for increasing security against accidental disengagement from the ear, said attaching means comprising a first straight rigid member having one end fixed to such ornament and extending therefrom and an acutely bent back arm over said straight rigid member with a portion rising away from said member, then bent abruptly toward said rigid member crossing the same and terminating at a point therebeyond, said attaching means thus providing a hump at a location between said acute bend and the point of attachment of said member to said ornament and of a distance from said acute bend to pass thru said piercing in the ear lobe and engage the inner side thereof, said straight member and bent back arm being resiliently compressible toward each other upon forcing the same through the ear lobe piercing in either direction, said termination point being at a location to be exterior to the earlobe piercing when the earring is in mounted condition.

4,129,999

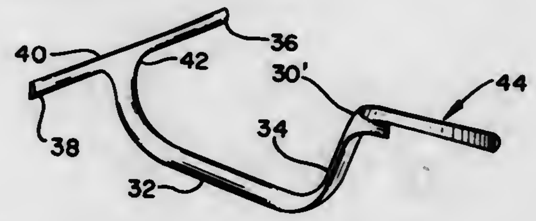
RING GUARD ATTACHABLE BY MELTING END PORTIONS THEREOF

George W. Shelton, 5131-C Roadrunner Land, Austin, Tex. 78749

Filed Jan. 17, 1977, Ser. No. 760,097

Int. Cl.^{2} A44C *9/02*

U.S. Cl. 63—15.6 **2 Claims**



1. A guard for a finger ring, said guard being of unitary construction and including a finger-engaging mid-section (32), opposed socket-forming members and opposed marginal end portions (34);
   said opposed marginal end portions being joined to said mid-section, and upwardly curving away therefrom;
   each of said opposed socket-forming members having a marginal central portion and including two transverse members (36, 38) joined together at said marginal central portion with the two transverse members each having a free end portion which is directed away from said mid-section;
   said marginal central portion being joined to the end of said marginal end portion which is remote from said mid-section;
   said guard being of a size to be positioned with the mid-section thereof located within a finger ring while each of the transverse members lies adjacent one of opposed lengths of the ring shank therewithin, and each pair of said transverse members being adapted to be wrapped about the shank and melted into the form of the aforesaid socket such that the socket slidably captures opposed marginal lengths of the shank therewithin.

4,130,000

DRILL STRING SHOCK ABSORBER

Edward V. Burge, Houston, Tex., assignor to Richard Dean Hawn, Jr., Dallas, Tex.

Filed Sep. 20, 1976, Ser. No. 724,541

Int. Cl.^{2} F16D *3/06;* **E21B** *17/04;* **F16F** *9/18*

U.S. Cl. 64—1 V **6 Claims**

1. A shock absorber for a drill string including a tubular housing adapted to be connected in a drill string adjacent its lower end,
   a tubular mandrel slidably mounted in the tubular housing and projecting from its lower end,
   upper and lower spaced packing means mounted on and surrounding the mandrel for sealing off between said housing and mandrel and forming therebetween an upper annular chamber in said housing,
   means below the lower packing means for slidably and drivingly connecting said mandrel to said housing for rotation therewith,

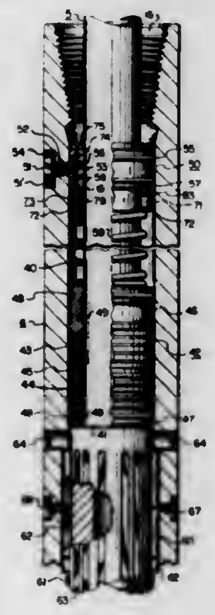
the upper housing chamber containing a noncompressible fluid for cushioning relative reciprocation between said mandrel and housing,

flow control means mounted in said upper chamber between the upper and lower packing means for controlling the flow of the fluid upon said relative reciprocation and for restricting upward flow of said fluid from below to above the flow control means so as to resist upward reciprocation of said mandrel relative to said housing,

said lower packing means being slidably confined upon said mandrel,

said restriction of upward fluid flow upon relative upward reciprocation of said mandrel creating fluid pressure between said flow control means and lower packing means for urging the latter downwardly away from said flow control means so as to permit limited upward reciprocal movement of said mandrel relative to said lower packing means,

sealing means in the lower end portion of said housing for packing off between the lower portions of said mandrel and housing below the means for slidably and drivingly connecting said mandrel to said housing,



the sealing means coacting with said lower packing means to form a lower annular chamber therebetween of sufficient length to enclose said slidably and drivingly connecting means and adapted to contain a fluid lubricant therefor,

said tubular housing having a bore in its upper portion complementary in diameter to said upper packing means and forming at least a portion of said upper annular chamber of said housing,

said upper packing means being confined upon the upper end portion of said tubular mandrel in slidably engagement with the bore in the upper portion of said housing,

said housing having a bore in its lower portion complementary in diameter to said lower packing means and forming at least a portion of said upper annular housing chamber,

said lower packing means being in coacting slidable engagement with the bore in the lower portion of said housing as well as the exterior of said mandrel.

4,130,001

DRIVE COUPLER AND UNCOUPLER

Frank Woodruff, New Hartford, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Aug. 25, 1977, Ser. No. 827,500

Int. Cl.^{2} F16D *3/54, 19/00, 11/06*

U.S. Cl. 64—19 **7 Claims**

1. A drive coupler and uncoupler comprising:

a driving member including a flange;

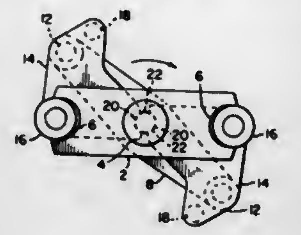
a driven member including a flange, said flange carrying a pair of pivots;

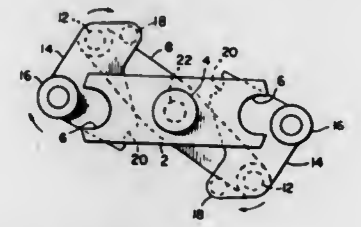
a pair of plates, each of which is supported by a corresponding pivot;

first means arranged with the plates and the driving member flange for engaging said plates and flange;

displaceable second means;

the plates including means engaged with the second means for maintaining the engagement of the plates and driving member flange and for preventing the plates from pivoting about the pivots, and to thereby couple the driving and driven members; and





the second means displaced for being disengaged from the means included in the plates, with the driving action between the driving and driven members pivoting the plates about the pivots so that the first means disengages the plates and driving member flange to uncouple the driving and driven members.

4,130,002

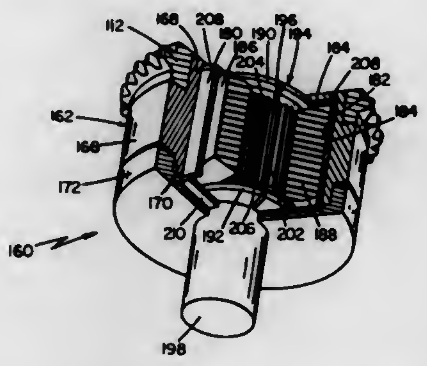
SLIP COUPLING

Jonathon H. Katz, Brookline, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed Apr. 4, 1977, Ser. No. 784,267

Int. Cl.^{2} F16D *7/02*

U.S. Cl. 64—30 D **8 Claims**



1. A slip coupling for a drive shaft, comprising

outer coupling means surrounding said shaft,

radially expandable inner coupling means between said outer means and said shaft, and

resilient means between said shaft and said inner coupling means to press the latter into frictional engagement with said outer means while providing rotational flexibility between said shaft and said inner coupling means to thereby provide isolation from torsional vibration,

wherein said inner coupling means comprises a plurality of separate members, and

wherein said inner coupling means is split along angularly spaced lines to provide said separate members, and said resilient means comprises a plurality of members angularly aligned with said separate members.

4,130,003

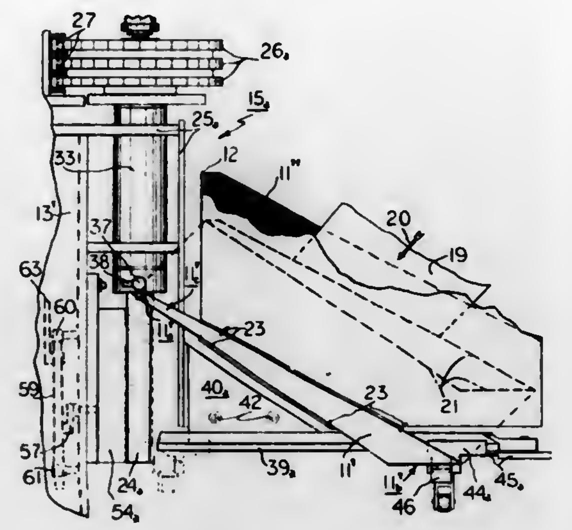
APPARATUS FOR MANUFACTURING HELICAL COILS

Maxwell S. Campbell, P.O. Box 134, Elkins, N.H. 03233

Filed Jun. 24, 1977, Ser. No. 809,926

Int. Cl.^{2} B21F *3/04, 3/10*

U.S. Cl. 72—133 **11 Claims**



1. Apparatus for the manufacture of helical coils from substantially straight discrete blanks of metal stock, comprising an arbor rotatable about its longitudinal axis, means for clamping one end of a blank to said arbor for rotation thereby in a skewed relationship therewith, said clamping means being mounted for rotation with said arbor about said axis, and said clamping means including a clamp member disposed on the outside of said arbor and actuatable to move from a first position at which it does not interfere with placement of the said one end of a blank against said arbor to a second position at which it overlies the said one end of a blank placed against said arbor and thence to a third position at which it clamps the said one end of a blank tightly against said arbor, means for locking the other end of a blank against motion in the longitudinal direction of said axis and angularly about said axis while allowing movement of said other end in a radial direction relative to said axis, means for rotating said arbor and clamping means about said axis, and means holding said locking means in a fixed angular relation about said axis, whereby rotation of said arbor about said axis causes a blank clamped thereto to become wrapped helically about said arbor with pitch as determined by the positioning and holding of the blank relative to said arbor by said clamping means and locking means.

4,130,004

METHOD FOR BENDING TUBES

Homer L. Eaton, Balboa, Calif., assignor to Eaton-Leonard Corporation, Santa Ana, Calif.

Division of Ser. No. 692,585, Jun. 3, 1976, Pat. No. 4,063,441, which is a continuation-in-part of Ser. No. 614,946, Sep. 19, 1975, abandoned. This application Aug. 18, 1977, Ser. No. 825,554

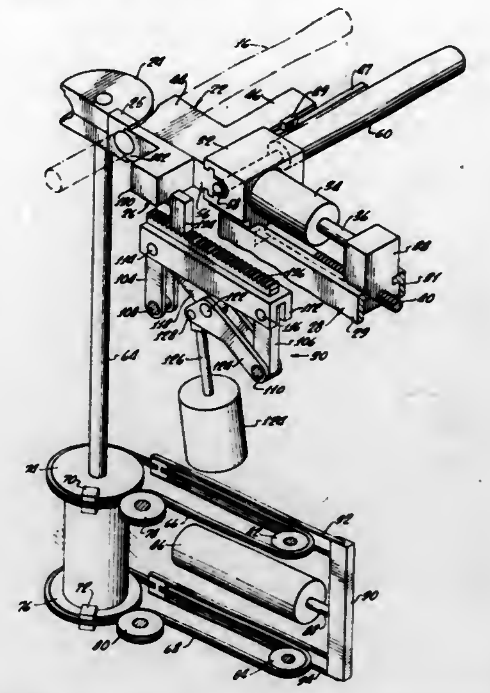
Int. Cl.^{2} B21D *7/04*

U.S. Cl. 72—151 **22 Claims**

1. A method of bending tubes comprising the steps of

starting a bend without applying substantial axial tension to the tube to thereby partially wrap the tube around a bend die to provide an increased area of contact between the tube and die and to provide an increased force holding the tube against the bend die, and

completing the bend while applying substantial axial tension to the tube.



4,130,005

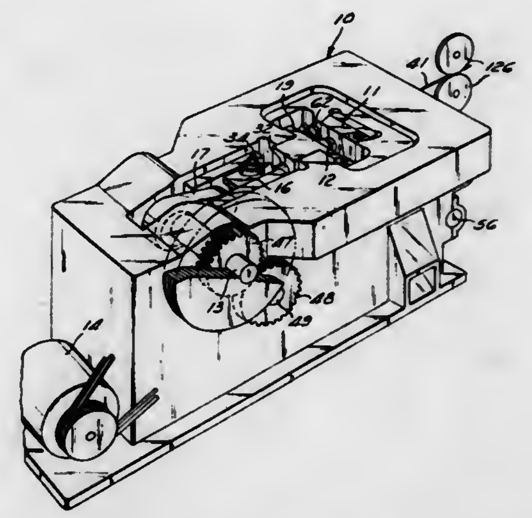
HIGH SPEED BALL HEADER

Allan D. Haines, Tiffin, Ohio, assignor to The National Machinery Company, Tiffin, Ohio

Continuation-in-part of Ser. No. 699,892, Jun. 25, 1976. This application Aug. 15, 1977, Ser. No. 824,927

Int. Cl.^{2} B21D *72/00*

U.S. Cl. 72—360 **8 Claims**

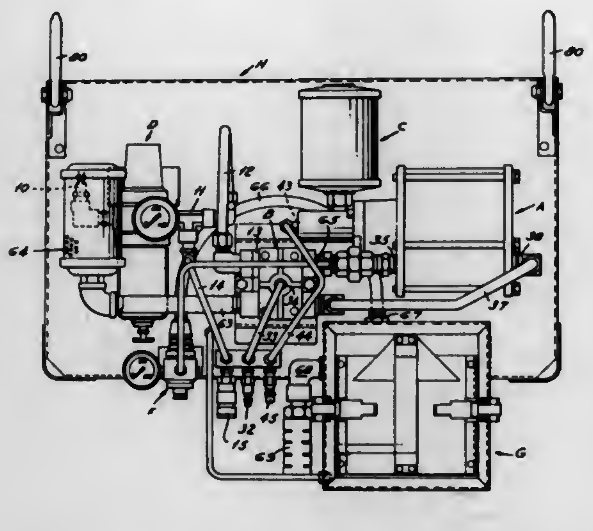


1. A cold former comprising a frame, a pair of dies mounted on said frame for relative movement between a retracted position spaced from each other to allow positioning of a workpiece between said dies and a closed forward position to deform such workpiece to a required shape; power means operable to move said dies from said retracted position to an intermediate gripping position so that such workpiece is initially gripped while said dies are moving relative to each other with a first relative velocity and to thereafter move said dies from said gripping position to said closed position with an initial second relative velocity which is substantially greater than said first relative velocity, said first relative velocity being sufficiently lower than said second velocity to substantially reduce the rate of errosion of said dies below the rate which would occur if said workpiece were initially gripped by said dies moving at said second velocity.

4,130,006

RIVETING SYSTEM

Robert J. Ebbert, and John V. Brown, both of Rochester, Mich., assignors to Ebbert Engineering Company, Troy, Mich.
Continuation-in-part of Ser. No. 105,686, Jul. 15, 1976, Pat. No. 4,062,217. This application Aug. 25, 1977, Ser. No. 827,793
Int. Cl.^{2} B21J ***15/34***
U.S. Cl. 72—391 **4 Claims**



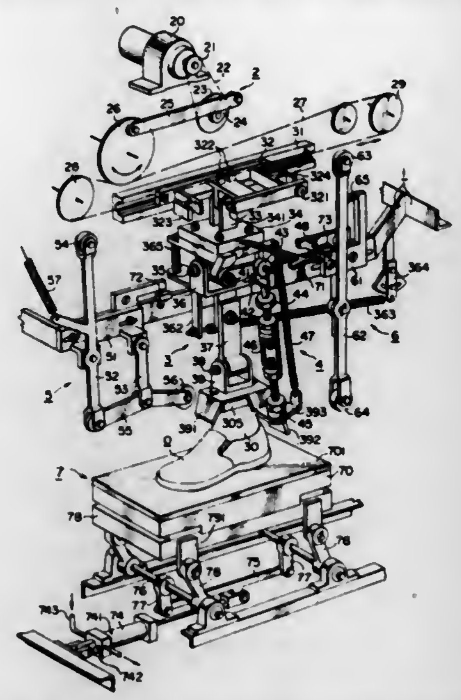
1. A riveting system comprising a power operated rivet setting tool having a housing, a nose piece fixed on said housing for receiving a rivet with an attached mandrel projecting within said housing, power actuated means within said housing including mandrel gripping jaws adapted to engage and retract said mandrel to effect the setting of a rivet in a workpiece and separation of its mandrel, means for returning said jaws to an advanced open position releasing said mandrel, tubular means extending from said mandrel gripping jaws to a mandrel collecting receptacle remote from said housing, vacuum means for producing an air flow through said tubular means effective upon release of said mandrel for conducting said mandrel to said collecting receptacle, and an air passage means communicating with the entrance to said tubular means bypassing any rivet mandrel positioned within said nose piece to minimize air flow restriction for conducting a mandrel to said collecting receptacle.

4,130,007

FOOTWEAR TESTER

Hideki Hayashi, Kurume, Japan, assignor to Nippon Rubber Co., Ltd., Tokyo, Japan
Filed Nov. 22, 1977, Ser. No. 853,891
Claims priority, application Japan, Nov. 25, 1976, 51-140722
Int. Cl.^{2} G01N ***3/56***
U.S. Cl. 73—7 **10 Claims**

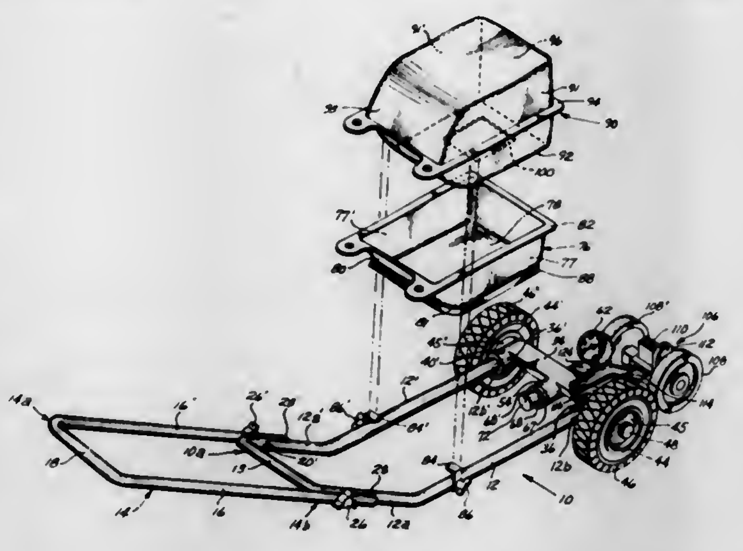
1. A tester of footwear comprising a machine stand, a prime mover mechanism mounted on the upper portion of the machine stand to give reciprocative movements repeatedly in the longitudinal direction of said footwear, a supporting mechanism for supporting freely a footwear block for attachment of said footwear so that the footwear block can be advanced and retreated and can be bent in all directions, a footwear block inclining mechanism attached to the footwear block supporting mechanism to slightly incline the footwear block in the lateral direction of said footwear only when the footwear block supporting mechanism is retreated, a front operation mechanism disposed in the machine stand to incline forwardly the posture of the footwear block when the footwear block supporting mechanism is located in the vicinity of the front dead point, a rear operation mechanism disposed in the machine stand to incline backwardly the posture of the footwear block when the footwear block supporting mechanism is located in the vicinity of the rear dead point and a lift mechanism for bringing up and down a ground stand so that the ground stand is in the brought-down state during a period from the point when the footwear block supporting mechanism is advanced to the front dead point to the point when the footwear block supporting mechanism is retreated to a point intermediate the front dead point and the rear dead point, wherin when the tester is driven, the respective mechanisms are interconnected with each other so that longitudinal inclination, lateral inclination, grounding operation and kick-up operation resembling those imparted to the foot during practical walking are given to the footwear block.



4,130,008

DEVICE FOR MEASURING FRICTION AND DISTANCE

Robert W. Broshears, Rte. 1, Box 1437, Bremerton, Wash. 98310
Filed Feb. 3, 1978, Ser. No. 874,884
Int. Cl.^{2} G01N ***19/02***
U.S. Cl. 73—9 **15 Claims**



1. A device for measuring coefficient of friction comprising:

a test pad of material, the coefficient of friction of which is to be measured on a given surface;

a test pad holder for holding said test pad in contact with said surface;

a frame upon which said test pad holder is slidably and removably mounted, said frame having a longitudinal dimension and a transverse dimension, said test pad holder being free to slide on said frame along the longitudinal dimension of said frame, said frame including a pair of elongate first frame members in parallel spaced relation and extending in said longitudinal dimension of said frame, each of said first frame members having a first end and a second end and further including an elongate second frame member transverse to said first frame members and attached to a first end of each of said first frame members;

container means adapted to fit inside said test pad holder, said container means having an aperture therein through which a fill material can be placed into said container means to increase the weight of said container means to a predetermined magnitude;

at least one wheel rotatably mounted on each end of said second frame member, the plane of rotation of said wheel being normal to the elongate dimension of said second frame member, said wheels being of diameter sufficient to allow said test pad to engage said surface;

handle means for controlling the movement of said frame, said handle means being attached to a second end of each of said first frame members;

a chamber affixed to said second frame member, said chamber including a first portion and a second portion;

a flexible diaphragm, mounted within said chamber and forming a fluid barrier between said first portion and said second portion, said second portion being a closed hydraulic chamber;

a piston slidably mounted within said first portion, said piston having a first end and a second end, said first end of said piston abutting said flexible diaphragm;

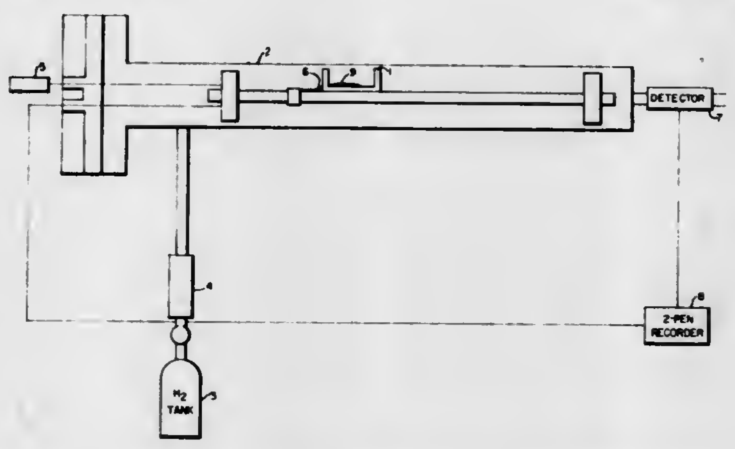
an actuator having a first end and a second end, said first end of said actuator being affixed to said second end of said piston and said second end of said actuator abutting said test pad holder such that motion of said test pad holder relative to said frame along the longitudinal dimension of said frame in the direction away from the handle means causes said test pad holder to move said actuator which in turn moves said piston so as to cause an increase in pressure in said second portion; and,

gauge means for indicating the magnitude of pressure within said second portion.

4,130,009

METHOD AND APPARATUS FOR DETERMINING THERMOPARTICULATION TEMPERATURE OF COMPOUNDS

James D. B. Smith, Turtle Creek, and David C. Phillips, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Division of Ser. No. 669,554, Mar. 23, 1976, Pat. No. 4,102,809, which is a division of Ser. No. 390,284, Aug. 21, 1973, Pat. No. 3,973,438. This application Feb. 16, 1977, Ser. No. 769,130
Int. Cl.^{2} G01N ***25/02***
U.S. Cl. 73—17 R **14 Claims**



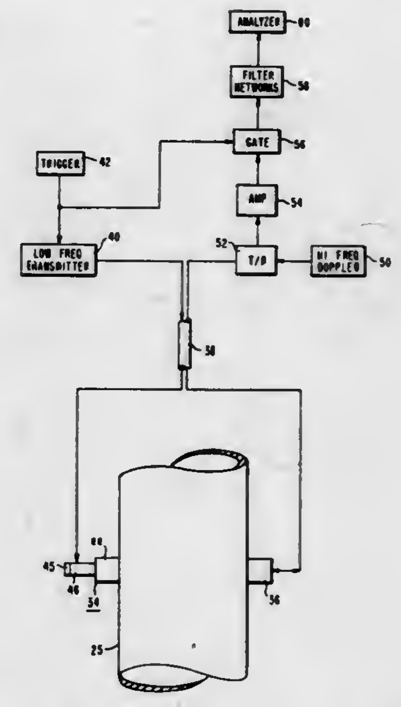
1. A method of determining the thermoparticulating temperature of a compound which thermoparticulates at a temperature below 230° C. comprising

(1) mixing about 20 to about 250 phr of said compound into a liquid resin which is unreactive with said compound and which is solidifiable and stable at the thermoparticulating temperature of said compound;
(2) solidifying said resin;
(3) providing a flow of gas over said mixture;
(4) monitoring said gas for the presence of particles therein;
(5) gradually heating said mixture; and
(6) noting the temperature of said mixture when said monitor detects particles in said gas.

4,130,010

BUBBLE DETECTOR

James W. Wonn, Hempfield Township, Westmoreland County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Aug. 15, 1977, Ser. No. 824,593
Int. Cl.^{2} G01N ***29/02***
U.S. Cl. 73—19 **9 Claims**



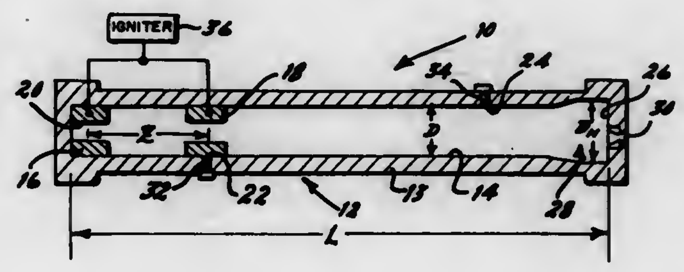
1. Apparatus for detecting bubbles in a liquid subject to inclusion of solid acoustic energy scatterers, comprising:

(A) a relatively low frequency acoustic generation system operable to project acoustic energy into a region of said liquid to insonify it with standing waves;
(B) a relatively higher frequency acoustic motion detection system operable to detect motion of bubbles in said region displaced due to said low frequency insonification.

4,130,011

FLARED SONIC END NOZZLE VELOCITY COUPLING TEST BURNER

Paul L. Micheli, Sacramento, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jun. 14, 1977, Ser. No. 806,437
Int. Cl.^{2} G01N ***33/22***
U.S. Cl. 73—35 **9 Claims**



1. A velocity coupling test burner comprising an elongated body, said body having walls which define a chamber formed within said body, said chamber being closed at one end thereof and having a flared nozzle formed at the other end thereof, said flared nozzle terminating in a centrally located opening, a propellant driver located within said chamber adjacent the closed end thereof, first and second transducers located within said walls of said body, each of said transducers being capable

of operably attaching a propellent sample thereto, and means operably connected to said driver and said sample for igniting said driver and said sample, whereby upon ignition of said propellant driver and said propellant sample the velocity coupling response can be measured.

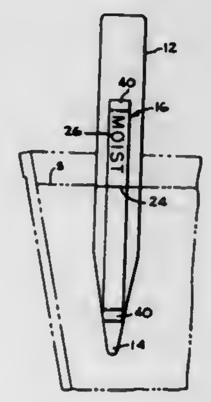
4,130,012
SOIL MOISTURE INDICATOR

Charles E. Lockerby, Foster City, and W. Scott Dimmick, Sunnyvale, both of Calif., assignors to Design Loft Creations, Inc., Foster City, Calif.

Filed Nov. 25, 1977, Ser. No. 854,794

Int. Cl.^{2} G01N *5/02*

U.S. Cl. 73—73 **4 Claims**



1. An article of manufacture for indicating the moisture content of a plant growing medium comprising an elongate rigid base member having sufficient strength for penetration into the surface of said medium, an elongate water absorbent sheet having length and width dimensions less than corresponding dimensions of said base member, a transparent impervious layer laminated to one surface of said sheet, said layer having a width substantially equal to that of the sheet and a length greater than the length of the sheet so as to form an incremental portion of at least one longitudinal end of said sheet that extends beyond said sheet, means for adhesively securing said sheet and said incremental portion to said base member so that said layer overlies said sheet, and a region of said water absorbent sheet remote from said incremental portion being treated to produce a visual effect when said sheet is wet different from that produced when dry.

4,130,013
APPARATUS AND METHOD FOR USING FUEL PRESSURE TO TRIGGER AN INJECTION TIMING DEVICE

John M. Bailey, Dunlap, and Ronald K. Scott, Buda, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 27, 1977, Ser. No. 864,997

Int. Cl.^{2} G01M *15/00*

U.S. Cl. 73—119 A **12 Claims**

1. A method of providing fuel injection timing information to set the timing of an engine, comprising:

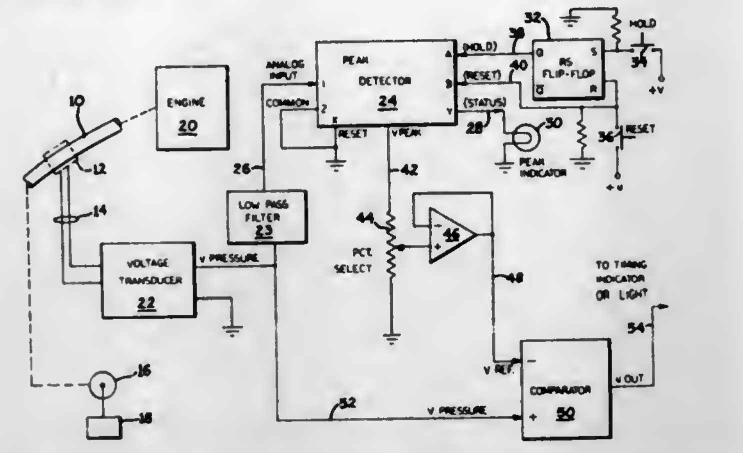
(a) running the engine under a certain condition;

(b) sensing the pressure of fuel in a fuel line with a pressure sensing means;

(c) generating a first variable amplitude output signal with said pressure sensing means, said first signal having fuel pressure information;

(d) generating a second signal proportional to a peak amplitude of said first variable signal;

(e) comparing said second signal with said first variable signal; and



(f) generating a third signal when said first signal is at least equal to said second signal to produce the timing information.

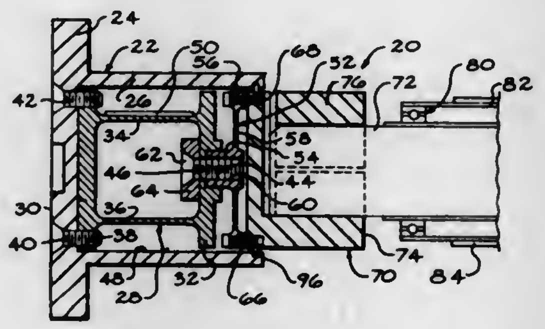
4,130,014
TENSION MONITOR MEANS

Gerald R. Eddens, St. Louis, Mo., assignor to W. J. Industries, Incorporated, St. Louis, Mo.

Filed Oct. 11, 1977, Ser. No. 840,646

Int. Cl.^{2} G01L *5/10*

U.S. Cl. 73—144 **20 Claims**



12. Means to measure tension forces on a member moving over and around a roll comprising

a roll rotatable about an axis,

means supporting the roll from at least one end thereof including means responsive to forces on said roll in a direction to deflect said roll, said force responsive means including

a fixed support structure and a support member having a first end portion anchored to the fixed support structure and a second end portion, said support member including a pair of spaced deflectable portions extending between and integrally connecting the first and second end portions, said deflectable portions being located on opposite sides of a line extending through the axis of roll,

a diaphragm member interposed between the second end portion of the support member and the one roll end, said diaphragm having a hub portion connected to the second end portion and a rim portion outwardly therefrom,

means connecting the rim portion to the said one roll end,

means on said fixed support structure engageable by the second end portion of said support member and by the rim portion of the diaphragm when the roll is under predetermined tension force to limit the amount of possible deflection of said support member, and

sensor means attached to at least one of said pair of deflectable portions at a location to indicate the deflection thereof.

4,130,015
SAFE TAKE-OFF INDICATORS

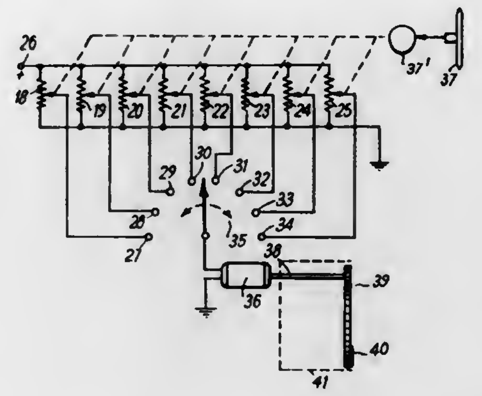
John H. H. Grover, Ashford, England, assignor to National Research Development Corporation, London, England

Filed Feb. 8, 1977, Ser. No. 766,643

Claims priority, application United Kingdom, Feb. 9, 1976, 4984/76

Int. Cl.^{2} G01C *21/10*

U.S. Cl. 73—178 T **10 Claims**



1. A take-off performance indicator system, comprising:

means electrically defining a plurality of different speed versus distance curves;

means actuable for selecting a desired one of the said curves in dependence upon parameters relevant to an individual take-off;

means for generating a first electrical signal dependent upon distance traversed by the aircraft during a take-off run;

means for applying said first electrical signal to said curve-defining means to generate a second electrical signal representative of the speed associated in the selected curve with the distance defined by the first signal; and

means for providing a display dependent upon the second signal, wherein the selecting means is adapted to effect the selection in dependence upon individual take-off parameters and including means responsive to at least one of the said parameters for directly controlling said selecting means in response thereto.

4,130,016
ADIABATIC CALORIMETER APPARATUS AND METHOD FOR MEASURING THE ENERGY CHANGE IN A CHEMICAL REACTION

Lynn C. Walker, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 8, 1977, Ser. No. 822,595

Int. Cl.^{2} G01K *17/00*

U.S. Cl. 73—190 R **16 Claims**

1. An adiabatic calorimeter apparatus for measuring the energy change in a chemical reaction, the apparatus comprising:

an oven chamber;

a reaction vessel which is positioned in the oven chamber and is adapted to contain one or more chemical reactants;

the oven chamber containing a gas atmosphere which surrounds the reaction vessel;

a jacket cover which is fitted to the reaction vessel and is in contact with the outer wall surface of the reaction vessel;

a temperature measuring means positioned in the reaction vessel;

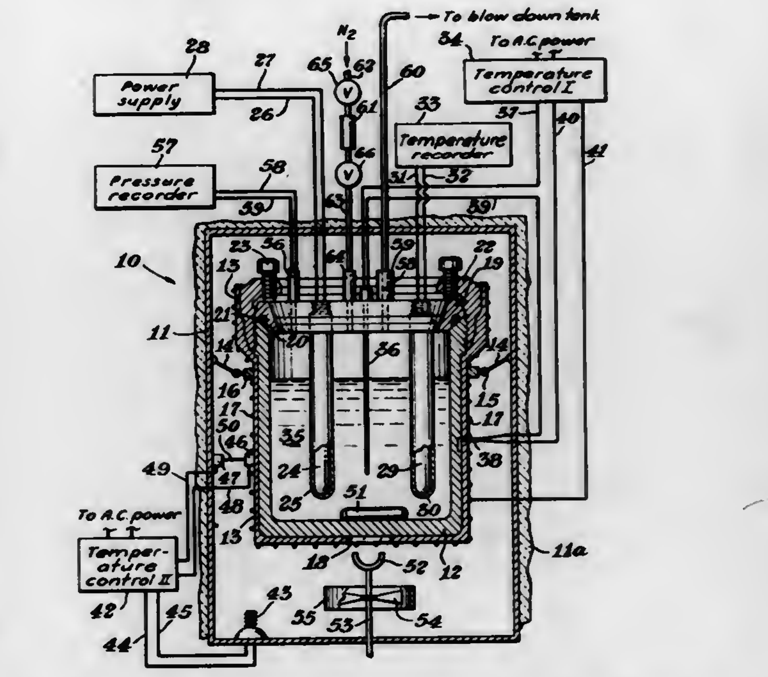
a temperature recorder unit which is electrically connected into the temperature measuring means;

a first heater means which is positioned in the reaction vessel;

a second heater means which is attached to an outer wall surface of the jacket cover;

a first temperature control system which includes a first temperature sensor positioned in the reaction vessel, a second temperature sensor attached to the outer wall surface of the reaction vessel, the second heater means, and a first temperature control unit positioned outside of the oven chamber and electrically connected to the first and second temperature sensors and the second heater means;

the first temperature control unit thereby controlling power input to the second heater means on the jacket cover, such



that the temperature of the reaction vessel is maintained in equilibrium with the temperature of the chemical reactants contained in the reaction vessel; and

a stirring means positioned in the reaction vessel and operatively associated with a means for actuating the stirring means.

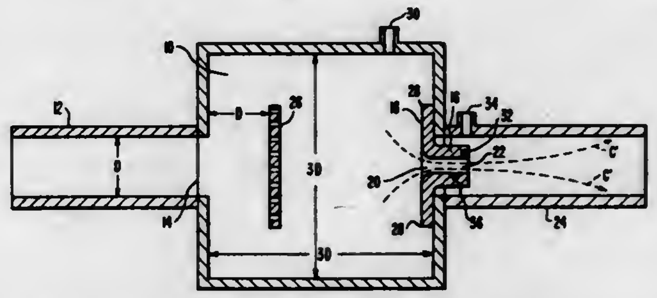
4,130,017
FLOW RATE MEASURING DEVICE

Robert P. Benedict, Media, Pa., and John S. Wyler, Andover, Mass., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 1, 1977, Ser. No. 847,528

Int. Cl.^{2} G01F *1/42*

U.S. Cl. 73—211 **9 Claims**



1. A flow rate measuring apparatus comprising:

a plenum chamber including an inlet port and an outlet port, said plenum chamber having a substantially larger cross-sectional flow area than said inlet port for reducing the velocity of fluid entering said plenum chamber to essentially zero, said plenum chamber having a substantially larger cross-sectional flow area than said outlet port;

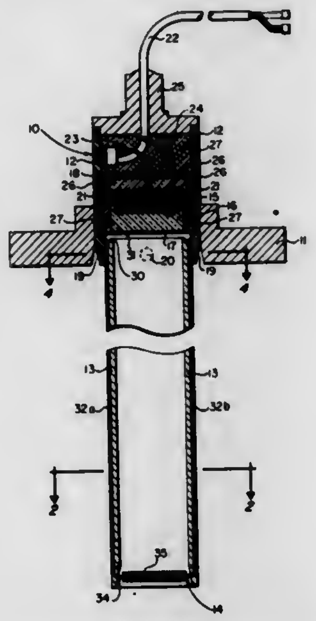
a converging nozzle having a body portion with an inlet opening for receiving fluid from said plenum chamber and an outlet opening for expelling that fluid after it has been accelerated through a throat in the body which connecting said inlet and outlet openings, said nozzle being disposed through said plenum outlet port, said nozzle's body portion having an inlet end which bounds said inlet opening, said inlet end being disposed within said plenum chamber and extending a smaller distance in the nozzle's radial direction than does the portion of said plenum chamber radially adjacent thereto and a greater radial distance than said outlet port; and

an upstream and a downstream pressure tap, said upstream tap being disposed in said plenum chamber and said downstream tap being disposed downstream from said plenum chamber outlet port.

4,130,018
ULTRASONIC TRANSDUCER WITH REFERENCE REFLECTOR

George L. Adams, Bayshore; David Aker, Huntington Station, and David Silvermetz, Wantagh, all of N.Y., assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Aug. 30, 1977, Ser. No. 829,036
Int. Cl.^{2} G01F *23/28*
U.S. Cl. 73—290 V **11 Claims**



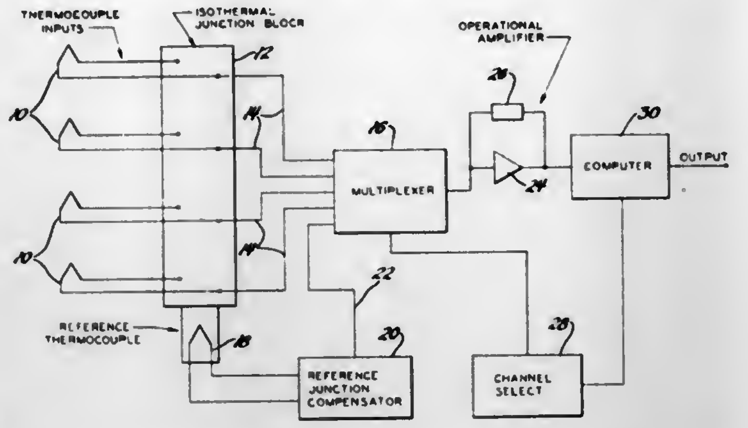
1. An ultrasonic transducer for transmitting acoustic waves into a gaseous environment comprising:
- a. a piezoelectric crystal; and
- b. a window layer mounted adjacent said crystal to transmit acoustic waves between said crystal and a gaseous environment, said window layer composed of an acoustically transmissive material having dispersed therein hollow glass spheres having diameters in the range of 20–300 microns so that said window layer has a relatively constant acoustic impedance and sound velocity characteristic over a range of temperatures.

4,130,019
SELF-COMPENSATING THERMOCOUPLE READING CIRCUIT

John S. Nitschke, 324 E. Second, Perrysburg, Ohio 43551

Filed Jun. 9, 1977, Ser. No. 805,067
Int. Cl.^{2} G01K *7/10, 7/12*
U.S. Cl. 73—341 **4 Claims**

1. A self-compensating thermocouple reading circuit comprising:
- a first thermocouple adapted to sense a temperature to be monitored;
- an isothermal junction block at which said first thermocouple is connected to reading circuit conductors;
- a second thermocouple adapted to sense the temperature of said isothermal junction block;
- a reference junction compensator connected to said second thermocouple to effect a compensated connection of said second thermocouple to reading circuit conductors;
- an amplifier;
- means for selectively connecting either said first thermocouple or said second thermocouple to said amplifier;
- and means connected to the output of said amplifier to subtract the signal developed when said second thermocouple is connected to said amplifier from the signal developed when said first thermocouple is connected to said amplifier to thereby generate a signal proportional to the temperature to be monitored corrected for both the junction error at said isothermal junction block and the offset error of said amplifier.



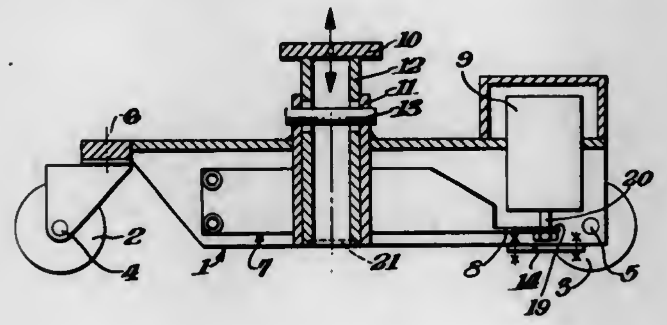
4,130,020
PORTABLE BEARING SUPPORT

Otfrid Maus, Darmstadt, Germany, assignor to Schenck-Auto-Service Geraete GmbH, Darmstadt, Germany

Filed Sep. 13, 1977, Ser. No. 832,832

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1976, 2641890

Int. Cl.^{2} G01M *1/28*
U.S. Cl. 73—457 **8 Claims**



1. A portable bearing support for measuring out of balance forces comprising:
- (a) a flexible elongated frame having wheel means mounted at each end;
- (b) a load receiver mounted on said frame between the ends thereof;
- (c) an elongated non-loadbearing pointer arm having one end securely fastened to said frame and having the other end free to move but in communication with a relative type pick-up which is securely mounted on said frame;

whereby the flexure of the frame caused by a load applied to the load receiver causes deflection of the free end of the pointer which deflection is detected and measured by the relative type pick-up.

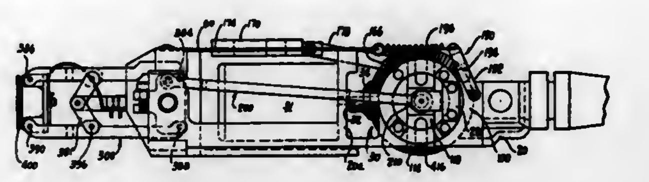
4,130,021
ULTRASONIC SECTOR SCANNING SEARCH UNIT

Peter G. Mueller, Guilford, and Albert S. Goodrich, Newtown, both of Conn., assignors to Picker Corporation, Cleveland, Ohio

Filed Nov. 12, 1976, Ser. No. 741,413
Int. Cl.^{2} G01N *29/00*
U.S. Cl. 73—633 **6 Claims**

1. An ultrasonic scanner unit, comprising:
- (a) a frame;
- (b) a transducer;
- (c) transducer support structure projecting from said frame and mounting said transducer for oscillatory movement about an axis;

- (d) drive means for driving said transducer support structure to effect oscillatory movement of said transducer about said axis; and

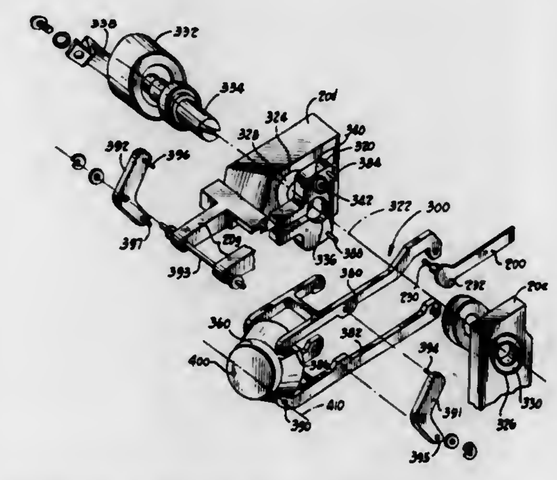


- (e) oscillation varying means operatively interposed between said transducer support structure and said drive means for mechanically varying the magnitude of transducer oscillation while said drive means is driving said transducer support structure.

4,130,022
ULTRASONIC SECTOR SCANNING SEARCH UNIT

Albert S. Goodrich, and Thomas M. Corcoran, both of Newton, Conn., assignors to Picker Corporation, Cleveland, Ohio

Filed Nov. 12, 1976, Ser. No. 741,412
Int. Cl.^{2} G01N *29/00*
U.S. Cl. 73—633 **3 Claims**

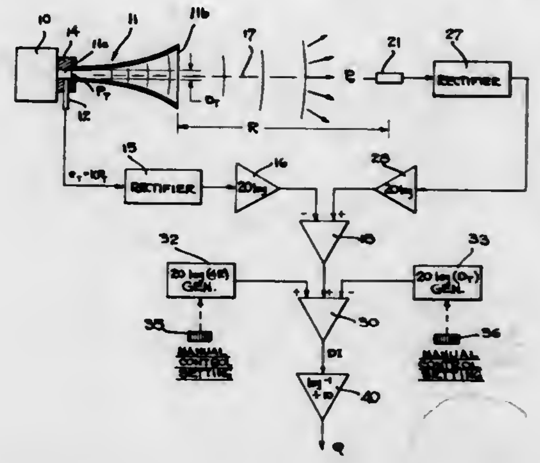


1. An ultrasonic scanning unit comprising:
- (a) a supporting chassis;
- (b) an ultrasonic transducer having a surface through which ultrasonic beams are conveyed;
- (c) a pantographic system carried by the chassis and supporting said transducer for pivotal oscillatory movement about an axis which is fixed with respect to the transducer and with respect to the chassis and which coincides with said surface; and
- (d) drive means for imparting motion to said pantographic structure;
- (e) said pantographic system comprising:
  - (i) a first link structure drivingly connected to said drive means and supported by the chassis for rotation about a second axis fixed with respect to the chassis and parallel to the first axis, said first link structure having portions extending oppositely away from said second axis;
  - (ii) a second link structure supporting said ultrasonic transducer;
  - (iii) a driven link structure supported by said chassis at a point on said second axis displaced laterally from said first link structure for rotation about said second axis, said driven link structure having portions extending laterally away from said second axis;
  - (iv) at least two intermediate articulating links pivotally connected to the respective lateral portions of said first link and said driven link and projecting therefrom toward said second link structure, said articulating link pivotally connected to the second link structure to transmit oscillatory motion from the first link to the second link, said pivot connection disposed such that any four co-planar pivot points form the vertices of a parallelogram.

4,130,023
METHOD AND APPARATUS FOR TESTING AND EVALUATING LOUDSPEAKER PERFORMANCE

Clifford A. Henricksen, Yorba Linda, Calif., assignor to Altec Corporation, Anaheim, Calif.

Filed Dec. 27, 1977, Ser. No. 864,738
Int. Cl.^{2} G01M *19/00*
U.S. Cl. 73—647 **9 Claims**

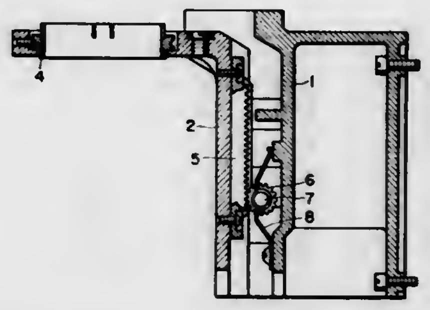


6. A method for determining the directivity characteristics of a loudspeaker having a throat comprising the steps of:
- generating a first electrical signal representing the acoustical pressure (P_T) at the throat of the loudspeaker,
- generating a second electrical signal representing the on-axis acoustical pressure (P_O) of the loudspeaker at a predetermined distance (R) from the mouth thereof,
- generating a third electrical signal in accordance with the ratio between said second and first signals, and
- generating a fourth electrical signal which is in accordance with the third signal multiplied by a factor in accordance with said predetermined distance (R) divided by the value of the diameter (D_T) of the loudspeaker throat, said fourth signal representing the directivity index of the loudspeaker.

4,130,024
SLIDING MEANS FOR PRECISION MACHINERY

Toshimi Hayasaka, Hino, and Toshikazu Nakajima, Ina, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 23, 1977, Ser. No. 809,415
Claims priority, application Japan, Jun. 30, 1976, 51-85158[U]
Int. Cl.^{2} F16H *19/04*
U.S. Cl. 74—29 **5 Claims**

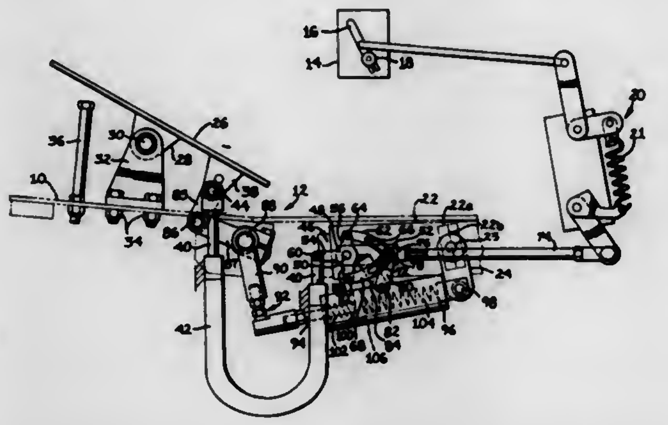


1. For precision machinery which includes a body having a fixed part fixed thereto and a movable part slidable along a guide mounted to said fixed part,

a sliding means, comprising:
- (a) a rack fixed to said moving part and having a row of rack teeth extending thereon lengthwise thereof;
- (b) a pinion journalled for rotation on said fixed part and

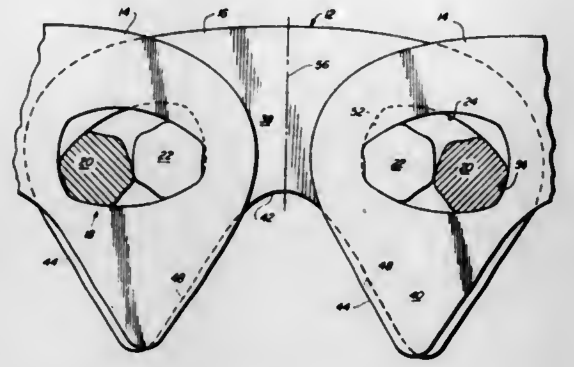
having a row of pinion teeth extending thereon circumferentially thereof;
(c) said pinion being meshed with said rack;
(d) said rack including a first contact surface means extending lengthwise thereof near said rack teeth;
(e) said pinion including a second contact surface means extending circumferentially thereof near said pinion teeth;
(f) said first contact surface means being constantly in sliding contact with said second contact surface means;
(g) the spatial disposition of the first contact surface means relative to said rack teeth and the spatial disposition of the second contact surface means relative to the pinion teeth being such that said first and second contact surface means perform a substantial bearing function and limit the pinion teeth from meshing so deeply between the rack teeth as they could were the first and second contact surface means not provided.

4,130,025
CONTROL LINKAGE FOR CONVERTING ALTERNATING ROTARY MOTION INTO UNIDIRECTIONAL MOTION
Dennis E. Dawson, Highland Heights, Ohio, assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Nov. 25, 1977, Ser. No. 855,037
Int. Cl.² F16H *25/08;* B60K *26/04*
U.S. Cl. 74—53 **22 Claims**



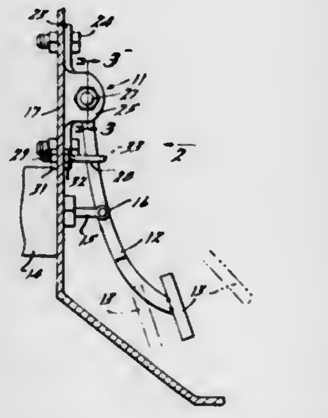
1. A system for converting movement of one member in a first or a second direction to movement of a second member in a single direction when the one member is moved in either the first or the second direction, comprising:
(a) a support;
(b) a crank having one end and an opposite end, said crank being pivotally connected to said support;
(c) a first arcutate link having an arcuate slot and connected to said one end of said crank;
(d) a second arcuate link having an arcuate slot and connected to said opposite end of said crank;
(e) a third link, said third link being movable in a single direction to move the second member;
(f) means for connecting siad first link, said second link and said third link in common, said connecting means being slidable in said arcuate slot of said first link and said second link; and
(g) means for rotating said crank in one direction in response to movement of the one member in the first direction and for rotating said crank in the opposite direction in response to movement of the one member in the second direction.

4,130,026
POWER TRANSMISSION DRIVE
Joseph O. Jeffrey, Ithaca, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Nov. 18, 1976, Ser. No. 742,808
Int. Cl.² F16G *13/06, 15/12*
U.S. Cl. 74—245 S **12 Claims**



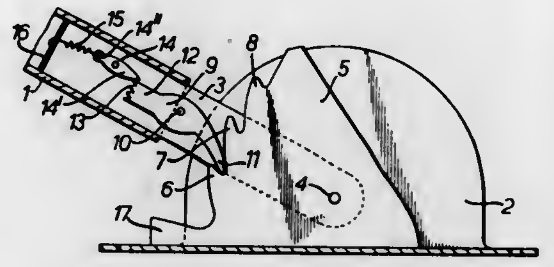
1. A power transmission chain of the type adapted to cooperatively engage driving means on a rotating member comprising:
a series of overlapping and interlaced sets of links having aligned apertures formed therethrough, and
pivot means positioned in said apertures forming said chain with articulating joints;
said pivot means comprising a pin and a rocker each of which has three convex and three concave surfaces which alternate and are joined with one another and with a convex surface of each in rocking engagement with one another;
said apertures having a small end and a large end, said small end being so shaped to receive a concave surface and its flanking convex surfaces in seating engagement.

4,130,027
RESILIENT LEVER ASSEMBLY
John D. Leighton, Bloomfield Hills, Mich., assignor to Betty Leighton, Bloomfield Hills, Mich., a part interest
Continuation-in-part of Ser. No. 693,104, Jun. 4, 1976, abandoned. This application Jan. 24, 1977, Ser. No. 761,647
Int. Cl.² G05G *1/14*
U.S. Cl. 74—512 **6 Claims**



1. A rigid elongated automotive brake pedal lever or the like mounted on a vehicle having a firewall between the engine and passenger compartment, said lever comprising a sleeve fixed to one end, a second sleeve within the first sleeve and spaced inwardly therefrom, a rubber bushing disposed between the two sleeves and secured thereto, means stationarily securing the inner sleeve comprising bracket means having a portion secured to the vehicle firewall and ears secured to the opposite ends of said inner sleeve, said lever depending downwardly from said bracket, a stop adjacent the lever, and means holding the stop in a position such that the rubber bushing will be stressed in a direction constantly urging the lever against the stop.

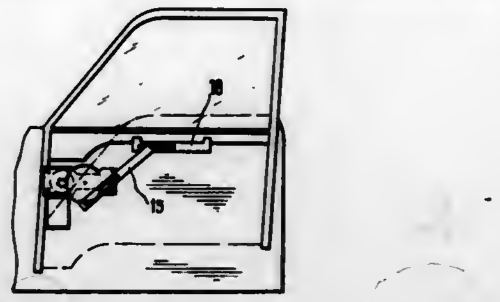
4,130,028
PAWL-AND-RATCHET CATCH
Aasmund Solberg, Leirsund, Norway, assignor to Angel Mork, Gjerdrum, Norway
Filed Jun. 9, 1977, Ser. No. 805,102
Int. Cl.² G01H *3/12*
U.S. Cl. 74—577 R **2 Claims**

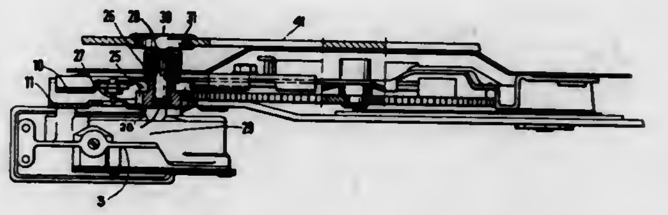


1. A pawl catch device comprising two relatively rotatable parts, the first part having a main pawl pivotally mounted thereon with a tongue that engages with the teeth on a toothed sector on the second part, said second part having a shaft about which the first part is rotatably secured, the teeth on the toothed sector being disposed at successively increasing distances from the shaft, the main pawl being adapted to catch automatically in any of a plurality of angular positions in engagement with successive ones of said teeth, said main pawl having a plurality of radially extending notches therein, an auxiliary pawl pivotally mounted on said first rotatable part, spring means urging said auxiliary pawl toward said notches, said teeth and auxiliary pawl being so positioned relative to each other that movement of said tongue from tooth to tooth along said toothed sector in the direction in which the distances of said teeth from said shaft successively increase causes said auxiliary pawl to move from notch to notch on said main pawl whereby said main pawl is held by said auxiliary pawl in such an angular position that upon reversal of the direction of rotation of the parts relative to each other, said main pawl will bypass the top of the teeth of lesser height that have been passed by said main pawl.

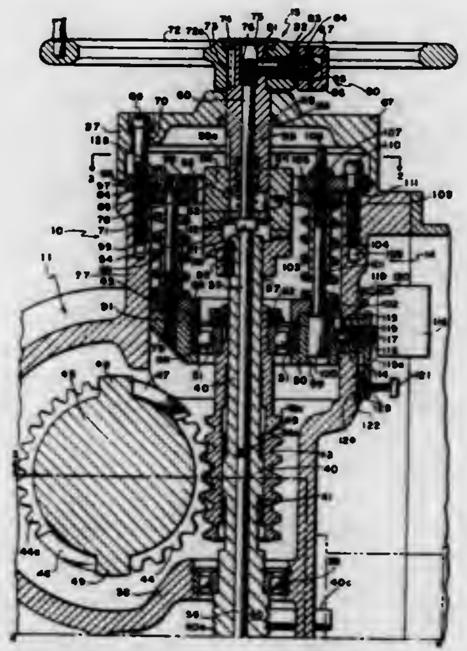
4,130,029
DRIVE ARRANGEMENT FOR MOVING A GLASS PANEL OF A WINDOW OF A VEHICLE
Bernd Klüting, Radevormwald, and Horst Kutschat, Wuppertal-Ronsdorf, both of Fed. Rep. of Germany, assignors to Keiper KG, Remscheid, Fed. Rep. of Germany
Filed Jan. 25, 1977, Ser. No. 762,421
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1976, 2603489
Int. Cl.² F16H *35/00*
U.S. Cl. 74—625 **16 Claims**

1. An arrangement for alternately opening and closing a vehicle window, having a glass panel, the arrangement comprising displacing means connected to the glass panel for displacing the same, said displacing means including an input member which is rotatable in one direction to thereby open the window, said input member being movable between a first position and a second position; a motor coupled to said input member in the first position and uncoupled therefrom in the second position, whereby said motor rotates said input member by a motor-driven operation when said input member is in the first position to thereby displace the glass panel; a handle coupled to said input member when said input member is in the second position so as to thereby manually rotate said input member in order to displace the glass panel; and deactivable locking means connected to said input member in such a manner that said locking means are operative only until deactivated and while said input member is in the second position so as to prevent rotation of said input member in the other direction when said input member is uncoupled from said motor.





4,130,030
MANUALLY SHIFTED ACTUATOR
Andrew Stratienko, Philadelphia, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Apr. 4, 1977, Ser. No. 784,391
Int. Cl.² F16H *33/00*
U.S. Cl. 74—625 **10 Claims**



1. A valve actuator assembly comprising:
an actuator housing assembly;
a stem engagement gear assembly having a circular gear ring, and a helical gear sleeve in engagement therewith;
a drive motor having an output shaft with power transfer means slidably located thereon and resiliently biased outward therefrom;
a rotatable hollow power shaft coaxially aligned with said output shaft, having power transfer means at each end thereof, and slidably engaged inside said gear sleeve with means to prevent rotation of said gear sleeve with respect to said power shaft;
a manual rotation assembly having a rotatable input shaft slidably and rotatably held in said housing assembly in coaxial alignment with said power shaft, a manual operator on said input shaft, and power transfer means secured on said shaft and arranged to be moved into engagement with said power transfer means on said power shaft; and,

sliding means in said power shaft extending outward from each end thereof, arranged to abut said output shaft power transfer means and said input shaft power transfer means, and adapted to prevent simultaneous engagement of said input shaft and said output shaft with said power shaft.

4,130,031
WIRE STRIPPER

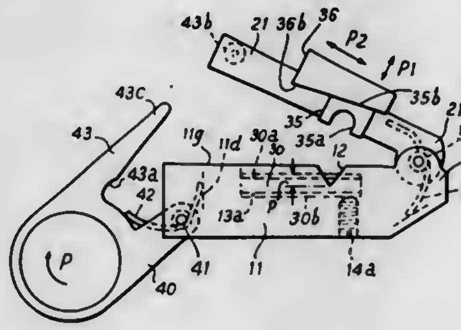
Hans Wiener, Täby, and Hans Undin, Åkersberga, both of Sweden, assignors to Pressmaster AB, Stockholm, Sweden

Filed May 26, 1977, Ser. No. 801,016

Claims priority, application United Kingdom, Jun. 9, 1976, 23819/76; Oct. 6, 1976, 41487/76

Int. Cl.^{2} H02G *1/12;* B26B *29/00*

U.S. Cl. 81—9.5 R **44 Claims**



1. A wire stripper comprising;
a pair of elongated rigid jaws hinged together at one end by an axle pin, one of said jaws being formed with at least one blade having a cutting edge turned toward the other jaw, said other of said jaws being formed with a bed open in the direction of said one of said jaws and formed with a notch open toward said blade and adapted to receive a wire whose insulation is partially incised by said edge upon the clamping of said jaws together about said wire;
latch means at the other end of said jaws to lock said jaws in a closed position about said wire;
a finger-receiving eye connected to one of said jaws for enabling the wire stripper to be twirled about by the finger of a user to effect relative rotation of the wire and the jaws when the same are clamped upon said wire, thereby extending the incision formed by said edge about the entire circumference of the said insulation; and
a cartridge replaceably received in said one of said jaws and carrying said blade and detent means on said one of said jaws engageable with said cartridge for retaining same immovably on said one of said jaws.

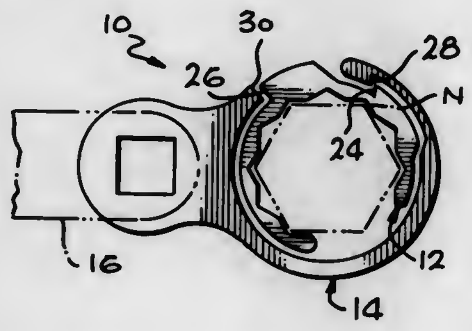
4,130,032
HIGH-TORQUE OPEN-END WRENCH

Anthony Giandomenico, San Gabriel, Calif.; James M. Dame, Slidell, La., and Harold Behimer, West Covina, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 29, 1977, Ser. No. 828,262

Int. Cl.^{2} B25B *13/02, 13/58*

U.S. Cl. 81—119 **7 Claims**



1. A wrench usable where limited access normally requires an open-end wrench, but which has substantially the high torque capacity of a closed-end, or socket wrench, comprising:
a sleeve forming a socket with a gap in its side, said sleeve having a plurality of wrench faces on its inside to engage and apply large torque to a nut; and
an adaptor forming a socket with a gap in its side, said adaptor formed to surround the region of said sleeve which forms said gap and to lie close to portions of said sleeve which lie on opposite sides of said sleeve gap to resist spreading apart of said sleeve portions;
said sleeve and adaptor having engageable torque-transmitting surfaces extending at least partially in radial directions, between and including a direct radial direction and an undercut, which enable said adaptor to apply torque to said sleeve.

4,130,033
MULTIPLE SPINDLE AUTOMATIC SCREW MACHINE

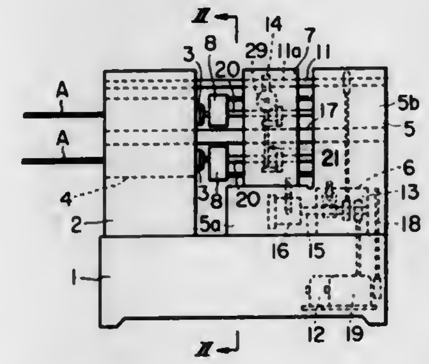
Yoshifumi Tsuchiya, 6 of 1373, Baigo 6, Ohme-shi, Tokyo, Japan

Filed Jun. 7, 1977, Ser. No. 804,282

Claims priority, application Japan, Aug. 13, 1976, 51-96788

Int. Cl.^{2} B23B *9/04, 11/00*

U.S. Cl. 82—3 **4 Claims**



1. A multiple spindle automatic screw machine comprising:
a plurality of work spindles each work spindle for holding a workpiece extending frontwardly thereof, said work spindles peripherally and equally spaced around an indexing drum;
a plurality of tool brackets, the number of said tool brackets equalling the number of said work spindles, said tool brackets opposedly mounted frontwardly of said work spindles, said tool brackets each including a guide bush in fixed relationship thereto to support said workpiece;
working tools mounted on each of said tool brackets;
means for producing relative motion between said workpieces and said working tools;
means for rotationally indexing said indexing drum with said work spindles, whereby each of said work spindles in turn opposes each of said tool brackets;
means for reciprocally translating said tool brackets with said guide bushes toward and away from said indexing drum and said work spindles, whereby said workpieces are translated away from said guide bushes for indexing said drum, and said workpieces are supported by said guide bushes when said tool brackets are translated toward said work spindles for machining of said workpieces;
a bed, said bed supporting said indexing drum and said tool brackets;
whereby the relationship between each of said guide bushes and each of said tool brackets is unchanged when said work spindles index said workpieces.

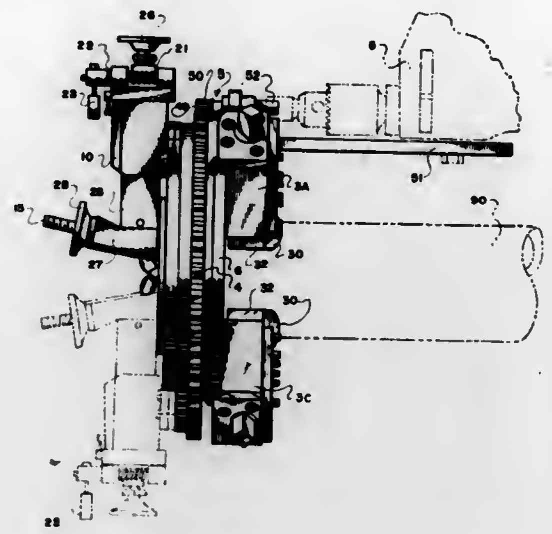
4,130,034
PORTABLE REFACING MACHINE

Lloyd F. Benoit, Rt. 1, Box 57B, Arnaudville, La. 70512

Filed Jun. 20, 1977, Ser. No. 808,053

Int. Cl.^{2} B23B *3/34*

U.S. Cl. 82—4 C **3 Claims**



1. A portable apparatus for refacing pipe section joints, and the like, without the need of threaded adaptors, comprising:
a support housing;
a set of four movable members, telescopically mounted on said support housing at substantially equal distances from each other, and adapted to detachably secure a pipe section from the outer surface of the pipe section;
a first ring gear, rotably mounted on said support housing;
a cutting head, provided with one cutting element, and connected to said first ring gear by means comprising a casing, mounted on said first ring gear, a shaft, connected to said cutting head and telescopically mounted within said casing, a second ring gear, connected to said shaft so as to cause said shaft to move perpendicularly to the longitudinal axis of said second ring gear as said second ring gear rotates, a worm gear, engaged to said second ring gear, and a weight, rotably connected to the shaft of said worm gear;
two symmetrical slotted plates, detachably mounted on one flat surface of said support housing, and provided with inwardly extending protrusions for positioning the joint shoulders of the pipe section within about 1/16 of an inch from the face of said cutting head, and
means for imparting rotational motion to said first ring gear comprising a drive gear, engaged to said first ring gear, a drive shaft, connected to said drive gear, and a reversible electric motor.

4,130,035
SPRING MOUNTED SUPPORT FOR BARSTOCK

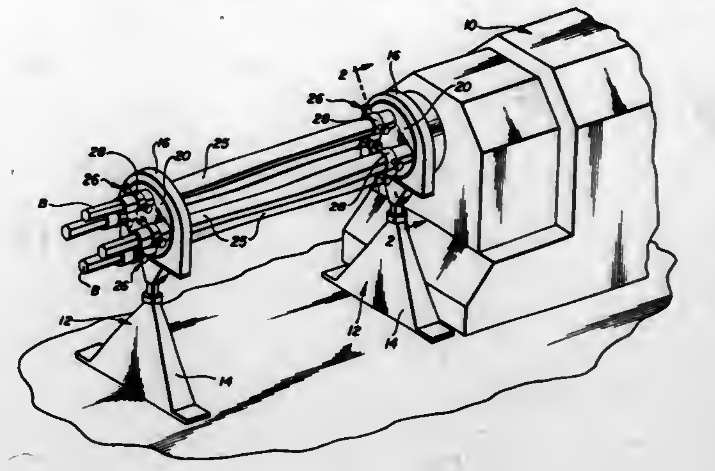
Allie B. Langley, 11810 Chimney Rock, #54, Houston, Tex. 77035

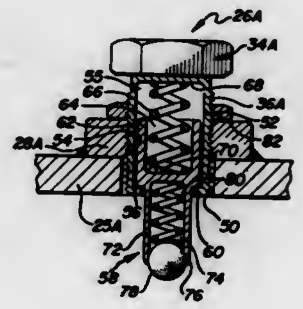
Filed Oct. 26, 1977, Ser. No. 845,519

Int. Cl.^{2} B23B *13/08, 25/00*

U.S. Cl. 82—38 A **3 Claims**

1. In combination with a machine having tools operating upon a plurality of bars being fed longitudinally within the machine for forming workpieces; a plurality of tubes extending generally horizontally from the machine each receiving a bar therein, bar supporting means spaced along the length of each tube to support the bar therein in spaced relation to inner surface of the associated tube, said bar supporting means including at least three bar supports carried by the associated tube and spaced about the circumference of the bar, each bar support comprising an outer housing fixed to the associated tube, an elongated spring carrier fitting within the housing and extending through an opening in the associated tube, said spring carrier having an inner bore extending within the tube, a spring mounted in said inner bore, a ball carried by the inner end of the spring carrier projecting beyond the spring carrier to contact an adjacent bar and resiliently urged by the spring into contact with the bar, and means resiliently mounting the spring carrier for movement relative to the outer housing toward and away from the bar.





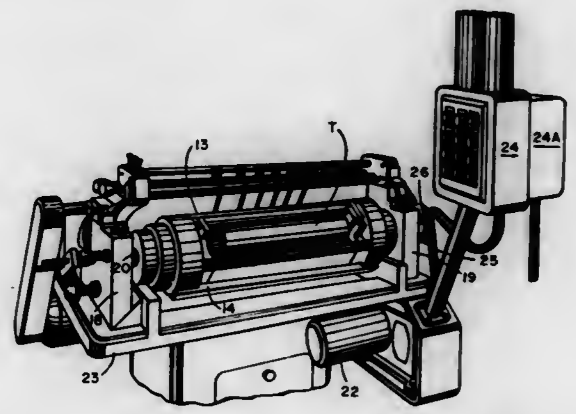
4,130,036
APPARATUS FOR CUTTING TUBES

Anthony V. Thomas, Prospect Heights, Ill., assignor to Precision Paper Tube Compay, Wheeling, Ill.

Filed Oct. 6, 1977, Ser. No. 839,806

Int. Cl.^{2} B23B *5/14*

U.S. Cl. 82—90 **2 Claims**



1. Apparatus for cutting a long paper tube into individual sections comprising: cradle means for holding the tube; means for mounting said cradle for rotation about a horizontal axis; means for driving said cradle in rotation from a load position through a cutting position and back to a load position; a plurality of saws mounted on a shaft having an axis parallel to the axis of rotation of said cradle; means for driving said saws at high speed; surface-drive means for engaging the surface of said tube at the cutting position for spinning the tube in said cradle during cutting, said cradle including a pair of end discs; means for securing said discs together to form a balanced rotatable member; a pair of stub shafts secured to said discs respectively for supporting the same while permitting the

rotation thereof; first and second base plates extending between and mounted to said side discs and spaced at right angles toward the periphery of said disc to permit the support of a tube of large diameter approaching the diameter of said discs.

4,130,037

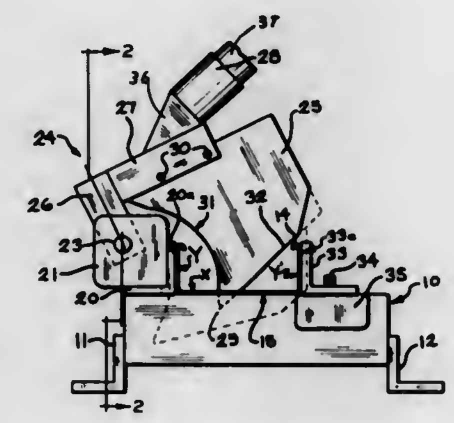
SHEAR FOR CUTTING SHEET MATERIAL AND METHOD OF USE

Loren A. Matthews, Haslett, Mich., assignor to Matt Tool Corporation, Haslett, Mich.

Filed Jun. 17, 1977, Ser. No. 807,449

Int. Cl.^{2} B23D *23/00*

U.S. Cl. 83—56 **9 Claims**



1. A shear for cutting building channel which is U shaped with a backbone and two parallel sides to a predetermined length which comprises:
   - (a) a frame having an elongate slot in a flat surface on the frame with a straight edged surface;
   - (b) a pair of spaced apart parallel plates mounted adjacent to and perpendicular to the flat surface on the frame having holes in each plate defining a pivot axis towards the slot;
   - (c) two spaced apart holders defining extensions of the straight edged surface and mounted on the frame so as to position a building channel with the backbone mounted on the flat surface over the slot and the sides against the holders so as to prevent the sides of the channel from being bent outward out of parallel;
   - (d) a pivot arm moveable by hand to pivot over the slot mounted between the parallel plates by means of a pin in the holes in the plates; and
   - (e) a blade with parallel sides and having a point formed by double cutting edges provided at one side of the blade which is in slideable contact with the straight edged surface of the slot which edges are at an angle of between about 30° to 70° to each other one of which nearest the pivot axis is concave, which blade is mounted and positioned on the pivot arm to be moveable into the slot adjacent the straight edged surface such that the backbone of the channel is pierced at about the center and cut towards the sides of the channel on both cutting edges as the blade is forced into the slot adjacent the straight edged surface on the frame and such that an edge of the blade opposite the concave edge first cuts into one side of the channel against one holder and then the concave edge of the blade cuts into the other side of the channel against the other holder and along the extensions of the straight edged surfaces on the holders until the channel is cut to length without significantly distorting the sides or backbone.

4,130,038

THREAD PARTING DEVICE FOR TEXTILE MACHINES

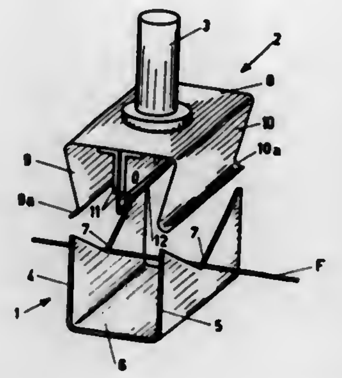
Ulrich Zehnder, Einsiedeln, Switzerland, assignor to Maschinenfabrik Schweiter AG, Horgen, Switzerland

Filed Jun. 20, 1977, Ser. No. 808,093

Claims priority, application Switzerland, Jul. 22, 1976, 9432/76

Int. Cl.^{2} B26D *7/02*

U.S. Cl. 83—175 **7 Claims**



1. A thread parting device for textile machines, comprising:
- a fixed, separating member, comprising two mutually parallel thread guide plates spaced from each other;
- a cutting edge-containing cutting body movable toward said fixed separating member and operable by means of said textile machine, comprising a U-shaped thread tensioning bow having two spring clamping shanks which during the course of a cutting motion of said device are slideable against the outer surfaces of said thread guide plates with a predetermined contact pressure in order to tension a thread guided crosswise over the thread guide plates, and
- a blade so arranged on said cutting member between and parallel to said clamping shanks that in the direction of the cutting motion its cutting edge lies behind said clamping edges of said spring clamping shank.

4,130,039

CUTTING DEVICE

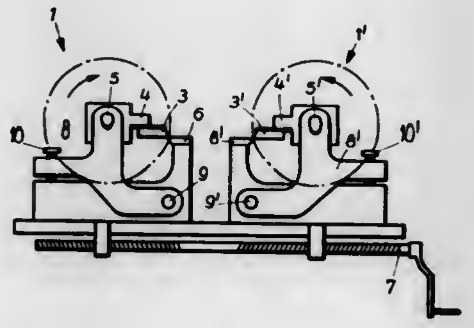
Günter Heyden, and Günter Geitz, both of Neuwied, Fed. Rep. of Germany, assignors to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co., KG, Neuwied am Rhein, Fed. Rep. of Germany

Filed Jun. 20, 1977, Ser. No. 807,844

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1976, 2628728

Int. Cl.^{2} B26D *5/20*

U.S. Cl. 83—356.3 **3 Claims**



1. In a cutting device of the type having rotary vane knives which cooperate with stationary knives, for making patterned cuts in the longitudinal edges of a paper web fed therepast, for the preparation of envelopes or envelope blanks, the improvement comprising:
- at least one cooperating knife pair, including
- one rotary knife made of an aluminium alloy and one stationary knife made of hardened steel, disposed for cooperative engagement, for making patterned cuts in the edges of paper webs moving therepast, said blades being made of materials differing from one another in hardness to an extent such that the softer knife can have material removed from it without damage to the latter, and at least one of the knives of said cooperating knife pair being mounted for feeding movement toward its associated cooperating knife, while the cutting device is operated, said knife which makes the infeeding movement, being mounted on a frame pivotable around a pivot, which pivot is positioned such that, irrespective of its infeed, the rotary knife, when in the cutting position, always takes up the same angular position relative to the paper web fed therepast.

4,130,040

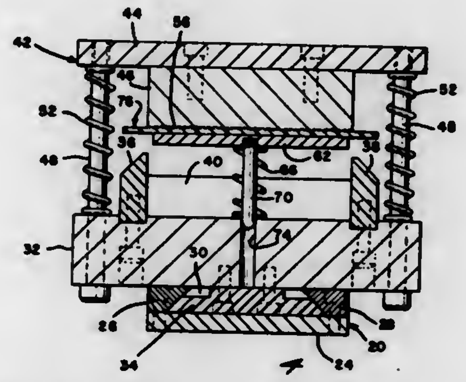
CUTTER ASSEMBLY

Charles W. Donnelly, Sr., and Larry R. Stauffer, both of Camp Hill, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 23, 1977, Ser. No. 827,041

Int. Cl.^{2} B26D *5/10;* H02G *1/12*

U.S. Cl. 83—389 **8 Claims**



8. In combination with a press having a frame, a ram, and ram actuation means, a cutter assembly for profiling a free end of multi-conductor flat flexible cables and the like, said cutter assembly comprising:
- a base member mounted on said press frame so as to be moveable between a first position beneath said ram and a second position remote from and clearing said ram,
- shear means secured to and extending from said base member defining a profile including a pair of fixed, parallel, spaced side blades, and a fixed transverse end blade normal to said side blades adjacent one end thereof,
- a shear head mounted on said base member for reciprocal movement therebetween, said shear head being receivable within said profile to cause a shearing action with said shear means;
- cable stop means fixed to said shear head beyond said transverse end blade; and
- means to hold said cable against said shear head and moveable therewith whereby cable carried thereby is sheared to said profile upon actuation of said press.

4,130,041

VENEER CLIPPER

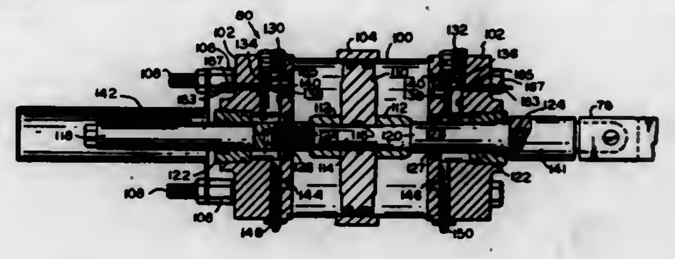
David L. McGee, Portland, Oreg., assignor to Plymak Company, Inc., Portland, Oreg.

Division of Ser. No. 522,576, Nov. 11, 1974, Pat. No. 4,041,820. This application May 9, 1977, Ser. No. 795,220

Int. Cl.^{2} B26D *5/12;* B27L *5/08*

U.S. Cl. 83—617 **1 Claim**

1. In an improved veneer slipper,
- reciprocable knife means,
- double acting cylinder means including a cylinder having heads provided with bores and counterbores and a piston member slidable in the cylinder and having a rod at each end slidable in the bores, the piston member also having shorter plug portions on the rods adapted to enter the counterbores near the ends of the strokes of the piston member,
- the cylinder heads having ports connected to the counterbores,
- the cylinder means also including bleeder means between the ports and end portions of the cylinder to control exhaust of fluid from the end portions of the cylinder after the plug portions have closed the counterbores,
- means for supplying fluid under pressure selectively to the ports,



- actuating means driven by the cylinder means for reciprocating the knife means once for each stroke of the piston member,
- check valve means for connecting the ports to the end portions of the cylinder to bypass the bleeder means when fluid under pressure is supplied to the ports,
- each check valve means being of the poppet type including a valve rod extending through the cylinder head, a spring on the rod exteriorly of the cylinder, and adjustable spring seat means on the rod exteriorly of the head.

4,130,042

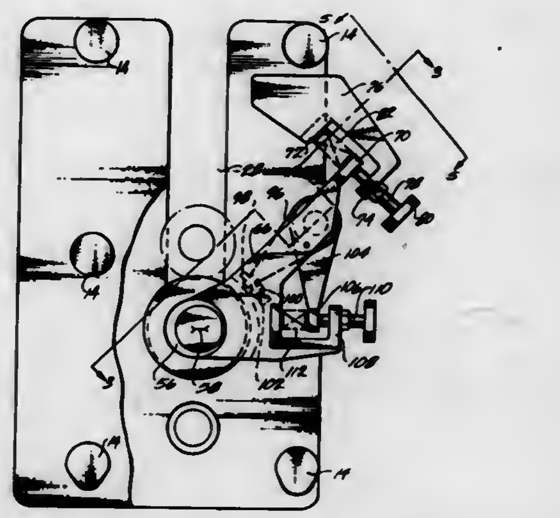
ADJUSTABLE ANVIL ROLL FOR DIE-CUTTING LABELS

Charles F. Reed, Painesville, Ohio, assignor to Avery International Corporation, San Marino, Calif.

Filed Jul. 25, 1977, Ser. No. 818,546

Int. Cl.^{2} B26F *1/42;* B26D *3/08*

U.S. Cl. 83—887 **10 Claims**



1. A roll cutter assembly comprising a pair of rolls having cylindrical bearing portions at the ends of the rolls, the cylindrical bearing portion of one of said pair of rolls being in rolling contact with the cylindrical bearing portion of the other roll to maintain fixed spacing between the rolls, the cylindrical bearing portions of the first roll each including an outer annular bearing having an outer circular surface in rolling contact with one of the bearing portions of the second roll, an inner bearing, the first roll being journaled in the inner bearings, an annular eccentric cam having inner and outer cylindrical eccentric surfaces positioned between the inner and outer bearings, whereby the inner bearing is mounted eccentrically within the outer bearing, and means for adjusting the angular positions of the cams to vary the distance between the rolls.

4,130,043

ELECTRONIC MUSICAL INSTRUMENT HAVING FILTER-AND-DELAY LOOP FOR TONE PRODUCTION

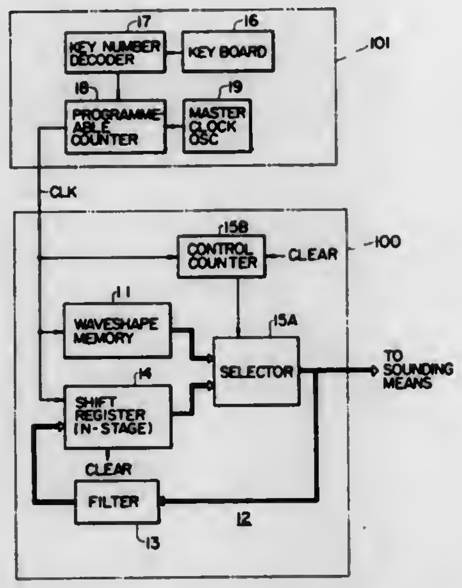
Koji Niimi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 13, 1976, Ser. No. 732,181

Claims priority, application Japan, Dec. 16, 1975, 50/149148

Int. Cl.² G10F *1/00*

U.S. Cl. 84—1.03 **9 Claims**



1. An electronic musical instrument comprising:

waveshape generating means for generating during a time period of predetermined length a waveshape defining a period of a tone wave to be sounded, said time period being determined according to a frequency of a musical tone to be produced by said musical instrument; and

a loop circuit connected to said waveshape generating means for receiving said waveshape of said length, and including a filter and a delay means connected in a loop for repetitively circulating therein said waveshape, and having a delay time equal to the length of said predetermined time period, providing thereby for a period of said signal to circulate in the loop circuit once, said loop circuit delivering out a musical tone signal having said frequency.

4,130,044

KEYBOARD MUSICAL INSTRUMENT AND IMPROVED PIANO

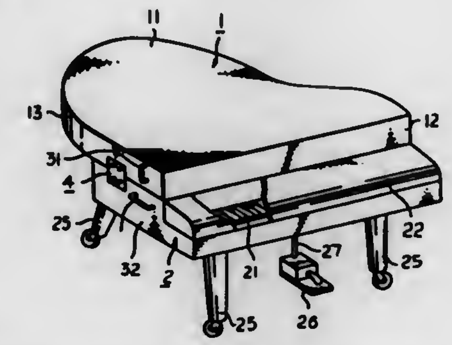
Takashi Yamada; Yasutoshi Kaneko, and Kazuo Murakami, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Sep. 13, 1976, Ser. No. 722,398

Claims priority, application Japan, Sep. 16, 1975, 50-125929[U]; Nov. 19, 1975, 50-156221[U]; Nov. 19, 1975, 50-156223[U]

Int. Cl.² G10C *3/02*

U.S. Cl. 84—176 **21 Claims**



1. A horizontal grand-type piano, comprising:

(A) a keyboard comprising a plurality of individually actuatable keys;

(B) an action assembly comprising:

(1) a plurality of hammers, a different said hammer associated with each of said keys;

(2) linkage means for impelling each said hammer from a first, rest position towards a second, operative position in response the actuation of its corresponding said key;

(C) a first, elongated housing member at least partially housing said keyboard and said action assembly, said first housing member having an opening in the upper surface thereof, each of said hammers being so oriented within said first housing member that each said hammer lies below said opening and within said first housing member when it is in its first, rest position and lies above said opening and without said first housing member when it is in said second, operative position, said first housing member having an upwardly facing, elongated support surface lying in a horizontal plane;

(D) vertical leg means for supporting said first housing member above a horizontal support plane such that said first housing member is elongated in a generally horizontal plane;

(E) a plurality of piano strings carried by a piano plate;

(F) a second, elongated housing member at least partially housing said piano plate and said strings, an opening formed in the bottom of said second housing member and providing direct access to each of said strings, said second housing member having a downwardly facing elongated support surface lying in a horizontal plane; and

(G) means for releasably connecting said second housing member to said first housing member in such a manner that said downwardly facing support surface of said second housing member lies on top of said upwardly facing support surface of said first housing member in such a manner that the weight of said second housing member is supported by said upwardly facing support surface of said first housing member and a strong frictional force is established between said upwardly and said downwardly facing support surfaces;

(H) said strings being so located within said second housing member that they lie in a generally horizontal plane when said second housing member is coupled to said first housing member;

(I) said second housing member lying in a generally horizontal plane on top of and offset with respect to said first housing member;

(J) said opening in said first housing member communicating with said opening in said second housing member; and

(K) the relative location of said hammers and said strings being such that each of said hammers strikes a different set of said strings when its respective key is actuated.

4,130,045

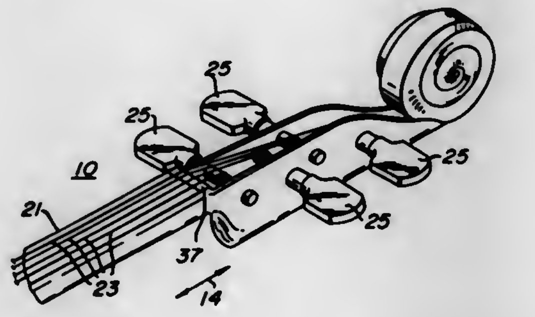
STRING INSTRUMENT TUNING SYSTEM

William C. Walker, 7665 Marcin Dr., Glen Burnie, Md. 21061

Continuation-in-part of Ser. No. 647,979, Jan. 9, 1976, Pat. No. 4,062,265. This application Oct. 25, 1977, Ser. No. 845,442

Int. Cl.² G10D *3/14*

U.S. Cl. 84—297 R **11 Claims**



1. A string instrument tuning system for tuning a string instrument having at least one string passing in a longitudinal direction, comprising:

(a) first means for indication formed on a surface of said string of said string instrument, said first indication means having at least one indicia zone, and,

(b) second means for indication disposed upon said string instrument, said second indication means having cooperative indicia for alignment with said first indication means in said indicia zone for determining a tension load on said string of said instrument.

4,130,046

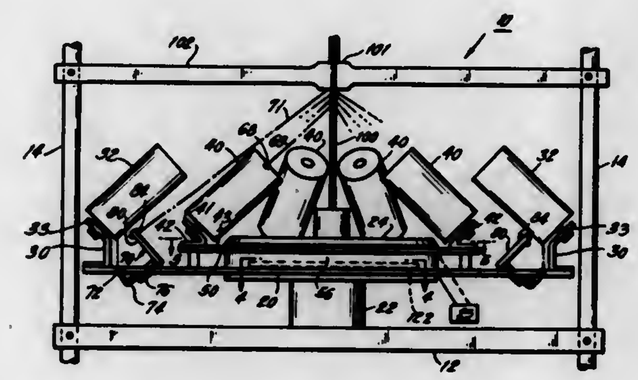
BRAIDING MACHINE WITH CONTINUOUS TENSION FILAMENT CONTROL

Vincent Sokol, 93 Sunnyside Dr., Yonkers, N.Y. 10705

Filed Feb. 15, 1978, Ser. No. 877,980

Int. Cl.² D04C *3/42, 3/06*

U.S. Cl. 87—48 **64 Claims**



1. A machine for braiding filaments, comprising:

a mandrel at a central axis on which said mandrel the filaments are braided;

an array of first bobbins, or the like, each for supplying a respective filament to be braided; first moving means for supporting and for moving said first bobbins annularly around said central axis in a first direction; each said first bobbin having a top side and an underside;

an array of second bobbins, or the like, each for supplying a respective filament to be braided;

a respective filament guide means for each said second bobbin; the filament from each said second bobbin being guided by its said filament guide means; second moving means for supporting and for moving said guide means annularly around said central axis in a second direction opposite said first direction; each said guide means having an entrance thereto at which filament from the respective said second bobbin enters said guide means; each said guide means having an exit therefrom out of which filament leaves the respective said guide means; said guide means exits all being further from said mandrel than said first bobbins;

said second moving means comprises a support for each said guide means which is connected with the respective said second bobbin that supplies filament to that said guide means such that the location of each said guide means entrance remains fixed with respect to the location of the respective said second bobbin, while each said guide means exit moves with respect to said second bobbin as said guide means is moved;

said guide means each being movable in a manner that raises and lowers said guide means filament exits, raising the filament exiting from each said guide means exit to a level at which the filament passes over a said first bobbin top side and lowering the filament exiting from each said guide means exit to a level at which the filament passes under said first bobbin underside; said guide means exits each being movable along a pathway wherein the tension on the filament exiting from each said exit remains substantially constant throughout the movements of said guide means to raise and lower the filament exiting therefrom;

each said guide means being oriented and adapted to move the respective said guide means exit along the respective said pathway, and said pathway is chosen so that the length of a filament section, from said guide exit to said mandrel, remains substantially constant throughout the movement of said guide means exit;

guide means moving means for so moving said guide means;

each said guide means is disengageable from the respective second bobbin array filament connectable therewith;

with first bobbins and said second bobbins also being rotatable in the respective directions opposite to their respective said first and said second rotation directions;

filament positioning means placed so as to direct filament from each said second bobbin to normally pass by one of said top side and said underside of all said first bobbins;

a deflector on said machine; said deflector having a first side edge positioned to be engaged by the filaments of said second bobbins as said second bobbins move past said deflector in the respective said second direction of rotation thereof; said deflector first side edge being shaped to deflect the second bobbin filaments to pass by the other of said top side and said underside of said first bobbin then passing said deflector;

said deflector having a second side edge on the opposite side thereof from said first side edge and positioned to be engaged by the filaments of said second bobbins as said second bobbins move past said deflector in said opposite direction from said second direction; said deflector second side edge being shaped to deflect the second bobbin filaments to pass by the other of said top side and said underside of said first bobbins then passing said deflector;

a frame for supporting said bobbins and with respect to which both of said first and said second bobbins arrays rotate; said deflector being mounted to said frame and being shiftable circumferentially of said bobbin arrays with respect to said frame for positioning either of said first and said second side edges to be engaged by the filaments of said second bobbin array when said second bobbin array rotates, respectively, in said second direction and the direction opposite to said second direction.

4,130,047

SEALING SYSTEM FOR A WEDGE-TYPE BREECH MECHANISM

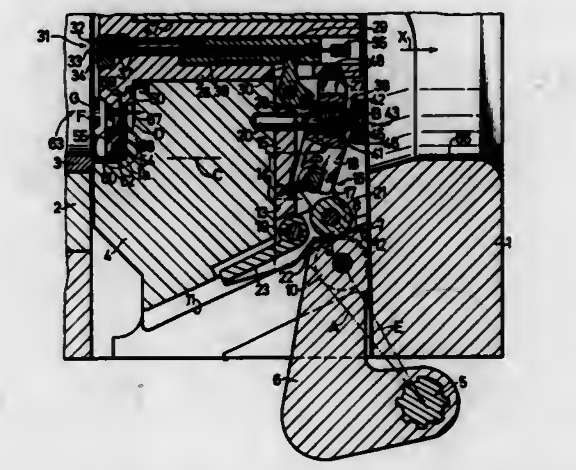
Anton Politzer, Robert-Koch-Str. 18, 8520 Lauf/Pegn., Germany, and Wilhelm Machmer, Salzburger Str. 34, 8500 Nürnberg, Germany

Filed Dec. 6, 1976, Ser. No. 752,827

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1975, 2554728

Int. Cl.² F41F *11/02*

U.S. Cl. 89—26 **7 Claims**

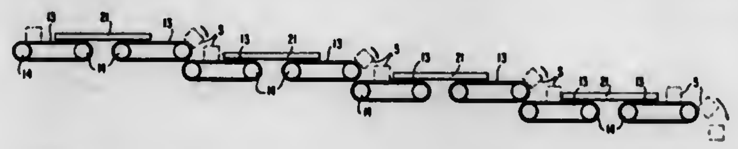


1. Apparatus for sealing the breech member of a breech mechanism of a firearm for firing caseless ammunition, the firearm having a barrel, said apparatus comprising a clamping member movably mounted in a recess provided in the breech member, drive means coupled to the clamping member for moving the clamping member between released and operative

positions, a sealing ring adjacent the barrel and means coupled to said clamping member for pressing said sealing ring against the barrel, the latter means including a radially movable shifting member which undergoes radial movement as said clamping member moves between the released and operative positions, said sealing ring having one end facing the barrel and an opposite end, said shifting member including means for applying axial force to said opposite end of the sealing ring to axially clamp the sealing ring against the barrel.

4,130,048
CARPET SAMPLE BEVELING APPARATUS AND METHOD

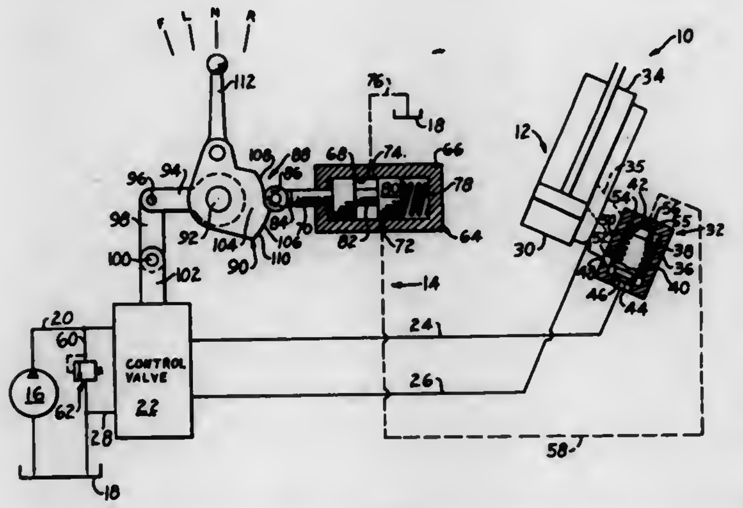
Michael A. Lewallyn, 114 Tibbs Rd., Dalton, Ga. 30720
Filed Aug. 29, 1977, Ser. No. 828,665
Int. Cl.² B23C *3/12;* B24B *9/02*
U.S. Cl. 90—18 **10 Claims**



1. A method of beveling rectangular carpet samples along all of their four marginal edges comprising conveying rectangular carpet samples in succession along a horizontal path having vertical steps in said path at descending elevations while the carpet samples are supported on their edges at an inclination to the vertical for the sake of stability of the samples, engaging each sample in succession at each stepped elevation along the horizontal path and exerting a yielding holding force on the sample and beveling the lower edge of each sample during application of said holding force, and causing each carpet sample in succession to free-fall by gravity from each stepped elevation along said horizontal path to the next lowermost stepped elevation and during such free-falling to rotate ninety degrees edgewise thereby positioning another lower edge of each sample for beveling at each successive stepped elevation until the four edges of each sample are beveled.

4,130,049
VENT CONTROL FOR CYLINDER MOUNTED LOAD CHECK VALVES

Lloyd D. Finley, Lockport, and Leroy F. Kasper, Braidwood, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 7, 1977, Ser. No. 785,628
Int. Cl.² F15B *11/08, 13/042*
U.S. Cl. 91—445 **8 Claims**



1. In a hydraulic motor and control system therefor which comprises fluid source means for delivering fluid from sump means via first conduit means to control valve means having a float position wherein a first end of said motor is in flow communication with sump means, a first position for applying fluid from said fluid source means to power said motor to move in a first direction by delivering said fluid to said first end thereof via second conduit means and a second position in which said control valve means applies fluid from said fluid supply source means to power said motor in a second direction by delivering said fluid to a second end thereof via third conduit means; and sump conduit means communicating said control valve means with sump means; an improvement comprising:

check valve means in said second conduit means allowing fluid flow therethrough to said first end of said motor and normally biased to block reverse fluid flow therethrough from said first end of said motor to said control valve means, said check valve means being operable to allow said reverse fluid flow therethrough responsive to communication to said sump means via check valve means and drain conduit means of a pilot flow from said first end of said motor which is applied to said check valve means to oppose the biasing thereof;

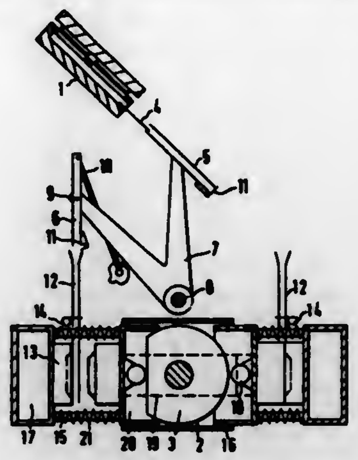
drain valve means having an entry port in communication with said check valve means to receive said pilot flow therefrom and an entry port in communication with said sump means, said drain valve means providing interconnection between said entry and exit ports in a first position thereof and blocking interconnection between said entry and exit ports in a second position thereof and including biasing means normally biasing said drain valve means towards a respective one of said first and said second position thereof;

mechanical means moving responsive to shifting of said control valve means to shift said drain valve means into said first position thereof when said control valve means is in said second and float positions and into said second position thereof when said control valve means is in the first position, said mechanical means comprising bellcrank means linked via first linking means at a first arm thereof to said control valve means, directly linked via second linking means at a second arm thereof to said drain valve means and pivoted to frame means intermediate said first and second arms thereof, said mechanical means exerting a force directly upon said drain valve means in opposition to said biasing means sufficient to position said drain valve means in said first position in said second and float control valve position and in said second position in said first control valve position, said second linking means comprising a cam surface on said second arm of said bellcrank means, and, cam follower means on a first end of a drain spool of said drain valve means, said cam surface moving on rotation of said bellcrank means to position said drain spool in said first position responsive to shifting of said control valve means into said lower and float positions and to position said drain spool into said second position responsive to shifting of said control valve means into said first position.

4,130,050
PROCESS AND APPARATUS FOR THE PRODUCTION OF CARDBOARD PLATES AND THE LIKE

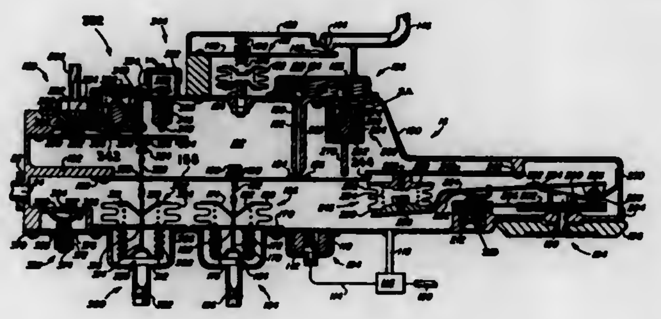
Godi Graf, Effretikon, Switzerland, assignor to Maschinenfabrik Gietz AG., Switzerland
Filed Jun. 13, 1977, Ser. No. 806,059
Claims priority, application Switzerland, Aug. 31, 1976, 11104/76
Int. Cl.² B31D *5/02;* B31F *1/00*
U.S. Cl. 93—1 D **7 Claims**

1. A machine for punching sheet material to produce separate punched pieces and distributing the punched pieces to presses in a multiple press, the machine comprising a punching apparatus for producing, in series, substantially flat pieces to be pressed, a multiple press comprising a plurality of presses each including a pair of dies for pressing one said piece when that piece is delivered between said dies, guiding elements allocated respectively to individual ones of said presses for guiding said pieces to said dies, and a distributing means for receiving, in series, all said pieces produced by said punching apparatus and for delivering them one by one in a cyclic sequence to said guiding elements such that during each cycle each guiding element receives one of said pieces.



4,130,051
PNEUMATIC AUTOSCHEDULE CABIN PRESSURE CONTROLLER

Myron J. Brudnicki, Los Alamitos, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed Dec. 22, 1976, Ser. No. 753,409
Int. Cl.² B64D *13/00*
U.S. Cl. 98—1.5 **47 Claims**



1. Fluid pressure control apparatus, comprising:
- (a) wall means enclosing a chamber for containing a fluid at a pressure to be controlled;
- (b) first and second port means defining respective first and second passageways communicating through said wall means between the interior and exterior of said chamber;
- (c) first and second fluid pressure sources coupled to said first and second port means, respectively,

said first source being adapted to provide a supply of pressurized fluid at a substantially constant pressure into said first passageway,

said second source being of pressure lower than said first source;
- (d) first and second fluid flow control means disposed in said first and second passageways, respectively,

one of said first and second fluid flow control means comprising metering valve means; and
- (e) movable wall means coupled with said metering valve means for actuation thereof to modulate the flow therethrough,

said movable wall means being subject to the pressure in said chamber.

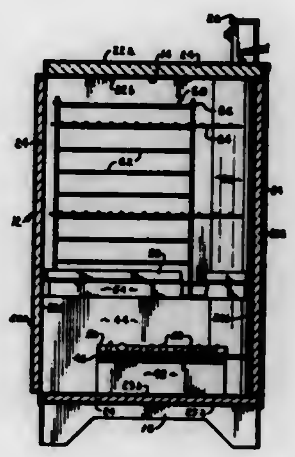
46. The method of regulation of the fluid pressure in a compartment admitting pressurized fluid through an inlet port and exhausting fluid through an outlet port provided with an outflow valve member formed as a part of an outflow valve means having a chamber defined in part by movable wall means coupled to said valve member for controlling the flow through said outlet port in accordance with fluid pressure control signals made manifest in said valve means chamber, comprising:
- (a) providing fluid pressure control apparatus having wall means defining a chamber coupled by fluid pressure signal transmission means to said valve means chamber,

said apparatus chamber wall means being provided with chamber inlet and outlet port means defining inlet and outlet passageways, respectively, communicating through said chamber wall means between the interior and exterior of said apparatus chamber;
- (b) coupling supply and sink sources of control fluid pressure with said inlet and outlet port means, respectively,

said supply source providing a supply of pressurized fluid at a substantially constant pressure into said inlet passageway; and
- (c) disposing fluid flow control means to control the flow of controlled pressure fluid through said outlet passageway to said sink source.

4,130,052
COMBINATION SMOKER-COOKER FOR FOOD

John E. Jacobson, 11 Northwestern Dr., Topeka, Kans. 66619
Filed Mar. 30, 1976, Ser. No. 671,843
Int. Cl.² A23L *1/00;* A23B *4/04*
U.S. Cl. 99—339 **4 Claims**



1. A device for cooking and imparting flavor to foods comprising:

an enclosure characterized by substantially air tight construction and an absence of any source of outside air,

said enclosure presenting a substantially box-like compartment having an opening at one side thereof, said compartment being characterized by a sidewall opposite said one side which sidewall does not present any 90° angles with any other sidewalls,

said enclosure being adapted to receive means for producing flavor imparting gases or vapors upon being heated;

door means pivotally coupled with said enclosure for closing said compartment opening,

locking means for said door means comprising an elongated bar extending substantially the length of the door, means for pivotally mounting said bar on said enclosure and handle means for moving said bar from a locking to an unlocking position; and

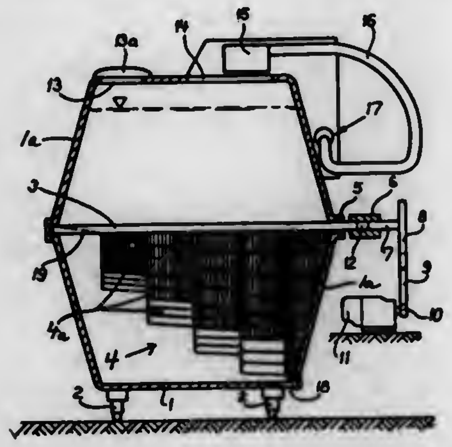
means for raising the temperature in said enclosure to an elevated level high enough to effect cooking of the food while also effecting production of gases or vapors from said flavor producing means and simultaneously increasing the pressure in said enclosure.

4,130,053
APPARATUS FOR CUTTING CHEESE CURD

Claes B. Sjöholm, Malmo, and Karl J. G. Martensson, Lund, both of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden
Filed Apr. 14, 1976, Ser. No. 676,876
Claims priority, application Sweden, Apr. 18, 1975, 75045047
Int. Cl.² A23C *19/02, 21/00*
U.S. Cl. 99—466 **4 Claims**

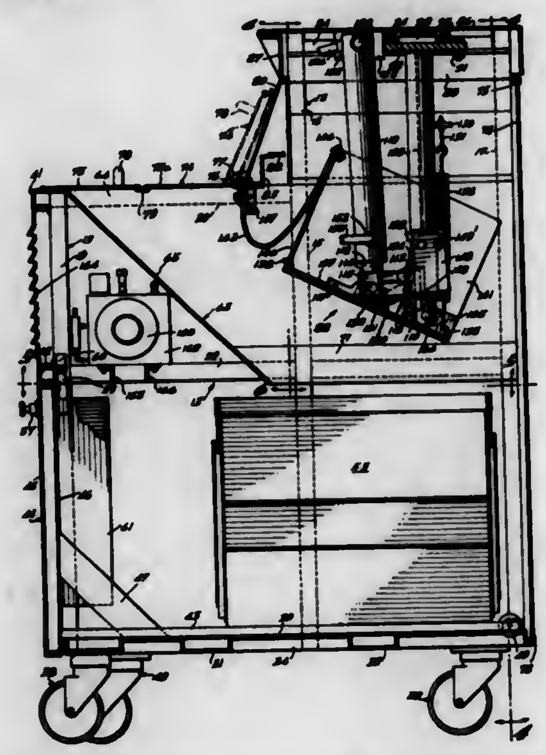
1. Apparatus for cutting and stirring cheese curd, which comprises an immobile curdling container with a circular cross

section and having a substantially horizontal axis, a cutting and stirring tool mounted within the container for rotation about said axis, driving means connected to said tool for rotating the same through a plurality of revolutions in one direction about said axis to effect a cutting operation, said tool including swingable members operable during a said cutting operation as check valves for passage of cheese curd through the tool, said swingable members being operable, in response to rotation of the tool in said one direction relative to the cheese curd, to take positions where said members permit passage of cheese curd through the tool, whereby the curd is cut, said members being operable, in response to rotation of the tool in the opposite direction relative to the cheese curd, to take positions where they oppose passage of curd through the tool, and a control system operatively connected to said driving means for causing interruptions in the rotation of the tool in said one direction during the cutting operation and for maintaining the tool stationary at each such interruption, the control system including control means for operating said driving means to rotate the tool through a plurality of revolutions in said opposite direction about said axis, without interruptions, to effect a stirring operation in which cut cheese curd is rotated around said axis.



4,130,054
TOP LOADING WASTE COMPACTOR

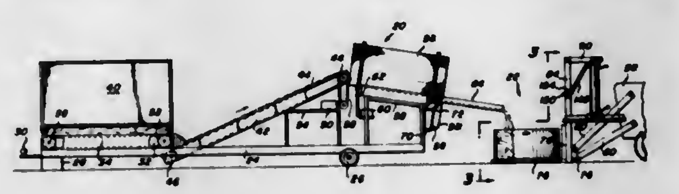
Philip Tashman, 7500 NW. 41 St., Miami, Fla. 33166
Filed May 5, 1977, Ser. No. 794,251
Int. Cl.² B30B ***15/22***
U.S. Cl. 100—52 **8 Claims**



1. A portable solid waste compactor comprising, in combination, an upstanding main compactor unit, said main compactor unit comprising a rectangular framework defining a front opening at the lower end thereof, a compactor ram, mechanism supporting said compactor ram from the upper end of said framework, hydraulic drive means for reciprocatively moving said ram vertically downwardly within said main compactor unit, a waste bin dolly, said waste bin dolly being removably receivable within said lower end front opening of said framework, said waste bin dolly supporting a box-like enclosure bin having a top opening to receive a lower end portion of said reciprocative ram when said dolly is received within said lower end front opening, said upstanding main compactor unit comprising a forwardly and upwardly-inclined, open-topped chute above said waste bin dolly when contained within said lower end front opening for feeding waste to be compacted angularly into said dolly bin, the opening of said chute being defined by a horizontal rectangular support structure located at a level below that of said upper end of said framework, said compactor ram comprising, at its lower end, a substantially flat ram plate member operative, in its reciprocative movement, to compact trash fed through said chute into said dolly bin, and means controlled by said ram plate reaching its uppermost position in a cycle of reciprocative motion of said ram for tipping the forward end of said ram plate angularly upwardly to minimize obstruction to the passage of refuse fed through the top of said chute into said bin, said ram plate, when in its uppermost position in a cycle of reciprocative motion of said ram, being at a position intermediate the upper end of said dolly bin and the top opening of said chute, said means for tipping the foreward end of said ram plate angularly upwardly comprising a pair of ram slide bar cylinders extending vertically from the upper end of said main compactor, a pair of slide bars slidingly disposed, one each, in said slide bar cylinders, means pivotally connecting lower end portions of said slide bars with respect to laterally-opposed, rear portions of said ram plate member at the upper side thereof, means pivotally journalling the lower end of said hydraulic piston ram to a central portion of the upper side of said ram plate member, a cam member fixed with respect to and between said ram slide bar cylinders, and a cam follower fixed with respect to said lower end of said hydraulic cylinder piston rod and cooperative with said cam member for rotating said ram plate about said pivotal connection with said ram slide bars when in uppermost positions in their respective ram slide bar cylinders until said slide bars and said hydraulic cylinder piston rod are in substantially parallel relative disposition and said flat ram plate lies in a substantially horizontal plane.

4,130,055
ASSEMBLY FOR CLEANING AND PACKING CURED TOBACCO

Marvin A. Langley, Rte. 1, Box 382, Fountain, N.C. 27829
Filed Aug. 23, 1977, Ser. No. 826,990
Int. Cl.² B30B ***1/32***
U.S. Cl. 100—91 **9 Claims**

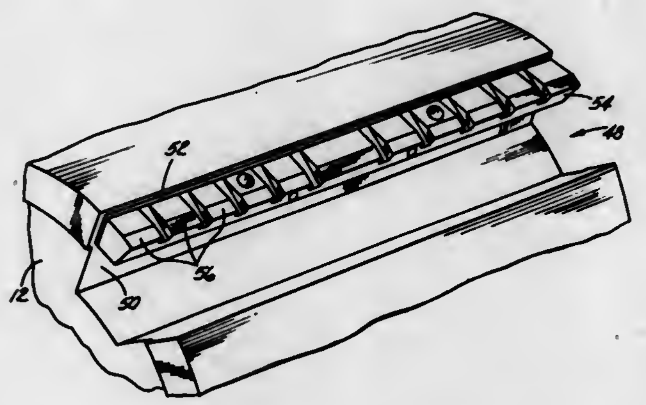


1. A unit for packing cured tobacco leaves on a tobacco sheet, said unit including:

(a) a forming member having upper and lower limits positioned on the tobacco sheet, the tobacco leaves being placed into the forming member
(b) said forming member being provided with diametrically opposed slots proximate the upper limit of the member
(c) a compressing member mounted proximate said forming member
(d) said compressing member being provided with slidable locking members partially movable through the opposed slots of said forming member for selectively locking the compressing member and forming member together, and
(e) power means engaged with said compressing member for urging the latter into packing engagement with the tobacco leaves within said forming member when said compressing member and forming member are disengaged from each other
(f) said power means being operative to enable said forming member and compressing member to be lifted as a unit from the packed tobacco leaves when said members are in locking engagement.

4,130,056
LITHOGRAPHIC MOISTURE SYSTEM AND METHOD

Saied A. Mabrouk, Macedonia, and Edward T. Morgan, Mentor, both of Ohio, assignors to Addressograph-Multigraph Corporation, Los Angeles, Calif.
Filed Aug. 1, 1977, Ser. No. 820,760
Int. Cl.² B41F ***7/24;*** **B41L** ***25/00***
U.S. Cl. 101—141 **5 Claims**

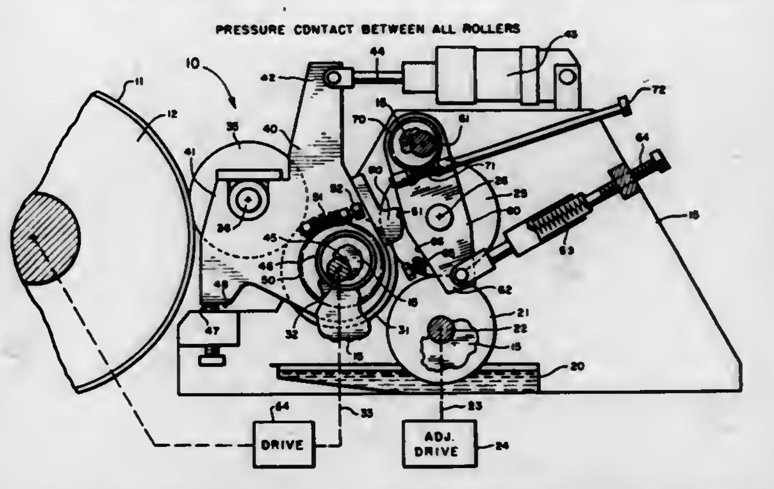


1. In a lithographic duplicating apparatus having separate ink and moisture feed systems comprising roller trains;

cylinder means for retaining and holding a lithographic master in a predetermined area thereon in ink and moisture receiving relation with said feed paths;
moisture applying roll means associated with said moisture feed train for applying moisture to said master comprising an oleophilic surface capable of carrying moisture thereon;
moisture transfer roll means for feeding moisture to said moisture applying means;
means comprising oleophilic image portions for providing a continuous film of lithographic ink on said oleophilic surface;
means for positively driving said moisture applying roll in timed relation with the master cylinder of the duplicator;
means for applying to said transfer roll a retarding torque whose value varies monotonically with the speed of the rotation of the transfer roll;
said transfer roll being maintained in cooperating relationship with said moisture applying roll to form a nip therewith and being driven thereby through the layers of ink and moisture at said nip, and said relationship together with said means for applying said retarding torque controlling the surface speed of said transfer roll relative thereto and thereby the rate at which moisture is forwarded by said feed train;
the improvement comprising an ink reservoir in the form of an oleophilic band extending transverse the direction of said master cylinder in a location outside the master retention area for providing a supplemental source of ink for said moisture applying roll in addition to said oleophilic portions.

4,130,057
DAMPENING SYSTEM FOR PRINTING PRESSES, PARTICULARLY OFFSET PRINTING PRESSES

Klaus List, Wachtersbach, and Paul Abendroth, Offenbach am Main, both of Fed. Rep. of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG., Germany
Continuation-in-part of Ser. No. 844,907, Oct. 25, 1977, abandoned. This application Dec. 2, 1977, Ser. No. 856,635
Int. Cl.² B41L ***25/16***
U.S. Cl. 101—148 **2 Claims**



1. In a dampening system for a printing press having a lithograph plate, plate cylinder and drive therefore, the combination comprising a frame, a fountain containing dampening fluid, a fountain roller, means for driving the fountain roller at a relatively slow speed, an intermediate roller, a distributor roller, means for driving the distributor roller at press speed, and a form roller, said rollers occupying working positions under normal running conditions in serial pressure engagement with one another for conveying a film of dampening fluid to the plate, means including a form roller throw-off lever pivoted to the frame and mounting the form roller for establishing a throw-off position for the form roller in which the form roller is totally disengaged from the plate and in which the form roller retains "kissing" contact with the distributor roller, means including an intermediate roller throw-off lever pivoted to the frame and mounting the intermediate roller for establishing a throw-off position in which the intermediate roller is totally disengaged from the distributor roller while retaining "kissing" contact between the intermediate roller and the fountain roller, an actuator having linkage coupling the same to both of the throw-off levers for moving them between respective working and throw-off positions, the linkage including sequencing means so that when the form roller and intermediate roller are restored by the linkage to their working positions contact is made last between the form roller and the plate, the pivots of the levers each having means providing limited orbital adjustment for adjusting the "kissing" contact to a substantially pressureless condition serving to ensure that during throw-off residual fluid on the surfaces of the rollers will be maintained in the form of an evenly distributed film free of contraction into droplets by reason of surface tension.

4,130,058
FASTENING BAR FOR SECURING PRINTING PLATES ON A PRINTING MACHINE

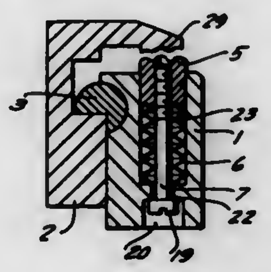
Erich Bock, Dürener Str. 5, 4600 Dortmund 1, Germany
Filed Feb. 18, 1977, Ser. No. 770,230
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1976, 2606773
Int. Cl.² B41F ***27/06***
U.S. Cl. 101—415.1 **15 Claims**

1. A clamping arrangement for a printing plate on a printing machine, said clamping arrangement comprising:

an elongated base;
at least one clamping bar mounted on said base and formed with a first clamping surface;
a plurality of clamping elements spaced along said base and

forming respective second clamping surfaces juxtaposed with said first clamping surface and movable relative to said base;

spring means bearing upon each of said clamping elements and yieldably biasing same for pressure equalization along an edge of a printing plate to be clamped between said first and second surfaces, said clamping bar constituting one member and said elements constituting another member of a pair of relatively movable members engaging said edge of said printing plate between them; and



an eccentric shaft rotatable relatively to said base and extending therealong while being operatively connected to at least one of said member for displacing said one of said members relative to the other of said members between an engaged position wherein said printing plate is clamped between said first and second surfaces and a disengaged position wherein said plate is released, said recess having a depth dimensionsed such that said head lies flush with a surface of said base in one limiting position of the respective element and engages a wall of said recess in another limiting position thereof.

4,130,059

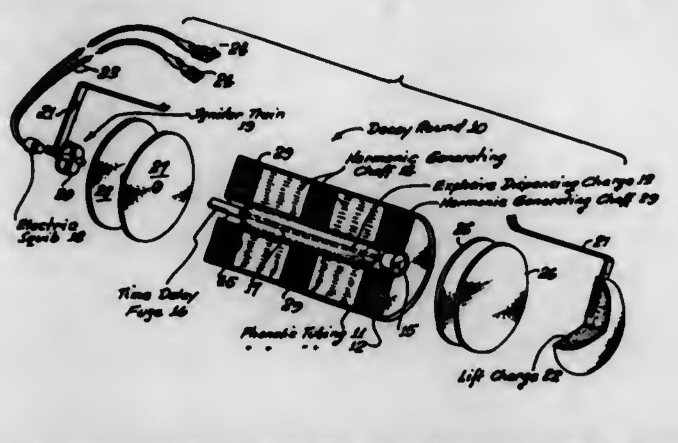
DECOY MEANS AND METHOD THEREFOR

Kenneth A. Block, Claremont, and Leon J. Lader, Los Angeles, both of Calif., assignors to General Dynamics Corporation, Pomona, Calif.

Filed Aug. 2, 1966, Ser. No. 570,140

Int. Cl.^{2} F42B *13/42*

U.S. Cl. 102—34.4 **18 Claims**



1. A decoy round comprising: at least one load of passive energy converting material, means for propelling said load, a burst charge for shattering said load, and means for igniting said burst charge, said passive energy converting material including at least some material composed of a multiplicity of dipoles having passive non-linear junctions therein and capable of reradiating frequencies transmitted by an associated active energy source while radiating frequencies which are not transmitted by an associated active energy source, thus giving the illusion of a plurality of independent energy sources.

4,130,060

PYROTECHNIC DEVICES

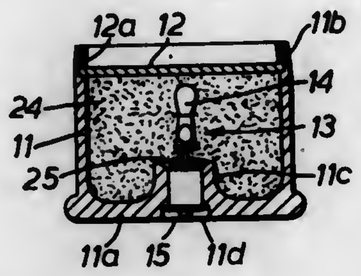
Dudley C. Murray, Salisbury, England, assignor to Pains - Wessex Limited, England

Filed Dec. 8, 1976, Ser. No. 748,415

Claims priority, application United Kingdom, Dec. 15, 1975, 51325/75

Int. Cl.^{2} F42B *4/02*

U.S. Cl. 102—39 **12 Claims**



1. A pyrotechnic device comprising
a casing having an electrically-conductive wall,
an electrically-operable ignition device in said casing for igniting a charge,
said ignition device comprising
  a base,
  a first terminal disposed centrally within said base,
  a second terminal spaced from the first terminal and located, at least in part, on the periphery of the base,
  means electrically insulating the terminals from each other,
  an electric igniter head and
  means electrically connecting the igniter head to the first and second terminals,
  the base fitting within an opening in said electrically-conductive wall of the casing, and
said second terminal making electrical contact with said wall, and
a plug of solid adhesive material disposed within the inner end of said opening and adhering to the base and the said wall of the casing to seal the base to said wall of the casing to prevent escape of gases therebetween, to prevent the ignition device from being ejected from the casing under the shock loading resulting from ignition of said charge and to relieve the ignition device from at least part of said shock loading.

4,130,061

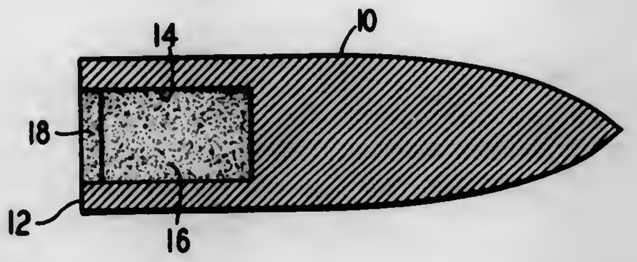
GUN FIRED PROJECTILE HAVING REDUCED DRAG

Brian F. Boggs, West Simsbury, Conn.; Hector J. Zilcosky, Christiana, Pa., and William M. Smith, Simsbury, Conn., assignors to Ensign Bickford Company, Simsbury, Conn.

Filed Nov. 5, 1975, Ser. No. 628,970

Int. Cl.^{2} F42B *13/14, 13/34*

U.S. Cl. 102—66 **16 Claims**



1. A fumer comprising a projectile having a base cavity therein and a pyrotechnic charge positioned within said cavity, said charge comprising about 30–55 percent by weight of an alkaline earth metal compound, about 20–35 percent by weight of a powdered metal fuel, about 20–50 percent by weight of a plasticized resin and about 10–30 percent by weight of an active oxidizer for said resin, said metal powder being present in greater than stoichiometric amounts relative to the amount of alkaline earth metal compound, said pyrotechnic composition being effective to provide rapid burning in the near wake area of the projectile resulting in a high specific impulse and fuel-rich combustion products.

4,130,062

APPARATUS FOR OBTAINING A CONTROLLED DEGREE OF BALLAST COMPACTION IN THE TAMPING AND LEVELING OF A TRACK

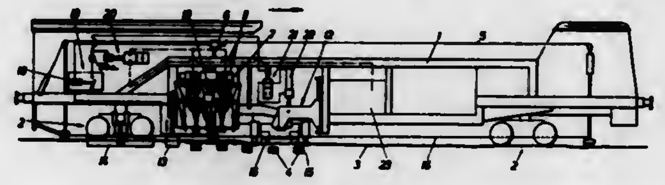
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Continuation-in-part of Ser. No. 556,177, Mar. 6, 1975, which is a continuation of Ser. No. 438,264, Jan. 31, 1974, Pat. No. 3,910,195. This application Apr. 12, 1976, Ser. No. 675,944

Claims priority, application Austria, Apr. 26, 1973, 3742/73

Int. Cl.^{2} E01B *27/16*

U.S. Cl. 104—7 R **4 Claims**



1. Apparatus for leveling a track consisting of rails mounted on ties and tamping ballast thereunder, comprising the combination of
  (1) a reference system in relation to which the track is leveled,
  (2) jacking means for lifting the track,
  (3) tamping means for tamping the ballast by vibratory pressure,
  (4) control means for operating the jacking and tamping means, the control means including
    (a) a control for simultaneously jacking and tamping the track, and
    (b) a control for terminating track jacking before tamping has been completed.
  (5) means in the region of the tamping means for holding the track in a position under the control of the reference system, and
  (6) means for locking the holding means in said position under the control of the reference system.

4,130,063

TAMPING HEAD

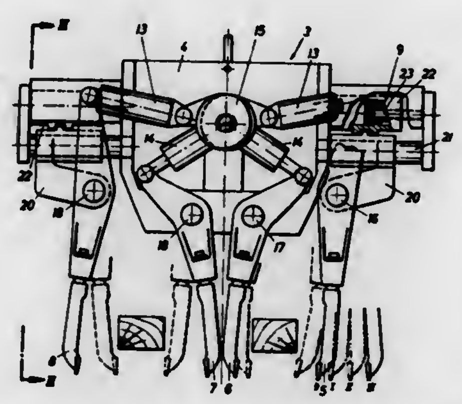
Josef Theurer, Vienna, and Wilhelm Praschl, Linz-Urfahr, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Continuation of Ser. No. 707,946, Jul. 23, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,488

Claims priority, application Austria, Sep. 16, 1975, 7101/75

Int. Cl.^{2} E01B *27/20*

U.S. Cl. 104—12 **8 Claims**



1. In a tamping head for tamping ballast underneath a track including rails supported on a plurality of spaced ties resting on the ballast and defining cribs therebetween, which comprises a pair of tamping tools, a vertically adjustable carrier whereon the tamping tools are mounted for immersion in the ballast in the cribs adjacent respective ones of the ties, the ties being positioned between the tamping tools, each tamping tool being constituted by a lever pivotal in a substantially vertical plane extending in the direction of the track about a horizontal pivot extending substantially transversely to the track direction, power drive means for reciprocating the tamping tools about the pivots thereof and for vibrating the tamping tools, stop means associated with one of the tamping tools for positioning the pivot of the one tamping tool in at least three different fixed positions with respect to the pivot of the other tamping tool of the pair in the track direction, and a remote control for operating the stop means to move the stop means into a selected one of the fixed positions whereby the distance between the pivots of the tamping tools of the pair is changed without changing the stroke of the reciprocating power drive means, the stop means including a multi-step drive operated by the remote control for setting the stop means at the selected position.

4,130,064

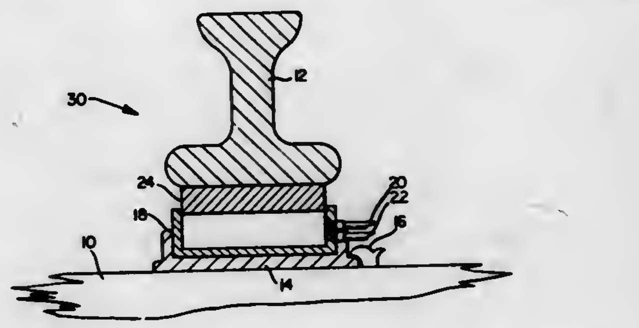
ENERGY GENERATING SYSTEM FOR A ROADWAY OR RAILWAY

Phillip P. Bridwell, R.R. #1, P.O. Box 535, Anna, Ill. 62906

Filed Dec. 20, 1976, Ser. No. 752,612

Int. Cl.^{2} F04B *9/00*

U.S. Cl. 104—154 **12 Claims**



1. A railway track energy generating system comprising:
a rail bed comprising a plurality of cross ties,
an elongated rigid rail base secured to said cross ties and being supported thereon,
an elongated vehicle supporting rail located above said rail base and being generally coextensive therewith, said rail and rail base having sufficient strength and rigidity to support a train passing thereover,
a plurality of piston and operating cylinders mounted underneath said rail between said rail and rail base.
working fluid in said cylinders,
said pistons being secured to one of said rail and said rail base and said cylinders being secured to the other of said rail and said rail base,
said rail being completely supported and spaced from said rail base by the working fluid in said cylinders,
a portion of said piston and cylinders being positioned between adjacent ones of said cross ties and the remainder of said piston and cylinders being positioned above respective said cross ties,
return line means for supplying the working fluid to said cylinders,
means for pressurizing the working fluid within said return line means,
an outlet fluid line communicating with said cylinder,
valve means associated with said return line means and said outlet line for permitting fluid flow only into said cylinders through said return line means and only out of said cylinders through said outlet line, and
a fluid motor operatively connected to said output line.

4,130,065

DUAL AXLE RAILWAY DRIVING TRUCK

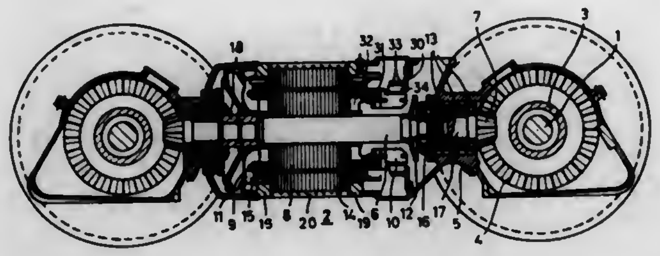
Roman Susdorf; Ulrich Schüler, and Heinz Engelmann, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 24, 1976, Ser. No. 669,805

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1975, 2514265

Int. Cl.^{2} B61C *3/00, 9/50, 9/52;* **H02K** *1/17*

U.S. Cl. 105—135 **6 Claims**



1. A drive for a track-bound propulsion vehicle equipped with two drive axles comprising:

an electric drive motor disposed between the two drive axles and having a stator and a rotor equipped with a rotor shaft;

said stator including: a lamination stack, tension members arranged at the surface of said stack facing away from said rotor for tension holding said stack and pressure plates arranged at the respective longitudinal ends of said lamination stack for holding the same therebetween;

gear transmissions for transferring the torque energy developed by the drive motor to the drive axles respectively;

each of said gear transmissions including: a transmission housing, a pinion member coupled to said rotor shaft and operatively engaging the corresponding drive axle, and bearing means for bearing said pinion member and said rotor shaft in said housing;

said transmission housings including means for engaging and supporting the pressure plates at said longitudinal ends of said lamination stack, whereby said lamination stack is supported longitudinally between and by said transmission housings;

and at least one centering coupling means, said coupling means being disposed between one of said bearing means and the corresponding end of the rotor shaft for slidably connecting the one pinion member associated with that one bearings means to said corresponding rotor shaft end to permit a longitudinal displacement of the rotor shaft relative to said one pinion member.

4,130,066

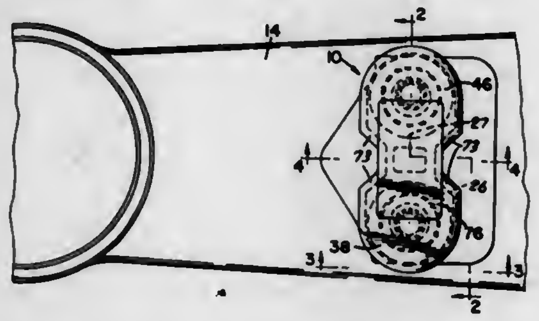
FRICTION SIDE BEARING ASSEMBLY

Harry W. Mulcahy, Griffith, Ind., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed May 16, 1977, Ser. No. 797,519

Int. Cl.^{2} B61F *5/14, 5/24;* **F16C** *17/04, 27/02*

U.S. Cl. 105—199 CB **4 Claims**



1. A side bearing assembly for use with a railroad car truck having a truck bolster and a car body bolster of a railroad car supported thereby, said assembly comprising,

two spaced spring means each having a selective width dimension less than one half of a width of said bolster,

a base disposed for mounting to said truck bolster with the longitudinal axis of said base positioned substantially perpendicular to the longitudinal axis of said truck bolster and mounting means formed within said base and proximately aligned with said base longitudinal axis, said base having shallow pockets at each of its longitudinal extremities for receiving one end of one of said spring means respectively so as to retain said spring means within said base, said base further having a centrally located upstanding projection having a substantial cross-sectional area, and sidewalls about said base having angularly and laterally disposed surfaces partially enveloping said spring means, with inner end portions of said sidewalls joining said projection,

a cap having shallow pockets at each of its longitudinal extremities for receiving an opposite end of one of said spring means respectively so as to retain said spring means within said cap, and a pair of spaced centrally located downwardly depending members which co-operatively interengage said projection of said base, said cap further being provided with sidewalls having angularly and laterally disposed surfaces with an inner end portion of said sidewalls joining said depending members to co-operatively interengage similar surfaces on said base during horizontal movement of said base with respect to said cap,

wherein downward vertical movement of said cap is limited by engagement with said base projection, horizontal movements of said cap with respect to said base is limited by interengagement between said inner end portions of said side walls of said base and cap, and said angularly and laterally disposed surface of said base and cap side walls allow said spring means to remain readily observable for inspection purposes.

4,130,067

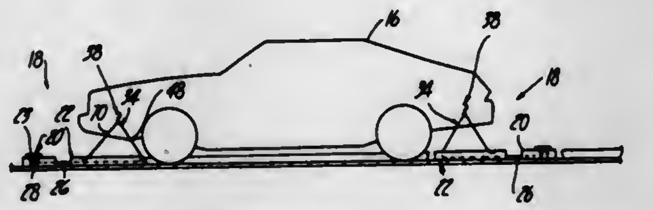
VEHICLE TIE-DOWN HOOK ASSEMBLY FOR RAILWAY CARS

Donald C. Kilgus, deceased, late of Grosse Point Woods, Mich., and by Marjorie M. Kilgus, executrix, 1288 Fairholme Rd., Grosse Point Woods, Mich. 48236

Division of Ser. No. 703,594, Jul. 8, 1976, Pat. No. 4,044,691. This application May 9, 1977, Ser. No. 795,402

Int. Cl.^{2} B61D *45/00;* **F16B** *35/00, 37/00;* **F16G** *15/00*

U.S. Cl. 105—368 R **3 Claims**



1. In a tie-down system for securing a vehicle to a rail car, tie-down chains each comprised of connected links of predetermined thickness and width, and a connector assembly for releasably connecting each of said chains to said vehicle, said assembly comprising a hollow body, means on said body operable to connect the body to the vehicle, a disc positioned in said body, said disc having an open ended transverse slot formed therein of a width greater than the thickness and less than the width of a chain link, said chain having one of the links therein positioned in said slot disposed, and means mounted on said body releasably retaining said disc therein, said disc being arranged in said body so that the links of said chain adjacent to the link positioned in said slot cooperate with said disc to prevent movement out of said slot of said link positioned therein.

4,130,068

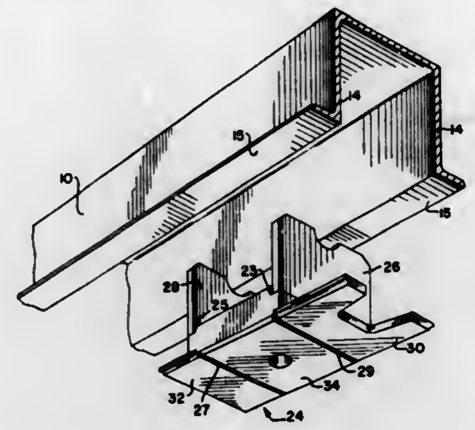
CENTER FILLER FOR RAILWAY CARS

Marvin Stark, Houston, Tex., and Steve L. Suvada, Michigan City, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Feb. 13, 1978, Ser. No. 877,145

Int. Cl.^{2} B61F *1/08, 5/16*

U.S. Cl. 105—420 **4 Claims**



1. In a railway vehicle having an underframe comprising body bolsters extending transversely from a longitudinally extending center sill, said center sill having spaced side webs and bottom flanges extending outwardly from each side web, the improvement comprising:

a center filler;

said center filler including lug means;

said lug means including means for abutting and interconnecting the spaced side webs of the center sill;

said lug means having a bottom surface in a plane with the bottom of each bottom flange of the center sill;

said lug means having a top surface spaced a first distance from the bottom surface;

weld means attaching the lug means to the center sill;

bottom plate means with means abutting said lug means;

second weld means attaching the bottom plate means with said lug means and with said center sill webs;

said bottom plate means having a lower surface in a plane with the bottom surface of said lug means and having a top surface spaced from the bottom surface a second distance;

said first distance of the lug means being in the range of three to five times the second distance of the bottom plate means.

4,130,069

VERTICALLY-ADJUSTABLE TWO-POST DRAFTING TABLE

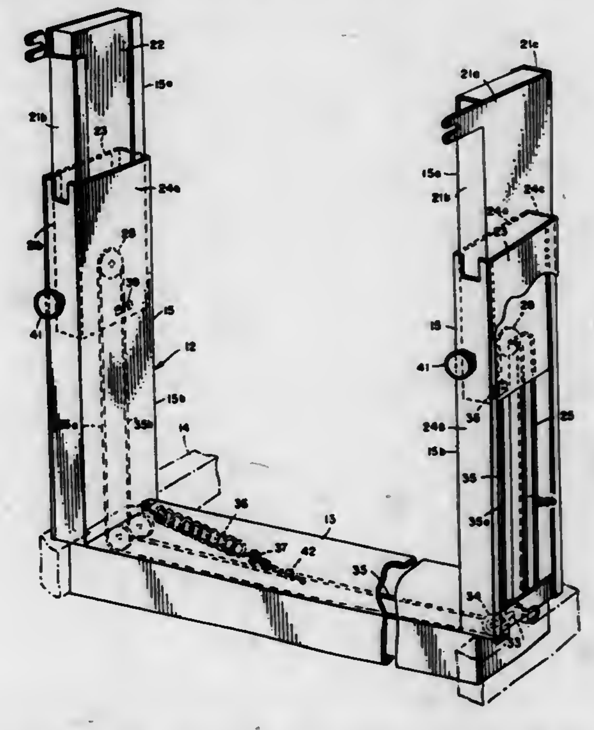
David F. Evans, and Leonard J. Yindra, both of Manitowoc, Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Continuation of Ser. No. 744,520, Nov. 24, 1976. This application Mar. 3, 1978, Ser. No. 883,057

Int. Cl.^{2} A47B *9/02*

U.S. Cl. 108—136 **3 Claims**

1. A table including a base having a hollow horizontal beam and a pair of hollow upstanding columns at opposite ends of said beam, each column comprising upper and lower column sections, said lower sections being secured to said beam adjacent their lower ends, a table top carried by said upper sections, said upper sections being vertically slidable between raised and lowered positions for selected adjustment of the elevation of said top, and means for synchronizing the movement of said upper sections and for counterbalancing said upper sections and said top carried thereby, said means including a cable extending in an endless loop through said beam and upwardly into each of said columns, guide means disposed within each of said columns and within said beam for supporting and guiding movement of said loop of cable, said loop having a pair of vertically-extending stretches disposed within each of said columns and movable in opposite vertical directions as said loop of cable is moved, spring means in said base connected to said cable and base for urging said loop of cable in one direction, securing means in each of said upper column sections for securing said sections to those stretches of cable in said columns urged upwardly by said spring, whereby, said cable synchronizes movement of said upper sections to maintain said top in level condition while said spring means acting through said cable counterbalances the weight of said upper sections and top, said guide means comprising pulleys mounted in said beam and said column, and stalks extending upwardly within said lower column sections and into said upper column sections, said pulley mounted within said columns being rotatably supported by said stalks at the upper ends thereof, at least one of said pulleys within said columns being carried by a horizontal shaft extending through a vertically-elongated slot in said stalk, said shaft being movable along said slot to vary the tension of said cable, and means for holding said shaft in a selected position of adjustment along the length of said slot, said last-mentioned means comprising an angle member disposed adjacent the upper end of said stalk, said angle member including a vertical arm having an opening through which said shaft extends and also having a horizontal arm with an opening therein, and an adjustment screw extending through the opening of said upper arm and threadedly received by said stalk, said screw being provided with means engagable with said angle member for shifting said member when said screw is rotated.



4,130,070

LINEARLY TRANSLATABLE TABLE TOP

Cline E. Herrin, 1666 Dike Rd., Mount Vernon, Wash. 98273

Filed Dec. 8, 1977, Ser. No. 858,736

Int. Cl.^{2} A62B *35/00*

U.S. Cl. 108—143 **8 Claims**

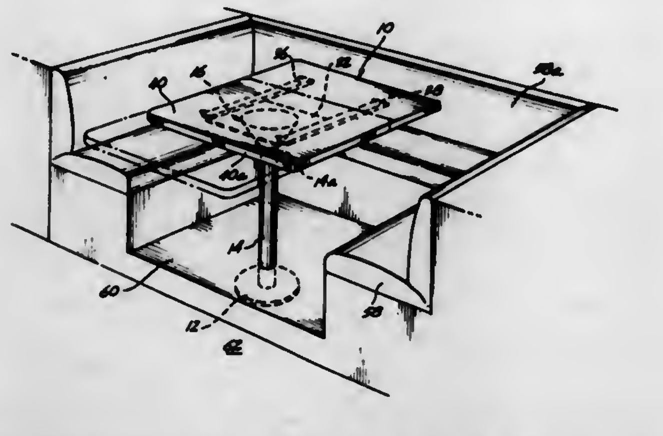
1. For use with a table having a base, a fixed horizontal support plate mounted on the base and a planar table top overlying the support plate, an apparatus for mounting the table top on the base so as to permit linear translation of the table top relative to the base, comprising:

a base plate;

first means for affixing said base plate to the horizontal support plate;

a plurality of rollers mounted on a first surface of said base plate, each of said rollers having an axis of rotation substantially orthogonal to said first surface, said rollers being arranged in a first and a second group, the rollers of the first group being aligned so that their axes of rotation describe a first line and the rollers of the second group being aligned so that their axes of rotation describe a second line, said first and second lines being in parallel spaced relation to one another; and,

a first elongate rail and a second elongate rail to be affixed to a first surface of the table top is substantially parallel



spaced relation to one another so that when the table top overlies said support plate, said first group of rollers is received in said first rail and said second group of rollers is received in said second rail whereby the table top can translate along said rails relative to the base.

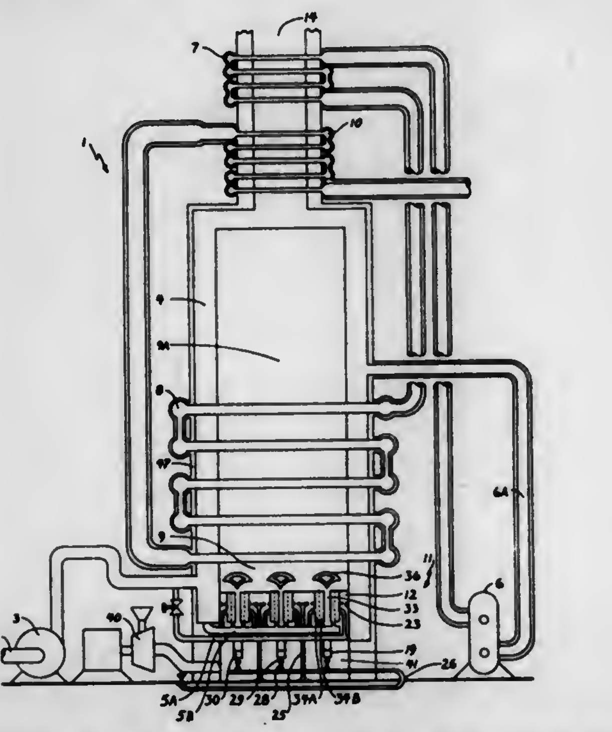
4,130,071
FLUIDIZED-BED COMBUSTOR

James H. Porter, Vineyard Haven, Mass., assignor to Energy Resources Company, Inc., Cambridge, Mass.

Filed Jun. 6, 1977, Ser. No. 803,580

Int. Cl.² F23D *19/02*

U.S. Cl. 110—245 **12 Claims**



1. A method of feeding one or more particled solids into a fluidized-bed combustor comprising,

introducing the solid particles into one or more open-top ducts beneath the distributor plate of the fluidized bed,

injecting high velocity gas into the ducts at one or more ports spaced along the bottom of the ducts so as to entrain the particled solid in a gas stream, and

guiding the gas and entrained solids upwardly through and out of at least one chamber passing through the distributor plate and having an exit into the fluidized bed at a point above the distributor plate, so that the solid is evenly distributed throughout the bed.

7. Apparatus for feeding one or more particled solids into a fluidized bed having a distributor plate, comprising:

at least one open-topped duct located beneath the distributor plate and having an opening at one end for receiving the particled solid,

means for moving the particled solids into and through said duct,

at least one port in the bottom of each duct for injecting gas into said duct, whereby the solids may be entrained into the gas stream,

at least one chamber means communicating with the open top of said ducts, said chamber means passing through said distributor plate and having an exit into said bed above the distributor plate, and

guide means adjacent the ports whereby said gas and entrained solids may be directed through said ducts and said chamber means and distributed throughout the fluidized bed.

4,130,072
FIELD TRANSPLANT SYSTEMS AND METHODS AND COMPONENTS THEREOF

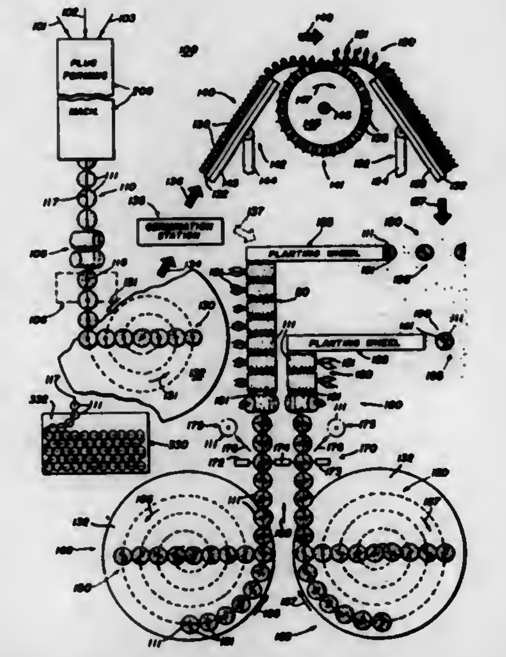
Richard R. Dedolph, Naperville, Ill., assignor to Gravi-Mechanics Co., Naperville, Ill.

Filed Feb. 25, 1977, Ser. No. 772,094

The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.

Int. Cl.² A01C *11/00*

U.S. Cl. 111—2 **20 Claims**



1. A field transplant production and planting system comprising mechanism for forming polymerized soil plugs each including a body of spongy open-celled hydrophilic polymer with a quantity of particles of soil mix distributed throughout said body of spongy polymer, a quantity of foam-forming synthetic organic plastic resin being reacted in situ to form said body of spongy open-celled hydrophilic polymer binding said particles of soil mix therein and into a plug, said soil mix comprising from about 20% to about 80% by dry weight of said soil plug, means for establishing a plant of transplant size in each soil plug so as to incorporate the roots of the plant therein, and planting mechanism for said soil plugs utilizing the soil plugs to move said soil plugs with the plants therein to a growing position in a field with said soil plugs essentially buried in the soil of the field and the plants growing upwardly therefrom.

4,130,073
AUTOMATIC SEWING MACHINE

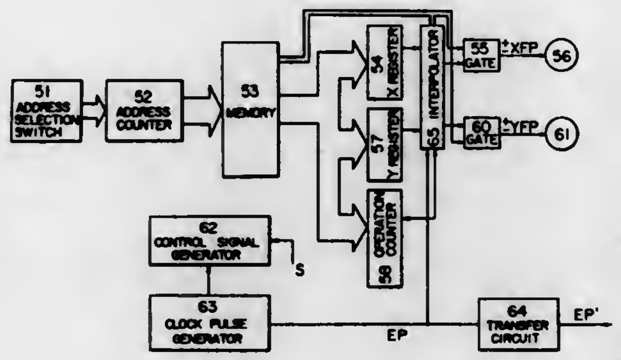
Koya Kimura, Numazu; Shinji Machi, Mishima, and Shigetugu Matunaga, Numazu, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

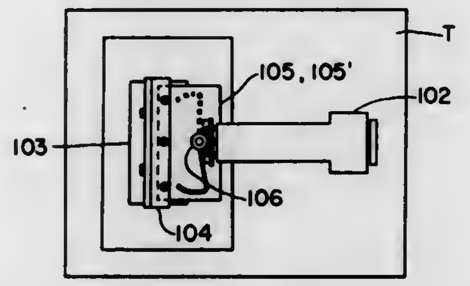
Continuation-in-part of Ser. No. 771,265, Feb. 23, 1977, abandoned. This application Aug. 19, 1977, Ser. No. 826,072

Claims priority, application Japan, Feb. 25, 1976, 51-19619

Int. Cl.² D05B *21/00*; B23C *1/16*

U.S. Cl. 112—121.12 **5 Claims**





1. An automatic sewing machine comprising a movable head including a cloth clamping member for clamping a piece of cloth to be sewed to said movable head and provided with a profile corresponding to a predetermined sewing pattern, a memory device including a plurality of addresses for storing data concerning said sewing pattern and rectangular coordinate data for working an opening corresponding to a working origin on a blank of the cloth clamping member, electric drive means controlled by an electric signal read out from said memory device for moving said movable head at a predetermined speed thereby sewing said piece of cloth accoring to said sewing pattern, a work tool mounted on said sewing machine, means for mounting said blank of the cloth clamping member on said movable head at a position to be worked by said working tool, a pin adapted to be inserted into said opening for determining the sewing operation starting point, and means for driving said electric drive means at a speed lower than said predetermined speed, thereby working said blank to have said profile.

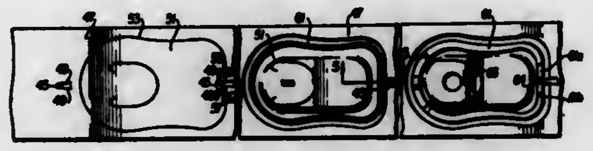
4,130,074
TAB SYSTEM

Daniel F. Cudzik, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Dec. 29, 1977, Ser. No. 865,447

Int. Cl.² B21D *51/44*

U.S. Cl. 113—121 R **10 Claims**



1. A method of making a tab of the type attachable to an easy-open container wall to open a tear panel of the container wall wherein the tab includes a body having a lifting portion movable away from the container wall and an attachment portion for fastening said tab to the container wall, said method including the steps of:

providing a strip of sheet metal material;

forming in said strip of sheet metal material a stitch, said stitch remaining attached to said strip of sheet metal material at opposite ends thereof, but being severed from said strip of sheet metal material along opposite sides thereof;

cutting in said strip of sheet metal material a tab-body blank having an outer periphery, an inner surface, an outer surface, a forward end and an other end, the cut forming said tab-body blank extending uninterruptedly from a starting point immediately adjacent one side of said stitch to a finishing point immediately adjacent the opposite side of said stitch, said tab-body blank being thereby integrally connected to said strip of sheet metal by said stitch;

forming a peripheral curl on the inner-surface of said tab-body blank by curling the outer periphery of said tab-body blank onto said inner-surface except at said stitch; and,

severing said stitch approximately at the junction of said stitch and said tab.

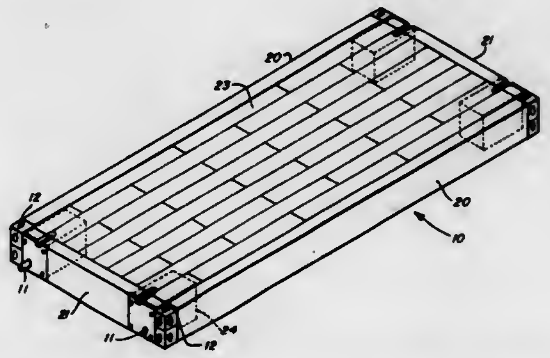
4,130,075
PORTABLE CARGO DECKS

David G. Larive, 7707 Bryonwood, Houston, Tex. 77055

Filed Sep. 2, 1976, Ser. No. 719,919

Int. Cl.² B63B *3/48*

U.S. Cl. 114—85 **8 Claims**



1. In a cargo vessel having a hold which allows lift spreaders therein for the movement of cargo or containers comprising

(a) a portable deck;

(b) movable pin means removably connected to said portable deck for securing or releasing said portable deck in said hold by moving from a 1st position to a 2nd position in said deck;

(c) a drive means connected to said movable pin means for movement of said movable pin means;

(d) a detaining means movable connected to said deck and positioned adjacent said movable pin means for preventing inadvertent movement of said movable pin means from said 1st and 2nd position;

(e) lost motion means connected to said drive means for retracting said detaining means from said movable pin means prior to movement of said pin means by said drive means.

4,130,076
SINGLE POINT MOORING APPARATUS

Ben H. van Bilderbeek, Ventura, Calif., assignor to Vetco, Inc., Ventura, Calif.

Filed Mar. 17, 1977, Ser. No. 778,483

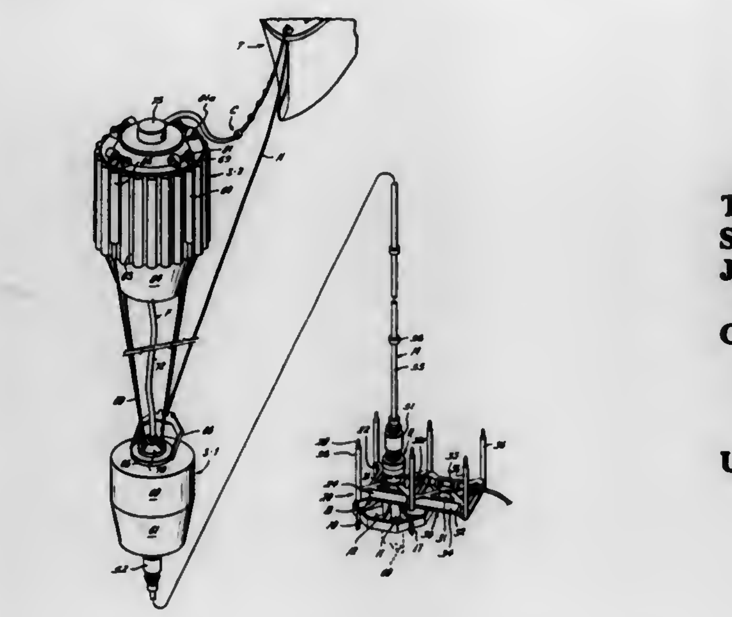
Int. Cl.² B63B *21/00*

U.S. Cl. 114—230 **4 Claims**

1. A single point mooring apparatus for mooring a ship and conducting fluid thereto, comprising:

a guide base positioned on the ocean floor and connected to a pile embedded in the ocean bottom;

a hollow tubular conductor pipe extending upwardly from said base and connected thereto by a releasable connector;
a submerged buoy mounted with said conductor pipe adjacent its upper end;
a surface buoy connected to said submerged buoy by adjustable connector means for controlling the tension on said hollow tubular conductor pipe;

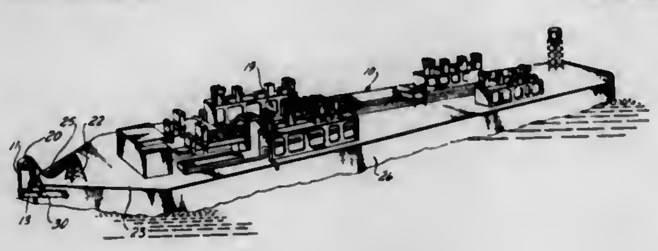


a flexible conduit connecting the upper end of said conductor pipe and a fluid flowline extending from said surface buoy for delivering fluids from said hollow tubular conductor pipe to a tanker; and
a rotatable ring mounted for rotation about said flexible conduit and having a yoke pivotally connected to said ring for receiving a hawse for mooring a tanker to said submerged buoy.

4,130,077
SINGLE-POINT MOORING SYSTEM

Abraham Person, Los Alamitos, and Yilmaz H. Ozudogru, Rancho Santa Fe, both of Calif., assignors to Global Marine, Inc., Los Angeles, Calif.

Filed Sep. 23, 1977, Ser. No. 836,068
Int. Cl.^{2} B63B *21/00*
U.S. Cl. 114—230 **28 Claims**

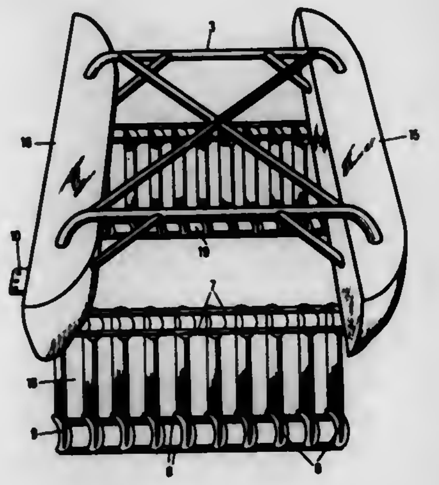


1. Apparatus for mooring a structure floating in a body of water to an anchor point located above the water surface, comprising
a substantially rigid anchor structure fixed to the bottom of the body of water and extending above the water surface where it defines a right circular cylinder having a vertically disposed axis, the portion of the structure above the water surface comprising said anchor point,
a collar mounted to the cylinder circumferentially thereof for motion angularly about and axially along the cylinder,
a pair of rigid supports extending from the floating structure, the supports being spaced substantially equally from and on opposite sides of a roll axis of the floating structure, the spacing between the supports being greater than the diameter of the collar, and
resilient connections between the supports and the collar
(a) for locating the collar centrally between the supports in a normal state of the mooring apparatus,
(b) for affording and accommodating motions of the floating structure, as manifested at the supports, relative to the collar in horizontal linear directions and angularly about the roll axis in surge, sway and roll, and
(c) for absorbing the forces manifested between the collar and the floating structure in association with the surge and sway motions, the collar moving on the anchor structure cylinder in response to pitch, heave and heading change motions of the floating structure.

4,130,078
FLOATING DEVICE CONNECTED TO A SHIP, FOR TOWING A SUBMERGED MEMBER WITH A LATERAL SHIFT THEREOF WITH RESPECT TO THE SHIP ROUTE

Jacques Cholet, Massy, France, assignor to Institut Francais du Petrole, France

Continuation of Ser. No. 646,846, Jan. 5, 1976, abandoned. This application Sep. 9, 1977, Ser. No. 831,989
Claims priority, application France, Jan. 6, 1975, 75 00384
Int. Cl.^{2} B63B *21/56*
U.S. Cl. 114—244 **6 Claims**



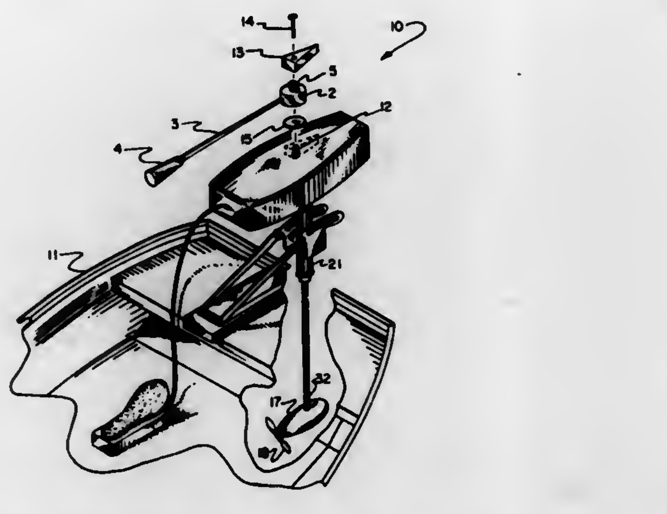
1. In a device for shifting a submerged member towed from a ship with respect to the moving direction of said ship, which comprises floating means, and submerged deflector means fixed to said floating means, said deflector means including a plurality of parallel paddles curved in the same direction, each having a generatrix perpendicular to the plane of flotation, the improvement comprising said paddles being arranged in two assemblies respectively placed at the head and at the rear of said floating means, and said floating means comprising two elongated floating members, each having a longitudinal cross-section with a curved segment at one side thereof, the respective chords of said segments extending along a direction parallel to the longitudinal axis of said floating means, and the curvatures of said curved segments being oriented in the same direction as the curvature of said paddles.

4,130,079
AUXILIARY STEERING CONTROL FOR ELECTRIC TROLLING MOTOR

William F. Rhorer, 5961 Stoneshire, Baton Rouge, La. 70805, and Joseph V. Zito, 855 Princewood Ct., Baton Rouge, La. 70806

Filed Jun. 13, 1977, Ser. No. 806,173
Int. Cl.^{2} B63H *5/12*
U.S. Cl. 115—18 E **2 Claims**

1. In a steering control apparatus for a rack and pinion steering mechanism of an outboard motor in which an elongate shaft is rotatably attached at its upper end to a hollow casing, which is fixedly attached to a boat, and at its lower end is fixedly attached to a motor housing containing an electric motor which drives a propeller transversely of said shaft, said shaft having a hollow first pinion mounted thereon which is continuously in mesh with a sliding rack operatively connected by a control cable to a foot pedal actuator so that operation of the foot pedal causes the elongate shaft to turn, thereby steering the boat, and a second pinion also continuously engaged with the sliding rack and carrying a direction-indicating pointer, the improvement comprising an auxiliary steering apparatus including a coupling means attached to said second pinion in the shape of a cylindrical collar having a flange for attachment of said direction-indicating pointer at its upper end,

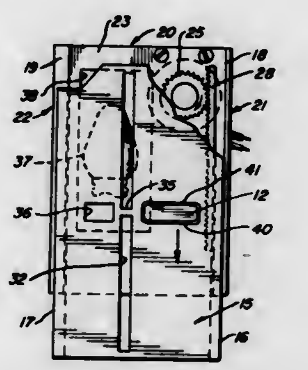


an axial bore through said flange and said collar ending at its lower end in a socket, opposite said flange, and having a larger diameter than said bore for receiving the shaft of said second pinion and said coupling means having a tapped socket axially transverse of said bore for receiving one end of an auxiliary control rod whereby upon loss of control or failure of said foot pedal actuator or said control cable, said control rod is attached to said tapped socket for receiving one end of said control rod in said coupling means for temporary manual steering control.

4,130,080
INDICATING CONTROL STRUCTURE

Lawrence C. Lotz, Marion, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 31, 1977, Ser. No. 801,835
Int. Cl.^{2} G09F *9/40;* H01C *10/32*
U.S. Cl. 116—2 **7 Claims**

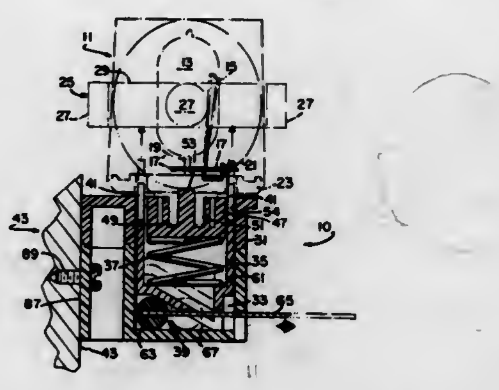


1. In a control structure for concurrently rotating a rotatably adjustable mechanism and indicating the adjusted disposition of the mechanism, including a slider having a manipulating handle, means for guiding the slider reversibly along a preselected path in said control structure, and drive transmission means for rotating the mechanism to a desired adjusted disposition as a result of a corresponding movement of the slider along said path, the improvement comprising
indicator means for indicating the disposition of said slider in said path and resultingly the adjusted disposition of the mechanism including means defining an integrally formed window movable with said slider and indicia means disposed adjacent said path to be selectively exposed by said window for indicating said disposition.

4,130,081
ACTIVATION MEANS FOR FLASHLAMP ARTICLE

Ronald G. Blaisdell, Saugus; Harold H. Hall, Jr., Marblehead, and Harold L. Hough, Beverly, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Jun. 6, 1977, Ser. No. 803,563
Int. Cl.^{2} G08B *7/08, 3/14*
U.S. Cl. 116—5 **21 Claims**



1. Activation means for activating at least one flashlamp unit located within a flashlamp article including a base portion, said activation means comprising:
a casing defining a chamber therein, said casing adapted for having said base portion of said flashlamp article positioned thereon;
an activator member movably oriented within said chamber of said casing for occupying a first, non-firing position and a second position therein and including at least one upstanding engagement member thereon, said activator member effecting firing of said flashlamp unit within said flashlamp article when said article is positioned on said casing and said activator member occupies said second position;
biasing means located within said casing and engaged to said activator member, said biasing means continuously biasing said activator member toward said first, non-firing position for returning said activator member thereto subsequent to said firing of said flashlamp unit;
engagement means movably positioned within said chamber for engaging said activator member to effect movement of said activator from said first position to said second position, said engagement means effecting said movement in response to external actuation thereof; and
means for securing said activation means to an external surface.

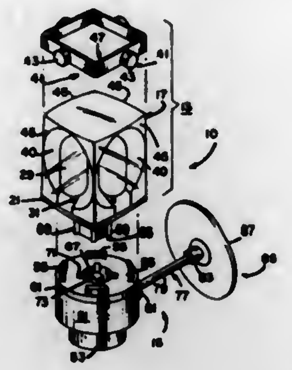
4,130,082
FLASHLAMP ASSEMBLY FOR PROVIDING HIGHLY INTENSE AUDIBLE AND VISUAL SIGNALS

Andre C. Bouchard, Peabody; Harold H. Hall, Jr., Marblehead; Robert J. Patton, Westford, and Thomas J. Sentementes, Wakefield, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Jun. 6, 1977, Ser. No. 803,565
Int. Cl.^{2} G08B *3/14, 7/08*
U.S. Cl. 116—5 **42 Claims**

1. A combustible member for use with a flashlamp article including at least one flashlamp unit therein, said flashlamp unit including at least one flashlamp, said combustible member comprising:
at least one pyrotechnic device including a container, a quantity of pyrotechnic mixture within said container, and sealing means for hermetically sealing said pyrotechnic mixture within said container separately from said flashlamp unit, said pyrotechnic device adapted for being located externally of and in operative relationship to said

flashlamp of said flashlamp unit to receive energy therefrom in the form of light and/or heat and provide an

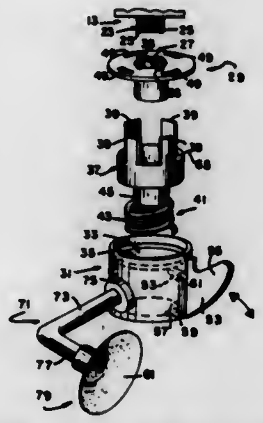


audible signal of high intensity in response to receipt of said energy.

4,130,083
ACTIVATING MECHANISM FOR FLASHLAMP ARTICLE

Andre C. Bouchard, Peabody, and Harold H. Hall, Jr., Marblehead, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Jun. 6, 1977, Ser. No. 803,564
Int. Cl.² G08B *7/08, 17/02, 13/08*
U.S. Cl. 116—114.5 25 Claims



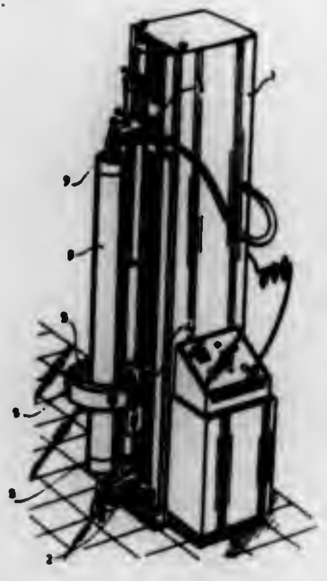
1. Activation means for activating a plurality of flashlamp units located within a flashlamp article wherein each of said units comprises a percussively-ignitable flashlamp and prestressed striker spring associated therewith, said activation means comprising:

a casing defining a chamber therein;
seating means located at one end of said casing for having said flashlamp article positioned thereon;
an activator member movably oriented within said chamber of said casing to occupy first and second positions therein, said activator member including as a portion thereof a plurality of upstanding engagement members, said engagement members engaging said prestressed striker springs to effect release thereof and cause firing of said flashlamp units when said flashlamp article is positioned on said seating means and said activator member occupies said second position, the direction of movement of said activator member being linear;
means operatively connected to said activator member within said chamber for effecting movement of said activator member from said first position to said second position;
means for retaining said activator member in said first position and effect release thereof in response to actuation by means external of said activation means; and
means for securing said activation means to an external surface.

4,130,084
COATING APPARATUS

Hermanus Josephus Eduardus J. M. Hoelen, Nijmegen, Netherlands, assignor to Stork Brabant B.V., Boxmeer, Netherlands

Filed Jul. 18, 1977, Ser. No. 816,877
Claims priority, application Netherlands, Jul. 23, 1976, 7608241
Int. Cl.² B05C *3/02*
U.S. Cl. 118—59 2 Claims



1. An apparatus for coating a thin-walled perforated cylinder, particularly a screen stencil, with a photo-sensitive liquid layer comprising a vertical support column, a stationary lower mounting head attached to said support column, an upper mounting head adjustable for height along said column above said lower head, a carriage slidable along said column between said mounting heads, an annular receptacle attached to said carriage and movable therewith, the center of said annular receptacle coinciding with the center lines of both mounting heads, a drive means on said column for moving said carriage at a constant speed up and down along said column between said mounting heads, a pair of detachable accessory parts each having two conical ends, one conical end of each accessory part receiving a separate end of a said perforated cylinder and means projecting from the other conical end of each accessory part being mounted on an associated one of said mounting heads, said one conical end having a projecting means adapted to detachably mount on the second of said heads whereupon the said other conical end is adapted to be received by a said perforated cylinder, said annular receptacle comprising a reservoir for said liquid and being operatively associated with a said perforated cylinder which is supported by said pair of parts whereby to coat said cylinder upon movement of the carriage, and means for heating at least one of said mounting heads.

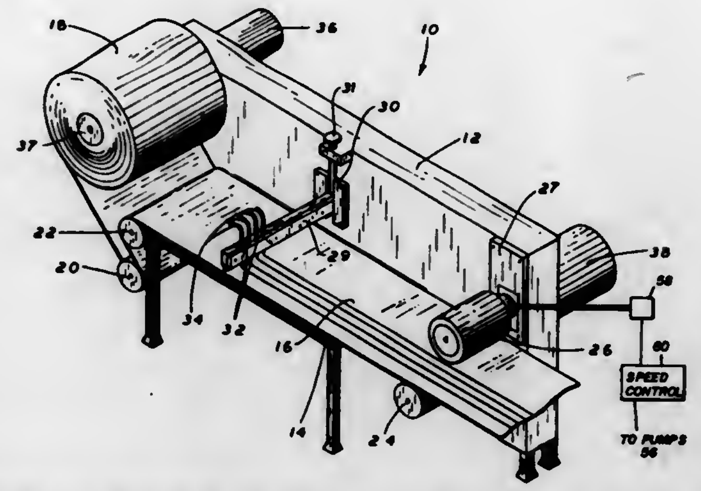
4,130,085
APPARATUS FOR MANUFACTURING SPOT TEST INDICATORS

Raymond Hewitt, Stanhope, N.J., assignor to Becton, Dickinson and Company, Rutherford, N.J.

Filed May 11, 1977, Ser. No. 795,956
Int. Cl.² B05C *5/02*
U.S. Cl. 118—315 7 Claims

1. Apparatus for applying a predetermined pattern of an aqueous liquid containing a chemical indicator reagent to a flat, moving sheet having a hydrophobic surface, whereby a constant volume of the liquid is deposited on a constant area of the hydrophobic surface, which comprises;

a fixed platen having a flat surface to support a sheet traveling thereover;
means for feeding a flat sheet to the surface of said platen;
means for drawing the sheet across the surface of said platen at an adjustable, fixed speed of from about 5 to about 20 feet per minute and within 1 percent of the set fixed speed;
a header for mounting a plurality of liquid dispensing nozzles over the surface of said platen, said header being adjustable in a vertical plane and adapted to hold in a rigid position a plurality of said nozzles;
a plurality of liquid dispensing nozzles mounted in said header;

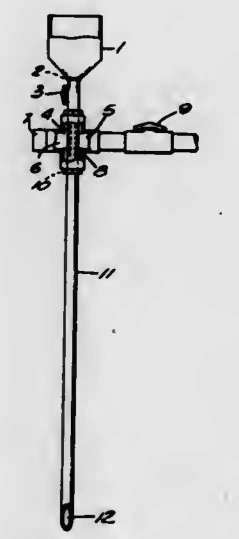


means for positioning the plurality of nozzles in the header a uniform distance above the surface of the platen and above the flat sheet drawn across the surface of the platen so that there is a gap between the moving sheet and the nozzles, said nozzles being set as close to the moving sheet as physically possible; and
means for supplying to said nozzles an uninterrupted, pulse-free flow of the aqueous liquid reagent, at a constant volume rate of from about 2 to about 4 microliters per linear inch of the moving sheet.

4,130,086
FISH EGG PLANTING DEVICE AND METHOD

Tod A. Jones, Box 1288, Wrangell, Ak. 99929

Filed Jun. 14, 1977, Ser. No. 806,455
Int. Cl.² A01K *61/00*
U.S. Cl. 119—3 5 Claims

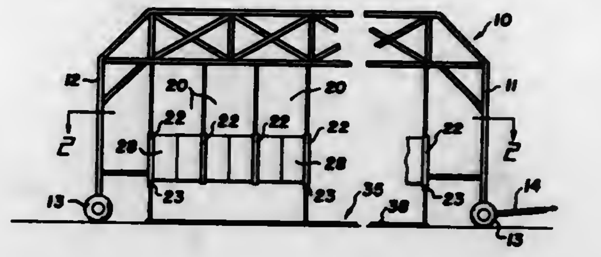


1. A fish egg planting device which comprises a receptacle for fertilized eggs, said receptacle having a valved orifice at its base through which the fertilized eggs may pass into a central chamber attached to said receptacle, said chamber having a lateral orifice to permit the entry of water, the flow of said water being governed by a control valve, and a rigid hollow tubing communicating with the base of said chamber, said tubing being adapted to permit insertion into the stream or lake bed substrates, such that the eggs are deposited in the stream or lake bed.

4,130,087
STARTING BAR ATTACHMENT FOR STARTING GATES

Samuel G. Dunn, 15039-68th Ave., Surrey, British Columbia, Canada (V3S 2B8)

Filed Jun. 7, 1977, Ser. No. 804,286
Int. Cl.² A01K *1/00*
U.S. Cl. 119—15.5 R 21 Claims

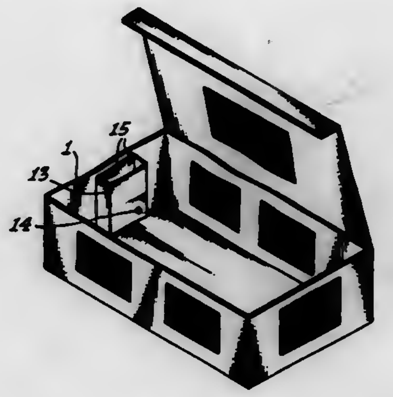


1. Starting bar apparatus for a starting gate structure divided by separators into a plurality of animalretaining stalls, each stall having a rear entrance end and a forward exit end, said bar apparatus comprising a starting bar extending across said stalls at ground level and adjacent the rear thereof, a plurality of downwardly-inclined rigid main links spaced from each other longitudinally of the bar and extending from the gate structure to said bar, said links being inclined forwardly in the direction of the forward ends of the stalls, and connectors connecting the upper ends and the lower ends of the links respectively to the gate structure and the starting bar, said connectors at the upper ends of the links comprising swivel means to allow the links to swing longitudinally and laterally of the stalls.

4,130,088
SHIPPING CAGE FOR FEEDING ANIMALS WATER FROM DISPOSABLE BAGS

Matthew Salvia, Cold Spring Rd., Stanfordville, N.Y. 12581

Continuation-in-part of Ser. No. 632,626, Nov. 17, 1975, Pat. No. 4,022,159, which is a continuation-in-part of Ser. No. 517,509, Oct. 24, 1974, Pat. No. 3,958,535. This application Mar. 11, 1977, Ser. No. 776,523
Int. Cl.² A01K *1/02, 9/00*
U.S. Cl. 119—19 2 Claims



1. A shipping cage made of laminated corrugated paper for feeding animals liquids while in transit (have) having a cover,

receptacle means made of laminated corrugated paper secured to a wall within said cage,
a sealed plastic bag of liquid within said receptacle means,
a feeding means having a demand feeding means at one end and a piercing point at the other end extending through said (wall) receptacle means and into the bag,
and integral (retaining means) spaced flanges intermediate the ends of the feeding means, one of the flanges being retained between the laminations of the receptacle means and the other abutting its wall through which the clemand feeding means protrudes to prevent withdrawal of the feeding means by the animals.

4,130,089

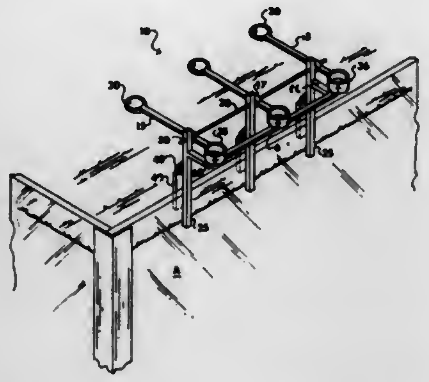
AUTOMATIC AQUARIUM FEEDING DEVICE

Daniel J. Moran, Box 5113, 3 W. Henderson St., Wrightsville Beach, N.C. 28480

Filed May 16, 1977, Ser. No. 797,033

Int. Cl.² A01K *1/10*

U.S. Cl. 119—51 R **4 Claims**



1. An apparatus for automatically and periodically dispensing food to aquatic animals in an aquarium, said apparatus comprising:

(a) a support means removably attached to a side wall of said aquarium;

(b) a balance arm having a first end and a second end, said balance arm being pivotally attached to said support means at a point intermediate said first and second end with at least said first end extending over the open top of the aquarium;

(c) a shallow bowl secured to said first end of said balance arm for holding a supply of food therein;

(d) a liquid containing cup having an open top and being secured to said second end of said balance arm for containing therewithin a preselected amount of liquid having an established rate of evaporation;

(e) in operation said first end of said balance arm being activated downwardly by gravity directly responsive to evaporation of said liquid from said second end whereby the food will spill from said bowl into the aquarium at a preselected time determined by the established rate of fluid evaporation.

4,130,090

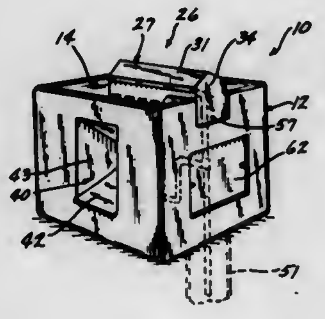
AUTOMATIC LIVESTOCK WATERER

Orville R. Bohlmann, P.O. Box 344, Densłon, Iowa 51442

Filed Aug. 21, 1975, Ser. No. 606,432

Int. Cl.² A01K *7/02*

U.S. Cl. 119—73 **1 Claim**



1. Livestock watering apparatus comprising:

a rectangular housing having formed in the upper portion thereof a first rectangular trough adapted to hold water, said housing having formed additionally therein a well, spaced from said first trough;

means for controlling the level of the water within said first trough, said means having a float located in said first trough, said means further including a plumbing assembly positioned in said well and fluidly connected to a source of water and to said float via a valve assembly, said valve assembly operated in response to the level of said float for maintaining a predetermined water level in said first trough;

further wherein said well is formed within one end of said housing, comprising a hollow interior area of said housing below the closed bottom of said trough, and comprising further a hollow area open to the top and to an adjacent end of the housing and forming thereby top and end openings, whereby the well is exposed from the top and from an adjacent end of the waterer; and

further wherein a portion of the housing at one end thereof intermediate the end corners and having a depth toward the bottom of the housing is removed to form the said opening of said well to the top and end of said housing; and

further wherein a cover unit is positioned above and about said float and valve assembly, and said cover unit comprises a top element positioned over said float and valve assembly, a front end mounted on the floor of said first trough, a rear end secured to said housing and covering said top and end openings, and a pair of parallel side walls extended from said front end on either side of said float, toward said rear end, said front end and said side walls all spaced inwardly from the walls of said trough whereby water in said trough surrounds said front end and said side walls.

4,130,091

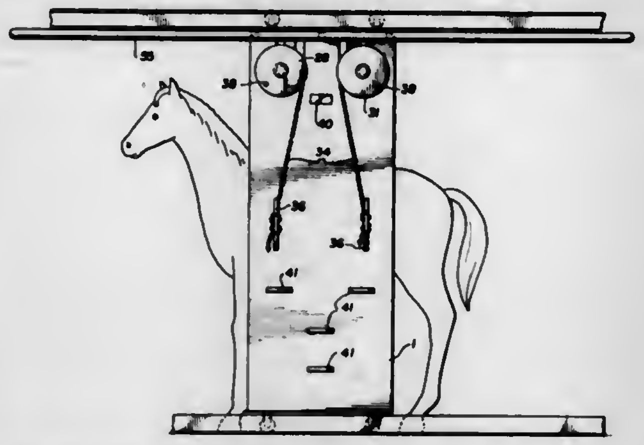
ANIMAL WALKER

M. Theresa Knudson, 3900 16th St. NW., Washington, D.C. 20011

Filed Dec. 23, 1976, Ser. No. 753,891

Int. Cl.² A61D *3/00*

U.S. Cl. 119—102 **8 Claims**



8. An animal walker comprising

means for engaging the midsection of an animal,

track means for controlling the path of the walker,

a carriage having a pair of opposed vertical elements on opposite sides of said engaging means slidably engaging said track means and extending along the axis of said track means no greater than the length of the animal's midsection,

means connecting said engaging means to said carriage for restraining and supporting the animal in said carriage, and

a bumper extending from the top of said carriage along the axis of said track means beyond the length of the animal.

4,130,092

DUST BAG FOR ANIMAL INSECTICIDE

W. Scott Eshnaur, and Helen E. Eshnaur, both of 3207 Coronado, St. Joseph, Mo. 64505

Division of Ser. No. 701,794, Jul. 1, 1976, Pat. No. 4,079,700. This application Oct. 26, 1977, Ser. No. 845,629

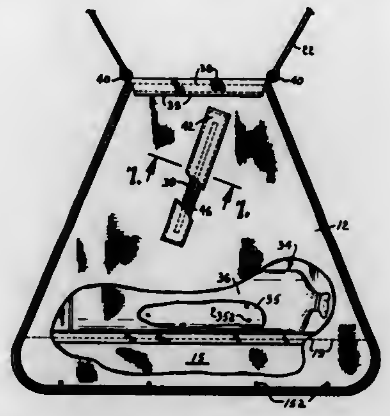
Int. Cl.² A01K *13/00, 29/00*

U.S. Cl. 119—159 **9 Claims**

1. A dust bag arrangement for applying powdered insecticide to animals and adapted to receive a waterproof cartridge containing said insecticide wherein the cartridge may be punctured to permit flow of insecticide, said arrangement comprising:

a first bag adapted to accommodate the flow of insecticide therethrough and having opposed side panels and a bottom portion;

a second bag disposed inside of the first bag and adapted to accommodate the flow of insecticide therethrough,



said second bag having opposed side panels located inwardly of the side panels of said first bag and also having a bottom portion located above the bottom portion of said first bag; and

a pair of water resilient panels disposed between corresponding side panels of said first and second bags, said water resistant panels having lower edges which are spaced apart to present a space through which insecticide may pass from the bottom portion of said second bag to the bottom portion of said first bag.

4,130,093

EXHAUST GAS RECIRCULATION CONTROL SYSTEM

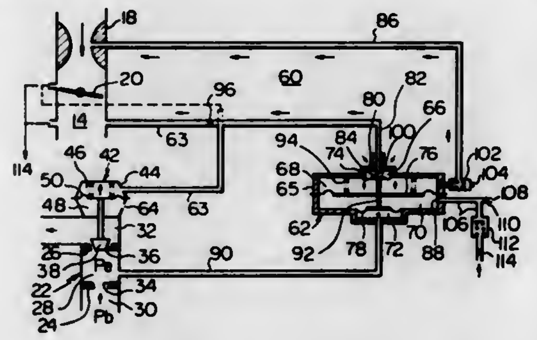
Syunichi Aoyama, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Apr. 12, 1977, Ser. No. 786,812

Claims priority, application Japan, Apr. 13, 1976, 51-41590

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **7 Claims**



1. An exhaust gas recirculation (EGR) control system in combination with an internal combustion engine including

an intake passage providing communication between the atmosphere and the engine and having

a venturi formed therein, and

an exhaust gas passageway providing communication between the engine and the atmosphere, said EGR control system comprising

an EGR passageway providing communication between the exhaust gas passageway and the intake passageway for recirculating thereinto exhaust gas emitted from the engine, said EGR passageway having provided therein

a restriction for restricting said EGR passageway;

an EGR control valve which is disposed in said EGR passageway downstream of said restriction to define a first chamber interposed between said restriction and said EGR control valve and is operable in opposite directions to increase and reduce the pressure of engine exhaust gas in said first chamber for controlling the flow of recirculated engine exhaust gas; and

operating means for operating said EGR control valve in opposite directions to increase and reduce the exhaust gas pressure in said first chamber in accordance with a decrease and an increase in said exhaust gas pressure and in accordance with a decrease and an increase in a venturi vacuum in said venturi, respectively.

4,130,094

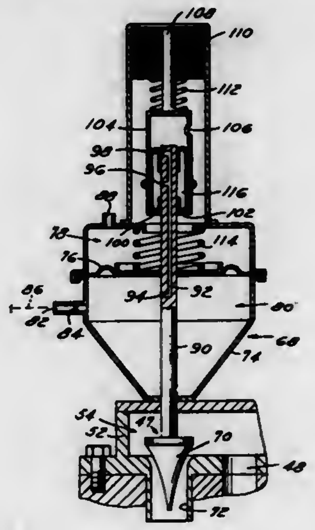
EXHAUST GAS RECIRCULATION VALVE ASSEMBLY

Karl H. Gropp, Grosse Pointe Woods, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 3, 1977, Ser. No. 821,442

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **9 Claims**



1. An engine exhaust gas recirculating (EGR) valve assembly, comprising in combination, a duct connecting engine exhaust gases to the engine intake manifold, an (EGR) valve movable into and out of the duct to block or permit flow of gases through the duct, a spring biasing the (EGR) valve into the duct to a closed position, fluid pressure actuated force means connected to the (EGR) valve for moving it to an open position against the forces of gases and manifold pressure acting in the duct on the valve, means connecting a source of varying pressure to the force means to actuate the same, a movable atmospheric bleed device movable to decay the pressure from the source below a level operative to effect opening of the (EGR) valve, and control means operably connected to the bleed device to move the same to control the decay of source pressure force, the force means including a servo having a diaphragm dividing the servo into an atmospheric pressure chamber on one side and a variable fluid pressure chamber on the other side, a valve stem connected to the (EGR) valve and to the diaphragm and projecting through the diaphragm from one side to the other, the bleed device including bypass passage means in the stem having an outlet opening into each chamber for decaying the pressure in one chamber to the level of the pressure in the other chamber, and rollable flexible seal means movable by the control means between a first position uncovering the outlet in one chamber to expose the latter outlet to atmospheric pressure to equalize the level of the pressures in the chambers to thereby permit movement of the diaphragm in a valve closing direction by the spring or movable to a second position to cover the latter outlet to permit a change in the force level of the pressure in the variable pressure chamber to effect an (EGR) valve opening movement of the diaphragm, the latter movement of the diaphragm moving the stem relative to the seal means to again uncover the latter outlet and again effect the movement of the diaphragm and stem and (EGR) valve in a valve closing direction, the valve moving back and forth until an equilibrium position is attained for each movement of the control means.

4,130,095

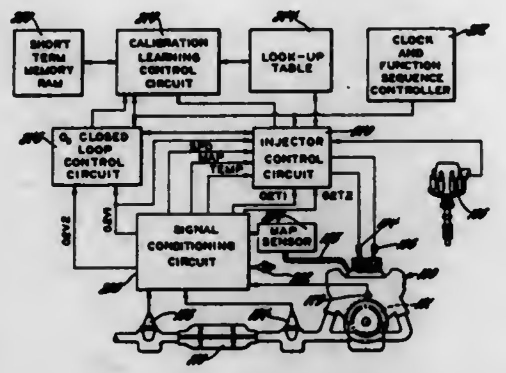
FUEL CONTROL SYSTEM WITH CALIBRATION LEARNING CAPABILITY FOR MOTOR VEHICLE INTERNAL COMBUSTION ENGINE

Lauren L. Bowler, Bloomfield Hills, and John E. Lahiff, Farmington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 814,884, Jul. 12, 1977, abandoned. This application Dec. 1, 1977, Ser. No. 856,238

Int. Cl.^{2} F02G *3/00*; F02M *7/00*

U.S. Cl. 123—32 EE **14 Claims**


SHORT TERM MEMORY RAM
CALIBRATION LEARNING CONTROL CIRCUIT
LOOK-UP TABLE
CLOCK AND FUNCTION SEQUENCE CONTROLLER
O2 CLOSED LOOP CONTROL CIRCUIT
INJECTOR CONTROL CIRCUIT
RPM
MAP
TEMP
OET1
OET2
SIGNAL CONDITIONING CIRCUIT
MAP SENSOR

1. A fuel control system for an internal combustion engine having combustion space into which an air/fuel mixture is supplied to undergo combustion and having means defining an exhaust gas passage from the combustion space into which spent combustion gases are discharged and are directed to the atmosphere comprising, in combination:

a sensor responsive to the oxidizing/reducing conditions at a predetermined point in the exhaust passage, and hence, after a transport time delay period dependent upon engine operating conditions, to the mixture supplied to the combustion space, the sensor having an output condition indicative of predetermined desired oxidizing/reducing conditions;

a memory having locations addressable in accordance with at least one engine operating condition and having a number at each such location determinative of a fuel supply rate as determined by the engine operating condition so as to produce the predetermined desired oxidizing/reducing conditions;

means effective to supply fuel to the combustion space at a rate determined at least by the number recalled from the memory at the location of the current value of the predetermined engine operating condition;

sampling means effective to sample and store at recurrent intervals at least the predetermined engine operating condition; and

means responsive to at least the engine operating condition stored by the sampling means at the beginning of a particular transport time delay period and to the output condition of the sensor at the end of the particular transport time delay period effective to store in the memory at the address according to the engine operating condition at the beginning of the particular transport time delay period a new number having a value differing from the value previously stored at such address in a sense tending to restore the sensor output to the desired output condition.

4,130,096

IGNITION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

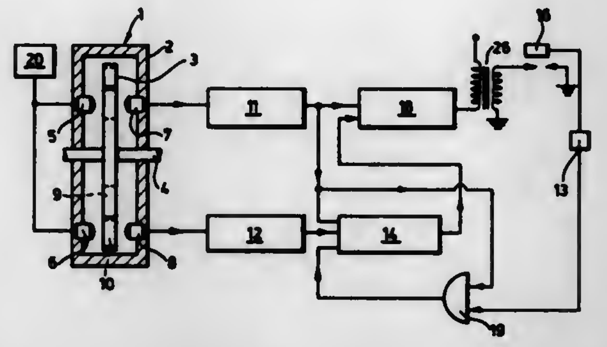
Eric H. Ford, London, England, assignor to Lumenition Limited, England

Division of Ser. No. 572,889, Apr. 30, 1975, abandoned. This application Oct. 6, 1977, Ser. No. 839,810

Int. Cl.^{2} F02P *5/04, 1/00*

U.S. Cl. 123—117 R **8 Claims**

1. An electronic ignition system including: means for generating a series of square wave voltage pulses whose mark space ratio is variable, one edge of said waveform always occurring at a fixed predetermined crank-shaft position, whilst the other edge is variable for the purpose of advancing or retarding the ignition; means for varying the mark space ratio of the generated square wave voltage pulses in response to engine requirements; means for deriving a signal from the second stage of combustion representative of a selected point on the pressure rise curve; means operative from a timing comparison between the occurrence of said derived signal and said fixed edge of the square voltage pulses to vary the mark space ratio of said voltage pulses and hence the ignition timing so maintaining coincidence between said derived signal and the fixed edge of the square wave voltage pulses.



4,130,097

IGNITION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

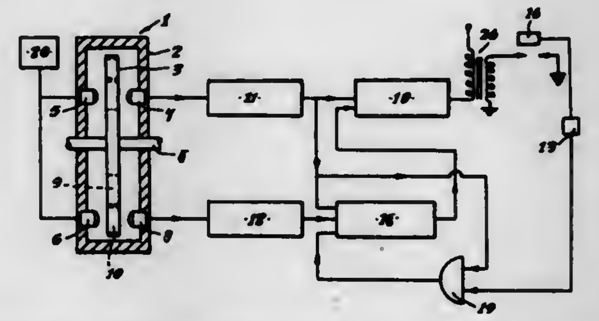
Eric H. Ford, 17, Kensington Gate, London, W.8., England

Continuation of Ser. No. 572,889, Apr. 30, 1975, abandoned. This application Oct. 17, 1977, Ser. No. 842,953

Claims priority, application United Kingdom, May 7, 1974, 20148/74

Int. Cl.^{2} F02P *5/04, 1/00*

U.S. Cl. 123—117 R **12 Claims**



1. An electronic ignition system for an internal combustion engine, including: means for generating a first series of square-wave, constant mark-to-space ratio voltage pulses in synchronism with the engine revolutions to provide a series of alternate first and second voltage levels; means for generating a second series of square-wave voltage pulses also in synchronism with the engine revolutions and at a fixed multiple of the first series of square-wave voltage pulses; means for counting a given number of the second series of voltage pulses from a predetermined point in relation to the first series of voltage pulses in order to initiate a signal for the production of the spark; means for sensing a predetermined point on the pressure rise curve after the commencement of the second stage of the combustion process in a cylinder of the engine at each firing cycle; means for deriving a digital signal from the sensing of the predetermined pressure point; means for digitally comparing the crank-shaft position corresponding to the said predetermined pressure point with a fixed predetermined crank-shaft position derived from said first series of voltage pulses; and digital means for advancing or retarding the ignition by subtracting or adding one pulse at a time to the given number of pulses of the second series to be counted, during each firing cycle, in order to maintain substantial coincidence between the predetermined pressure point in the second stage of combustion and said fixed predetermined crank-shaft position irrespective of engine requirements.

4,130,098

METHOD AND APPARATUS FOR REDUCING THE TOXIC COMPONENTS IN EXHAUST GAS

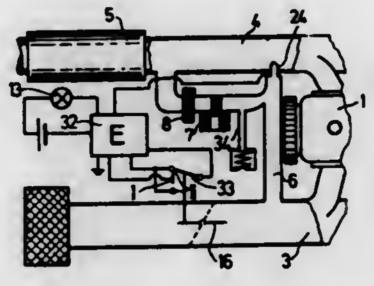
Ernst Linder, Mühlacker; Günter Wössner, Esslingen; Helmut Maurer, Schwieberdingen, and Franz Rieger, Wasseralfingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Division of Ser. No. 560,555, Mar. 20, 1975, Pat. No. 4,075,992. This application Aug. 3, 1977, Ser. No. 821,425

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1974, 2414761

Int. Cl.^{2} F02M *25/06*

U.S. Cl. 123—119 A **8 Claims**



1. An apparatus for exhaust gas detoxication in an internal combustion engine which includes an induction tube, a throttle valve disposed therein and an exhaust manifold, comprising:

(A) an exhaust gas recycle line, connected to establish flow communication between the exhaust manifold and the induction tube of the engine;

(B) valve means, disposed within said recycle line for controlling the gas flow therethrough;

(C) sensor means, disposed within the exhaust manifold for generating signals related to gas conditions; and

(D) warning signal means, influenced by said sensor means for producing a warning signal, capable of being sensed and related to the gas flow in said recycle line.

4,130,099

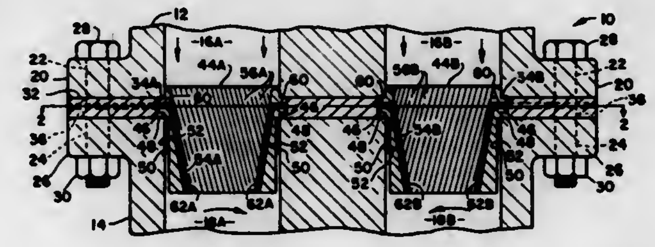
GAS SAVER

Russel O. Ferguson, 636 Richmond St., Dunedin, Fla. 33528

Filed Mar. 9, 1977, Ser. No. 775,975

Int. Cl.^{2} F02M *29/00*

U.S. Cl. 123—141 **11 Claims**



1. A gasoline saving device for an internal combustion engine having a carburetor housing and a manifold housing, each housing having an internal orifice for passing a gasoline fluid, comprising in combination:

a substantially flat plate member adapted for insertion between the carburetor housing and the manifold housing;

said plate member comprising aperture means having a diameter in accordance with the cross-section of the internal orifices of the carburetor housing and the manifold housing;

means for registering said aperture means of said plate member relative to the internal orifices of the carburetor housing and the manifold housing;

a plurality of plate fluid channel means extending longitudinally through said plate member for providing fluid communication for an external fluid adjacent an outer surface of said plate member with said aperture means of said plate member;

venturi means established in proximity to said aperture means for drawing the external fluid through said fluid channel means into the internal orifice of the manifold housing upon gasoline fluid flow therein to mix the external fluid with the gasoline fluid;

said aperture means of said plate member including a first and a second aperture for cooperation with first and second carburetor and manifold internal orifices, respectively;

means for inducing a clockwise spin to the gasoline fluid in the first manifold internal orifice and for inducing a counterclockwise spin to the gasoline fluid in the second manifold internal orifice;

said substantially flat plate member including attachment means for securing said venturi means; and

sleeve means disposed within the internal orifice of the manifold and cooperating with said venturi means and said plate member for positioning said venturi means in the internal orifices of the manifold housing.

4,130,100

DIRECT-INJECTION SPARK-IGNITION ENGINE

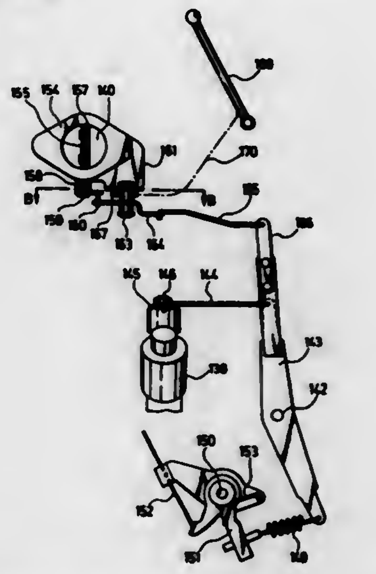
Shigeichi Okada, Owari-asahi, and Takeshi Katoh, Nagoya, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Nov. 23, 1976, Ser. No. 744,257

Claims priority, application Japan, Jan. 10, 1976, 51-1843; Jan. 16, 1976, 51-2493[U]

Int. Cl.^{2} F02M *63/00*

U.S. Cl. 123—139 BG **5 Claims**



1. A direct-injection spark-ignition engine adapted to be coupled to a load including a governor having a power shaft for sensing the rotational speed of the engine, at least one fuel injection pump for injecting fuel at a rate which may be increased or decreased by a fuel control rack, a fuel control rack connected to the power shaft of said governor and operatively connected to each said fuel injection pump, fuel injection nozzles for directly injecting the fuel from said at least one pump into the respective engine cylinders, ignition plugs for igniting and burning the fuel charges injected from said nozzles by spark discharge, and suction air passages through which air is caused to flow toward the combustion chambers of said engine cylinders, throttle valves each mounted within each suction air passage to open or close the same, throttle control mechanisms each connected to each said throttle valve and to said fuel control rack to open or close said valve as a function of the quantity of fuel injected, and throttle control means for maintaining the throttle valve opening larger, when the engine is under load condition, than the throttle valve opening as determined by the fuel control rack when the engine operates under no-load condition.

4,130,101
TRANSISTORIZED IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

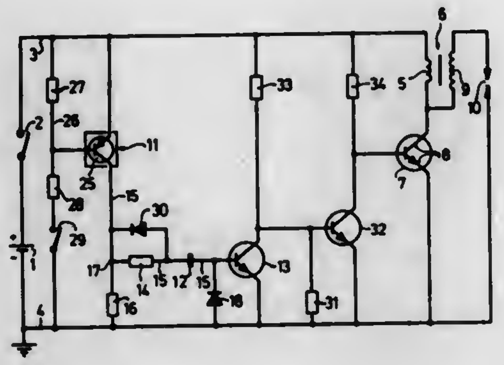
Werner Jundt, Ludwigsburg; Bernd Bodig, Leinfelden; Gerhard Söhner, Remshalden; Walter Ruf, Korntal-Munchingen; Helmut Roth, and Peter Werner, both of Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jul. 21, 1976, Ser. No. 707,323

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1975, 2533046

Int. Cl.^{2} F02P *9/00, 11/00*

U.S. Cl. 123—148 E **11 Claims**



1. Transistorized ignition system for an internal combustion engine have an ignition coil (6);
- a main switching transistor (7) connected in series with the primary (5) of the ignition coil (6);
- an ignition breaker switch (11) connected to and controlling conduction or blocking of the switching transistor (7) in accordance with commanded ignition events;
- a control capacitor (12) connected to the switching transistor (7) to control the switching transistor to non-conduction or blocked state if the engine should be stopped, with the ignition breaker switch (11) closed;
- a control resistor (16) connected between the positive (3) and negative (4) terminals of a source (1) and in series with said breaker switch (11), the junction (17) between said control resistor (16) and said ignition breaker switch (11) being connected to the control capacitor (12);
- a charge discharge resistor (14) forming a series connection (15) with the ignition breaker switch (11) and the control capacitor (12) between the positive (3) and negative (4) terminals of a direct current source (1);
- a capacitor discharge circuit (18) connected to the control capacitor;
- means connected to the control capacitor (12) and gradually changing over the conduction state of the main transistor (7) from conduction to blocking to prevent induction of a high-voltage pulse in the secondary (9) of the ignition coil (6) after the engine has stopped, comprising
- an auxiliary transistor (13) connected to the control capacitor (12) and a control circuit therefor gradually changing the conduction of the emitter-collector path of said auxiliary transistor, the main switching transistor (7) being connected to and controlled by said auxiliary transistor and similarly gradually changing to blocking state in dependence on the gradual change in conduction of the emitter-collector path of the auxiliary transistor (13);
- a coupling transistor (32, 38) connected to and controlled by said auxiliary transistor, annd having its emitter-collector path connected in parallel to the base-emitter junction of the main switching transistor (7);
- and wherein the collector of the auxiliary transistor (13) is connected to the positive terminal (3) of the source (1) — the emitter is connected to the negative terminal (h) of the source (1);
- and the base of the auxiliary transistor (13) is connected to the capacitor discharge circuit the auxiliarly transistor (13) providing a control output through said coupling transistor (32, 38) to the main switching transistor (7).

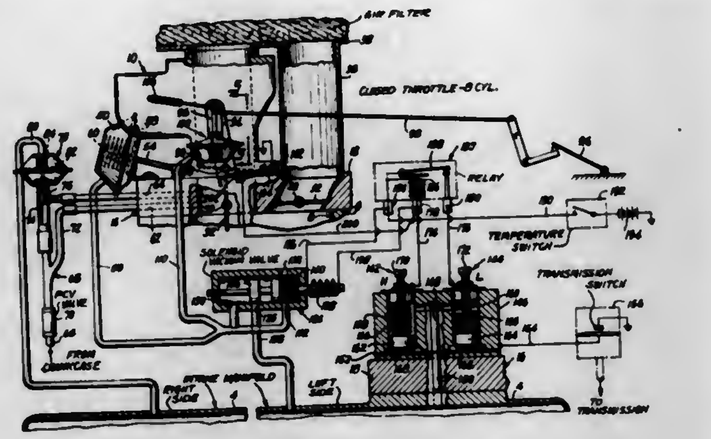
4,130,102
ADAPTOR AND CONTROL SYSTEM ARRANGEMENT FOR CONVERTING MULTIPLE CYLINDER CARBURETOR ENGINES FOR SPLIT OPERATION

Arthur E. Churchill, Alexandria, Va., assignor to George A. Stanford, Marlow Heights, Md., a part interest

Filed Sep. 1, 1977, Ser. No. 829,974

Int. Cl.^{2} F02D *13/06*

U.S. Cl. 123—198 F **20 Claims**



1. In a motor vehicle including a multiple cylinder internal combustion carburetor engine having an intake manifold for supplying a fuel-air mixture to the engine cylinders, said intake manifold being divided into first and second sections having separate inlet openings, a first set of the engine's cylinders being connected with the first section of said intake manifold and a second set of said cylinders being connected with the second of said sections, a transmission connected with said engine, and an accelerator pedal, an adaptor and control system arrangement for effecting either full or split operation of said engine, comprising:
- an adaptor mounted on said intake manifold, and including first and second passages aligned with the inlet openings of said first and said second manifold sections, respectively, and an air port in communication with said second manifold sections;
- first valve means mounted in said first passage of said adaptor, and movable between open and closed positions;
- second valve means mounted in said air port in said adaptor, and movable between open and closed positions;
- means interconnecting said first valve means with said second valve means for effecting substantially simultaneous operation thereof, and arranged so that said second valve means will open when said first valve means is closed, and vice versa;
- valve motor means connected to operate said interconnected first and second valve means;
- a carburetor mounted on said adaptor and having separate first and second chambers aligned with said first and said second passages, respectively, said carburetor including a throttle shaft, a throttle arm for operating said throttle shaft, and an idle screw engageable by said throttle arm;
- linkage means connecting said throttle arm with said accelerator pedal; and
- control means with said valve motor means for operating the same in response to the valve of vacuum within said first intake manifold section, and arranged to close said first valve means when the vacuum in said first intake manifold section rises above a first, preselected value, and to open said first valve means when the vacuum in said first intake manifold section falls below a second, preselected value;
- said control means including a holding circuit operable to hold said first valve means in its closed position after it has been closed in response to vacuum in said first inlet manifold section exceeding said first preselected value, until after said vacuum value falls below said second preselected value.

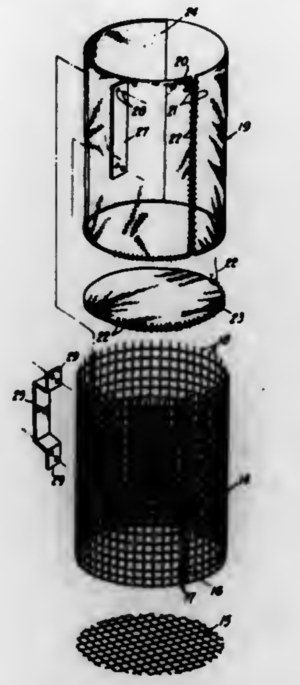
4,130,103
CHARCOAL LIGHTER BASKET

Leonard P. Zimmerman, 1443 Spring Hill Ter., Augusta, Ga. 30904

Filed Mar. 11, 1977, Ser. No. 776,491

Int. Cl.^{2} F23B *3/00*

U.S. Cl. 126—25 B **6 Claims**



1. A device to facilitate igniting and handling fuel briquettes comprising an outer stiff wire mesh basket body serving as a primary support for briquettes, an interior finer wire mesh liner for the outer basket body adapted to retain small briquette particles within the device during use thereof, said interior wire mesh being of a double thickness, said liner being telescoped into said basket body in the assembled device, a carrying handle for the device on the side wall thereof, and a heat shield panel on the side wall of the device adjacent to the handle to protect the hand of a user of the device, said heat shield panel being positioned within the outer wire mesh and a thickness of the interior wire mesh, said outer basket body and said liner being substantially cylindrical and open at their tops and having superposed bottom walls.

4,130,104
GLOW WIRE IGNITION WITH ON/OFF AND HOT WARNING MEANS FOR GAS HEATED STOVE

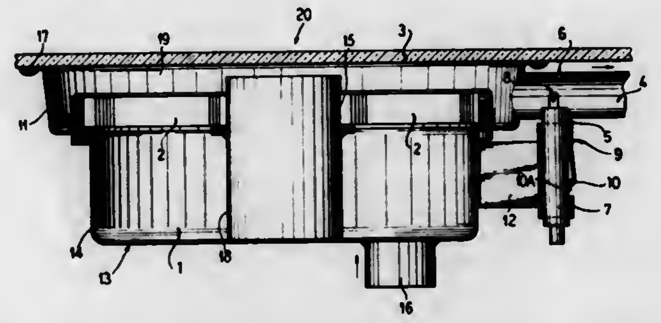
Klaus Kristen, Wiesbaden, and Herwig Scheidler, Finthen, both of Germany, assignors to JENAer Glaswerk Schott & Gen., Germany

Filed Sep. 12, 1977, Ser. No. 832,235

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1976, 2641274

Int. Cl.^{2} F24C *3/04*

U.S. Cl. 126—39 J **16 Claims**



1. In a cooking stove assembly of the type having a transparent cooking plate in combination with at least one gas burner assembly, each such burner assembly having
- (a) a perforated burner plate which is located in fixed, spaced relationship to the underside of said cooking plate,
- (b) a wall means surrounding said burner plate and defining a heating chamber below said cooking plate,
- (c) an exhaust gas flue leading from an aperture in said wall means,
- (d) pipe means for delivering a combustible gas to said burner plate,
- (e) gas lighter means for igniting said gas,
- (f) adjustable valve means for controlling the flow of said gas in said pipe means, and
- (g) control means for operating each such burner assembly, including an "on-off" switch means for each such burner assembly,

the improvement which comprises for each such burner assembly in combination
- (A) said gas lighter means comprises an igniter wire means electrically heatable to a glowing condition with low voltages and amperages,
- (B) mounting means for positioning said igniter wire means in said exhaust gas flue means in spaced, adjacent relationship to said heating chamber,
- (C) window means defined in said flue means and spatially located so that said igniter wire is visible through said cooking plate whenever said igniter wire is in such a glowing condition,
- (D) temperature sensing means for determining the temperature of said cooking plate in the region of said heating chamber and for generating a signal representative of the temperatures so sensed,
- (E) first electrical switch means and associated first electrical means for maintaining said igniter wire means in such a glowing condition whenever said burner assembly is operating, and
- (F) second electrical switch means, and second associated electrical means for maintaining said igniter wire in such a glowing condition whenever said cooking plate has a temperature which exceeds a predetermined value as sensed by said temperature sensing means.

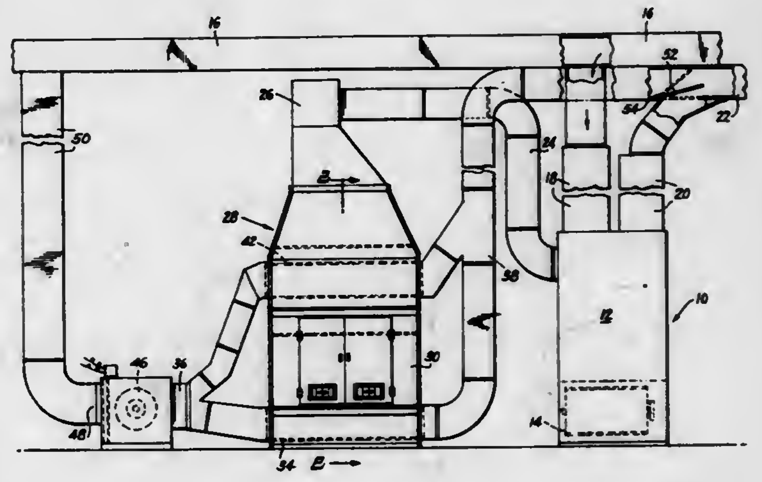
4,130,105
AUXILIARY WOOD BURNING FURNACE

Leoda Melton, 134 S. Foster St., Mansfield, Ohio 44903

Filed Jul. 5, 1977, Ser. No. 812,663

Int. Cl.^{2} F24B *7/02*

U.S. Cl. 126—110 R **5 Claims**

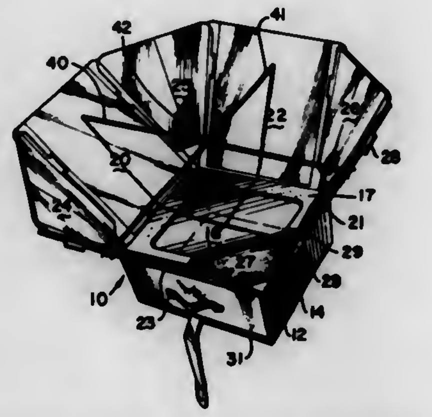


1. In combination:
- a forced air furnace having a firebox, a hot air outlet connected to a distribution duct, a return duct, and a first blower for receiving air through said return duct and

blowing the same through said hot air outlet to said distribution duct;
a wood burning furnace separate from said forced air furnace, said wood burning furnace having a firebox, a second outlet, a second inlet, and a second blower for blowing air from said second inlet to said second outlet;
first conduit means connecting said second outlet directly to said distribution duct;
second conduit means connecting said return duct directly to said second blower; and
the fireboxes of both said furnaces being provided with exhaust means connected to a common flue.

4,130,106
SOLAR STOVE

Merton L. Clevett, and Mildred L. Clevett, both of 4685 S. Ogden St., Englewood, Colo. 80110
Filed Mar. 23, 1977, Ser. No. 780,288
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—270 3 Claims

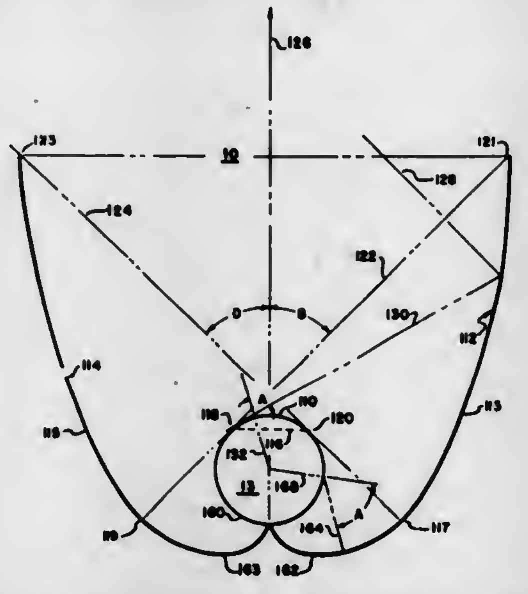


1. A solar stove that is portable and foldable, comprising:
(a) a box-like oven formed from multiple layers of corrugated paperboard for thermal insulation, the paperboard forming the bottom and four lateral side walls of the oven, and a transparent top face allowing radiant solar energy to be directed therein;
(b) four rectangular corrugated paperboard reflector panels, each having a reflective covering thereon, one panel being integrally and hingedly attached to each of the four lateral sides of said oven and extending upwardly therefrom to direct solar energy through said transparent top, and
(c) a cross-shaped member structurally joining opposite reflective panels and providing a sun sight for accurately aiming said transparent face of the oven at the sun.

4,130,107
SOLAR CONCENTRATOR WITH RESTRICTED EXIT ANGLES

Arnulf Rabl, Downers Grove, and Roland Winston, Chicago, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Division of Ser. No. 663,590, Mar. 3, 1976, abandoned. This application Nov. 10, 1977, Ser. No. 850,340
Int. Cl.^{2} F24J *3/02;* G02B *5/08*
U.S. Cl. 126—270 5 Claims

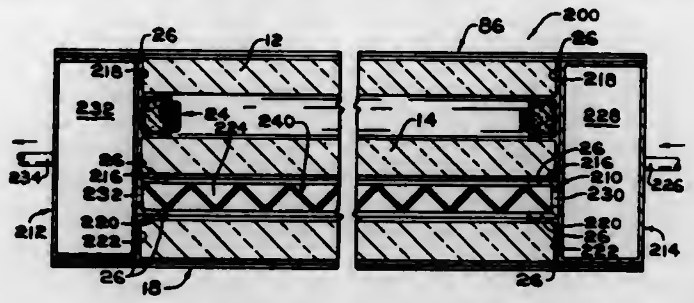
1. A device for concentrating and collecting radiant energy from a source of radiant energy, comprising:
an energy receiver a portion of whose perimeter is non-linear and has a cross section bounded by and on a first side of a first reference axis and which is convex with respect to said first reference axis, said cross section of said portion having a second axis extending therethrough perpendicular to said first reference axis, the perimeter of the cross section of said portion extending from a first tangent point along said first reference axis to a second tangent point along said first reference axis such that a first shadow line intersects said second axis on the first side of said first reference axis at an angle B and is tangent to the perimeter of the cross section of said portion at said first tangent point and such that a second shadow line intersects said second reference axis on the first side of said first reference axis at an angle D and is tangent to the perimeter of the cross section of said portion at said second tangent point, a first side wall for directing radiant energy being positioned on the same side of said second axis as said first tangent point, said first wall being of such contour that any extremal ray of radiant energy from the source intersecting said second reference axis on said first side of said first reference axis and incident on said first wall is directed along a line which intersects the perimeter of the cross section of said portion at an angle of value A, where A is a particular value less than 90°, said first wall extending from said first shadow line to no further than an intersection with said second shadow line, and a second side wall wall for directing radiant energy being positioned on the same side of said second reference axis as said second tangent point substantially opposite said first side wall, said second side wall being of such contour that any extremal ray of radiant energy from the source intersecting said second reference axis on said first side of said first reference axis and incident on said second side wall is directed along a line which intersects the perimeter of the cross section said portion at said angle A, said second wall extending from said second shadow line to not further than an intersection with said first shadow line, said energy receiver and said first and second side walls extending along a third reference axes perpendicular to said first and second reference axes to form a trough-like structure.



4,130,108
SOLAR COLLECTOR FOR HEATING A FLUID

Pandit G. Patil, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 672,098, Mar. 31, 1976, abandoned, which is a continuation-in-part of Ser. No. 573,497, May 1, 1975, abandoned. This application Jun. 28, 1976, Ser. No. 700,257
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—270 3 Claims

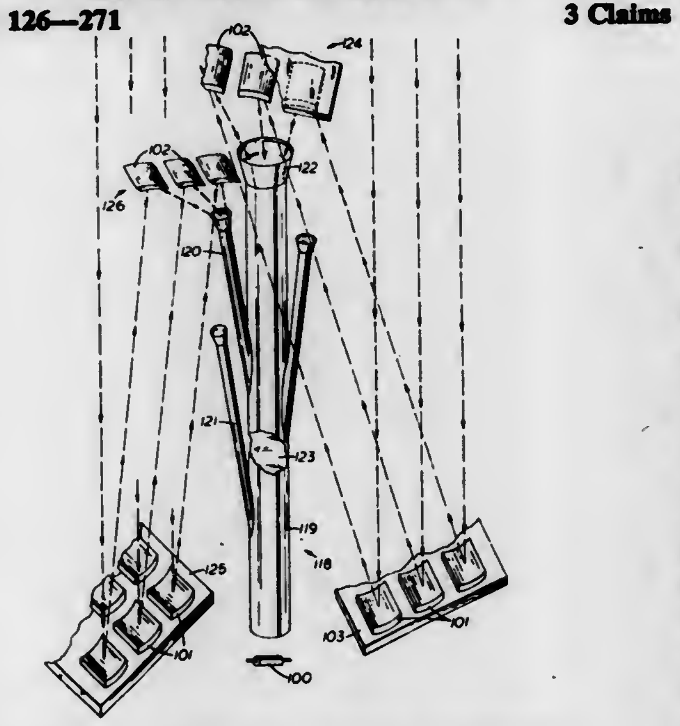
1. A solar collector for heating gas by solar energy, comprising:
a cover plate capable of passing solar energy;
a solar energy absorber having a first surface, and a second opposite surface and a first plurality of holes therein for flowing the gas to be heated away from said first surface and a second plurality of holes for flowing the gas to be heated away from said second surface, said first and second plurality of holes alternated along said absorber;
a plate;
means for mounting said cover plate in spaced relation to said first absorber surface to provide a plurality of first heating compartments and said plate in spaced relation to said second absorber surface to provide a plurality of second heating compartments;
means for preventing uncontrolled movement of ambient air into the said first and second heating compartments;
said first plurality of holes directs the flow of gas to be heated into said first heating compartment away from the first surface of said absorber toward said cover plate and said second plurality of holes directs the flow of gas to be heated away from the second surface of the absorber toward said plate; and



means for passing the gas to be heated into at least one of said compartments and out of at least one of said compartments wherein the gas to be heated as it passes through said first and second heating compartments is heated by convective heat transfer.

4,130,109
SOLAR ENERGY CONCENTRATOR

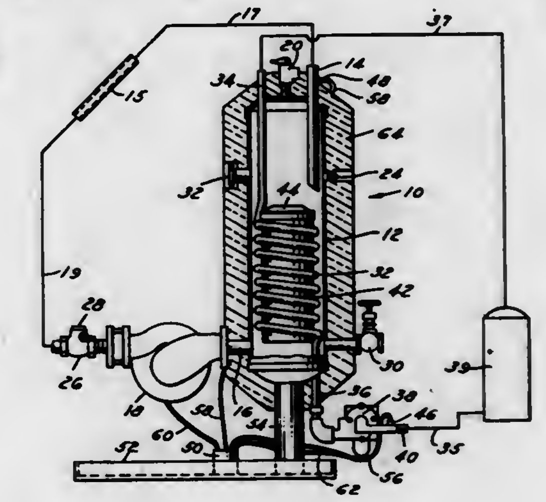
Chris M. Brueck, 615 Chestnut, Muscatine, Iowa 52761
Continuation-in-part of Ser. No. 854,850, Nov. 25, 1977, which is a continuation of Ser. No. 573,915, May 2, 1975, abandoned. This application Nov. 25, 1977, Ser. No. 855,014
Int. Cl.^{2} F24J *3/02;* G02B *5/14*
U.S. Cl. 126—271 3 Claims



1. A solar energy concentrator system comprising:
a reflecting concentrator having a main tubular member and a plurality of smaller tubular branches, an energy pickup device operatively connected to an energy utilization device, said main tubular member being substantially upright and having an open lower end directed to said energy pickup device, said branches extending upwardly at small acute angles from respective points spaced longitudinally along said main tubular member, said branches opening into said main tubular member, said main tubular member and said branches having highly polished reflective inner walls,
a plurality of first reflectors, a plurality of second reflectors, different ones of said second reflectors being associated with different ones of said branches and being at a level higher than respective upper ends of respective ones of said branches, said first reflectors being associated with certain ones of said second reflectors and being positioned at levels below said respective second reflectors, each of said first and second reflectors having a reflecting surface, said first reflectors being rotated and tilted with respect to respective reference axes during a portion of each day to position said reflecting surfaces thereof for reflecting energy from the sun to respective ones of said second reflectors, and said second reflectors being oriented to reflect solar energy from respective ones of said first reflectors into said upper ends of respective ones of said branches.

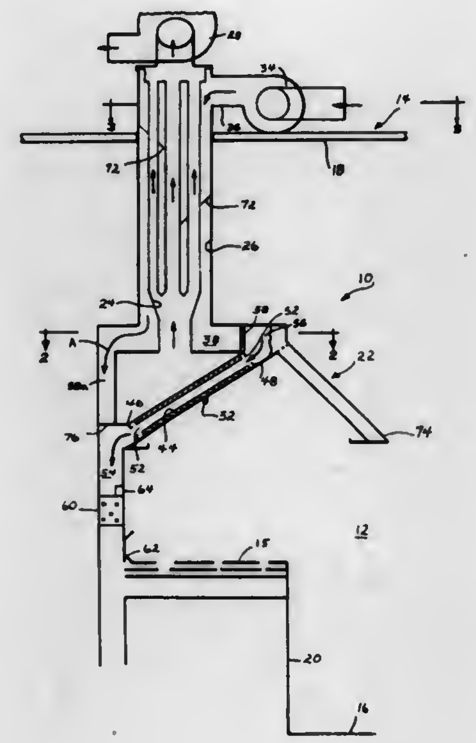
4,130,110
SOLAR HEATING SYSTEM COMPONENT AND CONTROL THEREFOR

Edward W. Bottum, 9357 Spencer Rd., Brighton, Mich. 48116
Filed Jun. 20, 1977, Ser. No. 807,646
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—271 1 Claim



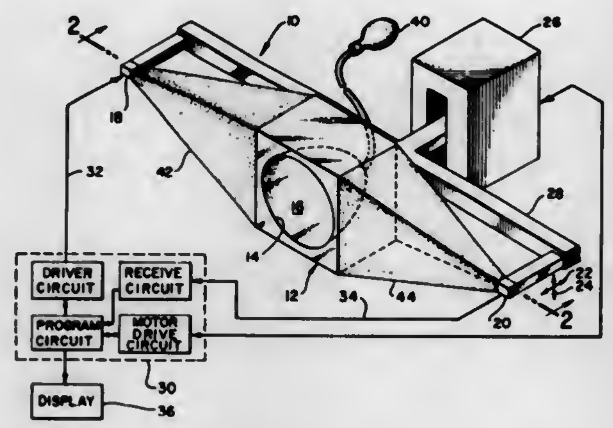
1. In a solar heating system component comprising a closed vessel, a first fluid inlet and a first fluid outlet for said vessel, said first fluid inlet being adapted for connection to the fluid outlet of a solar energy collection system through which fluid flows in a closed system as a heat exchange medium, said first fluid outlet being adapted for connection to the fluid inlet of said solar energy collection system, said vessel defining an expansion tank for said solar energy collection system, a second fluid inlet and a second fluid outlet for said vessel, said second fluid outlet being adapted to forward such heated fluid to a point of use, and a heat exchange structure within the vessel positioned for heat exchange relationship to solar energy collector system fluid in the vessel, said heat exchange structure including means for fluid flow therethrough, said second fluid inlet and outlet being operably connected to said heat exchange structure, the improvement comprising a variable speed electric motor driven first fluid pump connected to said first fluid outlet and a second electric motor driven fluid pump connected to said second fluid inlet for circulation of fluid pump through the respective systems, a first temperature sensor located to sense the temperature at the collector outlet, a second temperature sensor located to sense the temperature of fluid pumped by said second pump, a control device connected to said first and second sensors, means operably connecting said control device to the motors of said pumps to energize said pumps when the differential temperature of fluids being pumped by said pumps reaches a predetermined minimum valve, said control device including means to cause said variable speed electric motor to run at low speed when said differential temperature of said fluids is at said predetermined minimum and to increase the speed thereof when said temperature differential increases, said control device including means to cause said electric motor of said second fluid pump to run at a constant speed.

4,130,111
VENTILATING SYSTEM
Cedomir B. Ristic, 23820 Harper, St. Clair Shores, Mich. 48080
Filed Apr. 21, 1977, Ser. No. 789,612
Int. Cl.² F23J *11/00*
U.S. Cl. 126—299 D **1 Claim**



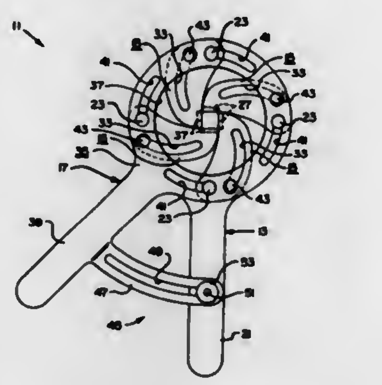
1. A ventilating system comprising:
a vent hood;
exhaust means having an inlet coupled to said hood and including a filter, an exhaust duct and an exhaust blower means for removing heated air from under said hood and through said filter and said exhaust duct to discharge said removed air to the exterior of a building in which said hood may be disposed, said filter having a plurality of air conduits extending therethrough;
intake means including a return duct and an intake blower means for introducing fresh air into said hood separately from said exhaust air, said fresh air being directed through said filter air conduits such that said exhausted, heated air preheats said fresh air;
the side and rear walls of said hood being of a hollow construction for directing the flow of said fresh air;
the inside walls of said hood being exposed to heated air, said inside walls further heating said fresh air;
a plurality of exhaust tubes defining said exhaust means, said exhaust tubes being disposed within said return duct such that the fresh air passing through said return duct is preheated by the exhausted, heated air passing through said exhaust duct;
electrical heating means disposed downstream of said filter air conduits;
temperature sensing means for sensing the temperature of the air passing through said air conduits, said electrical heating means being responsive to said temperature sensing means for heating said preheated air to a predetermined value;
a normally closed passage means for bypassing said filter air conduits; and
a damper in said passage means for selectively opening said passage means to communicate fresh air downstream of said filter air conduits.

4,130,112
COUPLING APPARATUS FOR ULTRASONIC MEDICAL DIAGNOSTIC SYSTEM
Robert E. Frazer, La Canada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Nov. 15, 1976, Ser. No. 741,749
Int. Cl.² A61B *10/00*
U.S. Cl. 128—2 V **8 Claims**



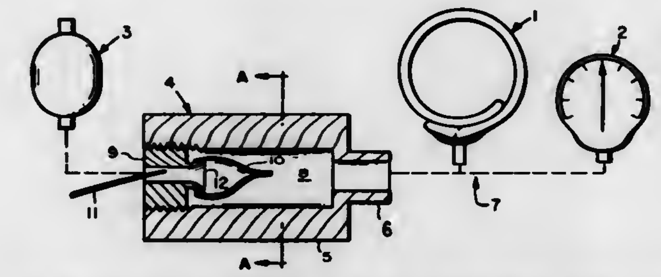
5. An ultrasonic mammography system comprising:
walls forming a substantially hemispheric cavity for receiving a breast to be examined, said walls being of substantially uniform thickness;
a pair of tapered sound-transmitting bodies lying on either side of said walls which form said cavity, with the large ends of said tapered bodies lying nearest said cavity and acoustically coupled thereto, each tapered body having elastic walls forming a tapered chamber and a quantity of fluid filling the chamber;
an ultrasonic transmitter and an ultrasonic receiver, each acoustically coupled to the small end of a different one of said tapered bodies; and
means for moving said transmitter and receiver in a scanning pattern.

4,130,113
RETRACTOR
Charles M. Graham, Memphis, Tenn., assignor to Richards Manufacturing Co., Inc., Memphis, Tenn.
Filed Dec. 15, 1976, Ser. No. 750,968
Int. Cl.² A61B *17/02*
U.S. Cl. 128—20 **7 Claims**



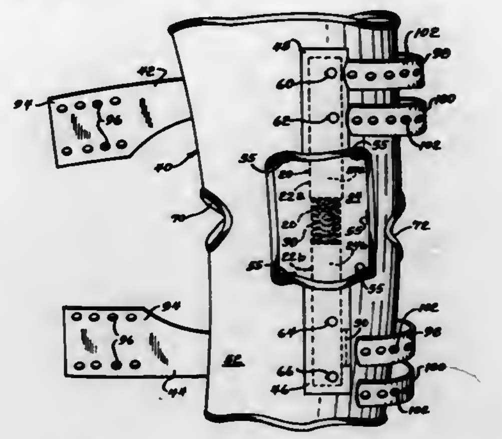
1. A surgical retractor for holding open a surgical incision, said retractor comprising:
(a) body means having an aperture therethrough for placement over the incision;
(b) a plurality of post members fixedly attached to said body means substantially adjacent and spaced substantially equal distance about said aperture through said body means;
(c) a plurality of substantially opposed blade means movably attached to said body means and extending into said aperture through said body means blade means, portions on said for being inserted into and engaging the incision to be held open, each of said plurality of blade means being pivotally mounted to one of said plurality of post members, each of said plurality of blade means including an elongated, slightly curved slot therethrough; and
(d) trigger means for causing said plurality of blade means to simultaneously diverge from one another and pivot about said plurality of post members to thereby open the incision, said trigger means including a body member having an aperture therethrough substantially the same size as said aperture through said body means, said body member of said trigger means having a plurality of elongated, slightly curved slots therethrough for slidable engagement with said plurality of post members to allow said body member of said trigger means to be movably attached to said body means with said apertures through said body means and said body member of said trigger means being constantly in substantial alignment with one another, said trigger means including a plurality of cam members fixedly attached to said body member thereof for slidable engagement with said elongated slots of said plurality of blade means so that when said body member of said trigger means is rotated relative to said body means, said plurality of blade means will be simultaneously pivoted about said plurality of post members.

4,130,114
FLUID PRESSURE MEASURING OR TESTING SYSTEM AND BLEED REGULATOR VALVE THEREFOR
Donald H. Peeler, Hendersonville, N.C., assignor to Sybron Corporation, Rochester, N.Y.
Filed Jan. 31, 1977, Ser. No. 764,341
Int. Cl.² A61B *5/02*
U.S. Cl. 128—2.05 G **22 Claims**



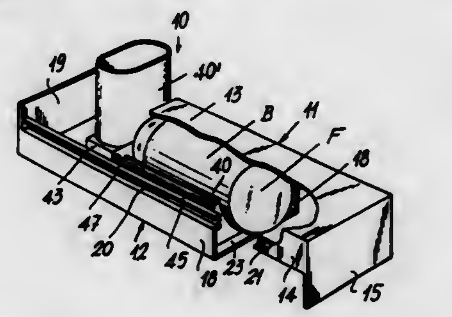
1. A sphygmomanometer system comprising fluid-containing means for applying a measured fluid pressure to a cardiovascular system for measuring pressures arising in said cardiovascular system, means for measuring pressures arising in said cardiovascular system, said sphygmomanometer system also including a regulator valve connected to said fluid-containing means for bleeding fluid from said fluid-containing means for decreasing said measured fluid pressure at a predetermined rate;
said regulator valve including a tube having a flexible wall, said tube being open at both ends, and having the opening at one said end formed with a slit having surfaces which sealingly contact each other when the pressure within said tube and the pressure without said tube are substantially the same;
said regulator valve also including a pin means in said tube for separating said surfaces somewhat, said pin means including a pin projecting into said slit, said tube being connected to said fluid-containing means, such as to expose the exterior of said tube to said measured fluid pressure, and its interior to a second fluid pressure lesser than said measured fluid pressure, whereby the said measured fluid pressure maintains said slit closed save for said pin.

4,130,115
BRACE HINGE
Glenn N. Taylor, 231 Thomas, Cary, Ill. 60013
Filed May 2, 1977, Ser. No. 792,824
Int. Cl.² A61F *5/01*
U.S. Cl. 128—80 C **13 Claims**



1. A hinge, comprising:
a first hinge member having a housing, and a plurality of elongated flexible ribs extending from one end of said housing, said ribs being spaced laterally across the housing and defining a plurality of laterally spaced grooves extending longitudinally in the housing;
a second hinge member having a housing, and a plurality of elongated flexible ribs extending from one end of the second member housing, the second member ribs being spaced laterally across the second member housing and defining a plurality of laterally spaced grooves extending longitudinally in the second member housing, said ribs of the first hinge member being slidably received in the grooves of the second hinge member, and said ribs of the second hinge member being slidably received in the grooves of the first hinge member; and
means for securing the housing of one hinge member generally parallel a wearer's extremity proximal a wearer's joint, and means for securing the housing of the other hinge member generally parallel the wearer's extremity distal the joint, with said housings being spaced from each other in the region of the joint.

4,130,116
POCKET INHALATOR
Claudio Cavazza, Rome, Italy, assignor to Sigma Tau S.p.A. Industrie Farmaceutiche Riunite, Italy
Filed Jul. 15, 1977, Ser. No. 816,178
Claims priority, application Italy, Aug. 13, 1976, 50904 A/76
Int. Cl.² A61M *15/00*
U.S. Cl. 128—203 **4 Claims**



1. An inhalator for spray substances contained in a spray can having a dispensing tube, wherein said inhalator comprises:
(a) a hollow elongated container adapted to contain said spray can in an operating position, said container being formed by a first and a second half, each having lateral walls and only one terminal wall;
(b) companion guide means with sliding engagement means

formed on the sides of said lateral walls of the two halves, adapted to permit a relative limited sliding movement of one of said walls with respect to the other form a first position wherein the container is closed to a second position wherein the container is open and viceversa;

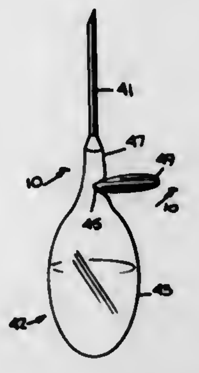
(c) spraying head means supported by a section integral with said first half having a lateral spray nozzle and an longitudinal axial channel communicating with said nozzle said channel including means adapted, to receive with a certain degree of friction said dispensing tube of the spray can;

(d) a sleeved nozzle open at its extremity having a bridged base supported by hinged means on said spraying head means such as to be able to rotate between a rest position, in which the axis of the sleeve is parallel to the axis of the elongated container, and an operating position perpendicular to the rest position, wherein the base of said sleeved nozzle is located adjacent said lateral said lateral spray nozzle; and

(e) mechanical actioning means adapted to bring said sleeved nozzle from said rest position to said operating position when said first and second halves are moved to said second position.

4,130,117
HYPODERMIC SYRINGE

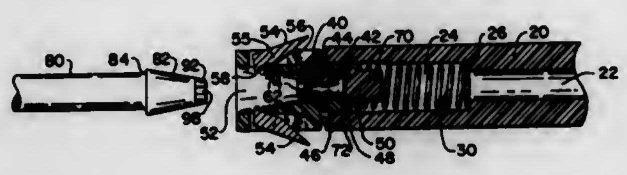
William F. Van Eck, 228 Main St., East Haven, Conn. 06512
Division of Ser. No. 501,448, Aug. 28, 1974, Pat. No. 3,989,045, which is a continuation of Ser. No. 293,489, Sep. 29, 1972, abandoned. This application Sep. 15, 1976, Ser. No. 723,192
Int. Cl.^{2} A61M *5/00*
U.S. Cl. 128—216 **9 Claims**



1. A hypodermic syringe comprising a prefilled medicament-containing ampul, a hypodermic needle, said ampul having a wall made of a resilient plastic material defining a medicament-containing chamber, with a hollow neck portion leading to a mouth, said needle affixed to said ampul in communication with said mouth, said wall defining an indentation in said neck portion and decreasing the area across said neck portion thereat, a rupturable membrane disposed across said neck portion at said indentation and providing a fluid seal between said mouth and said chamber to maintain a medicament in said chamber in a sterile condition.

4,130,118
CARTRIDGE DISPENSER FOR MEDICATING DOUCHE

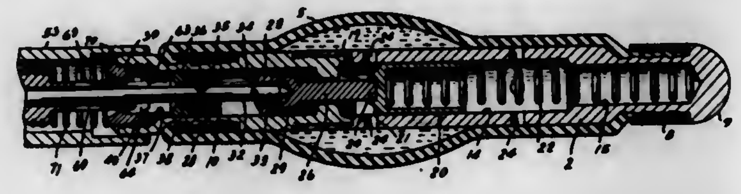
Jack E. McLaughlin, Yuba City, Calif., assignor to Andermac, Inc., Yuba City, Calif.
Filed May 25, 1977, Ser. No. 800,390
Int. Cl.^{2} A61M *3/00*
U.S. Cl. 128—229 **15 Claims**



1. In apparatus for making and dispensing an aqueous cleansing, sanitizing, and treating solution for application to body tissue within a body cavity, which apparatus contains a dispensing handle, an applicator nozzle, a cartridge containing water-soluble salts, and at least one normally closed valve, wherein said handle and said nozzle each defines separate portions of a conduit for the passage of water and said portions together define said conduit, the combination comprising: said cartridge disposed in said conduit; and means connecting said cartridge and said valve enabling said valve to open only if said cartridge is in place in said conduit.

4,130,119
OCCLUSION DEVICE

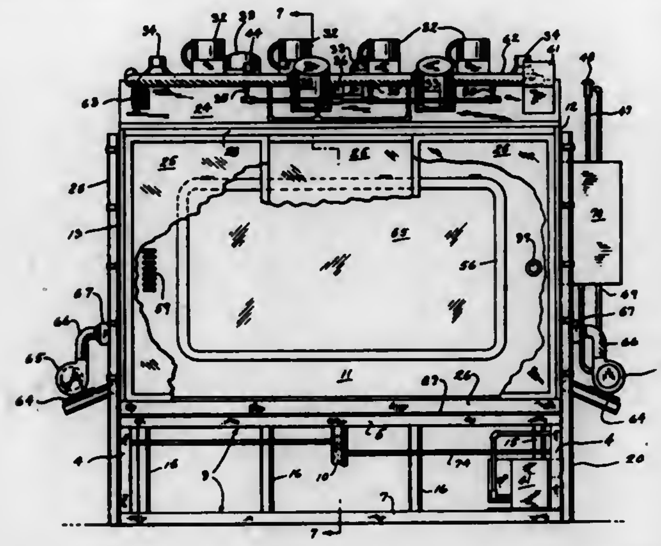
Robert W. Sessions, Hinsdale; Jerome Jeslis, Chicago, and Richard A. Rodzen, Bolingbrook, all of Ill., assignors to Barlow Mfg. Corp., Hinsdale, Ill.
Filed Apr. 1, 1977, Ser. No. 783,839
Int. Cl.^{2} A61M *25/00*
U.S. Cl. 128—325 **12 Claims**



1. A device for effecting occlusion of a blood vessel, in the form of an expandable balloon-type structure, comprising an elongated hollow, rigid body, closed at its distal end and open at its proximal end, a deformable balloon sleeve encircling the intermediate portion of and secured, at its ends, to the body in fluid-tight relation, the body having at least one opening therein connecting the hollow interior thereof with the balloon interior, a first valve member disposed in said body, adjacent the distal end thereof, and movable relative thereto, said valve member having a needle-engaging portion and a sealing portion, sealing means cooperable with said sealing portion to provide a seal between the interior of said hollow body and the exterior thereof, and spring means engageable with said valve member and a portion of the body for urging said valve member into sealing engagement with said sealing means, a second valve member, movable relative to, and disposed in said body between said first valve member and said opening to the balloon interior, said first valve member being movable relative to said second valve member, second sealing means operatively disposed between the inner end of said first valve member and the second valve member, said second valve member having a sealing portion cooperable with said second sealing means to provide a seal between said second valve member and said body, further spring means engageable with said second valve member and a portion of said body for urging said second valve member into sealing engagement with said second sealing means, such valve structures thus being operatively connected in series for cooperably providing connection between the balloon interior and open end of said body, said first valve means being engageable, upon movement thereof in opening direction, with said second valve member to move the latter in opening direction, whereby both valve members may be in open position, means at the open end of said body for guiding a hollow fluid supply needle into said body for engagement with said first valve member to move the latter in opening direction, and means carried by said body for effecting a fluid-tight seal between the open end of said body and such an inserted supply needle.

4,130,120
BATHING CHAMBER

Herbert V. Kohler, Jr., Kohler, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Apr. 11, 1977, Ser. No. 786,067
Int. Cl.^{2} A61H *33/06*
U.S. Cl. 128—373 **13 Claims**



1. In a bathing chamber the combination comprising:

an elongate enclosure having a ceiling, sides and an entry door with a lower sill extending along one lengthwise side;

a decking alongside said lower sill that extends across the length and width of the enclosure to support a user in prone and sitting positions with freedom of movement thereon;

an array of downwardly directed lamps associated with said ceiling and disposed above said decking to radiate downward with substantially uniform coverage of the decking; and

water sprays associated with said ceiling disposed above said decking to substantially uniformly shower the area of the decking.

4,130,121
POLYETHER POLYURETHANE FOAM END WRAP TREATED WITH BUFFER SYSTEM

Thomas A. Wetzel, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Mar. 31, 1977, Ser. No. 783,118
Int. Cl.^{2} A45D *7/00*
U.S. Cl. 132—7 **8 Claims**

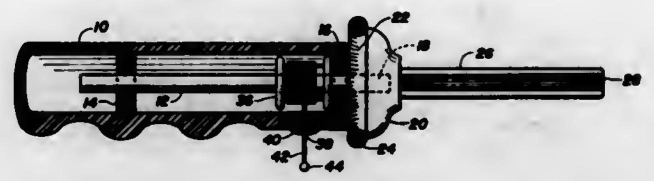
1. An end wrap for use in the permanent hair waving process, comprising:

A. a permeable flexible wafer of open-celled polyether polyurethane foam having:
  I. a thickness of from about one-sixteenth inch to about one-sixty-fourth inch,
  II. an average pore incidence within the range of from about 30 to 120 pores per linear inch; and

B. a solid, water-soluble buffer system contained in said wafer at a level of at least 50 milligrams of buffer system per cubic inch of foam, said buffer system comprising a mixture of:
  I. a water-soluble mono-basic orthophosphate salt, and
  II. orthophosphoric acid, wherein the buffer system has a pH of from about 2.5 to about 2.9 and wherein the weight ratio of phosphate moiety of the orthophosphate salt to the phosphate moiety of the orthophosphoric acid ranges from about 3:1 to about 5.4:1.

4,130,122
HAIR CURLER OPERATING DEVICE

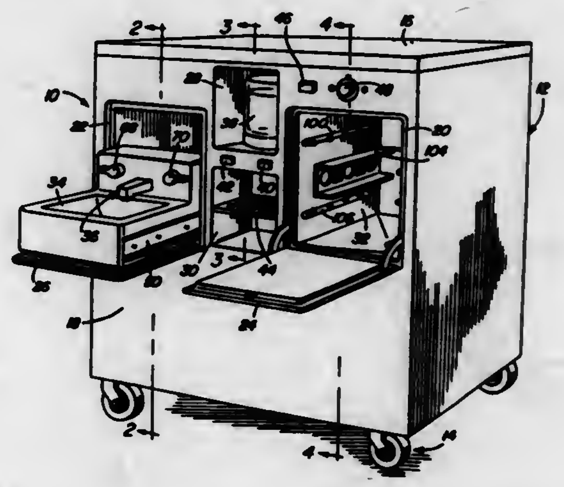
David J. Kennedy, R.D. #4, York, Pa. 17404
Filed Mar. 3, 1978, Ser. No. 883,140
Int. Cl.^{2} A45D *2/12*
U.S. Cl. 132—34 R **6 Claims**



1. A device to support a hair curler unit and rotate it to coil hair upon the curler comprising in combination, an elongated handle, a shaft rotatably supported at one end within bearings within said handle, and the opposite end projecting beyond one end of said handle, means on said opposite end of said shaft removably receiving a hair curler for rotation thereof by said shaft, a spool connected to said shaft adjacent one end of said handle, a flexible cord-like member coilable around said spool and operable to rotate said spool and shaft when said cord-like member is pulled to uncoil it from said spool, and a circular friction member fixed to said shaft and adapted to be rolled upon a surface while manually moving said handle relative to said surface to rotate said spool in a direction to coil said cord-like member upon said spool after the uncoiling of the same therefrom to rotate said shaft in a direction to coil hair upon a curler mounted upon said opposite end of said shaft.

4,130,123
PORTABLE NURSING DEVICE

Roy L. Wines, Jr., and Roy L. Wines, III, both of Southampton, N.Y., assignors to Roy L. Wines & Son, Inc., Southampton, N.Y.
Division of Ser. No. 681,493, Apr. 29, 1976, Pat. No. 4,072,157. This application Dec. 8, 1977, Ser. No. 858,859
Int. Cl.^{2} A47K *1/02*
U.S. Cl. 134—56 R **2 Claims**



1. In a portable nursing unit having a plurality of liquid receiving receptacles and a plurality of flexible conduits connected thereto through which liquid is conducted to and from said receptacles, a mobile cabinet enclosing the conduits and said receptacles, closure means mounted on the cabinet for alternately concealing and exposing two of said receptacles enclosed in the cabinet when displaced between closed and open positions, control valve means connected to two of said conduits for selectively supplying liquid to said receptacles, means connecting a third of the conduits to each of the receptacles for draining waste liquid therefrom, means responsive to movement of one of the closure means to the closed position for sealing one of the receptacles internally of the cabinet, and means rendered operative in response to movement of the other of the closure means to open position for supporting the

other of the receptacles externally of the cabinet, said other of the receptacles being displaceable between an extended position supported on the other of the closure means and a retracted position stored internally of the cabinet.

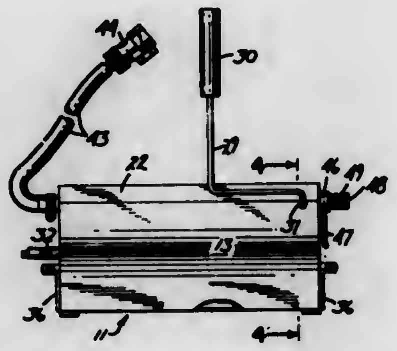
4,130,124
PAINT ROLLER CLEANER

Raymond H. Sherwin, 1521 Fourth Ave. NW., Jamestown, N. Dak. 58401

Filed Oct. 13, 1977, Ser. No. 841,664

Int. Cl.² B08B *3/02*

U.S. Cl. 134—138 **2 Claims**



1. A paint roller cleaner comprising:
(a) a housing having side walls and opposite end walls defining an elongated chamber for reception of a paint roller and a portion of a paint roller handle at one end of the paint roller;
(b) a tubular inlet manifold extending along one side of said chamber and mounted in said housing for pivotal movements on its own axis, said tubular manifold having opposite end portions extending through said end walls for connection of one of said end portions to a source of pressurized cleaning liquid;
(c) said side walls defining discharge aperture means generally opposite said manifold;
(d) and a handle fixed to the other one of the end portions of said manifold for imparting pivotal movements to said manifold to vary the direction of discharge of cleaning liquid against the surface of a paint roller rotatably disposed in said chamber.

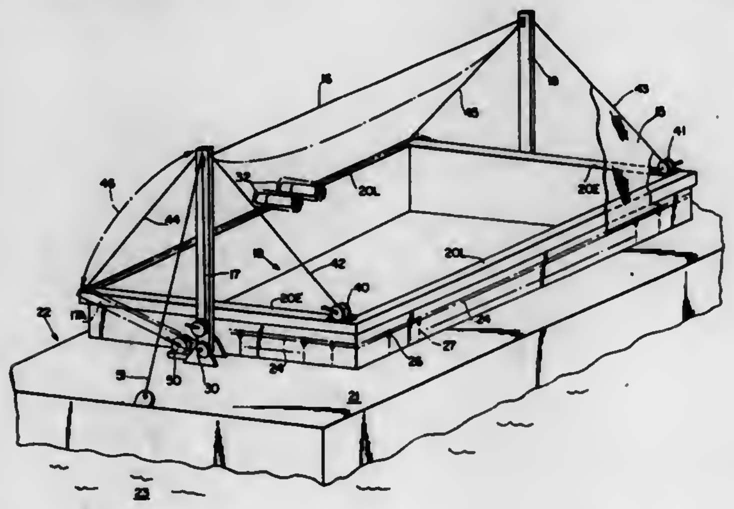
4,130,125
LIGHT-WEIGHT, EASY-ERECTING BARGE HATCH COVER

James E. Nivin, Louisville, Ky., assignor to American Commercial Barge Line Company, Jeffersonville, Ind.

Filed Sep. 8, 1977, Ser. No. 831,648

Int. Cl.² B63B *19/14*

U.S. Cl. 135—6 **7 Claims**



1. In a barge having an open hatch with a coaming therearound, the improvement comprising a hatch cover assembly provided with two spaced ridge poles positioned to support above the hatch coaming a light-weight weatherproof fabric covering over the hatch in a pup-tent like array wherein the ridge poles are movably supported for stowing in a lowered position, when not in use to support the fabric, the movable support for the ridge poles comprises a pivot assembly positioned on the barge deck amidships at respective fore and aft ends of the hatch coaming and including two support stays attached to the coaming at port and starboard sides, and one of the stays is attached to a tightening winch that permits the pole to be moved by the winch from a lowered pivot position alongside the respective fore and aft coamings to an upright midships position with taut stays.

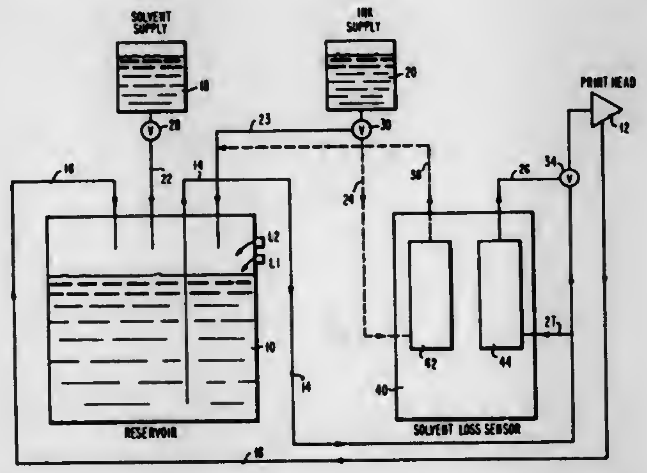
4,130,126
INK MAINTENANCE SENSOR

Warren L. Chocholaty; Robert K. Evans, both of San Jose, and Francis J. Perry, Morgan Hill, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1977, Ser. No. 801,689

Int. Cl.² G05D *11/06*

U.S. Cl. 137—3 **8 Claims**



6. Method for changing the concentration of a fluid, comprising the steps of:
determining the difference in the rate of fall of heavy floats in reference and working fluid solutions,
adding fluid to the working solution when said difference exceeds a predetermined value.

4,130,127
ACCUMULATOR CHANGING VALVE

Ludwig Budecker, Frankfurt am Main, and Anton David, Goetzenhain, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.

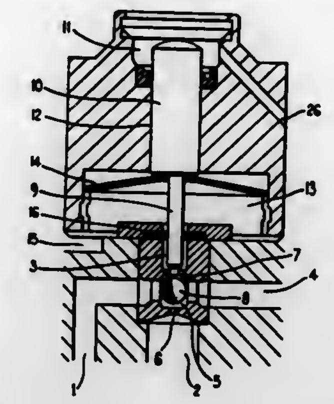
Filed Jun. 3, 1977, Ser. No. 803,176

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1976, 2625555

Int. Cl.² G05D *15/00*

U.S. Cl. 137—101 **12 Claims**

1. A valve for connecting a user port with a pressure port or a return port comprising:
a valve chamber connected to said user port, said pressure port, said return port and an accumulator port, said return port and said pressure port opening diametrically opposite each other in said valve chamber and said user port and said accumulator port opening diametrically opposite each other in said valve chamber at right angles to said return port and said pressure port;
each of said return port and said pressure port having an orifice in said valve chamber acting as a valve seat;
a closure member disposed in said valve chamber;
a slidable piston associated with said return port acted upon by pressure in opposition to the force of a spring disposed adjacent said return port, said piston shifting said closure member from a first into a second valve position, said closure member interrupting the connection between said return port and said user port in said first valve position and interrupting the connection between said pressure port and said user port in said second valve position; and
a throttle disposed in said return port spaced from said valve seat.



4,130,128
BALL VALVE WITH ORIFICE

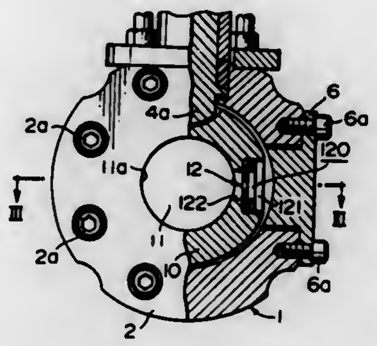
Shiro Kaneko, Fujimiya, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 596,953, Jul. 17, 1975, abandoned. This application Jan. 17, 1977, Ser. No. 760,021

Claims priority, application Japan, Jul. 17, 1974, 49-85275[U]

Int. Cl.² F16K *5/10*

U.S. Cl. 137—269 **2 Claims**



1. A ball valve comprising a valve housing, a fluid flow passage communicated with said valve housing on the opposite sides thereof, a ball having a first through hole for rough control of fluid flow rotatably provided in said valve housing, said ball being rotatable about an axis extending through the center thereof and extending at a right angle with respect to the first through hole and said fluid flow passage, said first through hole being brought into communication with said fluid flow passage by the revolution of the ball, a means for revolving said ball about said axis, a second through hole of smaller diameter than said first through hole extending through said ball at a certain angle with said first through hole in a plane including said through hole and extending perpendicular to said axis of revolution, and an interchangeable orifice for fine control of fluid flow removably mounted in said second through hole whereby rough or fine control of fluid flow is selectively conducted by selectively bringing one of said through holes into communication with said fluid flow passage, said orifice comprising an orifice plate having an orifice opening and an orifice holding member screwed into said fluid passage to hold said orifice plate in the fluid passage, and said valve housing being provided with a removable cover on one side thereof so that the orifice can be interchanged with a different orifice.

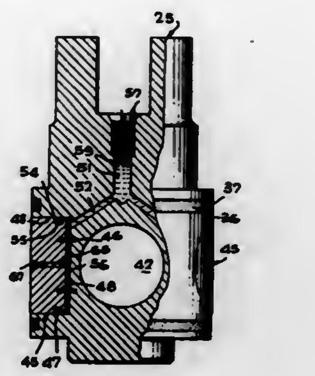
4,130,129
PLUG VALVE

Jack H. Pollock, 1428 W. 132nd St., Gardena, Calif. 90249

Filed Nov. 21, 1977, Ser. No. 853,112

Int. Cl.² F16K *35/00*

U.S. Cl. 137—385 **9 Claims**



1. A rotary plug valve comprising:
a casing having inlet and outlet ducts therein;
a valve body rotatable in said casing in fluid-tight abutment with said ducts and having a port therethrough conformed to communicate between said ducts;
recesses in said valve body in registry with said ducts;
sealing plugs removeably seated in and sealing said recesses and defining fluid-tight chambers between said plugs and said recesses;
a fluid reservoir within said valve body containing an hydraulic fluid;
fluid passageways communicating between said reservoir and said fluid chambers;
a piston in said valve body operatively connected to said reservoir for applying controlled pressure to the hydraulic fluid in said reservoir; and
drive means in the valve body controllably moving said piston against said hydraulic fluid and thereby urging said sealing plugs into intimate abutment with said inlet and outlet ducts.

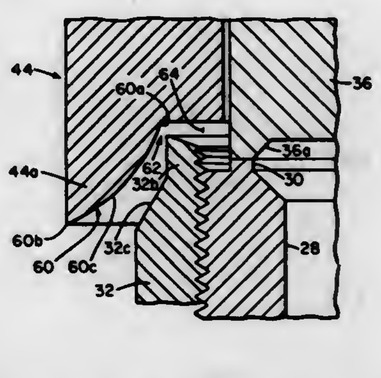
4,130,130
VALVE WITH VARIABLE SECONDARY ORIFICE

Robert D. Stewart, Greenville, R.I., and James A. Schretter, Framingham, Mass., assignors to Crosby Valve & Gage Company, Wrentham, Mass.

Filed Nov. 15, 1976, Ser. No. 741,667

Int. Cl.² F16K *17/20*

U.S. Cl. 137—475 **7 Claims**

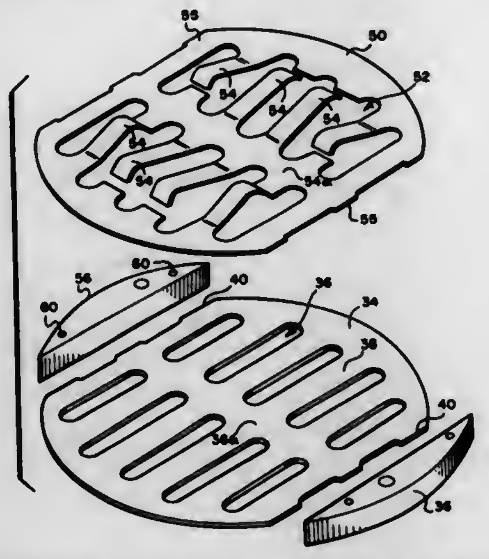


1. In a valve of the type having an annular valve seat fixed in a valve body, the body providing a fluid path through the seat between an inlet and an outlet, and a movable valve head engageable with the seat and movable away from the seat in response to urging of fluid pressure above a predetermined amount of said inlet, the combination with said body of
nozzle means of generally tubular configuration in said fluid path, communicating interiorly with said inlet and having an end portion defining said seat and an annular outer edge portion external to the seat, and

a valve head having an central surface formed to close on the seat, an annular intermediate surface extending radially outwardly from the central surface, and a shroud surface extending radially outwardly from the intermediate surface and having a portion forming with said outer edge portion a variable annular secondary orifice, said surfaces forming with said nozzle means a huddle chamber communicating interiorly with the seat, the secondary orifice communicating between the huddle chamber and the outlet and comprising a restriction in said fluid path, the shroud surface being curved to vary the cross sectional area of said restriction from a minimum valve smaller than that of any restriction within the huddle chamber external to said seat with said central surface in a closed position on the seat to a maximum valve with said central surface at a predetermined maximum spaced position from the seat, the rate of change of said cross sectional area as a function of the spacing between said central surface and the seat increasing from said closed position toward said maximum spaced position, and the cross sectional area of said restriction being smaller than that defined between said central surface and the seat at positions of said central surface above an initial value upon movement from said closed position between said closed and maximum spaced positions.

4,130,131
COMPRESSOR VALVE

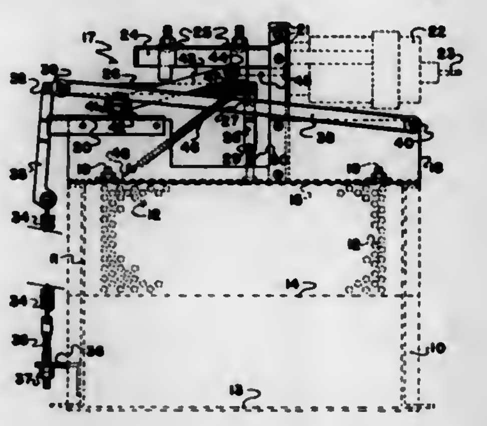
Jerzy Kaceaty, 49 Edgebrook Cres., Bramalea, Ontario, Canada
Filed Jun. 4, 1976, Ser. No. 693,105
Int. Cl.² F16K *15/02*
U.S. Cl. 137—512.1 5 Claims



4. A one-piece spring means for use in a plate-type valve and which comprises:
a generally planar spine having terminal end guide surfaces;
generally planar end members integrally formed with said spine, essentially coplanar therewith and extending generally perpendicularly thereto at each end thereof and in both directions therefrom;
generally planar side members integrally formed with respective ones of said end members on opposite sides of said spine, essentially coplanar with said spine, extending generally parallel thereto and having terminal end guide surfaces essentially co-linear with respective ones of said end guide surfaces of said spine;
a plurality of resiliently flexible fingers integrally formed with said spine, extending generally perpendicularly from said spine on both sides thereof toward respective ones of said side members and terminating outwardly of said spine but inwardly of respective ones of said side members; and
a plurality of resiliently flexible fingers integrally formed with said side members, extending generally perpendicularly therefrom toward said spine and terminating outwardly of said spine, all of said fingers terminating at positions which are offset from the principal plane of said spine.

4,130,132
CONSTANT VOLUME REGULATOR WITH ADJUSTABLE LOAD MEANS

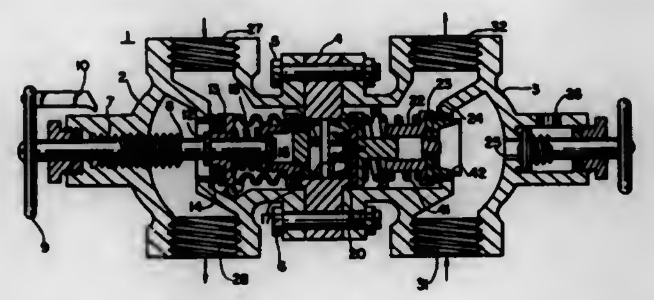
Anthony J. Côté, Shawbridge, Canada, assignor to E. H. Price Limited, Winnipeg, Canada
Filed Mar. 24, 1977, Ser. No. 780,964
Claims priority, application United Kingdom, Aug. 31, 1976, 35980/76
Int. Cl.² F16K *15/14, 17/30*
U.S. Cl. 137—512.15 24 Claims



1. A control volume regulator for use with air supply systems which include at least one terminal unit having a volume regulator housing and a flexible curtain control assembly situated in said housing and a source of control air for said regulator; the improvement comprising in combination an actuating rod for said flexible curtain control assembly, operatively connected thereto, means to control the range of movement of said curtain, said means including supporting structure, a lever arm pivotally connected by one end thereof to said actuating rod, fulcrum means on said supporting structure, supporting said lever arm and adjustable load means operatively connected to the other end of said lever arm, said adjustable load means including a tension spring extending between said other end and an anchor point, and means to adjust the tension in said spring.

4,130,133
BYPASS VALVING FLUID CONTROL ARRANGEMENT

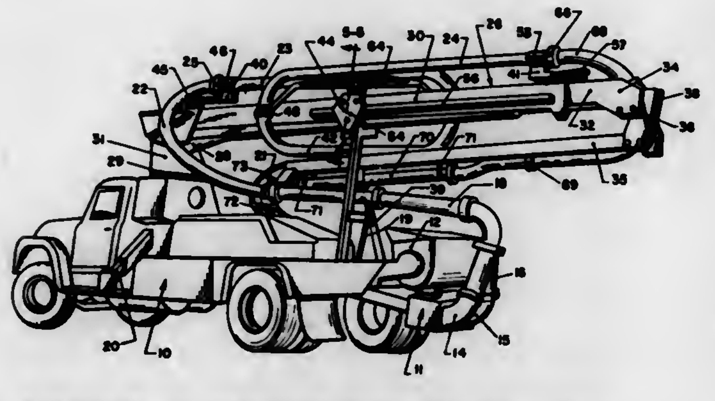
Timothy J. Sullivan, Butte, Mont., assignor to The Sullivan Valve & Engineering Company, Butte, Mont.
Filed Nov. 11, 1976, Ser. No. 741,116
Int. Cl.² F16K *11/18*
U.S. Cl. 137—599.1 10 Claims



1. A bypass valving fluid control arrangement for cooperation with a fluid treatment device by which fluid from a pressure fluid source is treated and made available to its point of use, said arrangement comprising
a body having a plurality of chambers;
a first inlet adapted to be connected to said fluid source and opening into a first of said chambers;
a first valve means within said first chamber controlling the flow of fluid from said first inlet to a first outlet which is adapted to be connected to said fluid treatment device;
a second of said chambers in said housing;
a second valve means for controlling the flow of fluid from said first chamber to said second chamber;
said first and second valve means being mounted on and controlled by a common valve stem;
manual means for controlling the operation of said valve stem;
a third of said chambers in said housing;
a second inlet adapted to be connected to said treatment device and opening into said third chamber;
a second outlet from said third chamber adapted to be connected to said point of use;
third valve means in said third chamber controlling the flow of fluid from said second inlet to said second outlet;
a fourth valve means for controlling the flow of fluid from said second chamber to said third chamber;
said third and fourth valve means being mounted for relative motion therebetween;
first spring means, said first spring means being mounted with respect to both said third and fourth valve means for biasing both said third and fourth valve means to closed position;
both said third and fourth valve means being provided with fluid pressure responsive surfaces either of which responsive to a predetermined pressure is operative to open its respective valve means against the force of said spring means;
whereby when said manual means is actuated to open said first valve means and to close said second valve means fluid pressure is supplied to said treatment device and the resulting pressure in said third chamber opens said third valve means to connect said second inlet to said second outlet and when said manual means is actuated to close said first valve means and to open said second valve means the resulting pressure in said second chamber opens said fourth valve means to bypass said treatment device, the arrangement being further characterized in that
said first and second valve means are slidably mounted on said valve stem, a second spring means being mounted on said valve stem between said first and second valve means and biasing said first and second valve means away from each other and against stops mounted on said valve stem, whereby said first and second valve means are positively actuated in one direction by said valve stem and its respective stop and in the opposite direction by said second spring means.

4,130,134
MATERIAL CONVEYING APPARATUS

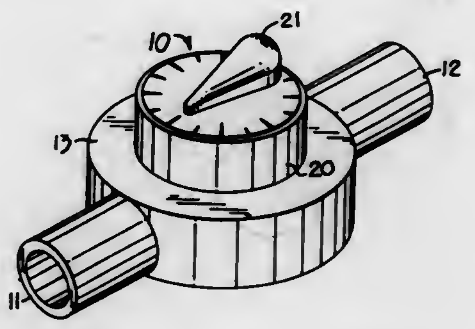
Harold J. Castle, Yankton, S. Dak., assignor to Morgen Manufacturing Company, Yankton, S. Dak.
Filed Dec. 13, 1976, Ser. No. 749,798
Int. Cl.² B67D *5/64;* F16L *3/00*
U.S. Cl. 137—615 20 Claims



1. Apparatus for conveying materials comprising:
first and second support means spaced from each other and movable linearly with respect to each other along a longitudinal axis extending through said first and second support means;
third support means comprising at least one support member disposed between said first and second support means and movable linearly with respect to said first and second support means along said longitudinal axis; and a material conveying conduit comprising:
a first relatively rigid conduit section connected with and supported by said first support means near one end of said first conduit section,
a second relatively rigid conduit section connected with and supported by said second support means near one end of said second conduit section, and
a third conduit section having one of its ends swivelly connected to the other end of said first conduit section about a swivel axis and the other of its ends swivelly connected to the other end of said second conduit section about a swivel axis, said third conduit section including at least one relatively rigid intermediate conduit member, each of said swivel axes being generally perpendicular to and laterally spaced from said longitudinal axis with adjacent swivel axes being spaced laterally from each other and spaced laterally on opposite sides of said longitudinal axis, and said one intermediate conduit member being supported between its ends by a corresponding one of said support members about an axis generally parallel to said swivel axes.

4,130,135
AUTOMATIC LIQUID FLOW CONTROL DEVICE

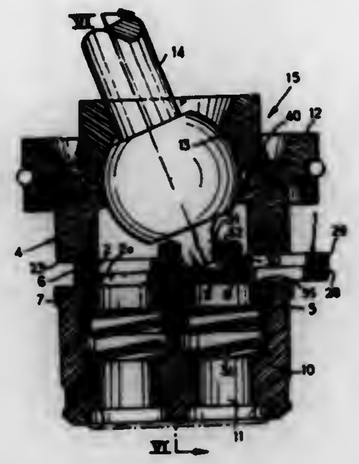
Donald D. Moore, 5716 Benton Ave. S., Minneapolis, Minn. 55436
Filed Jul. 11, 1977, Ser. No. 814,173
Int. Cl.² A01G *27/00*
U.S. Cl. 137—624.11 6 Claims



1. An automatic water flow control valve for installation in a water supply line comprising:
(a) housing means including cylindrical wall means, inlet means and outlet means;
(b) paddle wheel means rotatably positioned within said cylindrical wall means, said paddle wheel means having a plurality of generally radially extending paddles, at least two of said paddles contacting the inner surface of said cylindrical wall means in a water-tight fit; said paddle wheel being adapted for rotating in response to a flow of water admitted through said inlet means;
(c) engagement means adapted for engaging said paddle wheel means to prevent said paddle wheel means from rotating thereby preventing water from flowing through said control valve, said engagement means being adapted for disengaging said paddle wheel means to permit rotation of said paddle wheel means thereby permitting water to flow through said control valve; and
(d) timing means adapted to operatively drive said engagement means.

4,130,136
MIXING TAP

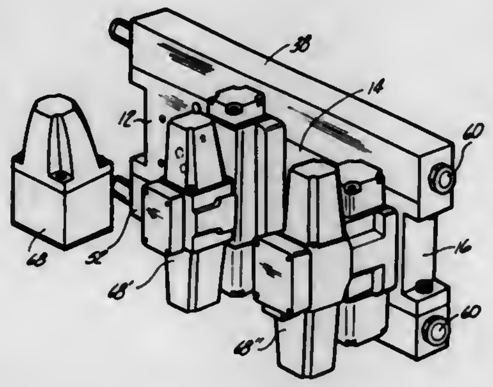
Régis Garnier, and Claude Delpla, both of Reims, France, assignors to Societe Generale de Fonderie, Paris, France
Filed Mar. 18, 1977, Ser. No. 779,143
Claims priority, application France, May 4, 1976, 76 13257
Int. Cl.² F16K *11/06*
U.S. Cl. 137—625.41 **11 Claims**



1. A mixing tap comprising a movable obturator provided with two flow orifices and placed between an abutment member and two nozzles for the admission of hot water and cold water over which the obturator is capable of sliding, wherein the obturator is provided with a plastic shoe covered by a metallic shell on which the nozzles are applied in leak-tight manner, that face of said shell on which the nozzles are applied being covered with a coating of self-lubricating polymer.

4,130,137
FLUID DISTRIBUTION SYSTEM

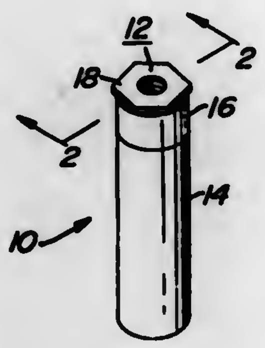
William G. Lane, 34380 Mercer La., Fraser, Mich. 48026
Filed Jul. 20, 1977, Ser. No. 817,157
Int. Cl.² F15B *13/08*
U.S. Cl. 137—884 **8 Claims**



1. A fluid distribution system comprising
- at least two fluid distribution plates, each plate having two side surfaces, a top and bottom surface and a front and a back surface,
- a fluid inlet port means formed in one side of each distribution plate,
- a fluid outlet port means formed in the other side of each distribution plate,
- means for mounting fluid control means on each base plate,
- means for mounting said fluid distribution plates end to end and adjacent each other,
- a first fluid manifold having at least two outlet ports and first means for fastening said first manifold to one side of said distribution plates whereby said first manifold outlet ports fluidly communicate with said fluid inlet port means on said distribution plates, and
- a second fluid manifold having at least two inlet ports and second means for fastening said second manifold to the other side of said distribution plates whereby said second manifold inlet ports fluidly communicate with said fluid outlet port means on said distribution plates.

4,130,138
MOLDED STAND-OFF

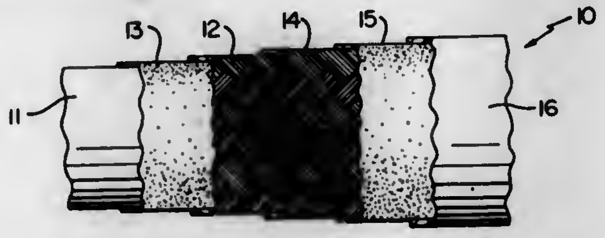
Kenneth A. Swanstrom, Buckingham Township, Bucks County, Pa., assignor to Penn Engineering & Manufacturing Corp., Danboro, Pa.
Filed May 31, 1977, Ser. No. 802,116
Int. Cl.² F16B *09/00, 37/04*
U.S. Cl. 138—109 **4 Claims**

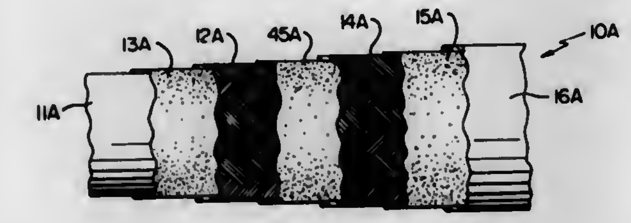


1. A stand-off comprising
a base defining a head and a cylindrical post between which is an undercut groove formed on said post, said head overhanging said post, said undercut groove receiving material displaced by said head from a sheet in which said head is to be embedded, said post having an end portion opposite said head of a smaller outer diameter than the remainder of said post, a tube bonded to said end portion of smaller diameter and of a material which is softer than the material of said base and which has a substantially lower melting point than the material of said base.

4,130,139
FLEXIBLE HOSE CONSTRUCTION AND METHOD OF MAKING SAME

Doyle V. Haren, Clyde, N.C., assignor to Dayco Corporation, Dayton, Ohio
Filed Jul. 13, 1977, Ser. No. 815,615
Int. Cl.² F16L *11/08*
U.S. Cl. 138—125 **8 Claims**

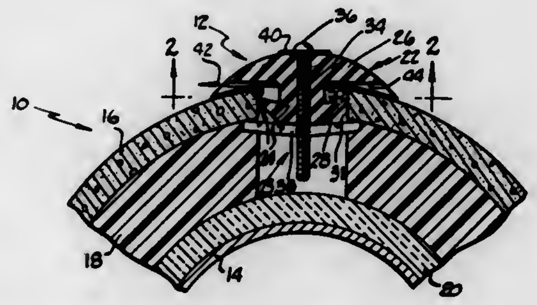




1. A flexible hose construction comprising a flexible nylon-11 base tube, a braided reinforcing layer disposed around said base tube, and a layer of adhesive means between said base tube and reinforcing layer consisting of a mixture of a urethane prepolymer and a cross-linking material, said cross-linking material comprising 4, 4' methylene-bis-chloroaniline, said layer of adhesive means being a solely ambient air cured adhesive means and comprising the sole means bonding said braided reinforcing layer and said base tube yet providing a tenacious bond therebetween.

4,130,140
HEAT INSULATED CONDUIT ESPECIALLY SUITABLE FOR CARRYING HIGH TEMPERATURE FLUIDS

Ronald N. Cerny, Littleton; Walter B. Peters, Englewood; Thomas H. Sadler, Morrison; Peter Rodrigo, and George M. Mollick, both of Littleton, all of Colo., assignors to Johns-Manville Corporation, Denver, Colo.
Filed Oct. 8, 1976, Ser. No. 730,775
Int. Cl.² F16L *9/14*
U.S. Cl. 138—149 **6 Claims**

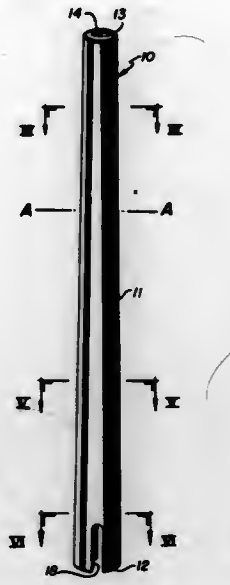


1. In a conduit for carrying high temperature fluid under pressure which conduit includes an outer casing, a concentric inner core and a concentric layer of insulation material therebetween, the improvement comprising means for passing moisture, said moisture being within said layer of insulation material and under a predetermined amount of pressure, to the ambient surroundings of said conduit, along a predetermined path directly through said outer casing, said means also preventing fluid in said ambient surroundings from passing into said layer of insulation material along said path, wherein said means includes a body member constructed of a resilient material and located within said outer casing, said body member includes a circumferential fin integral with and extending out from said body member filling said path through said outer casing, said fin movable between a biased first position for maintaining said path closed in the absence of said moisture under pressure in said layer of insulation material and a second position for opening said path to the passage of said fluid in the presence of said moisture under.

4,130,141
PICKER STICK

F. William Alley, Elmore, Vt., assignor to Page Belting Company, Concord, N.H.
Filed Nov. 23, 1977, Ser. No. 854,475
Int. Cl.² D03D *49/38*
U.S. Cl. 139—157 **7 Claims**

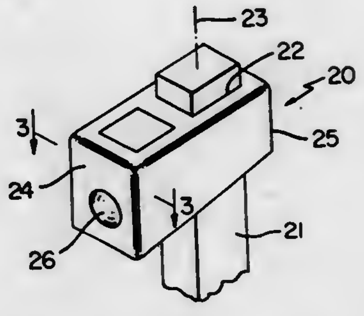
1. A picker stick for use in a fly shuttle loom, comprising:
(a) an elongated main body adapted to swing in the vertical plane of the shuttle motion, the main body having an outside surface which tapers from a larger lower end to a smaller upper end, a bore extending through a substantial portion of the length of the main body is ovate in cross section with the major axis extending in the direction of said plane of the shuttle motion, and



(b) a body of sound and vibration-absorbing material lying in the bore.

4,130,142
LOOP PICKER

Mayo B. Tell, Asheville, N.C., assignor to Dayco Corporation, Dayton, Ohio
Filed Dec. 9, 1977, Ser. No. 858,920
Int. Cl.² D03D *49/36*
U.S. Cl. 139—159 **19 Claims**



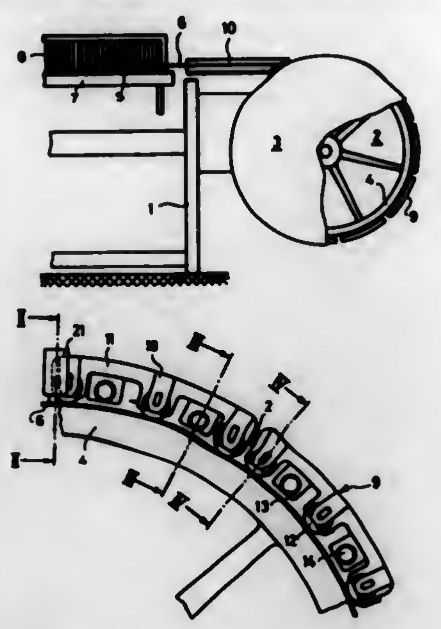
1. In a loop picker having at least one face block and a plurality of laminated fabric layers including laminated fabric layers disposed around said face block and laminated fabric layers defining a picker stick receiving passage which has a central longitudinal axis, the improvement wherein at least one of said face block and plurality of laminated layers is comprised of triaxial fabric, said triaxial fabric being defined by three angularly displaced sets of parallel courses of yarn interwoven to prevent slippage of at least one yarn course set along any other yarn course set.

4,130,143
BAND GUIDE ROLLER FOR BAND-GRIPPER LOOMS

Viktor Smutny, Wetzikon, Switzerland, assignor to Ruti Machinery Works Ltd, Ruti, Switzerland
Filed Sep. 16, 1977, Ser. No. 833,829
Claims priority, application Switzerland, Oct. 1, 1976, 12365/76
Int. Cl.² D03D *47/00*
U.S. Cl. 139—449 **9 Claims**

1. A band-gripper loom having a band wheel for the driving of an insertion band in an oscillating manner and having band guide rollers supported on a housing surrounding the band wheel, said guide rollers preventing the insertion band from lifting off from the band wheel, said improvement providing

band guide rollers having ball bearings mounted on said housing, each ball bearing having an inner and an outer race and

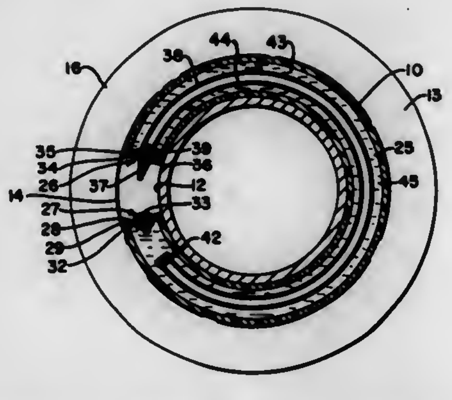


each band guide roller operatively supported on the inner race of said ball bearing.

4,130,144

APPARATUS AND METHOD FOR DISPENSING FLUID WITHIN A TIRE

James T. Harris, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 12, 1976, Ser. No. 731,217
Int. Cl.² B60C *17/00;* B65B *3/04*
U.S. Cl. 141—9 **19 Claims**

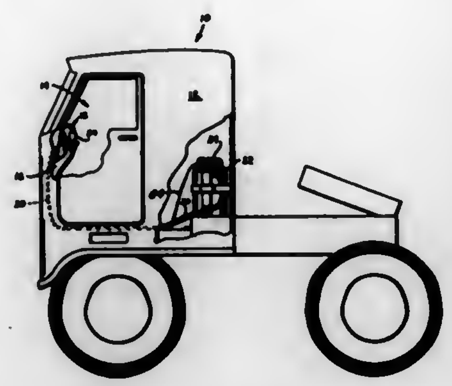


16. A method of dispensing liquid fluid from a container mounted on a rim of a tire rim assembly into a tire cavity enclosed by the tire and rim, said container having a divided chamber, a pressure-transmitting means in said chamber, first one-way valve means for releasing a liquid fluid medium from said chamber and second one-way valve means for automatically communicating a gaseous fluid medium from said tire cavity into said chamber when the pressure in said tire cavity is greater than the pressure in said chamber by a first predetermined amount comprising placing a quantity of liquid fluid medium in a first section of said divided chamber, increasing the pressure of said gaseous fluid medium in said tire cavity by inflation causing injection of said gaseous fluid medium into a second section of said divided chamber at a first predetermined pressure, retaining said gaseous fluid medium in said chamber by said second one-way valve means when the differential beween the pressure of said gaseous fluid medium inside and outside said container is under a second predetermined amount and releasing said liquid fluid medium into said tire cavity from said container through said first one-way valve means when said pressure differential is greater than said second predetermined amount whereby said liquid fluid medium is released into said tire cavity when the pressure in said tire cavity is reduced below a certain level.

4,130,145

LIQUID DISPENSER FOR VEHICLE AND THE LIKE

Paul E. Thomas, Jr., 3421 Louise St., Hapeville, Ga. 30334
Filed Oct. 19, 1977, Ser. No. 843,526
Int. Cl.² B65B *3/04*
U.S. Cl. 141—88 **10 Claims**

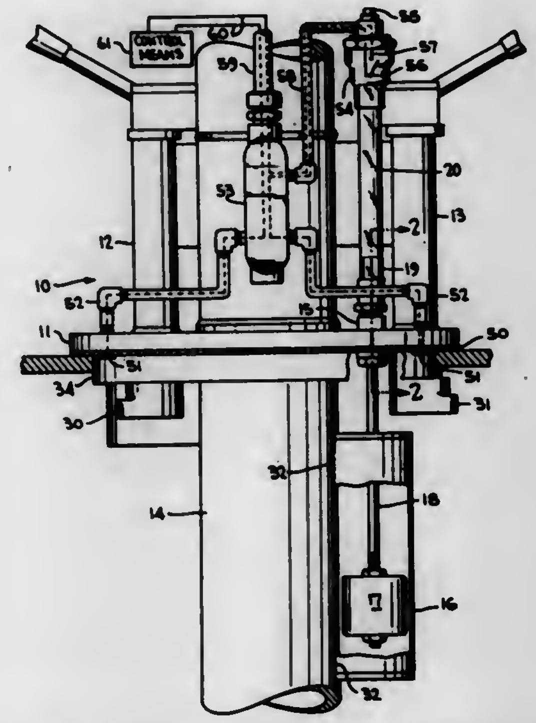


1. In a dispensing device for vehicles:
an insulated container mounted on said vehicle and having a supply of liquid such as cool water contained therein,
a small electrically operated pump mounted on said container for pumping liquid therefrom,
a liquid conduit leading from said pump to a remote point on said vehicle,
a dispensing outlet mounted within the vehicle operator compartment,
a cup support mounted adjacent said outlet for supporting a drinking cup thereon to receive a quantity of liquid dispensed from said outlet,
pump actuation means on said cup support for actuation to operate said pump,
and switch means operated by said pump actuator means for electrically connecting said switch means to said pump on said container whereby liquid is dispensed into said cup.

4,130,146

VISUAL LEVEL INDICATOR

Ronald A. Dunster, 36 S. Whittier St., Carteret, N.J. 07008, and John A. Savage, 1111 Crandon Blvd., Key Biscayne, Fla. 33149
Filed May 23, 1977, Ser. No. 799,609
Int. Cl.² B65B *3/26*
U.S. Cl. 141—96 **4 Claims**



1. A coupling apparatus for use in a system for transferring liquids from a storage tank to the tank of a vehicle wherein the tank of the vehicle has an upwardly facing horizontal manhole means, comprising:

(a) a plate;
(b) said plate having a downwardly extending annular flange having a diameter whereby said flange may fit into said manhole with a relatively snug fit;
(c) said plate having at the underside thereof an annular gasket and external of said flange whereby said gasket at the otherside thereof is in confronting relationship with an edge portion of said manhole means when the apparatus is in place;
(d) manually operated means on the upper side of said plate and extending therethrough and terminating in means for compressively locking said plate and said manhole together in a fluid tight manner;
(e) electrical sensors positioned in said annular gasket to sense that said coupling apparatus has been positioned in a fluid tight means and to prevent liquid flow if said coupling apparatus is not fluid tight;
(f) a drop tube having one end terminating above said plate adapted and constructed to be connected to a source of liquid, the distal end extending through said plate and terminating thereinunder;
(g) visual level indicator means attached to the upperside of said plate;
(h) said indicator means including a rod fluidly tightly extending through said plate and terminating with a float adapted and constructed to float on said liquid in said tank of the vehicle when said tank is almost filled;
(i) a shroud attached to said drop tube adapted and constructed to protect said float while permitting access of said liquid to said float;

wherein said visual level indicator means includes said rod having a visible top portion and a tubular sight tube which terminates in a housing having mounted thereon a normally open electric switch means adapted and constructed to be closed by the top portion of said rod when said rod is driven upwardly when the liquid level in the tank in the vehicle is to a desired level thereby preventing further delivery of said liquid.

4,130,147

FUNNEL WITH SPOUT EXTENSION SUPPORT

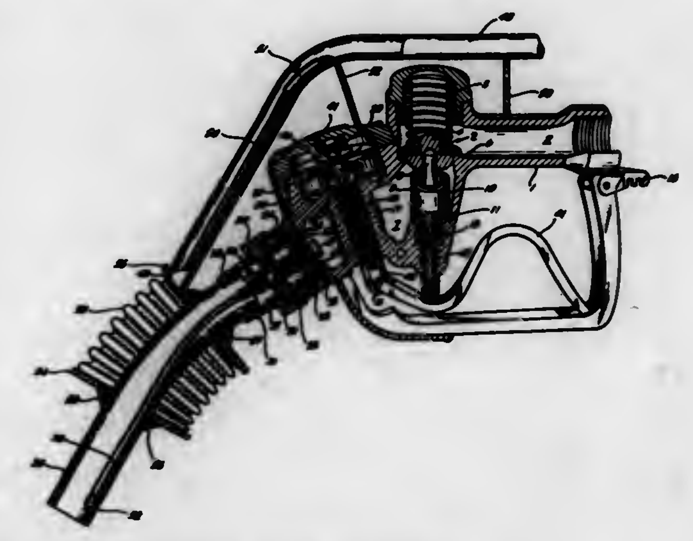
Howard Langlie, and Albert T. Berg, Jr., both of Ellendale, Minn. 56026
Filed Aug. 19, 1977, Ser. No. 825,918
Int. Cl.² B65B *39/00*
U.S. Cl. 141—98 **7 Claims**

1. In a plastic funnel including a body having a smaller end forming an outlet and further including a spout extension detachably engageable within the smaller end of said body, said spout extension having a coupling end and an angled tubular section forming a circular discharge end remote from said coupling end, a support for the spout extension comprising a ring integral with said body and projecting therefrom, said ring having an opening therein for receiving said discharge end of said spout extension and said discharge end of said spout extension being substantially the same size as said ring opening, and a plurality of angularly spaced fingers on said ring engageable with angularly spaced portions on said discharge end of said extension.

4,130,148

AUTOMATIC SHUT-OFF LIQUID DISPENSING NOZZLE

James L. Keller, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Jul. 1, 1976, Ser. No. 701,575
Int. Cl.² B65B *3/18, 31/06*
U.S. Cl. 141—218 **7 Claims**



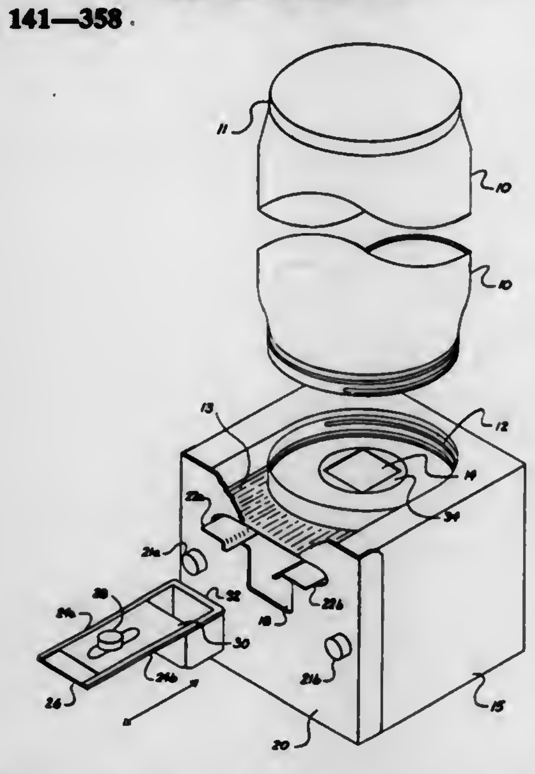
1. A liquid dispensing nozzle comprising:
(a) a body having an inlet port, a discharge port, and a liquid communication passageway housed within said body connecting said inlet port and said discharge port;
(b) a valve within said body for controlling the flow of liquid through said liquid communication passageway;
(c) operating means for opening and closing said valve;
(d) a venturi, situated within said liquid communication passageway, said venturi having a throat opening thereinto for the aspiration of gases into a liquid passing through said liquid communication passageway;
(e) vapor transporting means comprising:
  (1) means, mounted on said body, for collecting vapors displaced from a receiving vessel during the filling thereof with liquid passing through said discharge port; and
  (2) a vapor removal line connected at one end in vapor-tight engagement with said vapor collecting means and adapted at the other end to be connected to means for removing vapors transported through said vapor removal line;
(f) a gas communication passageway connecting said venturi throat opening with a first and second orifice through which gases are drawn into said gas communication passageway when liquid is passing through said discharge port, said first orifice being disposed adjacent to said discharge port so that gases in said gas communication passageway are in communication with fluids surrounding said discharge port, and said second orifice being disposed in said vapor removal line such that said gas communication passageway is in fluid communication with said vapor transporting means, said second orifice being disposed in said vapor removal line and connected to said gas communication passageway by (1) a rigid tube terminating in said second orifice and (2) means, in fluid communication with

said tube and the remainder of said gas communication passageway, for flexibly mounting said tube within said vapor removal line such that that end of said tube containing said second orifice is free to fall by gravity to a position within said vapor removal line such that a liquid passing through said vapor removal line must flood said second orifice; and

(g) means for activating said operating means to close said valve when either of said orifices is filled with liquid, said activating means comprising (1) a chamber, housed within said body of said nozzle, which chamber is divided by a pressure responsive diaphragm into a first and second chamber, said first chamber being a portion of said gas communication passageway, and (2) means, attached to said diaphragm, for closing said valve in response to the flexing of said diaphragm into said first chamber when a reduced pressure, caused by the suction produced by said venturi when liquid passes therethrough and either of said orifices is filled with liquid, is present in said first chamber.

4,130,149
COFFEE DISPENSER

Leonard P. Hausam, 6801 50th Ave. N., Crystal, Minn. 55428
Filed Jul. 25, 1977, Ser. No. 818,568
Int. Cl.² B65B *1/06*
U.S. Cl. 141—358 **8 Claims**



1. A dispenser for dispensing a measured volume of granular material, the dispenser comprising:

a supply container for containing the granular material;

a plate fixed at the bottom of the supply container and having a dispensing opening;

a pair of horizontally disposed slide rails fixed to a bottom surface of the plate on opposite sides of the dispensing opening, the slide rails and the bottom surface of the plate together defining a horizontally disposed slide track underlying the supply container, the slide rails extending in front of a front edge of the plate to form a guiding path into the slide track;

slide closure means mounted in the slide track and positioned to slide along the bottom surface of the plate in surface to surface contact therewith;

spring means for normally holding the slide closure means in closed position underlying the dispensing opening;

a separate measuring cup member for insertion into and movement along the slide track, the measuring cup member having a handle on the outer end thereof, a pair of laterally extending flange elements on the sides thereof adapted to be received in the slide track and to position the top edges of the measuring cup member in sliding coplanar engagement with the bottom surface of the plate when the measuring cup member is inserted into the slide track, and a bumper element on the inner end thereof for engaging the slide closure means and moving the slide closure means to an open position when the measuring cup member is inserted into and moved along the slide track;

a base for receiving and holding the supply container at the bottom thereof, the base having an opening through which a granular material may pass, wherein the plate is fixed at the bottom of the base and the dispensing opening corresponds at least in part to the opening in the base;

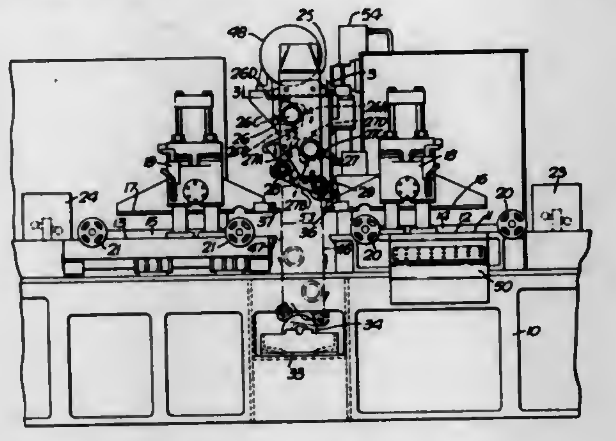
a housing for containing the base, the plate, the slide rails, the slide closure means, and the spring means;

a removable front panel connected to the housing and having an opening therein through which the measuring cup member may be inserted, the removable front panel being connected to the plate and the slide rails whereby the base, the plate, the slide rails, the slide closure means, and the spring means are removed from within the housing when the front panel is removed from the housing; and

stop means for positively defining the open position of the slide closure means to position the measuring cup member under the dispensing opening to receive granular material from the supply container.

4,130,150
FINGER JOINTING MACHINE

Alan J. Cook, Bovingdon; Norman Brooks, Tring, and Anthony D. Kirkby, Dunstable, all of England, assignors to Cook Bolinders Limited, Leighton Buzzard, England
Filed Dec. 3, 1976, Ser. No. 747,365
Int. Cl.² B27F *1/16*
U.S. Cl. 144—2 R **7 Claims**



1. A finger jointing machine comprising, in combination:

(a) a horizontal support table;

(b) a vertical guide fence adjacent said support table;

(c) means for moving timber along said support table;

(d) means for clamping two pieces of timber on said support table and against said guide fence, with the rear end of one piece of timber spaced from the front end of the other piece of timber;

(e) a cutting and gluing unit movable vertically through the space between the ends of the timber clamped by said clamping means, said cutting and gluing unit including:

  (i) two rotatable cutters rotatable about horizontal axes, each cutter having axially spaced teeth, the teeth of one cutter being axially spaced from those of the other by half the spacing between the teeth of each cutter;

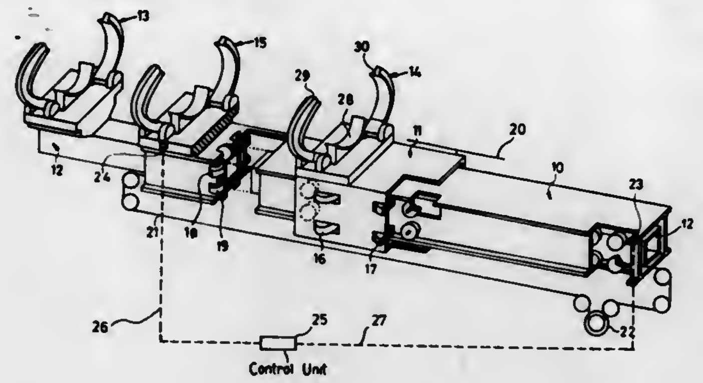
(ii) means to rotate the cutters in opposite directions, whereby the teeth of one cutter engaging the rear end of said one piece of timber and the teeth of the other cutter engage the front end of said other piece of timber are both moving upwardly; and

  (iii) two ribbed gluing rollers arranged one below each of said cutters, the ribs of said gluing rollers being disposed directly below the teeth of the cutter thereabove; and

(f) means to move said cutting and gluing unit vertically upwardly past the rear end of said one piece of timber and the forward end of said other piece of timber, whereby when said pieces of timber are clamped by said clamping means, said unit cuts and glues interfitting fingers therein.

4,130,151
LOG FEEDING AND DE-BRANCHING MECHANISM

Sven O. Ericsson, P.O. Box 2131, S-710 10 Fjugesta, Sweden
Filed Jun. 10, 1977, Ser. No. 805,428
Claims priority, application Sweden, Jun. 10, 1976, 7606562
Int. Cl.² B27C *9/00;* A01G *23/08*
U.S. Cl. 144—309 AC **9 Claims**



1. A method for debranching a felled tree and simultaneously feeding it axially as a log, comprising:

(a) tightly gripping the tree with a high gripping force by means of a first set of debranching tools which extend around the tree;

(b) loosely gripping the tree with a low gripping force by means of a second set of debranching tools which extend around the tree;

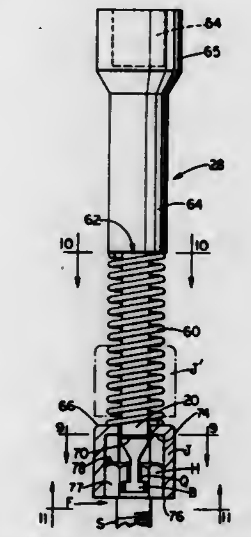
(c) thereafter shifting said first set of tools to effect initial axial feeding while shifting said second set of tools in an opposite direction along a portion of the length of the log to effect initial debranching;

(d) lowering said high gripping force to a low gripping force, and increasing said first-named low gripping force to a high gripping force; and

(e) thereafter shifting said first and second sets of tools in directions opposite to those in which they were first shifted to respectively effect (1) further debranching by said first set of tools along a further portion of the length of the log, (2) and further axial feeding by said second set of tools.

4,130,152
SLOT-HEAD FASTENER AND DRIVER THEREFOR

Ralph A. Bolen, London, Ohio, assignor to John Sawyer, Cincinnati, Ohio, a part interest
Filed Oct. 19, 1977, Ser. No. 843,727
Int. Cl.² B25B *15/00*
U.S. Cl. 145—50 D **19 Claims**



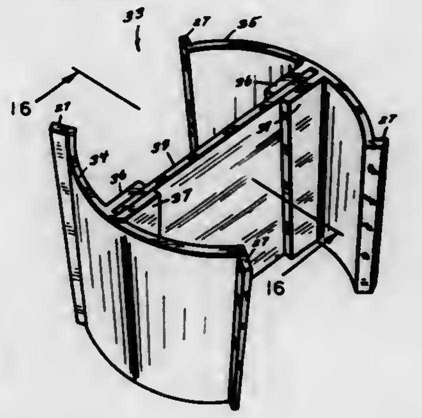
1. A slot head fastener and driver therefor comprising:

a slot head fastener having a threaded shank and a head, said head being polygonal in shape to have a plurality of flats and having a slot defined therein which is in the shape of an inverted T, said slot having a first section defined to extend transversely of said head and a throat section intersecting said first section, said throat section being defined by a pair of laterally spaced parallel side walls which are spaced apart to define a bit receiving gap therebetween, said slot and said throat having tapered portions to facilitate entrance and exit of a bit into said slot; and

a driver for engaging said slot head fastener, said driver including a torquing member having a projecting driver member thereon, a handgrip member having an internal socket defined therein at one end thereof, said handgrip member being sized to be gripped by a user's hand with the user's other hand gripping said torquing member, said internal socket being shaped to receive said torquing member projecting driver member, a shank connected at one end thereof on another end of said handgrip member, a socket member mounted on said shank to be axially movable thereon and having a shape corresponding to the shape of said slot head fastener polygonal head to engage said flats to impart turning torque to said fastener, a spring mounted on said shank to yieldably bias said socket member toward another end of said shank, a bit on said shank another end, said bit including a rectangular portion sized to be received in said slot head fastener gap, and a projecting portion which is located and sized to be received in said head fastener first section, said bit portions forming a T-shaped member which is received in said slotted head fastener inverted T-shaped slot to form a driving connection between said driver and said fastener whereby torque developed by said driver is imparted to said fastener via said socket member and said bit.

4,130,153
GOLF BAG CLUB SEPARATOR

David E. Zopf, 2216 Marilyn Plaza, Lansing, Mich. 48910
Filed Mar. 2, 1978, Ser. No. 882,577
Int. Cl.² A63B *55/00*
U.S. Cl. 150—1.5 R **3 Claims**



1. In a golf bag club separator, the combination comprising:

a pair of opposed spaced-apart arcuately curved vertically oriented end panels, each of said end panels having a pair of spaced-apart flanges extending radially inwardly from the concave surface thereof so as to define a divider panel engaging channel therebetween; and

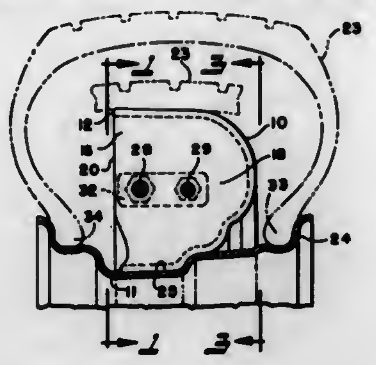
a divider wall panel in selective engagement with each of said channels provided on said end panels.

4,130,154
CURVED REINFORCED SUPPORT MEMBER

William J. Hampshire, Peninsula, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation of Ser. No. 611,979, Sep. 10, 1975, abandoned. This application Jun. 3, 1977, Ser. No. 803,358
Int. Cl.² B60C *5/00*
U.S. Cl. 152—158 **19 Claims**

1. A fiber reinforced body of plastic material in which said body is curved about an axis of revolution and has a generally U-shaped cross section with an inner peripheral edge portion and an outer peripheral edge portion comprising a plurality of relatively long fibers of reinforcing material extending into said body from said edge portions generally in planes containing the axis of revolution of said body and a plurality of rela-

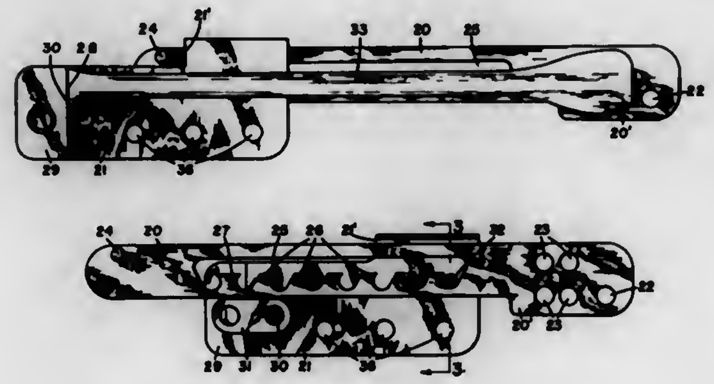
tively short fibers of reinforcing material extending generally circumferentially of said body and in planes perpendicular to the axis of revolution of said body and the majority of said relatively short fibers being in said edge portions.



4,130,155
SELF TIGHTENING CONNECTOR FOR NON-SKID TIRE CHAINS

Forest H. Barnett, 2602 N. Baltimore, Tacoma, Wash. 98407, and Clarence E. Barnett, 5208 - 156th NE., Redmond, Wash. 98052

Filed Apr. 15, 1977, Ser. No. 787,781
Int. Cl.^{2} B60C *27/10*
U.S. Cl. 152—217 **8 Claims**



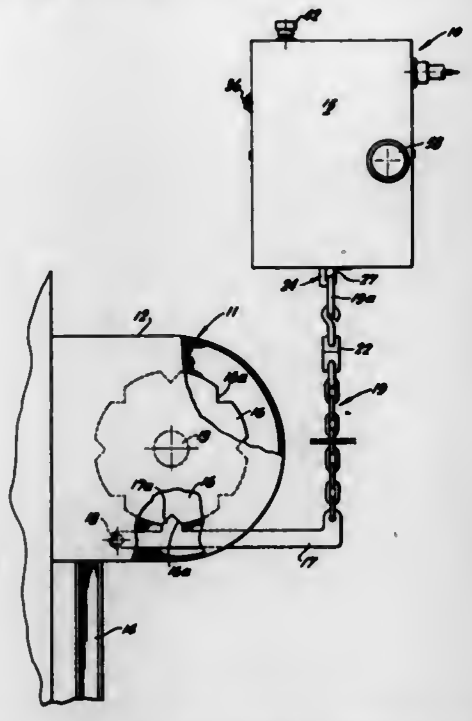
1. In a self-tightening connector for fastening together the two ends of a side chain of a non-skid tire chain assembly, a bar-shaped part of substantial length; a U-shaped part fitting over the bar-shaped part capable of limited transverse movement on the bar-shaped part and movable longitudinally relative to the bar-shaped part between an extended and a retracted position; ratchet means comprising teeth carried by the bar-shaped part and a pin carried by the U-shaped part; elastic tension means interconnecting said two parts, yieldingly urging said two parts toward the retracted position, and when the connector is attached to a tire chain and mounted on a tire, cooperating with ratchet means in locking said two parts against relative longitudinal movement toward their extended position, said ratchet means being releasable by relative transverse movement of said two frame parts.

4,130,156
TIME DELAY FIRE CLOSURE RELEASING DEVICE

Russell Wardlaw, San Rafael, Calif., assignor to The Cookson Company, San Francisco, Calif.

Filed Mar. 27, 1978, Ser. No. 890,534
Int. Cl.^{2} E05F *15/20*
U.S. Cl. 160—9 **11 Claims**

1. A delayed release mechanism responsive to power interruption for disengaging a tension member after a predetermined period of power outage comprising retaining means supported to move between advanced and retracted positions to capture and release a portion of the tension means, a locking dog member disposed to move between retracted and released positions to lock and unlock the first named means against movement releasing the tension member, means yieldingly urging said dog member toward its said released positions to release said portion of the tension member, electric means serving when energized, to hold said dog member in its said retracted position against the urging of the last named means, and means for delaying movement of said locking dog member toward its released position to delay release of the tension member.



4,130,157
SILICON NITRIDE (Si_3N_4) LEACHABLE CERAMIC CORES

Donald G. Miller, Bethel Park, and Frederick F. Lange, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 19, 1976, Ser. No. 706,334
Int. Cl.^{2} B22D *29/00;* B22C *1/00*
U.S. Cl. 164—132 **7 Claims**

1. A method of producing shaped articles from nickel or cobalt base superalloys having at least one internal passage therein, the method comprising the steps of:

(a) providing a core to conform with the shape of the internal passage, said core consisting substantially of sintered silicon nitride (Si_3N_4) having a density between about 60% and 99%+ of theoretical density of Si_3N_4;
(b) securing the core within a mold;
(c) casting the superalloy within the mold and around the core;
(d) removing the solidified, superalloy casting from the mold; and
(e) leaching the core from the internal passage of the cast article in molten sodium hydroxide (NaOH).

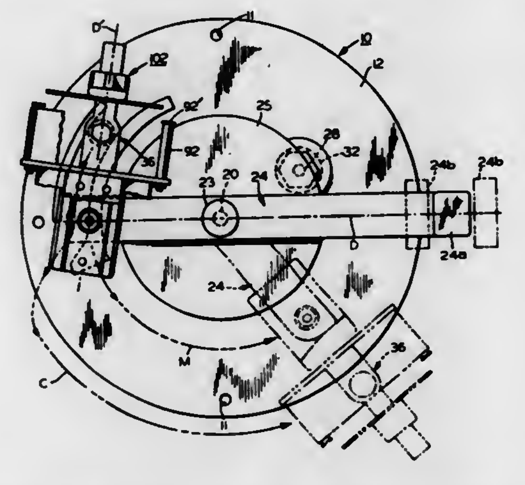
4,130,158
CENTRIFUGAL CASTING MACHINE

Frank M. Kulig, Bloomfield, Conn., and Frank H. Nealon, Plantation, Fla., assignors to The J. M. Ney Company, Bloomfield, Conn.

Filed Oct. 17, 1977, Ser. No. 843,066
Int. Cl.^{2} B22D *13/06*
U.S. Cl. 164—289 **17 Claims**

1. A centrifugal casting machine comprising:
a. a base;
b. a casting arm mounted for rotation relative to said base;
c. drive means to rotate said casting arm about an axis of rotation, said casting arm having a first dimension perpendicular to said axis of rotation;

d. a swing arm having a first dimension;
e. pivot means pivotally mounting said swing arm on said casting arm for pivoting about an axis spaced from said axis of rotation of said casting arm, said pivot means permitting pivoting of said swing arm by forces generated by rotation of said casting arm from a first position wherein said first dimension of said swing arm is angularly disposed to said first dimension of said casting arm, to a second position wherein said casting arm and said swing arm have their respective first dimensions extending in the same direction;
f. a casting ring support on said swing arm;
g. a crucible support on said swing arm spaced from said casting ring support along said first dimension of said swing arm, said crucible support being configured to support thereon a refractory crucible adapted to contain a molten metal and tiltable from a holding position to a pouring position by forces generated by initial rotation of said casting arm, said casting ring support and crucible support being oriented along said first dimension of said swing arm: (i) in said first position thereof, to locate a casting ring and a crucible supported thereon in cooperative alignment to define a flow path therebetween along a line lying in a plane which is approximately tangential to a circle concentric with said axis of rotation of said casting arm, with said crucible support leading said casting ring support in the path of travel of said swing arm and, (ii) in said second position thereof, to locate said casting ring support radially outwardly of said crucible support relative to said casting arm axis of rotation; and



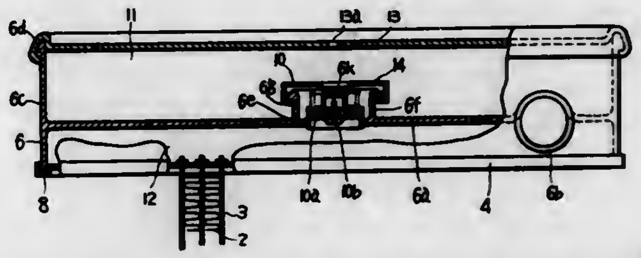
h. guide means operatively engaged with said swing arm to maintain said swing arm in said first position relative to said casting arm for a limited path of movement of said casting arm about its axis of rotation, said guide means being operative to release said swing arm after said limited path of movement to permit pivoting thereof to said second position by forces generated by rotation of said casting arm.

4,130,159
HEAT EXCHANGER

Kazuhiro Ohta, Nagoya, and Mituzi Ohshima, Ohbu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 27, 1975, Ser. No. 580,757
Claims priority, application Japan, May 28, 1974, 49/60970[U]
Int. Cl.^{2} F28F *9/00*
U.S. Cl. 165—111 **6 Claims**

1. A heat exchanger used in an automotive vehicle comprising:
upper and lower tanks,
a plurality of conduits extending between and in communication with said upper and lower tanks, and
a plurality of radiating fins provided in spaces between said conduits; wherein said upper tank comprises:
a partition wall, disposed in said upper tank, for dividing said upper tank into upper and lower rooms,
means for maintaining the pressure in said upper room at the pressure of the atmosphere surrounding said heat exchanger,
tubular means, connected to said lower room to communicate said lower room with said atmosphere, for supplying cooling fluid into said lower room therethrough,
a cap removably mounted on the upper end of said tubular means,
a negative pressure valve, positioned on said partition wall apart from said tubular means, for passing air contained in said supplied cooling fluid therethrough into said upper room as the level of said cooling fluid goes up in said lower room,

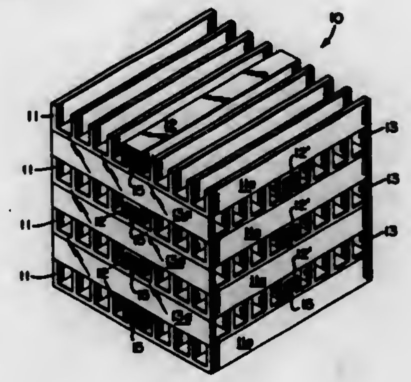


means, provided in said tubular means, for passing said cooling fluid into said upper room from said tubular means to reserve said cooling fluid in said upper room; and
a positive pressure valve removably installed in said tubular means, for opening itself to allow escape of said cooling fluid into said upper room through said cooling fluid passing means when the pressure in said lower room exceeds a first predetermined value,
said negative pressure valve being operative to allow flow through itself of said reserved cooling fluid in said upper room into said lower room when the pressure in the lower room becomes lower than a second predetermined value.

4,130,160
COMPOSITE CERAMIC CELLULAR STRUCTURE AND HEAT RECUPERATIVE APPARATUS INCORPORATING SAME

Chester J. Dziedzic, and Joseph J. Cleveland, both of Dushore, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Sep. 27, 1976, Ser. No. 726,950
Int. Cl.^{2} F28F *3/00*
U.S. Cl. 165—166 **16 Claims**



1. A composite cross-flow recuperative ceramic cellular structure, having first and second pairs of opposing faces defining cell openings for the passage of heat transfer fluids, respectively, in directions transverse to one another, the first fluid transferring heat to the second fluid during passage through the cells, whereby each pair of faces has in operation a hot face and a cold face, the hot face of the first pair being the inlet face for the first fluid, and the hot face of the second pair being the outlet face for the second fluid,

characterized in that the ceramic cellular structure is a composite of a plurality of sectioned stacked ribbed layers, the layer sections in abutting relationship, the layers stacked so that the ribs of alternate layers are transverse to one another, and sealing means between abutting layer sections, the sealing means substantially preventing leakage of heat transfer fluids between adjacent layers.

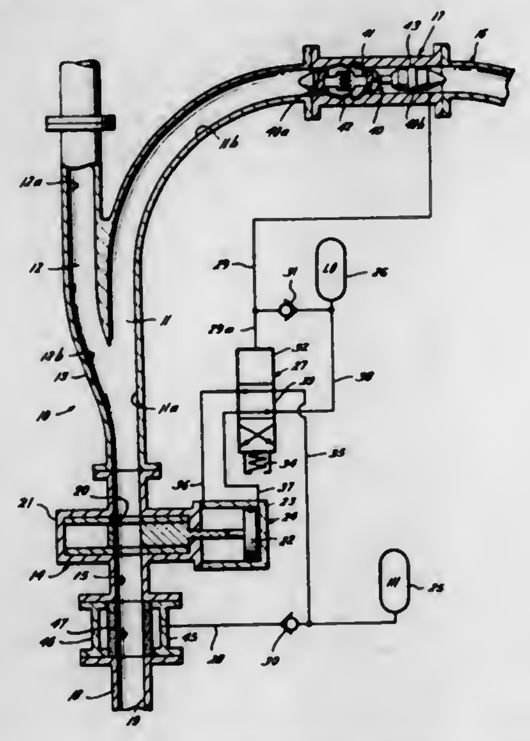
4,130,161
UNDERWATER CHRISTMAS TREE

Marvin R. Jones, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Sep. 6, 1977, Ser. No. 830,797

Int. Cl.^{2} E21B *7/12*

U.S. Cl. 166—337 **7 Claims**



1. Apparatus for controlling flow from an offshore well, comprising an underwater Christmas tree having a production bore through which TFL tools may be passed to and from the well through a flowline connectible with the bore, an auxiliary bore intersecting the production bore to permit wireline tools to be lowered into or raised from the well, valve means for opening and closing the production bore below the intersection of the auxiliary bore therewith in response to fluid pressure at a location above said intersection being respectively above or below a predetermined value, and means for receiving and releasably retaining a TFL tool intermediate said intersection and said location so that fluid pressure at said location may be maintained above said predetermined value.

4,130,162
FLOW-THROUGH MULE SHOE SUB

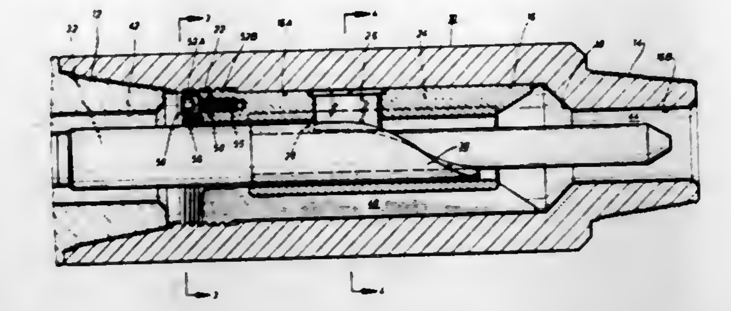
Paul M. Nelson, Houston, Tex., assignor to Wilson Industries, Inc., Houston, Tex.

Filed Jul. 1, 1977, Ser. No. 812,063

Int. Cl.^{2} E21B *17/00, 47/00*

U.S. Cl. 166—243 **4 Claims**

3. A sleeve for supporting a radially inwardly extending key comprising:
- a substantially cylindrical member having a predetermined thickness dimension associated therewith and a first and a second axial end thereon;
- a plurality of radially inwardly extending ribs disposed on said cylindrical member;
- a plurality of screw threads extending circumferentially about the exterior surface of said cylindrical member adjacent said first axial end thereof; and,
- one of said ribs having an axially extending opening and a substantially radially extending notch disposed therein, said notch dividing said plurality of threads into a first and a second set of threads.



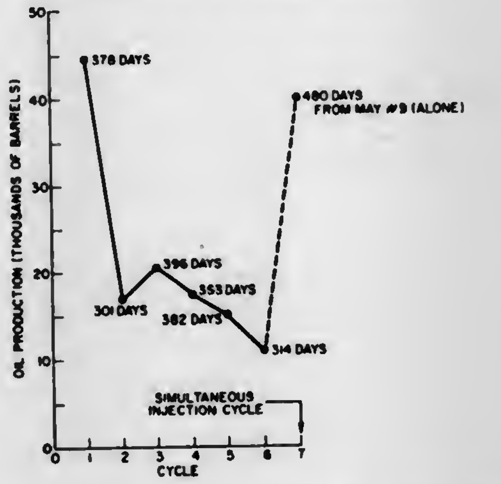
4,130,163
METHOD FOR RECOVERING VISCOUS HYDROCARBONS UTILIZING HEATED FLUIDS

Caurino C. Bombardieri, Calgary, Canada, assignor to Exxon Production Research Company, Houston, Tex.

Filed Sep. 28, 1977, Ser. No. 837,114

Int. Cl.^{2} E21B *43/24*

U.S. Cl. 166—252 **5 Claims**



1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation which is penetrated by at least two wells having a communicating relationship, comprising in combination:
- (a) initially injecting a heated fluid at relatively high pressures into said hydrocarbon formation by means of both wells for a relatively short period of time, sufficient to fluidize hydrocarbons therein and produce hydrocarbons upon cessation of said injection, but insufficient to result in fluid breakthrough;
- (b) subsequently shutting in one well, and recovering hydrocarbons from the formation by means of the other well;
- (c) selecting a minimum production rate from said other well whereby a relatively long production span is established;
- (d) monitoring the production rate of said hydrocarbons from said other well;
- (e) after said production rate declines to said minimum rate, along with reduced temperatures of the produced fluids, injecting additional heated fluid into said one well at relatively low pressures over a relatively long time span to create a driving force into the formation by means of said one well and continuing production of hydrocarbons from said other well while continuing said fluid drive but without breakthrough.

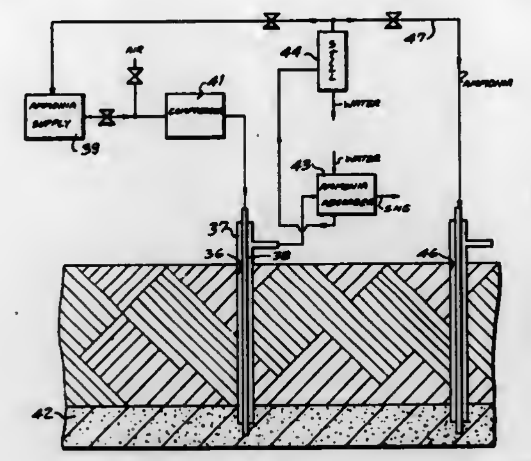
4,130,164
PROCESS FOR COAL GASIFICATION

Rabinder S. Datta, Syracuse, N.Y., assignor to Syracuse Research Corporation, Syracuse, N.Y.

Filed Aug. 11, 1977, Ser. No. 823,803

Int. Cl.^{2} E21B *43/24, 43/27;* E21C *41/02, 41/04*

U.S. Cl. 166—259 **21 Claims**



1. An improved process for the gasification of coal, comprising the steps of introducing a member of the group consisting of gaseous anhydrous ammonia, liquid anhydrous ammonia, aqueous ammonia and combinations thereof and methanol into a coal seam, allowing said member to remain in contact with the coal in said coal seam for a long-enough period to increase substantially the permeability thereof to flow of fluid therethrough, removing at least a portion of said member of said group, raising the temperature of at least a portion of the coal in said seam to combustion point and introducing an oxygen-containing gas into said seam under conditions such as to produce a combustible gas from said coal.

4,130,165
METHOD FOR SELECTIVELY PLUGGING WATER ZONES

Clarence R. Fast, and George E. King, both of Tulsa, Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 760,195, Jan. 17, 1977, abandoned. This application May 1, 1978, Ser. No. 901,906

Int. Cl.^{2} E21B *33/138, 43/00*

U.S. Cl. 166—279 **6 Claims**

1. A method for reducing the production of water from an oil production well which penetrates an oil producing formation comprising in the following order the steps of:
- (a) injecting gas into said oil producing formation by means of said production well;
- (b) injecting a mixture of clean oil and emulsifier into said oil producing formation by means of said production well; and
- (c) producing fluids from said oil producing formation by means of said production well.

4,130,166
VALVE AND LUBRICATOR APPARATUS

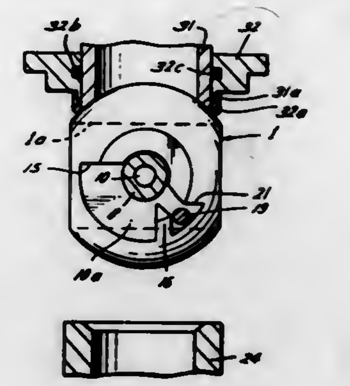
Neil H. Akkerman, New Orleans, La., and Richard J. Ross, Houston, Tex., assignors to Baker International Corporation, Orange, Calif.

Division of Ser. No. 732,937, Oct. 15, 1976, Pat. No. 4,062,406. This application Sep. 26, 1977, Ser. No. 836,348

Int. Cl.^{2} E21B *43/12*

U.S. Cl. 166—324 **1 Claim**

1. In a lubricator apparatus for use in installation of drilling, completion, workover tools, or parts thereof for subsequent use in a subterranean well, said lubricator having therein a valve assembly comprising a longitudinally shiftable carriage, a ported valve head rotatable on valve seat means between closed and opened positions by said carriage to control flow of fluid through the well, the improvement comprising: a differential sleeve slidingly disposed around said carriage for reduction of metallic friction, said sleeve being longitudinally movable immediate said valve assembly, said sleeve being sealingly engageable upon the exterior of said ported valve head when said valve assembly is in closed position, said sleeve being sealingly disengageable from said ported valve head when said valve assembly is in open position, said sleeve being urgeable to sealing engagement position upon said ported valve head in response to pressure differential across the valve assembly, said sleeve being in frictionless relationship with said ported valve head in absence of pressure differential across said valve assembly; and reference pressure operated means in conduit communication with said valve assembly for rendering the said valve assembly insensitive to hydrostatic pressure at the depth of the operation of said valve assembly, said reference pressure operated means further enabling control pressure to rotate said ported valve head operatively independent of well pressure.



4,130,167
SOIL CULTIVATING IMPLEMENTS

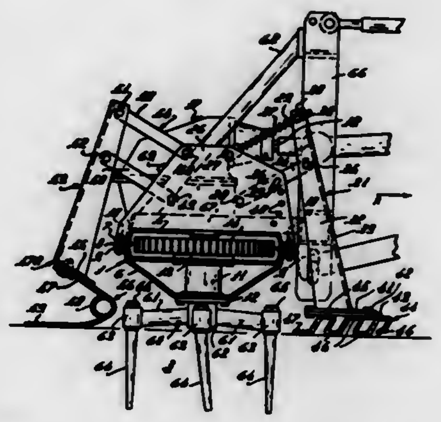
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Nov. 30, 1976, Ser. No. 746,086

Claims priority, application Netherlands, Dec. 1, 1975, 7513962

Int. Cl.^{2} A01B *27/00, 33/14*

U.S. Cl. 172—40 **6 Claims**



1. A soil cultivating implement comprising a frame and a plurality of tined soil working members being mounted for rotation about upwardly extending axes defined by corresponding shafts supported on said frame, driving means connected to said shafts and adjacent working members being rotated in relative opposite directions, the shafts of adjacent soil working members being spaced apart and the tines of adjacent soil working members being positioned to work overlapping paths, soil crumbling means being connected to said implement and comprising at least one elongated soil crumbling member that extends transverse to the direction of travel, said driving means engaging said soil crumbling member and moving same upwardly and downwardly with respect to said frame to further crumble soil worked by said rotatable working members during operation, said driving means including driven vibratory means that vibrates the crumbling member in substantially upward and downward directions, said crumbling

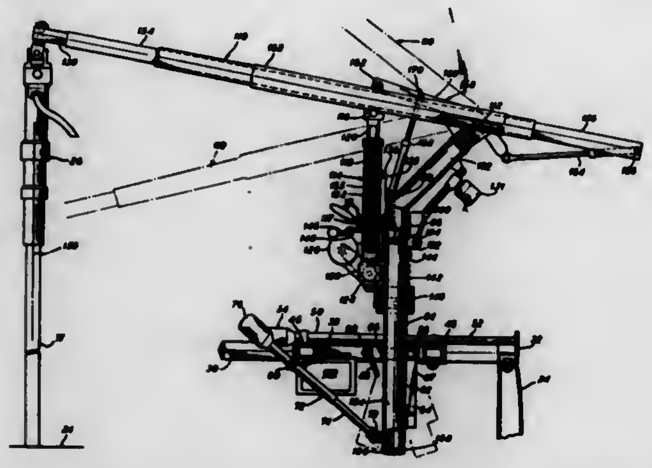
member being pivoted to the frame by at least one parallelogram linkage and comprising a plurality of rib-like portions arranged one behind the other.

4,130,168
DOWNCROWDING BOOM ASSEMBLY

Robert F. Deike, Cheyenne, Wyo., assignor to Foresight Industries, Cheyenne, Wyo.

Filed Oct. 13, 1976, Ser. No. 732,076
Int. Cl.^{2} E21C *5/00*

U.S. Cl. 173—38 **21 Claims**



11. A self-contained, straight-line, downcrowding boom apparatus comprising: a base frame; a pedestal adjustably carried by said base frame for adjustably positioning a generally upright swing axis for said pedestal in all planes relative to the base frame; a swing post journalled by said pedestal for rotational movement about said upright swing axis; a laterally extending boom secured to the swing post for pivotal movement about a horizontal pivot; means to pivot said boom about said horizontal pivot through a predetermined, vertically disposed arc; a telescoping boom member carried by said boom and having a crowding end thereon extending from said boom and pivotable therewith; and means to automatically and positively move the crowding end of said telescoping boom member when pivoting the boom through the predetermined arc, whereby the crowding end follows a straight line downcrowding course.

12. The self-contained, straight line, downcrowding boom apparatus of claim 11, which further comprises a power storage means and wherein the means to pivot said boom comprises a power means to energize the power storage means for downcrowding a tool mounted on said boom to continue a downcrowding load on the tool after said power means is stopped.

4,130,169
DOWNHOLE CONNECTOR FOR USE WITH DRILL STRING TELEMETERING SYSTEM

Early B. Denison, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 22, 1977, Ser. No. 790,158
Int. Cl.^{2} E21B *1/10, 47/02*

U.S. Cl. 175—299 **16 Claims**

1. A combination remotely-operable connector and jar means for both electrically and mechanically coupling a wireline to a remote companion connector located in a drill string, said connector comprising:

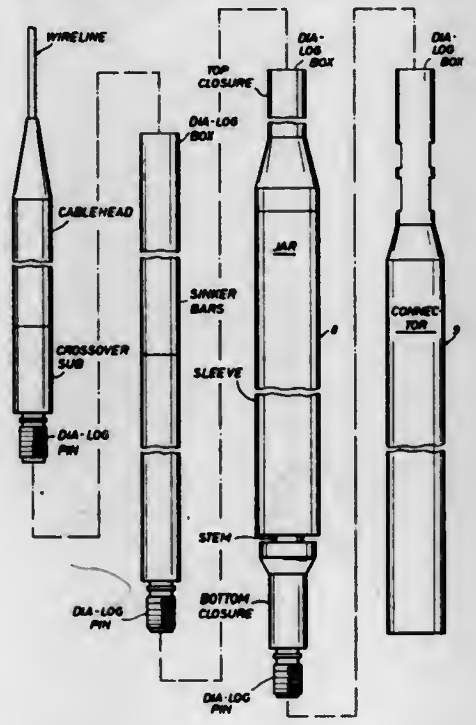
a support member;

a plurality of collet fingers mounted on said support member, said collet fingers being movable between first and second positions, in one position said collet fingers being engaged with a fish neck formed on said companion connector; and in the second position, the collet fingers being disengaged from said fish neck;

one-half of an electrical connector mounted on said support member, and disposed to electrically couple with the mating half of the electrical connector mounted on said companion connector;

an operating member mounted on said support member and axially movable relative to said support member, said operating member having a tapered surface disposed adjacent said collet fingers, said tapered surface moving said collet fingers to an engaged position with respect to said fish neck when said operating member is moved axially;

cam means mounted on said support member and disposed to control the axial movement of said operating member between two preset limits, one of said limits allowing movement of said collet fingers to said first position and the other of said limits allowing movement of said collet fingers to said second position, said cam means being operable by sequentially applying and releasing tension on said wireline;



spring-actuated down jar means, said jar means being coupled to said operating member, said jar means being cocked by applying tension to said wireline and tripped by releasing tension from said wireline; and

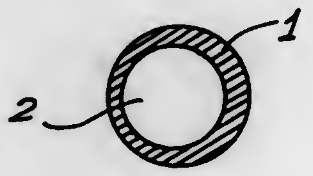
an electrical cable disposed to pass through said support and operating members, said cable being coupled at one end to said one-half of the electrical connector and at the other end to a second electrical cable, said second electrical cable disposed to pass through said jar means and electrically couple to said wireline.

4,130,170
PROBE FOR USE IN GEOLOGICAL SURVEYS

Ronald H. C. Holman, Clonee, Ireland, assignor to Barymin Explorations Limited, Toronto, Canada

Filed Feb. 8, 1977, Ser. No. 766,824
Int. Cl.^{2} E21B *9/20*

U.S. Cl. 175—245 **9 Claims**



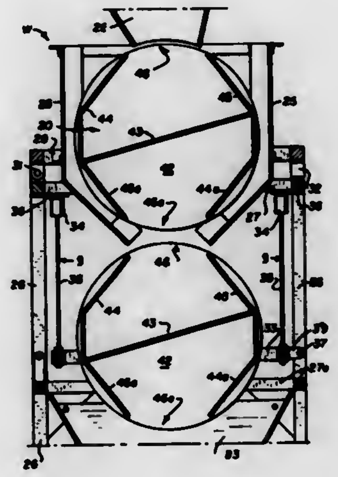
1. A probe for extracting samples from below the surface of the earth, said probe comprising an elongated body having a smooth bottom annular surface, a hollow core in the elongated body, the elongated body and the hollow core having respective longitudinal axes which are inclined at a small angle to one another such that the hollow core extends from one end of the body to one side thereof, the said probe further comprising means at the other end of the body adapted for engagement with a drive rod of a powered hammer mill.

4,130,171
APPARATUS FOR BATCH-WEIGHING A CONTINUOUS FLOW OF MATERIAL

James M. Smith, Golden, and Wilson S. Howe, Longmont, both of Colo., assignors to Industrial System Engineers, Inc., Englewood, Colo.

Filed Aug. 18, 1976, Ser. No. 715,294
Int. Cl.^{2} G01G *11/04*

U.S. Cl. 177—1 **11 Claims**



1. A method for rapidly weighing a continuous flow of material which drops into a holding container and loads from the holding container drop into a weighing container which vibrates when so loaded, with a transducer means carrying the container to convert weight and vibrational effects to an electrical output and with a computer means to convert the electrical output at any instant to a digital value and perform other computer operations, including the steps of:

(a) permitting the holding container to receive and retain the flowing material until a load is accumulated therein;

(b) dropping the load into the weighing container and permitting the initial peak vibrations of the container to attenuate to a more nearly uniform vibration pattern at a regular frequency;

(c) thereupon, converting the transducer means output to a sequence of digital values at short time intervals in the general range of microseconds, and which are substantially less than the time intervals of the vibration frequency imposed upon the transducer means by the container;

(d) continuing this conversion for a short time interval in the general range of one-half second;

(e) averaging the sum of the digital values during said time interval and placing this average value in the display and/or memory of the computer; and

(f) dropping the load from the weighing container and positioning the weighing container to receive another load before another load is accumulated in the holding container.

4,130,172
ELECTRIC VEHICLE

Warren E. Moody, 95 Fiesta Way, Fort Lauderdale, Fla. 33301

Continuation-in-part of Ser. No. 588,841, Jun. 20, 1975, abandoned. This application Nov. 17, 1976, Ser. No. 742,721
Int. Cl.^{2} B60K *1/00, 17/04;* B60L *15/20*

U.S. Cl. 180—65 E **11 Claims**

1. A differential electric motor drive for driving a vehicle comprising:

a vehicle frame:

a drive wheel assembly, including a dead axle shaft; a pair of vehicle drive wheels rotatably mounted at opposite ends of the dead axle shaft, and elastic support means for supporting the vehicle frame on the dead axle;

a motor supporting frame mounted on the vehicle frame;

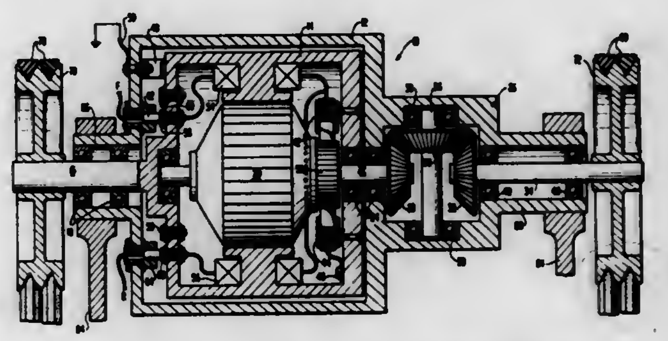
a first motor element rotatably mounted within said supporting frame and having means for creating an electric field therein;

a second motor element rotatably mounted within said first motor element;

each motor element having a motor element output shaft extending from one end thereof in opposite directions;

a final output shaft connected to one of said motor element output shafts;

a reverse mechanism for effecting said connection between said one motor element output shaft and said final output shaft in a 1:1 relationship for compensating for relative opposite rotation of said motor elements, the other motor element shaft and said final output shaft being connected by power transmission means to the vehicle drive wheels,



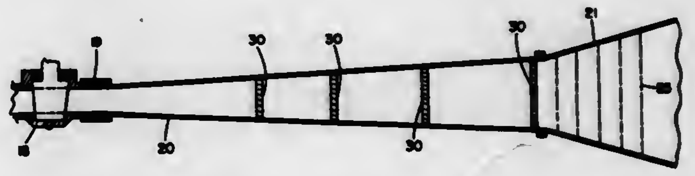
and said power transmission means connecting said drive wheels to said motor drive comprising two pairs of cooperating driving and driven pulleys, the driving pulley of one pair being mounted on the final output shaft, the driving pulley of the other pair being mounted on the other motor element shaft, and the driven pulley of each pair being mounted on a respective one of said drive wheels, said pairs of cooperating pulleys being connected by suitable belt means, and adjustable means between the motor supporting frame and said dead axle shaft for maintaining proper spaced apart relation and tension between said belts and said pulleys; said means for creating an electric field within the first motor element includes: a first field coil for rotating the second motor element in one direction relative to the first motor element to effect forward movement of the vehicle; and a second field coil for rotating the second motor element in an opposite direction relative to the first motor element to effect backward movement of the vehicle.

4,130,173
APPARATUS AND METHOD FOR REDUCING FLOW DISTURBANCES IN A FLOWING STREAM OF COMPRESSIBLE FLUID

James M. Cooksey, Irving, Tex., assignor to Vought Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 185,514, Oct. 1, 1971, abandoned. This application Jul. 7, 1975, Ser. No. 593,827
Int. Cl.^{2} F01N *1/00, 1/08*

U.S. Cl. 181—212 **8 Claims**



1. Apparatus for controlling reduction of pressure in a flowing compressible fluid comprising:

(a) conduit means having a central axis,

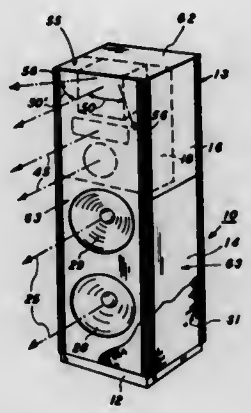
(b) an inlet valve and an exit throat at opposite ends of said conduit means,
(c) a plurality of choke means positioned at spaced locations within said conduit, the number and characteristics of said choke means determined by

$$r^n = A_o/A_{v_{max}}$$

where r is the desired pressure ratio across each choke means when gas is flowing through said exit throat at sonic velocity, n is the number of said choke means, A_o is the exit throat area, and $A_{v_{max}}$ is the full open area of the inlet valve.

4,130,174
LOUDSPEAKER

Walter M. Ostrander, Bridgewater; Malcolm M. Scholl, Bethlehem, both of Conn.; Edward R. Minott, Ellsworth, Me., and Christopher D. Smith, New Milford, Conn., assignors to Audioanalyst, Inc., Brookfield, Conn.
Filed May 25, 1977, Ser. No. 800,205
Int. Cl.² H05K *5/00;* A47B *81/06*
U.S. Cl. 181—146 **19 Claims**

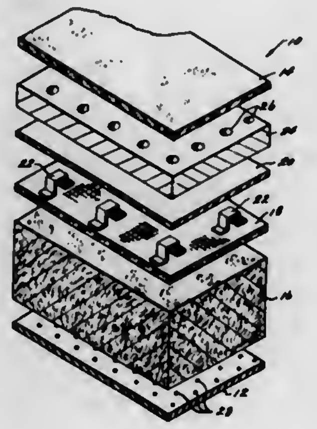


1. A loudspeaker comprising:
(A) a cabinet having a lower portion, an upper rearwardly positioned backing compartment, and having an upper frontally disposed recess;
(B) at least one low frequency speaker frontally mounted to the lower portion of the loudspeaker cabinet with vertical alignment of the driver portion of each speaker;
(C) a frontal block dimensioned for receipt within the recess in the upper frontal portion of the loudspeaker cabinet, said block having a central recess and an upwardly protruding open-ended second recess, said block fabricated from a substantially acoustically transparent material;
(D) a mid-range and high frequency baffle compartment dimensioned for interfitting within the central recess of the frontal block and having a frontally disposed mounting plate and a rearwardly positioned backing block, said backing block fabricated from an acoustically absorbent material;
(E) a mid-range speaker mounted to the mounting plate of the baffle compartment so as to have a radiating pattern substantially aligned with the axis normal to the front of said cabinet, and having its driver vertically aligned with the drivers of the other speakers of the loudspeaker;
(F) a high frequency speaker mounted to the mounting plate of the baffle compartment so as to have a radiating pattern substantially aligned with the axis normal to the front of said cabinet, and having its driver vertically aligned with the drivers of the other speakers of the loudspeaker;
(G) a supertweeter cartridge fabricated from an acoustically transparent material dimensioned for receipt in an upright or an inverted manner within the upper second recess of the frontal block and having a recess formed therein dimensioned for receipt of a supertweeter, said supertweeter recess positioned angularly away from the axis normal to the front portion of the loudspeaker cabinet so as to have an orientation favoring one side of the cabinet when mounted in the upright manner, and favoring the other side when mounted in the inverted manner; and
(H) a supertweeter dimensioned for placement within the recess of the supertweeter cartridge at substantially the same angular displacement that the supertweeter recess makes with the normal axis of the loudspeaker, the supertweeter having its driver vertically aligned with the driver of the remaining speakers of the loudspeaker;

whereby the loudspeaker incorporates low frequency, mid-range, and high frequency components vertically aligned with each other to minimize phase distortion and to yield precise imaging with minimal coloration, and incorporating a supertweeter angularly disposed with respect to the remaining speakers of the loudspeaker in order to yield a high frequency radiating pattern of substantially uniform polar response for the central radiating pattern and an angularly disposed radiating pattern to either one side or the other side of the loudspeaker depending upon the orientation of the supertweeter cartridge.

4,130,175
FLUID-IMPERVIOUS ACOUSTIC SUPPRESSION PANEL

Horst W. W. Hehmann, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed Mar. 21, 1977, Ser. No. 779,776
Int. Cl.² G10K *11/04*
U.S. Cl. 181—290 **8 Claims**

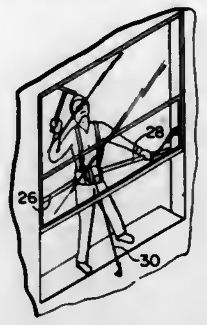


1. A multilayered acoustic suppression panel comprising:
a layer of a bulk absorber;
a flexible, fluid impermeable membrane covering said bulk absorber;
means for spacing said membrane from said bulk absorber to form a space therebetween so that said membrane can vibrate and be essentially acoustically transparent;
a perforated plate partially sandwiching said membrane, said plate having a porosity great enough to permit said membrane to be essentially acoustically transparent in the presence of acoustic waves; and
an acoustically hard backing sheet for said bulk absorber.

4,130,176
COMBINATION SAFETY BELT AND SAFETY LINE

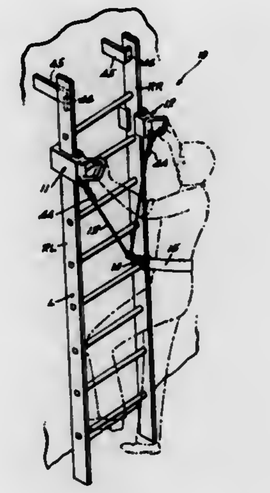
Roy W. Paulie, 5375 Duke St., Alexandria, Va. 22304
Filed Apr. 19, 1978, Ser. No. 897,700
Int. Cl.² A62B *1/18, 35/00*
U.S. Cl. 182—4 **5 Claims**

1. A safety belt comprising, in combination, a waist belt, a pair of straps secured to said waist belt for attaching said belt to a supporting surface, a housing secured to said belt intermediate said belt portions, said housing having first and second side walls, a shaft rotatably mounted intermediate said side walls and having first and second ends extending through and beyond said side walls, a safety line wound on said shaft, said safety line having one end secured to said shaft and another end provided with a hook for attaching said cord to a supporting surface and means for winding said safety line on said shaft, comprising a ratchet wheel mounted intermediate said first end engaging a pawl pivoted on said first side wall, a hand wheel attached to said first end, gear reduction means intermediate said second end and a hand crank on said second end.



4,130,177
LADDER CLIMBER'S SAFETY DEVICE

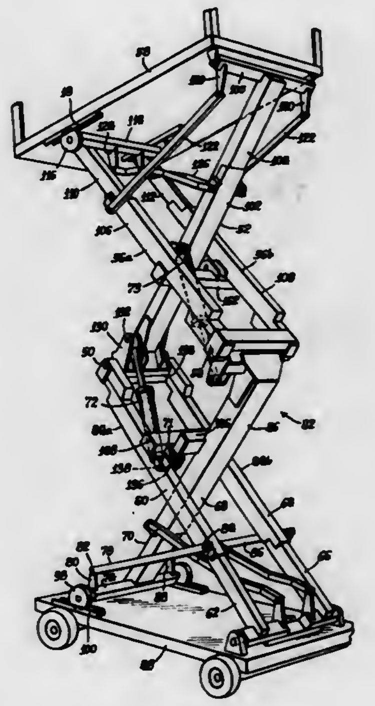
James E. Pandolph, 11970 SW. 174 St., Miami, Fla. 33177
Filed Jul. 15, 1977, Ser. No. 816,376
Int. Cl.² E06C *7/18;* A62B *1/16*
U.S. Cl. 182—8 **4 Claims**



1. A ladder climber's safety device for use with stationary ladders of the type having side rails of rectangular cross-sectional configuration comprising, in combination, a pair of sliding lock handle members, a top-to-bottom through opening in each of said sliding lock handle members for the sliding reception therein of one each of the side rails of the stationary ladder, manual grip means extending laterally outwardly of each of said sliding lock handle members, a cable loosely interconnecting said sliding lock handle members and permitting independent relative sliding movement of said sliding lock handle members along their respective ladder rails, said sliding lock handle members each comprising means for frictionally gripping their respective ladder rails to prevent downward sliding movement therealong when said sliding lock handle members are rotated downwardly with respect to their ladder rails towards the front of the ladder for preventing free downward movement thereof, means controlled by the manual rotation of said sliding lock handle members in the opposite direction with respect to their ladder rails to release said gripping action and permit free upward movement of said sliding lock handle members along their respective rails as controlled by the climber in climbing or descending the ladder, said manual gripping means extending forewardly with respect to the ladder rails along which they are slidingly disposed, said sliding lock handle member gripping means comprising toothed rail grip members fixed with respect to front and back wall portions, respectively, of said top-to-bottom through opening, near lower and upper end portions thereof, respectively, the width of said top-to-bottom through opening being somewhat greater than the width of the front to back width of the associated ladder to permit said rotative rocking motion of said sliding lock handle member with respect thereto, said gripping action release means comprising a pair of roller wheels journalled within said top-to-bottom through opening for protrusion therewithin beyond surfaces defined by said front and back wall portions, respectively, of said top-to-bottom through opening, near upper and lower end portions thereof, respectively, said lower roller wheel being so disposed and of such size as to preclude its contact with the associated ladder rail when the sliding lock handle member is frictionally gripping the rail, said upper roller wheel being journalled at the upper end of an elongated carrier member the lower end of which is pivotally journalled within said top-to-bottom through opening, and means resiliently urging said roller wheel carrier member in the inward direction with respect to said top-to-bottom through opening for yieldingly urging said sliding lock handle members in said downwardly rotated positions.

4,130,178
ELEVATING DEVICE

Raymond E. Smith, Jr., 385 E. Greenwood, Lake Forest, Ill. 60045
Filed Mar. 28, 1977, Ser. No. 782,183
Int. Cl.² E04G *1/22*
U.S. Cl. 182—141 **16 Claims**



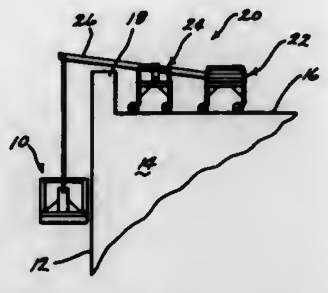
1. An elevating device comprising:
a pair of pivotable legs disposed in a scissors arrangement, each leg including a telescoping section and terminating in an end;
means for pivoting said legs; and
means interconnecting the end of each leg with the telescoping section of the opposite leg for effecting extension of said telescoping sections in response to the pivoting of said legs without imparting substantial horizontal movement to the ends of said legs.

4,130,179
PORTABLE SUPPORT FOR A SCAFFOLD

Albert Williams, 4506 Laurel Ave., Omaha, Nebr. 68104
Filed Nov. 14, 1977, Ser. No. 851,362
Int. Cl.² E04G *3/10*
U.S. Cl. 182—142 **3 Claims**

1. A portable support for a scaffold, comprising, a first portable support member,
a plurality of weights on said first support member,
an elongated member having one end pivotally connected to said first support member,
a second portable support member spaced from said first support member,

said elongated member being connected, intermediate its length, to said second support member,
the other end of said elongated member being adapted to support a scaffold extending downwardly therefrom,

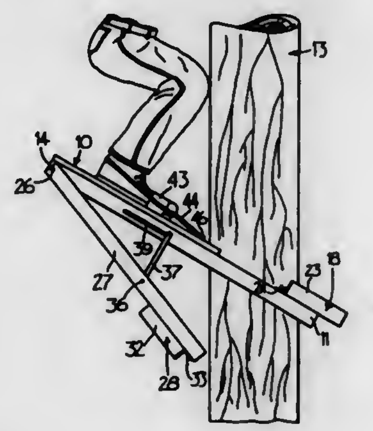


said elongated member being selectively vertically secured to said first support member.

4,130,180
TREE CLIMBING PLATFORM

James B. Ferguson, Rte. 3, Box 14A, Falkville, Ala. 35622; Ernie B. Ferguson, 1156 Crestfield La., Hixson, Tenn. 37343, and Clarence E. Ferguson, Rte. 2, Box 241A, Hartselle, Ala. 35640

Filed Jan. 25, 1977, Ser. No. 762,243
Int. Cl.² A47C *9/10;* A63B *27/00*
U.S. Cl. 182—187 10 Claims

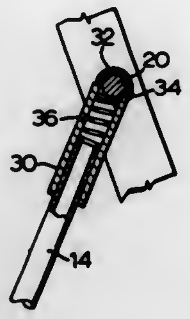


1. A tree climbing platform comprising:
(a) a horizontal base plate having rigid side members projecting beyond one end thereof in position to extend alongside opposite sides of a tree with said one end of said base plate being out of operative engagement with and spaced from the adjacent side of said tree so that no force is transmitted from said one end of said base plate to the side of said tree adjacent thereto and the other end of said base plate extending away from said tree,
(b) a first transverse blade carried by said rigid side members in position to bite into the opposite side of a tree from the side thereof nearest said one end of said base plate,
(c) a frame member pivotally connected at one end thereof to said other end of said base plate in spaced relation to said one end of said base plate and disposed to extend downwardly and inwardly beneath said base plate,
(d) a second transverse blade carried by the inner end of said frame member in position to bite into the side of a tree opposite the side thereof engaged by said first transverse blade,
(e) means carried by said base plate for detachably attaching said base plate to the feet of a person standing thereon, and
(f) locking means operatively connecting said frame member to said base plate and adapted to retain said inner end of said frame member and said base plate at fixed positions relative to each other.

4,130,181
LADDER SUPPORT SYSTEM

William J. P. McCallum, R.R. #2, Hillsburgh, Ontario, Canada (N0B 1Z0)

Filed May 25, 1977, Ser. No. 800,520
Int. Cl.² E06C *1/20*
U.S. Cl. 182—169 1 Claim

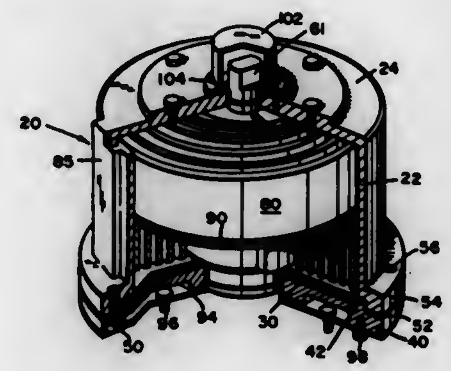


1. Strut means for attachment to a ladder intermediate the ends thereof, to extend at a substantial angle between the ladder and the ground for transference of a significant supporting force between the ladder and the ground; tie means for connecting the strut means to the ladder adjacent the lower end thereof to provide triangulation of forces in a substantially vertical plane, when in use, and spring means permitting predetermined shortening of said strut means when under compression to permit predetermined limited bowing deflection of the ladder towards the ground under the weight of the user before the strut means becomes effective to transfer load from the ladder to the ground whereby the weight of a user is substantially fully applied in unrestricted relation to the upper end of the ladder, to develop optimum reaction and friction forces between the upper end of the ladder and a surface supporting said ladder upper end.

4,130,182
ROTARY SPRING-RETURN ACTUATOR WITH SAFETY FEATURE

Dale Aunspach, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio

Filed Jul. 7, 1977, Ser. No. 813,619
Int. Cl.² F03G *1/06;* F16K *31/04*
U.S. Cl. 185—45 11 Claims

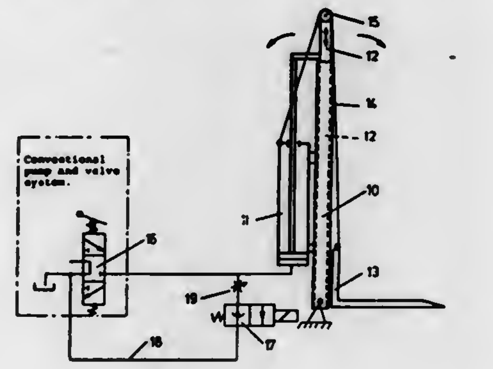


1. In a rotary spring-return actuator which includes a housing, a shaft rotatably journaled therein, and spring means interposed between and secured relative to said shaft and the interior of the housing; the improvement which comprises the provision of safety means which preclude access to the interior of the housing during those periods of time when the shaft is spring loaded comprising, a clutch plate having means to limit the amount of rotational movement of said shaft relative to said clutch plate interposed between said shaft and housing and means accessible from the exterior of the housing to simultaneously conceal and selectively yet releasably lock said clutch plate relative to said housing against the counterforce of the spring means for continuously subjecting said shaft to predetermined spring tension when the clutch plate is locked relative to the housing, and wherein the spring tension is dissipated incident to rotation of the shaft and clutch plate when the clutch plate is released from a locked relationship with respect to the housing.

4,130,183
CONTROL SYSTEM FOR SELECTIVE POSITIONING OF A DISPLACEABLE DEVICE

Erik Tjörnemark, Tästrup, Denmark, assignor to Islef & Hagen A/S, Denmark

Filed Apr. 26, 1976, Ser. No. 680,580
Claims priority, application Denmark, Apr. 30, 1975, 1893/75
Int. Cl.² G05B *19/26*
U.S. Cl. 187—9 R 16 Claims

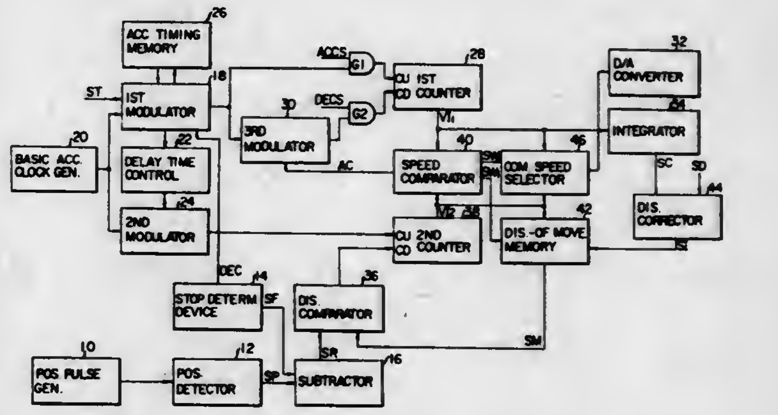


1. In a control system for a conventional apparatus which includes a movable means to be selectively positioned at a selected one of a plurality of locations, guide means cooperating with said movable means to guide the latter for movement with respect to said guide means to said plurality of locations, drive means operatively connected with said movable means for moving the latter with respect to said guide means, and manually operable means having operating and rest positions to each of which said manually operable means is at any time movable by the operator, said manually operable means being operatively connected with said drive means for rendering the latter operable when said manually operable means is in in said operating position thereof and for blocking said drive means against operation when said manually operable means is in said rest position thereof, said control system comprising electrically-responsive automatic means also connected operatively with said drive means and also having operating and rest positions, said automatic means when electrically energized automatically assuming said operating position thereof and cooperating with said drive means for rendering the latter operable, said automatic means when unenergized assuming said rest position thereof and cooperating in the latter rest position thereof with said drive means for blocking the latter against operation, said manually operable means and said automatic means both being operatively connected with said drive means for rendering the latter operable when either one of said manually operable and automatic means is in said operating position thereof even though the other of said manually operable and automatic means is in said rest position thereof, a plurality of normally open positioning switch means carried by said guide means and distributed therealong at locations corresponding to the positions of said movable means to be selected, said movable means carrying a switch-closing means cooperating with said plurality of positioning switch means for respectively closing said plurality of positioning switch means when said movable means is respectively situated at said positions which are to be selected, an electrical circuit including said plurality of positioning switch means and said electrically-responsive automatic means, and a plurality of manually operable selecting switch means also located in said electrical circuit and respectively connected in series with said plurality of positioning switch means, said plurality of selecting switch means respectively corresponding to the positions of said movable means to be selected so that the operator will close one of said selecting switch means corresponding to the selected position for said movable means, whereby the operator can operate said manually operable means to render said drive means operative to move said movable means at least approximately to a selected position where said switch-closing means closes that one of said plurality of positioning switch means which corresponds to the selected position of said movable means, while the selecting switch means corresponding thereto has been previously closed, so that when said movable means has been displaced at least approximately to said selected position said automatic means will be energized to render said drive means operative even though the operator has returned said manually operable means to said rest position thereof, said drive means continuing to operate until said switch-closing means moves with respect to the closed positioning switch means to a location opening the latter, whereupon said automatic means automatically assumes said rest position thereof blocking further operation of said drive means and thus maintaining said movable means in the selected position.

4,130,184
ELEVATOR SPEED CONTROL SYSTEM

Tsuyoshi Satoh, and Kenzo Tachino, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1977, Ser. No. 799,314
Claims priority, application Japan, May 27, 1976, 51-61595
Int. Cl.² B66B *1/30*
U.S. Cl. 187—29 R 7 Claims



1. An elevator speed control system comprising, in combination, first speed pattern generator means for generating a command speed pattern, second speed pattern generator means for generating a second speed pattern delayed a predetermined time interval with respect to said command speed pattern during the acceleration, distance-of-movement calculating means for calculating theoretical distances of movement due to said command speed pattern, memory means for writing and reading said calculated theoretical distances of movement into and out from the same, said memory means successively storing said second speed pattern concerning said theoretical distances of movement in the form of a distance-to-speed function during the acceleration, and means for utilizing said second speed pattern stored in said memory means to generate a command deceleration pattern during the deceleration.

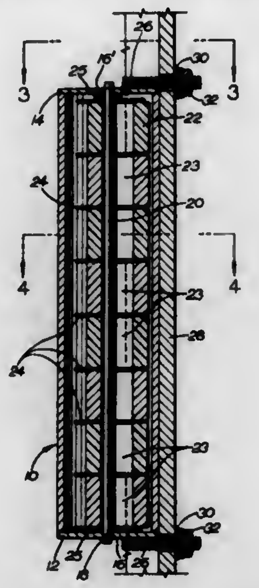
4,130,185
POLE VIBRATION DAMPER

Russell A. Densmore, Dublin, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Sep. 12, 1977, Ser. No. 832,692
Int. Cl.² F16F *7/10*
U.S. Cl. 188—1 B 10 Claims

1. A vibration damper for pole structures and the like comprising in combination with a pole structure a housing affixed to the pole structure and a plurality of metal vibration damping discs of smaller outer peripheral dimensions than the interior cross section of said housing mounted for controlled and lim-

ited movement within the housing, each of said discs being provided with a centrally disposed aperture, means for loosely and vertically stacking said discs within said housing including a rod means which is centrally and vertically disposed within the housing and which is insertable within the apertures of said discs, said rod means having a substantially smaller outer peripheral dimension than the peripheral dimensions of the various disc apertures, and apertured washer means of a different material from said discs mounted on said rod means between adjacent discs and providing slippery contact surfaces and separators between adjacent discs wherein the relative sizes of the outer peripheries of the discs and the sizes of the central apertures of the discs are adjusted and correlated so as to prevent the discs from contacting the housing during movements of the same in the housing.



4,130,186
RIBBED BRAKE SHOE SUPPORT PLATE FOR CYLINDRICAL RING TYPE BRAKE

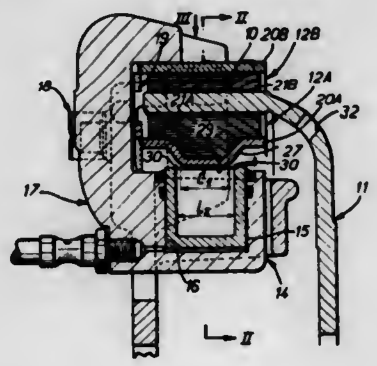
Gérard de Gennes, Senlis, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed May 17, 1976, Ser. No. 687,093

Claims priority, application France, May 20, 1975, 75 15587; Mar. 30, 1976, 76 09113

Int. Cl.² F16D *53/00*

U.S. Cl. 188—76 **15 Claims**



1. A brake shoe for a ring type brake having a cylindrical brake ring comprising a generally part-cylindrical support plate having remote faces defining a convex surface and a concave surface, a brake lining on one of the faces of said support plate and at least one elongate protruding rib on the opposite face of said support plate, said rib extending substantially from one edge of said support plate to an edge opposite thereto and comprising two lateral surfaces joining said rib to said opposite face of said support plate and a substantially planar surface interconnecting said lateral surfaces and extending only between said lateral surfaces to define the sole bearing surface on said opposite face of said support plate adapted to bear against actuating means for said brake shoe, said two lateral surfaces and said planar surface of said rib defining a depression in said support plate and said brake lining having a portion projecting into said depression and forming a mechanical interlock with said support plate.

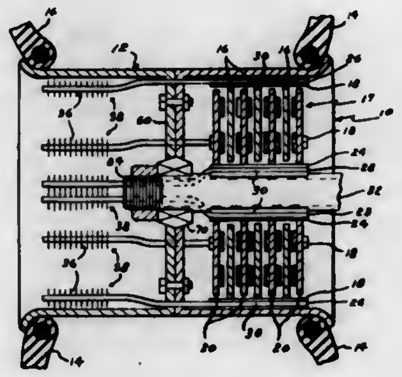
4,130,187
SYSTEM FOR THERMAL ISOLATING OF BRAKES

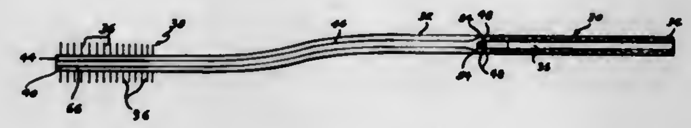
Lawrence L. Midolo, 1475 Black Oak Dr., Centerville, Ohio 45459

Filed Sep. 28, 1977, Ser. No. 837,136

Int. Cl.² F16D *65/853*

U.S. Cl. 188—264 CC **4 Claims**





1. An apparatus for thermally isolating the brakes from the tire and axle bearing in an aircraft wheel having an axle member, a rim member, a brake member, with the brake member having rotor members and stator members; a plurality of key members for securing the brake rotor members to the rim member and the stator members to the axle member; comprising: a plurality of elongated heat transfer members; each of said heat transfer members having a sealed tubular chamber; a heat resistant wick member adjacent the wall at one end of the heat transfer member; means, at the end of said chamber remote from said wick member for removing heat from said chamber; a solution within said chamber; a tubular membrane, permeable only to the solvent, of said solution, supported within said chamber at the end of the chamber adjacent the heat removing means; said tubular membrane being spaced from the wall of the tubular chamber; a liquid transfer passage connected between the tubular membrane and the wick member; a solvent vapor transfer passage between said wick member and the space between the tubular member and the tubular membrane; said key members each having a longitudinal chamber therein; each of said elongated heat transfer members having its wick end extending into said longitudinal chambers in said key members; the end of said elongated heat transfer member having said heat removing means being positioned on the side of said aircraft wheel remote from said brake member.

4,130,188
BRAKING DEVICE FOR A MOTOR

Crawford S. Askew, 5120 SW. 98th Ave. Rd., Miami, Fla. 33165

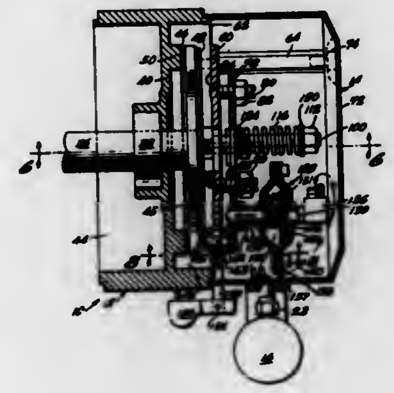
Continuation-in-part of Ser. No. 625,454, Oct. 23, 1975, abandoned. This application Aug. 1, 1977, Ser. No. 820,743

Int. Cl.² F16D *59/02*

U.S. Cl. 188—170 **11 Claims**

1. A fluid operated brake device for an electric motor, including a housing with the motor shaft extending into the housing, the shaft having a brake disc fixed thereto within the housing, and including brake ring means carried in said housing, constrained against rotational movement and free for axial movement into and out of braking engagement with the disc, said brake device comprising,

a fixed mounting plate on the housing;
a movable mounting plate in a spaced apart, pivotal relation to said fixed mounting plate;
brake stud means adjustably fixed to said movable plate for movement into and out of engagement with the brake ring means;
compression spring means to normally maintain said movable plate in a first position with said brake stud means in engagement with the brake ring means to maintain a braking engagement with the brake disc;
a plunger movable between a normally retracted position, permitting said compression spring means to maintain said braking engagement, and an extended position in engagement with said fixed mounting plate to pivot said movable plate to a second position with said brake stud means out of engagement with said brake ring means;
means to actuate said plunger to said extended position by means of a suitable pressurized fluid when the motor is energized;
said means to actuate includes a diaphragm housing, including mounting means mounting said diaphragm housing on said movable plate, and providing an inner chamber with a diaphragm spanning said chamber, said diaphragm housing provides an inlet port into said chamber on a first side of said diaphragm, said plunger extends inwardly through said mounting means and terminates in an enlarged head portion within said chamber, engaged against a second side of said diaphragm; said means to actuate further includes a normally closed solenoid actuated valve, wired in parallel with the motor to maintain said valve in an open position when the motor is energized, providing a flow of pressurized fluid through said inlet port against said diaphragm first side to displace said diaphragm in a manner so as to maintain said plunger in said extended position, said pressurized fluid flow being interrupted when said motor is de-energized permitting said valve to assume its normal closed condition and said plunger to move to said retracted position;
an adjustable metering valve including manual control means, associated with said solenoid actuated valve, disposed in an exhaust passage in said solenoid actuated valve to control the rate of flow of pressurized fluid out of the diaphragm housing through said exhaust passage via said inlet port and the resulting speed rate of the braking operation of the brake device.



4,130,189
RETURN SPRING OF A DRUM BRAKE USED IN A VEHICLE

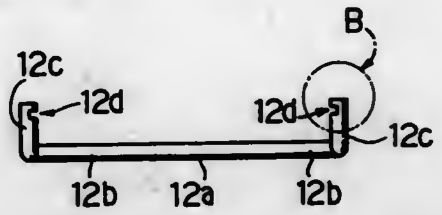
Masayoshi Katagiri, and Ziro Kizaki, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 14, 1977, Ser. No. 842,159

Claims priority, application Japan, Jun. 13, 1977, 52-69652

Int. Cl.² F16D *51/24*

U.S. Cl. 188—328 **3 Claims**



1. In a drum brake for vehicle use which includes:
a backing plate secured to a fixedly positioned member on a wheel shaft;
a pair of brake shoes slidably attached to said backing plate, each of said brake shoes including a lining portion and a web portion, each web portion including a hole;
a wheel cylinder disposed between respective first mutually closely positioned end portions of said shoes;
an anchor means doposed between second mutually closely positioned end portions of said shoes;
a substantially U-shaped return spring which includes a U-shaped portion in a given plane and is engaged with each web portion of said shoes for biasing said shoes in a mutually approaching direction;
the improvement wherein said U-shaped return spring is made of a wire rod, each end portion of said rod being bent perpendicularly to said plane determined by said U-shaped portion of said U-shaped return spring, into respective L-shapes for providing respective engaging portions engaged with respective ones of said holes in said web portions of said shoes, each of said engaging portions being provided with a respective notch, which is a single indent having shoulders on either side thereof, formed substantially perpendicular to an axis of said engaging portion in a mutually confronting posture and fitted respectively onto an edge of a respective one of said engaging holes to prevent relative movement of said engaging portions in the axial direction relative to said web portions due to abutment of said web portions on said shoulders, with said U-shaped portion of said U-shaped return spring being spaced from said web portions.

4,130,190
BRAKE ACTUATING DEVICES

David J. Townsend, F1, 37 Dyott Rd., Birmingham B13 9AZ, England

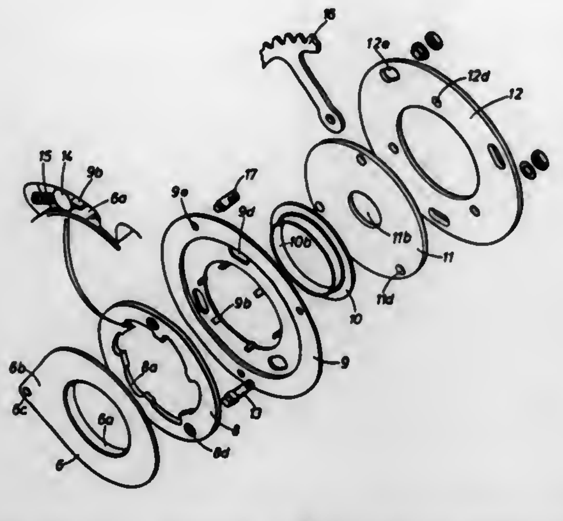
Filed Jan. 24, 1977, Ser. No. 761,905

Int. Cl.² B60T *1/14*

U.S. Cl. 192—5 **9 Claims**

1. A braking means for a pedal actuated vehicle comprising: a first rotatable element and a second rotatable element; a formation between said first and said second rotatable elements, which has engaged and disengaged positions, the position of said formation being determined by the direction of rotation of one of said rotatable elements so that when the formation is in the engaged position the two rotatable elements are caused to rotate together, and when the formation is in the disengaged position the two rotatable elements can rotate relative to one another; a control device for moving the formation to the disengaged position during forward rotation of one rotatable element with respect to the other rotatable element, wherein the control device is arranged so that backward rotation of one rotatable element with respect to the other causes said formation to move to the engaged position; a braking force

transmitting system coupled to a pair of braking force transmitting cables; means for securing one of said rotatable elements



to a rotatable drive member of the pedal actuated vehicle; and means for connecting the other of said rotatable elements to said braking force transmitting system.

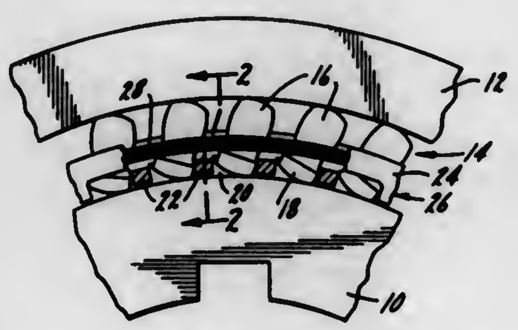
4,130,191
SPRAG CLUTCH ASSEMBLY

Carl R. Judd, Ithaca, and Howard D. Snyder, Jr., Newfield, both of N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 17, 1977, Ser. No. 825,326

Int. Cl.^{2} F16D *41/07*

U.S. Cl. 192—41 A **1 Claim**



1. A sprag clutch assembly especially usable in indexing applications where the indexing rates and degree of accuracy are high comprising:

an inner race and an outer race, said races defining an annular space therebetween;

a plurality of circumferentially spaced sprags in said annular space;

each sprag having a body portion with race engaging surfaces and axially extending footed portions;

each footed portion being defined in part by an upper surface which diverges from said body portion;

said axially extending footed portions being closely adjacent said inner race;

a sprag retainer in said annular space comprising axially spaced rings joined by cross bars, each adjacent pair of cross bars defining an opening in which a footed portion of a sprag is received;

said cross bars being closely adjacent said inner race; and

at least one contracting garter spring encircling said footed portions of said sprag and engaging the diverging surfaces thereof.

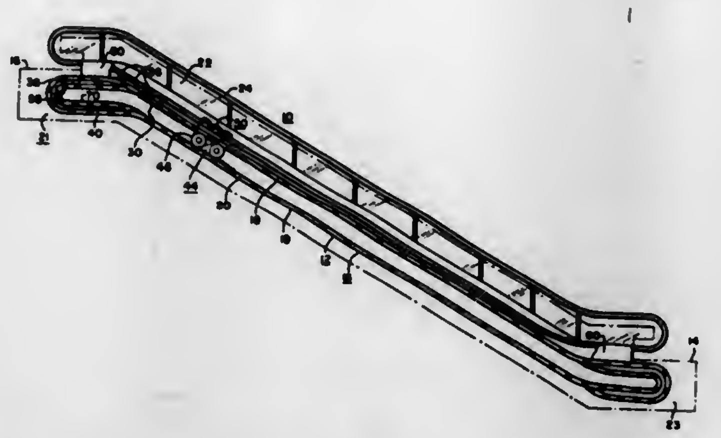
4,130,192
TRANSPORTATION APPARATUS

Joseph K. Kraft, Dover, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 6, 1976, Ser. No. 748,247

Int. Cl.^{2} B66B *9/12*

U.S. Cl. 198—327 **10 Claims**



4. Transportation apparatus, comprising:

an endless belt,

a plurality of platforms attached to said belt,

means driving said belt and platforms in a loop, said loop including first and second ends which interconnect load bearing and return runs of said belt and platforms,

and means guiding said belt about said loop including guide wheels and guide tracks,

said guide tracks including load bearing and return run tracks, and means providing an automatically adjustable transition therebetween at each of the first and second ends of the loop which means defines turn-arounds for the endless belt, said means including first and second curved members having first ends oriented to provide extensions of the load bearing and return run tracks, respectively, and second ends, means pivotally mounting the first ends of said first and second curved members on first and second pivot axes, respectively, and means interconnecting the second ends of said first and second curved members to provide a predetermined fixed distance between selected points of the first and second curved members without restricting pivotal movement thereof.

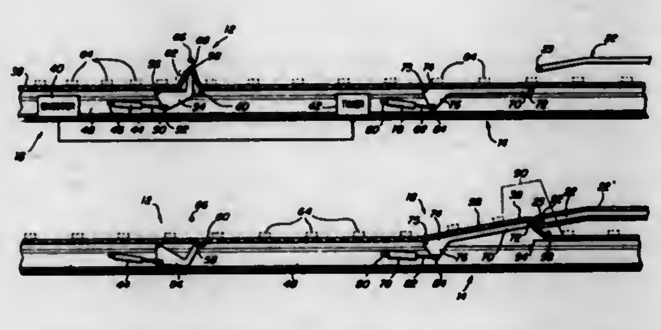
4,130,193
TRANSFER SYSTEM FOR CONVEYOR SYSTEMS

Ronald D. Bourgeois, 138 Ellison Park, Waltham, Mass. 02154

Filed Apr. 25, 1977, Ser. No. 790,466

Int. Cl.^{2} B65G *47/46*

U.S. Cl. 198—369 **8 Claims**



7. A transfer system for periodically transferring conveyed objects between first and second conveyor systems, each including a conveyor belt, one of said first and second conveyor systems being the transferor system, the other being the transferee system, comprising:

a transfer unit including a rotatable support section for carrying at least a portion of the conveyor belt of the first conveyor system and having a free end and an end rotatably interconnected with the support structure of the first conveyor system; and a drive mechanism for rotating said support section between a retracted position and an inclined position bridging said first and second conveyor systems with the conveyor belt of the first conveyor system at the free end of said section in close, conveying, proximity to the conveyor belt of the second conveyor system; and

an interrupter unit for producing a gap in the normal flow of product along the one of the first and second conveyor systems which is the transferor system during which said rotatable support section switches between its retracted position and its inclined position, including drive means; and actuator means including a crank mechanism and a cross bar disposed beneath the conveyor belt and fixed to the crank mechanism responsive to said drive means for raising a limited portion of the conveyor belt of the one of the first and second conveyor systems which is the transferor system, to produce an inclination of the conveyor belt to prevent further progress of conveyed objects.

4,130,194
APPARATUS FOR ERECTING AND ALIGNING ARTICLES

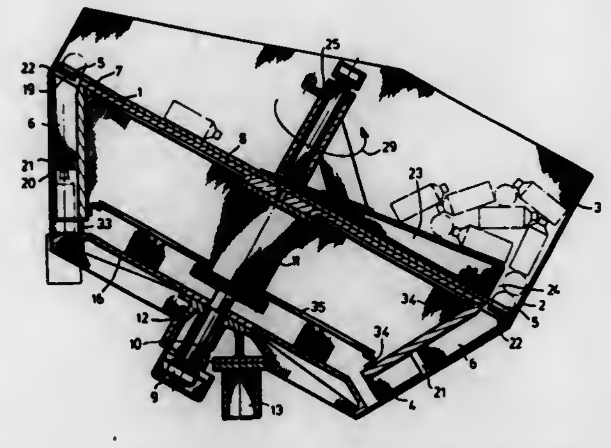
Hugo Schindel, Saulheim, and Karl Mecks, Gau-Odernheim, both of Germany, assignors to Rationator-Maschinenbau GmbH, Hillesheim, Germany

Filed Sep. 30, 1977, Ser. No. 838,087

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1976, 2651495

Int. Cl.^{2} B65G *47/24*

U.S. Cl. 198—397 **10 Claims**



1. An apparatus for erecting elongated shaped articles and for aligning the erected articles, which comprises

(a) a housing defining an open top for randomly receiving a multiplicity of the elongated shaped articles,

(b) a disc mounted in the housing for rotation about an inclined axis of rotation whereby the disc extends in a plane enclosing an angle with the horizontal and the rotating disc has a zenith and nadir, the disc having

(1) a circumferential edge adjacent the housing and the edge defining openings capable of permitting the articles to pass therethrough, and

(2) shafts accociated with the openings and descending therefrom,

(c) a stationary annular support plate mounted in a plane immediately below the plane of the disc and in registry with the openings in the circumferential edge of the disc, the annular support plate defining

(1) an opening at the zenith for permitting communication between a respective one of the openings in the circumferential disc edge and the shaft associated therewith,

(2) the associated shaft at the zenith having a perpendicularly extending axis whereby the randomly received articles gravitate to the nadir, are revolved by the rotating disc to the zenith while supported in the openings on the annular support plate and pass sequentially through the opening at the zenith into the shaft while being erected therein, and

(d) a generally horizontally extending elongated conveyor means for receiving the sequentially erected articles from the shaft at the zenith and for transporting them in alignment away from the shaft.

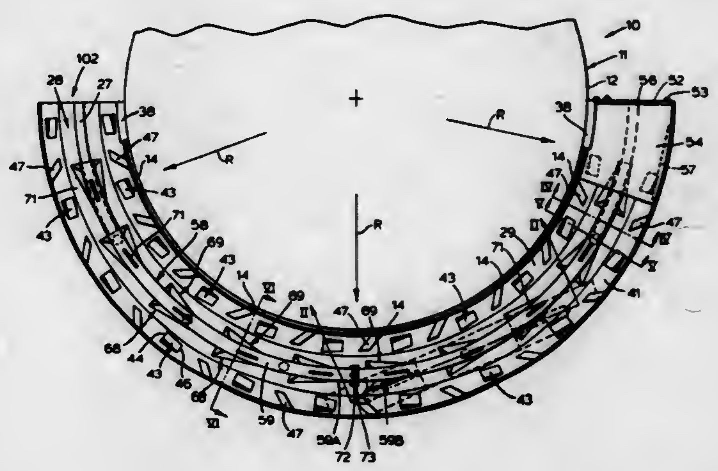
4,130,195
ARCUATE PUSH-BAR CONVEYOR

Roger T. Becker, Kalamazoo; Donald L. Burns, Oshtemo, and Stephen P. Calkins, Three Rivers, all of Mich., assignors to Kalamazoo Conveyor Company, Kalamazoo, Mich.

Filed Apr. 22, 1977, Ser. No. 789,876

Int. Cl.^{2} B65G *25/08*

U.S. Cl. 198—739 **16 Claims**



1. An apparatus for conveying material deposited therein, comprising:

an elongated and continuous arcuate trough, the top portion of which is substantially completely open for receiving material along its arcuate length, the centerpoint for the radius of said arcuate trough being located on one side thereof;

arcuate rail means mounted in an extending along an arcuate path in said arcuate trough;

arcuate and rigid slide means slidably mounted on said arcuate rail means, the centerpoint for the radius of the arcuate arrangement of said rail means and said slide means coinciding with the centerpoint of the radius for said arcuate trough;

a plurality of plows mounted on said arcuate slide means at spaced intervals;

reciprocal power means associated with said arcuate trough and driving linkage means for connecting said reciprocal power means to said arcuate slide means and arranged to move said arcuate slide means and said plows thereon back and forth along said arcuate path, said linkage means including guide means for converting the reciprocal drive of said power means into an arcuate drive for said arcuate slide means in both directions of movement thereof;

material retaining means in said arcuate trough encouraging unidirectional movement of said material in said trough by said plows on said arcuate slide means; and

outlet means from at least one end of said arcuate trough for discharging said material from said arcuate trough.

4,130,196
PACKAGE ELEVATOR FOR A SHIP

Randall J. Schwab, Portland, Oreg., assignor to Transco Northwest, Inc., Portland, Oreg.

Filed Dec. 13, 1976, Ser. No. 750,366

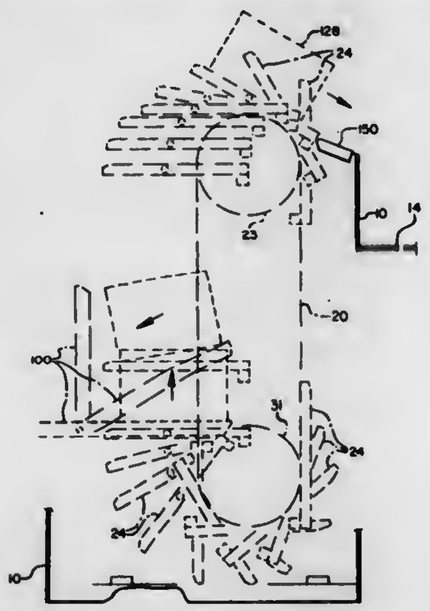
Int. Cl.^{2} B65G *17/12*

U.S. Cl. 198—796 **6 Claims**

3. In an elevator,

a pair of endless chains,

a pair of drive sprockets meshing with the chains and reversing the direction of the chains,
a pair of idler sprockets meshing with the chains and reversing the direction of the chains,
a carrier tray,
a pair of forked followers carried pivotally by the chains and carrying the tray,
each of the followers including an inner arm and an outer arm,
a pair of follower rollers mounted on the arms,
a pair of parallel inner cam track means guiding the rollers on the inner arms,
a pair of outer cam track means guiding the other rollers, the cam track means serving to guide the followers to advance the trays 90° at the idler sprockets and to retard the trays 90° at the drive sprockets,
the carrier tray being comb-like and including a comb-like transfer tray mounted at a loading and unloading station along one course of movement of the carrier tray,

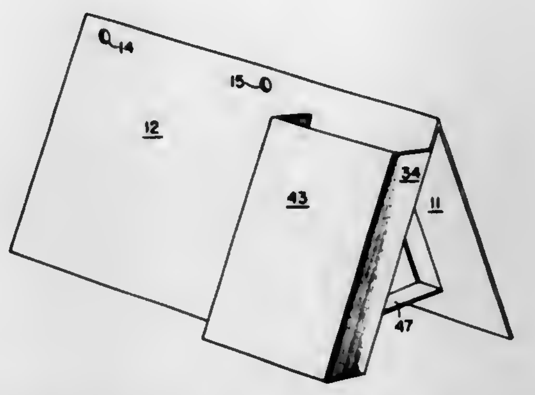


and mounting means for selectively holding the transfer tray in an extended position in the path of the carrier and a retracted position out of that path,
the mounting means including means for holding the transfer tray in a sloping position extending into the path of the carrier tray for unloading a package being lowered by the carrier tray,
the mounting means also including means for holding the transfer tray in a horizontal position adapted to hold a package in the path of the carrier tray for the carrier tray to pick up and raise,
the mounting means including pairs of pins on the transfer tray and a pair of members having forked slots for one pin of each pair,
the pair of members including one pair of forked slots for holding one pair of pins to locate the transfer tray in the horizontal position and a second pair of slots for holding a second pair of pins to locate the transfer tray in the sloping position.

4,130,197
DISPLAY DEVICE

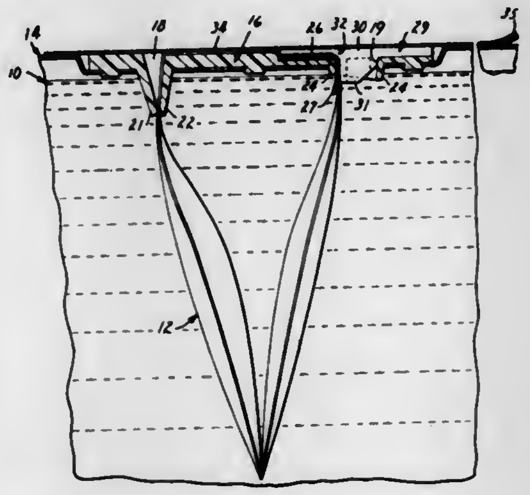
Philip R. Fox, Cincinnati, Ohio, assignor to Midwest Bindery Enterprises, Inc., Cincinnati, Ohio
Filed Dec. 7, 1977, Ser. No. 858,194
Int. Cl.^{2} B65D *5/52*
U.S. Cl. 206—45.26 **9 Claims**

1. A display card blank for forming a display card having an integral pocket, said blank comprising:
(a) a main panel including a foldable glue flap formed therein by a score line and intersecting cut lines;
(b) a first side panel hingedly connected to said main panel by means of a score line parallel to the score line forming one edge of said glue flap;
(c) an inner wall panel hingedly connected to said first side panel by means of a score line, said inner wall panel having its longitudinal dimension equal to the longitudinal dimension of said first side panel;
(d) a second side panel hingedly connected to said inner wall panel by means of a score line, said second side panel having its longitudinal dimension equal to the longitudinal dimension of said first side panel and parallel thereto;
(e) an outer wall panel hingedly connected to said inner wall panel by means of a score line, said outer wall panel being positioned along a free edge of said inner wall panel; and
(f) closure means for effecting closure at the bottom of said integral pocket.



4,130,198
MULTI-PART LIQUID CONTAINER

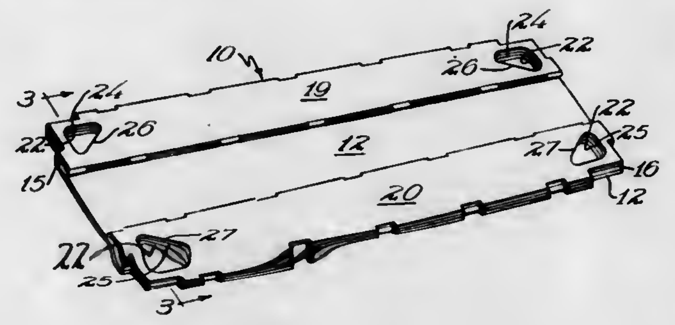
Kenneth A. Aho, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Mar. 27, 1978, Ser. No. 890,472
Int. Cl.^{2} B65D *25/08*
U.S. Cl. 206—221 **10 Claims**



1. A container for two fluids to be mixed just prior to use comprising:
a rigid, fluid-tight, primary container having a cover and containing a first fluid, said cover being formed with two spaced parallel slots,
a squeegee comprising a pair of parallel, closely spaced members fixedly positioned in the first of said slots in said cover parallel to said slots and projecting into said container,
an elongate, flexible bag containing a second fluid, said bag passing through said squeegee into said primary container and out of the second of said slots in said cover with one end of said bag projecting from said primary container through said squeegee and the other end of said bag projecting from said primary container through said second slot, and
a strip of tape covering the projecting ends of said bag and removably adhered to said cover around said bag ends,
whereby said tape may be removed from said cover, the end of said bag projecting from said primary container through said second slot is permitted to slip through said second slot into said primary container and the end of said bag projecting from said primary container through said squeegee is pulled on to empty the contents of said bag into said primary container, the contents of said bag being substantially completely removed by said squeegee as the bag is pulled therethrough.

4,130,199
DIE CUT PAD

John F. Sorenson, Minneapolis, Minn., assignor to Champion International Corporation, Stamford, Conn.
Continuation of Ser. No. 710,449, Aug. 2, 1976, abandoned. This application Jan. 20, 1978, Ser. No. 870,879
Int. Cl.^{2} B65D *85/70*
U.S. Cl. 206—320 **1 Claim**

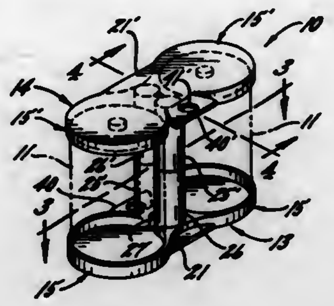


1. A heavy appliance in combination with a support pad for engaging and cushioning said appliance, said appliance having a bottom plate and distended supports, said support pad including a central, substantially rectangular base portion, said base portion having die cut apertures which are so configured and so oriented that they can each receive a distended support from said appliance, said support pad further having a pair of lateral, raised, multilayer cushion members formed from a plurality of hingedly connected flap members which are folded against each other, said cushion members also having die cut apertures for receiving the distended supports of said appliance, the apertures of the cushion members being in register with the apertures of said base portion, said appliance and support pad cooperatiing with each other such that the plate of the appliance lies flush against the cushion members, but spaced apart from the base portion of the pad, and the distended supports of the appliance extend completely through the apertures in the base portion of the pad and are fully accommodated within the apertures of the cushion members of the pad whereby the distal surface of said distened supports lie flush with the bottom surface of said base member.

4,130,200
DISPLAY PACKAGE FOR BATTERIES OR THE LIKE

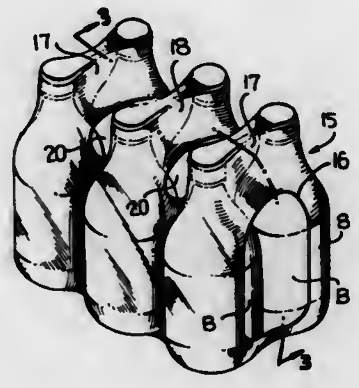
Harry E. Iepson, Lino Lakes, Minn., and Richard A. Erickson, New Richmond, Wis., assignors to Gould Inc., Rolling Meadows, Ill.
Filed May 6, 1977, Ser. No. 794,630
Int. Cl.^{2} B65D *85/20, 85/62, 7/12*
U.S. Cl. 206—333 **4 Claims**

1. A package for holding and displaying a pair of substantially cylindrical batteries, said package comprising a base unit and an indentically formed top unit each molded of plastic, each of said units comprising a pair of cup-shaped receptacles molded integrally with and spaced horizontally from one another, the receptacles of each unit opening in a vertical direction and having substantially the same cross-sectional size and shape as said batteries, vertically extending post means molded integrally with and located between the receptacles of each unit, a socket opening vertically out of the free end of the post means of each unit, and a stud projecting vertically from the free end of the post means of each unit and sized to telescope securely but releasably into the socket in the post means of the other unit whereby batteries placed in the receptacles of said base unit may be held therein by inverting said top unit with respect to said base unit and by shifting said top unit downwardly toward said base unit to cause the receptacles of said top unit to telescope over said batteries and to cause the stud of each unit to telescope into the socket of the other unit and thereby hold said units in assembled but releasable relationship so that the package is capable of being easily opened and is reusable.



4,130,201
SHRINK WRAP CONTAINER PACKAGE

Joseph W. Duerr, Rockleigh, N.J., assignor to Ganz Brothers, Inc., Bergenfield, N.J.
Filed Oct. 19, 1976, Ser. No. 733,695
Int. Cl.^{2} B65D *75/06*
U.S. Cl. 206—432 **3 Claims**



1. A package comprising a plurality of containers each having a base portion and a tapering neck portion, said containers being arranged in two columns and including at least three rows, a sheet of heat shrinkable plastics material film defining a sleeve extending about said containers and open at its ends in the direction of said columns, said sheet being heat shrunk about said containers and tightly fitting about said containers with portions of said sheet enclosing said containers at the ends of said package and defining end openings of limited size as compared to the cross-section of said package, and a slit in said sheet in the direction of said rows between adjacent pairs of rows, said sheet being relieved solely by said slits with each slit having been transformed to a heat shrunk finger receiving opening generally oval in plan between adjacent ones of said rows with said sheet extending inwardly and downwardly about said container tapering neck portions to define a strap of inverted U-section encasing the tapering neck portions of the two containers in the respective row, said straps including a strap tightly engaging upper portions of at least two centrally disposed ones of said containers and defining a lifting strap, said straps each extending in the direction of said rows and extending in about three quadrants of each container tapering neck portion.

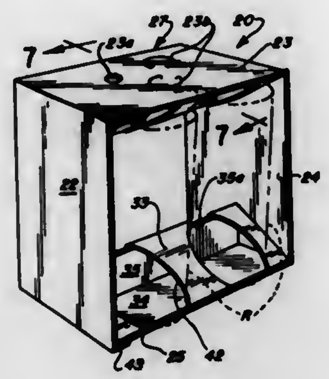
4,130,202
CARRIER FOR RECEPTACLES AND BLANK THEREFOR

Charles L. Champlin, Rittman, and John T. Misura, Wadsworth, both of Ohio, assignors to Packaging Corporation of America, Evanston, Ill.

Filed Apr. 13, 1978, Ser. No. 895,994

Int. Cl.^{2} B65D *65/10*

U.S. Cl. 206—434 **17 Claims**



1. A carrier of foldable sheet material for accommodating a plurality of receptacles, said carrier comprising a sleevelike member including a top panel, a bottom panel, and a pair of side panels foldably connecting corresponding first peripheral portions of said top and bottom panels; and receptacle-retaining means provided on opposing surfaces of said top and bottom panels, the retaining means for each opposing surface including a pair of apertured panel sections overlying said opposing surface and adjustable relative thereto between an operative position and an inoperative position, said apertured panel sections having corresponding inner edges integral with and foldably connected to one another and the corresponding outer edges foldably connected to opposite second peripheral portions of said top and bottom panels, one panel section of a pair being provided with a foldline spaced from and substantially parallel to the foldable connection of the outer edge of said one panel section, the inner edges of said pair of panel sections being spaced the greatest distance from the opposing surface when said pair of apertured panel sections is in an operative position, and support means movable independently of said pair of panel sections and supportingly engaging the foldably connected inner edges thereof to effect retention of said pair of panel sections in said operative position.

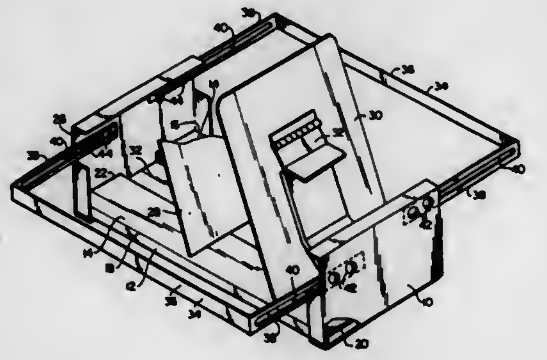
4,130,203
RECORD TRAY WITH ADJUSTABLE SIDE RAILS

Thomas H. Russell, III, 14 Sulgrave Rd., West Hartford, Conn. 06107

Filed Oct. 17, 1977, Ser. No. 842,941

Int. Cl.^{2} A47F *7/00*

U.S. Cl. 211—51 **5 Claims**



1. A tray for holding a collection of generally rectangular record cards in face-to-face arrangement with their faces generally vertical, said tray comprising a base providing a generally rectangular horizontal support surface with front and rear ends, front and rear walls fixed to said base and extending upwardly from said front and rear ends thereof respectively, and two C-shaped side rail members separate from said base and said front and rear walls and located at opposite sides of said support surface, said two side rail members each having a vertical dimension substantially less than that of said front and rear walls and being spaced in its entirety above said support surface, each of said side rail members including an elongated side rail portion extending horizontally between said front and rear walls and each of said side rail members having two elongated legs at opposite ends of its side rail portion extending horizontally inwardly from said side rail portion into overlapping relationship with said front and rear walls respectively, and connecting means connecting the two of said legs overlapping said front wall to said front wall and the two said legs overlapping said rear wall to said rear wall for rectilinear slidable movement of said legs horizontally relative to said walls and laterally of said base to vary the spacing between said side rail portions, said connecting means including a plurality of threaded fasteners which may be tightened to releasably fix said legs relative to said walls and which may be loosened to free said legs for said rectilinear slidable movement, said legs of said C-shaped rail member being of such lengths and said connecting means being so constructed that throughout one portion of the range of movement of said rail members the two of said legs associated with each of said walls overlap one another and that throughout another portion of the range of movement of said rail members the two of said legs associated with each of said walls do not overlap one another.

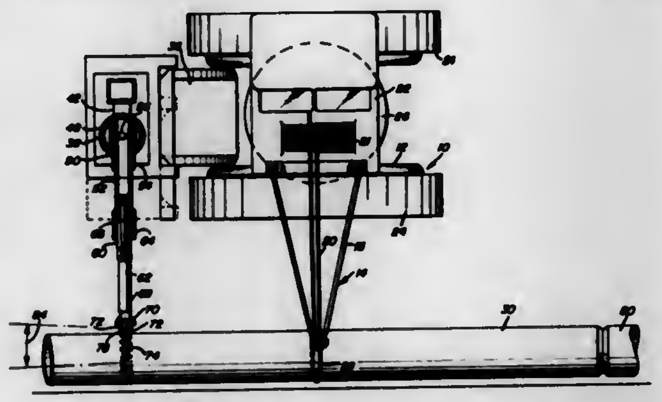
4,130,204
SIDE BOOM PIPE LAYING CRANE WITH PIPE SECTION ALIGNMENT FEATURE

Kenneth L. Pickard, 419 S. 106th East Ave., Tulsa, Okla. 74128

Filed Aug. 26, 1977, Ser. No. 828,294

Int. Cl.^{2} B66C *23/42*

U.S. Cl. 214—1 PA **11 Claims**



1. A mobile land vehicle for laying successive pipe sections, said vehicle including a frame having front and rear ends and ground engageable support means for said frame adapted to support and advance said frame from and forwardly over the ground, said frame including longitudinally spaced front and rear support means supported from and projecting outwardly from one side of said vehicle at points spaced therealong, said support means each including pipe section engaging means adapted to engage and support longitudinally spaced portions of a pipe section extending therebetween, said support means each including means operative to selectively adjustably vertically and laterally position the corresponding pipe section engaging means relative to said frame, independent of vertical and/or lateral positioning of the other pipe section engaging means relative to said frame.

4,130,205
LOADING ARM

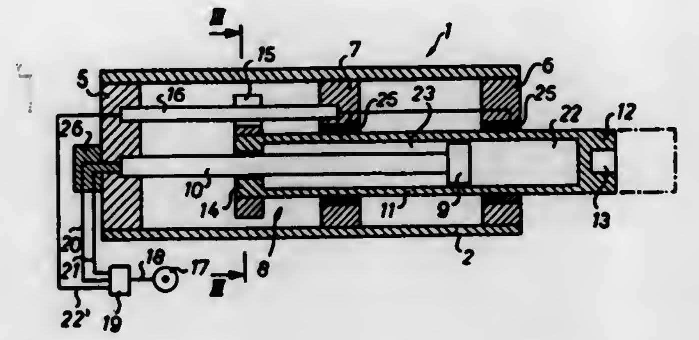
Hans Lüthi, Steffisburg, Switzerland, assignor to Fritz Studer AG., Thun, Switzerland

Filed Dec. 8, 1976, Ser. No. 748,499

Claims priority, application Switzerland, Dec. 9, 1975, 15959/75

Int. Cl.^{2} F15B *15/26*

U.S. Cl. 214—1 BB **4 Claims**



1. A loading arm apparatus comprising a main rod, support means operable for supporting said rod displaceably along the longitudinal direction thereof, said rod including engaging means operative for engaging work pieces to transfer the same from one position to another, said support means comprising releasable clamping means operable for clamping and accurately aligning said main rod, and, respectively, releasing said main rod for displacement thereof along the longitudinal direction with play, wherein said main rod comprises piston drive means having a piston fixedly mounted in said housing, said main rod comprising a movable cylinder for said piston defining a pair of chambers, a source of pressurized medium for supplying pressurized fluid to said chambers selectively to displace said cylinder to predetermined distances along said longitudinal direction.

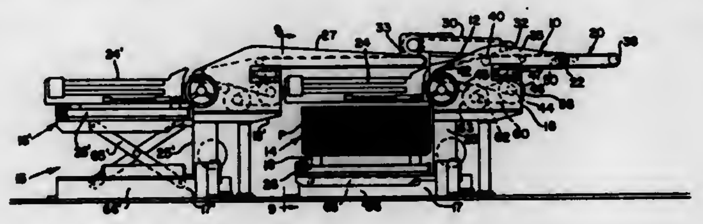
4,130,206
SHEET PILING MACHINE WITH CLASSIFIER AND MULTIPLE PILING ARRANGEMENTS

Velio S. Buccicone, Portage, Ind., assignor to Bucciconi Engineering Co., Inc., Gary, Ind.

Filed Oct. 4, 1976, Ser. No. 729,131

Int. Cl.^{2} B65G *57/11*

U.S. Cl. 214—6 D **12 Claims**



1. A machine for piling metal sheets comprising a plurality of unitary sheet accumulating mechanisms arranged in aligned relation, each of said accumulating mechanisms comprising a separate supporting frame having a base portion adapted to be disposed horizontally, a vertically movable platform supported on each said frame for receiving thereon a pile of said sheets, an upstanding portion on each said supporting frame and means thereon cooperating with means on the movable platform for guiding the platform in a vertical path between a raised and lowered position, an infeed conveyor supported on each said upstanding frame portion and extending rearwardly thereof in the direction of sheet travel in cantilever arrangement and at an elevation above the raised position of said platform, means for driving said infeed conveyor to deliver sheets to an area above the associated platform, laterally spaced, elongate sheet edge guide members supported on said upstanding frame portion and extending in cantilever arrangement forwardly thereof above said pile receiving platform, end stop mechanism supported on said side guide members and a cooperating back stop member mounted in spaced relation on said upstanding frame portion, and an overhead conveyor disposed above the discharge end of each said infeed conveyors which is operable to pick up sheets delivered by the infeed conveyor and advance said sheets to the infeed conveyor of the next in line sheet accumulating mechanism.

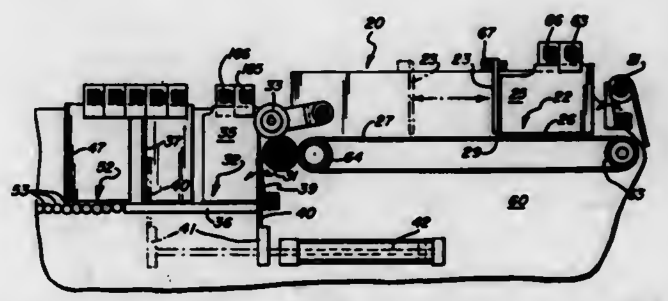
4,130,207
APPARATUS FOR STACKING BOOKLETS FROM THE TOP

John A. Cogswell, Medfield, Mass.; Fred E. Klaszky, Glen Ellyn, and Anthony S. Jacobs, Glencoe, both of Ill., assignors to The Wessel Company, Inc., Chicago, Ill.

Filed Mar. 5, 1976, Ser. No. 664,281

Int. Cl.^{2} B65G *57/14*

U.S. Cl. 214—6 D **6 Claims**



1. An apparatus for the top stacking of booklets, said apparatus comprising:
means for supporting a stack of booklets;
first conveying means for conveying a stream of unstacked booklets in a downstream direction toward said stack-supporting means;
means for piling booklets from said stream to form a vertical stack atop said stack-supporting means;
means normally actuated to restrain movement of said stack in a downstream direction from said stack-supporting means;
means, responsive to said stack attaining a predetermined size, for deactuating said restraining means, to permit movement of said stack in a downstream direction;
second conveying means downstream of said stack-supporting means;
means for displacing the entirety of said stack as a whole from said supporting means, in a downstream direction, to said second conveying means when said restraining means is deactuated;
second restraining means actuable to restrain movement of the stack in a downstream direction on said second conveying means;
and means for actuating said second restraining means when said first-recited restraining means is deactuated.

4,130,208
SIDE RAILS CONTAINER TRANSFER SYSTEM

Leonard D. Barry, 19300 Pennington Dr., Detroit, Mich. 48221

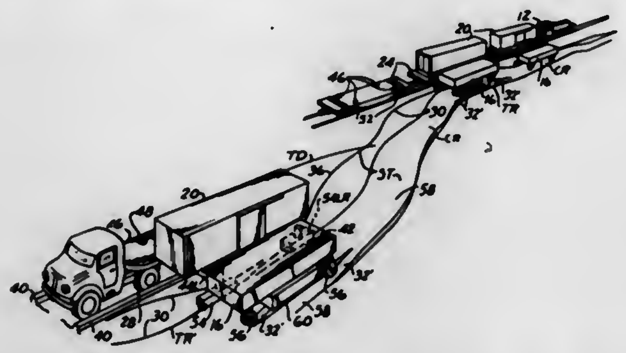
Continuation of Ser. No. 528,948, Dec. 2, 1974, abandoned. This application Nov. 15, 1976, Ser. No. 741,680

Int. Cl.^{2} B61D *47/00*; B65G *67/02*

U.S. Cl. 214—43 **17 Claims**

1. A moving-vehicle bottom-support-way side transfer system comprising a first vehicle way, a first vehicle thereon, a second vehicle way, a second vehicle for transfer between said first vehicle and said second way, (said second vehicle way having means to bear) wheel means for supporting said second vehicle to run on said second way, said wheel means bearing the full weight of the second vehicle below that vehicle, a berth or spot on said first vehicle for said second vehicle to be carried on, first (side-extensible latching) side coupling means on said first vehicle (to engage and couple) for moving said second vehicle in lengthwise alignment with said berth for

transfer, said second way incuding a transfer run along said first vehicle way which includes a coupling run wherealong the ways are spaced a distance apart so said coupling means can reach (when extended) for (to move) moving said second vehicle for transfer and an alignment run wherealong said second way is closer said first way enough to positioning said second vehicle aligned for transfer over said first vehicle, at least one lateral displacement S-curve in said second way connecting said coupling and alignment runs, and a dip in said second way along said alignment run at the opposite end thereof to lower said second vehicle to said berth on said first vehicle while aligned therewith or for lifting said second vehicle up from the first vehicle according to the direction of movement of said first vehicle along its way to load or unload said first vehicle of said second vehicle.



4,130,209
VEHICLES FOR TAKING ON, TRANSPORTING, AND DISCHARGING A LOAD

Sakari M. Mononen, Salkolantie 3 A 15, 01900 Nurmijarvi, Finland

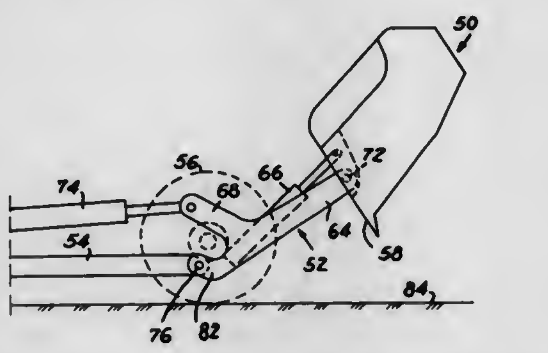
Continuation-in-part of Ser. No. 588,349, Jun. 19, 1975, Pat. No. 3,985,250. This application Oct. 8, 1976, Ser. No. 731,050

Claims priority, application Finland, Jun. 20, 1974, 1909/74; May 14, 1975, 751427

The portion of the term of this patent subsequent to Oct. 12, 1993, has been disclaimed.

Int. Cl.² E02F *3/28*

U.S. Cl. 214—140 **16 Claims**



1. In a self-loading vehicle which is capable of digging into and/or taking on a load, transporting the load, and then discharging the load, frame means, ground-engaging means supporting said frame means for travelling movement, said ground-engaging means and frame means cooperating with each other for providing the vehicle with a wheelbase of predetermined length, lever means pivotally connected with said frame means for turning movement with respect thereto about a lever axis, load-carrier means pivotally connected to said lever means for turning movement with respect thereto about a carrier axis, lever-displacing means operatively connected between said frame means and said lever means for turning said lever means with respect to said frame means about said lever axis, and carrier-displacing means operatively connected between said lever means and said load-carrier means for turning the latter with respect to said lever means about said carrier axis, both of said displacing means, said lever means, and said load-carrier means cooperating with each other for situating said load-carrier means in a load-receiving position where said load-carrier means is relatively close to the ground and situated beyond said wheelbase, as well as for placing said load-carrier means in a load-transporting position where said load-carrier means is closer to said wheelbase than when said load-carrier means is in said load-receiving position thereof with said load-carrier means when in said load-transporting position thereof being situated sufficiently close to said wheelbase to provide for stable travel of the vehicle with a load carried by said load-carrier means, and for placing said load-carrier means in a load-discharging position where said load-carrier means has been turned about said carrier axis with respect to said lever means while said load-carrier means is situated at an elevation higher then when said load-carrier means is in said load-receiving position thereof, said load-carrier means when in its load-transporting position providing for the load a a center of gravity situated over the wheelbase of the vehicle, and said load-carrier means having a load-carrying capacity on the order of at least 75% of the weight of the vehicle itself, said load-carrier means when in its load-transporting position having a lower wall portion situated directly over said frame means while being adjacent thereto.

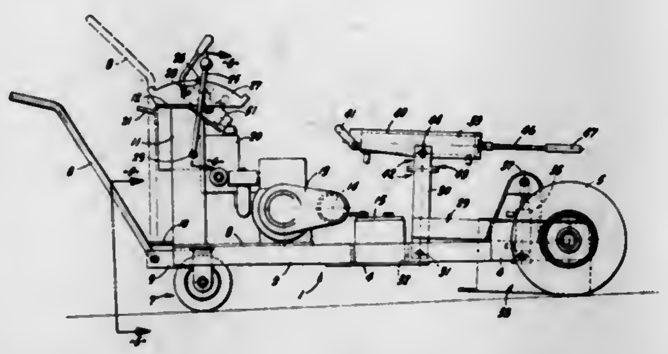
4,130,210
SELF-PROPELLED AIRPLANE DOLLY

John R. Purviance, 3400 Cottage Way, Sacramento, Calif. 95825

Filed Aug. 4, 1977, Ser. No. 821,829

Int. Cl.² B60B *29/00*

U.S. Cl. 214—332 **9 Claims**



1. A dolly — for moving, on the ground, a tricycle landing gear-type airplane which includes a nose wheel journaled on a depending strut — comprising a mobile frame, a vertically adjustable ramp at one end of the frame adapted to receive and elevate said nose wheel preparatory to moving the airplane, means between the frame and ramp operative to adjust the latter between a lowered, nose wheel-receiving position and a raised position with said nose wheel thereon disposed aboveground, and means mounted on the frame adapted to engage and pull on the strut in a direction to draw the nose wheel onto the ramp when in said lowered position; said strut engaging and pulling means being mounted in connection and moving with the vertically adjustable ramp.

4,130,211
TRAILER LOADING AND UNLOADING SYSTEM

Jose M. Z. Abascal, Arrieta 3-3°, Pamplona (Navarra), Spain

Filed Jun. 24, 1977, Ser. No. 809,540

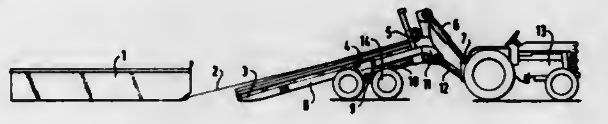
Claims priority, application Spain, Jul. 10, 1976, 449749; Feb. 14, 1977, 226473

Int. Cl.² B60P *1/04*

U.S. Cl. 214—505 **7 Claims**

1. In a trailer loading and unloading system for use with a tractor and a trailer, said trailer being of the type having a chassis, said chassis being supported on a set of wheels, said trailer having means for displacing said wheels forward or rearward with respect to the center of gravity of said chassis including any load thereupon whereby said chassis and load are urged by gravity to tilt rearward or forward respectively, the improvement comprising:

(a) a tow head rigidly attached to the front end of said chassis;
(b) a towing structure rigidly attached to the rear end of said tractor;
(c) a rigid tow bar pivotably attached at its first end to a first point on said towing structure and pivotably attached at its second end to a second point on said tow head;
(d) double-acting shock absorber means for retarding motion pivotably attached at its first end to a third point on said towing structure and pivotably attached at its second end to a fourth point on said tow head;
(e) said first and third points being vertically spaced apart, said second and fourth points being vertically spaced apart;
(f) said third and fourth points being higher than said first and second points;
(g) the vertical distance between said second and fourth points being substantially greater than the vertical distance between said first and third points;
(h) said shock absorber means being extensible in the rearward tilting direction of said chassis and being operative to restrain the rate of tilting of said chassis whereby a sudden fall of the rear of said trailer is avoided; and
(i) said shock absorber means having a fixed minimum length, the front cf said trailer being supported against said shock absorber means at its minimum length whereby the maximum forward tilt of said trailer is fixed.



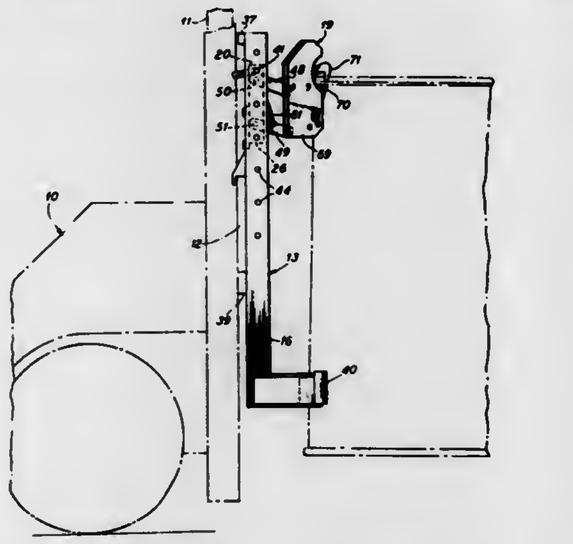
4,130,212
MULTIPLE HEAD DRUM LIFT UNIT

Lamberto S. Gatilao, Chicago, Ill., assignor to Liftomatic Material Handling, Inc., Evanston, Ill.

Filed Apr. 26, 1977, Ser. No. 791,040

Int. Cl.² B66F *9/18*

U.S. Cl. 214—653 **8 Claims**



1. For use with a lift rruck having a vertically movable mast for gripping and lifting drums, each having a bead at each end thereof and extending thereabout, a pair of drum gripping attachments each having a lower gripping jaw for gripping beneath the top bead of a drum and an upper gripping jaw cooperating with said lower gripping jaw and gripping within the top bead of a drum, transverse support means adjustably mounting said drum gripping attachments on said mast in laterally spaced relation with respect to each other for movement about a horizontal axis extending between said gripping attachments to conform to a drum having a non-uniform bead and for vertical movement with said mast, and means pivotally mounting said gripping attachments at opposite ends of said transverse support means for movement about parallel vertical axes to conform to the circumferential surfaces of drums of various diameters.

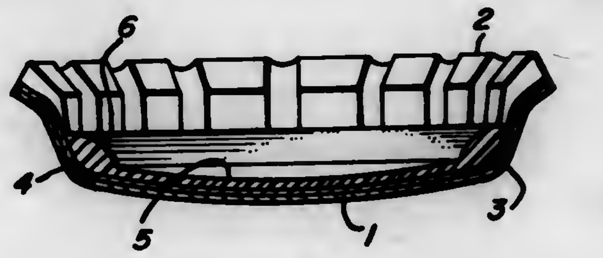
4,130,213
PLASTISOL COMPOSITION AND CONTAINER CLOSURE GASKET MADE THEREFROM

Walter R. Wszolek, Sykesville, Md., assignor to W. R. Grace & Co., New York, N.Y.

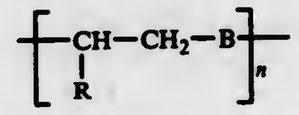
Continuation-in-part of Ser. No. 563,018, Mar. 28, 1975, Pat. No. 4,020,966. This application Jan. 10, 1977, Ser. No. 758,233

Int. Cl.² B65D *53/06*; C08K *5/36*; C08L *23/00*

U.S. Cl. 215—349 **5 Claims**

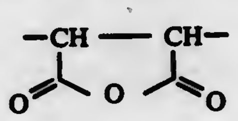


1. A plastisol composition comprising (a) a copolymer resin of a normal α-olefin and maleic anhydride (1:1 mole ratio) having a particle size in the range from about 0.1 to about 1500 microns and having the structure

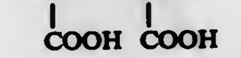


$$\left[\underset{\substack{| \\ R}}{CH}-CH_2-B \right]_n$$

wherein B is a member of the group consisting of



and



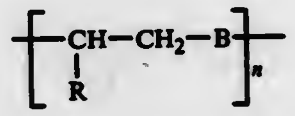
$$-\underset{\substack{| \\ COOH}}{CH}-\underset{\substack{| \\ COOH}}{CH}-$$

R is H or C_xH_{2x+1}, x is 1 to 16 and n is 2–300, and (b) 65–600 parts/100 parts copolymer of a thiol plasticizer having the formula

$R'-(SH)_x$

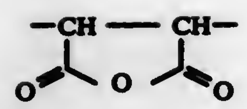
wherein x is at least one and R' is an organic moiety.

2. A container closure comprising a cap having deposited therein a resinous mass functioning as a gasket to seal the container when the closure is in sealing relationship with the container, said resinous mass comprising a fluxed plastisol of a composition comprising (a) a copolymer resin of a normal α-olefin and maleic anhydride (1:1 mole ratio) having a particle size in the range from about 0.1 to about 1500 microns and having the structure

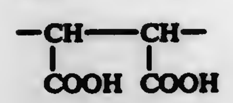


$$\left[\underset{\substack{| \\ R}}{CH}-CH_2-B \right]_n$$

wherein B is a member of the group consisting of



and



$$\begin{array}{cc}-\mathrm{CH}- & -\mathrm{CH}- \\ | & | \\ \mathrm{COOH} & \mathrm{COOH}\end{array}$$

R is H or C_xH_{2x+1}, x is 1 to 16 and n is 2–300, and (b) 65–600 parts/100 parts copolymer of a thiol plasticizer having the formula

$R'—(SH)_x$

wherein x is at least one and R is an organic moiety.

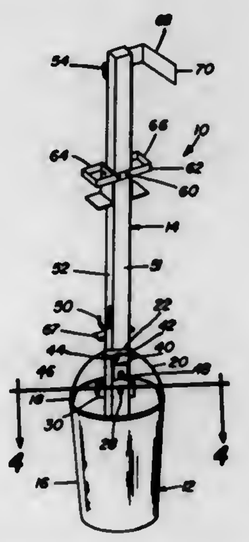
4,130,214
PORTABLE CONTAINER HAVING SERVICE TOWER

Ted P. Sobson, 22624 Lakecrest St., St. Clair Shores, Mich. 48081

Filed Dec. 8, 1977, Ser. No. 858,621

Int. Cl.² B65D *25/00;* A47F *5/00;* A47G *29/00*

U.S. Cl. 220—85 R **1 Claim**



1. An apparatus for storing a cleaning fluid and a plurality of articles and related paraphernalia for use in conjunction with the cleaning fluid, said apparatus comprising:
a container having a bottom and a circular side wall, said container being opened at its top;
an upright support post;
first means carried within the interior of said container at the bottom thereof for supporting the lower end of said support post at a location adjacent to said wall;
second means for fastening said support post to said container wall at the upper portion of said wall;
spacer means associated with said second means between said container and said support post for slightly inclining said support post toward the center of said container for stabilizing said support post when it is carried by said container;
handle means pivotally carried by said container for lifting said container;
third fastening means carried by said support post for snaplockingly receiving said handle means to secure said container to said support post and to provide stability for said container when said support post is lifted; and
a plurality of holding means mounted to said support post, each of said holding means being adapted to carry and support one of a plurality of said articles and paraphernalia.

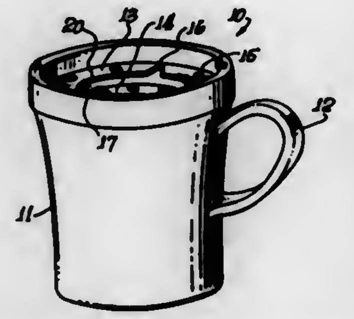
4,130,215
NO SPILL BEVERAGE CUP

Joe F. Corey, 11846 Ridgeout, Whittier, Calif. 90601, and Tony G. Corey, 11432 Aldrich, Whittier, Calif. 90606

Filed Feb. 10, 1978, Ser. No. 876,729

Int. Cl.² A47G *19/22*

U.S. Cl. 220—90.4 **10 Claims**



1. A drinking cup having a substantially reduced tendency to spill or splash, said cup comprising:
a hollow cup having a base, side wall and upper lip; and
at least two baffle members positioned along the inner surface of the side wall of the cup near the upper lip thereof but positioned downwardly therefrom, each of said baffles being generally annular in shape extending outwardly from the cup wall and having a central opening at least ½ the maximum diameter of the inside wall of the cup and each of said baffles having a plurality of passageways passing therethrough.

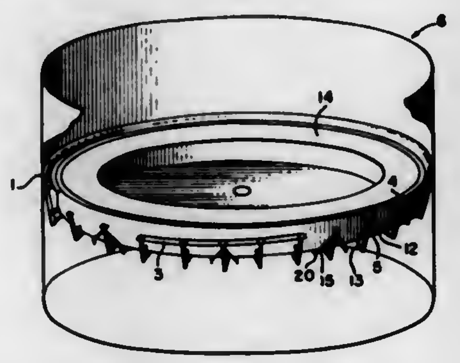
4,130,216
PERIPHERAL SEAL FOR FLOATING ROOFS

Lou C. Creith, Allentown, Pa., assignor to Altech Industries, Inc., Allentown, Pa.

Filed Apr. 5, 1977, Ser. No. 784,953

Int. Cl.² B65D *87/20*

U.S. Cl. 220—224 **13 Claims**



1. Apparatus for sealing a liquid storage tank of the type having welded, riveted or bolted cylindrically shaped sidewalls comprising:
(a) a generally annular pontoon member floatably disposed within the tank, said pontoon including sides, base and top;
(b) a plurality of seal support arms, each pivotally connected to the outer side of said pontoon, said arms being generally vertically disposed, successively and radially about the periphery of said pontoon, the bottom end of each of said arms extending toward the tank bottom and the top end of each arm extending above said liquid;
(c) a plurality of support arm end plates, each mounted on a support arm top;
(d) a plurality of arcuately shaped primary seals attached to successive arm end plates, said seals adapted to sealingly mate with said cylindrically shaped sidewalls;
(e) a plurality of fabric membranes, each membrane extending between and attached to a primary seal and the pontoon, said membranes being disposed between successive radially disposed support arms to form an annular cover;
(f) biasing means for biasing said seals radially outwardly to effect a sealing engagement of said seals with said sidewalls;
(g) means flexibly connecting each of said support arm end plates to adjacent successive support arm end plates while allowing limited pivotal movement of each said support arm so that each support arm may, within limits, move inwardly and outwardly toward and away from the tank sidewall to compensate for major irregularities in the tank wall.

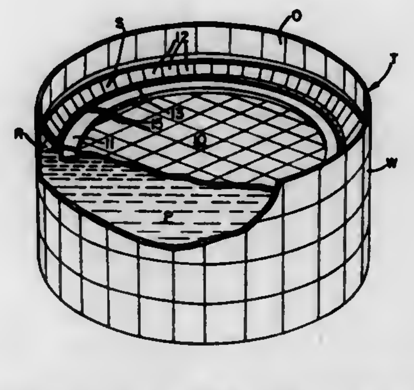
4,130,217
SEAL ARRANGEMENT FOR FLOATING ROOF STORAGE TANKS

Richard E. Hills, Coraopolis; Frank R. Neely, Wexford; Derek K. Neely, Pittsburgh, and John T. Malinowski, Hartstown, all of Pa., assignors to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed Sep. 27, 1977, Ser. No. 837,230

Int. Cl.² F16J *15/02;* B65D *25/34, 87/36*

U.S. Cl. 220—226 **24 Claims**



1. A seal arrangement for a floating roof in a storage tank, wherein the roof is spaced at its periphery from the tank side wall, defining an annular rim space, comprising: a plurality of support members each having an inner edge, an outer edge and opposite side edges, and secured at their inner edges to the roof and extending in side-by-side relationship angularly outwardly from the roof into close proximity at their outer edges with the tank side wall, said support members being resiliently yieldable whereby they accommodate themselves to different rim spaces; and resilient means carried by the support members in a position to engage the tank side wall and effect a seal therewith, said resilient means having a predetermined configuration defining at least two different contact areas, such that for minimum rim spaces the resilient means presents a large contact area to the tank, and for maximum rim spaces the resilient means presents a small contact area to the tank, whereby the contact pressure between the resilient means and tank remains below a predetermined value, and wear to the seal is thus kept to a minimum, while an effective seal is maintained.

4,130,218
EASY OPENING END CLOSURE FOR A CONTAINER

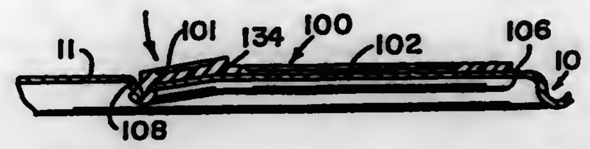
John Walter, Evergreen Park, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Continuation of Ser. No. 702,793, Jul. 6, 1976, abandoned, which is a continuation of Ser. No. 643,647, Dec. 23, 1975, Pat. No. 4,004,530, which is a division of Ser. No. 365,014, May 29, 1973, Pat. No. 3,967,749. This application Aug. 15, 1977, Ser. No. 824,998

Int. Cl.² B65D *41/32*

U.S. Cl. 220—268 **8 Claims**

1. An easy opening end closure for container, said end closure comprising a metal panel, a disc cut from said panel to form a pour opening therein, a plastic tab including a ring seated within said opening, and said disc seated within said ring and stressing said ring in compression between the marginal edge of said opening and the periphery of said disc for sealing said opening, said panel having a flange defining the periphery of the said opening and providing a wide surface seating area for said ring, said flange terminates in a downward interiorly-facing edge and said ring having a portion curled around said edge and being hooked to said flange.



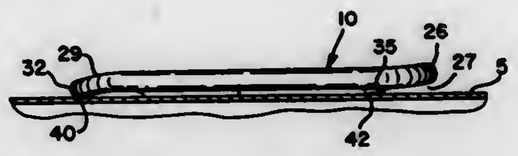
4,130,219
BEAD SUPPORTED TAB FOR NON-DETACHABLE ENDS

Salvador C. Mallorca, Downers Grove, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Nov. 21, 1977, Ser. No. 853,373

Int. Cl.² B65D *41/32*

U.S. Cl. 220—270 **7 Claims**



1. A one-piece sheet metal tab suitable for levering open a tear panel on an end wall of an easy open container, said tab having a rear end spaced above the end panel for easy accessibility and adapted to be lifted to open a tear panel and a front end adapted to be pressed down on the tear panel and a hinge member extending substantially lengthwise of the tab between its ends and hingedly connected at one end to said front end of the tab, and having means on the other end for attachment to the end wall, and means at the extreme opposite ends of the tab in constant abutment with the end panel for holding the tab firmly against the end panel upon securement of the tab thereto for preventing rocking movement of the tab about a transverse axis and thereby flexing of the end panel and premature fracturing of the same.

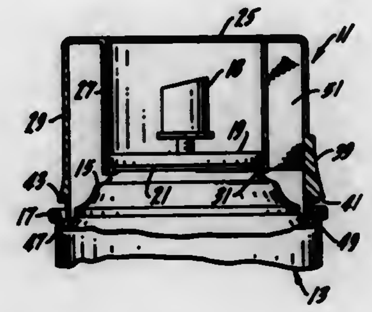
4,130,220
TAMPERPROOF COVER

Robert A. McKirnan, Winnetka, Ill., assignor to Knight Engineering & Molding Company, Arlington Heights, Ill.

Continuation-in-part of Ser. No. 732,098, Oct. 13, 1976, abandoned. This application Jun. 6, 1977, Ser. No. 803,520

Int. Cl.² B65D *43/10*

U.S. Cl. 220—284 **6 Claims**



1. A removable and replaceable tamperproof cover for a container having a cylindrical mounting cup with a peripheral undersurface defined by a peripheral outer edge located near the outlet end of the container, said cover including:
a top wall,
a relatively thin flexible outer sleeve depending from said top wall,

a relatively thin flexible inner sleeve generally coaxial with said outer sleeve and also depending from said top wall,

an inwardly projecting locking flange carried by said inner sleeve,

said locking flange being generally trapezoidal in cross section with the longer base of the flange formed integrally with the inner sleeve and the shorter end of the flange extending inwardly of the peripheral outer edge and under the peripheral undersurface of the container mounting cup when the cover is initially installed on the container,

said locking flange and said peripheral outer edge of the container mounting cup being located relative to each other in said installed position of the cover so that at least a portion of the locking flange is removed by said peripheral outer edge when the cover is removed for the first time from the container,

said locking flange being formed and adapted so that the portion thereof remaining after initial removal of the cover provides sufficient engagement with the container mounting cup upon re-installation of the cover on the container that the cover cannot readily be removed by a child but requires squeezing and manipulation ordinarily beyond the ability of a child for removal,

a lifting pad located on the outer surface of the outer sleeve and having a lifting surface located above the lower edge of the outer sleeve, and

at least one web connecting said inner and outer sleeves with said at least one web being located adjacent said lifting pad and forming a connection between the inner and outer sleeves.

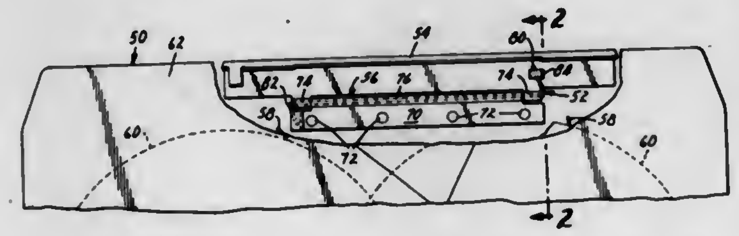
4,130,221
TORSION SPRING DOOR FOR A VIDEOCASSETTE

Clyde V. Peterson, Hutchinson, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 6, 1978, Ser. No. 875,523

Int. Cl.² B65D *45/16, 43/14, 51/04*

U.S. Cl. 220—326 **2 Claims**



1. In a videocassette comprising a length of magnetizable recording tape; two reels each supporting a different helically wound end portion of said tape; a generally rectangular housing enclosing and supporting said reels for rotation to transfer tape between said reels, said housing including an outer front wall having generally planar end portions, a recessed portion between said end portions and means for guiding tape between said reels through said outer wall and across said recessed portion to provide a tape access area; a door; a hinge assembly for pivotably mounting said door on said housing for movement between a closed position over said tape access area and an open position spaced from said tape access area comprising a hinge plate fixed to said housing, arcuate generally hollow cylindrical axially aligned side portions of said door and said hinge plate, and a hinge pin extending through said side portions; and a spring for biasing said door to its closed position, the improvement wherein:

said spring is a torsion spring including a straight central portion extending through the side portions of said door and hinge plate to provide said hinge pin, a first end portion fixed to said door, and a second end portion fixed to said housing.

4,130,222
FLUID RESERVOIR

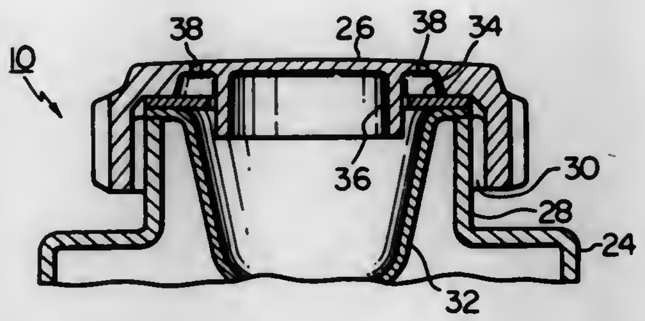
Takayoshi Ono, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation-in-part of Ser. No. 663,344, Mar. 3, 1976, abandoned. This application Mar. 3, 1977, Ser. No. 773,937

Claims priority, application Japan, Mar. 14, 1975, 50-35073[U]

Int. Cl.² B65D *51/16*

U.S. Cl. 220—373 **6 Claims**



1. A fluid reservoir used in brake or clutch master cylinders of motor vehicles comprising:

a fluid reservoir body made from a resin material;

a cap made from a resin material and attached to an inlet opening portion of said reservoir body by a thread engagement;

a rubber sealing member interposed between an inside face of said cap and an end face of said inlet opening portion of the reservoir body, and;

a spacer means made from a material other than rubber, such as metals or resins for example, and disposed between said inside face of the cap and said sealing member so that it does not solidly adhere therebetween;

wherein said cap has an annular sleeve extending from the inside face of the cap and at least one air breathing port, which is formed in said cap between said sleeve and the abutting portion between said spacer means and said inside face of the cap.

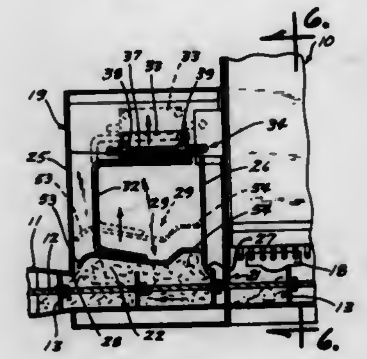
4,130,223
FEED LEVEL MONITOR AND CONTROL APPARATUS

Robert D. Jones, Oskaloosa, Iowa, assignor to Intraco, Inc., Oskaloosa, Iowa

Filed Oct. 8, 1976, Ser. No. 730,931

Int. Cl.² B07B *1/28*

U.S. Cl. 222—55 **12 Claims**



1. Apparatus for monitoring and controlling the amount of granular or powdered material delivered to a conveyor system of a type including: a circuitous conveyor tube; a continuous flexible member disposed in said tube and having a plurality of spaced disc members rigidly attached thereto; at least one outlet port in said tube for delivering said material to a predetermined destination; a hopper attached to said tube for holding material for selectively delivering said material to said tube, said hopper having an inlet port connected to one end of the tube and an outlet port connected to the other end of the tube; the improvement comprising:

means attached to the outlet port of said hopper for sensing the amount of material in the conveyor tube at such outlet port;

means for varying the amount of material passing from the hopper to the conveyor tube; and

means attached to said sensing means and to said varying means for controlling the amount of material delivered to the conveyor tube from the hopper in response to said sensing means, said sensing means including a housing means for forming a chamber above said flexible member said chamber having an inlet and an outlet orifice for said flexible member, said outlet orifice having an internal diameter larger than said discs but substantially smaller than the internal diameter of said tube whereby a restriction is formed, and said sensing means disposed in said chamber for following the top surface of the material in said chamber.

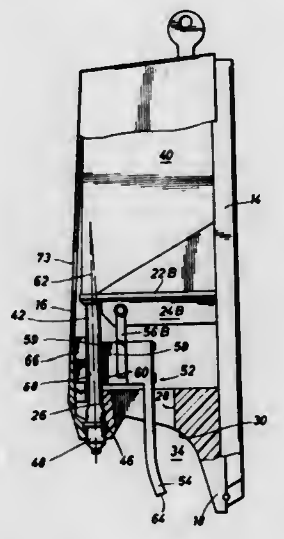
4,130,224
VISCOUS LIQUID DISPENSER

Richard O. Norman, and John R. Frassanito, both of San Antonio, Tex., assignors to Envair, Inc., San Antonio, Tex.

Filed Oct. 8, 1976, Ser. No. 730,834

Int. Cl.² G01F *11/02*

U.S. Cl. 222—185 **1 Claim**



1. Apparatus for dispensing a viscous liquid comprising:

a casing;

a viscous liquid reservoir disposed within said casing;

a resilient tube attached at a first end thereof to said reservoir;

a rigid backup block having a compression surface thereon adjustably disposed within said casing adjacent to said resilient tube, said block being adjustable to regulate the volume of viscous liquid dispensed;

a yieldable dispensing arm pivotally connected at a first end thereof and having a second, free end thereon;

a rigid dispensing block having a tip thereon mounted on said yieldable dispensing arm; said dispensing arm being responsive to an actuating force imposed at said free end thereof to pivotally move to constrict said resilient tube between the tip of said dispensing block and a predetermined impact point on said backup block; said dispensing arm being yieldably responsive to an actuating force to compress a predetermined portion of said resilient tube between said dispensing block and a predetermined portion of said compression surface on said backup block to expell a volume of liquid from within the resilient tube; and

a spring biased, long throw, check valve disposed within said resilient tube at a second end thereof for drawing liquid into said resilient tube in response to the cessation of an actuating force to said lever.

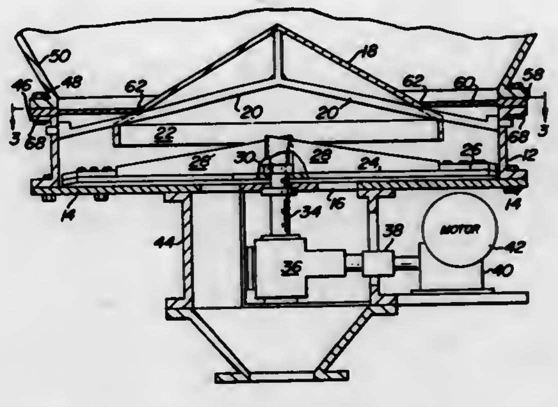
4,130,225
APPARATUS FOR FACILITATING THE REPAIR OF A VOLUMETRIC FEEDER

Charles P. Illes, Jr., Chattanooga, Tenn., assignor to Flowstar Industries, Inc., Passaic, N.J.

Continuation-in-part of Ser. No. 663,321, Mar. 3, 1976, Pat. No. 4,020,980. This application Dec. 7, 1976, Ser. No. 748,334

Int. Cl.² G01F *11/20*

U.S. Cl. 222—411 **15 Claims**



1. Feeder apparatus comprising:

(a) a housing, a base plate having means defining a discharge port in said plate, said plate being adjacent the lower end of a vertical wall of said housing,

(b) a cone supported by said housing, said cone having its lower periphery within said housing above the elevation of said port and radially inward of said housing wall,

(c) at least one feeder blade supported within said housing for feeding solids from within said housing to said port,

(d) an annular disc removably supported along its outer circumference by the upper end of said vertical wall and along its inner circumference by said cone, said annular disc being divided into at least two sections, whereby said annular disc cooperates with said cone to seal the upper end of said housing, means securing said outer circumference of each disc to said housing, said securing means being readily removable whereby each of said disc sections can be independently secured to and removed from said housing.

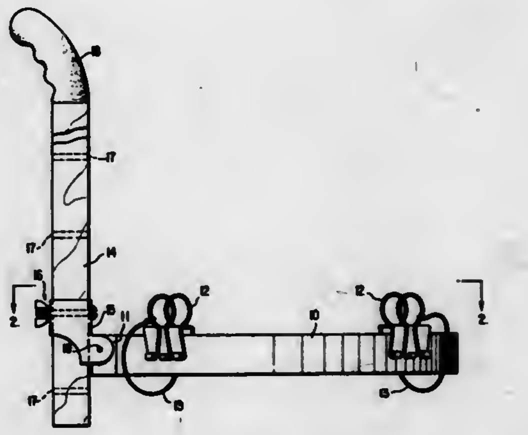
4,130,226
GARMENT APPLYING DEVICE

Mary S. Farrell, 5331 Church Dr., Charleston, W. Va. 25306

Filed Nov. 4, 1977, Ser. No. 848,566

Int. Cl.² A47J *51/06*

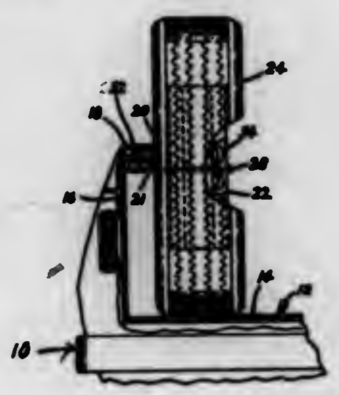
U.S. Cl. 223—111 **4 Claims**



1. A garment applying device comprising a hoop-like element to receive a garment to be put on the lower extremities of the body, a plurality of clamps to hold the garment on the hoop-like element, a handle removably attached to a pivotal handle mounting element which is positioned on one side of the hoop, said handle having a plurality of spaced apertures

along its length to adjustably position the handle within the handle mounting element relative to the hoop-like element, means passing through said apertures and said mounting element to secure and adjustably position said handle within said mounting element, and means on the end of the handle to be gripped by the hand of the user.

4,130,227
SPARE WHEEL AND TIRE LOCKING MOUNT FOR PICKUP TRUCKS
Donald R. Rice, 334 E. Butler La., Ashland, Oreg. 97520
Filed Jun. 3, 1977, Ser. No. 803,158
Int. Cl.² B62D *43/08*
U.S. Cl. 224—42.24 **2 Claims**



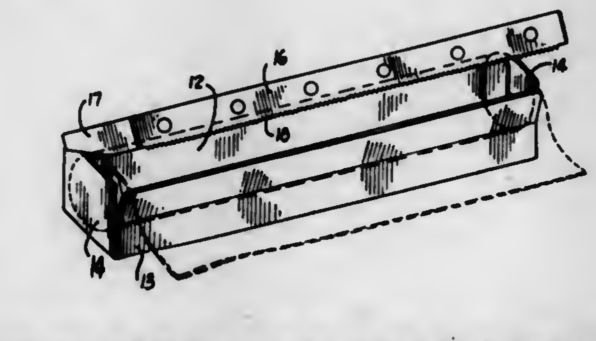
1. A three-piece spare wheel mounting device for use in a pickup truck that has a wide wall surmounted by an inturned flange which continues as a downturned flange, and terminates in an outturned lip to form a sleeve receiving channel, which device includes, in combination,

(a) a hooked member having a terminal hook portion and a straight threaded terminal shank portion, which shank portion is adapted to be passed through a bolt hole of a spare wheel,
(b) a clamping sleeve which is distinct from the hooked member and which has a side opening capable of receiving the hooked end of the hooked member and of bearing laterally against the outturned terminal lip of the side wall of the truck, and
(c) a wing nut adapted to be threaded onto the straight threaded terminal shank of the hooked member for engagement with the inner face of the wheel,

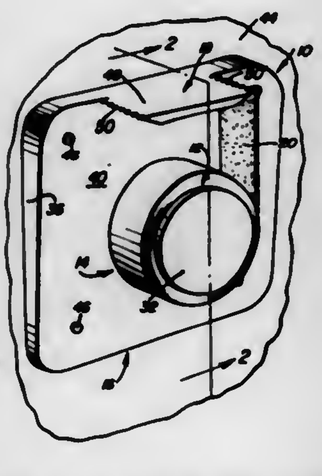
the construction and arrangement being such that the shank of the hook member can be freely passed completely through the sleeve from end to end and so secured at one end by the wing nut, with the hook protruding outside the sleeve and spaced slightly from it to provide a convenient means for hanging the device from the belt or waistband of the installing mechanic while the wheel is being carried to the truck and set in place.

4,130,228
FILM DISPENSING CONTAINER
Ronald Perrin, Marshall, Mich., assignor to The St. Regis Paper Company, New York, N.Y.
Filed Nov. 16, 1977, Ser. No. 852,057
Int. Cl.² B26F *3/02*
U.S. Cl. 225—19 **7 Claims**

1. A dispensing container for a roll of film and adapted for the dispensing of successive increments of said film from the container, comprising the combination of an elongated cardboard box of rectangular cross-section formed for containing a roll of film, said box having a rear wall, a bottom wall, a front wall, and end walls, said box having a cover portion extending longitudinally of the box hingedly connected to the upper edge of the rear wall of the box, said cover portion at its ends having depending end portions extending downwardly adjacent and outwardly of the upper regions of said end walls, respectively, to overlap the same, said cover along its front edge having a depending front portion extending downwardly adjacent the front wall to overlap the same, said front portion of the cover, when the container is in non-dispensing condition, being tucked within the box behind the front wall of the box and adjacent thereto, said box at the juncture of said front wall and said end walls, respectively, having slits formed therein for permitting said front portion of the cover to be moved to within the box behind the front wall of the box, said front portion of the cover when tucked within the box and the front wall of the box being initially adhered together for holding the box closed during shipping and storage of the box with the roll of film therein, said front portion of the cover being separable from said front wall of the box by overcoming the said initial adherence of the front portion of the cover to the front wall of the box, said front portion of the cover after separation from the front wall of the box upon swinging of the cover upwardly from the front wall being movable to a position outwardly of, and adjacent to, the front wall of the box, said front portion of the cover having a lower cutting edge extending therealong whereby film in the box, being successively unrolled and threaded over the top edge of the front wall of the box and hence downwardly between the front portion of the cover and the front wall of the box, may engage said cutting edge, the film being severable into successive increments by the film extending from between the front wall of the box and the front portion of the cover being manually pulled downwardly from the box a distance fixing the amount of increment to be dispensed and hence pulled upwardly from the box against the resistance of said cutting edge to tear the film along a line coinciding with said cutting edge to dispense such increment of film from the box.



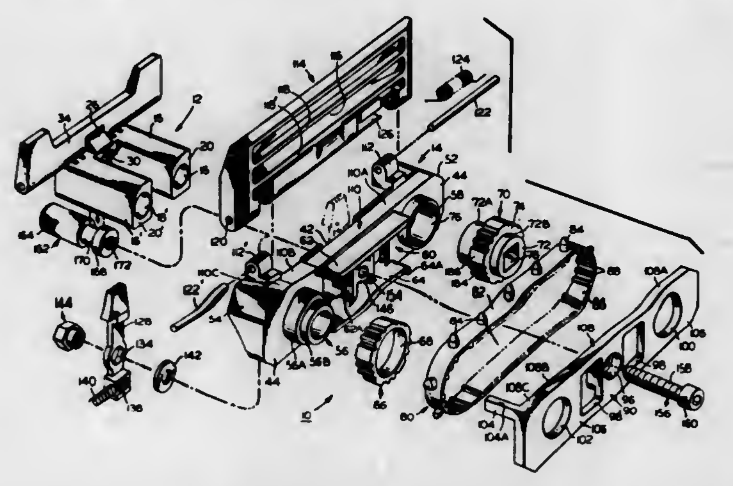
4,130,229
TAPE DISPENSER
Edillio Pagnini, 301 S. Main St., Hopedale, Mass. 01747
Filed Aug. 26, 1977, Ser. No. 828,292
Int. Cl.² B26F *3/02*
U.S. Cl. 225—33 **8 Claims**



1. A dispenser for adhesive tape, and the like, comprising, in combination:

(a) spool means for receiving a roll of tape;
(b) mounting means supporting the spool means; and
(c) cutting means provided on the mounting means for severing tape wound from a roll arrangeable on the spool means, the mounting means including a base member having a pair of spaced, planar faces arranged converging toward one another, the cutting means and spool means being disposed on one of the faces, and the faces converging toward one another from the cutting means toward the spool means for making a pull on tape being dispensed slightly away from the plane of the other of the faces.

4,130,230
SHEET FEED TRACTOR
Alan F. Seitz, Harwinton, Conn., assignor to Data Motion Incorporated, Torrington, Conn.
Filed Oct. 31, 1977, Ser. No. 847,234
Int. Cl.² B65H *17/34*
U.S. Cl. 226—75 **17 Claims**

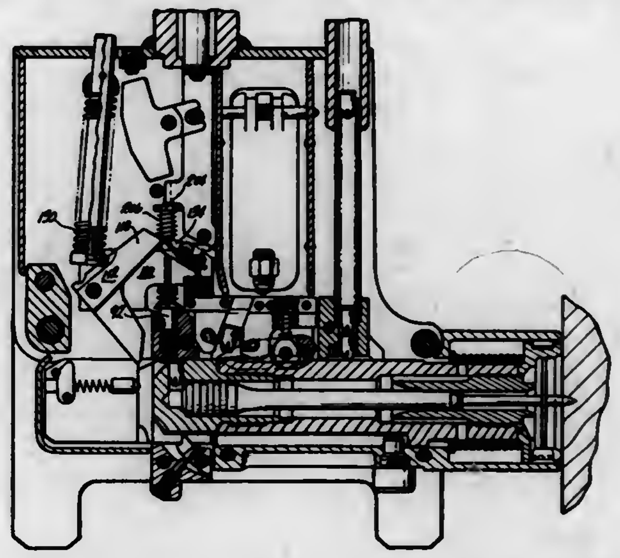


1. A drive tractor for driving web material comprising:

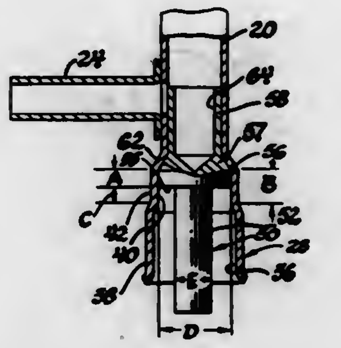
(a) a chassis having means thereon for mounting said chassis in proximity to a drive member;
(b) belt driving means mounted on said chassis and including a drive wheel mounted for rotation on said chassis and adapted to be operatively connected to the associated drive member to be rotated thereby, said drive wheel having a locating element on the periphery thereof;
(c) a flexible endless belt having an outer driving surface and an inner driven surface, said belt driven surface engaging said drive wheel for driving of said belt in a path of travel and including a locating formation thereon dimensioned and configured to mesh with said wheel locating element but not with other segments of said drive wheel periphery, said belt outer surface having a plurality of spaced apart pin members disposed along the length thereof and projecting outwardly therefrom, said pin members being adapted to engage a web material for driving thereof along a portion of said path of travel; said belt locating formation having a predetermined spatial relationship relative to said belt pin members whereby engagement of said belt locating formation with said wheel locating element places said pin members at respective predetermined locations along said path of travel relative to the rotational position of said drive wheel.

4,130,231
HAMMER BLOCK
Alan Iacoviello, New Haven, Conn., assignor to Olin Corporation, New Haven, Conn.
Filed Jun. 15, 1977, Ser. No. 806,785
Int. Cl.² B25C *1/14*
U.S. Cl. 227—10 **3 Claims**

1. A safety device for use with a powder-actuated tool of the type including a housing, a barrel assembly mounted in said housing for reciprocal sliding movement with respect to said housing from a rearwardmost battery position to a forward loading position and return, a firing chamber in said barrel assembly, means carried by said housing forming a magazine adapted to receive and hold a plurality of cartridges, a hammer mounted in said housing, sear means mounted in said housing for releasably engaging said hammer in a cocked position, a trigger bar assembly extending into said housing and having a lower portion thereof engageable with said sear means to disengage the latter from said hammer when said trigger bar assembly is displaced to a firing position, and blocking means for engaging a surface on said barrel assembly to block rearward movement of said barrel assembly toward said battery position upon displacement of said trigger bar assembly to said firing position before said barrel assembly has reached said rearwardmost battery position; the safety device comprising: hammer block means, independent of said sear means, for engaging a surface on said hammer to block substantial displacement thereof from said cocked position before said displacement of said trigger bar assembly to said firing position, thereby preventing accidental impact firing of the tool, said hammer thereby preventing accidental impact firing of the tool, said hammer block means comprising a blocking member moveable between a first position, whereat substantial movement of said hammer from said cocked position is prevented, and a second position, whereat movement of said hammer is unobstructed, said blocking member being operatively connected to said trigger bar assembly whereby movement of the former from said first position to said second position is effected by displacement of the latter to said firing position.



4,130,232
PROCESS PLUG FOR ULTRASONIC SOLDERING
Walter W. Anderson, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 29, 1976, Ser. No. 745,578
Int. Cl.² B23K *1/08*
U.S. Cl. 228—57 **2 Claims**

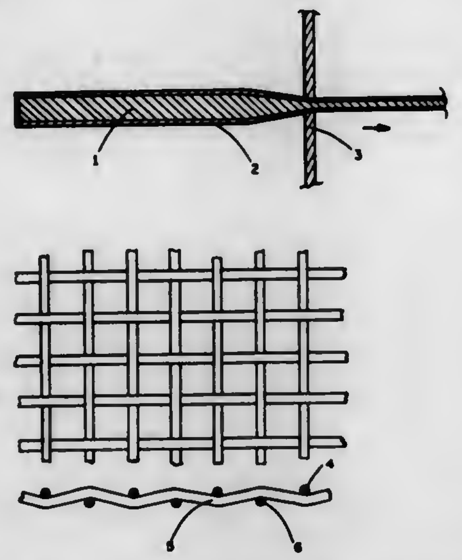


1. For use during immersion soldering of a heat exchanger, a processing combination comprising an aluminum process plug and an aluminum enlarged bell-type female portion having a coatable characteristic for subsequently telescopically receiving a non-aluminum male pretinned tubing portion for completing a permanent joint on the heat exchanger, and wherein the female portion and said process plug cooperate during said immersion soldering because of such coatable characteristic to tin the internal enlarged surface of said female

portion prior to the removal of said process plug and the insertion of said male pretinned tubing portion for completing said permanent joint, said process plug comprising a rod-like member forming a handle portion and a plug head portion, said plug head portion having a longitudinal dimension shorter than said enlarged female portion and a lateral dimension substantially the same as the internal surface of said enlarged female portion so that solder entering said enlarged female portion during said immersion soldering will join said plug head portion to said enlarged female portion along said longitudinal dimension to form a short separable joint therebetween without passing beyond said enlarged female portion into said heat exchanger, said handle portion having a lateral dimension less than the internal surface of said enlarged female portion and thereby spaced therefrom so that said internal surface is tinned during said immersion soldering without forming a joint between said handle portion and said enlarged female portion, and whereby said enlarged female portion is reheatable after said immersion soldering to melt the solder along said short joint to facilitate the easy separation of said plug head portion from said enlarged female portion while retaining the tinning on the internal surface of said enlarged female portion.

4,130,233
PROCESS FOR MAKING POROUS METAL HEAT SINK FROM CLAD ALUMINUM WIRE

John Chisholm, River Terrace La., Jupiter, Fla. 33458
Filed May 23, 1977, Ser. No. 799,642
Int. Cl.^{2} B23K *31/02;* B23P *15/26*
U.S. Cl. 228—126 **7 Claims**

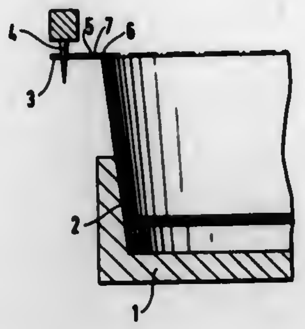


1. The process for making a laminated porous metal panel from clad aluminum wire, said process comprising the steps of encasing a billet of aluminum in a tube of brazable aluminum alloy whose melting temperature is slightly below that of the aluminum, extruding the clad billet into wire, weaving the wire into a mesh, calendering the mesh, cleaning the mesh by vapor degreasing, randomly stacking a plurality of said lamina to form a panel and brazing the stacked lamina in a controlled atmosphere furnace.

4,130,234
COMBINED THROWAWAY CONTAINER OF CARDBOARD AND PLASTIC MATERIAL WITH A RIGIDLY FLANGED APERTURE RIM OR LIP

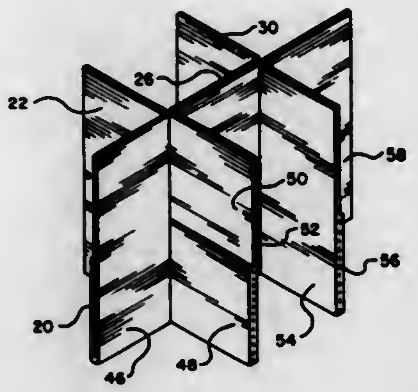
Werner Schmidt, Hamburg, Fed. Rep. of Germany, assignor to Maschinenfabrik Rissen GmbH, Hamburg, Fed. Rep. of Germany
Filed Dec. 27, 1977, Ser. No. 864,399
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1977, 2700230
Int. Cl.^{2} R65D *3/04*
U.S. Cl. 229—1.5 B **2 Claims**

1. A combined cup for beverages or packing material that consists of an external container of cardboard or other fibrous material and an inner, preferably bonded or welded-on thin-walled container of thermoplastic material, the two container portions of which are flanged with one another, characterized in that the inner container is the longer by at least double the wall strength of the external container and in that the rim portion of the inner container projecting thereby at the aperture side, prior to the flanging operation, is wrapped around the edge of the flanged rim or lip (10) of the external container.



4,130,235
ONE-PIECE CARRIER PARTITION

Earl J. Killy, Monroe, La., assignor to Olinkraft, Inc., Monroe, La.
Filed May 2, 1977, Ser. No. 792,787
Int. Cl.^{2} B65D *81/08, 5/48*
U.S. Cl. 229—15 **7 Claims**

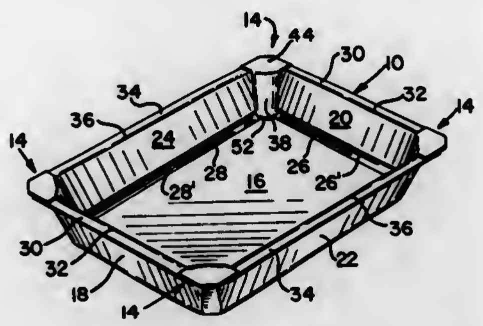


1. A one-piece partition for a multiple article carrier comprising
front and back series of panels,
each of said front and back series of panels having at least four panels hinged together at vertical scorelines,
end panels of said front and back series of panels being hinged at horizontal scorelines to the respective end panels of the opposite series of panels,
an adjacent pair of panels in each series of panels between the end panels being free of the corresponding adjacent pair of panels of the opposite series of panels, and
said front and back series of panels having respective alternating tall and short vertical dimensions wherein the corresponding panel of the opposite series to each tall panel is short.

4,130,236
TRAY TYPE CONTAINER

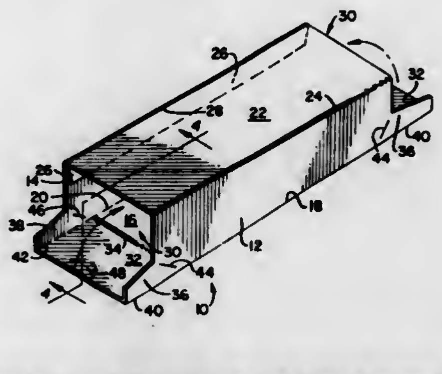
Guelfo A. Manizza, Blauvelt, N.Y., assignor to Federal Paper Board Co., Inc., Montvale, N.J.
Filed Nov. 28, 1977, Ser. No. 855,245
Int. Cl.^{2} B65D *5/24*
U.S. Cl. 229—31 R **6 Claims**

1. A package forming tray adapted for containing a fluid product which tray is formed from a single blank of foldable sheet material having an interior surface providing a leakproof construction, said tray comprising a generally rectangular bottom wall forming panel and upstanding sidewall forming panels which are connected to each other at their ends by integral corner web formations, said bottom wall forming panel being connected to said sidewall forming panels by relatively narrow sections of material defined by spaced, generally parallel hinge lines which sections of connecting material have an outward curvature in transverse section and each of which, at the ends thereof, terminates at a bowed line defining the bottom edge of the associated corner web formation, said corner web formation including a generally rectangular center section terminating at the bottom on said bowed line and sections on each side of said center section which are generally triangular and which are folded and secured in overlying relation with inner end marginal portions of the sidewall forming panels to which they are hingedly connected thereby forming relatively rigid corner posts.



4,130,237
COLLAPSIBLE OR FOLDABLE PACKAGING SLEEVE CONTAINER

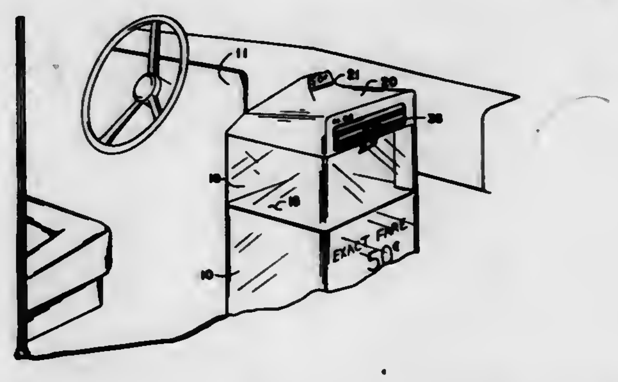
Glenn E. Struble, Oxford, Ohio, assignor to Diamond International Corporation, New York, N.Y.
Filed Jul. 28, 1977, Ser. No. 820,068
Int. Cl.^{2} B65D *5/02, 85/02*
U.S. Cl. 229—40 **11 Claims**



1. A collapsible or foldable packaging sleeve-like container of pasteboard material or the like comprising:
(a) a pair of side wall panels;
(b) at least a back wall panel and a front wall panel each of which is foldably connected to one edge each of said side wall panels; and
(c) snap closure means for at least one end of said container including a main flap extending from said at least one end of said back wall panel along a first hinge line and a single distinct auxiliary flap at opposite sides of said main flap, each of said auxiliary flaps being hingedly connected to said main flap along a second hinge line at said opposite sides of said main flap and also hingedly connected to each of said side wall panels along a diagonal hinge extending forwardly from said back wall panel to an adjacent free edge of the respective side wall panel associated therewith;
said closure means being open in the collapsed or folded condition of said container and ready to be closed when said container is initially erected to an upstanding condition to receive an article therein;
said closure means being closed by rotating said main flap inwardly of said container about said first hinge line on the order of about 90° whereby each of said auxiliary flaps will simultaneously automatically rotate about the respective second hinge line and about the respective diagonal hinge structurally associated therewith in a toggle-like snap locking action to maintain itself in closed condition, each of said auxiliary flaps being hinged outwardly about said second hinge line and folded around its said diagonal hinge to a position of substantially 180° into contact against the adjacent inside surface of one of said side wall panels when said main flap is closed.

4,130,238
FARE BOX

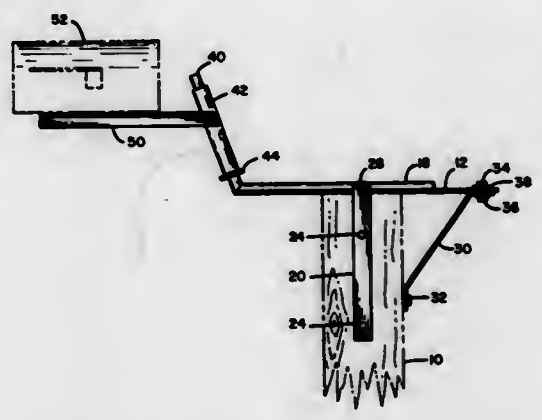
John B. Williams, 825A Madison St., Brooklyn, N.Y. 11221
Filed Oct. 17, 1977, Ser. No. 842,832
Int. Cl.^{2} G07B *15/00*
U.S. Cl. 232—7 **2 Claims**



1. A fare collection box fitted with transparent side walls that enclose the sides of an interior collection chamber, so that all the sides of said chamber are transparent, with a cover fitted to said side walls, said cover formed with a first opening in the form of a slot for admittance of coins into the said interior chamber and said cover formed with a second opening of a size to admit an unfolded paper bill of currency,
said second opening blocked on the interior of said cover by a pair of engaged rollers, together with motorized drive means to rotate said rollers so as to engage and draw in a paper currency bill through said opening into said chamber.

4,130,239
SWING-AWAY MAILBOX

Rodney W. Belsheim, 607 S. First St., Marshall, Minn. 56258
Filed Sep. 26, 1977, Ser. No. 836,406
Int. Cl.^{2} F16M *13/00*
U.S. Cl. 232—39 **3 Claims**



1. Improved roadside mailbox mounting apparatus comprising:
(a) a tubular sleeve having a mailbox support member affixed thereto at a predetermined angle with respect to the axis of said tubular sleeve;
(b) a first cylindrical rod having a smaller diameter than that of said tubular sleeve, said first rod adapted to pass through said sleeve;

(c) a mounting plate affixed to said first cylindrical rod at one end thereof at an angle with respect to the axis of said rod which is the supplementary angle of said predetermined angle;
(d) first and second L-shaped straps having one leg thereof secured to opposite sides of said post and the other leg thereof to said mounting plate; and
(e) an angle bracket connected at one end to said post and at the other end to said mounting plate,
the connection between said bracket and said mounting plate being adjustable, and said L-shaped straps each having a slotted hole in said other leg thereof.

4,130,240

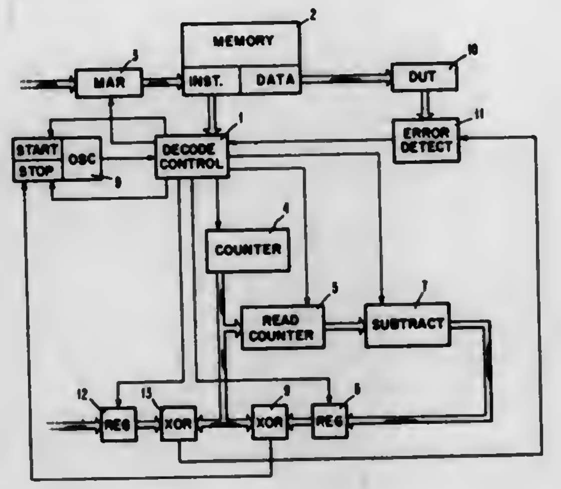
DYNAMIC ERROR LOCATION

Ernest H. Millham, Warrenton; Ralph J. Scaccia, Fairfax, both of Va., and Francis J. Villante, Greene, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1977, Ser. No. 829,307

Int. Cl.² G06F *11/04*

U.S. Cl. 235—303.1 **2 Claims**



1. In a digital processor which processes data in response to a sequence of machine instructions issued in response to a system clock and having an error detector which issues an error signal whenever an abnormal operation occurs in the digital processor, a dynamic error location mechanism for identifying the exact machine cycle where an error in the processed data occurs, comprising:
a retry means connected to said error detector for restarting the sequence of machine instructions at an origin lying at a selected number of cycles preceding the cycle at which the error was detected;
a counter connected to said system clock for counting the sequence of machine cycles from said origin;
a register connected to said retry means for storing a value equal to said selected number minus one;
a comparator connected to said counter and said register for comparing the values stored in said counter and said register;
stopping means connected to said comparator and said system clock for stopping said system clock when said comparator determines that the contents of said counter equals the contents of said register;
said retry means setting said register in response to said stopping means, to a value of said selected number minus two (2) if said error detector indicates that the error has occurred, and initiating said system clock at said origin;
repeating the above steps until said error detector determines that no error has occurred;
whereby the exact machine cycle at which an error actually occurs in a data processing system is determined.

4,130,241

CONTROL SYSTEMS

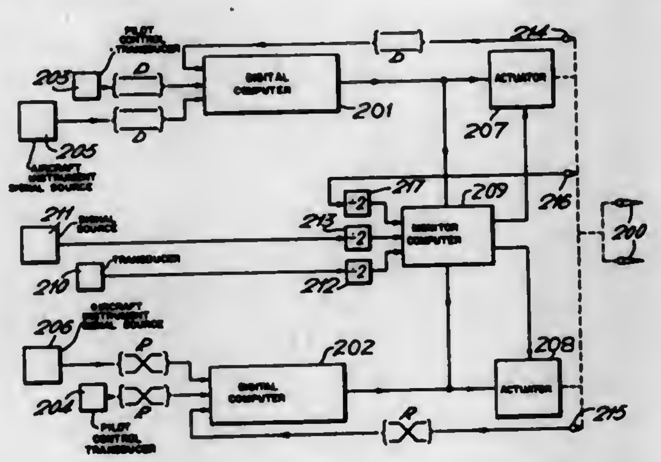
James F. Meredith, Cheltenham, and Brian Williams, Bishops Cleeve, both of England, assignors to Smiths Industries Limited, Cricklewood, England

Filed Mar. 10, 1977, Ser. No. 776,448

Claims priority, application United Kingdom, Mar. 10, 1976, 9643/76

Int. Cl.² G06F *11/08*

U.S. Cl. 235—307 **9 Claims**



1. In a control system including two control lanes for processing nominally-identical data digitally to derive nominally-equivalent control outputs, and means for comparing said outputs with one another to respond to the existence of a failure, the improvement wherein different digital representations of the same nominally identical data are used in the processing of the same data in the two lanes so that context dependent features (as defined) are detected.

4,130,242

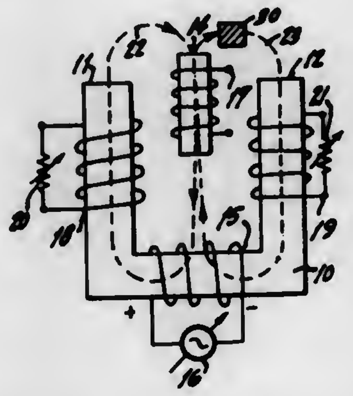
DATA STORAGE AND RETRIEVAL SYSTEM EMPLOYING BALANCED MAGNETIC CIRCUITS

Robert S. Mannion, Carbondale, Pa., assignor to Continental Instrument Corporation, Hicksville, N.Y.

Filed Sep. 8, 1977, Ser. No. 831,428

Int. Cl.² G06K *7/08*; G11B *5/27, 5/20*

U.S. Cl. 235—450 **8 Claims**



1. Apparatus for retrieving information on an information carrying member, said carrying member having at least one magnetic land area located thereon and positioned a predetermined distance from a reference line on said member, comprising:
(a) a magnetic circuit of a "U" shaped configuration having a right vertical arm defining a first pole and a left vertical arm defining a second pole, said first and second arms joined together by the horizontal base member of said "U", said first and second poles separated one from the other by a given distance determined by the length of said bottom horizontal base,
(b) exciting means coupled solely to said base member for driving said magnetic circuit to provide flux lines between said poles,
(c) first and second windings, with said first winding positioned about said right vertical arm and said second winding positioned about said left vertical arm, balancing means coupled across said windings to determine the amount of flux through one arm as compared to the other,
(d) pickup means positioned between said poles and located at a distance from one pole with respect to the other, said distance manifesting a position to cause said means to intercept said flux lines to cause a zero electrical signal to be developed across said means at said position,
(e) means positioning said carrying member in the proximity of said magnetic circuit to cause said magnetic land area to affect said flux lines between one of said poles and said pickup means to provide across said pickup means, a signal indicative of the position of said land area with respect to said reference line.

4,130,243

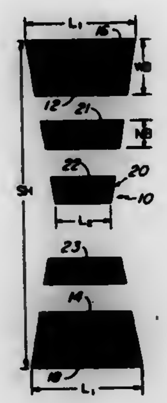
MACHINE READABLE OPTICAL PRINTED SYMBOL FORMAT

Raymond L. Stevens, 34 Fuller Rd., Cochituate, Mass. 01778

Filed Jul. 5, 1977, Ser. No. 812,711

Int. Cl.² G06K *19/04, 7/10*

U.S. Cl. 235—487 **10 Claims**



1. A machine readable optical printed symbol format for the representation of a plurality of discrete codes comprising:
a plurality of horizontally extending bars, said bars being arranged in a vertical structure and spaced apart by intermediate spaces;
one of said bars serving as the top bar in the vertical structure of said symbol format and a second of said bars serving as the bottom bar in the vertical structure of said symbol format;
said bars being of varying length in the horizontal plane such the length of the center line of said symbol structure is less than the length of the upper edge of said top bar and less than the length of the lower edge of said bottom bar, the bars intermediate to said top bar and bottom bar having proportionally decreasing lengths according to their proximity to the center line of said symbol format, resulting in a generally hour-glass shape for said symbol format;
the height of said symbol format being greater than the length of the upper edge of the top bar and the lower edge of the bottom bar;
some of said bars and spaces being wide bars and spaces, the width being measured in the vertical plane and being less than the length of the upper edge of said top bar;
said wide bars and spaces representing a "one" in a binary code;
some of said bars and spaces being narrow bars and spaces, the narrow dimension being measured in the vertical plane and being less than the width of said wide bars and spaces;
said narrow bars and spaces representing a "zero" in a binary code.

4,130,244

TRACK RAIL SUPPORT

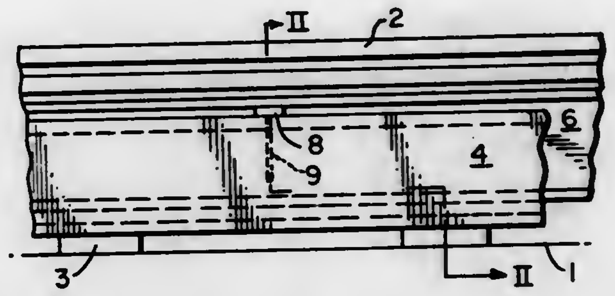
Manfred Blase, Essen, Germany, assignor to Didier Engineering GmbH, Essen, Germany

Filed Aug. 29, 1975, Ser. No. 609,148

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1974, 2443047

Int. Cl.² E01B *3/12*

U.S. Cl. 238—24 **11 Claims**



1. In a track rail support, particularly for transporting charging cars over coke oven blocks or batteries, said track rail support being of the type including a plurality of ties positioned at spaced intervals on a base and at least one elongated track rail supported by said ties, said ties extending transversely across the entire width of the track rail support, the improvement comprising:
an elongated intermediate carrier positioned between said ties and said track rail, said elongated intermediate carrier extending longitudinally throughout the entire length of said track rail;
a plurality of secondary track rail supports positioned in contact with said intermediate carrier; and
said secondary track rail supports being spaced from each other in the longitudinal direction of said track rail, each said secondary track rail support being positioned above a position midway between two adjacent of said ties.

4,130,245

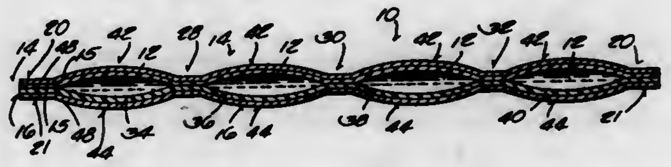
LIQUID DISPENSING PACKAGE

John D. Bryson, Milwaukee, Wis., assignor to Will Ross, Inc., Milwaukee, Wis.

Filed Sep. 29, 1977, Ser. No. 837,524

Int. Cl.² A61L *9/04*

U.S. Cl. 239—34 **12 Claims**

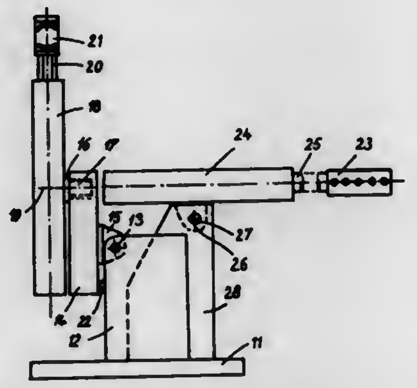


1. A package for controllably dispensing into the atmosphere a substance which is normally liquid and vaporizable under atmospheric temperature and pressure conditions, said package comprising
first and second sheets peripherally sealed together in opposing relation to form a hermetically sealed chamber having opposed side walls formed from said first and second sheets, at least one of said sheets being made of a flexible material which is permeable to the liquid substance, and
means joining the interior surfaces of said chamber walls together at a plurality of spaced locations to divide said chamber into a plurality of smaller chambers which are filled with the liquid substance under atmospheric pressure and have wall portions formed from said chamber walls, said wall portions formed from said flexible material collapsing under atmospheric pressure in response to permeation of the liquid substance therethrough to the surrounding atmosphere and having sufficient rigidity to

minimize outward bulging thereof by the liquid substance and to encourage surface contact of the entire interior surface of said wall portions with the liquid substance as the liquid substance permeates to the surrounding atmosphere.

4,130,246
APPARATUS FOR THE EXTRACTION OF DIE-CAST PARTS FROM THE MOLDS OF DIE-CASTING MACHINES

Werner Engel, Ringstrasse 13, 3502 Vellmar 2, Fed. Rep. of Germany
Filed May 24, 1977, Ser. No. 800,035
Int. Cl.² B05B *3/18*
U.S. Cl. 239—186 **4 Claims**



1. An extracting apparatus for extracting hot die-cast parts from the casting mold halves of a die-casting machine, said apparatus comprising: a bearing block adapted to be positioned adjacent a die-casting machine, a sleeve, a carrier arm supported by said sleeve for axial sliding movement relative thereto along a slide axis running longitudinally of said arm, a gripping device mounted on said carrier arm for gripping work pieces from the mold halves of the die-casting machine with which it is associated and for removing such work pieces to a delivery station as a result of movement of said carrier arm, a support between said bearing block and said sleeve, means pivotally connecting said support to said bearing block for movement of said support relative to said bearing block between first and second positions approximately 90° from one another and about a horizontal first pivot axis, means pivotally connecting said sleeve to said support for movement of said sleeve relative to said support about a second pivot axis which is generally vertical when said support is in said first position and generally horizontal when said support is in said second position whereby when said sleeve and carrier arm are positioned generally horizontally and in a plane perpendicular to said horizontal first pivot axis said sleeve and carrier arm may be rotated in a first vertical plane to a vertical position by movement of said support relative to said bearing block about said horizontal first pivot axis and may then be rotated in a second vertical plane perpendicular to said first vertical plane to a new horizontal position by movement of said sleeve relative to said support about said second pivot axis.

4,130,247
SPRAY NOZZLE

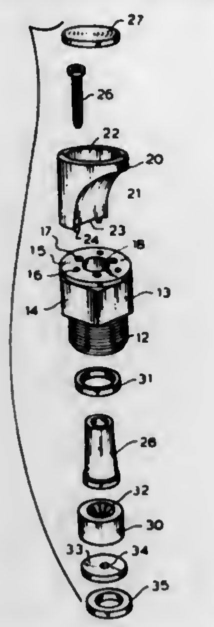
Mark Healy, Orlando, Fla., assignor to Senninger Irrigation, Inc., Orlando, Fla.
Filed Dec. 17, 1976, Ser. No. 751,900
Int. Cl.² B05B *1/26, 1/30*
U.S. Cl. 239—523 **10 Claims**

1. A spray nozzle comprising in combination:

a threaded base for attachment to a water line, and having an opening therethrough and a plurality of bores therein;

a removable nozzle insert mounted in said opening through said base with a retainer ring and having an opening therethrough of a predetermined size, and an exterior of predetermined size and shape for fitting into the opening through the threaded base;

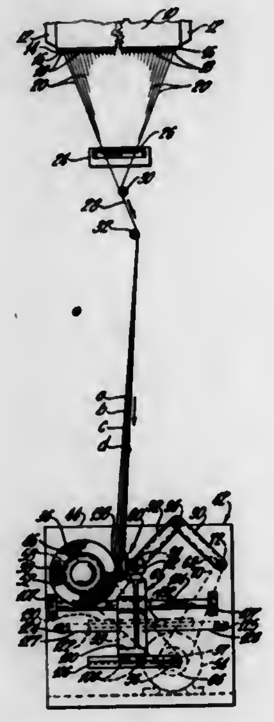
a removably mounted water-deflector member, having a curved water deflecting surface and having attaching means for attaching said water-deflector to said base, said attaching means having at least one insert attached to said water-deflector member and protruding into one of said plurality of bores in said threaded base, whereby an easily assembled spray nozzle is provided; and



a flow control member mounted adjacent said removable nozzle insert retainer ring in said opening in said threaded base, said flow control member being a flexible member which under increased pressure is flexed into said nozzle insert retainer ring to reduce the passageway through said retainer ring.

4,130,248
METHOD AND APPARATUS FOR PACKAGING MULTISTRAND ROVING

Ronald W. Hendrix, Columbus; Jerome P. Klink, Granville, and John W. Dunn, Sylvania, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed May 20, 1977, Ser. No. 799,059
Int. Cl.² B65H *54/02*
U.S. Cl. 242—18 G **14 Claims**

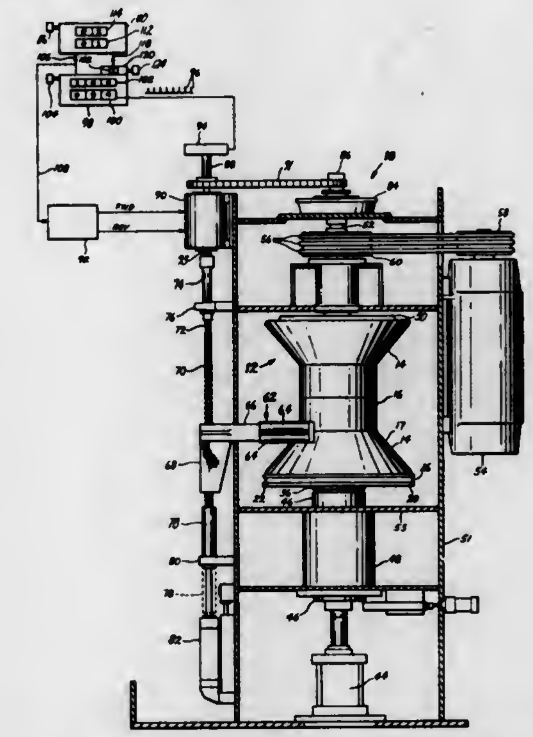


1. The method of packaging a roving comprising a plurality of strands of glass fibers including segregating a linear group of the fibers into a plurality of strands, winding the strands of the roving into a package on a rotating mandrel, advancing the strands in separated relation toward the package in a plane substantially normal to the axis of rotation of the package, traversing the strands lengthwise of the package while maintaining the strands adjacent the package in a plane substantially normal to the axis of rotation of the package, and engaging the strands successively with the package surface at peripherally-spaced regions whereby the strands of the roving are collected in side-by-side relation on the package.

7. Apparatus for packaging a roving comprising a pluralit of strands of glass fibers including, in combination, a winding machine having a rotatable mandrel upon which the roving is wound, means spacing the strands one from another as they as advanced toward the package, and means for traversing the strands lengthwise of the package, said traversing means maintaining the spaced strands substantially in a plane normal to the axis of the mandrel whereby the individual strands of the roving successively engage peripherally-spaced surface regions of the package.

4,130,249
WIRE SPOOLER

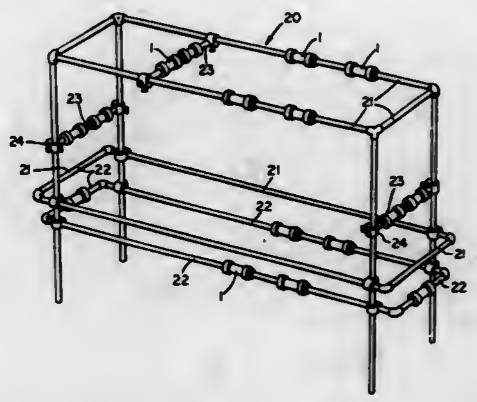
Wilhelm A. Steinhilber, Guilford, Conn., assignor to Orion Machinery & Engineering Corp., Branford, Conn.
Filed Dec. 1, 1977, Ser. No. 856,799
Int. Cl.² B65H *54/12, 54/32*
U.S. Cl. 242—25 R **20 Claims**



1. An apparatus for winding wire onto spools, said apparatus comprising: means for rotating a spool such as aforesaid about its central axis, a traversing guide for guiding wire onto the spool rotated by said rotating means, means supporting said traversing guide for traversing movement relative to said spool back and forth along a path parallel to said central spool axis, means for moving said traversing guide along said path at a speed related to the rotational speed of said spool by a fixed speed ratio, and means for reversing the direction of said traversing guide along said path when said traversing guide reaches either one of two end limits spaced from one another along said path and between which said traversing guide moves, said reversing means including a pulse generator connected to said spool rotating means and an associated pulse counter for providing pulse counts representative of amounts of rotation of said spool, means for effecting reversal of said traversing guide when the pulse count of said counter reaches a predetermined number and means responsive to the pulse counts provided by said pulse counter for increasing said predetermined number and for thereby increasing the spacing between said two end limits as the total rotation of said spool increases during the winding of wire onto it.

4,130,250
REELS FOR MEDICAL TRACTION APPLICATIONS

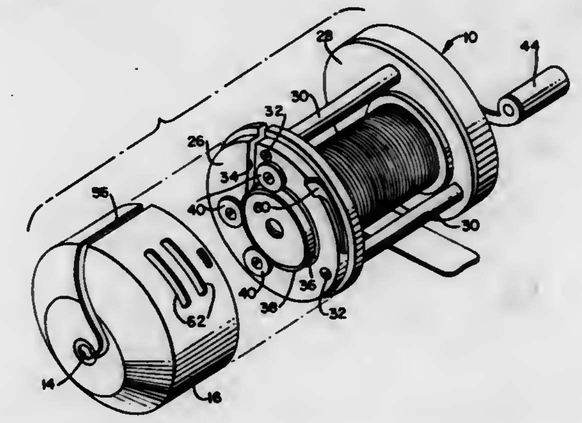
Mervyn Evans, Oxford, and John D. Harris, Abingdon, both of England, assignors to The Secretary of State for Social Services in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed Sep. 19, 1977, Ser. No. 834,356
Claims priority, application United Kingdom, Sep. 24, 1976, 39884/76
Int. Cl.² B65H *17/02;* A61H *1/02*
U.S. Cl. 242—68 **7 Claims**



1. A reel for applying traction, restraint, or support to a patient, comprising a spool, a close wound helical spring which is coaxially attached to the spool by one of its ends, and an end cap operatively connected to the other end of said spring; whereby in use the spool, spring, and end cap are mounted on a cylindrical support having a slightly greater diameter than the free internal diameter of the spring so that the spring encircles and grips the support, rotation of the spool in one direction expanding the spring to free its grip and contra-rotation of the spool being resisted by the grip of the spring while rotation of the end cap in the contra-rotation direction expands the spring to release its grip and permit said contra-rotation of said spool.

4,130,251
COMBINATION TROLLING AND CASTING REEL

Jack R. Findley, 5921 Cherrywood Ter., Greenbelt, Md. 20770
Continuation-in-part of Ser. No. 806,691, Jun. 15, 1977, abandoned. This application Apr. 11, 1978, Ser. No. 889,034
Int. Cl.² A01K *89/015, 89/01*
U.S. Cl. 242—84.2 C **9 Claims**



1. A fishing reel adapted to be shifted between casting and trolling modes comprising:

a housing, a spool adapted for rotation about an axis relative to the housing, the spool including a line portion around which fishing line can be wound, rotating means for rotating the spool, first bearing means for rotatably mounting the spool on the housing on one side of the line portion, the spool on the other side of the line portion being spaced from the housing at a distance at least wide enough to accommodate a strand of fishing line, the first bearing means including means for accommodating movement of the spool between its normal axial position to a second position where a portion of the spool on the other side of the line portion will engage the housing when pressure is exerted on the spool and return to said normal position when the pressure is relieved, the housing including an opening therein located to allow the fishing line to be shifted between the trolling mode whereby line projects from the spool generally perpendicular to the spool axis and the casting mode whereby the line can unwind generally axially from the spool through the space between said other side of the line portion and the housing when the spool is in its normal axial position.

4,130,252
SEAT BELT SYSTEM

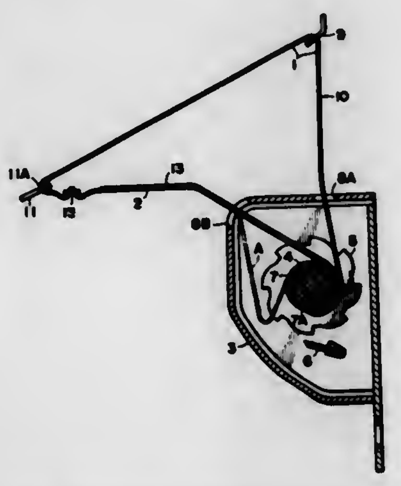
Mamoru Mori, Okazaki, and Mitsuo Inukai, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai Rika Denki Seisakusho, both of Aichi, Japan

Filed Jul. 25, 1977, Ser. No. 818,301

Claims priority, application Japan, Aug. 2, 1976, 51103420[U]

Int. Cl.² A62B *35/02;* B65H *75/48*

U.S. Cl. 242—107.1 **8 Claims**



1. A seat belt retractor system for retracting two seat belts into a single retractor, comprising:
a retractor case;
a base provided within said retractor case;
a retractor shaft rotatably supported by said base;
two seat belts coupled to said retractor shaft and wound one over the other such that one seat belt is an inner side seat belt and one is an outer side seat belt and extendable from said retractor case; and
a bias means coupled to substantially the total length of said inner side seat belt, said bias means being more rigid than said seat belt but being sufficiently flexible to be wound up on said retractor shaft with said seat belt whereby said seat belt can be smoothly extended and retracted without becoming slack within said retractor case.

4,130,253
SEAT BELT WINDING DEVICE

Jun Yasumatsu, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

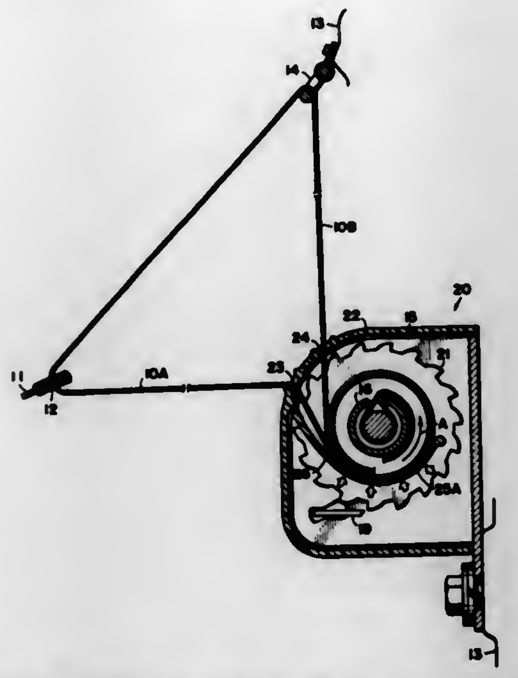
Filed Jul. 25, 1977, Ser. No. 818,409

Claims priority, application Japan, Oct. 14, 1976, 51-137917[U]

Int. Cl.² A62B *35/02;* B65H *75/48*

U.S. Cl. 242—107.1 **15 Claims**

1. A seat belt winding device for use in a three point seat belt system comprising:
two seat belts for use as a lap belt and as a shoulder belt;
a base;
a shaft rotatably supported by said base for winding up said seat belts;
a housing covering said base, shaft and wound up portion of said seat belts; and
a means for preventing slack of the belts within the housing comprising an arm integral with and extending from said housing pressing against the wound up portion of said seat belts with sufficient force such that said two seat belts are tightly wound up during retraction and such that the same length of seat belt is wound out for both of said two seat belts at the same time when the two seat belts are extended whereby malfunction of said seat belt winding device is prevented.



4,130,254
SEAT BELT WINDING DEVICE

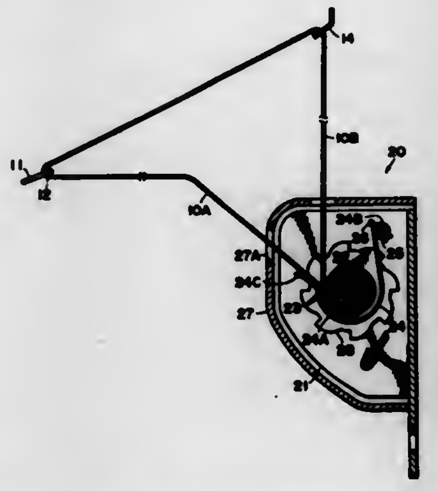
Jun Yasumatsu, Toyota; Noriyuki Masuda, Joetsu, and Tatsushi Kubota, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Tokai Rika Denki Seisakusho, both of, Japan

Filed Jul. 25, 1977, Ser. No. 818,300

Claims priority, application Japan, Aug. 6, 1976, 51-105011[U]

Int. Cl.² A62B *35/02;* B65H *75/48*

U.S. Cl. 242—107.1 **10 Claims**



1. A seatbelt winding device for motor vehicles comprising:
a pair of seatbelts;
a base;
a shaft rotatably supported by said base for winding up said pair of seatbelts; and
a pressure board coupled to said base and resiliently engaging with and substantially surrounding the outside surface of said seatbelts wound up on said shaft for preventing slack in said seatbelts, whereby a pressure is applied to said seatbelts along said shaft and both of said seatbelts will extend together the same length when unwound.

4,130,255
PASSENGER RESTRAINING BELT RETRACTOR

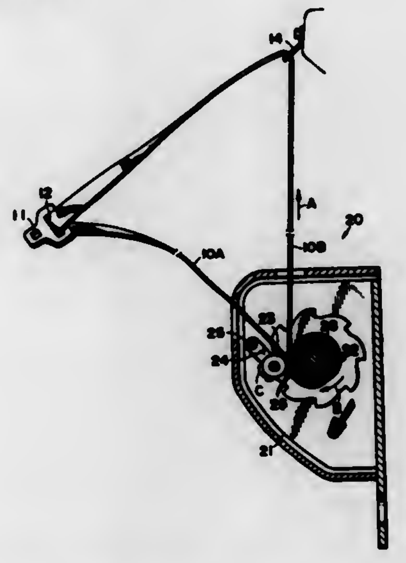
Shiro Sasaki; Jun Yasumatsu, both of Toyota, and Kazuhisa Tatematsu, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 22, 1977, Ser. No. 818,140

Claims priority, application Japan, Jul. 30, 1976, 51-102541[U]

Int. Cl.² A62B *35/02;* B65H *75/48*

U.S. Cl. 242—107.1 **5 Claims**



1. A restraining belt retractor comprising:
a base;
a retractor shaft rotatably supported by said base;
two restraining belts secured to said retractor shaft;
first bias means mounted between said base and said retractor shaft for biasing said retractor shaft in the direction of belt retraction; and
second bias means resiliently engaging with and pressing an unrolled portion of said two restraining belts against the wound up portions thereof for preventing slack in the belts whereby said two restraining belts are extended substantially the same amount.

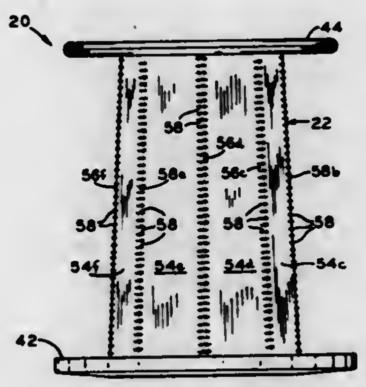
4,130,256
WIRE CARRYING SPOOL

Hugh W. Hosbein, Fort Wayne, Ind., assignor to Mossberg Hubbard, a division of Wanskuck Company, Garrett, Ind.

Filed Nov. 18, 1977, Ser. No. 852,865

Int. Cl.² B65H *75/14*

U.S. Cl. 242—118.4 **1 Claim**



1. A wire carrying spool comprising a barrel having a barrel axis;
said barrel being frusto-pyramidal having wire receiving barrel sides inclined from one spool end to the other;
said barrel having corners formed between adjacent side edges;
said corners each having a plurality of axially spaced ridges formed thereon to define wire receiving channels whereby wire windings will nest in said channels for maintaining axial wire placement;
said ridges of circumferentially adjacent corners being axially displaced thereby defining helically disposed wire receiving grooves on said barrel corners;
said barrel having an integral flange on one end, a demountable flange on the other end of said barrel, said demountable flange being removably secured to said barrel by means of threaded fasteners;
said other end of said barrel being formed with an annular recess having a cylindrical wall portion of smaller diameter than the outer dimension of said barrel and a radial ledge, said demountable flange having a central opening snugly received over said cylindrical wall portion and supportably engaged with said radial ledge, and a plurality of circumferentially spaced fasteners extending axially of said barrel passing through said demountable flange and removably fastenable to said barrel; and
said spool being hollow and internally tapered outwardly at said one end, and including a plate-like insert having an outer periphery conforming to said tapered portion and press-fitted therein to a position at which one surface thereof is substantially co-planar with the end surface of said integral flange.

4,130,257
TAPE DRIVE MECHANISM

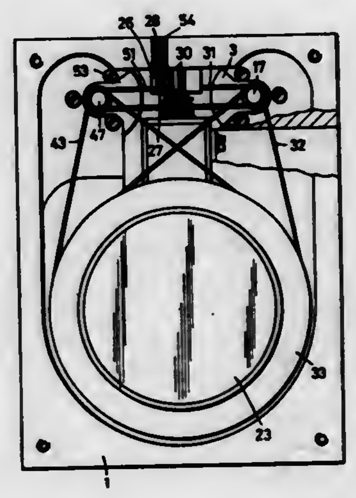
Gerhard Falk, Rossdorf, Germany, assignor to Robert Bosch GmbH, Darmstadt, Germany

Filed Mar. 18, 1977, Ser. No. 778,924

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1976, 2611638

Int. Cl.² G11B *15/22*

U.S. Cl. 242—193 **2 Claims**



1. A tape transport mechanism comprising in combination:
a frame,
a pair of coaxially arranged hubs disposed on said frame, and adapted, respectively, to carry a tape supply reel and a tape take-up reel between which the tape is transportable under tension,
electrically operable drive means comprising a pair of motors for selectively rotating said hubs in first and second opposite directions, each motor having a shaft in driving connection with a respective hub,
a plurality of supports disposed on said frame,
braking means including a plurality of hairpin springs in contact with, and surrounding a respective shaft, and yieldably resilient means urging said hairpin springs to act on the respective shaft to constrain the same against relative turning of the corresponding hub drivingly connected thereto, in a sense allowing the tape to slacken, each hairpin spring having a free extremity and an extremity restrained by a respective support, and

operating means including an electromagnet having a movable armature, said movable armature having a portion engageable with said free extremities so as to release said hairpin springs from contact with the respective shaft, and to terminate the action of said braking means.

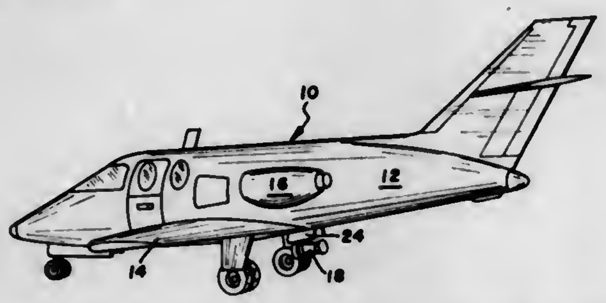
4,130,258
AIRCRAFT WITH RETRACTABLE AUXILIARY POWER UNIT

Anthony Fox, 8306 Queen Ave. South, Minneapolis, Minn. 55431

Filed Nov. 17, 1977, Ser. No. 852,216

Int. Cl.² B64D *41/00*

U.S. Cl. 244—58 **1 Claim**



1. In a heavier than air aircraft of the type having an airframe including a fuselage supporting first and second wing members along the longitudinal axis of said fuselage and having first and second main power units disposed on opposite sides of said fuselage and generally above the longitudinal axis of said wing members, the improvement comprising:

(a) an opening formed in the bottom of said fuselage said opening being located symmetrically about a line parallel to said longitudinal axis of said fuselage;
(b) first and second door members shaped to conform to the surface of said fuselage in the area of said opening for normally covering said opening;
(c) a hydrogen peroxide fueled thruster rocket engine auxiliary power unit;
(d) a generally rectangular mounting plate connected to said auxiliary power unit;
(e) first and second guide rails connected to said fuselage and extending transverse to said longitudinal axis of said fuselage and generally disposed within said fuselage and in proximity to said opening, said guide rails slidably engaging the edges of said mounting plate; and
(f) hydraulically operable positioning means coupled between said fuselage and said mounting plate for selectively opening said door members and moving said auxiliary power unit from a normal position within said fuselage through said opening, to a position exterior to said fuselage and below the longitudinal axis of said first and second wing members prior to energization of said auxiliary power unit.

4,130,259
HELICOPTER COLLECTIVE LEVER

Floyd W. Carlson, Fort Worth, and Joseph Mashman, Dallas, both of Tex., assignors to Textron Inc., Providence, R.I.

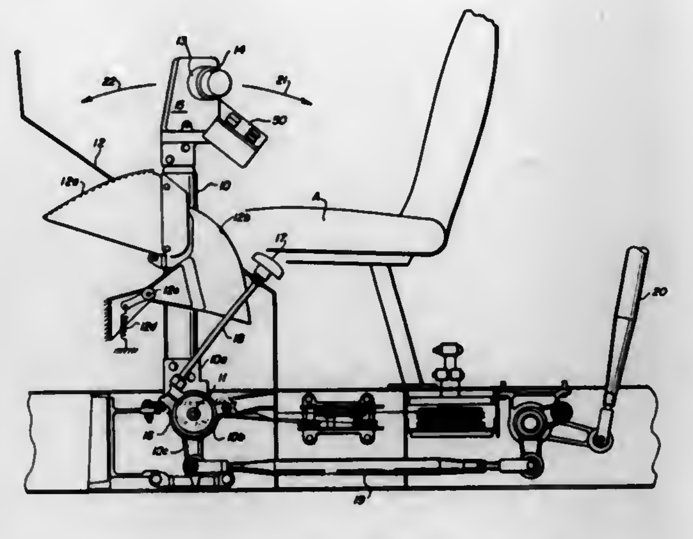
Filed Aug. 10, 1977, Ser. No. 823,284

Int. Cl.² B64C *27/56*

U.S. Cl. 244—83 F **5 Claims**

1. In a helicopter collective pitch and control for the helicopter engine system control, the combination which comprises:

(a) structure in a helicopter adjacent a pilot seat forming a horizontal pivot at about the cabin floor adjacent to and ahead of the pilot seat and having an axis lateral relative to the longitudinal axis of said helicopter,
(b) a control lever mounted on said pivot normal to the longitudinal axis of said helicopter,
(c) a throttle support extending generally parallel to said pivot away from said seat,
(d) throttle means including at least one control on said support coupled through said lever to control the engine system, and



(e) a control train extending from said lever to vary the collective main rotor pitch of said helicopter in dependence upon rotation of said lever about said pivot.

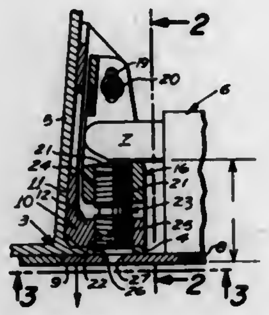
4,130,260
ADJUSTABLE KEEPER FOR PIN LATCHES

L. Richard Poe, Long Beach, Calif., assignor to Hartwell Corporation, Placentia, Calif.

Filed Aug. 26, 1977, Ser. No. 828,030

Int. Cl.² B64C *1/14*

U.S. Cl. 244—129.5 **2 Claims**



1. An adjustable keeper for a pin latch carried by an aircraft panel, the margins of which overlap a supporting frame to dispose the panel flush with the surrounding surface of the aircraft, the pin latch being movable between a retracted position and an extended position in essentially parallel relation with the adjacent surface of the panel and in confronting relation to the supporting frame, said keeper comprising:

a. a channel shaped mounting bracket secured to the supporting frame in confronting relation to the pin latch, the mounting bracket including an end portion confronting the supporting frame;
b. a channel shaped keeper bar slidably received in the mounting bracket and including an end portion interposed between the mounting bracket and the pin latch and confronting the end portion of the mounting bracket;
c. the end portions of the mounting bracket and keeper bar having coaxial internally screwthreaded bores of opposite pitch;
d. and a screw means having opposed screwthreaded portions received in the screwthreaded bore, the screw means having a tool socket, the supporting frame being perforated for access to a tool inserted in the socket, for applying a force against the pin latch in a direction to urge the panel into firm contact with the supporting frame.

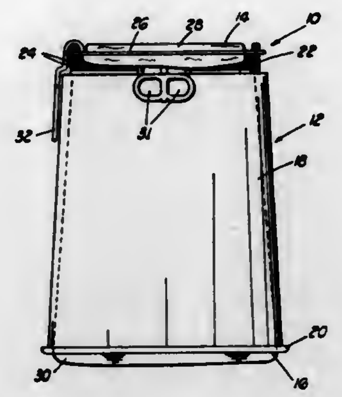
4,130,261
BAG FILLING DEVICE

Ray A. Dow, 804 N. Ross, Dewey, Okla. 74029

Filed Apr. 11, 1977, Ser. No. 786,063

Int. Cl.² A63B *55/04*

U.S. Cl. 248—97 **2 Claims**



1. A bag filling device for receiving a bag or the like therein, the device holding the bag in an open position for filling the bag with various articles, the device comprising:

a tube having an open top portion and an open bottom portion, the sides of said tube tapered upwardly and inwardly from the bottom portion to the top portion, said tube receiving the bag therein;
a recessed annular shaped upper lip portion disposed around the outside of the top portion of said tube, said lip portion having rough textured surface portions for engaging the edges of the open top of the bag when the top of the bag is overlapped against the surface of said lip portion;
a pair of sets of outwardly extending protuberances disposed on opposite sides of the surface of said lip portion and intermediate the rough textured surface portions;
a pair of semicircular handles having a first end portion, a second end portion, and a "U" shaped center portion, said handles parallel to each other when raised into a vertical position, the first end portion and the second end portion of said handles pivotally attached to the top of said lip portion, said handles when pivoted into a horizontal position adjacent the sides of said lip portion compressing the top of the bag against the textured surface of said lip portion, the "U" shaped center portion of said handles engaging said protuberances in a snap fit;
a hook pivotally mounted on said lip portion between the second end portions of said handles; and
a plurality of notches disposed in the top of said lip portion and adjacent the first and second end portions of said handles, said notches receiving a portion of the top of the bag when the bag is overlapped on the surface of said lip portion, said notches allowing the bag to be wrapped around the surface of the upper lip portion without contacting said hook and the first and second end portions of said handles.

4,130,262
ADJUSTABLY INTERFITTING PANEL CLAMP

John Steckowich, Jr., Edison, N.J., assignor to Burroughs Corporation, Detroit, Mich.

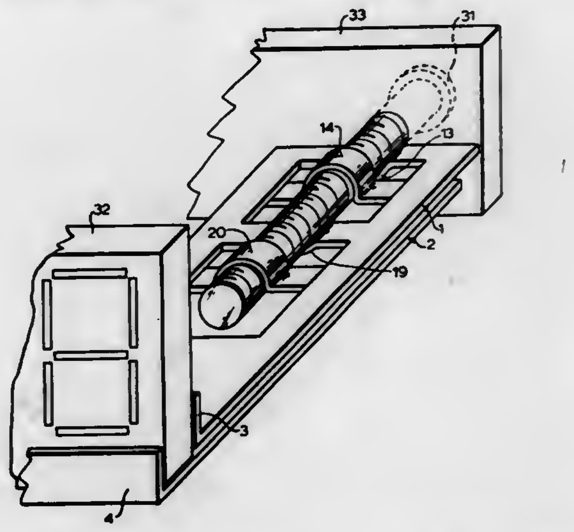
Continuation-in-part of Ser. No. 729,452, Oct. 4, 1976, abandoned. This application Sep. 19, 1977, Ser. No. 834,192

Int. Cl.² F16B *1/04*

U.S. Cl. 248—226.1 **12 Claims**

1. An adjustable clamp comprising:

A. a first clamping jaw and a second clamping jaw;
B. a first extension means connected to said first clamping jaw and a second extension means connected to said second clamping jaw, said first and second extension means being adapted to be placed in overlying relationship to hold said first and second clamping jaws in an adustably opposing relationship;
said first and second clamping jaws and said first and second extension means forming respective first and second L-shaped members;
C. mutual interfit means, formed in each of said first and second extension means, for enabling both said extension means to be mutually and slide-adjustably interfitted when said means are placed in the overlying relationship, and for forming an anchor receiving means between said overlying extension means;
said mutual interfit means comprising apertures and semicylindrical bands formed in each of said first and second extension means;



the semicylindrical bands of said first extension means being non-threaded and the semicylindrical bands of said second extension means having threads formed therein; at least one of said bands in each of said extension means being received in one of said apertures of the other extension means; and
D. controllable anchor means, adapted to pass into said anchor receiving means, for securing said overlying extension means together and for producing a controlled sliding of said second extension means with respect to said first extension means, said controlled sliding effecting an adjustable clamping action between said opposing first and second clamping jaws.

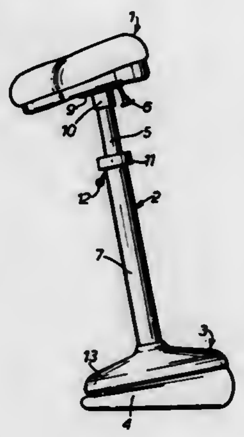
4,130,263
CHAIRS

Hans Roericht, Ulm, Fed. Rep. of Germany, assignor to Wilkhahn, Wilkening & Hahne, Eimbeckhausen, Fed. Rep. of Germany

Filed Jun. 17, 1977, Ser. No. 807,664

Int. Cl.² F16M *13/00*

U.S. Cl. 248—371 **7 Claims**

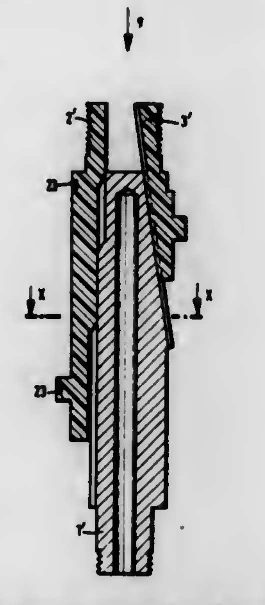


1. A seat comprising
a seat portion,
a stem carrying the seat portion, and
a base supporting the stem, the base including

a support,
a ground-engaging flexible bag secured to the support and, together with the support, defining a chamber, and
particulate material substantially filling the support and flowable in the bag to change the shape of the bag in response to displacement of the bag produced by a tilting of the stem whereby to hold the seat in equilibrium in its tilted state.

4,130,264
EXPANDABLE CORE FOR INJECTION MOLDING

Peter Schröer, Ludenscheid, Fed. Rep. of Germany, assignor to Geyer & Co., Ludenscheid, Fed. Rep. of Germany
Filed Oct. 26, 1977, Ser. No. 845,613
Int. Cl.² B28B *7/30;* B29C *1/12;* B29D *1/00*
U.S. Cl. 249—180 12 Claims

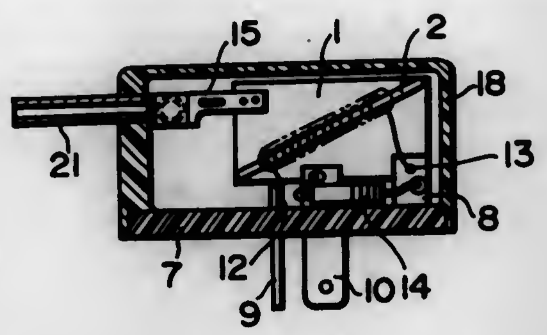


1. In an expandable core device for forming an interior wall in a part being molded and including a core pin and a sleeve composed of a plurality of segments disposed around the pin, the segments being movable axially of the pin and radially inwardly from a molding position to an unmolding position, the improvement wherein: said pin is provided with a conical outer surface defined by a plurality of faces disposed around the periphery of said pin and each having a continuous slope toward the axis of said pin in the direction of axial movement toward the unmolding position; said sleeve is constituted by a group of first lateral slides and a group of second lateral slides, each said slide constituting a respective segment which extends axially of said pin and is movable along a respective face of said outer surface, said first slides alternating with said second slides around the periphery of said pin, and each said slide having a continuously sloping inner surface arranged to cooperate with its associated face; and said conical outer surface faces and said inner surfaces of said slides are formed such that the angle of inclination of said inner surfaces of said second slides and of said pin faces associated therewith, relative to the axis of said pin, is approximately twice that of said inner surfaces of said first slides and of said pin faces associated therewith.

4,130,265
ELECTRICALLY OPERATED SWITCHING VALVE

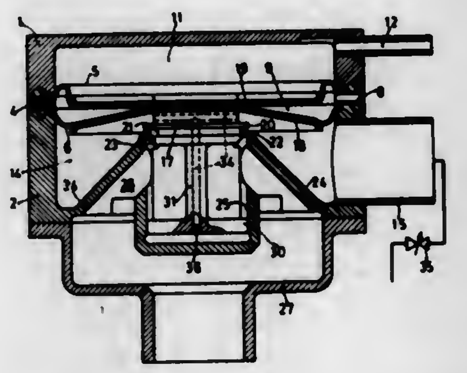
Naoji Sakakibara, Chiryu, and Nobuyuki Hashimoto, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Feb. 3, 1977, Ser. No. 765,309
Claims priority, application Japan, Feb. 25, 1976, 51-22039
Int. Cl.² F16K *31/04*
U.S. Cl. 251—11 7 Claims

1. Electrically operated switching valve comprising valve housing means provided with valve port means, valve member means for co-operation with valve seat means formed on said valve port means, valve actuating means for moving said valve member means into and out of engagement with said valve seat means, said valve actuating means including resilient plate means supported on said valve housing means and carrying said valve member means, strap means having opposite ends rigidly secured to the resilient plate means at two spaced apart portions and having a dimension smaller than the distance between said portions under a normal condition so that the plate means is deflected from a normal position, electric heating wire means for heating the strap means when energized, and means for energizing the heating wire means so as to generate heat in the heating wire means for producing thermal expansion of the strap means to allow the resilient plate means to return to its normal undeflected position.



4,130,266
PRESSURE CONTROL VALVE

Johannes-Gerhard Bertling, Vaihingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jun. 1, 1977, Ser. No. 802,332
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1976, 2625512
Int. Cl.² F16K *31/12*
U.S. Cl. 251—50 9 Claims

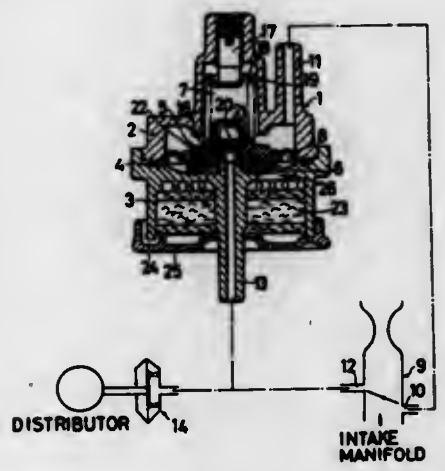


1. A pressure control valve including a housing and non-resilient flexible diaphragm means in said housing dividing the interior volume thereof into a first chamber and a second chamber, and said housing including a valve seat disposed in said second chamber and a valve closing member attached to said diaphragm means to cooperate with said valve seat to control communication between said second chamber and interior portions of said housing downstream of said valve seat and wherein the improvement comprises:

said diaphragm means is composed of two substantially adjoining diaphragms fastened together at their centers and fastened to said valve closing member and moving therewith, said housing being provided with wall channel means for admitting pressurized fluid to the space between said two diaphragms; and
a relief piston, attached to said valve closing member and extending beyond said valve seat and disposed to glide sealingly in a blind bore of said housing having a diameter equal to said valve seat to thereby define a variable space which communicates with said second chamber via a conduit in said relief piston;
whereby, when pressurized fluid is admitted to said first chamber, the excursions of said diaphragm means variably open said valve seat to thereby control the pressure in said second chamber.

4,130,267
PNEUMATIC CONTROL SYSTEM AND PRESSURE RESPONSIVE VALVE ASSEMBLY THEREFOR

Masami Inada, and Kazuhiko Kitamura, both of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Division of Ser. No. 611,960, Sep. 10, 1975, Pat. No. 4,044,732.
This application Feb. 25, 1977, Ser. No. 772,201
Claims priority, application Japan, Sep. 20, 1974, 49-108971; Nov. 7, 1974, 49-128403
Int. Cl. F16k *31/128*
U.S. Cl. 251—61.2 6 Claims

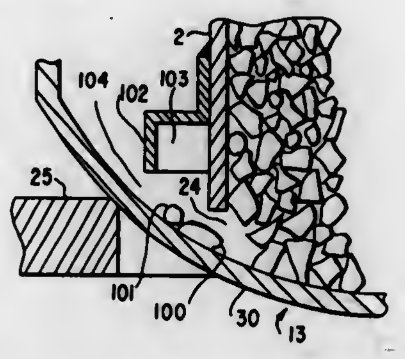


1. A pressure responsive valve assembly for use with a vacuum source, comprising in combination:

a housing including an inlet port adapted to be connected to said vacuum source and an outlet port adapted to be connected to an engine emission control device of a motor vehicle,
said housing being comprised of an upper housing and a lower housing,
a diaphragm secured between the edges of said upper and lower housing dividing the interior of said housing into a first chamber and a second chamber, said first chamber adapted to be communicable with said vacuum source through said inlet port, while said second chamber is provided with a hole communicating with air at atmospheric pressure,
a power piston movably disposed in said housing,
a guide member secured to said power piston with the inner peripheral edge of said diaphragm secured between said piston and said guide member,
a first spring disposed within said housing for urging said power piston to move in one direction into said second chamber.
said power piston being movable in the other direction against the force of said first spring when a vacuum is applied to said first chamber, a valve seat surrounding said outlet port,
a valve member operatively associated with said power piston and cooperative with said valve seat to control the admission of atmospheric air to said outlet port from said second chamber, and
a second spring disposed between said power piston and said valve member and being weaker than said first spring for urging said valve member to rest on said valve seat when said power piston is being urged in said one direction.

4,130,268
ROTARY VALVE FOR POWDERY AND GRANULAR MATERIALS

Kenji Kojima, and Tatsunori Saiguaa, both of Tokyo, Japan, assignors to Hitachi Plant Engineering & Construction, Tokyo, Japan
Continuation-in-part of Ser. No. 608,384, Aug. 27, 1975, abandoned. This application Apr. 7, 1977, Ser. No. 785,402
Int. Cl.² F16K *1/16*
U.S. Cl. 251—298 1 Claim



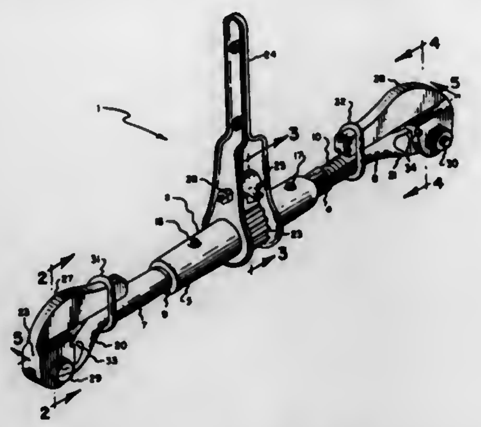
1. A rotary valve for use in a conveying passage for granular material consisting of a vertically disposed valve casing, a sealing means fixed to the downstream end of said valve casing and having a central opening permitting passage of said granular material therethrough, a tubular material conveying path member vertically disposed within said valve casing and extending in the direction of material flow to terminate in a lower end adjacent to said sealing means to define a first gap therebetween, and a valve member disposed to be swingable within said valve casing for making slidable engagement with said central opening of said sealing means in the area of said first gap defined between said sealing means and said end of said material conveying path member, a short auxiliary pipe larger in diameter than said conveying path member and fixed to the path member such that a ring-shaped space is formed between the auxiliary pipe and an outside surface of said path member and such that a lower end of said auxiliary pipe forms a second gap with said inner peripheral surface of said valve member which is larger than said particles, said valve member being spaced around said conveying path member such that an inner peripheral surface of said valve member and said end of said conveying path member form a third gap which is larger than said particles, is the same as said second gap and is configured such that a bridge effect prevents said granular material from passing therethrough, said valve member having an opening to permit passage of the material therethrough when said opening registers with said central opening of said sealing means and said opening is larger than an inner diameter of said path member, said central opening having a greater areal extent than and substantially circumscribing said opening in said valve member so that contact between said sealing means and said granular material is substantially avoided.

4,130,269
TELESCOPIC TURNBUCKLE

Kenneth D. Schreyer, Clarence, N.Y., assignor to Columbus McKinnon Corporation, Tonawanda, N.Y.
Filed Feb. 7, 1978, Ser. No. 875,782
Int. Cl.² B66F *3/10*
U.S. Cl. 254—67 11 Claims

1. A load binder (1) of the type having an axially extending tubular body (2) with first and second opposite end portions (3, 4) having right and left hand threads (5, 6) on their respective inner surfaces and including first and second axially extending threaded members (7, 8) with exterior threads (9, 10), each member being adapted to engage said threads of one of said opposite end portions (3, 4), said first member (7) having an axially extending cylindrical void (11) adapted to telescopically receive therewithin said second member (8), said second member (8) having an outside diameter smaller than the inside

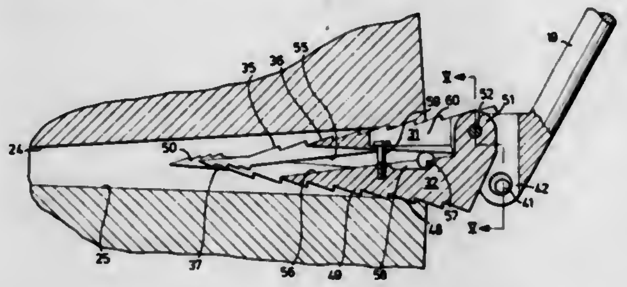
diameter of said cylindrical void (11) characterized in that said second member (8) includes a threaded length at least long enough to extend from the axially outermost end (12) of one of said end portions (4) to a position radially adjacent to the interior threads (5) of the opposite end portion (3), the threads (10) of said second member (8) having a pitch which is greater



than the pitch of the threads (9) of said first member (7) and said cylindrical void (11) of said first member (7) has a length at least long enough to extend from the axially innermost end (13) of one of said end portions (14) to a position radially adjacent to the interior threads (5) of the opposite end portion (3).

4,130,270
WEDGE ARRANGEMENT

Einar W. Andersson, Gavle, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden
Filed Oct. 18, 1977, Ser. No. 843,310
Int. Cl.^{2} B66F *15/00*
U.S. Cl. 254—104 **8 Claims**

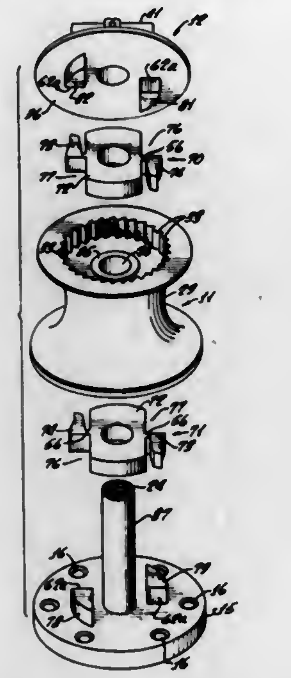


1. A wedge arrangement for forceably spreading apart the opposing surfaces of a saw cut made in a tree, comprising:

(a) a first pointed wedge member having at least two spaced, parallel fingers,
(b) a second pointed wedge member having at least one finger disposed in the space between said two fingers of the first wedge member, the second wedge member having substantially the same length as the first wedge member,
(c) wood gripping means on the outer surfaces of each wedge member directed rearwardly from the respective points thereof for engaging the opposing surfaces of a saw cut in a tree, and
(d) drive means coupled to the first and second wedge members for alternately applying an axial force to each of said members to successively advance the wedge arrangement into the saw cut in a step-by-step manner.

4,130,271
SYNTHETIC RESIN RATCHET WINCH

Franklin Merriman, 524 DeAnza Dr., Corona del Mar, Calif. 92625
Continuation of Ser. No. 729,809, Oct. 5, 1976. This application Apr. 3, 1978, Ser. No. 893,056
Int. Cl.^{2} B66D *1/30*
U.S. Cl. 254—150 R **8 Claims**

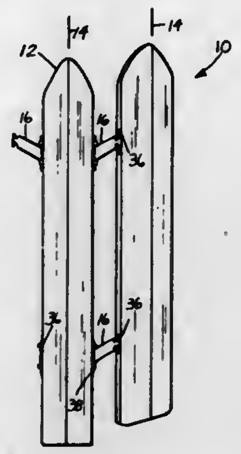


2. A ratchet winch for sailboats, which comprises:
(a) a synthetic resin base adapted to be anchored on the deck of a sailboat,
(b) a post extending upwardly from said base, in fixed relationship relative thereto,
(c) a synthetic resin drum mounted rotatably on said post,
said drum having a recess at the lower end thereof, there being internal teeth provided internally on said drum at said recess,
(d) synthetic resin pawl means disposed on said base,
said pawl means comprising a synthetic resin body,
said pawl means further comprising a synthetic resin pawl shaped to lock with said internal teeth to prevent rotation of said drum in one direction,
said pawl means further comprising a synthetic resin flexural beam extending between said body and said pawl,
said flexural beam being sufficiently flexible to flex and permit rotation of said drum in the direction opposite to said one direction, despite the presence of said teeth, and
(e) boss means provided fixedly on said base and extending upwardly therefrom to provide a stop for said pawl,
said boss means being positioned to be directly engaged by said pawl, when an attempt is made to rotate said drum in said one direction, so that the force is transmitted from one of said teeth through said pawl directly to said boss means for effective prevention of said rotation in said one direction,
said boss means also being positioned to permit movement of said pawl and said flexing of said beam when said drum is rotated in said direction opposite to said one direction.

4,130,272
FLEXIBLE PICKET FENCE

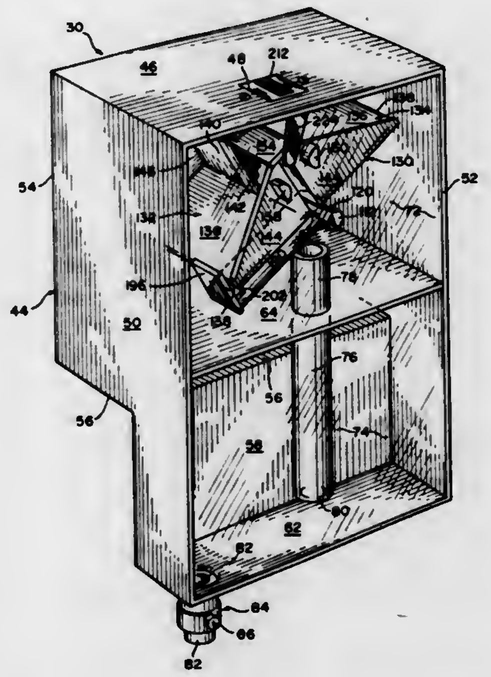
George W. Emmie, 4141 Nicholas Dr., Sterling Heights, Mich. 48077
Filed Sep. 22, 1977, Ser. No. 835,666
Int. Cl.^{2} E04H *17/14*
U.S. Cl. 256—22 **4 Claims**

1. A flexible picket fence comprising:
a plurality of parallel, laterally spaced pickets; and
a plurality of parallel pairs of stringers interconnecting said pickets, each stringer having opposite ends pivotally attached to adjacent, laterally spaced pickets such that said pickets and their associated stringers are movable with respect to each other about an axis parallel to the longitudinal axis of said pickets while maintaining said pickets in said parallel relationship and permitting said pickets to be disposed along a curved path,
each of said pickets having a front wall and side walls connected thereto, each side wall having longitudinally spaced connecting joints, each of said connecting joints having a slot dividing the joint into upper and lower recesses including circular rings adjacent to said slot between said slot and the upper and lower recesses, said recesses having a circular configuration, each of said stringers having tubular end sections, said tubular end sections being matingly received by said picket recesses to permit pivotal movement between said pickets and said stringers.



4,130,273
SILVER RECOVERY IMPROVEMENTS

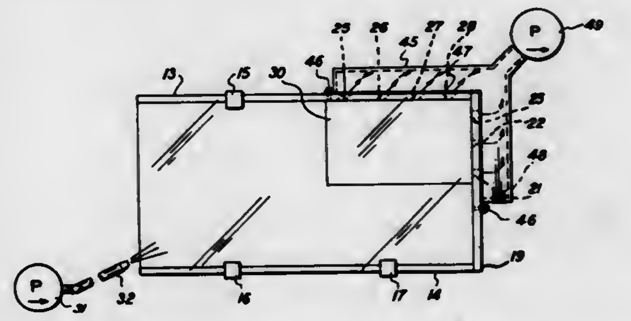
Gunter G. Woog, P. O. Box 43, West Bend, Wis. 53095
Filed Apr. 15, 1977, Ser. No. 788,052
Int. Cl.^{2} C22B *11/12;* G01W *1/14*
U.S. Cl. 266—79 **3 Claims**



1. An apparatus for recovering metal from a liquid comprising said metal, the apparatus comprising:
a metal recovery chamber through which the liquid is caused to flow in contact with the surfaces of objects of metal higher in the electromotive series than the metal in the liquid so that said mentioned metal is precipitated through ionic exchange, which precipitated metal may later be removed and refined;
a single container externally carried adjacent the metal recovery chamber, said single container liquid influent means, metering means and sampling means;
said metering means being disposed within the container and receiving all the liquid caused to flow through the metal recovery chamber, said metering means comprising means measuring the quantity of liquid caused to flow through the chamber during a predetermined interval of time and unobstructed liquid effluent discharge means; and
said sampling means being disposed within the container and receiving only a negligible amount of the liquid measured by the metering means, said sampling means comprising storage means, means periodically causing samples of said liquid to be deposited cumulatively in the storage means and selectively operable sample effluent discharge means.

4,130,274
PNEUMATIC REGISTRATION APPARATUS

Klaus K. Stange, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Continuation of Ser. No. 627,571, Oct. 31, 1975, abandoned. This application Mar. 8, 1977, Ser. No. 775,508
Int. Cl.^{2} B65H *9/00*
U.S. Cl. 271—236 **1 Claim**



1. Apparatus for registering a sheet with respect to perpendicularly related axes, the sheet having a length and width within predetermined ranges, comprising:

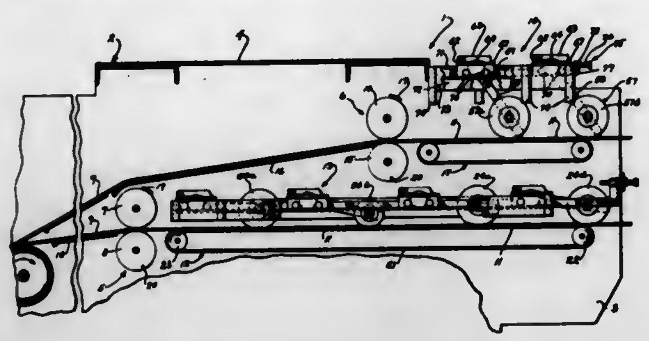
(a) a sleeve for internally accommodating said sheet, having a top plate and a bottom plate, at least a section of one of the plates being transparent to provide a substantial view of a registered sheet, and at least one point on an inner narrow wall of the sleeve being coincident with one of the axes;
(b) a stop located at one end of the sleeve, the stop having at least one point coincident with the other of the axes; and
(c) means, remote from said transparent section, for providing in the sleeve a fluid stream having velocity components normal to each of the axes, whereby when a sheet is placed in the sleeve the stream moves the sheet into abutment with each of said points, wherein said means for providing a fluid stream includes at least one port in said stop and at least one port in said narrow wall, and wherein said means for providing a fluid stream includes a manifold coupled to at least one of the ports and a pump for discharging fluid from the manifold.

4,130,275
SKEW CONTROL MECHANISM FOR SHEET MATERIAL

Vincent E. Rozga, Greendale, Wis., assignor to Kelley Company Inc., Milwaukee, Wis.
Filed Jan. 26, 1977, Ser. No. 762,476
Int. Cl.^{2} B65H *9/16*
U.S. Cl. 271—251 **4 Claims**

1. A skew control mechanism for controlling skewing of cut sections of sheet material, comprising a supporting structure, conveyor means carried by the supporting structure for conveying said cut sections in a downstream direction, a pair of tracks located at opposite sides of the conveyor, and a skew control unit mounted above the conveyor, said skew control

unit including a frame mounted for movement on said tracks, locking means for locking the frame against movement on said tracks in said downstream direction, said skew control unit including pressure means disposed to engage the upper surfaces of the cut sections moving on the conveyor and mounted for floating movement in a vertical plane, said skew control unit being removable from said tracks on release of said locking means.



4,130,276

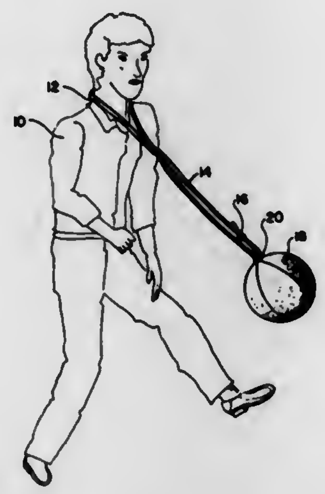
EXERCISING DEVICE

Joseph R. Tricarico, 1955 Williamsbridge Rd., Bronx, N.Y. 10461

Filed Jun. 9, 1977, Ser. No. 805,082

Int. Cl.^{2} A63B *69/26*

U.S. Cl. 272—78 1 Claim



1. An exercising device for a user having a neck and a head, said exercising device comprising
   - a ball having a size substantially that of a user's head, said ball having an eye loop extending therefrom;
   - a closed loop of elastic strip-like material fittable over the user's head and around the user's neck; and
   - a strap of strip-like material having spaced opposite first and second ends and a buckle affixed to the first end thereof, said strap passing through the eye loop of said ball and through said closed loop and the second end of said strap being adjustably secured to said buckle thereby providing an adjustable closed loop tethering said ball to said closed loop of elastic material in a manner whereby the user is enabled to knee, kick and throw said ball.

4,130,277

COMPOSITE PADDLE RIM

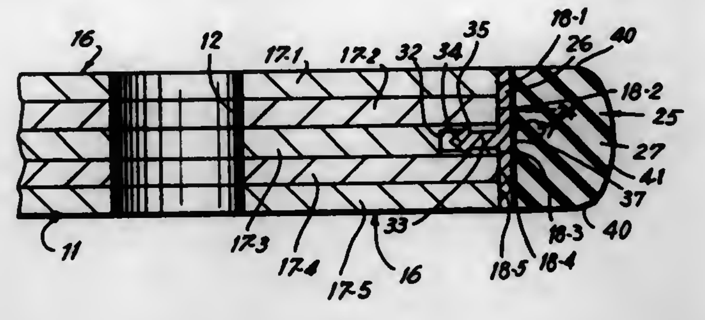
Nathan Marks, Garfield, N.J., assignor to Marcraft Recreation Corp., Garfield, N.J.

Filed Jul. 1, 1977, Ser. No. 812,071

Int. Cl.^{2} A63B *59/00*

U.S. Cl. 273—67 R 7 Claims

1. A composite protective rim in combination with a game paddle having a handle portion and a blade portion including opposed substantially planar surfaces, comprising rim means surrounding at least a portion of the periphery of said blade portion defined by said opposed planar surfaces, said rim means including an elongated metal element, said element having operative means projecting therefrom for anchoring said element to said blade portion of said paddle, said rim means further including a resilient bumper means bonded to said metal element along the lengthwise extent thereof.



4,130,278

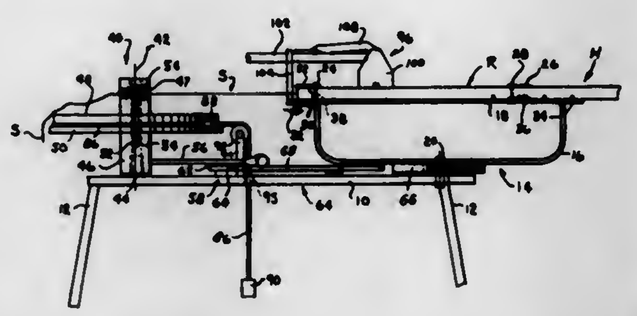
RACQUET STRINGING MACHINE

Robert L. Gutzwiller, 730 Barr Crest La., Lancaster, Pa. 17603

Filed Jun. 21, 1977, Ser. No. 808,538

Int. Cl.^{2} A63B *51/14*

U.S. Cl. 273—73 A 17 Claims



1. An improved racquet stringing machine having a base, a racquet supporting frame means pivotally connected to said base, retaining means on said frame for fixing the racquet relative to said frame, first string clamping means adapted to engage said frame and a string under tension to hold the tensioned string relative to the racquet, tension applying means comprised of a wheel rotatably disposed on said base and spaced apart from said frame, a vertically disposed drum on said wheel and rotatable therewith, second string clamping means on said drum for holding a string to be tensioned and a free hanging weight connected by means to said wheel, and locking means disposed between said wheel and said frame and automatically activated by rotation of said wheel for holding said frame in a preselected position while tension is applied to a string by said weight through said wheel and drum.

4,130,279

INDOOR GOLF

Samuel C. Ross, 510 S. 8th West, Brigham City, Utah 84302

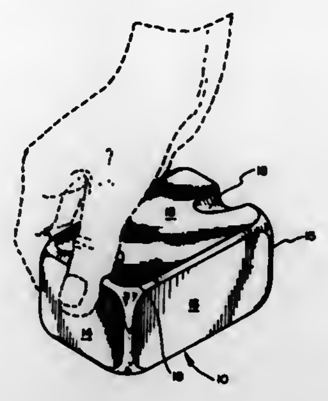
Filed Jul. 21, 1977, Ser. No. 817,558

Int. Cl.^{2} A63F *7/06*

U.S. Cl. 273—87.2 7 Claims

1. A game comprising rectangular shaped hollow clubs having no projections extending beyond the peripheral rectangular configuration thereof and being open on one side for insertion of the fingers, the top of said club having indentations for thumbs; a series of sequentially numbered indicators detachably connectable to a furniture leg in numerical order, golf balls to go with the clubs, and a scorecard.

7. A method of playing a golf game with rectangular shaped hollow clubs having a base and no projections extending beyond the peripheral rectangular configuration thereof which comprises sequentially numbering furniture legs with an indicator, placing the fingers in the hollow club and the thumb in an indentation at the top of the club, striking a golf ball with the face of the club until the ball touches the first sequentially numbered furniture leg and then proceeding to the next sequentially numbered leg until all numbered legs have been contacted and then computing the total number of strokes taken to strike all of the legs.



4,130,280

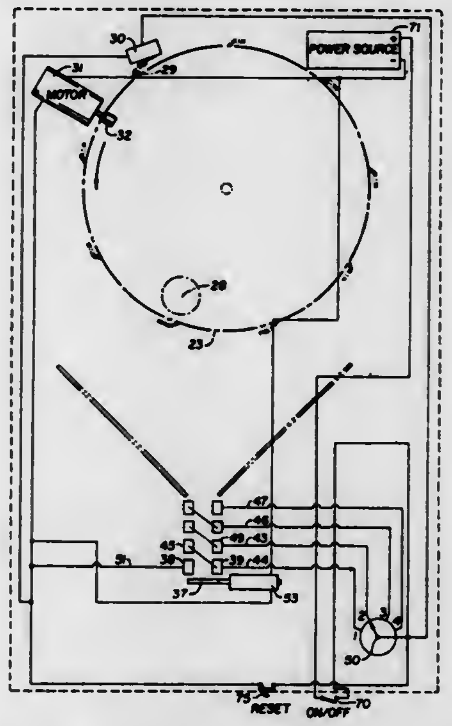
GAME APPARATUS

Joseph Lowell, 139 Sutro Heights Ave., San Francisco, Calif. 94121

Filed Dec. 20, 1977, Ser. No. 862,267

Int. Cl.^{2} A63F *7/06*

U.S. Cl. 273—87.2 11 Claims



11. A game device simulating a golf game and capable of being played by one to four players wherein a ball is propelled up an inclined playing surface and through a first hole of a series of holes, and wherein when each of the players has succeeded in placing a ball through the first hole, that hole is automatically closed, the next hole is automatically opened, and the played balls are automatically returned to the playing surface for replay, said device comprising:
- (a) an inclined substantially planar playing surface having a plurality of ball receiving apertures;
- (b) a like plurality of weighted movable cover members, each of said cover members being loosely disposed in a respective aperture and connected to said playing surface by a hinge device;
- (c) a rotatable disk mounted beneath said playing surface for retaining said cover members in a closed position to cover said apertures and having an opening for permitting a cover member to fall into the open position when the disk is rotated to align the opening with a cover member, said disk having a plurality of cams located around the periphery;
- (d) at least four balls having electrically conductive surfaces;
- (e) a rotatable spring device including means for propelling said balls up said inclined playing surface and means for aiming said balls toward said apertures;
- (f) an electrical power source;
- (g) means for selecting the number of balls to be played;
- (h) a channel for retaining said selected number of balls having been played, said channel further comprising a movable gate for stopping the movement of said selected number of balls, and at least four pairs of electrically conductive plates, each of said pairs defining a space for the retention of one of said balls, said spaces defining gaps in an electric circuit;
- (i) a motor for rotating said disk when said selected number of balls is retained in said channel to close an open cover member and open another cover member of said plurality of cover members;
- (j) a solenoid connected to said gate for opening said gate when said selected number of balls is retained in said channel;
- (k) a switch located in close proximity to the periphery of said disk for stopping the rotation of said disk when said switch is contacted by one of said cams; and
- (l) lifting means for returning said selected number of balls to said ball propelling means.

4,130,281

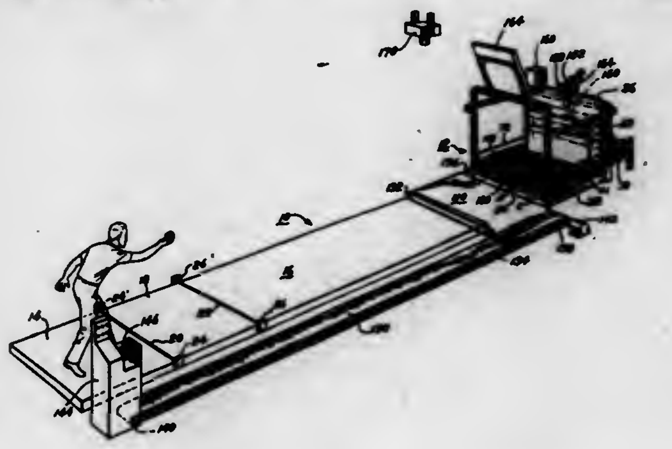
HORSESHOE PITCHING GAME APPARATUS

Ralph E. Leber, R.R. 2, Box 248, Plymouth, Ind. 46563, and Robert O. Baughman, 24633 Stanton Rd., North Liberty, Ind. 46554

Filed Jul. 29, 1977, Ser. No. 820,090

Int. Cl.^{2} A63B *67/06*

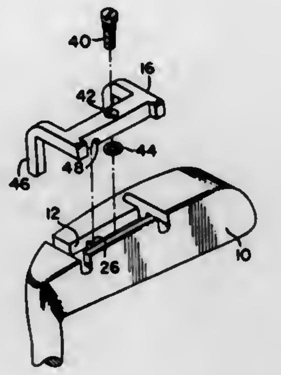
U.S. Cl. 273—100 13 Claims



1. A horseshoe pitching game apparatus comprising a court with a player station at one end, a shoe receiver assembly with a pit and a stake at the other end and a lane between said station and shoe receiver assembly, particulated material in said pit for receiving the pitched shoes, a conveyor means including a conveyor belt disposed in front of said pit, extending between said station and pit assembly for transporting pitched shoes from the pit assembly to the station, a backboard and two sideboards at the edge of said pit for confining the pitched shoes, a means for removing the pitched shoes from the pit and depositing them on said conveyor belt in front of said pit, a means movable in a horizontal plane over said pit for smoothing said material between pitches of the shoes after the shoes have been removed from said pit, and means adjacent said station for receiving the shoes returned by said conveyor means.

4,130,282
GOLF PUTTING SYSTEM FOR PLAY AND PRACTICE

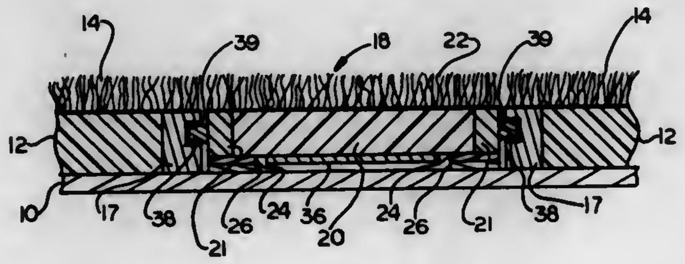
David T. Pelz, 13129 Oriole Dr., Beltsville, Md. 20705
Continuation-in-part of Ser. No. 580,243, May 23, 1975, Pat. No. 4,025,078. This application May 23, 1977, Ser. No. 799,431
Int. Cl.^{2} A63B *69/36*
U.S. Cl. 273—186 A **6 Claims**



1. A putting system for practicing and playing golf whereby a golfer is able to use the same golf club for both practice and playing wherein the improvement comprises
  a clubhead including a ball striking face,
  a first attachment adapted to be attached to said clubhead,
  a second attachment adapted to be attached to said clubhead,
    means for receiving one of said attachments including locating means for locating one of said attachments at said receiving means,
  said first attachment adapted for use in the practice mode and including spaced elements at the ends of said attachment and projecting outwardly from said attachment, and
  first positioning means offset from and non-symetrical with the center of said first attachment, said first positioning means cooperating with said locating means for positioning said first attachment with respect to said receiving means whereby said spaced elements are positioned forwardly of said ball striking face to form a restricted area on said ball striking face for striking a golf ball,
  said second attachment adapted for use in the playing mode including
  second positioning means offset from and non-symetrical with the center of said second attachment cooperating with said locating means for positioning said second attachment with respect to said receiving means to provide an unobstructed surface on said ball striking face for striking a golf ball.

4,130,283
SIMULATED FAIRWAY SURFACE FOR GOLF APPARATUS

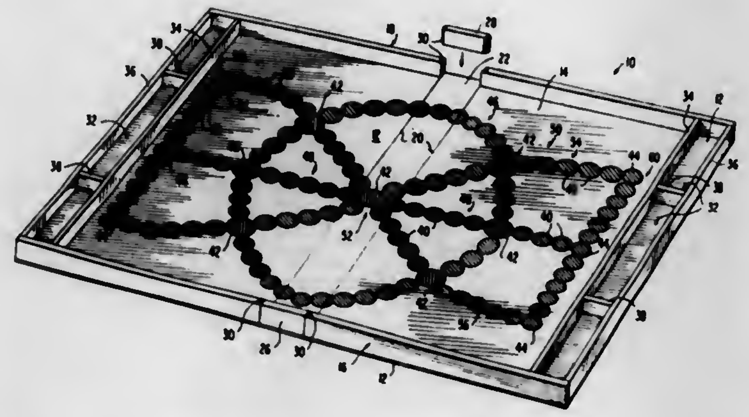
Everet F. Lindquist, Iowa City, Iowa, assignor to University of Iowa Research Foundation, Iowa City, Iowa
Filed Jan. 6, 1977, Ser. No. 757,238
Int. Cl.^{2} A63B *69/36*
U.S. Cl. 273—195 A **4 Claims**



3. A device for simulating actual fairway turf so as to provide for proper execution of a golf shot when a golf ball resting on said device is struck by a golf club, said device comprising a supporting base, artificial turf means having front, rear and side margins supported by and slidably movable relative to said base along a path generally in a horizontal plane, said artificial turf means and said base having corresponding tongue and groove portions slidably engagable with each other to guide said turf means and limit its movement relative to said base along said path from an initial at-rest position forwardly primarily in the direction of flight of a golf ball when struck by a golf club, said turf means having a layer of resilient material extending between said front, rear and side margins so as to provide a cushioned layer, said turf means also having an artificial turf layer on top of said cushioned layer, and resilient means combined with said turf means to return said turf means to said initial position when said turf means is moved forwardly during a golf shot.

4,130,284
TRAFFIC JAM BOARD GAME

Abram Fuks, 5724 Jumilla Ave., Woodland Hills, Calif. 91364
Filed Aug. 19, 1977, Ser. No. 826,037
Int. Cl.^{2} A63F *3/04*
U.S. Cl. 273—248 **7 Claims**

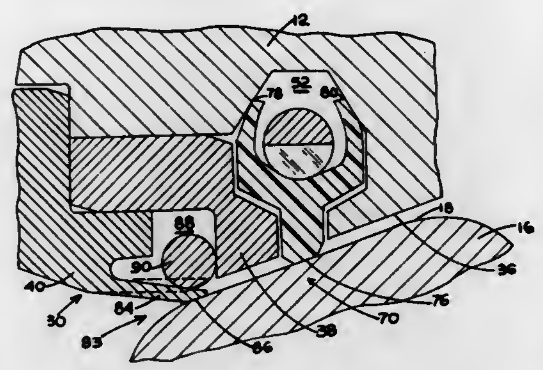


1. A board game apparatus comprising:
a playing board, a segmented series of intersecting pathways on said board and forming a playing area, said pathways defining a centrally located circle and sides of an hourglass, the sides thereof extending through a common center and through the circumference of said circle, the ends of said hourglass defined by pathways disposed adjacent and parallel to opposite ends of said board, said pathways further defining a line bisecting said circle and said hourglass along the longitudinal axis thereof and intersecting the ends of said hourglass at the center thereof; at least one storage compartment disposed at each of opposite ends of said board; a plurality of tokens constituting playing pieces for respective players, said tokens having means for indicating ownership thereof, each token adapted to be moved in successive turns along the pathways across the playing area of said board from an entrance point to an exit point; at least one pair of dice for indicating the advance of players' tokens along the pathways at successive turns.

4,130,285
VALVE SEALING DEVICE

Ritchie W. Whitaker, Claremont, Calif., assignor to Walworth Company, Valley Forge, Pa. and Kryoflo, Inc., Santa Ana, Calif.
Filed Jan. 26, 1978, Ser. No. 872,731
Int. Cl.^{2} F16K *25/00;* F16J *15/32, 15/48*
U.S. Cl. 277—12 **17 Claims**

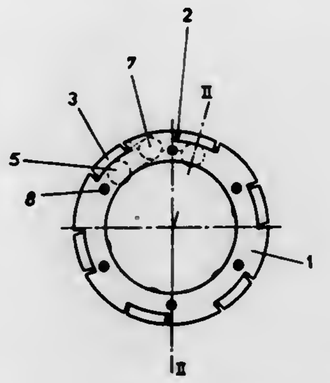
1. In a valve comprising:
a valve body member having a fluid flow passage therethrough; and
a valve closure member movable between valve open and valve closed positions;
an annular sealing surface on one of said members; and
an opposing annular sealing device on the other of said members;
said sealing device comprising;
an annular groove having a relatively narrow opening and then increasing in width to the groove side walls to form a pair of shoulders on opposite sides of said opening;
portions of said side walls converging away from said narrow opening; and
a resilient seal ring in said annular groove;



said seal ring having a narrow sealing portion extending through said narrow opening and a wider body portion engagable with said groove shoulders; and
generally radial flexible lips extending from both sides of said body portion for sealing engagement with said converging side wall portions;
said sealing portion in said valve open position being disposed to interfere with said annular sealing surface whereby in closed position said body portion is forced away from said shoulders and said radial lips are pressed against said converging side wall portions.

4,130,286
PACKING MEANS FOR SHAFT BUSHINGS

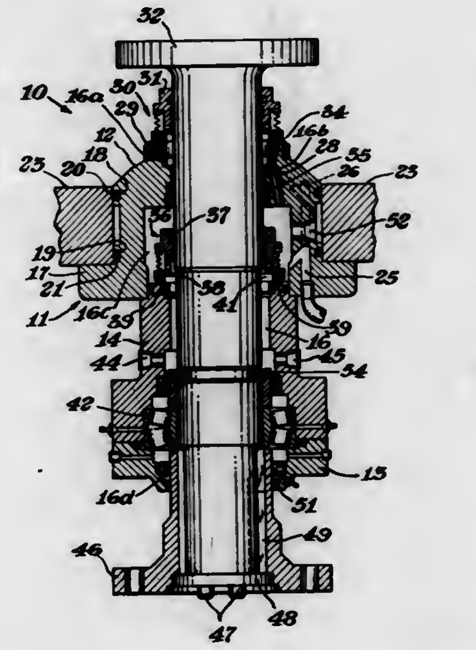
Horst M. Ernst, Eltingshausen; Manfred Brandenstein, Aschfeld, and Armin Olschewski, Schweinfurt, all of Germany, assignors to SKF Industrial Trading and Development Company B.V., Amsterdam, Netherlands
Continuation of Ser. No. 513,085, Oct. 8, 1974, abandoned. This application Nov. 16, 1977, Ser. No. 851,985
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1973, 7338017[U]
Int. Cl.^{2} F16C *19/00;* F16J *15/32*
U.S. Cl. 277—12 **11 Claims**



1. A ball bushing for journalling a shaft comprising an annular cage having ball-receiving bores therein, balls within said bores and race means retaining said balls within said cage, and a resilient packing releasably secured to the frontal end of said cage for sealing the space between the shaft and the frontal end of the cage, said packing being formed with an annular body adapted to engage the shaft and connecting means projecting axially from said body and extending circumferentially thereabout, said cage being formed with axial recess means cooperable with and dimensioned to receive the connecting means on said packing body, said connecting means and recesses being provided with cooperable extensions thereof extending transverse to the central axis of said packing to removably interlock said packing and cage together on stressing of said packing about said shaft, said race means and packing being cooperable to resiliently retain the end of said race means and said packing in interengaging relationship.

4,130,287
MECHANICAL SEAL ASSEMBLY WITH FLUSHING MEANS

Robert H. Ritzie, Mystic, Conn., assignor to The Dow Chemical Company, Midland, Mich.
Filed Nov. 23, 1977, Ser. No. 853,938
Int. Cl.^{2} F16J *15/36*
U.S. Cl. 277—12 **3 Claims**



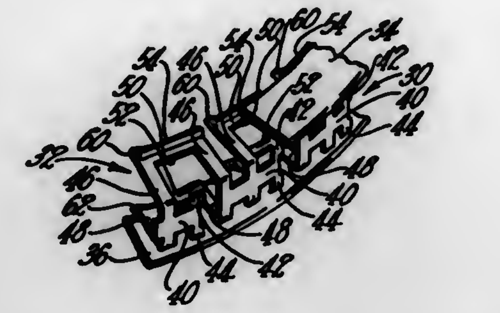
1. A mechanical seal assembly for the transfer of rotary motion through the wall of a vessel, the assembly comprising a housing, the housing defining a vessel engaging means and a generally, centrally disposed passageway, the housing having a first or inner end and a second or outer end, the passage extending between the first and second ends in a direction generally normal to the vessel engaging means, a rotatable shaft disposed within the housing, a first bellows seal in operative engagement with the shaft and inner end of the housing, a second bellows seal disposed generally, centrally within the housing, the first and second bellows seals having the bellows supported on a shaft and both bellows resiliently tensioned in a like direction, a generally annular passage defined by the shaft and the housing extending between the two bellows seals, the housing defining fluid inlet and outlet means in communication with the annular passage, the inlet and outlet means being disposed generally between the vessel engaging means and the second end, a self-aligned bearing disposed generally adjacent the second end of the housing and rotatably supporting the shaft therein.

4,130,288
PISTON RING

Kenneth J. Nisper, Spring Lake, Mich., assignor to Questor Corporation, Toledo, Ohio
Filed Apr. 20, 1977, Ser. No. 789,022
Int. Cl.^{2} F16J *9/06*
U.S. Cl. 277—216 **6 Claims**

1. In a rail supporting member for a piston ring, said rail supporting member comprising a plurality of circumferentially-arranged body sections, an upper row and a lower row of radially inwardly extending leg portions integrally connected with the body sections, said radially inwardly extending leg portions of each row being arranged for engagement with individual rail members, and an upper row and a lower row of bridge portions connecting the inner ends of pairs of the in-

wardly extending leg portions, said bridge portions providing abutments for engaging the inner edges of the rails members, the bridge portions of each row being provided with radially

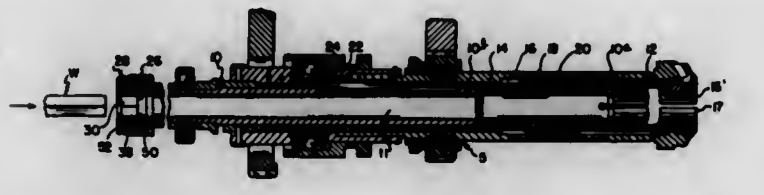


inwardly extending swaged protrusions for spacing the rail supporting members from the bottom of the ring groove in the piston to minimize the tendency of necklacing.

4,130,289
WORK HOLDER MECHANISM FOR AUTOMATIC MACHINE TOOL

Chester S. Zajac, Parma; Frederick T. Cockram, Lyndhurst, and Scott B. Thompson, Westlake, all of Ohio, assignors to Zamco Manufacturing Co., Valley View, Ohio

Filed May 17, 1976, Ser. No. 687,358
Int. Cl.^{2} B23B *5/22, 5/34*
U.S. Cl. 279—1 A 14 Claims

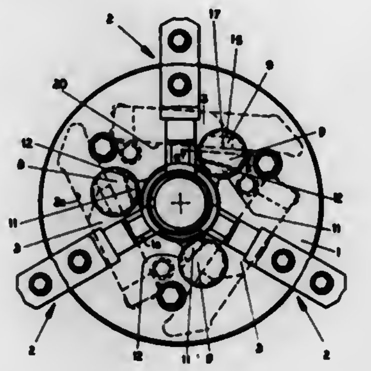


1. A work holder for an automatic tool machine, comprising, a chuck carrying tube, a stock feed tube arranged within the chuck carrying tube and having feeding jaws including faces defining a predetermined non-circular passage configuration in transverse section, and an adjustable, non-gripping stock aligning device at the intake end of said feed tube for aligning non-circular in cross section, stock with said faces of said feeding jaws, said aligning device comprising an axially apertured collar at least a portion of which is of generally cylindrical exterior configuration rotatable with respect to said feed tube, the aperture through said collar being non-circular in transverse section, generally complementary to said non-circular passage configuration, said intake end having an opening formed therein generally complementary to the exterior of said collar and receiving said cylindrical portion interiorly thereof in rotatable relation, and including wedge means mounted on said collar, said collar having a slot in the exterior of said cylindrical portion extending generally parallel to the lengthwise axis of said aperture through said collar, said wedge means comprising a wedge block movable generally axially in said slot relative to said collar and adapted for abutting holding coaction with the defining surface of said intake end opening and with said collar, for locking the aligning device in selected rotated position wherein the defining surfaces of the aperture through said collar will be aligned with said faces of said feedings jaws, and means coacting between said wedge means and said collar for selectively actuating and deactuating said wedge means.

4,130,290
RADIAL-JAW CHUCK FOR LATHES AND LIKE TURNING MACHINES

Günter H. Röhm, Heinrich-Röhm-Str. 50, 7927 Sontheim, Germany

Filed Oct. 28, 1977, Ser. No. 846,451
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1976, 7633955 [U]
Int. Cl.^{2} B23B *5/22, 5/34, 31/16*; B25G *3/22*
U.S. Cl. 279—121 10 Claims

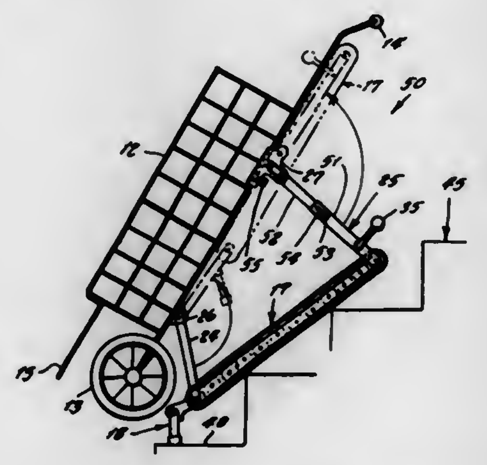


1. A radial-jaw chuck for a turning machine having a spindle and means for tightening the chuck, said chuck comprising
a chuck body adapted to be mounted on said spindle and having an axis;
a plurality of jaws radially shiftable on said body toward and away from said axis, each of said jaws being formed with an array of inclined teeth on a surface of the jaw;
respective wedge bars displaceable in said body in directions transverse to said axis and formed with teeth engaging the teeth of said jaws for radially displacing the respective jaws upon linear displacement of each bar;
a tightening member axially shiftable on said body by said means for tightening the chuck;
respective drive pins axially shiftable in said body and engaged by said member for axial displacement thereby; and
a respective wedge mechanism between each of said pins and the respective bar for translating axial displacement of the respective pin into corresponding linear displacement of the respective bar.

4,130,291
SHOPPING CART CAPABLE FOR USE ON STAIRS

Magnus Saethre, and George Spector, both of 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Nov. 10, 1976, Ser. No. 740,540
Int. Cl.^{2} B62B *5/02*
U.S. Cl. 280—5.22 3 Claims

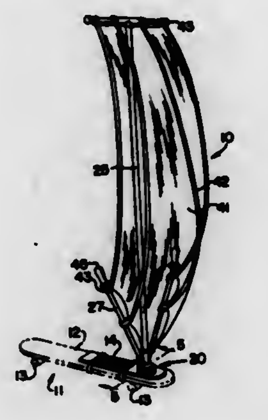


1. A shopping cart adapted for use on flat surfaces and stairways, comprising a basket mounted on a frame including a front end with a handle and a rear end with a pair of wheels in further combination with a retractable endless mechanism track secured at front and rear ends to the frame between the handle and wheels, said frame and track mechanism including coacting securing means for pivoting said track mechanism from a lower position spaced from said frame and wheels to an upper position flush with said frame whereby said track mechanism is located beyond said wheels to fully engage stairs when in the lower position and whereby said wheels are free to fully engage flat surfaces when the track is in the upper position, including means for securing the track mechanism in said positions and a rear stop mounted resiliently on said rear end of said track mechanism to provide automatic vertical support when the cart is at rest on a stairway, wherein the said coacting securing means comprise a pair of lever means pivotally secured to the frame at longitudionally spaced points, said lever means being also pivotably secured at opposite ends to said track mechanism and wherein the said means for securing the track in said positions comprise brackets mounted on said frame pivotally secured to one of said pair of lever means, said brackets having spaced holes that align with corresponding holes in one pair of said lever means corresponding to the upper and lower positions, and including a pin for removably locking said one of said pair of lever means and bracket at said positions.

4,130,292
APPARATUS FOR PROPELLING A SKATE BOARD WITH WIND CURRENTS

A. Michael Lorenz, 421 55th St., Downers Grove, Ill. 60515

Filed Aug. 22, 1977, Ser. No. 826,633
Int. Cl.^{2} A63C *3/00*
U.S. Cl. 280—11.37 S 6 Claims

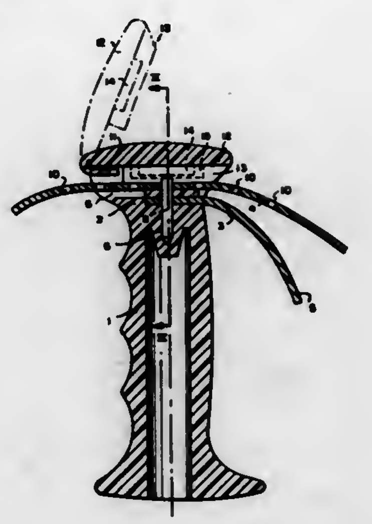


1. Apparatus for propelling a skate board with air currents, said apparatus comprising:
a base plate;
means for securing said base plate to said skate board;
a swivel member with one end mounted to said base plate and an upper portion defining a mast receptacle at another end, said one end including an upstanding tubular segment and said upper portion including a depending tubular segment disposed about said upstanding tubular segment, said upstanding tubular segment having outwardly flaring ends and said depending tubular segment having an inwardly flaring end, and bearing means between said tubular segments providing free rotational movement of said mast receptacle in relation to said base plate without appreciable tilting movements therebetween;
a mast adapted for insertion into said mast receptacle in a generally vertical orientation;
handle control means in fixed relation to said mast for controlling the angular rotational position of said mast in relation to said base plate; and
a substantially transparent sail supported by said mast and said handle control means for receiving air currents and for transmitting forces of such air currents to the apparatus for propelling the skate board.

4,130,293
SKI POLE HANDLE OF SYNTHETIC RESIN

Ignaz Hinterreiter, Ramsauerstrasse 119, Linz, Austria (A-4020)

Filed Jul. 22, 1977, Ser. No. 817,968
Claims priority, application Austria, Jul. 26, 1976, 5464/76
Int. Cl.^{2} A63C *11/22*
U.S. Cl. 280—11.37 H 3 Claims

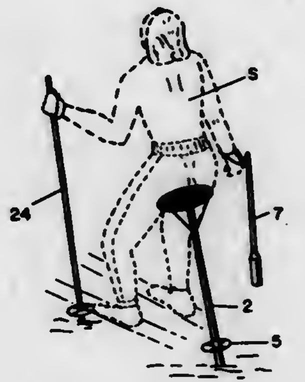


1. A ski pole handle, comprising a head portion including two lateral walls defining therebetween a recess open on top and at respective ends thereof, a cover movable between a closed and open position into and out of the recess through the open top between the two lateral walls, and a flexible web integrally and hingedly connecting the cover to the lateral walls of the head portion at one of the recess ends whereby the web bridges the one open recess end, the head portion, the cover and the web forming an integral unit of synthetic resin, a bolt in the head portion and projecting into the recess, a strap having two ends and formed into a loop projecting from the end of the recess opposite the one end, the strap ends defining apertures and being superposed in the recess, the bolt passing through registering ones of the apertures in the strap ends whereby the strap ends are fastened to the bolt, and the cover having portions pressing against an upper one of the superposed strap ends in the closed position thereof while permitting detachment of the upper strap end from the bolt in the open position.

4,130,294
COLLAPSIBLE SKI POLE SEAT

Laurine L. Walker, 2210 Nome St., Aurora, Colo. 80010

Filed Jun. 14, 1977, Ser. No. 806,488
Int. Cl.^{2} A63C *11/22*
U.S. Cl. 280—11.37 E 7 Claims



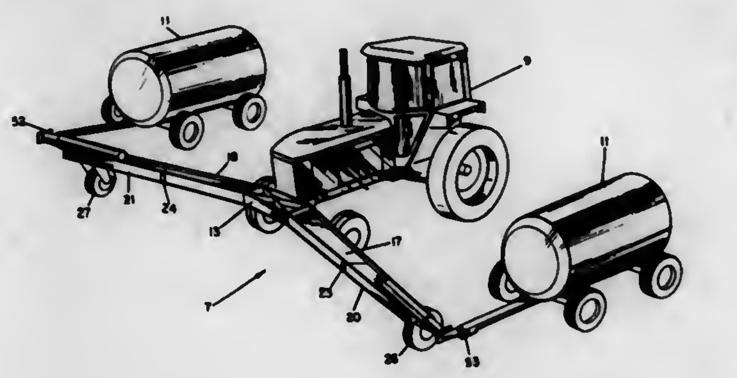
1. A two-part ski pole including a pointed tubular lower shaft section and an upper tubular shaft section sleevably positioned thereon, flexible rimmed fabric seat disc means attached at the upper end of said lower section and foldable to a collapsed tubular position in alinement with said section and expandable to a generally circular seat forming position rela-

tive thereto, hinged strut means attachable to said seat disc means and to said upper tubular shaft section for supporting said seat means in expanded seat forming position, said upper section entirely concealing and housing said seat disc means when sleeved over the latter when collapsed and assembled on said lower section, and said upper section being removable therefrom.

4,130,295

HITCH ASSEMBLY FOR A FARM TRACTOR

Donald A. Davis, Rt. 2, Box 328, Covington, Ind. 47932
Filed May 6, 1977, Ser. No. 794,529
Int. Cl.^{2} B60D *1/00*
U.S. Cl. 280—412 7 Claims



5. A hitch assembly for a farm tractor, said hitch assembly comprising:

a mount for mounting said hitch assembly to the front of a farm tractor;

a pair of inner strut members each of which has an inner end connected to said mount with said inner strut members extending outwardly and forwardly from opposite sides of said mount and terminating at outer ends;

a pair of outer strut members having inner and outer ends;

hinge means connecting the outer end of each of said inner strut members with the inner end of a different one of each of said outer strut members to establish a substantially vertical hinge axis therebetween whereby said outer strut members may be pivoted forwardly about a substantially vertical axis so that the outer end of each of said outer strut members may be pivoted to a position contiguous to and forwardly of said mount;

a pair of ground engageable wheels each of which is mounted at the outer end of a different one of each of said outer strut members, each of said wheels being mounted to be freely pivotable about a substantially vertical axis;

a pair of extendible arms having inner and outer ends with the inner ends of each of said arms being received in the outer and of a different one of each of said outer strut members, said arms being lengthwise movable with respect to said outer strut members whereby each of said arms may be moved into and out of said strut members to vary the distance of the outer ends of said arms from the outer ends of said strut members;

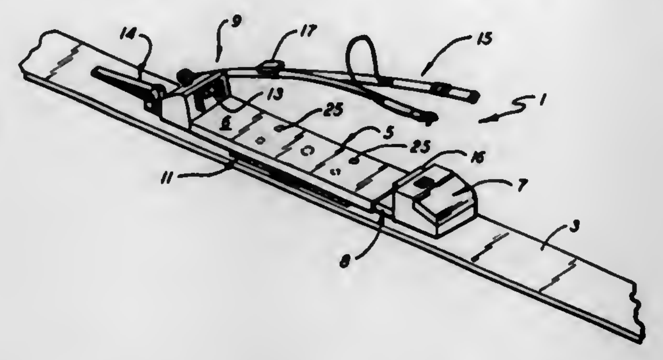
releasable positioning means for maintaining said extendible arms in a predetermined position with respect to said outer strut members; and

connecting ears attached to the outer ends of said arms whereby ancillary farming equipment may be connected thereto so that when so connected said equipment is maintained outwardly of said tractor as said equipment is pulled in a forward direction by said tractor.

4,130,296

SKI-BINDING

Nicholas F. D'Antonio, Liverpool, and Richard L. Bates, Camillus, both of N.Y., assignors to Kinetronic Industries, Media, Pa.
Filed Jun. 30, 1976, Ser. No. 701,301
Int. Cl.^{2} A63C *9/08*
U.S. Cl. 280—612 37 Claims



1. A ski binding for releasably securing a ski boot to a ski and for releasing the ski boot upon the application of predetermined forces to the ski boot, said ski binding comprising:

boot engaging means for engaging structure associated with a ski boot disposed in the ski binding for securing the ski boot to the ski, said boot engaging means being movable between a first position for securing the ski boot to the ski and a second position for releasing the ski boot from the ski; and said boot engaging means comprising: first biassing means for urging said boot engaging means towards said first position, said boot engaging means being movable from said first position towards second position in response to the insertion of a ski boot into the ski binding and the pressing of the ski boot against said boot engaging means, and said first biassing means moving said boot engaging means back to the first position upon the completion of the insertion of the ski boot into the ski binding;

guide means for guiding said boot engaging means in a linear path on the ski between the first position and the second position;

second biassing means for urging said boot engaging means towards said second position;

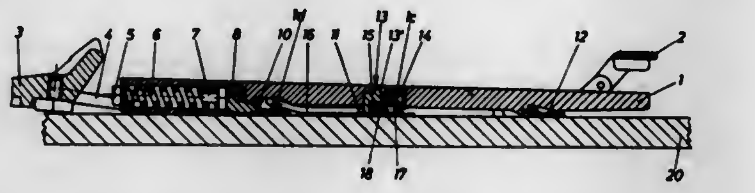
latching means having a latching condition for retaining said boot engaging means in said first position against the bias of said second biassing means, and an unlatching condition for releasing said boot engaging means to the bias of said second biassing means; and

unlatching means for placing said latching means in the unlatching condition in response to the application of said predetermined forces to the ski boot.

4,130,297

RELEASE SKI BINDING

Hans Horn, Wellington, New Zealand, assignor to TMC Corporation, Baar, Zug, Switzerland
Filed Apr. 27, 1977, Ser. No. 791,408
Claims priority, application Austria, Apr. 30, 1976, 3216/76
Int. Cl.^{2} A63C *9/086*
U.S. Cl. 280—618 24 Claims



1. A release ski binding, comprising:

an elongate release plate having means defining a first recess in the bottom surface intermediate the ends thereof;

releasable holding means for releasably securing said release plate to a ski, said releasable holding means including an upstanding pin means, adapted to be secured to said ski and received in said first recess to pivotally support said release plate for movement about the axis of said upstanding pin means, said upstanding pin means having an initial size greater than said first recess and including means for yieldingly reducing the diameter of said pin means to facilitate a snug reception in said first recess;

a first holding means adapted to be secured to said ski and operatively connecting said ski to said release plate adjacent one end thereof;

a second holding means adapted to be secured to said ski and operatively connecting said ski to said release plate at the other end thereof, said second holding means including an anchor member secured to said ski and variable force resilient means for continually urging said release plate to a position of use wherein the longitudinal axis thereof is parallel to the longitudinal axis of said ski when said release plate is held to said ski by said first and second holding means and providing a lesser magnitude of force to effect a release of said release plate in response to a movement thereof solely about said axis of said upstanding pin means than the force required to effect a release in response to a movement of said other end in any direction other than about said axis of said pin means, said release plate also having a second recess intermediate said first recess and said other end;

guide means mounted on said ski intermediate said pin means and said second holding meas, said guide means including a holding plate secured to said ski and a bar member pivotally secured to said holding plate about an axis extending transversely of the longitudinal axis of said ski and between a first position inclined relative to the upper surface of said ski and a second position generally parallel to said upper surface of said ski, said bar member being received in said second recess to guide said release plate into securement with said releasable holding means as said bar member is moved from said first position to said second position;

a first sole holder means mounted on said release plate adjacent one end thereof;

a second sole holder means mounted on said release plate adjacent said other end thereof, said second sole holder means including a pair of wire bars each having a leg with an inwardly turned end portion, the other ends of said legs being bent to define a pair of axially aligned axles, said release plate having means defining laterally opening recesses therein for receiving said axles therein to effect a pivotal securement of said bars to said release plate; and

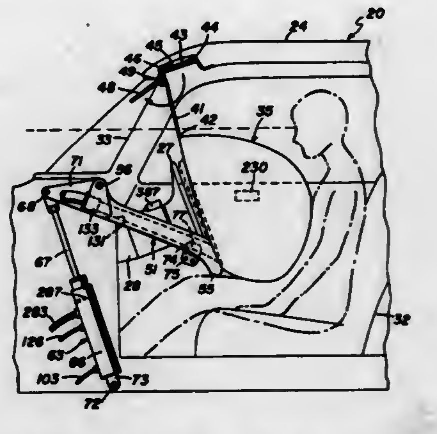
a tensioning member pivotally secured to said end portions, said tensioning member having a pair of outwardly directed wings which engage said legs to thereby prevent an engagement of said tensioning member with a shell of a ski boot when said ski boot is releasably held between said first and second sole holders.

4,130,298

OCCUPANT RESTRAINT AND PROTECTION SYSTEM FOR AN AUTOMOTIVE VEHICLE

Jerome Shaunnessey, 18 E. Willow Rd., Wheeling, Ill. 60090
Filed Jan. 12, 1976, Ser. No. 648,382
Int. Cl.^{2} B60R *21/08*
U.S. Cl. 280—730 30 Claims

1. A system for restraining and protecting the driver and passengers of an automotive vehicle against injury as a result of a collision of the vehicle with another object, said vehicle including a vehicle body having laterally spaced windshield posts for supporting a windshield, a dashboard, the lower ends of said windshield posts intersecting said dashboard, a front seat for supporting the driver and one or more passengers in said vehicle body, and a roof overlying said seat, said system comprising expansible cushioning means adapted to be mounted on the underside of the roof of said vehicle body in a collapsed, inoperative position and expandable to an operative position engaging the laps and pelvic areas of the driver and passengers seated on the front seat of said vehicle body so as to restrain said driver and passengers against forward movement in said vehicle body and thereby prevent injury thereto in the event of a collision, a pair of elongated, laterally spaced arms adapted to be mounted in said vehicle body for movement about axes located adjacent to the intersection of the lower ends of said windshield posts with said dashboard and from inoperative positions adjacent to said windshield posts to operative positions wherein one end of each arm is disposed generally adjacent to the knees of the driver and passengers, said ends of said arms being connected to said cushioning means and operable to extend and hold the latter in its operative, expanded position extending laterally across the front seat of said vehicle body and engaging the laps and pelvic areas of the driver and passengers, and actuating means for effecting movement of said arms from their inoperative to their operative positions and expansion of said cushioning means.



4,130,299

LOW-ODOR DYE SOLVENTS FOR PRESSURE-SENSITIVE COPYING SYSTEMS

James C. Wygant, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Sep. 12, 1977, Ser. No. 832,698
Int. Cl.^{2} B41M *5/16, 5/22*
U.S. Cl. 282—27.5 12 Claims

9. A pressure-sensitive recording system comprising

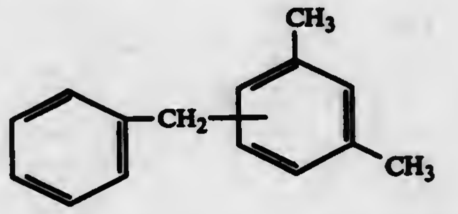
(A) a first support sheet having disposed thereon a coating of a pressure releasable marking fluid, and

(B) a second supporting sheet having disposed thereon a coating of an electron accepting material of the Lewis acid type arranged in contiguous juxtaposition with the coating on said first supporting sheet,

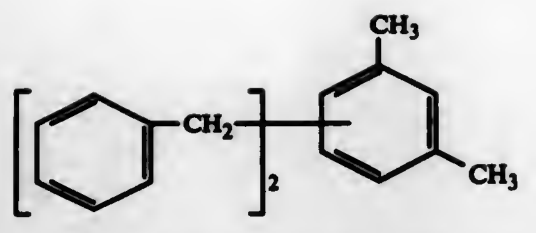
said marking fluid comprising a solvent and a colorless or substantially colorless chromogenic material dissolved therein, said chromogenic material being reactive with said Lewis acid type material to produce a colored mark and said solvent comprising a composition selected from the group consisting of:

(i)

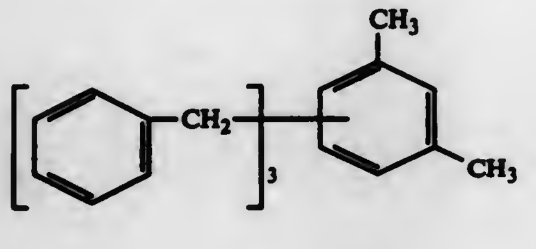
(a) at least about 70 percent by weight of:



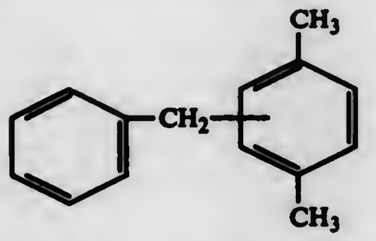
(b) from about 10 to about 25 percent by weight of:



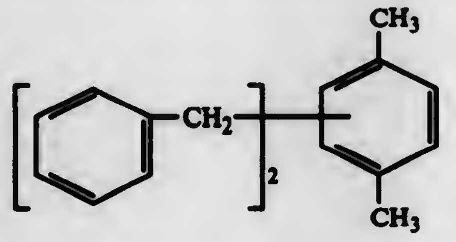
(c) from 0 to about 6 percent by weight of:



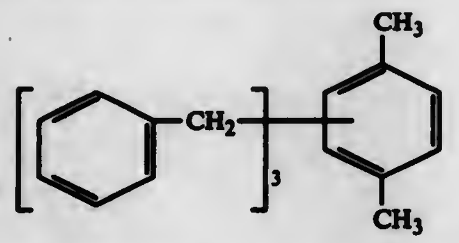
(ii)
(a) at least about 65 percent by weight of:



(b) from about 15 to about 30 percent by weight of:



(c) from 0 to about 8 percent by weight of:



and (iii) isomeric or physical mixtures of (i) and (ii).

4,130,300
COMPOSITE ABRASION RESISTANT PIPE ELBOW

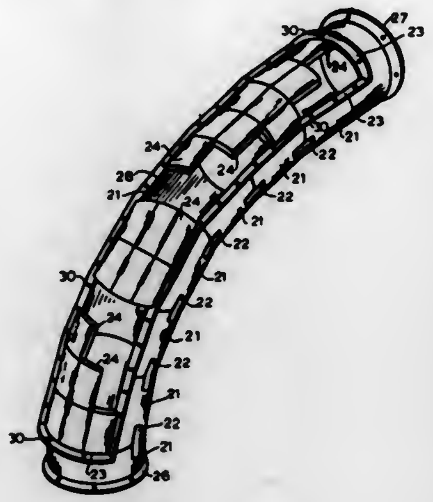
Joseph U. Sheridan, 400 Chadwick Dr., Havelock, N.C. 28532
Filed Feb. 6, 1978, Ser. No. 875,738
Int. Cl.^{2} F16L *55/00*
U.S. Cl. 285—16 7 Claims

1. A composite pipe elbow adapted to resist abrasive wear which comprises:

(a) a segmented elbow construction formed from a plurality of pipe sections initially cut from a straight steel pipe and wherein said elbow construction has an arcuate segment removed from the outer curved portion thereof to provide an arcuate, rectangular opening which extends through the length of said outer curved portion;

(b) an open frame member mounted on the edges of said opening and forming a rim about said opening;

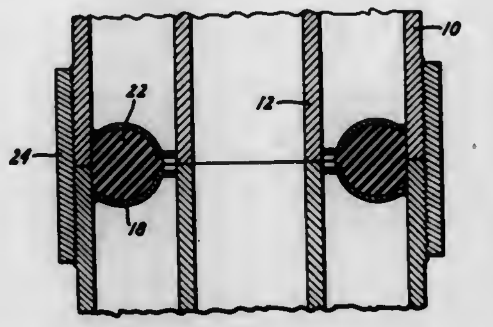
(c) a plurality of shaped, ceramic wear blocks positioned across and filling said rectangular opening in a keystone configuration thrusting against said frame member and forming therewith an inner impact wall in the curved portion of said composite pipe elbow; and



(d) a cover plate positioned over said wear blocks and secured to said pipe elbow.

4,130,301
DOUBLE-WALLED WELL CASING STRUCTURE

Harry J. Dunham, Dickinson, and Gordon P. Hurd, Seabrook, both of Tex., assignors to General Electric Company, Fairfield, Conn.
Continuation of Ser. No. 544,517, Jan. 27, 1975, abandoned, which is a continuation of Ser. No. 268,337, Jul. 3, 1972, abandoned. This application Dec. 13, 1977, Ser. No. 860,419
Int. Cl.^{2} F16L *59/14*
U.S. Cl. 285—47 4 Claims



1. A double-walled well casing structure for use in a working environment where the casing will carry a fluid which is hotter than the ambient temperature comprising:

concentric inner and outer pipe sections;

seal means at both ends of each pipe section sealing the cavity between said inner and outer pipes and supporting said pipes relative to each other; and

said seal means constructed of metal and sized so that it will be stressed beyond its yield point by the differential thermal expansion of the inner and outer pipes relative to each other when in their working environment.

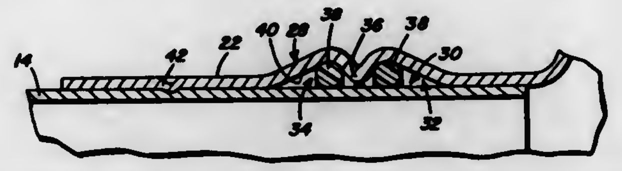
4,130,302
TWIN POSITIVE AND NEGATIVE SEAL PIPE FITTINGS

Wylie W. Mitchell, Snellville, and Gordon W. Arrowood, Palmetto, both of Ga., assignors to Clyde A. Robdell; Leonard B. Rodbell; Paul N. Rodbell; Sidney P. Rodbell and Arthur T. Rodbell, all of Atlanta, Ga., a part interest to each
Filed Jul. 18, 1977, Ser. No. 816,909
Int. Cl.^{2} F16L *13/14*
U.S. Cl. 285—113 1 Claim

1. A seal for coupling the ends of pipes together comprising:

a sleeve having openings concentrically receiving an end of each pipe into one of said openings;

a peripheral ridge formed in the sleeve in concentrically surmounting relation to each pipe received within said sleeve, said peripheral ridge having four walls with the walls being of substantially constant cross sectional area and wherein the first and second walls slope outwardly at an angle from the external surface of the pipe and extend toward each other, the third and fourth walls being connected at an angle respectively to said first and second walls and form a continuous curved connection therewith, said third and fourth walls extending toward each other and extending toward the external surface of the pipe and being connected in a continuous curved surface to each other thus forming an annular bead, said bead being in spaced relation to the pipe;



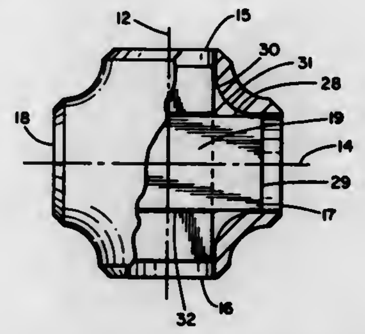
said four walls thereby forming a single pressure chamber with the pressure chamber being partially partitioned into two sub-chambers by said annular bead extending toward and ending in a spaced relation to said pipe;

an O-ring packing member disposed in each sub-chamber, the packing members contacting respectively the curved connection between the first and third walls and the curved connection between the second and fourth walls, and contacting the external surface of the pipe, the O-rings thus forming twin positive and negative seals with both O-rings actively sealing at the same time; and

indentation means formed in the sleeve and in each pipe for securing the sleeve to the pipe.

4,130,303
REINFORCED PIPE CROSS FITTING

Henry H. George, Louisville, Ky., assignor to Chemetron Corporation, Chicago, Ill.
Filed May 25, 1977, Ser. No. 800,325
Int. Cl.^{2} F16L *39/00*
U.S. Cl. 285—137 R 8 Claims

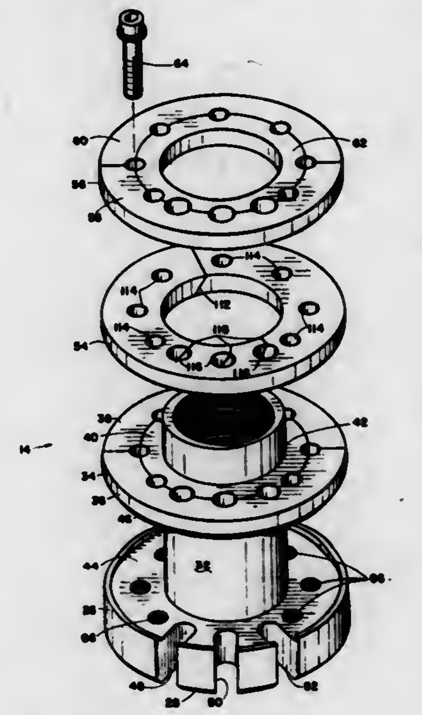


1. A reinforced pipe cross fitting of the type having four branches arranged in pairs, each pair being located on an axis, and the axes being coplanar and being oriented at right angles to each other, wherein an improvement comprises a rigid plate-like reinforcing element located in said fitting, said element being generally coplanar with the axes and extending substantially to the ends of each branch and reinforcing each branch of the fitting.

4,130,304
WELL HEAD SEAL ASSEMBLY

Harry D. Hebard, Tulsa, Okla., assignor to Don R. Hinderliter, Inc., Tulsa, Okla.
Filed Aug. 12, 1977, Ser. No. 824,000
Int. Cl.^{2} F16L *39/00*
U.S. Cl. 285—143 6 Claims

1. An assembly providing a liquid-tight and gas-tight seal for a well head having an upper cylindrical opening therein, which comprises a ring-shaped seal body positioned in said head, said seal body having an outer cylindrical surface adapted to lie closely adjacent the cylindrical opening of said head, a central circular opening, and a radial slot extending inward from the outer cylindrical surface of said seal body to accomodate a cable therein; a tubular coupling adapted to connect between adjacent portions of tubing, said coupling connected to said seal body at said central opening; a lower seal ring having an inner circular section and an outer circular section, said inner section having a central circular opening adapted to surround said coupling and an outer circular edge, said outer section having an inner circular edge mating with the outer circular edge of said inner section and an outer circular edge adapted to lie closely adjacent the cylindrical opening in said head, said outer section also being split into an arcuate outer front section and an arcuate outer rear section, said outer circular section having a semi-circular hole on its inner edge which mates with a semi-circular hole provided on the outer edge of said inner section to form a passageway for said cable; a pliable rubber gasket positioned in said tubing head above said lower seal ring



and surrounding said coupling and having a circular hole and a slit leading thereto from the inner edge to accomodate said cable; an upper seal ring having an inner circular section and an outer circular section, said inner section having a central circular opening adapted to surround said coupling and an outer circular edge, said outer section having an inner circular edge mating with the outer circular edge of said inner section and an outer circular edge adapted to lie closely adjacent the cylindrical opening in said head, said outer section also being split into an arcuate outer front section and an arcuate outer rear section, said outer circular section having a semi-circular hole which mates with a semi-circular hole provided on the outer edge of said inner section to form a passageway for said cable, clamping means extending through said upper seal ring, said rubber gasket, said lower seal ring and into said seal body for locking said seal body, said inner coupling, said lower seal ring, said gasket and said upper seal ring in place in said tubing head and for forming a liquid-tight and gas-tight seal by compressing said gasket.

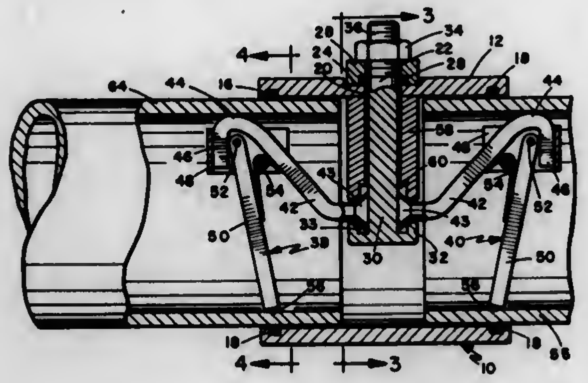
4,130,305
PUSH-IN PIPE CONNECTOR

Edward L. Parr, 301 N. Cuyamaca, El Cajon, Calif. 92020
Filed Jul. 11, 1977, Ser. No. 814,225
Int. Cl.^{2} F16L *37/00*
U.S. Cl. 285—308 10 Claims

1. A pipe connector, comprising:

a substantially cylindrical body having an internal bore for receiving an end of a cylindrical pipe inserted therein;

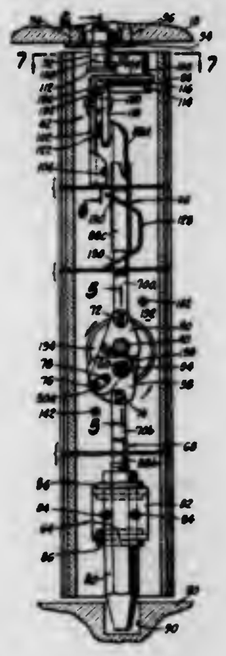
a locking member releasably secured in at least one end of said body;
said locking member having a support bar with a radially outwardly projecting bearing knob spaced from said internal bore to engage the inner wall surface of a pipe inserted in the bore;
a locking bar having one end pivotally attached to said support bar and extending substantially diametrically across said body, said locking bar being pivoted to swing axially inwardly into the body and being biased outwardly therefrom;
the other end of said locking bar having retaining means for engaging the inner wall surface of a pipe inserted in said bore, at a position diametrically opposed to said bearing knob and said retaining means at its greatest diametrical extension, being spaced from said bearing knob at a distance greater than the internal diameter of the pipe, whereby a jamming action inside the pipe is provided between said retaining means and said bearing knob.



4,130,306
EXIT DOOR LOCKING MECHANISM HAVING MULTIPLE BOLTS

Ferdo Brkic, Los Angeles, Calif., assignor to Adams Rite Manufacturing Co., Glendale, Calif.

Filed Apr. 7, 1977, Ser. No. 785,687
Int. Cl.² E05C *9/02, 9/16*
U.S. Cl. 292—5 **23 Claims**

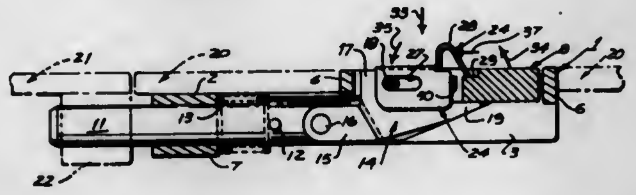


1. A lock mechanism for an exit door having a tubular stile frame member extending along its swinging edge, and with top and bottom bolt mechanisms, comprising:
(a) lever means positioned in the tubular stile, including a pair of separate rotatably mounted levers;
(b) connecting rod structures in the stile respectively connecting said levers with the top and bottom bolt mechanism, the bottom bolt mechanism including a bolt mounted for reciprocable movement and the top bolt mechanism includes a fixed member on the frame and a horizontally swingable latch member mounted on the door to be engaged with said fixed member when the door is in a closed position, said latch member being swingable into a released position with respect to said fixed member to permit the door to be opened;
(c) a driving connection between said levers;
(d) said lever means being normally operative in one direction to axially move said rod structures away from each other to effect one operating condition of the bolt mechanisms; and
(e) manually operable means accessible from one side of the door for rotating one of said levers and the connected other lever of the levers as a unit in an opposite direction to axially move said rod structures towards each other to effect another operating condition of the bolt mechanisms.

4,130,307
PIN LATCH AND SAFETY LOCK THEREFOR

L. Richard Poe, Long Beach, and Raymond E. Harmon, Orange, both of Calif., assignors to Hartwell Corporation, Placentia, Calif.

Filed Nov. 4, 1977, Ser. No. 848,441
Int. Cl.² E05C *1/06*
U.S. Cl. 292—179 **3 Claims**



1. A safety lock for pin latches of the type including a housing, a drive plate mounted in the housing for partial rotation, and connected through a linkage to a pin latch slidably movable between an extended position and a retracted position relative to the housing, the drive plate having a slot to receive a portion of the linkage, and having a portion in essentially coplanar relation with the linkage portion, the linkage and drive plate having confronting portions capable of relative angular movement on manual engagement, said safety lock comprising:
a. a channel shaped reciprocal means mounted on the linkage portion and capable of sliding movement with respect to the drive plate;
b. a locking element carried by the reciprocal means for movement between an extended position engagable with the other confronting portion to lock the drive plate and linkage against relative movement and a retracted position permitting such movement;
c. a spring urging the locking element toward its extended locking position;
d. said locking element being manually engagable to release the drive plate and linkage for further manual engagement to effect retraction to the pin latch.

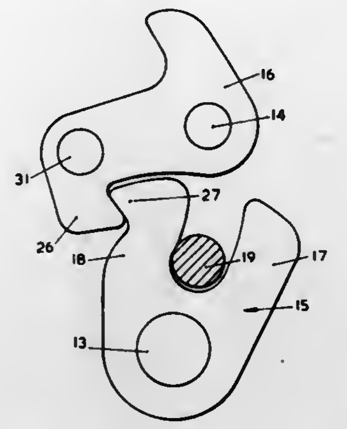
4,130,308
MOTOR VEHICLE DOOR LATCHES

Philip S. Jeavons, Birmingham, England, assignor to Wilmot-Breeden Limited, Birmingham, England

Filed Aug. 16, 1977, Ser. No. 825,078
Int. Cl.² E05C *3/26*
U.S. Cl. 292—216 **7 Claims**

1. In a latch for the door of a motor vehicle comprising:
(A) a housing which includes front and back plates,
(B) a generally U-shaped bolt arranged for engagement with a striker and mounted on a first pivot pin extending between the two plates,
(C) a pawl arranged to co-operate with the bolt to hold it in its locking position, said pawl being mounted on a second pivot pin extending between the two plates,

(D) a plastics moulding mounted between the two plates, the plastics moulding including guide portions which are arranged to co-operate with the striker to guide it into engagement with the bolt and to obtain a wedging action during the final stages of relative movement between the striker and the bolt, and

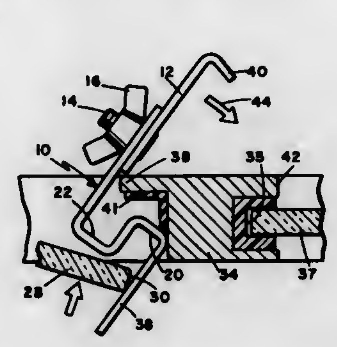


(E) an elastomeric block disposed within the housing and including a first part arranged to act on the striker to provide a throw-out action and a second part which provides support for one of the guide portions of the plastics moulding, the improvement wherein the first pivot pin passes through an aperture in said elastomeric block such that the elastomeric block provides a sound damping mounting for the bolt.

4,130,309
VENT WINDOW LOCK ASSEMBLY

Mary E. Lewis, 639 Maria Ave., Spring Valley, Calif. 92077

Filed Nov. 23, 1977, Ser. No. 854,154
Int. Cl.² E05C *17/54*
U.S. Cl. 292—258 **3 Claims**

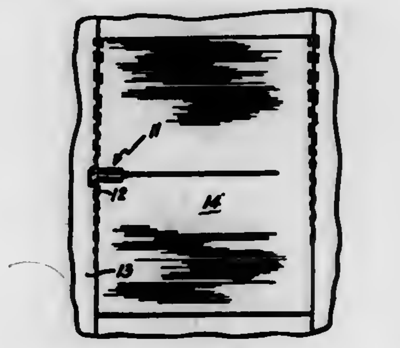


1. A vent window lock assembly for securing a pivotable vent window having a vertical edge at one end to a vertical window post having a wing flange against which the end of the vent window resides when the window is closed, said assembly comprising
an S-shaped bracket defining opposed first and second overlapping channels wherein the first channel is adapted for gripping the vertical edge of the vent window, with the end portion of the bracket that defines the first channel being for positioning on the outside of the vent window, and the second channel is adapted for gripping the wing flange of the window post, with the end portion of the bracket that defines the second channel being for positioning on the inside of the window post;
a hook plate slidably fastened to the end portion of the bracket that defines the second channel, wherein one end of the hook plate extends away from the bracket and defines a hook for gripping the side of the window post opposite the wing flange; and
means for tightly fastening the hook plate to the bracket;
whereby the vertical edge of the vent window may be moved into the first channel of the bracket while the window is open and as the vent window is being closed while pivoting the end portion of the bracket defining the second channel about the window post; and the bracket can be secured to the window post after the window is so closed by sliding the hook plate until the hook grips the window post, and then tightly fastening the hook plate to the bracket.

4,130,310
ANTI-SEPARATION LATCHING APPARATUS

Lawrence R. Kessie, Strongsville, Ohio, assignor to Cleveland Hardware and Forging Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 690,410, May 27, 1976, abandoned. This application Jul. 18, 1977, Ser. No. 816,512
Int. Cl.² E05C *1/06*
U.S. Cl. 292—340 **6 Claims**

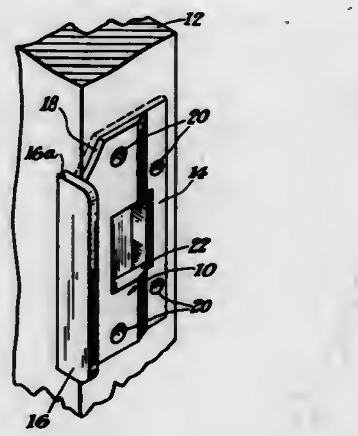


1. An anti-separation latch for a closure having a frame and a cover mounted for movement relative thereto between open and closed positions, comprising a striker mounted on said frame, and latch mechanism including a back plate mounted on said cover having a substantially right-angled and forwardly extending end flange engageable with the inner side of said striker when said cover is in closed position, a bolt longitudinally spaced from said end flange and slidable on said back plate, and spring means urging said bolt to extended position, the outer end of said bolt contacting said striker as said cover is moved toward closed position to retract said bolt against the action of said spring means, and said spring means moving said bolt into latching engagement with said striker when said cover is in closed position for preventing transverse opening movements thereof, whereby the engagement of said end flange and said inner side of said striker prevents relative longitudinal movement between said latch mechanism and said striker.

4,130,311
DOOR JAMB GUARD

Frank M. Sushan, 1422 Hayes St., Apt. 8, Hollywood, Fla. 33020

Division of Ser. No. 677,776, Apr. 16, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 840,604
Int. Cl.² E05B *17/00*
U.S. Cl. 292—346 **1 Claim**



1. A lock blocking device utilizable on a hinged door having a lock set, said door lock set having a retractable spring bolt

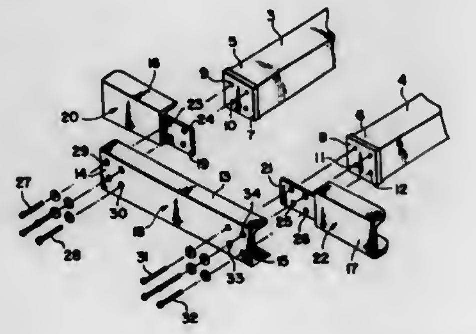
engageable into a guarded, interfitting-angled, striker catch plate in a door jamb, said bolt extending out of the free end face of said door, said door comprising:

a rigid planar plate mountable on the free end face of said door around said latch base plate, said plate including an aperture for receiving said lock bolt therethrough, said plate having a horizontal top edge, a first side edge, a second side edge parallel to said first side edge, and a horizontal bottom edge,

a lock guarding means connected integrally along said first side edge of said plate, said lock guarding means disposed adjacent and parallel to one side of said door and on both sides of said plate, said gaurding means having an upper horizontal portion, said plate including a downwardly disposed angular portion engageable at one end with the horizontal top edge of said plate and at its lower edge with the upper horizontal portion of said gaurding means whereby said angular upper edge portion of said plate acts as a drain for rain and the like.

4,130,312
SECTIONED BREAKABLE VEHICULAR SAFETY BUMPER

Robert L. Cooper, Sr., P.O. Box 461, Clay City, Ky. 40312
Filed Dec. 8, 1977, Ser. No. 858,700
Int. Cl.^{2} B60R *19/04*
U.S. Cl. 293—76 1 Claim



1. A safety bumper for a motor vehicle having a chassis with first and second spaced substantially parallel structural members extending along the length of the vehicle, each of the structural members of the chassis having a front end, said safety bumper comprising

a pair of square plates each affixed to the front end of a corresponding one of the first and second structural members of the chassis and each of the plates having a plurality of spaced holes formed therethrough;

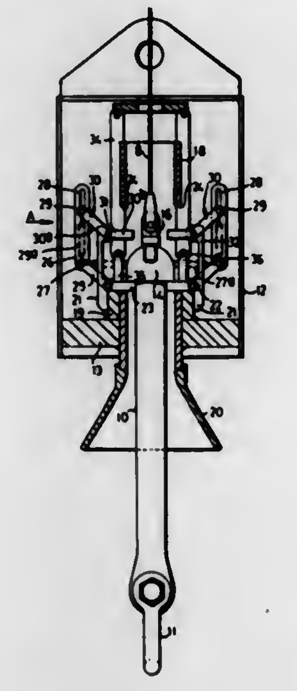
a main metal bumper section affixed to and extending between the plates at the front ends of the first and second structural members, said main metal bumper section having spaced opposite first and second ends, the first end being bolted to the plate of the first structural member via the holes through said plate of said first structural member and the second end being bolted to the plate of the second structural member via the holes through said plate of said second structural member;

a first plastic bumper section affixed to the plate of the first structural member and extending to one side of the main bumper section; and

a second plastic bumper section affixed to the plate of the second structural member and extending to the opposite side of the main bumper section, the first and second bumper sections being the same and being aligned with the main bumper section to provide a single bumper in appearance having a continuous front surface, each of the first and second bumper sections having a tongue extending therefrom behind the front surface thereof, said tongues having holes formed therethrough, and said first and second bumper sections being bolted to the plates of the first and second structural members, respectively, via the tongues thereof, said tongues being positioned behind the front surface of said main bumper section.

4,130,313
LIFTING DEVICES

David F. Clifford, Walsall, England, assignor to Ansell Jones & Company Ltd., England
Filed Feb. 3, 1977, Ser. No. 765,316
Claims priority, application United Kingdom, Feb. 3, 1976, 4135/76
Int. Cl.^{2} B66C *1/38*
U.S. Cl. 294—83 R 5 Claims



1: In or for a pulley block, a latch mechanism for releasably securing a lifting element to the block comprising:

(a) a shaft having said lifting element at its lower end or means for the attachment of said lifting element, and having at its upper end a head member affording a downwardly presented abutment face and means for the attachment of a lifting cable;

(b) a vertical guide member having an open lower end through which said shaft can be moved longitudinally by means of said lifting cable;

(c) pivotally mounted latches carried by said guide member having an operative condition in which said latches extend into the guide member to engage the abutment face of said shaft and an inoperative condition in which said latches are withdrawn to allow downward passage of the shaft relative to said guide member;

(d) release means for displacing said latches from the operative condition to the inoperative condition comprising pivoted arms carried by the guide member at a position above the latches and linkage means connecting said pivoted arms and the latches for moving the latches to the inoperative condition in response to upward movement of the shaft relative to the guide member to bring the head member into contact with the pivoted arms; and

(e) means for restoring said latches to the operative condition.

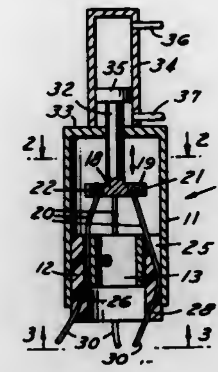
4,130,314
PICKER AND LOADER FOR SOFT GOODS

Donald W. Storm, 5857 Upper Straits Blvd., Orchard Lake, Mich. 48033
Filed Aug. 25, 1977, Ser. No. 827,453
Int. Cl.^{2} B25B *9/00*
U.S. Cl. 294—100 8 Claims

1. A soft goods picker comprising:

a sleeve having an inner end and an outer end;

elongated, flexible wires extending through the sleeve and through guide passages formed within the sleeve, said wires having inner ends connected to reciprocating means for moving the wires axially of the sleeve, with the wires being of sufficient length to extend outwardly of the outer sleeve end upon reciprocation in one direction and to be retracted within the sleeve upon reciprocation in the other direction;

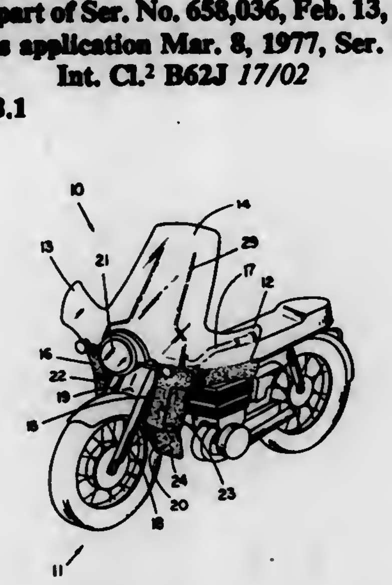


said guide passages being angled so that each wire extends in a different direction outwardly of the outer end of the sleeve;

whereby the outer ends of said wires may penetrate and be withdrawn from a soft goods item for picking and moving such item.

4,130,315
MOTORCYCLE FAIRING WITH VENT MEANS

William D. Shields, P.O. Box 672, R.R. 6, Lake Edgewood, Martinsville, Ind. 46151
Continuation-in-part of Ser. No. 658,036, Feb. 13, 1976, Pat. No. 4,010,976. This application Mar. 8, 1977, Ser. No. 775,633
Int. Cl.^{2} B62J *17/02*
U.S. Cl. 296—78.1 3 Claims



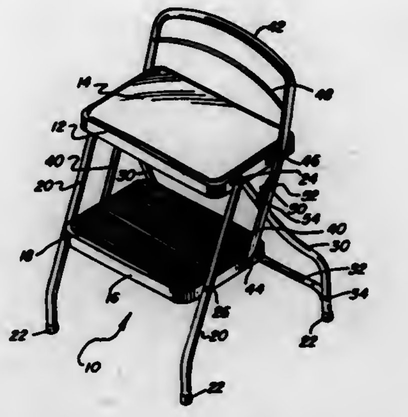
1. A motorcycle fairing which comprises:

a formed sheet of transparent material, the formed sheet including first portions extending across and spaced apart from the front of the motorcycle handlebars, a second portion extending above the handlebars to shield the motorcycle rider's face, and third portions extending downwardly along opposite sides of the front fork of the motorcycle; and

vent means associated with at least one of the third portions for directing air toward the motorcycle and rider, said vent means comprising a vent panel and further comprising mount means for rotatably mounting the vent panel to one of the third portions, the third portion defining an opening within which the vent panel is rotatably received.

4,130,316
STEP LADDER/CHAIR COMBINATION

Joseph V. Rossi, Chicago, Ill., assignor to Comfort Lines, Inc., Chicago, Ill.
Filed Jan. 3, 1978, Ser. No. 866,485
Int. Cl.^{2} A47C *4/00*
U.S. Cl. 297—46 10 Claims



1. A step ladder/chair combination comprising:

first and second platform means in spaced apart parallel relation for supporting a person/object at levels above the floor or other supporting surface;

a first pair of parallel legs pivotally interconnected to said first and second platform means on opposite sides thereof and depending downwardly of the lower platform means and having feet at their lower ends for supporting contact with said floor or other supporting surfaces;

a second pair of parallel legs pivotally connected to the upper platform means on said opposite sides thereof and depending downwardly with feet at their lower end for supporting contact with said floor or other supporting surface, said feet of said second pair of legs movable toward and away from said feet of said first pair of legs upon relative pivotal movement of said legs between a first position and a second position wherein said feet are spaced farther apart for supporting said step ladder/chair in a self-supporting standing condition on said floor or other supporting surface;

a third pair of parallel legs, parallel of said first parallel legs pivotally interconnected to said first and second platform means on said opposite sides thereof and extending upwardly above said upper platform means for supporting a back rest above said upper platform means;

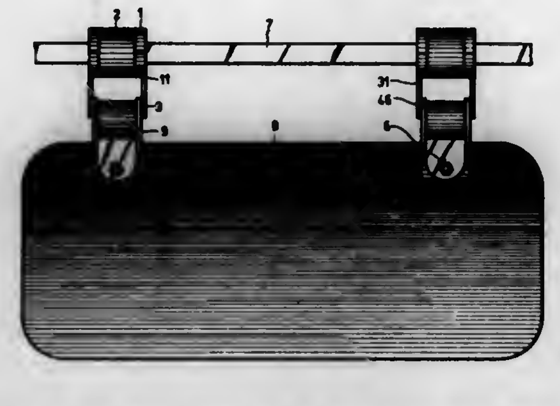
a pair of linkage elements pivotally interconnected at opposite ends to pairs of adjacent second and third legs intermediate their length between said upper and lower platform means; and a pair of stops adjacent said linkage elements for limiting the relative pivotal movement between adjacent pairs of first and second legs to provide a stable, self-supporting condition of said step ladder/chair with said first and second platform means in spaced parallel relation to said floor or other supporting surface.

4,130,317
SUN-CUT GLASS CLAMPING DEVICE FOR AUTOMOBILES

Winston Lai, No, 42, I-Tung St., Taipei, Taiwan
Filed Jul. 27, 1977, Ser. No. 819,334
Int. Cl.^{2} B60J *3/02; A44B 21/00*
U.S. Cl. 296—97 R 3 Claims

1. A device for attachment to an automobile visor for reducing sun glare comprising tongue means having separable top and bottom sections which overlie an edge of the visor, said top section provided with at least two holes, said bottom section having at least two protuberant points which register with the two holes of said top section when said tongue means engages a visor, a first U-shaped spring clip adapted to pressure said top and bottom sections together so as to retain said tongue means on said visor, clamping arm means attached to a

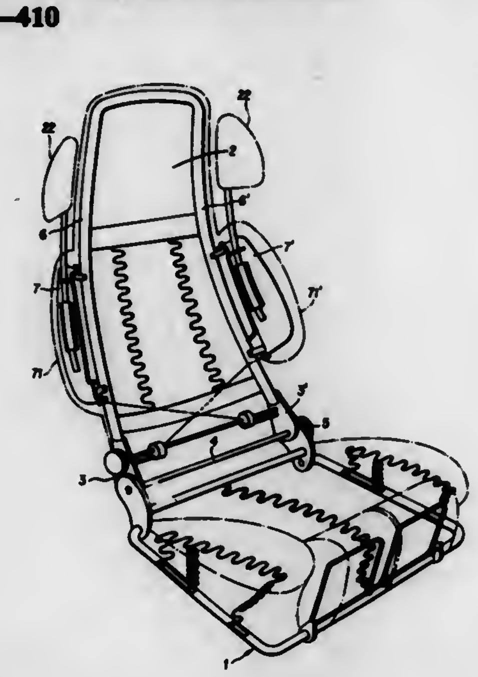
sun reducing glass having a second spring clip, and means connecting said tongue means with said clamping arm means,



including a carrier depending from said tongue means, a fixing shaft fastened to said carrier and carried on said clamping arm means.

4,130,318
HEADREST WITH SIDE PADS

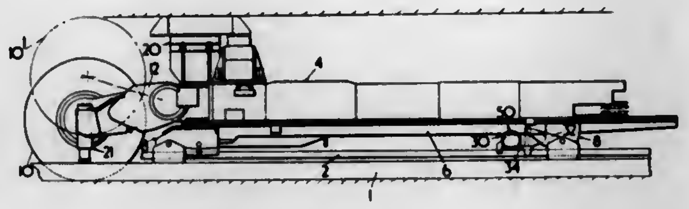
Marcel Hemmen, Franconville, and Jacky Herón, Suresnes, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France
Filed Jan. 9, 1978, Ser. No. 868,215
Claims priority, application France, Jan. 12, 1977, 77 00703
Int. Cl.² A47C *1/10*
U.S. Cl. 297—410 **1 Claim**



1. In a seat having a back frame and an adjustable cushion attached to the back frame, a headrest comprising: a pair of auxiliary frames disposed on a lateral side of the back frame, each auxiliary frame having an axis of rotation; a pair of supports, each support carried on an auxiliary frame; adjusting means for positioning each support on its auxiliary frame, said adjusting means including a row of holding notches located on each support and engageable with a catch movably fixed to the auxiliary frame, a guide fastened to each auxiliary frame and having a channel, an ejection spring disposed in each channel and acting upward on a support, and an anchoring pin disposed in each channel for anchoring the ejection spring in the channel; and a pair of adjustable side pads, each side pad mounted on a support and being movable with said support vertically, or angularly about the axis of rotation of its auxiliary frame; whereby adjustment of the auxiliary frames and adjusting means permits the side pads to be positioned out of the lateral field of vision of the person occupying the seat.

4,130,319
MINING MACHINES

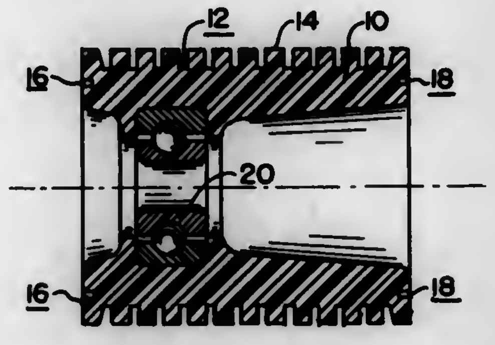
Terence J. Gapper, Duffield, England, assignor to Coal Industry (Patents) Limited, London, England
Filed Mar. 4, 1976, Ser. No. 663,785
Claims priority, application United Kingdom, Mar. 25, 1975, 12386/75
Int. Cl.² E21C *35/08*
U.S. Cl. 299—1 **12 Claims**



1. A mining machine which in use traverses to and fro along a track comprising a body adapted to be hauled to and fro, a number of shoes supporting the body and movable along the track, and equipment mounted on one shoe for sensing the position of the machine along the track, the equipment comprising an arm connected to the one shoe, a pin connected to the arm remote from the shoe and transverse to the track, a link mounted for rotation on the pin, a roller on the link drivably engageable with the track and means for sensing the number of rotations of the roller and for deriving a signal indicative of the number of rotations.

4,130,320
WHEEL FOR ROLLER SKATE OR SKATEBOARD

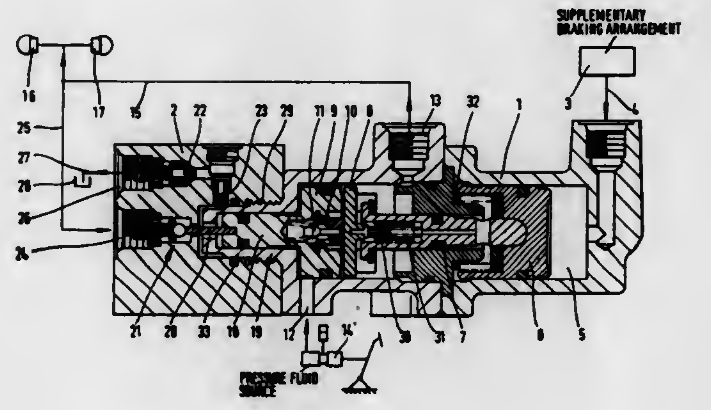
Anthony Scardenzan, 269 N. Hillcrest Blvd., Inglewood, Calif. 90301
Continuation-in-part of Ser. No. 628,048, Nov. 3, 1975, abandoned. This application Nov. 29, 1976, Ser. No. 745,789
Int. Cl.² A63C *17/22*
U.S. Cl. 301—5.7 **2 Claims**



1. A roller skate wheel assembly comprising: a wheel formed of one piece of plastic material having a bore extending therethrough with a pair of axially spaced annular shoulders formed on the bore surface, and having a series of spaced grooves extending around the outer peripheral surface of the wheel to define a corresponding series of surface-gripping ribs, and having at least one further groove formed in at least one end thereof adjacent to said peripheral surface to permit the outer edge of the wheel to turn radially inwardly when the assembly is in use; at least one bearing embedded in the bore of said plastic wheel between said annular shoulders and contained in said bore in concentric relationship therewith, the wheel extending axially beyond both ends of the bearing with the extension beyond the outer end of the bearing being substantially greater than the extension beyond the inner end of the bearing, and the peripheral surface of the wheel having a concave configuration.

4,130,321
PRESSURE-REGULATING VALVE FOR VEHICULAR BRAKING SYSTEMS

Franz Fleck, Frankfurt-Nied, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed Jun. 29, 1977, Ser. No. 811,006
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1976, 2635154
Int. Cl.² B60T *7/00*
U.S. Cl. 303—13 **4 Claims**

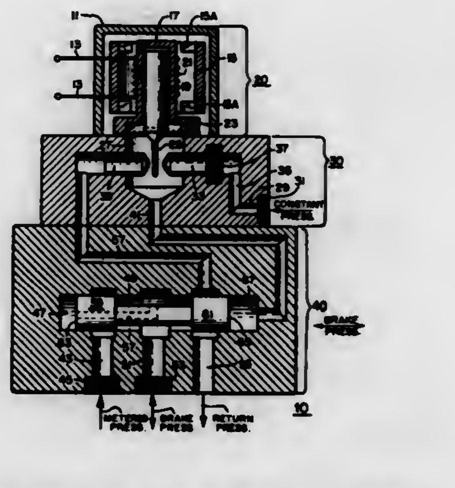


1. An improvement to a pressure-regulating valve for vehicular braking systems, said pressure-regulating valve being inserted between a brake-pedal-controlled pressure-fluid source and a plurality of wheel brake cylinders, said pressure-regulating valve including a housing portion having a longitudinal axis; a piston disposed within said housing portion coaxial of said axis in communication with a supplementary braking arrangement; a shifting device disposed within said housing portion coaxial of said axis and fastened to said piston remote from said supplementary braking arrangement; a plunger piston disposed within said housing portion coaxial of said axis; an auxiliary piston disposed within said shifting device coaxial of said axis and in a controlling relationship with said plunger piston, said auxiliary piston being displaceable in a direction away from said plunger piston against a force of a spring; and a pressure chamber disposed within said housing adjacent said plunger piston in communication with said brake-pedal-controlled pressure-fluid source and said plurality of wheel brake cylinders; said plunger piston having a pressure-fluid passageway therein disposed coaxial of said axis and a closure member for said passageway, said passageway communicating said brake-pedal-controlled pressure-fluid source with said pressure chamber, said closure member being movable into an open position by said auxiliary piston; the volume of said pressure chamber being variable as a result of the displacement of said plunger piston into an end position by said piston, said shifting device and said auxiliary piston; said displacement being dependent on the braking action of said supplementary braking arrangement; said improvement comprising:

- a housing block sealed to and seated on said housing portion;
- a seat valve disposed in said housing block coaxial of said axis and disposed in a connection between said plurality of wheel brake cylinders and a reservoir;
- a tappet secured to said plunger piston to push said seat valve open in said end position of said plunger piston; and
- a pressurizing valve disposed in said housing block in a parallel relationship with said seat valve and disposed in said connection, said pressure-regulating valve operating such that said seat valve is controlled by the location of said tappet acted upon by pressure from said supplementary braking arrangement and brake-pedal-controlled pressure-fluid source.

4,130,322
SINGLE GAIN SKID CONTROL VALVE AND SKID CONTROL SYSTEM

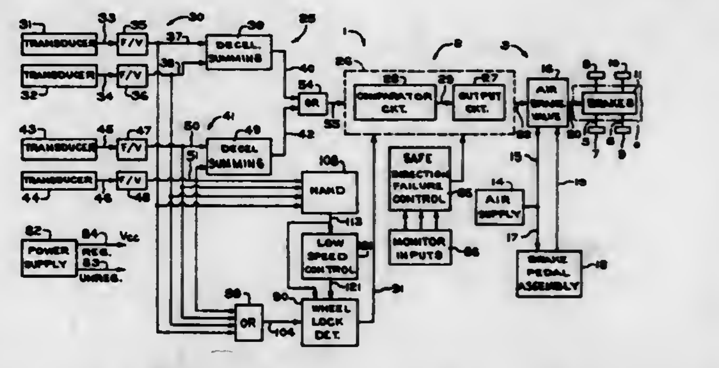
Robert D. Cook, Valencia, Calif., assignor to Crane Co., New York, N.Y.
Division of Ser. No. 742,251, Nov. 16, 1976, Pat. No. 4,053,187. This application Oct. 7, 1977, Ser. No. 840,417
The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.
Int. Cl.² B60T *8/02*
U.S. Cl. 303—93 **11 Claims**



1. A vehicle braking control system comprising:
- braking control circuit including a valve driver for providing an electrical braking signal;
- means for providing a supply of hydraulic fluid at substantially constant pressure;
- means for providing hydraulic fluid at variable metered pressure;
- control means for accepting said constant pressure hydraulic fluid and for providing a hydraulic control output in response to said braking control circuit, said hydraulic control output being exclusively controlled by said electrical braking signal; and
- brake pressure valving means selectively responsive to said metered pressure and said hydraulic control output for producing a brake pressure output which is limited by said hydraulic control output.

4,130,323
TANDEM CONTROL BRAKE SYSTEM

Yudh V. Rajput, Dayton, and Carl A. Couchot, Piqua, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio
Filed Jul. 19, 1977, Ser. No. 817,459
Int. Cl.² B60T *8/02*
U.S. Cl. 303—106 **15 Claims**



1. In an anti-skid brake control system for overriding manual operation of the brakes of a vehicle having plural wheels on each of plural axles, including transducer means for monitoring the speeds of such plural wheels, and output means responsive to the wheel speeds detected by the transducer means for controllably dumping a percentage of the brake operating fluid pressure requested by the vehicle operator, the improvement comprising:

a single wheel lock detector circuit means coupled between the transducer means and the output means for detecting the locking of any of the monitored wheels to operate the output means to effect such overriding in response to detection of such wheel locking, said wheel lock detector circuit means including disabling means for ordinarily disabling said wheel lock detector means when the vehicle speed drops below a predetermined minimum speed and threshold amplifier means for producing a wheel lock signal to effect such overriding when the speed of any of the monitored wheels drop below a predetermined minimum speed and said disabling means has not disabled said wheel lock detector circuit means, and further comprising NAND gate means for coupling the transducer means to said wheel lock detector circuit means, whereby the latter is responsive to the locking of the most slowly rotating one of the plural wheels monitored.

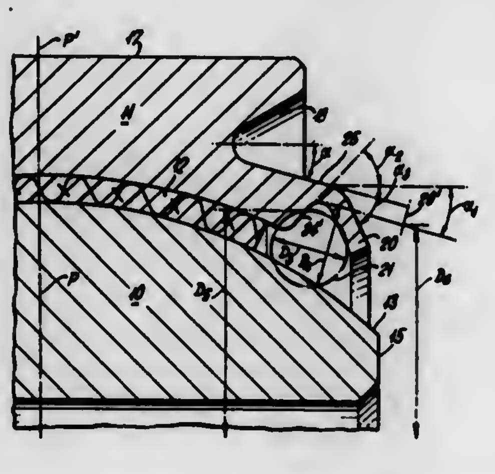
4,130,324
SEAL MEANS FOR A SELF-ALIGNING BEARING

Manfred E. Becker, Newington, Conn., assignor to Textron Inc., Providence, R.I.

Division of Ser. No. 758,402, Jan. 11, 1977, Pat. No. 4,089,095. This application Jan. 16, 1978, Ser. No. 869,590

Int. Cl.² F16C *33/74*

U.S. Cl. 308—36.1 **13 Claims**



1. A self-aligning bearing comprising an inner member having a spherical convex outer surface and an outer-ring member having a concave inner surface at sliding interface engagement with said convex surface, said outer-ring member having an undercut counterbore at one axial end, the axially outer end of the undercut counterbore being characterized by a surface of revolution which converges radially toward said spherical surface as a function of axially outerward location along the counterbore, and an elastomeric ring compressionally retained in the counterbore and in resilient circumferentially continuous contact with said convex surface, the extent and axial location of such convergence with respect to the remainder of the counterbore being such in relation to the elastomeric-ring section and to the convex spherical radius as to axially and radially inwardly squeeze said elastomeric ring in reaction to the circumferentially continuous contact of said elastomeric ring with said convex surface.

4,130,325
THRUST PLATE FOR THE BEARING PINS OF A TRUNNION IN A UNIVERSAL JOINT

Josef Schultenkämper, Essen, Fed. Rep. of Germany, assignor to Gelenkwellenbau GmbH, Essen, Fed. Rep. of Germany

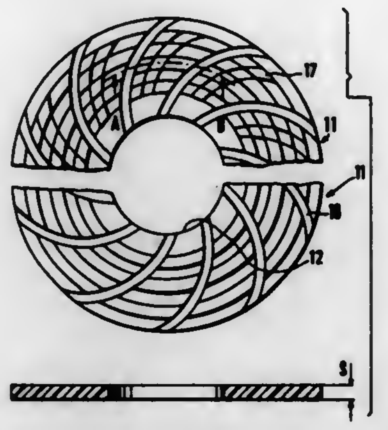
Filed Dec. 6, 1976, Ser. No. 747,477

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1975, 2555667

Int. Cl.² F16C *17/00;* **F16D** *3/38*

U.S. Cl. 308—163 **6 Claims**

1. A thrust plate for between an end face of a bearing pin of a trunnion in a universal joint and a bottom wall of a bushing on the bearing pin and comprising a wear-resistant heat-stable plastic material, there being lubricant grooves in a surface of said plate, and raised portions comprising a plurality of protuberances on said surface of said plate between said grooves, said raised portions being plastically deformable during assembly of the bushing on the bearing pin so that the desired end play is obtained between the bushing bottom wall and bearing pin end surface, said raised portions occupying an area such that deformation resistance under compression load will be less than a predetermined resistance value for said plate.



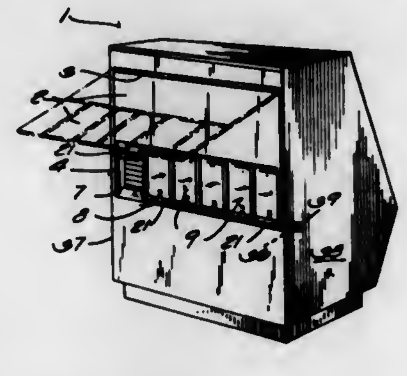
4,130,326
CIGARETTE MERCHANDISER

Richard P. Hornblad, Shorewood, Wis., assignor to Display Corporation International, Milwaukee, Wis.

Filed Sep. 9, 1977, Ser. No. 831,893

Int. Cl.² A47F *3/024;* **A47B** *81/00*

U.S. Cl. 312—292 **9 Claims**



1. A merchandiser as described comprising, in combination,

means defining a plurality of spaced apart bins,

housing means defining an enclosure for said bins,

a plurality of access doors,

means supporting said access doors on said housing means with one of said access doors positioned in registry with each of said spaced apart bins and also for sliding movement relative to said bins so that said access doors are selectively movable to close said bins and open said bins for access from the exterior of said merchandiser,

locking means comprising a plurality of locking fingers and supported on said housing means, said locking fingers being mechanically interconnected so that all of said locking fingers are jointly movable selectively between a first position wherein said locking fingers are each engaged with a respective one of said access doors and a second position free of engagement from said access doors to permit said sliding movement of said access doors,

and means defining a locking arrangement connected to said locking means and including a key operated portion exposed externally of said merchandiser and a locking portion disposed interiorally of said merchandiser and selectively movable between a first position in locking engagement with said locking means to hold said locking fingers in said first position and a second position out of engagement with said locking means and freeing said locking fingers for sliding movement to said second position, wherein each of said access doors includes means defining a notch projecting into the interior of said merchandiser when said main door is in its closed position, and said locking fingers comprise a plurality of tabs selectively engageable in respective ones of said notches when said locking fingers are in said first position and free of said notches when said locking fingers are in said second position.

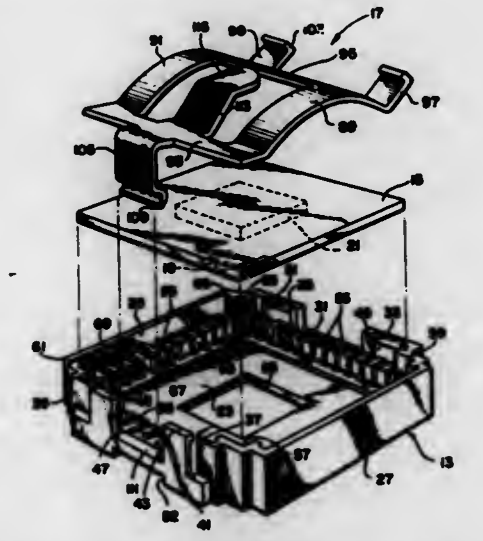
4,130,327
ELECTRICAL CONNECTOR HAVING A RESILIENT COVER

Tedford H. Spaulding, Norridge, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed May 27, 1977, Ser. No. 801,094

Int. Cl.² H05K *1/12*

U.S. Cl. 339—17 CF **17 Claims**



1. An electrical connector for supporting and for completing electrical connections to an integrated circuit device mounted on a flat substrate, said connector comprising:

base means having outer walls and an interior peripheral shoulder providing upward facing support surfaces for engaging said substrate;

said base means having hinge lug means on one of said outer walls and means at another outer wall opposite said one outer wall for engaging a catch, said hinge lug means comprising first and second hinge lugs spaced apart to correspond to the spacing between first and second arcuate portions of a resilient cover means, each of said hinge lugs having a slot extending therethrough to define a top hinge lug member above said slot; and

resilient cover means comprising first and second longitudinally extending arcuate portions having respective opposed ends and at least one laterally-extending connecting portion joining said first arcuate portion and said second arcuate portion in parallel spaced relation,

each of said arcuate portions having a corresponding hinging portion at one end thereof adapted to engage said hinge lug means, said hinging portions extending rearwardly from said first and second arcuate portions through a corresponding one of said slots in said first and second hinge lugs;

said cover means further having a latching portion extending forwardly from said connecting portion, said latching portion having catch means adapted to engage said catch engaging means in said opposite wall;

said cover means being pivotable about said hinge lug means to a closed position wherein said catch means cooperates with said catch engaging means to secure said cover means in the closed position and in which the ends of said arcuate portions contact said substrate and press said substrate down onto said support surfaces.

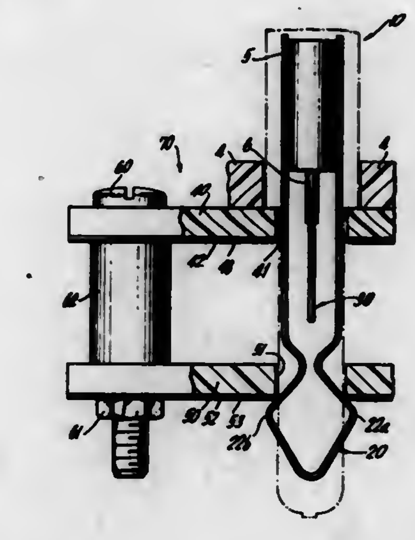
4,130,328
MULTI LEVEL PROGRAMMING ASSEMBLY

Kenneth Wessel, White Plains, N.Y., assignor to Sealectro Corporation, Mamaroneck, N.Y.

Filed Dec. 23, 1977, Ser. No. 863,895

Int. Cl.² H01R *29/00*

U.S. Cl. 339—18 C **14 Claims**



1. A contact pin for connecting a plurality of printed circuit boards in a spaced apart multi-level relationship, said printed circuit board having a plurality of columns and rows of apertures, said contact pin comprising:

an enlongated hollow shell member, formed from a nonconductive material having a body portion and a probe portion for insertion into an aperture of a printed circuit board, said probe portion including a plurality of spaced apart through slots; and

a plurality of conductive, resilient contacts disposed within said shell member, each contact being substantially diamond shaped in configuration, having spaced apart corner members, said corner members of each contact being on opposite edges of said diamond configuration, said contacts being disposed at a predetermined angle relative to each other, said angle being equal to or less than 90°, but large enough to avoid electrical interference among said contacts, the corner members on opposite edges of each said contact being received in and protruding through the through slots of the probe portion.

4,130,329
ELECTRICAL CONNECTOR ASSEMBLY RETENTION SYSTEM

Curtis S. Chandler, Walkertown, N.C., and Ralph L. Miller, Kernersville, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 6, 1977, Ser. No. 840,349

Int. Cl.² H01R *13/54, 13/58*

U.S. Cl. 339—75 M **3 Claims**

1. In a connector having intermatable dielectric housings containing multiple electrical contacts terminated to insulated electrical conductors, together with means latchably retaining said housings intermated, the improvement comprising:

a resilient spring having two elongate resilient fingers connected by an integral bight, the fingers having thickened tips at the free ends thereof initially biased resiliently toward each other,

said tips having convex edges bent outwardly of the planes of said fingers to project toward each other perpendicular to the planes of the fingers,

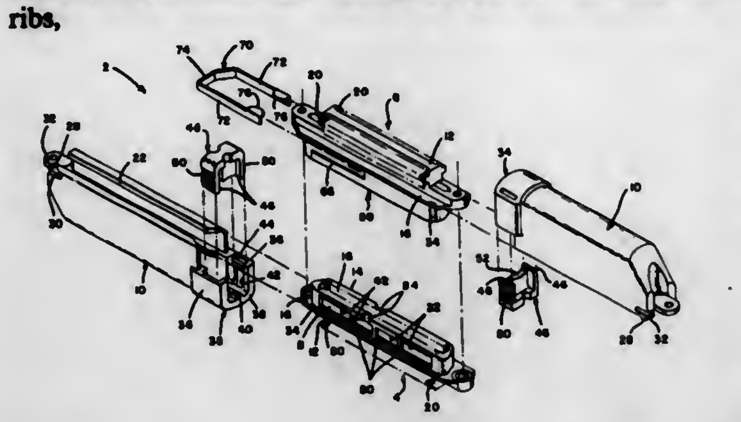
one said connector housing having a central cavity defined by elongate parallel sidewalls connected by integral end walls, said sidewalls having apertures therein communicating with said central cavity, said fingers being impinged along said sidewalls with said tips received in said apertures and protruding into said cavity,

the other of said housings having a portion which is pluggable within the first housing central cavity,

said other housing having a mating face provided with a central cavity containing multiple electrical contacts matable with contacts contained in said first housing,

said other housing having elongate sidewalls connected by end walls perpendicular of said mating face,

said sidewalls of said other housing having recesses therein defining a series of reinforcing ribs and also undercut shoulders proximate said mating face and intersecting said ribs,



said mating face having chamfered surfaced recesses in corresponding sidewalls intersecting corresponding shoulders,

said recesses being aligned with said contact edges of said tips when said housings are intermated, whereby said chamfered surfaces resiliently bias said tips outwardly of said central cavity upon receipt of said mating face within said central cavity, and

said tips being in registration within corresponding recesses with said convex edges in locked registration under said undercut shoulders thereby maintaining said housings in intermated condition.

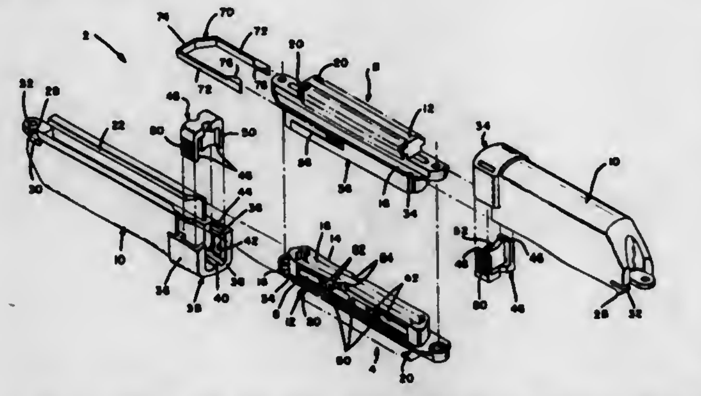
4,130,330
ELECTRICAL CONNECTOR STRAIN RELIEF AND COVER RETENTION SYSTEM

Curtis S. Chandler, Walkertown, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 6, 1977, Ser. No. 840,350

Int. Cl.² H01R *13/58*

U.S. Cl. 339—75 M **2 Claims**



1. In a connector having intermatable dielectric housings containing multiple electrical contacts terminated to insulated electrical conductors, together with means latchably retaining said housings intermated, the improvement comprising:

elongated grooves defined between a wire terminating portion of each said housing and a corresponding outwardly projecting flange separating said wire terminating portion from a mating side,

a cable having a plurality of individual conductors terminated to corresponding electrical contacts contained in each said wire terminating portion,

a cover for each said housing having an elongate opening on one side and one opened end receiving a corresponding cable therethrough,

each said cover having a pair of ribs projecting into said opening from opposite sides thereof and slottably received in said grooves, thereby mounting said cover over a corresponding wire terminating portion,

an extension portion integral with each cover having a pair of arms receiving a corresponding cable therebetween,

each said arms being provided with ratchet teeth defining undercut shoulders,

a bight portion integrally connecting each said pair of arms and provided with a projecting rib impinging a corresponding cable lengthwise thereof,

a plug inserted between each said pair of arms and having depending resilient tabs provided with ratchet teeth defining shoulders latchably secured to said undercut shoulders of said each pair of arms,

said plug being ratcheted into compression of said cable against said rib,

said rib indenting said cable, and

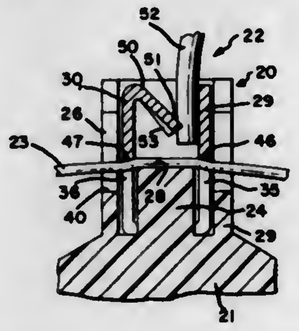
said plug projecting outwardly from said arms and overlying an end of a corresponding cover to prevent removal thereof from a corresponding wire receiving portion.

4,130,331
SOLDERLESS CONNECTOR FOR TERMINATING A MAGNET WIRE OR THE LIKE

Nelson E. Neff, Hershey, and Anthony F. Thomas, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa. Continuation of Ser. No. 749,185, Dec. 9, 1976, abandoned, which is a continuation of Ser. No. 643,209, Dec. 22, 1975, abandoned, which is a continuation-in-part of Ser. No. 547,318, Feb. 5, 1975, abandoned. This application Nov. 14, 1977, Ser. No. 852,004

Int. Cl.² H01R *9/08*

U.S. Cl. 339—97 R **2 Claims**



1. In combination, a wire and a connector for terminating said wire, said connector comprising:

housing means constructed to form a contact retaining structure having front and back side walls, a bottom surface, and open at the end opposite said bottom surface;

said housing means having first and second slots formed in said front and back side walls, each with an open end and a closed end and with said open end extending down said front and back side walls from said open side thereof;

said housing means further comprising an anvil-like wire supporting means extending upwardly from said bottom surface to about the level of the closed ends of said first and second slots and positioned between said front and back side walls;

said wire being inserted in said first and second slots and laying across said wire supporting means;

terminal means comprising a U-shaped conductive member having first and second plate-like legs with first ends thereof connected together by a connecting transverse section and having third slot means extending across the center of said connecting transverse portion to divide said transverse portion into two sections and further extending down into said first and second legs thereof as fourth and fifth slots;

said terminal being inserted in said contact retaining structure with the two sections of said transverse portion facing the bottom surface of said housing means and straddling said anvil-like wire supporting means, and with said fourth and fifth slots in said first and second legs thereof being aligned in an inverted position with respect to said first and second slots to trap the inserted wire end between the closed ends of said first and second slots and said fourth and fifth slots; and

at least one of said first and second slots and at least one of said fourth and fifth slots having a width slightly narrower than the diameter of said wire.

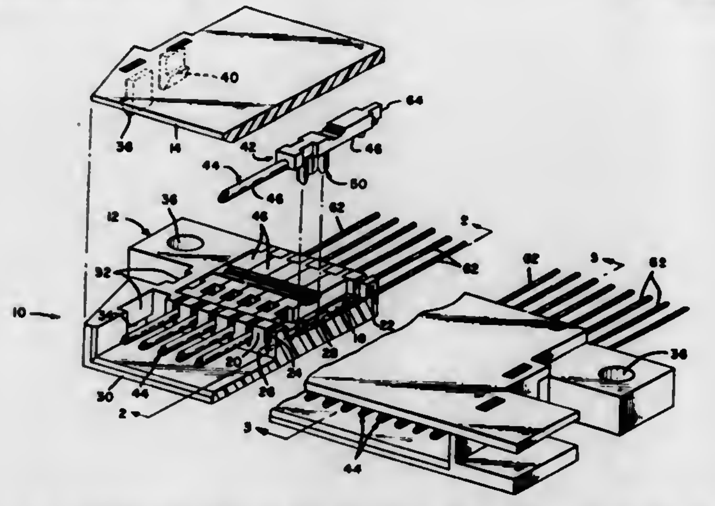
4,130,332
MODULAR CONNECTOR AND CRIMP ARRANGEMENT FOR MAGNETIC WIRE

John C. Asick, Harrisburg; Clifton W. Huffnagle, Camp Hill; Michael S. Peppler, Lancaster, and John A. Woratyla, Camp Hill, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 24, 1978, Ser. No. 889,756

Int. Cl.² H01R *13/38*

U.S. Cl. 339—97 P **5 Claims**



1. A connector providing an interface between wires of a plurality of magnetic coils in a multi-dot matrix print head and conventional cables comprising:

a housing having a base member and a mating cover defining a cavity therebetween, said base member having a plurality of parallel spaced channels extending transversely across said cavity and defining a comb-like configuration in front and rear walls thereof, and means for latchingly securing said cover on said base; and

a plurality of terminal modules, each said module including a terminal mounted in a rigid block of insulation material, each said terminal having a first mating portion profiled for mating with a further terminal and a conductor engaging second portion having a plurality of tines defining insulation displacing slots between adjacent pairs of tines, said modules being received in respective channels in said base member with the slots between the tines engaging conductors laid in said channels to form an electrical and mechanical engagement therewith.

4,130,333
QUICK CONNECT ELECTRICAL PLUG

Marijan Djurinec, Acton, Canada, assignor to Smith & Stone Limited, Toronto, Canada

Filed Mar. 6, 1978, Ser. No. 884,350

Claims priority, application Canada, Nov. 15, 1977, 290952

Int. Cl.² H01R *13/38*

U.S. Cl. 339—97 P **1 Claim**

1. A quick-connect electrical plug for use with a two-conductor insulated cord said plug comprising:

(A) first and second housing members, said housing members having groups of associated and opposed apertures, paired recesses and cavities to form an assembly;

(a) a cord receiving slot, terminating at an outer surface of said plug;

(b) first and second terminal receiving slots each disposed substantially perpendicularly to said cord receiving slot, said terminal receiving slots terminating at an outer surface of said plug;

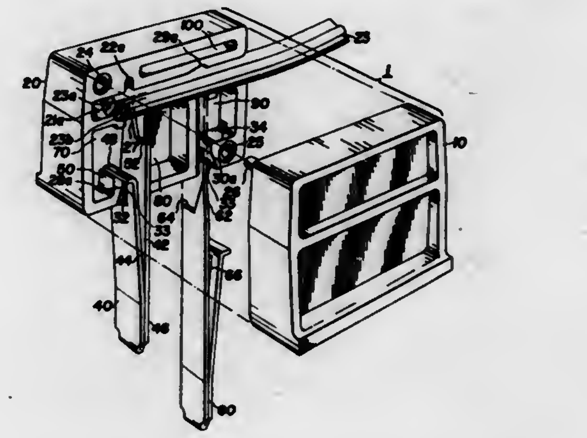
(c) first and second terminal retainer means within the interior of housing members, each retainer means being disposed adjacent to an associated one of said terminal receiving slots;

(d) a spike-receiving recess in said cord receiving slot in said first housing disposed in line with the first of said terminal receiving slots and a spike-receiving recess in said cord receiving slot in said second housing disposed in line with said second terminal receiving slot;

(e) a wedged-shaped recess in said cord receiving slot in said first housing disposed in line with said second terminal receiving slot and a wedge-shaped recess in said cord receiving slot in said second housing disposed in line with said first terminal receiving slot, and

(B) first and second terminals for slideable reception in said first and second terminal receiving slots, each of said terminals comprising:

(i) a short tine and a long tine joined together at adjacent ends thereof, said adjacent ends constituting a blade for insertion into a receptacle, said tines being urged apart at the opposite ends thereof by the inherent springiness of the material of which the contacts are made, the longer of said tines terminating with a first spike at said opposite end thereof, said spike being positioned to penetrate the insulation and conductor of one of said conductors in said cord and to enter said spike receiving recess, said longer tine also including a cable clamping portion adjacent said spike, said cable clamping portion being positioned to abut the insulation around the other of said conductors, and to deform said conductor into said associated wedge-shape recess, the shorter of said tines having an ear formed thereon, said ear abutting said terminal retaining means when the associated said terminal is slid outwardly of said housing members, the said short tine further including a resilient detent, said detent snapping behind said terminal retaining means when the said terminal is slid into insulation and conductor piercing relationship with the said cord, the said first and second terminals being permanently locked into the said first and second housing members after insertion of said first and second terminals.



4,130,334
GROUND TERMINATION AND STRAIN RELIEF CONNECTOR MEANS

Brent W. Anderson, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 3, 1977, Ser. No. 839,144

Int. Cl.² H01R *13/58*

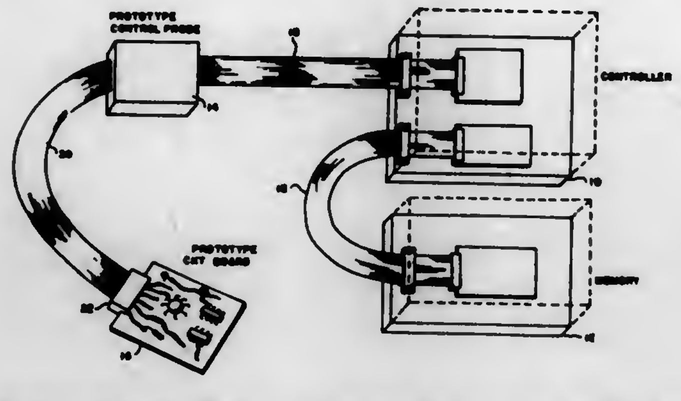
U.S. Cl. 339—103 M **8 Claims**

1. A ground termination and strain relief connector means for use in connection with flat cable means having a plurality of signal conductor means covered by insulation means and isolated from each other thereby and shielding conductor means extending along the signal conductor means and isolated therefrom by the insulation means but covered thereby, said connector means comprising:

termination plate means having a termination area for positioning an exposed section of the shielding conductor means and means provided along said termination area for connecting the exposed section of the shielding conductor means to said termination plate means;

mounting means provided by said termination plate means for mounting said termination plate means and the flat cable means with the shielding conductor means connected thereto onto connector mounting means of an instrument; and

clamping means for engagement with the connector mounting means for clamping said termination plate means and flat cable means thereon onto the instrument thereby forming a ground connection of the shielding conductor means with the instrument and to provide strain relief for the flat cable means.



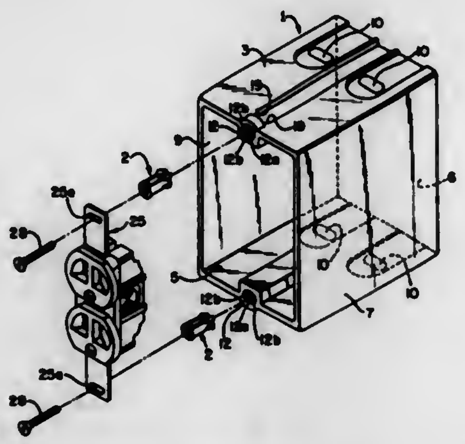
4,130,335
ELECTRICAL WIRING BOX

David W. Kinney, Parkersburg, W. Va., assignor to Union Insulating Company, Parkersburg, W. Va.

Continuation of Ser. No. 712,514, Aug. 9, 1976, abandoned. This application Sep. 19, 1977, Ser. No. 834,112

Int. Cl.^{2} H02G *3/16*

U.S. Cl. 339—122 R 13 Claims



1. A box arrangement comprising:

a box including a plurality of walls arranged to define a space for receiving a device, said box having a longitudinal opening therein in which a mounting element is disposed and further having a pair of abutment portions adjacent to opposite sides of the opening;

said mounting element comprising:

a central portion adjacent to the front of the opening in the box and having a portion in abutment with a portion of the box adjacent to the opening, said central portion having an opening associated therewith by which a threaded screw may be inserted into the mounting element, said opening in the central portion being of a size to permit a screw to be freely and readily inserted into the mounting element without the central portion interfering with the forward progress of the screw or gripping onto the screw;

first and second spaced-apart side portions connected with the central portion on opposite sides of the opening associated with the central portion and extending along the opening in the box, said side portions being spaced apart to define an unobstructed region therebetween for allowing a screw inserted into the mounting element and pushed longitudinally through the region between the side portions to pass continuously and unobstructively through the region without the side portions engaging the screw; and

first and second deflectible portions respectively connected with the first and second side portions and having first and second retention portions respectively associated therewith adjacent to the abutment portions of the box, said deflectible portions having threads provided along inner surfaces thereof and defining a screw-receiving region therebetween, said deflectible portions being operative when a screw is inserted and pushed longitudinally into the mounting element through the region between the side portions and into the screw-receiving region between the deflectible portions to be deflected outwardly in opposite directions away from the axis of the opening in the box and to cause the retention portions associated therewith to be positioned with respect to the abutment portions of the box so as to fix the mounting element in position in the opening in the box and prevent removal of the mounting element from the opening in the box, and the threads along the inner surfaces of the deflectible portions being operative when the screw is pushed into the screw-receiving region to ride along the rims of the threads of the screw, without impeding the forward progress or gripping onto the screw, and to engage interior portions of the threads of the screw only upon termination of the pushing of the screw into the mounting element.

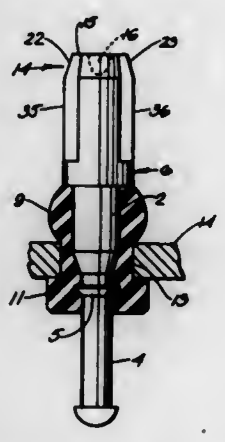
4,130,336
BINDING POST TERMINAL

Hilliard Dozier, Morrow, Ohio, assignor to U.S. Terminals, Inc., Cincinnati, Ohio

Filed Jun. 20, 1977, Ser. No. 808,076

Int. Cl.^{2} H01R *9/14*

U.S. Cl. 339—273 R 7 Claims



1. In an electric terminal having a conductive terminal pin with a binding post at one end, said binding post comprising a cylindrical body having an inwardly tapered annular shoulder terminating in a planar top, an annular recess extending inwardly from said planar top, a vertically disposed arcuate slot extending downwardly through said tapered shoulder and said recess into said cylindrical body, the inner and outer surfaces of said slot being defined by arcs of a pair of concentric circles having their axes parallel to the longitudinal axis of the binding post.

4,130,337
HOLOGRAPHIC VIEWER SYSTEM

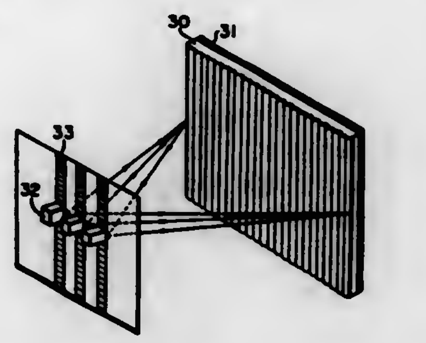
Takanori Okoshi, No. 7-7, 3-chome, Sengoku, Bunkyo-ku, Tokyo, Japan

Continuation of Ser. No. 760,024, Jan. 17, 1977, abandoned, which is a continuation of Ser. No. 553,086, Feb. 26, 1975, abandoned, which is a continuation of Ser. No. 412,643, Nov. 5, 1973, abandoned, which is a continuation of Ser. No. 134,177, Apr. 15, 1971, abandoned. This application Oct. 13, 1977, Ser. No. 841,719

Claims priority, application Japan, Apr. 21, 1970, 45-33634; Dec. 30, 1970, 45-122855

Int. Cl.^{2} G03H *1/30*

U.S. Cl. 350—3.76 23 Claims



1. A holographic viewer system, comprising a strip shaped elongated holographic element containing three-dimensional information and containing parallax information along the long dimension, means for directing a reconstructing beam onto the holographic element to form an image beam, a screen in the path of the image beam, said screen being constructed so that light incident thereon is diffused in one direction and autocollimated in the other direction, said screen being oriented to diffuse the light on the image beam from the holographic element in the direction transverse to the direction of the parallax information and to autocollimate the light in the image beam in the direction of the parallax information.

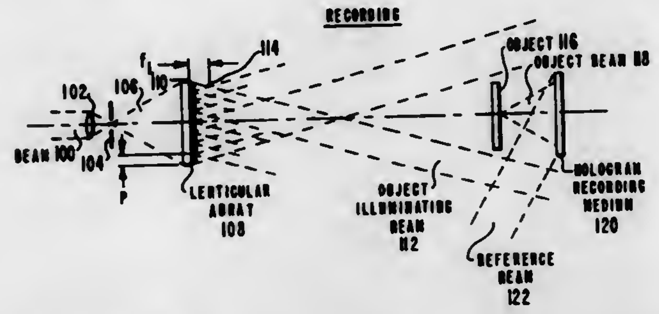
4,130,338
HOLOGRAM HAVING EXPANDED VIEWING AREA

Burton R. Clay, Wayland, and Douglas A. Gore, Billerica, both of Mass., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 714,360, Aug. 16, 1976, abandoned. This application Jan. 23, 1978, Ser. No. 871,761

Int. Cl.^{2} G03H *1/16, 1/32*

U.S. Cl. 350—3.82 5 Claims



1. A method for directly viewing over an expanded image viewing area the reconstructed image of a holographically recorded object played back with a readout beam of light of preselected wavelength; said method comprising the steps of:

holographically recording said object with a set of diverging object illuminating beams of coherent light of given wavelength respectively derived from an array of spaced point sources of light distributed at a first pitch distance over a given area, every one of said object illuminating beams illuminating said entire object,

playing back said holographically recorded object with said readout beam to derive a set of background first diffraction order beams of light that individually converge to a multiplicity of spaced background term convergence points corresponding to said array of point sources, said multiplicity of background term convergence points being distributed at a second pitch distance which is determined by said first pitch distance and the ratio of said preselected to said given wavelengths, and

specifying said first pitch distance at a value at which said second pitch distance is less than the diameter of the pupil of the light-adjusted eye of an observer,

whereby each background term convergence point constitutes a separate valid eye point of an expanded image viewing area, and an individual image of said object is directly viewable by the eye of an observer in proximity to any valid eye point.

4,130,339
SCANNING OPTICAL SYSTEM INCLUDING AN OPTICAL SYSTEM FOR DETECTING AN INFORMATION BEAM

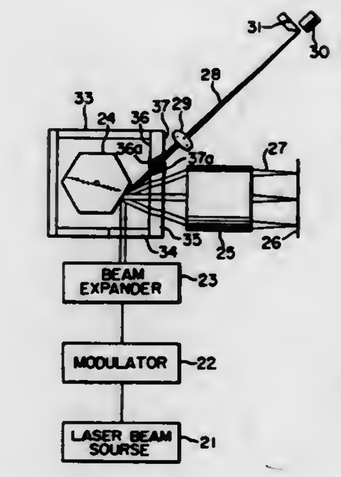
Naoto Kawamura, Inagi; Kazuya Matsumoto, and Takashi Kitamura, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1977, Ser. No. 776,894

Claims priority, application Japan, Mar. 16, 1976, 51-28494; Mar. 19, 1976, 51-30492

Int. Cl.^{2} G02B *27/17*

U.S. Cl. 350—6.8 11 Claims



1. A scanning optical system comprising:

a light source emitting a beam used for scanning;

a deflecting device for deflecting the beam emitted from said light source to scan in a predetermined direction;

a first focusing lens for focusing the deflected beam from said deflecting device onto a scanning plane;

an optical system disposed between said first focusing lens and said deflecting device for reflecting a portion of the beam from said deflecting device a plurality of times within the optical system so as to take up said portion of the beam as an information beam; and

a second focusing lens for focusing the information beam.

4,130,340
TWO-SPEED TELESCOPE FOCUSING MECHANISM

J. Peter E. Kooi, Succasunna, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Jul. 13, 1977, Ser. No. 815,126

Int. Cl.^{2} G02B *7/10*

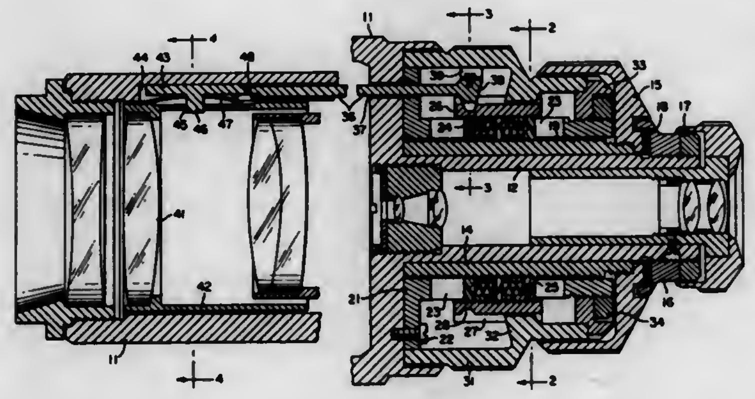
U.S. Cl. 350—79 7 Claims

1. In a telescope including an internal draw tube mounting a focusing lens and being displaceable longitudinally of said telescope to effect the focus of the image of a scene under observation, the improvement which comprises a two-speed focusing mechanism comprising:

(a) a threaded sleeve member journaled for rotation about the line of sight of said telescope, the threads being situated on the external circumference of said sleeve member and being of multiple lead configuration;

(b) a threaded drive ring member disposed concentrically about said sleeve member for rotation about said line of sight, the threads being situated on the internal circumference of said ring member and being of a configuration comprising a lesser number of leads than that of said sleeve member;

(c) a plurality of threaded drive block members interposed between and in threaded engagement with the respective threaded surfaces of said sleeve and ring members, said block members being constrained to movement substantially parallel to said line of sight;



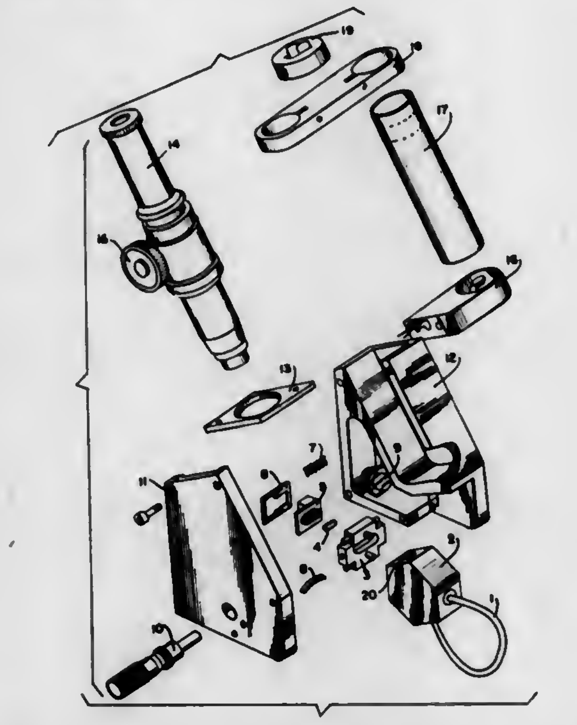
(d) first manually-accessible means associated with said sleeve member for effecting rotation of said sleeve member;

(e) second manually-accessible means associated with said drive ring member for effecting rotation of said ring member; and

(f) means coupling said drive ring member with said draw tube for effecting said focusing draw tube displacement with longitudinal displacement of said drive ring.

4,130,341
FIBER OPTIC SEAL APPARATUS

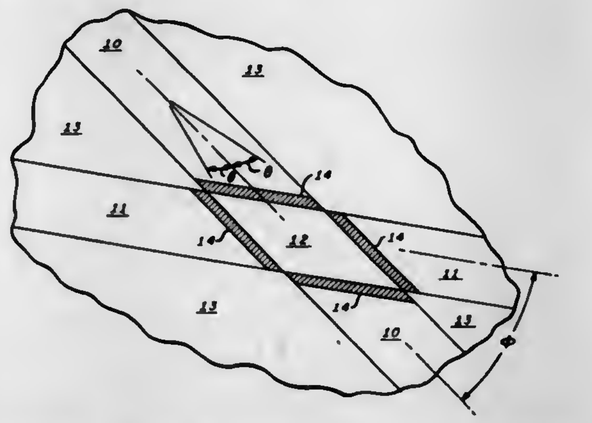
Lorin R. Stieff, P.O. Box 263, Kensington, Md. 20795
Continuation-in-part of Ser. No. 733,177, Oct. 18, 1976. This application Feb. 14, 1977. The portion of the term of this patent subsequent to Aug. 15, 1995 has been disclaimed. Ser. No. 768,434
Int. Cl.^{2} G02B *5/16*
U.S. Cl. 350—96.20 12 Claims



1. Fiber optic seal apparatus comprising a block, first and second pathways crossed within the block, the pathways having fiber bundle receiving openings and fiber end holding openings in spaced relationship on facial areas of the block, bundle holding means connected to the block for holding an optic fiber bundle end inserted in each pathway with portions of the fibers near one end of the bundle threaded between portions of the fibers near the opposite end of the bundle in random arrangement within the block and fiber directing means mounted within the block, and facial collet means having rectangular openings for holding the ends of fibers in tight rectangular configuration.

4,130,342
PASSIVE OPTICAL CHANNEL CROSSOVER, SWITCH AND BEND STRUCTURE

Donald H. McMahon, Carlisle, Mass., assignor to Sperry Rand Corporation, New York, N.Y.
Filed May 31, 1977, Ser. No. 801,661
Int. Cl.^{2} G02B *5/14*
U.S. Cl. 350—96.14 25 Claims



1. An optical channel in-plane crossover comprising:

a plate of substantially transparent optical material having a refractive index N_1;

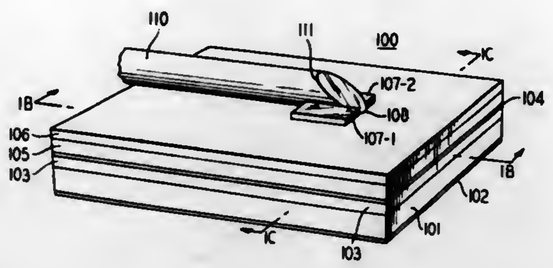
means for forming an optical channel configuration in said plate comprising first and second optical channels each with a refractive index n that is greater than N_1 such that optical signals with diverging angles between $-\theta$ and $+\theta$ with respect to the direction of said optical channels propagate therein, said first and second optical channels crossing at a predetermined crossing angle to form an interaction region with a refractive index n and having four sides forming boundaries with said first and second optical waveguides; and

means for providing strips of substantially transparent optical having a refractive index N_2 that is less than n at said four sides forming said boundaries of said interaction region with said first and second optical waveguides, whereby optical signals initially propagating in said first and second optical channels propagate through said interaction region and continue to propagate in said initial propagating channels therebeyond while being substantially reflected in the interaction region from the optical channels in which the optical signals are not initially propagating.

4,130,343
COUPLING ARRANGEMENTS BETWEEN A LIGHT-EMITTING DIODE AND AN OPTICAL FIBER WAVEGUIDE AND BETWEEN AN OPTICAL FIBER WAVEGUIDE AND A SEMICONDUCTOR OPTICAL DETECTOR

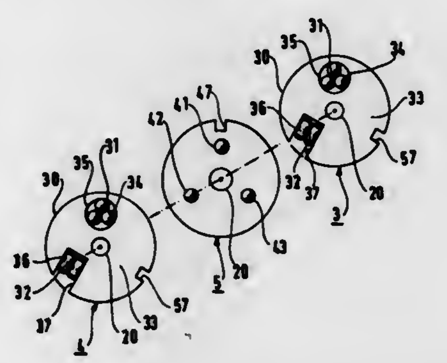
Stewart E. Miller, Locust, and Kinichiro Ogawa, Matawan, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 22, 1977, Ser. No. 770,796
Int. Cl.^{2} G02B *5/14*
U.S. Cl. 350—96.15 31 Claims

1. In combination, a semiconductor optical source having a light-emitting surface, an optical fiber waveguide having a central axis, a terminating portion of said fiber waveguide being affixed to said surface such that the axis of said terminating portion is substantially parallel to said surface so that a portion of the light power radiated from said surface is directly refracted into said optical fiber waveguide, and means at the end of said terminating portion for reflecting another portion of the light power radiated from said surface into said optical fiber waveguide.



4,130,344
CONNECTOR FOR OPTICAL FIBRES

Jean-Louis Lemonde, Le Chesnay, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France
Filed Aug. 19, 1977, Ser. No. 826,099
Claims priority, application France, Aug. 24, 1976, 76 25578
Int. Cl.^{2} G02B *5/14*
U.S. Cl. 350—96.21 17 Claims



1. A connector for end to end connecting of optical fibres, said connector comprising; two interconnectable cylindrical sleeves, each sleeve having an axial channel for receiving the end of an optical fibre to be connected, and assembly means for assembling the sleeves with their respective channels in alignment, the assembly means including at least one point-line-plane positioning means disposed between the facing front surfaces of said sleeves to define a reproducible positioning of one sleeve in relation to the other, the sleeves including transverse positioning means acting on the ends of the fibres in their respective channels, for alignment of the ends of the fibres, and said transverse positioning means comprising a set of radially oriented rods of adjustable radial position.

4,130,345
OPTICAL COUPLING APPARATUS

O. Leonard Doellner, Tucson, Ariz., assignor to The Boeing Company, Seattle, Wash.
Filed Feb. 25, 1977, Ser. No. 772,064
Int. Cl.^{2} G02B *5/14*
U.S. Cl. 350—96.22 9 Claims

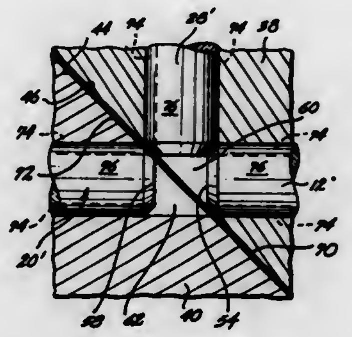
1. A fiber optic Tee coupler comprising:

first, second and third optical transmission cables each including a plurality of individual optical fibers;

a first support body having at least one planar face, said first and third optical transmission cable being fixedly embedded in said first support body with each individual optical fiber of each of said first and third optical transmission cables being substantially coplanar with and axially parallel to each other optical fiber within that same optical transmission cable, each said individual optical fiber of said first optical transmission cable being substantially coplanar and substantially orthogonal to an associated optical fiber of said third optical transmission cable with a first portion of the terminating end face of each optical fiber of said first and third optical transmission cables being substantially coincident with said planar face of said first support body and a second portion of the terminating end face of each of said optical fibers of said first optical transmission cable being in substantial contact with a portion of the terminating end face of said associated coplanar optical fiber of said third optical transmission cable;

a second support body having at least one planar face, said second optical transmission cable being fixedly embedded in said second support body with said individual optical fibers of said second optical transmission cable being substantially coplanar and substantially axially parallel with one another, at least a portion of the terminating end face of each of said individual optical fibers of said second optical transmission cable being substantially coincident with said planar face of said second support body, said first and second support bodies being configured and arranged for affixing said first support body to said second support body with said planar surfaces of said first and second support bodies in juxtaposition with one another to position each of said individual optical fibers within said second optical transmission cable in substantial optical and axial alignment with an associated individual optical fiber of said first optical transmission cable; and

a semi-reflective interlayer disposed between said planar surfaces of said first and second support bodies, said interlayer being positioned and arranged for substantial contact with said portions of said end faces of each individual optical fiber of said first, second and third optical transmission cables that are substantially coincident with said planar surfaces of said first and second support bodies, said semi-reflective interlayer reflecting a first portion of the optical energy travelling through each individual one of said optical fibers of said first optical transmission cable and impinging on said interlayer into said individual associated optical fiber of said third optical transmission line, said semi-reflective interlayer transmitting a second portion of said energy travelling through each individual one of said optical fibers of said first optical transmission cable and impinging on said interlayer into said individual associated optical fiber of said second optical transmission cable.

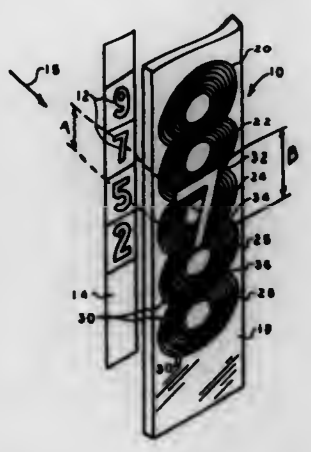


4,130,346
SUPER IMPOSED FRESNEL LENSES FOR CHANNEL INDICATORS

Eugene J. Polley, Lombard, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.
Filed Oct. 3, 1977, Ser. No. 839,042
Int. Cl.^{2} G02B *27/02*
U.S. Cl. 350—114 10 Claims

1. For use in a television receiver having an array of closely spaced channel indicators disposed in a substantially common plane and having means for illuminating the channel indicator which identifies a received television signal, a lens system for

magnifying the image of the illuminated channel indicator, comprising:
- a transparent plate disposed adjacent to and in a plane substantially parallel to the plane of the channel indicators; and
- a plurality of substantially coplanar circular fresnel lenses disposed on said plate, each such lens being located in optical alignment with, and having a diameter greater than the largest dimension of, its associated channel indicator,
- said lenses being disposed relative to each other such that adjacent lenses partially overlap each other, whereby the effective lens area over which the image of an illuminated channel indicator is magnified includes the overlapping areas of adjacent lenses, thus increasing the extent of magnification of an image and reducing the total amount of space required on said plate for said lenses.



4,130,347
FINE-LINE DIFFRACTIVE SUBTRACTIVE COLOR FILTERS

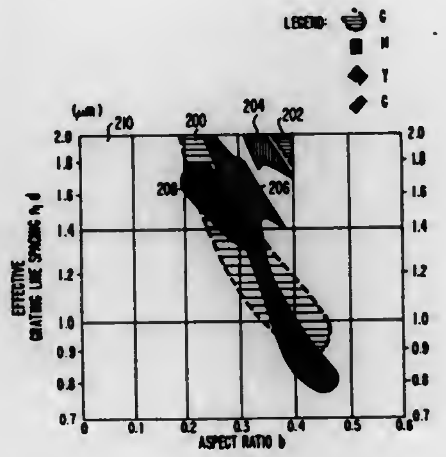
Karl Knop, Zurich, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Oct. 11, 1977, Ser. No. 841,057

Claims priority, application United Kingdom, Sep. 16, 1977, 44394/77

Int. Cl.^{2} G02B *5/18*

U.S. Cl. 350—162 R 40 Claims



1. In a fine-line rectangular-profile diffractive subtractive filter surrounded by a medium having an index of refraction n_1 and responsive to the illumination thereof with unpolarized white light for deriving zero diffraction order output light exhibiting a single one of the group of colors consisting of cyan, magenta, yellow and green, wherein said filter has a given line spacing d and said rectangular-profile has a given aspect ratio b and a given optical depth a; the improvement:
- wherein the respective values of n_1d and b define a point within a certain one of plot areas 200, 202, 204, 206 and 208 of FIG. 2.

4,130,348
OPTICAL SYSTEM FOR A COHERENT LIGHT ILLUMINATING SOURCE

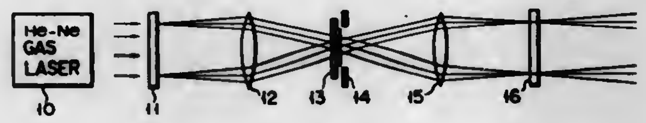
Masana Minami, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 630,497, Nov. 10, 1975, abandoned, which is a continuation of Ser. No. 506,853, Sep. 17, 1974, abandoned. This application Aug. 2, 1977, Ser. No. 821,192

Claims priority, application Japan, Sep. 18, 1973, 48-104559

Int. Cl.^{2} G02B *27/28*

U.S. Cl. 350—162 SF 6 Claims



O	O	O	π	O
O	O	O	π	O
O	O	O	π	O
π	π	π	O	π
O	O	O	π	O

1. An optical system for an object illuminating light source, comprising a source for emitting a collimated coherent light beam, means for converting the collimated light beam into a multiplicity of secondary collimated light beams travelling in different directions, a lens for focusing each secondary light beam at a unique convergence area in the focal plane of the lens and means located substantially at the focal plane for giving either one of "0"-relative phase or "π"-relative phase to each secondary light beam convergence area to cancel at a plane spaced from the phase giving means all interference fringes, created by the interference of the secondary light beams, except for those interference fringes caused by the secondary light beams incident on the lens having the greatest angle relative to the optical axis of the lens.

4,130,349
RETROFOCUS TYPE WIDE ANGLE LENS SYSTEM

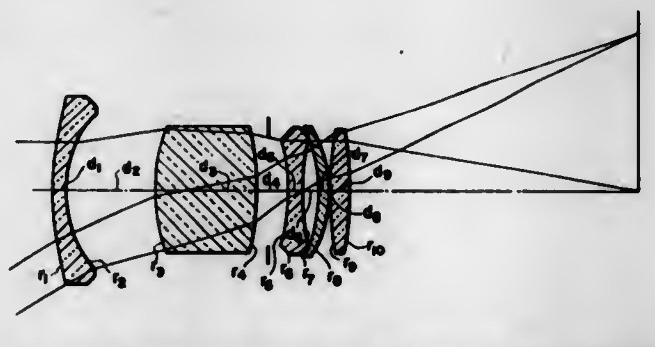
Kazushi Hyakumura, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1977, Ser. No. 784,796

Claims priority, application Japan, Apr. 6, 1976, 51-37849

Int. Cl.^{2} G02B *9/60*

U.S. Cl. 350—216 4 Claims



1. A retrofocus type wide-angle lens system comprising a first negative meniscus lens element, a second positive lens element, a third negative lens element, a fourth positive meniscus lens element and a fifth positive lens element, and said lens system satisfying the following conditions:

(1) $|r_3| < |r_1|$

(2) $0.12f < d_4 < 0.13f$

(3) $1.6d_4 < d_5 + d_6 + d_7 + d_8 + d_9 < 1.8d_4$

(4) $2.8d_4 < d_3 < 2.9d_4$

(6) $0.8 < |r_9|/|r_{10}| < 1.4$

wherein, the reference symbols r_1, r_3, r_9 and r_{10} represent radii of curvature on the object side surface of said first lens element, the object side surface of said second lens element and both surfaces of said fifth lens element, the reference symbols d_3, d_5, d_7 and d_9 designate thicknesses of the second, third, fourth and fifth lens elements respectively, the reference symbols d_4, d_6 and d_8 denote the airspaces between said second and third lens elements, between said third and fourth lens elements, and between said fourth and fifth lens elements respectively.

4,130,350
MEDIUM MAGNIFICATION OBJECTIVE FOR VIDEO DISKS

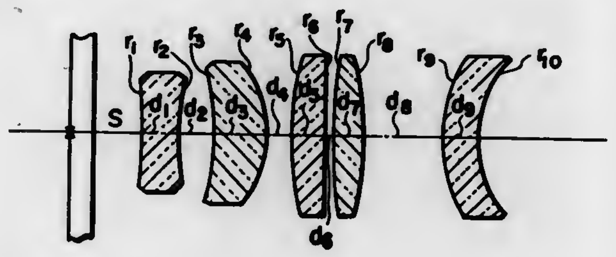
Toshimichi Koizumi, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 27, 1977, Ser. No. 801,249

Claims priority, application Japan, May 31, 1976, 51-63250; Jun. 4, 1976, 51-65303

Int. Cl.^{2} G02B *9/34, 9/60*

U.S. Cl. 350—216 7 Claims



1. A medium magnification objective for video disks comprising a first, second, third and fourth lens components, said first lens component being a negative lens, said second lens component being a positive meniscus lens with its concave surface positioned toward the object side, said third lens component having positive refractive power, said fourth lens component being a negative meniscus lens with its convex surface positioned toward the object side, said medium magnification objective for video disks satisfying the following conditions:

$$1.0 \leqq d_6/d_2 + d_4) \leqq 1.5 \qquad (1)$$

$$2.2 \leqq r_2/f \leqq 3.4 \qquad (2)$$

$$0.6 \leqq \left|r_3\right|/r_2 \leqq 0.9 \qquad (3)$$

$$0.51 \leqq r_{10}/f \leqq 0.63 \qquad (4)$$

$$2.7 \leqq \left|f_4\right|/\left|f_1\right| \leqq 3.7 \qquad (5)$$

wherein reference symbol r_2 represents the radius of curvature of the surface on the image side of the first lens component, reference symbol r_3 represents the radius of curvature of the surface on the object side of the second lens component, reference symbol r_{10} represents the radius of curvature of the surface on the image side of the fourth lens component, reference symbol d_2 represents the airspace between the first and second lens components, reference symbol d_4 represents the airspace between the second and third lens components, reference symbol d_6 represents the airspace between the third and fourth lens components, reference symbol f_1 represents the focal length of the first lens components, reference symbol f_4 represents the focal length of the fourth lens component and reference symbol f represents the focal length of the lens system as a whole.

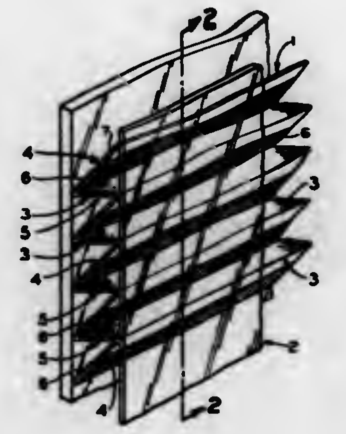
4,130,351
RADIO-CHROMIC COMBINED ABSORBING REFLECTING AND TRANSMITTING PANEL

Sergius N. F. Laboshez, 3530 Pinetree Terrace, Falls Church, Va. 22041

Filed Aug. 4, 1977, Ser. No. 821,703

Int. Cl.^{2} G02B *27/00*

U.S. Cl. 350—263 9 Claims



1. A radiant energy shade comprising
- a front panel;
- a rear panel;
- said panels being generally coextensive in length and width and facing toward each other;
- said front panel having a plurality of predetermined show areas arranged in a regular, repetitive, contoured pattern and a plurality of transparent shade areas between show areas;
- said show and shade areas being related to each other so that, when the front of the panel is exposed toward a source of radiation in certain predetermined angular relation to the source, the show areas are positioned to receive direct rays emitted from said source and to lie in ray intercepting relation between said source and the shade areas; and so that in other angular relations to the source, the show areas are in unintercepting relation to the shade areas so that the shade areas are exposed to, and receive, direct rays from the source;
- said show areas being opaque and reflective so as to intercept, and reflect forwardly, direct rays impinging thereon from the source in said predetermined angular relations, and to prevent direct rays from striking its shade areas; and
- said rear panel being of radio-chromic material, so as to darken where struck by said direct rays, and being spaced rearwardly from said shade areas throughout most of the extent of the shade areas and so as to be impinged upon, and caused to darken, by direct rays from said source through the shade areas in said other angular relations.

4,130,352
PORTABLE MICROFICHE READER WITH FOLDUP LENS AND MIRROR ASSEMBLY

John W. Overman, Colgate, and George V. Johnson, Oconomowoc, both of Wis., assignors to Bell & Howell Company, Chicago, Ill.

Filed Nov. 11, 1976, Ser. No. 741,007

Int. Cl.^{2} G03B *21/24*

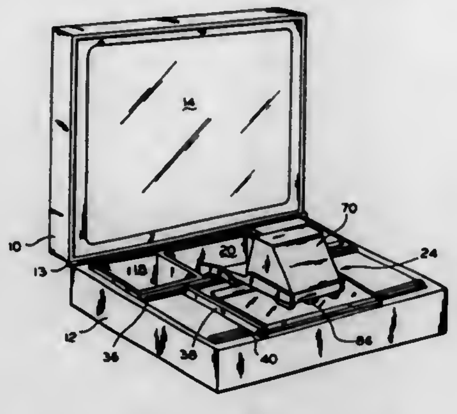
U.S. Cl. 353—79 8 Claims

1. A projector comprising:
- a bottom case portion and a top case portion,
- hinge means connecting said bottom and top case portions,
- a screen mounted within said top case portion,
- a transverse wall interior of said bottom case portion forming a light emitting area and a storage area,
- light source means in said light emitting area,
- means for completely enclosing said light emitting area

except for an opening for emitting said light in an upward direction,

housing means pivotally mounted to said transverse wall to allow said housing means to swing between a stored position in said storage area and an operating position over said light emitting area,

lens means mounted on said housing means to rest over said opening when said housing is in said operating position,



and means in said housing for reflecting light entering said lens means from said opening,

said reflecting means directing said reflected light onto said screen when said top case portion is swung on said hinge means to an upstanding position which is approximately vertical when said bottom case portion is horizontal.

4,130,353

PROJECTOR WITH CONTROLS FOR THE SLIDE CHANGER

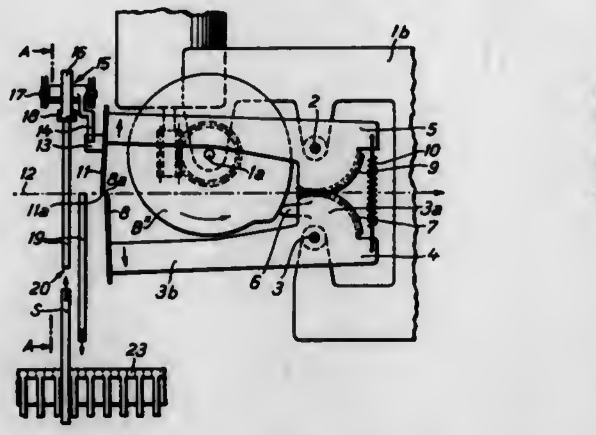
Kurt Henkelmann; Rolf Speier, both of Wissmar, and Wilhelm Schafer, Wetzlar, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Dec. 13, 1977, Ser. No. 860,204

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1976, 2657697

Int. Cl.² G03B *21/20, 23/04*

U.S. Cl. 353—85 **8 Claims**



1. In a slide changing apparatus for magazine slide projectors having slide pushrods driven by control means, one of said pushrods serving to insert the slides into an image aperture and the other to move back those slides that have been projected into the magazine, a transport path and a projecting stage located in a common plane and the insertion pushrod serving to insert slides along said path, a slide return path located alternatively on either side of said common plane, driving means transporter means actuated said driving means to transport a slide that has been projected from said projecting stage to said return path, and also to transport said magazine in the same direction, said other pushrod acting to move a slide that has been transported to said return path along said return path back to said magazine, said transporter means being operable alternatively to move a slide to either side of said common plane to give either a forward or reverse operation, said control means being operative so that the pushrods and the driving means operate to move a slide from the magazine to the projection stage, then to the return path, and then back to the magazine, the improvement comprising:

stop means (8,11) actuated by said control means, said control means comprising motor driven cams (B″, R″, S″, T″) with surfaces thereon for initiating closing of said stop means simultaneously with removal of a first slide from said projection stage and the movement of a second slide to said projection stage and initiating opening of said stop means after the complete closure of said stop means which coincides with the terminated insertion of said second slide, and interlocking means (14-18) provided in said projection stage (20) maintaining said stop means closed in change processes lacking slide insertion and means for overriding when said second slide is introduced or when said first slide is reinserted, said means for overriding acting through said slides themselves.

4,130,354

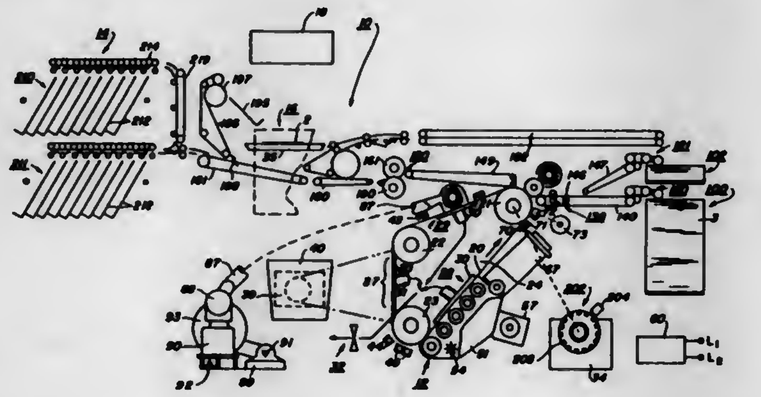
REPRODUCTION MACHINE HAVING DUPLEX JOB RECOVERY CAPABILITIES

Edward L. Steiner, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1977, Ser. No. 829,016

Int. Cl.² G03B *27/52;* G03G *15/00*

U.S. Cl. 355—26 **8 Claims**



8. In a reproduction machine for making duplex copies from side 1 and side 2 originals, the improvement comprising means for automatically adjusting the reproduction process in the event of a fault condition so that the selected number of copies are produced, said means including:

a first counter means for maintaining a running count of the number of exposures made of each original;

a second counter means for maintaining a running count of the number of successfully delivered copies of each original;

a first flag means for signalling that copies of the side 1 original are being made;

a second flag means for signalling that copies of the side 2 original are being made;

detector means for checking the condition of the first and second flag means in the event of a fault;

means for storing the contents of the second counter when the second flag signal is present at the time of the fault;

means for twice resetting the first and second counters with the stored contents of the second counter as the next two originals are presented to the machine;

means for successively representing the previous side 1 and side 2 originals to the machine; and

means for successively making a sufficient number of copies from said side 1 and side 2 originals to bring the count of said first and second counters equal to the number of copies selected thereby remaking the copies lost due to the fault.

4,130,355

PHOTOGRAPHIC CAMERA WITH AN AUTOMATIC EXPOSURE CONTROL ADAPTER UNIT DETACHABLY MOUNTED THEREON

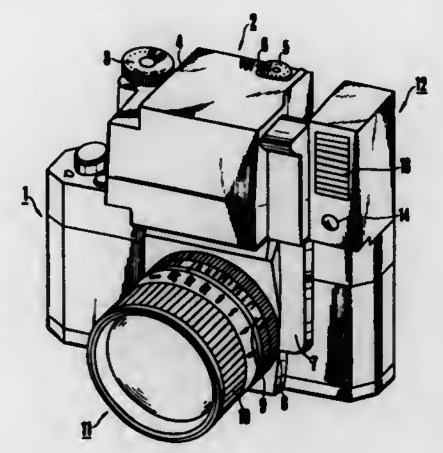
Shohei Ohtaki; Soichi Nakamoto, both of Machida; Tomonori Iwashita, Chofu; Yoshiaki Watanabe, Fujisawa, and Susumn Kozuki, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 575,003, May 6, 1975, abandoned. This application Nov. 9, 1976, Ser. No. 740,310

Claims priority, application Japan, May 7, 1974, 49-50499

Int. Cl.² G03B *7/16*

U.S. Cl. 354—33 **54 Claims**



1. A camera system comprising:

(a) a camera body unit having:
  (1) shutter means arranged to provide different exposure times;
  (2) exposure time setting means for said shutter means, said exposure time setting means being arranged to select an exposure time value and having a non-selecting position incapable of selecting any exposure time values beyond a selecting range thereof;
  (3) diaphragm means arranged to provide different aperture sizes;
  (4) aperture value setting means for said diaphragm means, said aperture value setting means being arranged to select an aperture value; and
  (5) detecting means for detecting a state of preparation for flash photographing;

(b) a flash unit for the flash photographing, said flash unit having:
  (1) flash light emitting means for emitting a flash light to an object to be photographed; and
  (2) light responsive means arranged to receive the flash light emitted from said emitting means and then reflected from said object, said responsive means providing an electrical signal when receiving said reflected flash unit; and

(c) a control unit for automatic exposure, said control unit having:
  (1) light measuring means for measuring the brightness of said object, said measuring means providing an electrical output representing the object brightness;
  (2) exposure time fixing means for fixing the exposure time at a value suitable for the flash photographing;
  (3) exposure control circuit means for determining a proper exposure value, said circuit means being arranged to selectively receive the electrical output of said light measuring means, exposure time value information set by said exposure time setting means, exposure time value information fixed by said exposure time fixing means, aperture value information set by said aperture value setting means and the electrical signal provided by said light responsive means and arranged to be selectively operable according to the following three operation modes:
    (i) a first operation mode in which said circuit means determines a proper aperture value on the basis of the electrical output of said light measuring means and the exposure time value information set by said exposure time setting means and controls said shutter means according to the exposure time value information set by the exposure time setting means;
    (ii) a second operation mode in which said circuit means determines a proper exposure time value on the basis of the electrical output of said light measuring means and the aperture value information set by said aperture value setting means and controls said shutter means according to the determined proper exposure time value information; and
    (iii) a third operation mode in which said circuit means determines the light amount to be emitted from said flash unit on the basis of the aperture value information set by said aperture value setting means and the electrical signal provided by said light responsive means and controls said shutter means according to the exposure time value information fixed by said exposure time fixing means; and
  (4) mode selecting means for selecting the operation mode of said circuit means between said first and second operation modes, said mode selecting means being operatively associated with said exposure time setting means and setting the operation mode of the circuit means to said first operation mode when the exposure time setting means is at a selecting position within said selecting range while setting the operation mode of the circuit means to said second operation mode when the exposure time setting means is at said non-selecting position;

said detecting means of the camera body unit detecting the state of preparation for the flash photographing of said flash unit and changing the operation mode of said circuit means from said second operation mode to said third operation mode by connecting said exposure time fixing means to the circuit means while disconnecting said light measuring means from the circuit means in the state of said second operation mode when detecting the completion of preparation for the flash photographing of the flash unit;

whereby automtic exposures according to exposure time preselection mode, aperture value preselection mode and flash photographing mode are made possible.

4,130,356

CAMERA WITH BUILT-IN FLASH DEVICE

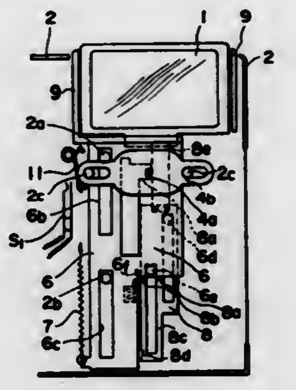
Akira Yamanaka, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 17, 1977, Ser. No. 842,763

Claims priority, application Japan, Oct. 26, 1976, 51-143126[U]

Int. Cl.² G03B *15/03*

U.S. Cl. 354—145 **7 Claims**



1. In a camera including a camera body of compact size, a flash device carried by the camera body and including a light emitting portion housed in a casing which is movable between a retracted position substantially contained within said camera body, and an extended operative position in which said light emitting portion projects beyond said camera body and means for releasably retaining said light emitting portion respectively

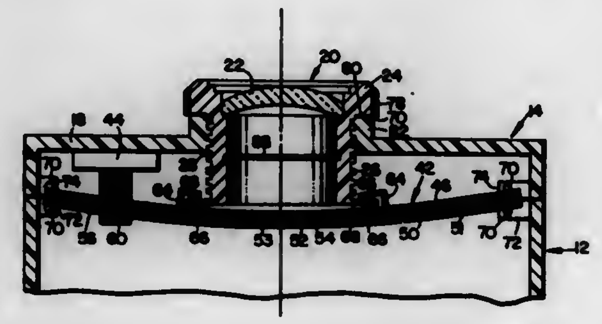
at said retracted and said extended positions, the improvement comprising:

a first elongated plate member slidable relative to said camera body from a first retracted to a second extended position;
a second elongated plate member carried on said first plate member and slidable relative to said first plate member from a first retracted to a second extended position, said second plate member being coupled at one end thereof to said casing, said first and second plate members being movable substantially in the same direction, and said casing being at its retracted position when both plate members are at their respective first positions, and at its extended position when both plate members are at their respective second positions, whereby said light emitting portion is movable a distance substantially equal to the sum of the distance of movement of said first and second plate members.

4,130,357
FLEXIBLE SHUTTER FOR PHOTOGRAPHIC CAMERA

Irving Erlichman, Wayland, and William T. Plummer, Concord, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jul. 18, 1977, Ser. No. 816,486
Int. Cl.² G03B *9/28, 9/40*
U.S. Cl. 354—241 **11 Claims**

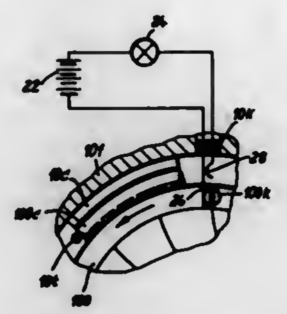


1. A photographic camera comprising:
a housing;
means within said housing for locating a film unit at an exposure position;
optical means, including at least one optical lens element having an optical axis, on said housing for forming a real image of a scene to be photographed on a film unit located at said exposure position;
actuable means for effecting the displacement of said lens element along its said optical axis for purposes of focusing said camera;
an aperture defining, flexible, elongated blade mechanism; and
means for mounting said blade mechanism for movement between a first arrangement wherein it blocks image carrying light rays from the scene being photographed from reaching the film unit and a second arrangement wherein it defines its said aperture through which such light rays may pass to effect exposure of the film unit, and for automatically flexing said blade mechanism responsive to the operation of said actuable means to maintain a substantially constant distance between said aperture defined by said blade mechanism and said displaceable lens element during all exposure operations of said camera regardless of variations in camera-to-scene distances between different exposure operations.

4,130,358
PHOTOGRAPHIC CAMERA WITH INTERCHANGEABLE LENS

Rudolf Lang, Grafing Bahnhof, and Gerhard Schwarz, Munich, both of Germany, assignors to Carl Zeiss Stiftung, Heidenheim on the Brenz, Germany

Filed Nov. 8, 1976, Ser. No. 739,642
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1975, 2551571
Int. Cl.² G03B *17/00*
U.S. Cl. 354—289 **7 Claims**

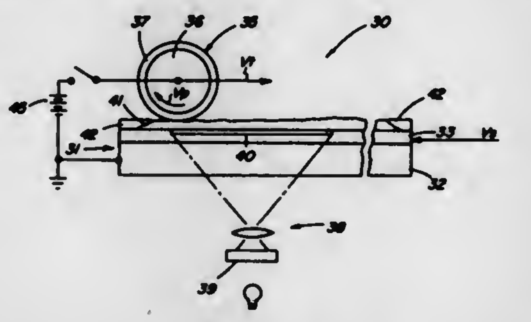


1. A photographic camera having a camera body and an interchangeable lens movable relative to said body from a first position fully seated on and engaged with said body to a second position disengaged from said body and ready to be removed from said body, said camera comprising electric warning signal means, an electric circuit for operating said signal means, a first switch in said circuit, and means responsive to the position of said interchangeable lens for closing said switch to activate said signal means when said interchangeable lens moves away from its said first position.

4,130,359
ELECTROPHORETIC MIGRATION IMAGING APPARATUS AND METHOD UTILIZING ENLARGED MIGRATION ENVIRONMENT

Carl F. Groner, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 708,243, Jul. 23, 1976, abandoned. This application Jun. 9, 1977, Ser. No. 805,217
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 P **23 Claims**

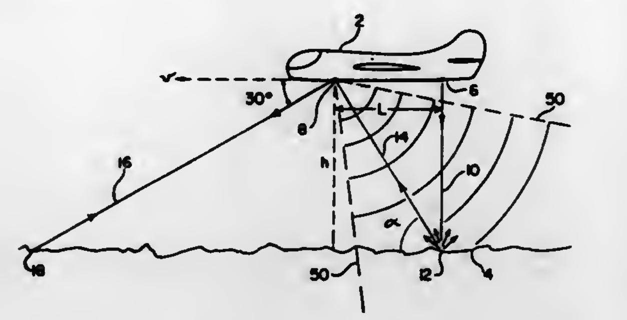


18. A method of electrophoretic migration imaging comprising:
(a) providing an imaged and non-imaged electrode in spaced relation with an imaging dispersion of electrophotosensitive pigment particles therebetween and an electrical field thereacross for producing a migration of imaging particles; and
(b) directing a radiation pattern corresponding to an image to be reproduced onto said imaged electrode with a substantially zero relative velocity therebetween, while providing a substantially enlarged migration environment to said imaged electrode.

4,130,360
LASER ALTIMETER/PROFILOMETER APPARATUS

Terence H. Courtenay, Ste-Foy, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Jan. 17, 1977, Ser. No. 760,037
Int. Cl.² G01C *3/08*
U.S. Cl. 356—4 **18 Claims**

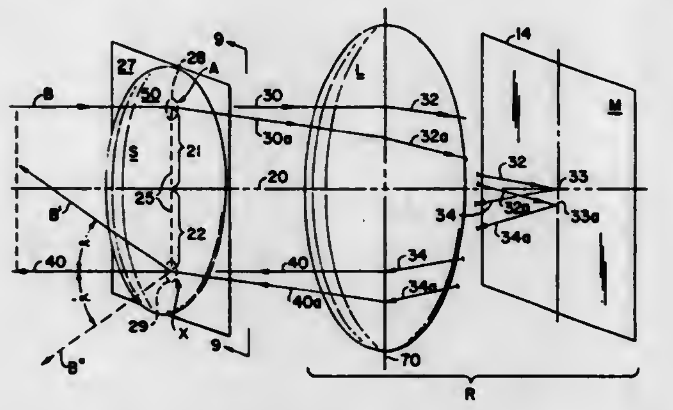


1. Apparatus located on a moving object for determining its distance from a point in a reflecting surface, comprising:
(a) an unmodulated CW laser transmitter for directing a narrow CW laser beam towards said surface,
(b) a laser receiver for receiving resultant signals reflected for said surface,
(c) first means for heterodyning the received signals with at least a part of the transmitter laser beam output signals to determine the optical doppler frequency by which the received signals are doppler shifted with respect to the frequency of the transmitter laser beam output signals, said optical doppler frequency being determined from the angle α between a reference line and an imaginary line joining said surface and said receiver said transmitter and said receiver being a fixed distance apart, and
(d) second means for utilizing the determined signals at the optical doppler frequency to calculate the distance of said moving object from said surface.

4,130,361
LENS METER WITHOUT RELATIVELY MOVING OPTICAL PARTS

William E. Humphrey, Orinda, Calif., assignor to Humphrey Instruments, Inc., San Leandro, Calif.

Filed Jun. 6, 1977, Ser. No. 804,034
Int. Cl.² G01B *9/00*
U.S. Cl. 356—125 **23 Claims**

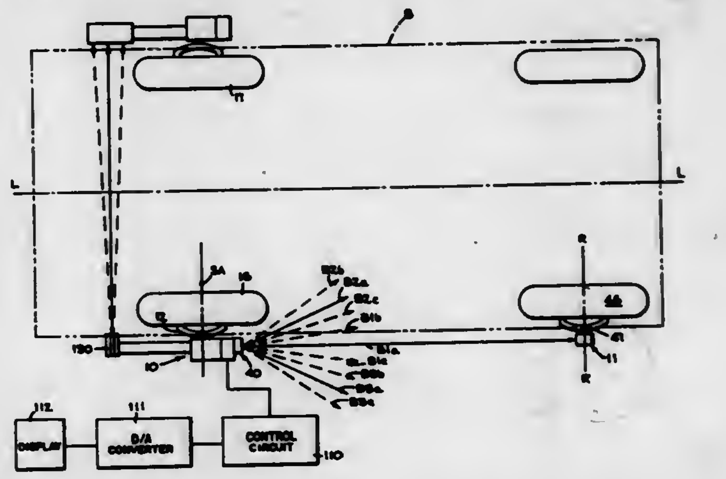


1. A lens meter for measuring a suspect lens comprising: at least one light source having means for emanating a substantially collimated beam of light; a retroreflecting means having optical axis, said retroreflecting means including an entrant aperture aligned to receive light from said light source and displaced from the optical axis of said retroreflector to image a real image of said entrant aperture to an exit aperture at a conjugate location of said retroreflector in a plane including the axis of said retroreflector and said entrant aperture; said retroreflector means further including means for reflecting light exiting said retroreflector at a known angularity with respect to the angularity of light entrant the retroreflector through said entrant aperture; means for placing a suspect lens proximate to said entrant aperture and said imaged exit aperture and means for measuring the changed angular deviation of light exiting said image of said entrant aperture due to the deflection of said suspect lens to determine a first power of said suspect lens.

4,130,362
APPARATUS FOR DETERMINING STEERING POSITIONS OF THE FRONT WHEELS OF A VEHICLE

Melvin H. Lill, San Jose, and James L. Wiederrich, Lodi, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Sep. 19, 1977, Ser. No. 834,637
Int. Cl.² G01B *11/26*
U.S. Cl. 356—152 **10 Claims**

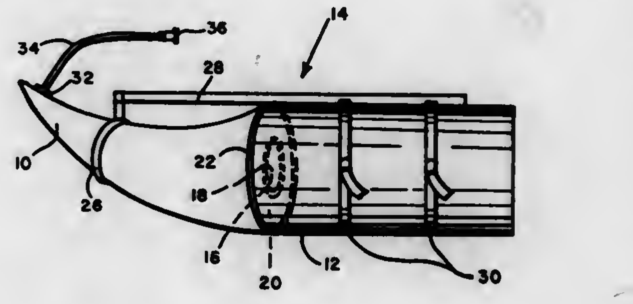


10. In a wheel aligner of the type in which optical projection apparatus is mounted on a steerable wheel of a vehicle for determining alignment conditions of said wheel, the improvement wherein said apparatus comprises projector means for simultaneously projecting a first beam and a second beam, said first beam being projected at a first angle fixed in relation to the plane of said steerable wheel, said second beam being projected at a selected angle in relation to said first beam in a plane generally normal to the plane of said steerable wheel, and beam receiving means optically spaced from said projector means for sequentially receiving said first and second beams as said wheel is steered through a turn angle equal to said selected angle between said first and second beams.

4,130,363
LASER DUMMY LOAD

Danny Graham, Rte. 1, Box 15, Alamogordo, N. Mex. 88310

Filed Jan. 11, 1977, Ser. No. 758,514
Int. Cl.² G01J *1/40, 1/42*
U.S. Cl. 356—225 **10 Claims**

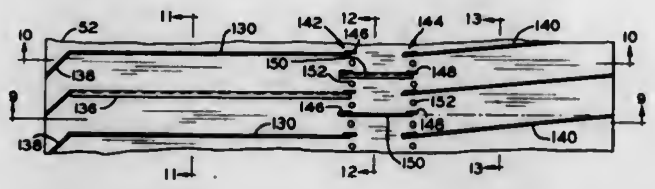


1. A laser dummy load comprising:
a generally frusto-concial hollowed member fabricated from laser energy absorptive material;
means for attaching the member to a laser housing;
means for detecting laser energy signals within the member; and

means for connecting the detecting means to an apex portion of the member and for preventing direct reflection of the incident laser light energy back to the laser housing.

4,130,364
METHOD AND PORTABLE APPARATUS FOR TREATING ASPHALT PAVING MATERIAL

Ralph E. Brown, 7428 Kingsway Dr., Fort Wayne, Ind. 46819
Filed Apr. 28, 1977, Ser. No. 791,717
Int. Cl.^{2} B28C *5/20, 5/42;* **B01F** *15/06, 9/06*
U.S. Cl. 366—4 **34 Claims**



1. Portable apparatus for treating asphalt paving material comprising:

a wheeled frame,

an elongated drum having a cylindrical inner surface, an inlet at the forward end thereof and an outlet at the opposite rear end thereof, and being supported on said frame with its longitudinal axis extending lengthwise of said frame,

means carried by said frame for rotating said drum in a given direction about its longitudinal axis,

material feed means communicating with said inlet,

burner means mounted at said drum outlet for directing a stream of hot gases centrally through said drum toward said forward end,

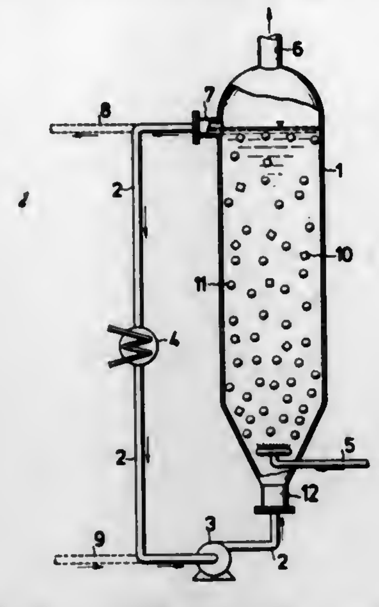
means comprising a plurality of first flights secured to said drum inner surface for raising said asphalt paving material from the lower portion of said drum and then dropping said material in a vertical stream so that it passes through the stream of hot gases while at the same time conveying the material rearwardly at a first rate as said drum rotates, said vertical stream of material being spaced from said drum longitudinal axis by a first horizontal distance, and

means comprising a plurality of second flights secured to said drum inner surface rearwardly of said first flights for raising asphalt paving material from the lower portion of said drum and then dropping said material in a vertical stream while at the same time conveying the material rearwardly at a faster rate than the first rate, said last-mentioned vertical stream of material being spaced from said drum longitudinal axis by a second horizontal distance, said second distance being greater than said first distance so that the material does not pass directly through the stream of hot gases in the rearmost portion of said drum.

4,130,365
MASS TRANSFER IN LIQUID MEDIA

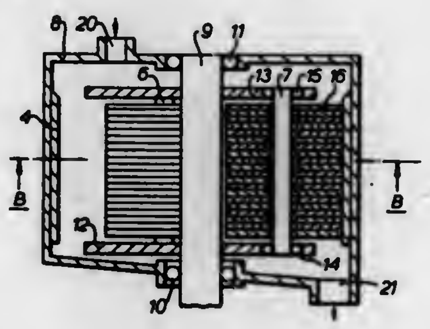
Wolfgang Sittig, Hofheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Feb. 28, 1977, Ser. No. 772,574
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1976, 2608480
Int. Cl.^{2} B01F *5/10*
U.S. Cl. 366—137 **5 Claims**

1. In a process for transferring mass in liquid media with the aid of inert solid particles having a higher specific gravity than the liquid medium, the improvement which comprises the steps of adding solid particles to the liquid medium in an amount of from 0.1 to 10% by volume and maintaining said solid particles in suspension in the liquid medium throughout substantially the entire volume thereof by imparting to the liquid medium a substantially continuous movement by circulating the liquid medium in a loop shaped flow path.



4,130,366
HOMOGENIZATION METHOD

John R. G. Braddyll, Kirby-in-Furness; Joseph H. Aubrey, Barrow-in-Furness; Ernest A. Shaw, Barrow-in-Furness, and Ian Palmer, Barrow-in-Furness, all of England, assignors to Vickers Shipbuilding Group Limited, Cumbria, England
Filed Oct. 17, 1977, Ser. No. 843,029
Claims priority, application United Kingdom, Jul. 8, 1977, 28859/77
Int. Cl.^{2} B01F *7/00*
U.S. Cl. 366—288 **11 Claims**



1. A method for the homogenization as defined herein of mutually insoluble liquids or liquid(s) and solid(s) which comprises

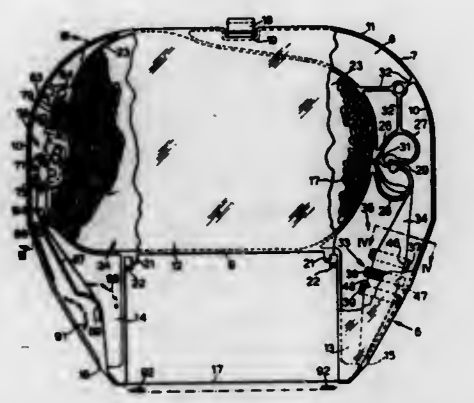
supplying the substances to be homogenized between cooperating surfaces, one of which surfaces is afforded by the internal circumferential surface of a homogenization chamber and the other of which surfaces is afforded by the external circumferential surface of the first of a coaxial stack of discs whose edges are cylindrical or part spherical, which discs are rotatable about their common axis so as to roll around the internal circumferential surface of the homogenization chamber thereby defining on the said internal surface a path of rolling for the discs;

causing the substances to pass the path of rolling of the discs so as to cause disintegration of a phase or phases insoluble in the liquid or one said liquid between the discs and said circumferential surface in the region of the point of rolling engagement as the substances pass under gravity down through the homogenization chamber; and

withdrawing the homogeneous liquid obtained from the other end of the chamber beyond the path of rolling of the discs, the discs being unrestrained mechanically against movement towards and away from the internal surface of the chamber throughout their rolling motion and the pressure between them and the chamber surface being produced solely by centrifugal force.

4,130,367
CARTRIDGE FOR AN ENDLESS INKED RIBBON FOR PRINTING OFFICE MACHINES

Giampaolo Guerrini, Ivrea, and Mario Trompetto, Mercenasco, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy
Filed Nov. 18, 1975, Ser. No. 632,910
Claims priority, application Italy, Nov. 18, 1974, 70359 A/74
Int. Cl.^{2} B41J *33/10*
U.S. Cl. 400—195 **16 Claims**

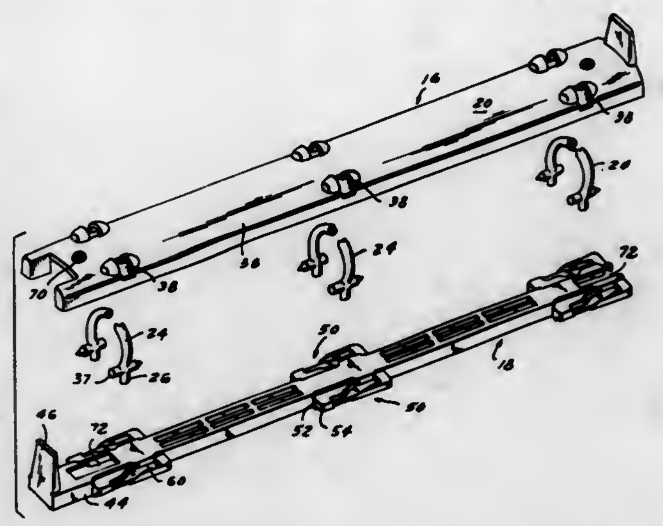


1. An endless inked ribbon cartridge removably mountable in a printing machine of the type comprising a motive shaft for feeding the inked ribbon; said cartridge including a container having a bottom wall and a top wall; an endless inked ribbon disposed in loops and distributed at random in the interior of said container; a first gear assembly having a shaft rotatably mounted in said container between said bottom and said top walls; a connection portion removably engageable with said motive shaft for being driven thereby; a second gear assembly rotatably mounted in front of said first gear assembly and comprising two gears fixed on a common shaft, and two projections projecting outside said two gears; spring means urging said second gear assembly toward said first gear assembly perpendicular to said shaft to nip a portion of said inked ribbon between said first gear assembly and said two gears for feeding the inked ribbon in response to the driving of said motive shaft; slot means adjacent said bottom and said top walls for slidably engaging said two projections and so oriented as to provide movement of said second gear assembly toward and away from said first gear assembly along a plane coplanar to the shaft of said first gear assembly through different inclinations of said two gears with respect to said first gear assembly; and means pivotally connecting said spring means to said common shaft for uniformly distributing the force of said spring means to each of said two gears whatever the inclination of said two gears with respect to said first gear assembly along said plane, wherein said common shaft comprises two surfaces intermediate said two gears which converge toward one another, and said connecting means comprises an element urged by said spring means and bearing on said common shaft intermediate said two gears.

4,130,368
PLASTIC LOOSELEAF BINDER RING ASSEMBLY

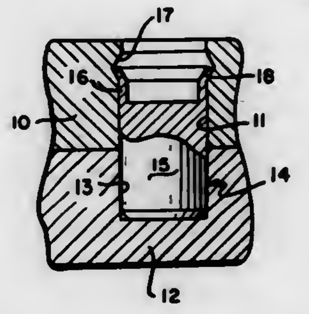
Ian H. Jacoby, Franklin Lakes, N.J., and Roland V. Bangha, Middletown, N.Y., assignors to Filtronics Ltd., Middletown, N.Y.
Filed Oct. 28, 1977, Ser. No. 846,447
Int. Cl.^{2} B42F *3/04*
U.S. Cl. 402—41 **16 Claims**

1. In a looseleaf binder ring assembly comprising a one-piece backbone formed of a resilient plastic material and having a plurality of pairs of cooperating fingers mounted thereon, the fingers of each pair facing one another and being movable between open and closed positions with respect to each other; a slide bar slidably mounted in said backbone for movement between first and second positions with respect to the backbone, corresponding respectively to the open and closed positions of said fingers, said slide bar having a plurality of pairs of oppositely facing cam surfaces formed thereon associated with each of said pair of fingers; said surfaces being respectively placed in engagement with their associated finger when said base is moved between its first and second positions; one of said surfaces of each pair engaging its associated finger and holding it in its open position when said bar is in its first position and the other of said surfaces of each pair engaging its associated finger and holding it in its closed position when said bar is in its second position; wherein the improvement comprises said fingers being separately formed from said backbone and each having at least one pivot pin integrally formed thereon extending transversely thereof, said backbone having a plurality of downwardly opening pockets formed therein pivotally receiving and engaging said pivot pins, said pockets having an arcuate extend of less than 180° thereby to retain said pivot pins in the pockets while allowing pivotal movement thereof.



4,130,369
DOWEL PIN

Thaddeus A. Wojcik, Greensburg, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Sep. 27, 1977, Ser. No. 837,254
Int. Cl.^{2} F16B *13/00*
U.S. Cl. 403—297 **3 Claims**

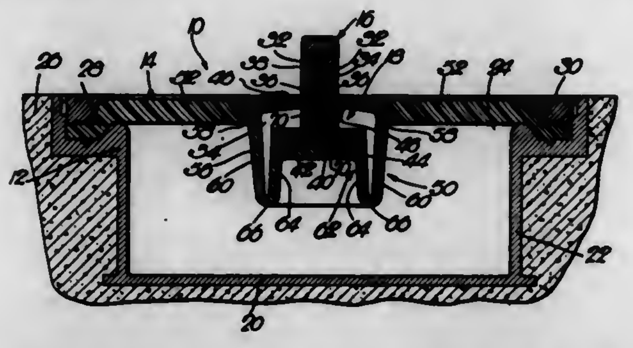


1. In combination, a substrate member and a member to be immobilized with respect thereto, at least one of the members having a through hole therein and the other member having at least a blind hole therein, said holes being in registry, an interior groove near the exterior surface of each member having a through hole therein and in the surface of said through hole, a self-locking dowel pin press fit into the holes to tie the two members together, said dowel pin having a solid shaft portion and a thin wall internally expandable extension section of the same diameter as the solid shaft portion of the pin on each end of the dowel pin facing an open hole, said thin wall extension

being crimped into the groove to form a rib of uniform thickness the same as the extension and conforming to the shape of the groove, with the free end of said extension being tuck welded in place.

4,130,370
LIGHT-REFLECTIVE ROAD MARKER OF SELF-CLEANING TYPE

Elliott H. Kone, Branford, Conn., assignor to Traffic Standard Incorporated, Branford, Conn.
Filed Nov. 14, 1977, Ser. No. 850,913
Int. Cl.² E01F *9/00*
U.S. Cl. 404—11 **3 Claims**

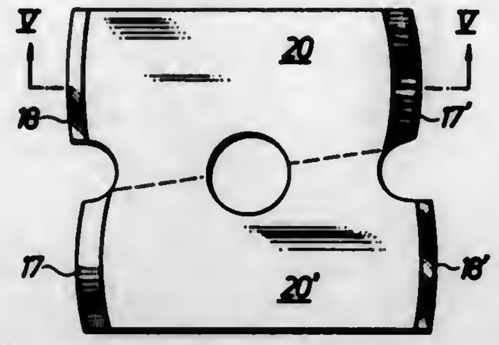


1. A road marker, comprising a cup-like casing with an open top, a rigid elongated lens with substantially parallel opposite light-reflective faces and a base, and a molded resilient diaphragm peripherally mounted on said casing top and extending thereacross in covering relation therewith, with said diaphragm providing a flat web extending inwardly from the mounted diaphragm periphery, a pair of wiper blades, and a lens suspension system, of which said system comprises a recess in said web formed by a first depending endless oval skirt on and continuous with said web and providing spaced opposite side legs, and an inverted channel in said recess having a base and a therefrom depending second endless skirt, with said skirts having lower ends and being thereat continuous with each other and said second skirt being normally infolded on said first skirt, said lens being mounted with its base on said channel base for normal upright lens disposition, and said wiper blades being continuous with said skirt legs and extending substantially coplanar with said web into contact with said lens faces, with said channel base being at a level at which the mounted lens at rest projects above said casing top and said wiper blades contact said lens faces next to said lens base, whereby on passage of an automotive wheel over said mounted lens the latter is depressed with ensuing resilient distortion of said channel with its skirt turned inside-out and into downward extension on said first skirt, and snap-return of said channel with its base to said level on recovery of said channel from its resilient distortion with ensuing wiping of said lens faces by said wiper blades.

4,130,371
CUTTING INSERT AND ROTARY CUTTER TOOL

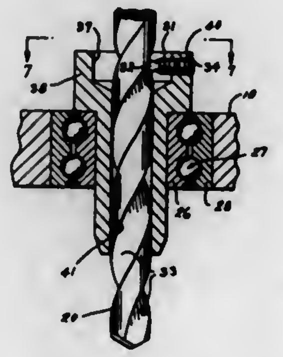
Rudolf Druxeis, Landshut, Germany, assignor to Sandvik Aktiebolag, Sandviken, Sweden
Filed Jul. 11, 1977, Ser. No. 814,843
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1976, 2631666
Int. Cl.² B26D *1/00;* B23B *51/00*
U.S. Cl. 407—114 **10 Claims**

1. Cutting insert for chip cutting operations comprising opposed top and bottom surfaces and side surfaces located therebetween, characterized in that at least one of said side surfaces being composed of two surface portions displaced at a fixed distance, the first surface portion (16) intersecting with said top surface to define a cutting edge (18) whereas the second surface portion (17) defines a guide support displaced towards the center of the insert at a fixed distance from said cutting edge corresponding to the cutting depth desired.



4,130,372
GUIDE BUSHING FOR ROTARY TOOL

Augustin Vugrin, 16645 Martha Dr., Brookfield, Wis. 53005
Filed Apr. 27, 1977, Ser. No. 791,235
Int. Cl.² B23B *49/00*
U.S. Cl. 408—72 R **2 Claims**

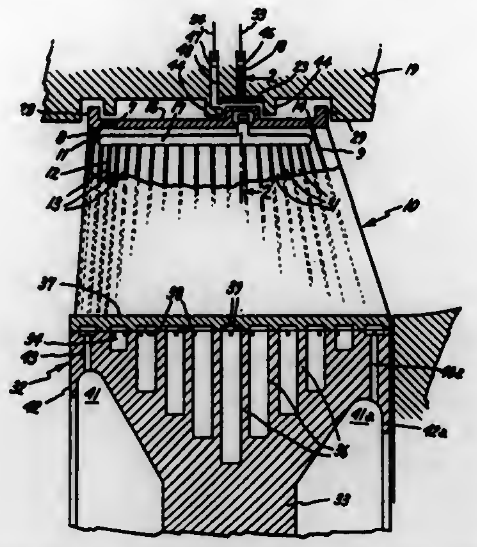


1. In a rotary tool assemblage, an axially movable rotary tool having flutes, means for holding a workpiece for engagement by said tool in a predetermined manner, a guide bushing rotatably supported and interposed between the tool and the workpiece, said bushing having a bore to guide and pilot the tool in the direction of the workpiece, said bore in the guide bushing being enlarged at the entry end thereof to provide a shoulder spaced from said end, and set screw means to rotationally interlock the guide bushing and tool while providing for relative axial movement therebetween, said set screw means being secured in the bushing and projecting into the enlarged bore portion for engagement within one of the flutes of the tool in spaced relation from the shoulder, said enlarged bore portion serving to provide relief for any chip material carried by the flutes of the tool into the guide bushing and deflected by the interlocking set screw means.

4,130,373
EROSION SUPPRESSION FOR LIQUID-COOLED GAS TURBINES

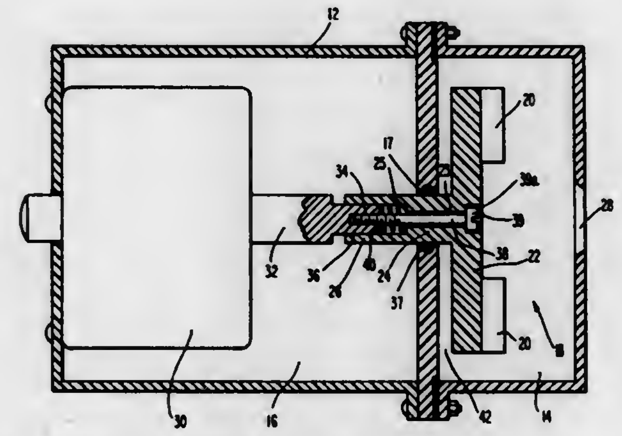
Walter B. Giles, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Nov. 15, 1976, Ser. No. 741,615
Int. Cl.² F01D *5/18*
U.S. Cl. 415—1 **8 Claims**

1. A method of reducing erosion of the inner surface of a gas turbine housing due to slamming of droplets of liquid coolant thereagainst, comprising: coating the surface over a defined region of the housing, said defined region extending circumferentially around said housing and having a limited dimension in the direction of the axis of rotation of said turbine with a circumferentially-continuous film of liquid coolant to absorb at least a portion of the kinetic energy of said droplets, and controllably maintaining said film between predetermined thickness limits substantially throughout normal operation of said gas turbine by detecting the film thickness at two spaced locations and drawing off liquid coolant from said region in response to detecting a predetermined difference in the film thickness at said two spaced locations.



4,130,374
CENTRIFUGAL PUMP ASSEMBLY

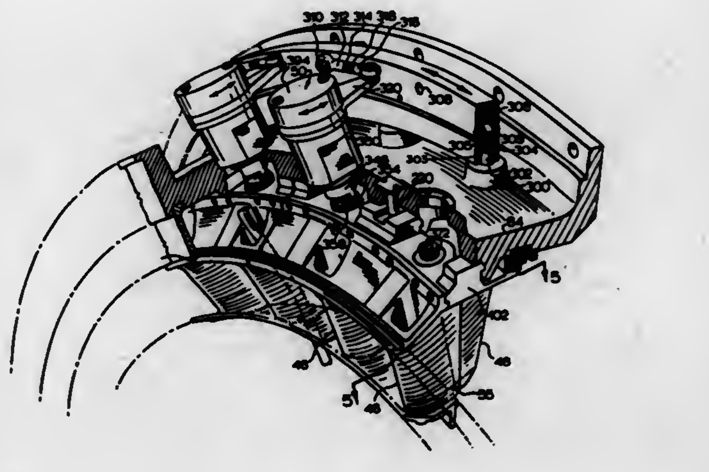
Douglas J. Bingler, Furlong, Pa., assignor to Milton Roy Company, St. Petersburg, Fla.
Filed Aug. 10, 1977, Ser. No. 823,262
Int. Cl.² F01D *7/00*
U.S. Cl. 415—131 **9 Claims**



1. A centrifugal pump assembly comprising:
- a pump housing defining an impeller chamber therein;
- a motor shaft, one end of which projects towards said chamber;
- an impeller having a blade portion and a hub portion, said hub portion having a bore therethrough and a recess therein, said blade portion being separated from said housing by a predetermined distance said distance equaling the depth of said recess;
- a fastening means projecting through said bore to said end for mounting said impeller to said shaft, said fastening means having a head portion adapted to be received within said recess; and
- a spring means biasing said impeller away from said shaft and toward the interior of said chamber.

4,130,375
VANE ROTATOR ASSEMBLY FOR A GAS TURBINE ENGINE

John Korta, Stoney Creek, Canada, assignor to Westinghouse Canada Ltd., Hamilton, Canada
Continuation of Ser. No. 694,928, Jun. 11, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 840,898
Claims priority, application Canada, Oct. 14, 1975, 237571
Int. Cl.² F01D *17/16, 1/04, 9/04;* F01B *25/10*
U.S. Cl. 415—161 **2 Claims**



1. A vane rotator assembly for a set of rotatable trailing vane tips in a gas turbine engine, comprising, a turbine casing having a series of substantially evenly spaced apertures located directly radially outwardly from said vane tips, each vane tip being provided with a pair of bearings in said turbine engine to permit rotation of said vane tip, each vane tip further having a projection provided therein to receive coupling means from a vane activator, vane rotation control means comprising a pair of coaxial annular members mounted in concentric relationship on said casing, a first annular member of said pair being mounted on said casing on a series of radial extending dowels mounted on said casing at substantially equidistantly spaced intervals, said first annular member extending around said casing in such a manner as to receive said dowels in an interior slot provided in said first member, said first annular member being restrained from rotation around said casing, said interior slot being of sufficient depth to permit said dowels to move outwardly during operation of said turbine without substantial deformation of said first annular member, said first annular member having a shallow groove on the outward side thereof extending around said first annular member, a second annular member of said pair having roller means mounted therein, said roller means cooperating with said shallow groove in said first annular member to permit said second annular member to rotate about said first annular member, locking means provided to lock said second member at any selected position with respect to said first annular member, said second member having a predetermined number of anchor pivots mounted thereon at evenly spaced intervals around the circumference thereof, a series of upstanding vane activators mounted on said casing in each of said spaced apertures in said casing, each of said upstanding vane activators having a pivot arm extending therefrom with a pivot joint at the end thereof, said anchor pivots and said pivot joints being intercoupled by an arm of adjustable length, said pivot arm being coupled to said projection of said vane tips by an intermediate assembly which is secured to said projection, said intermediate assembly having spring means to bias said vane in an outward direction, said intermediate assembly also being arranged to seal said apertures in said housing.

4,130,376

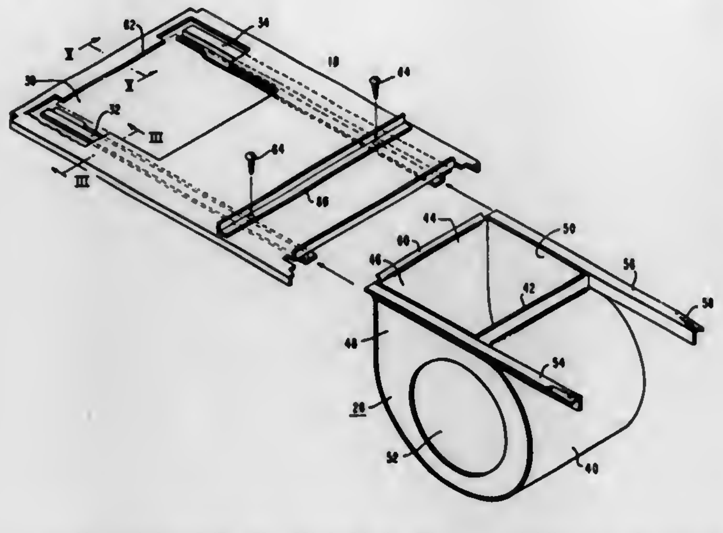
FAN MOUNTING ARRANGEMENT

Robert J. Dietsche, Elyria, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 23, 1977, Ser. No. 809,351

Int. Cl.² F01D *25/24*

U.S. Cl. 415—219 C **5 Claims**



1. In a centrifugal fan mounting arrangement of the type in which slide rails on the fan housing are received in sliding relation by track means underlying a base plate provided with an opening to register with the discharge opening of the fan, the improvement comprising:

flange means at the edge of the discharge opening of the fan housing which leads as the fan housing is slid in a front-to-rear direction along the base plate toward its installed position, said flange means projecting from said housing in said leading direction;

upwardly directed ramp means associated with said track means for lifting the leading edge of said fan before it reaches its final position as it is being slid, so that said flange means will clear and overlie the marginal portion of the base plate bounding the rear edge of the opening in the base plate; and

means for fastening said slide rails to said base plate at points on the front side of said discharge opening.

4,130,377

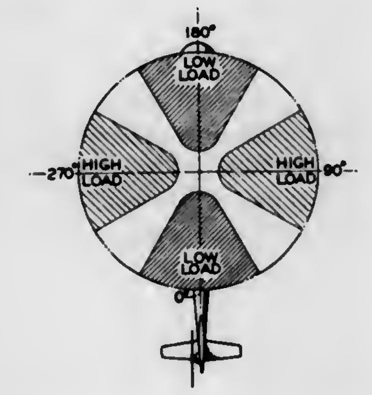
HELICOPTER BLADE AND ROTOR

Robert H. Blackwell, Jr., Derby, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 13, 1977, Ser. No. 815,613

Int. Cl.² B64C *27/38, 27/46*

U.S. Cl. 416—132 R **10 Claims**



1. A helicopter blade fabricated to be torsionally compliant throughout a portion of the blade span and so that the blade aerodynamic center axis is selectively positioned chordwise forward of the blade center of gravity and elastic axes for a selected portion of the blade span to thereby produce two per rev torsional twisting of the blade due to aerodynamic loading thereof in operation and thereby selectively vary the blade angle of attack.

4,130,378

SIDE PROPELLERS FOR THE PROPULSION OF FAST BOATS AND AIRCRAFT

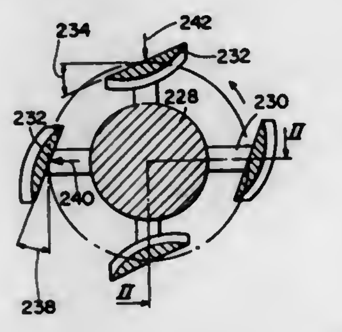
Horst Eichler, Auf dem Sande 12, 54-Koblenz-Pfaffendorf, Fed. Rep. of Germany

Filed May 26, 1976, Ser. No. 690,275

Claims priority, application Fed. Rep. of Germany, May 26, 1975, 2523180

Int. Cl.² B63H *1/16*

U.S. Cl. 416—175 **1 Claim**



1. A propeller for providng forward thrust to a body travelling at relatively high speed through a surrounding fluid medium, comprising:

(a) a propeller hub having an axis of rotation;

(b) a plurality of airfoil surfaces mounted to and distributed radially about said hub; the position of each said airfoil surface being defined by first and second pitch angles, respectively, said first pitch angle being the angle in the rotation direction between the profile longitudinal axis of said airfoil surface and a tangent on the circular arc described by the rotation of said airfoil surface about said propeller shaft, and said second pitch angle being the angle between the profile transversal axis of said airfoil and said axis or rotation, said second pitch angle being less than 90°, whereby the volume described by said rotation propeller is substantially conical in shape and wherein a large volume of said fluid medium is accelerated only slightly by said propeller, thereby resulting in a relatively high level of propeller efficiency; and

(c) peripherally adjacent airfoil surfaces having oppositely oriented first pitch angles with respect to their tangents and oppositely oriented second pitch angles with respect to the axis of rotation, so that alternate airfoil surfaces will direct fluid radially outward, whereas the remaining airfoil surfaces will direct the fluid radially inward.

4,130,379

MULTIPLE SIDE ENTRY ROOT FOR MULTIPLE BLADE GROUP

Albert J. Partington, Media, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

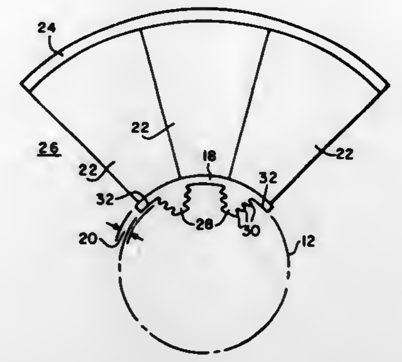
Filed Apr. 7, 1977, Ser. No. 785,379

Int. Cl.² F01D *5/30*

U.S. Cl. 416—193 A **4 Claims**

1. An integral turbine blading unit which is disposed about a rotatable rotor, said blading unit comprising:

three radially outwardly extending rotatable blades grouped together in a single axial row along a common platform portion of predetermined arcuate length from which two arcuately separated, axially extending side entry roots protrude radially inwardly and are engagable with said rotor causing said blading unit to have high rigidity and high frequency resulting in low response to vibratory excitation.



4,130,380

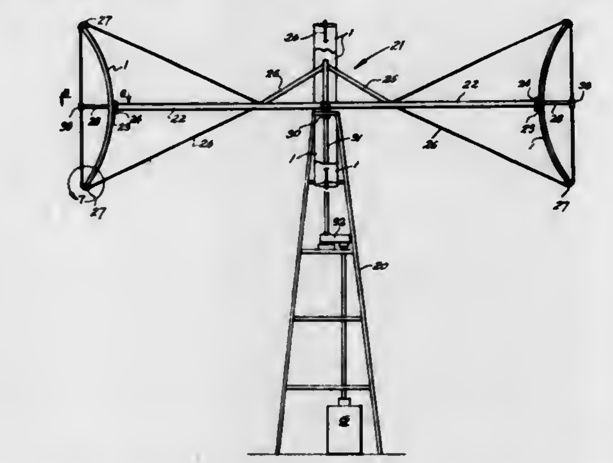
WIND POWERED TURBINE AND AIRFOIL CONSTRUCTION

Heinz W. Kaiser, Rte. 1, Box 248, Eugene, Oreg. 97404

Continuation-in-part of Ser. No. 686,167, May 13, 1976, abandoned. This application Jul. 20, 1977, Ser. No. 817,372

Int. Cl.² F03D *3/06*

U.S. Cl. 416—197 A **6 Claims**



2. A wind powered turbine comprising in combination,

a tower, and

a rotor structure supported by said tower including outwardly extending arms, an airfoil blade supported in an upright manner at the outer end of each of said arms, each blade being of curvilinear shape with blade end segments directed outwardly away from the axis of rotor rotation, each blade being of an aerodynamic shape and having a leading edge, tensioned elongate means extending intermediate each blade end segment and its supporting arm to receive blade imparted loads to inhibit blade distortion under dynamic loads.

4,130,381

IMPELLER OF AXIAL-FLOW FAN

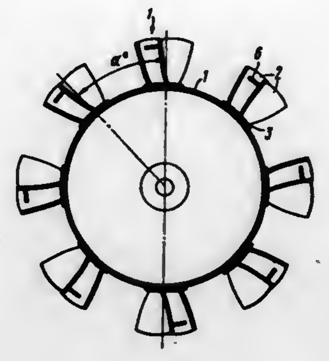
Efim M. Levin, ulitsa Gorkogo, 150, kv. 18; Vladimir P. Sysoev, ulitsa Universitetskaya, 97, kv. 46; Valery A. Rudenko, bulvar Shevchenko, 3, kv. 1, and Oleg K. Pomazan, bulvar Pushkina, 31, kv. 11, all of Donetsk, U.S.S.R.

Filed Jun. 8, 1977, Ser. No. 804,820

Int. Cl.² F04D *29/36*

U.S. Cl. 416—196 R **2 Claims**

1. An axial fan impeller comprising a hub, a plurality of rotatable bases fastened to said hub, a rotatable pivot fastening each said base to the hub, two blades mounted on each said base, said blades being constituted as thin sheets each having one edge fixed to said base, a crosspiece connecting said two blades disposed on the common base in the vicinity of the edges of said blades remote from the edges fixed to the base, said blades being disposed at an angular spacing on said base of from 0.15 α to 0.30 α, where α is the angular distance between the pivots of adjacent rotatable bases.



4,130,382

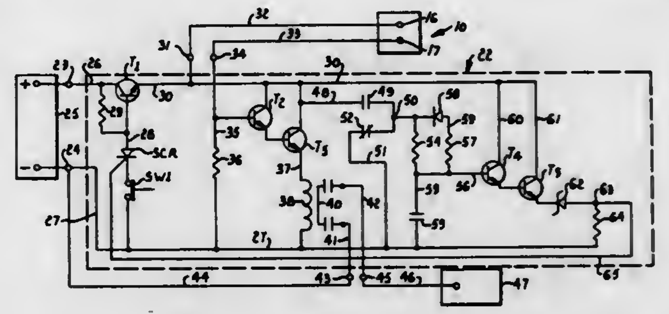
CONTROL SYSTEM FOR IRRIGATION PUMPS

John J. Bode, Box 865, Hastings, Nebr. 68901

Filed Jan. 10, 1977, Ser. No. 758,012

Int. Cl.² F04B *49/06*

U.S. Cl. 417—12 **5 Claims**



1. Apparatus for controlling the operation of an irrigation pump having a shut-off system operable to deactivate the pump, said apparatus comprising:

a normally open first circuit adapted to be connected with a power source;

a rain sensitive switch mechanism operable to effect closing of said first circuit when rainfall occurs;

control means associated with said first circuit and operable upon closing of same to activate said shut-off system, thereby deactivating the irrigation pump in response to closing of said first circuit by said switch mechanism;

delay means for opening said first circuit after elapse of a preselected time period following closing of same;

a normally open second circuit adapted to be connected with a power source and arranged in a manner to close after elapse of said time period following closing of said first circuit;

means maintaining said first circuit open when said second circuit is closed; and

a reset switch for opening said second circuit.

4,130,383

APPARATUS FOR NOISE SUPPRESSION IN A GEAR PUMP

Mohammed Moinuddin, Wooster, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.

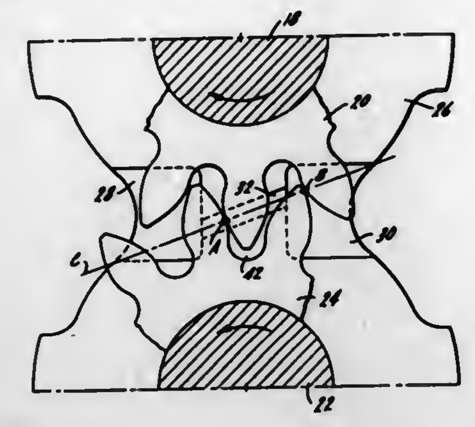
Filed Jun. 23, 1977, Ser. No. 809,229

Int. Cl.² F01C *19/08, 21/00, 1/18;* F04C *1/04*

U.S. Cl. 418—78 **12 Claims**

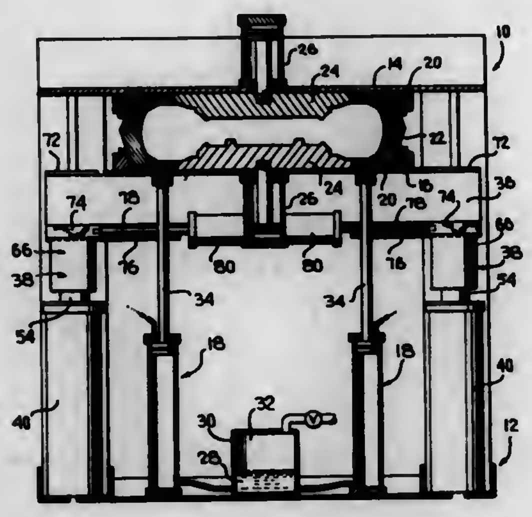
1. A fluid pump comprising a housing defining a chamber, an inlet and an outlet communicating with said chamber, a pair of gears supported for rotation in said chamber, said gears having meshing gear teeth defining in one position thereof an area of maximum pressure, means defining inlet and outlet trapping

recesses at one side face of said gears respectively communicating with said inlet and outlet, and a trapped pressure relief groove having a fixed flow area, said groove communicating said area of maximum pressure with both of said recesses.



4,130,384
TIRE CURING PRESS

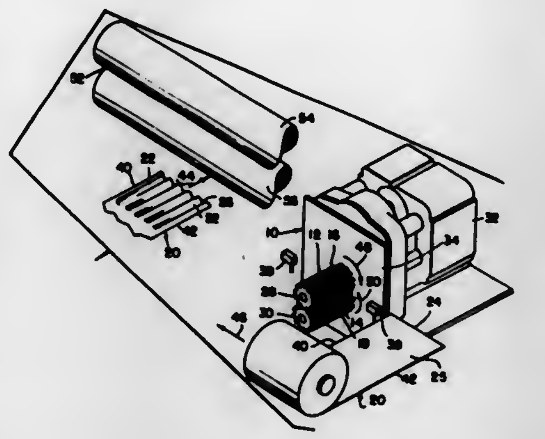
Kenneth T. MacMillan, 4992 Wesleyan Woods Dr., Macon, Ga. 31202
Filed Nov. 9, 1977, Ser. No. 849,864
Int. Cl.^{2} B29H *5/04, 5/08*
U.S. Cl. 425—25 14 Claims



1. A press assembly comprising a pair of cooperating press members, a first of said press members being stationary and a second of said press members being vertically movable, a first long stroke low force fluid motor connected to said second press member for moving the same vertically upwardly a predetermined distance between a first position remote from said first press member a second position contiguous thereto, a second short stroke high force fluid motor disposed between said second movable press member and a fixed support for imparting a locking force against said second press member in a direction urging said second press member toward said first press member, said second fluid motor locking force direction also resisting movement of said second press member from said second position toward said first position under the influence of gravity, means defining an opening in said second press member for passing at least a portion of said second fluid motor entirely through said second press member in said first position, means positionable to close said opening in said second position for transferring said locking force from said second fluid motor to said second press member, and said last-mentioned means being positioned between a terminal end of said second fluid motor portion and said second press member in said second position.

4,130,385
STRIP STRAIGHTENING APPARATUS

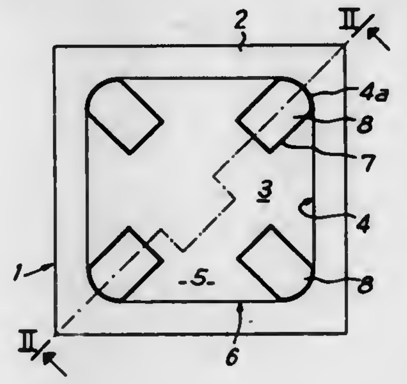
Henry F. Hope, 3192 Huntingdon Rd., Huntingdon Valley, Pa., and Stephen F. Hope, 2548 Wyandotte Rd., Willow Grove, Pa. 19090
Division of Ser. No. 530,685, Dec. 9, 1974, Pat. No. 3,966,868. This application Jun. 2, 1976, Ser. No. 692,196
Int. Cl.^{2} B29C *17/02*
U.S. Cl. 425—136 43 Claims



1. An apparatus for treating a selected leading portion of a continuous, coiled material having a tendency to curl and adapted to permit the remaining portions of the continuous material to remain unaffected, which comprises
- a pair of deforming means, having two ends, which are adapted to interact with each other to deform the selected leading portion of material; and
- limiting means adjacent one end of the pair of deforming means, adapted to limit the insertion of the selected leading portion of material within, and to guide it between, the pair of deforming means,
- wherein transmission of the material through the deforming means is provided by rotation of the pair of deforming means,
- whereby the pair of deforming means permits a deformation of predetermined length to be impressed into the selected leading portion of the material only.

4,130,386
DEVICE FOR PREFORMING AND HOLDING A WRAPPER IN A FORMING MOULD

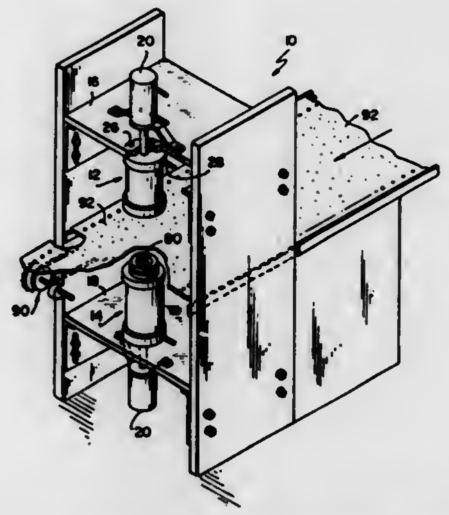
Jean-Claude H. Hautemont, Gif-sur-Yvette, France, assignor to Societe Anonyme dite: Etude et Realisation de Chaines Automatiques Erca, Orsay, France
Filed Oct. 17, 1977, Ser. No. 842,630
Claims priority, application France, Oct. 26, 1976, 76 32222
Int. Cl.^{2} B29C *7/00*
U.S. Cl. 425—383 22 Claims



1. In a machine for heat-forming receptacles such as goblets made of thermoplastics material, in which are provided at least one mould whose forming chamber is arranged in a mould body and comprises a cylindrical or truncated side wall, a bottom wall which is fixed with respect to said side wall and a mould opening opposite said mould bottom, as well as a wrapper-making device adapted to place a wrapper in said forming chamber before a receptacle is heat-formed, the mould being mounted to move between a position of forming and a position of stripping and being adapted to be aligned with said wrapper-making device for the introduction of a wrapper in said forming chamber,
- a device for preforming and holding the wrapper in said mould, comprising a plurality of applicator fingers movably mounted inside the forming chamber with respect to the side wall of the forming chamber in radial planes of said chamber and both parallel and transversely with respect to said side wall, the bottom wall of the forming chamber comprising openings for accommodating each finger which is adapted to be concealed in said opening, and further comprising means for controlling said applicator fingers, arranged so as to ensure, on the one hand, the spaced-apart relationship of the applicator fingers with respect to the side wall of the forming chamber when the mould is in position of alignment with said wrapper-making device and, on the other hand, the application of said fingers against the side wall in all the other positions of the mould and during the displacement of said fingers along said side wall until they are concealed in the openings in the bottom wall.

4,130,387
APPARATUS FOR THERMOFORMING PLASTIC ARTICLES

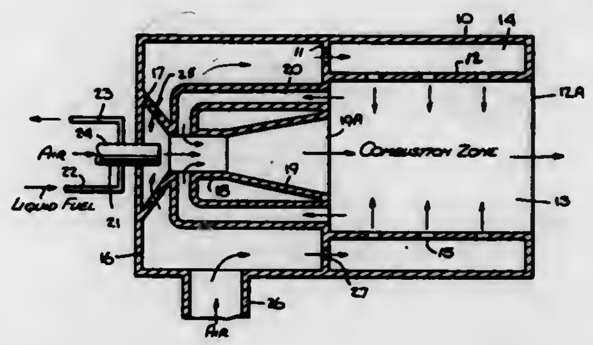
Donald G. Sauer, Harwinton, Conn., assignor to National Can Corporation, Chicago, Ill.
Continuation-in-part of Ser. No. 448,191, Mar. 5, 1974, abandoned, and Ser. No. 469,404, May 13, 1974, and Ser. No. 583,427, Jun. 3, 1975, Pat. No. 4,085,177, and Ser. No. 506,333, Sep. 16, 1974, abandoned. This application Aug. 25, 1976, Ser. No. 717,636
Int. Cl.^{2} B29C *17/04*
U.S. Cl. 425—388 7 Claims



1. A novel apparatus for thermoforming a hollow plastic article from a sheet of thermoplastic material which comprises:
- a thermoforming machine;
- lower and upper support members fixedly mounted to said thermoforming machine;
- means for linearly moving said sheet of thermoplastic material between said support members;
- a male mold assembly mounted on one of said support members; said male mold assembly including an extendible clamping means for engaging a selected portion of said sheet and a male mold means for assisting in the formation of said article;
- a female mold assembly mounted to said other support member, said female mold assembly including an extendible clamping means for engaging said selected portion of said sheet with said clamping means of said male mold means and a female member means having a chamber, said male mold assembly and said female mold assembly being fixedly positioned relative to each other at a distance greater than the length of said hollow article to be formed;
- means for extending said clamping means to trap said selected portion of said sheet therebetween;
- fluid cylinder means for extending and withdrawing said male mold means through a plane of said sheet of thermoplastic means;
- fluid cylinder means for extending and withdrawing said female member means to cooperate with said male mold means to form said hollow plastic article; and
- means for removing said hollow plastic article.

4,130,388
NON-CONTAMINATING FUEL BURNER

Paul Flanagan, Princeton, N.J., assignor to Flynn Burner Corporation, New Rochelle, N.Y.
Continuation of Ser. No. 723,542, Sep. 15, 1976, abandoned. This application Mar. 24, 1977, Ser. No. 780,852
Int. Cl.^{2} F23J *15/00*
U.S. Cl. 431—116 13 Claims



1. A liquid fuel burner adapted to promote full combustion to produce a non-contaminating blue flame, said burner comprising:

A. an outer casing having a rear section and a forward section, said forward section having a combustion zone therein wherein a hot combustion gas is produced;

B. a Venturi disposed in said rear section and having an inlet section, a constricted throat section and a diffuser outlet section opening into said combustion zone;

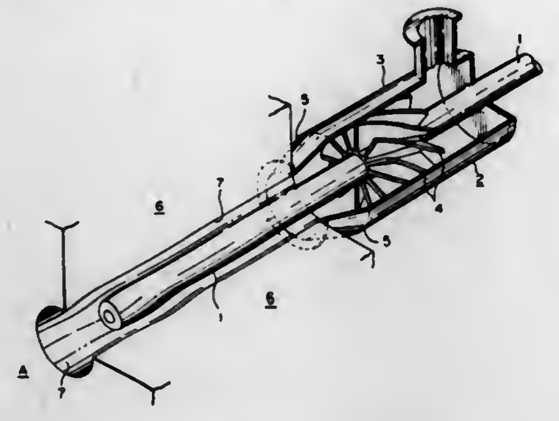
C. a feedback path within said rear section intercoupling said combustion zone with said throat section to conduct a portion of said hot combustion gas thereto, said feedback path being constituted by at least one duct disposed in said rear section and extending between said combustion zone and an opening in said throat section;

D. means to inject into the inlet section of said Venturi in the axial direction of the Venturi air-atomized liquid fuel with sufficient momentum to produce an ejector action causing said portion of hot combustion gas to be drawn into the throat section through said feedback path to prevaporize the air-atomized fuel whereby full combustion thereof takes place in the combustion zone;

E. a supply of combustion air; and

F. means coupled to the supply to feed substantially all of said combustion air directly into said combustion zone in a direction inclined with respect to said axial direction to react with said air-atomized fuel to generate said hot combustion gas in said combustion zone and to produce a back pressure in said feedback path to enhance the ejector action.

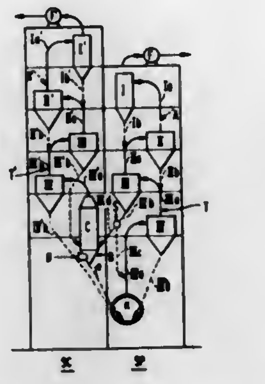
4,130,389
NOX DEPRESSION TYPE BURNERS
Katsuhiko Kaburagi; Yasutaka Yamamoto, both of Wakayama, and Yutaka Suzuki, Amagasaki, all of Japan, assignors to Sumitomo Metal Industries Limited, Osaka, Japan
Filed Jan. 25, 1977, Ser. No. 762,238
Int. Cl.² F23M *9/00*
U.S. Cl. 431—183 **7 Claims**



1. An NOx depression type burner comprising
a hollow air injection pipe which has an air inlet means and an air exit opening, said hollow air injection pipe comprising two parts, one part being a large diameter straight tubular section and the other part being a tapered section, said tapered section forming at its small diameter end said air exit opening, the ratio of cross sectional areas of said small diameter end to the large diameter section ranging from 0.4 to 0.8;
a burner tile which has a constant diameter, straight tubular passage therethrough, one end of said tubular passage connectable to an opening in a furnace and the other end connected to said air exit opening of said hollow air injection pipe;
a hollow fuel injection pipe positioned to extend through the center axis of said hollow air injection pipe and the center axis of said tubular passage of said burner tile, the open end of said hollow fuel injection pipe positioned a predetermined distance inwardly of said burner tile from the end of said tubular passage connectable to an opening in a furnace,
means positioned in the annular space between said hollow air injection pipe and said fuel injection pipe to cause air passing through said annular space from the air inlet means of said air injection pipe to said air exit opening to swirl;
said predetermined distance being in a range of 0.1 to 4.0 times the diameter of said straight tubular passage.

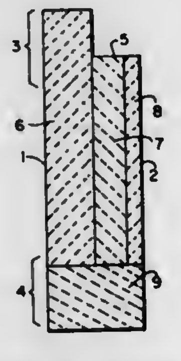
4,130,390
INSTALLATION AND METHOD OF BURNING CEMENT RAW
Toshihiro Kobayashi, Tokyo, and Tadaaki Saika, Yokohama, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Ote, Japan
Filed May 4, 1977, Ser. No. 793,605
Claims priority, application Japan, May 12, 1976, 51-54561
Int. Cl.² F27B *15/00, 7/02*
U.S. Cl. 432—14 **2 Claims**

1. A method of burning cement raw materials comprising the steps of
(a) feeding a part of cement raw materials into a first suspension preheater unit consisting of a plurality of series-connected heat-exchange stages to preheat the raw materials while feeding the remaining part of cement materials into a second suspension preheater unit consisting of a plurality of series-connected heat-exchange stages to preheat the raw materials,
(b) directing all of the raw materials discharged from the second lowermost heat-exchange stage in said second preheater unit into a calciner, which constitutes the lowermost heat exchange stage in said second preheater unit and provided with fuel supply means, thereby calcining the raw materials,



(c) sending a part of the raw materials discharged from the second lowermost heat-exchange stage in said first preheater unit into said calciner while feeding the rest of the materials to the lowermost heat-exchange stage in said first suspension preheater thereby calcining them, and
(d) feeding the equally calcined raw materials from the lowermost heat-exchange stages in both said first and second suspension preheater units into a rotary kiln.

4,130,391
TANK BLOCK
Paul Boggum, and Klaus Schulte, both of Wiesbaden, Germany, assignors to Didier-Werke A.G., Wiesbaden, Germany
Filed Dec. 14, 1976, Ser. No. 750,412
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557242
Int. Cl.² F27B *14/06*
U.S. Cl. 432—264 **9 Claims**

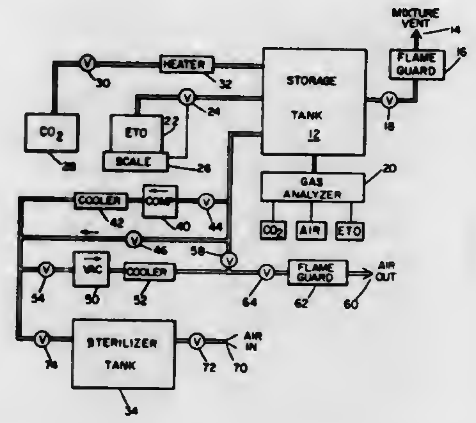


1. A tank block, for use in forming the walls of a glass-tank furnace, and of the type having an inner surface which faces a glass melt within the furnace, an outer surface facing away from the glass melt, an upper or head portion, a lower or base portion, an electrode opening extending from said inner surface to said outer surface, said tank block comprising, in sequence from said inner surface to said outer surface:
an inner layer formed of a material which is highly resistant to corrosion by said glass melt, said inner layer being wedge-shaped and having a thickness decreasing from said opening toward both said head and base portions;
a central layer firmly joined to said inner layer and formed of a material which is less resistant to corrosion by said glass melt than said material of said inner layer; and
an outer insulating layer firmly joined to said central layer.

4,130,392
BLEACHING PROCESS
Francis L. Diehl, Wyoming, and James B. Edwards, Roselawn, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 437,569, Jan. 29, 1974, abandoned. This application Nov. 10, 1975, Ser. No. 630,237
Int. Cl.² D06L *3/02, 3/04*
U.S. Cl. 8—101 **8 Claims**

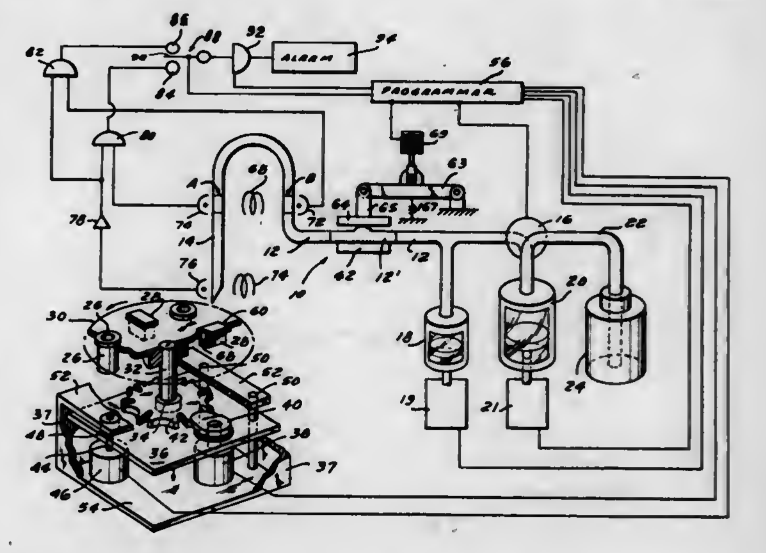
1. A process for removing stains from fabrics in an automatic clothes dryer during the drying cycle comprising the steps of:
(1) tumbling damp fabrics at a temperature of from 50° C. to 80° C. in the clothes dryer; and
(2) uniformly distributing an effective amount of a solid particulate bleaching composition consisting essentially of a peroxygen bleach having an average particle diameter below about 200 microns onto the damp fabrics within the first 10 minutes to 15 minutes of the drying cycle such that the bleaching composition is able to act in the presence of water on the damp fabrics prior to evaporation of the water from the fabrics.

4,130,393
METHOD FOR STERILIZING WITH AND RECYCLING OF ETHYLENE OXIDE
Lester A. Fox, Augusta, Ga., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Jun. 24, 1977, Ser. No. 809,931
Int. Cl.² A61L *1/00, 13/00*
U.S. Cl. 422—31 **3 Claims**



1. A method of sterilization an indefinite number of successive loads to be sterilized with a nonflammable gas mixture containing at least 10 percent ethylene oxide gas and an inert gas selected from the group consisting of carbon dioxide and nitrogen, comprising the steps of:
sterilizing said successive loads in individual sterilization cycles in succession in a sterilizing tank by reusing said mixture by recirculating it to a storage tank after each sterilization cycle while continuously maintaining it as a gas and refortifying it by the addition of substantially pure ethylene oxide so that the proportion of ethylene oxide initially present in the mixture sterilizing each load for each sterilization cycle is at least 10%, said mixture acquiring a small amount of air during each sterilization cycle for which it is used, said refortification with ethylene oxide and said acquisition of air resulting in the mixture used for each successive sterilization cycle being characterized by a proportion of at least 10% ethylene oxide, a decreasing proportion of inert gas and an increasing proportion of air,
periodically venting only a fraction of said mixture when the increasing proportion of air in said mixture produces a mixture which approaches the region of flammability of said mixture and increasing the proportion of inert gas in said mixture to reduce the proportion of air in said mixture while retaining the proportion of ethylene oxide in said mixture at least as great as 10% and
thereafter continuing sterilizing said loads in individual sterilization cycles in succession in said sterilizing tank by reusing said mixture by recirculating it to said storage tank after each sterilization cycle while continuously maintaining it as a gas and refortifying it by the addition of substantially pure ethylene oxide so that the proportion of ethylene oxide initially present in the mixture sterilizing each load for each sterilization cycle is at least 10% until the proportion of air in said mixture again approaches the region of flammability.

4,130,394
SHORT SAMPLE DETECTION
Kent M. Negersmith, Carmel, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.
Filed Oct. 3, 1977, Ser. No. 839,146
Int. Cl.² G01N *1/14*
U.S. Cl. 23—230 R **20 Claims**



20. A method for determining the aspiration of a predetermined volume of liquid into a dilutor/dispenser system, said dilutor/dispenser system including a probe system, said method comprising the steps of:
filling said probe system with a diluent to be dispensed along with a predetermined volume of liquid,
introducing a marker at the inlet of said probe system,
aspirating a volume of said liquid to displace said marker along said probe system,
detecting the location of said marker along said probe system to ascertain the volume of said liquid which has been aspirated, and
dispensing said aspirated volume of said liquid along with said marker and a predetermined volume of said diluent in accordance with said marker location.

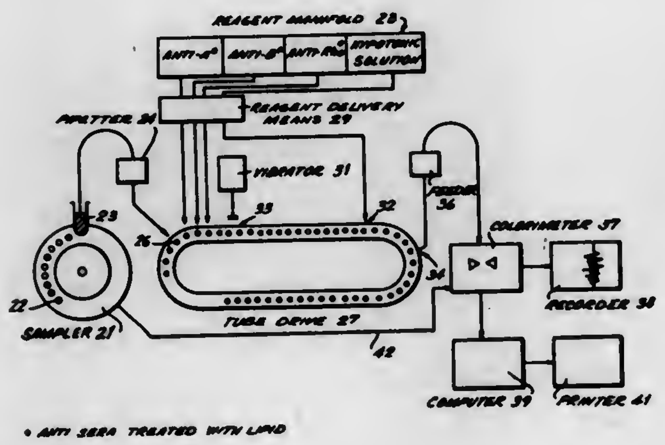
4,130,395
PROCESS AND APPARATUS FOR DETECTION OF SPECIFIC BIOLOGICAL FACTORS BY MEANS OF OSMOTIC HEMOLYSIS
Chryssanthos P. Chryssanthou, Cliffside Park, N.J., assignor to Beth Israel Medical Center, New York, N.Y.
Filed Aug. 19, 1975, Ser. No. 605,955
Int. Cl.² G01N *33/16*
U.S. Cl. 23—230 B **44 Claims**

1. A method for blood-typing, for identifying viruses and other red blood cell-agglutinating substances including factors originating in tumors, and for detecting the presence of and identifying antibodies in sera, comprising the steps of (a) treating red blood cells with a test solution suspected of containing therein an agglutinating factor for said red blood cells, or of containing a complex of an agglutinating factor with an antibody thereto, (b) bringing said treated red blood cells into contact with a hypotonic solution under conditions such as to cause strong lysis in untreated red blood cells, and (c) noting by means of color changes the extent of lysis, a degree of lysis

comparable to that of red blood cells treated with a serum known to lack a corresponding agglutinating factor indicating the absence of said suspected agglutinating factor, or the presence of a complex of said agglutinating factor with the antibody thereto, and a substantially reduced degree of lysis indicating the presence of said suspected agglutinating factor uncomplexed with an antibody.

35. Apparatus for automatic blood-typing, cross-matching, identifying viruses, detecting the presence of and identifying antibodies in sera, and detecting agglutinating factors derived from tumors, comprising

- (a) containers for holding washed red blood cells, hereinafter referred to as "RBC", suspended in saline solution;
- (b) first conveyor means for transporting said containers in preparation for removing samples from said containers;
- (c) lysing tubes for holding test reagents and RBC samples taken from said containers;
- (d) second conveyor means for transporting a plurality of said lysing tubes;
- (e) reagent manifold for holding and supplying at least one agglutination reagent hereinafter termed "AR", and hypotonic solution to each of said lysing tubes, the term "hypotonic solution" being taken to include water;
- (f) automatically sequenced sampler for transferring samples of RBC from each of said containers to a number of lysing tubes equal to the number of AR to be used in typing said RBC;
- (g) first delivery means for supplying each AR individually to a corresponding number of lysing tubes;
- (h) mixing means including shaker or vibrator means positioned for mixing the contents of said lysing tubes essentially immediately and for a controlled period of time subsequent to addition of said AR;
- (i) second delivery means for adding hypotonic solution to the contents of said lysing tubes subsequent to addition of AR, said first delivery means, mixing means and second delivery means being spaced apart along said second conveyor means for providing a controlled incubation period;
- (j) colorimeter means for determining quantitatively the degree of osmotic lysis of said RBC in said lysing tubes, said colorimeter means being spaced apart from said second delivery means; and
- (k) drive means for driving said second conveyor means at a rate such that, in combination with said spacing between said second delivery means and said colorimeter, a suitable fixed time interval is provided for osmotic lysis to proceed to an extent such as to make it possible to determine relative rates of lysis in different samples.



4,130,396

METHOD FOR THE QUANTITATIVE ANALYSIS OF Al-C- AND Al-H- BONDS IN HYDROCARBONS

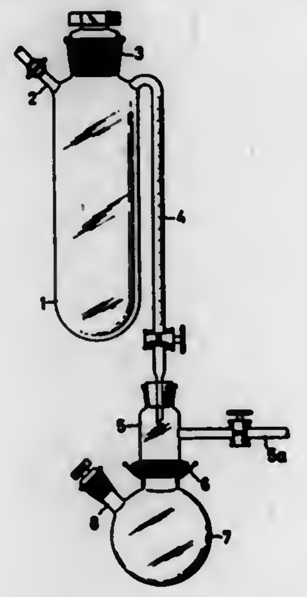
Ludwig Böhm, Mainz, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 26, 1977, Ser. No. 800,911

Claims priority, application Fed. Rep. of Germany, May 29, 1976, 2624204

Int. Cl.² G01N *21/06, 31/16*

U.S. Cl. 23—230 M **1 Claim**



1. A process for the quantitative analysis for the content of organoaluminum compounds containing Al—C— and Al—H— bonds in hydrocarbons, which comprises decomposing said organoaluminum compounds with a lower alcohol and subjecting an excess of said alcohol to back titration with a solution of a colored organometallic compound of an alkali metal and a polynuclear aromatic hydrocarbon.

4,130,397

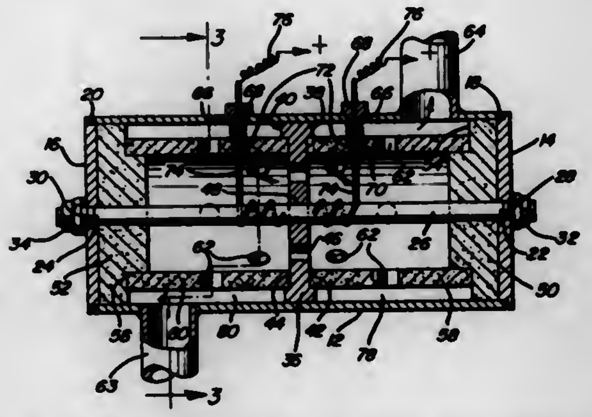
COMBUSTION ENGINE EXHAUST GAS AFTERBURNER

George L. Robitaille, 64 Pollock Rd., Latham, N.Y. 12110

Filed Oct. 12, 1977, Ser. No. 841,475

Int. Cl.² F01N *3/10, 7/10*

U.S. Cl. 422—168 **11 Claims**



1. An afterburner comprising an elongated tubular body including opposing end walls closing the opposite ends thereof and a central transverse partition dividing the interior of said tubular body inwardly of said end walls into inlet and outlet portions, a pair of tube sections disposed lengthwise within said body between and sealed against opposite sides of said partition and the opposing end walls and the outer radial surfaces of said tube sections spaced inwardly of the opposing inner radial surfaces of said body, whereby annular chambers are disposed about said tube sections inwardly of said body between opposite sides of said partition and the respective opposing end walls, said body including exhaust gas inlet means opening laterally into said inlet portion of said body and

the corresponding chamber and exhaust gas outlet means opening laterally outwardly from said outlet portion of said body and from the corresponding chamber, said tube sections each including exhaust gas passage openings formed therein at points spaced thereabout and longitudinally therealong, said partition including exhaust gas passage openings formed therethrough, said exhaust gas passage openings connecting the interiors of said chambers.

4,130,398

OVAL HEADER HEAT EXCHANGER AND METHOD OF PRODUCING THE SAME

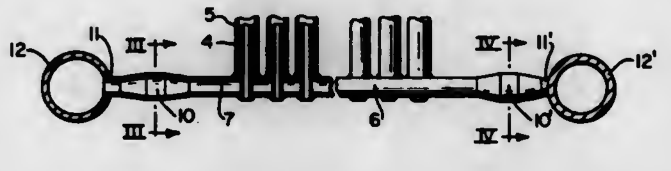
Helmut Knülle, Kassel, and Harald Pieschke, Zierenberg, both of Germany, assignors to Schmidt'sche Heissdampf-GmbH, Kassel-Bettenhausen, Germany

Filed Jan. 7, 1976, Ser. No. 647,170

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1975, 2500827

Int. Cl.² B23P *15/26*

U.S. Cl. 29—157.4 **1 Claim**



1. A process for constructing a heat exchanger of the type including banks of double-pipe elements connected at opposite ends thereof to oval headers, the outer pipe of each said element opening into respective said oval headers, the inner pipe of each said element passing through respective said oval headers, said oval headers being joined at opposite ends thereof to main headers by round cross-section transition elements, said process comprising:

- forming each of a plurality of integral oval header and transition elements by:
  - providing a single and integral length of round cross-section pipe;
  - deforming a portion of said pipe intermediate the ends thereof into an oval shape to form said oval header, while maintaining the round cross-section of said pipe ends to form said transition elements, and while maintaining said round pipe ends in substantial coaxial alignment with each other; and
  - reducing the diameter and increasing the thickness of the outer end portions of said transition elements to form reduced diameter, increased thickness cylindrical nipple elements;
- providing a plurality of coaxial double-pipe elements and attaching by welding opposite ends of said double-pipe elements to said oval headers such that the outer pipe of each double-pipe element opens into the respective said oval headers and the inner pipe of each double-pipe element extends through the respective said oval headers; and
- providing a plurality of main headers and attaching by welding said cylindrical nipple elements at each end of said oval header and transition elements to said main headers.

4,130,399

DISMANTLING TOOL

Stig L. Hallerbäck, Gothenburg, Sweden, assignor to Aktiebolaget SKF, Gothenburg, Sweden

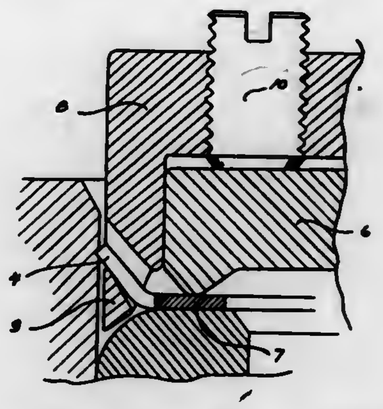
Filed Aug. 29, 1977, Ser. No. 828,897

Claims priority, application Sweden, Oct. 6, 1976, 7611055

Int. Cl.² B23P *19/04*

U.S. Cl. 29—225 **2 Claims**

1. A tool for dismantling a locking ring consisting of an annular portion having a plurality of radially projecting circumferentially spaced locking tongues for supporting a bearing element such as a ring in an opening in a housing or the like, the annular portion seating against the axial end face of the bearing element and the tongues wedging against the sidewall of the housing at an angle, said tool comprising a generally disc-like member having rib means depending from one axial face thereof adapted to abut the annular portion of said locking ring radially inwardly of the locking tongues, an outer member having a depending flange closely circumscribing the outer sidewall of said disc member of a diameter slightly smaller than the opening in the housing having a plurality of circumferentially spaced teeth having gripping elements adapted to engage through the spaces between tongues of the locking ring and upon rotation confront the back of the tongues and means for axially displacing the gripping member axially relative to the disc whereby the gripping elements of the teeth deform the tongues upwardly to release them from engagement with the sidewall of the opening in the housing.



4,130,400

COMBUSTIBLE FUEL SLURRY AND METHOD OF PREPARING SAME

Wilfred C. Meyer, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 3, 1978, Ser. No. 866,304

Int. Cl.² C10L *1/32*

U.S. Cl. 44—51 **10 Claims**

1. An improved mobile and combustible fuel slurry comprising solid particulate carbonaceous material, liquid hydrocarbon fuel, and a particulate cross-linked organic liquid-swellable, organic liquid-insoluble polymer, wherein the polymer is composed of at least 50 mole percent of at least one alkylstyrene wherein the alkyl groups contain from 1 to 20 carbon atoms.

4,130,401

COMBUSTIBLE AND MOBILE FUEL SLURRY AND METHOD OF PREPARING SAME

Wilfred C. Meyer, and Richard R. Klimpel, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 3, 1978, Ser. No. 866,305

Int. Cl.² C10L *1/32*

U.S. Cl. 44—51 **5 Claims**

1. An improved mobile and combustible fuel slurry comprising solid particulate carbonaceous material, liquid hydrocarbon fuel, a polar liquid flocculating third phase, and a wetting agent soluble in the third phase, wherein the wetting agent has an HLB value in the range of about 6.5 to about 10.

4,130,402

METHOD FOR PRODUCING COARSELY CRYSTALLINE ALUMINA

Bernhard Schepers, Burnside, La.; Heinz Hellinghausen, Ludwigshafen am Rhein, and Alois Kramer, Hassloch, both of Fed. Rep. of Germany, assignors to Guilini Chemie G.m.b.H., Ludwigshafen am Rhein, Fed. Rep. of Germany

Filed May 24, 1977, Ser. No. 800,046

Claims priority, application Fed. Rep. of Germany, May 26, 1976, 2623482

Int. Cl.² C04B *31/02;* **C01F** *7/02*

U.S. Cl. 51—309 A **9 Claims**

1. Coarsely crystalline aluminum oxide having a portion in the beta Al_2O_3 modification, and having the following trace elements: $V_2O_5 > 0.005$ percent by weight, $P_2O_5 > 0.005$ percent by weight, and $Na_2O > 0.8$ percent by weight, and which has an average primary crystal size of more than 6μ.

5. A method for producing a coarsely crystalline aluminum oxide having a portion in the beta Al_2O_3 modification, having an average primary crystal size of more than 6μ and having the following trace elements: $V_2O_5 > 0.005$ percent by weight, $P_2O_5 > 0.005$ percent by weight, $Na_2O > 0.8$ percent by weight, comprising calcining aluminum hydroxide in the presence of vanadium salt and at least one fluoride compound, the amount of vanadium salt being sufficient to provide said weight percentages of V_2O_5, P_2O_5 and Na_2O.

4,130,403

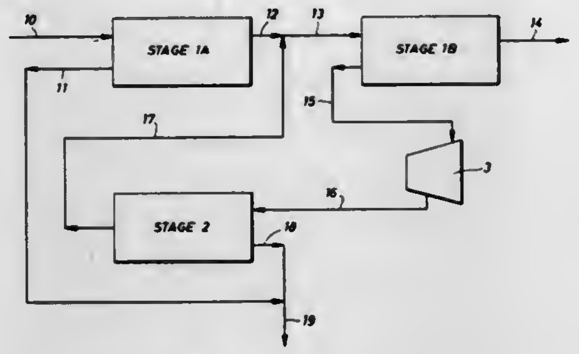
REMOVAL OF H_2S AND/OR CO_2 FROM A LIGHT HYDROCARBON STREAM BY USE OF GAS PERMEABLE MEMBRANE

T. E. Cooley, and A. B. Coady, both of P.O. Box 5244, Station A, Calgary, Alberta, Canada (T2H 1X6)

Filed Aug. 3, 1977, Ser. No. 821,459

Int. Cl.² B01D *53/22*

U.S. Cl. 55—16 **17 Claims**



1. A method for removing H_2S and CO_2 from a gaseous hydrocarbon feed stream comprising H_2S and CO_2 which comprises:

exposing a first side of a thin dry supported cellulose ester membrane having a helium permeability constant of at least 10^{-7} and having a separation factor for CO_2/CH_4 of at least about 5 to said feed stream;

maintaining said first side at a pressure of at least 100 psi greater than the permeate side of said membrane;

separately removing the permeate stream and the residue of the feed stream from contact with said membrane to maintain a higher partial pressure of H_2S and CO_2 on said first side than on said permeate side.

4,130,404

METHOD AND DEVICE FOR CLEANING FLUID FILTERS

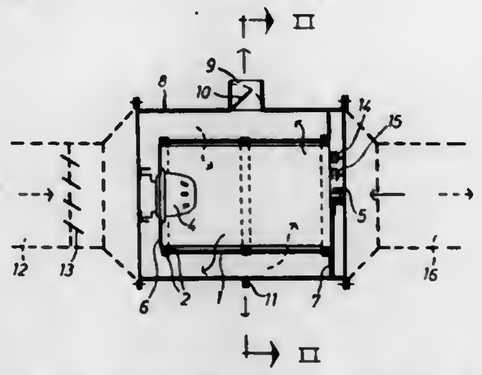
Knut E. Bergdahl, Kvartsgränd 4, S-85252 Sundsvall, Sweden

Filed Oct. 31, 1977, Ser. No. 847,019

Claims priority, application Sweden, Nov. 2, 1976, 7612149

Int. Cl.² B01D *23/26*

U.S. Cl. 55—242 **3 Claims**



1. A device for filtering particulate matter from a fluid comprising:

at least one filter member rotatably supported to rotate during filtration and having a casing defining at least one cavity;

means to direct the fluid to flow through said casing in a generally radially inward direction into the cavity during filtration, said filter member being rigidly connected to at least one vane disposed in the flow path of the fluid; said vane being shaped to effect rotation of said filter member during flow of fluid; and

drive means connected to the filter member and vane to periodically rotate the filter member and vane at a high speed in a direction of rotation opposite to the direction of rotation of the filter member and vane during filtration in order to clean the filter member from particulate matter deposited thereon by centrifugal action and by reversed fluid flow in a generally radially outward direction through the casing of the filter member, said reversed fluid flow being generated by said vane.

4,130,405

AIR CLEANER ARRANGEMENT

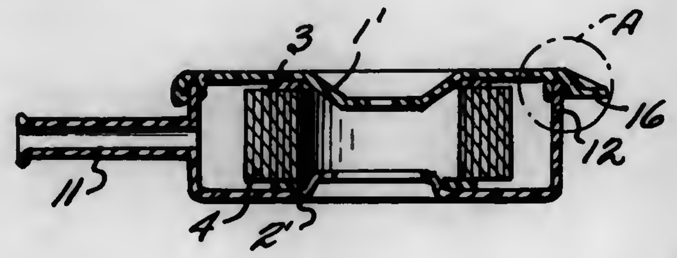
Hajime Akado; Hiroshi Ueda; Akira Yamashita, all of Kariya, and Takemasa Tamura, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 5, 1977, Ser. No. 756,963

Claims priority, application Japan, Jan. 12, 1976, 51-1833[U]; Jan. 12, 1976, 51-1834[U]

Int. Cl.² B01D *46/24*

U.S. Cl. 55—503 **15 Claims**



1. An engine air filter container for use with an air filter element comprising,

a cup-shaped casing member constructed to contain said air filter element, said casing having an open top, a bottom and upstanding from the periphery of said bottom a circumferential side terminating in an upper end first connection portion,

a cover member having an outer edge second connection portion,

said cover member being disposed to cover said open top and said members being detachably connected by said first and second connection portions,

said connected casing and cover members forming an enclosure having air inlet and outlet means,

one of said first and second connection portions having a vertically disposed first part of given radial width and connected thereto a vertically disposed second part with an enlarged lip of given maximum width radially greater than said given radial width,

said one connection portion including a first horizontally disposed latching shoulder extending from said lip at its maximum width to said first part,

the other of said first and second connection portions for the other of said members being resilient and including means forming a circumferentially extending vertically disposed recess including a first recess part having radially a maximum width recess approximating said given maximum width and vertically extending therefrom a second recess part having a recess width radially less than said given maximum width,

said recess forming means including a second horizontally disposed latching shoulder extending from said first recess part at its maximum width to said second recess part to form a side thereof and being locked with said first shoulder by said lip being in said first recess part to cause said casing and cover members to be detachably connected as aforesaid, and

manually operable flange means arcuately extending radially outwardly of the said other connection portion for spreading the width of said recess at said second shoulder to allow said enlarged lip to pass through said second recess part for locking and unlocking of said first and second connecting portions to effect connecting and disconnecting of said cover and casing members,

said recess forming means including at least one aperture in its outside periphery for more readily allowing at least said second recess part to be spread by manual manipulation of said flange means, said at least one aperture being adjacent and about at least as long as said second shoulder.

4,130,406

METHOD OF DETECTING BREAKAGE OF GLASS FIBER FILAMENT

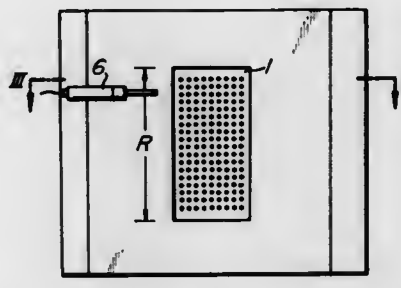
Isao Wakasa; Yutaka Kawaguchi, and Hiroaki Shono, all of Fukushima, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Aug. 22, 1977, Ser. No. 826,931

Claims priority, application Japan, Sep. 28, 1976, 51-116193

Int. Cl.² C03B *37/02*

U.S. Cl. 65—2 **10 Claims**



1. A method of detecting breakages of glass fiber filaments being drawn through orifices of an orifice plate, comprising the steps of

arranging a radiation thermometer in such a way that a portion of a glass fiber filament at least immediately below at least one of said orifices is focused on the field of view of said radiation thermometer, and

sensing by means of said radiation thermometer a variation in intensity of radiant light or heat emitted from a bead of molten glass when as a result of a breakage of the filament through said one orifice the molten glass bead grows on the undersurface of said orifice plate at said one orifice and said bead growth is focused on said field of view of said radiation thermometer to cause a variation in output from said radiation thermometer, whereby the breakage of the filament is detected based on said variation in output from said radiation thermometer.

4,130,407

STRENGTHENING OF GLASS

Nobel Ida, Boulder, Colo., assignor to Duraglass Research & Development Corp., Boulder, Colo.

Filed Jun. 16, 1977, Ser. No. 807,256

Int. Cl.² C03C *15/00, 17/00;* **C03B** *27/00*

U.S. Cl. 65—30 E **11 Claims**

1. A method of strengthening glass against failure under tension, comprising:

(a) mixing a fatty acid with the salt of an alkaline earth metal to form a fatty acid derivative wherein the metal is joined to a carboxyl group of the fatty acid, and

(b) applying the fatty acid derivative to glass having the same alkaline earth metal as a constituent element thereof at a temperature between the melting point of the derivative and and approximately 300° C., the derivative being chemisorbed on the glass surface through chelating between said alkaline earth metal of the derivative and a constituent element of the glass composition.

9. The method of strengthening lime glass, containing a known alkaline earth metal constituent against failure under tension by strengthening the micro crack structure of the glass, comprising:

(a) applying to the surface of the glass an alkaline earth metal salt of a straight chain, saturated, mono-carboxylic fatty acid with terminal carboxyl group in a diluent carrier miscible and inert with respect to said salt, at a temperature between the melting point of the salt and 300° C., wherein the alkaline earth metal of the salt is the same as the known alkaline earth metal constituent of the glass; and

(b) cooling the glass slowly to minimize thermal stress.

4,130,408

METHOD OF FORMING LARGE LIQUID CRYSTAL CELLS

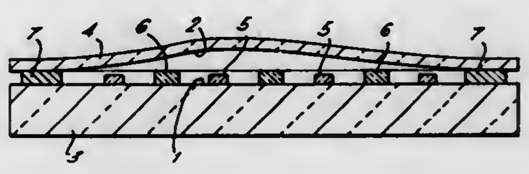
William A. Crossland, Harlow, and Joseph H. Morrissy, Dunmow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 1, 1977, Ser. No. 821,027

Claims priority, application United Kingdom, Sep. 3, 1976, 36692/76

Int. Cl.² C03B *23/20*

U.S. Cl. 65—43 **18 Claims**



1. A method of making an envelope in which two glass sheets are secured with a glass perimeter seal to form the envelope, comprising the steps of:

depositing a glass on one of the sheets to form an array of spacer dots, said glass having characteristics such that when it is heated to a predetermined temperature below the softening temperature of the sheets, it attains a softening temperature above that of the sheets;

heating said glass spacer dots to said predetermined temperature to effect a change in the softening temperature of the glass spacer dots;

depositing a glass on one of the sheets to form an array of tie dots having a greater thickness than that of the spacer dots, said glass having characteristics such that it flows at the softening point of the sheets;

depositing a glass on one of the sheets to form a glass perimeter ribbon of greater thickness than that of the spacer dots, said glass having characteristics such that it flows at the softening point of the sheets;

assembling the sheets with the arrays of dots and the perimeter ribbon facing inwardly;

heating the assembly to a temperature at which the tie dots and the perimeter ribbon soften to wet the sheets and at least one of the sheets softens sufficiently for its inner surface to distort to conform to the contour of the inner surface of the other sheet from which it is held uniformly spaced by the unsoftened spacer dots; and

cooling said assembly, whereby the perimeter ribbon seals the assembly and the tie dots connect the sheets.

4,130,409
TRIAZOLYL BUTANDIONES

Margaret C. Shephard, and Paul A. Worthington, both of Maidenhead, England, assignors to Imperial Chemical Industries Limited, London, England

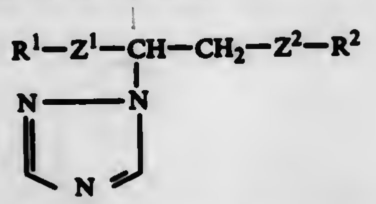
Filed Jun. 1, 1977, Ser. No. 802,545

Claims priority, application United Kingdom, Jun. 8, 1976, 23601/76; Sep. 3, 1976, 36614/76; Feb. 8, 1977, 5140/77

Int. Cl.² A01N *9/22, 21/02;* **A61K** *31/41;* **C07D** *249/08*

U.S. Cl. 71—76 **21 Claims**

1. A compound of the formula:



wherein each of R^1 and R^2, which may be the same or different, is unsubstituted for C_1–C_{10} alkyl-substituted cyclopentyl or cyclohexyl unsubstituted or halo-substituted C_1–C_{10} alkyl or unsubstituted or halo-, C_1–C_{10} alkyl-, C_1–C_{10} alkoxy- or nitro-substituted phenyl, and each of Z^1 and Z^2, which may be the same or different, is $C = O$ or an acid addition salt or copper, zinc, manganese or iron complex thereof.

8. A fungicidal or plant growth regulating composition, the composition consisting essentially of a fungicidally or plant growth regulatingly effective amount of, as active ingredient, a compound, salt or metal complex as claimed in claim 1, and a carrier for the active ingredient.

4,130,410
HERBICIDAL USE OF SUBSTITUTED PHENYL PHOSPHINIC ACIDS

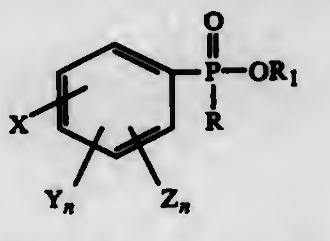
Milton J. Sabacky, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 620,982, Oct. 9, 1975, abandoned. This application Mar. 2, 1977, Ser. No. 773,625

Int. Cl.² A01N *9/36*

U.S. Cl. 71—86 **8 Claims**

1. A method of selectively preventing the growth of undesirable broadleaf plants in the presence of narrowleaf plants which comprises applying to the plant system a herbicidally effective amount of a compound having the formula



wherein R is selected from the group consisting of primary and secondary alkyl and trihalomethyl; R_1 is selected from the group consisting of hydrogen, primary and secondary alkyl, ammonium, alkyl ammonium and phenyl substituted by halo, lower alkoxy, nitro and trifluoromethyl; and X, Y and Z are independently selected from the group consisting of hydroxy, halo, trihalomethyl, amino, primary and secondary alkyl, lower alkoxy and thioalkyl; and each n is independently zero or one.

4,130,411
COMPOSITIONS FOR REGULATING UNDESIRABLE PLANT GROWTH

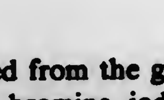
John E. Engelhart, Westfield, and Maynard W. McNeil, Washington, both of N.J., assignors to M&T Chemicals Inc., Stamford, Conn.

Filed Nov. 5, 1976, Ser. No. 739,117

Int. Cl.² A01N *9/36, 5/00*

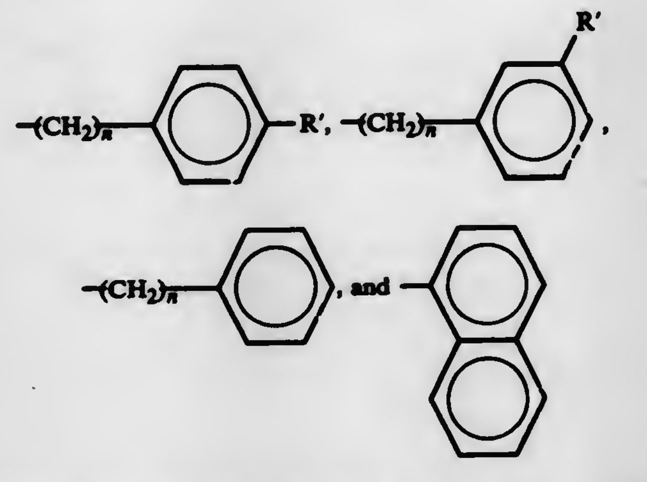
U.S. Cl. 71—86 **10 Claims**

1. A method for killing or retarding the growth of undesirable plants by applying to said plants a composition consisting essentially of at least one inert carrier and a phytotoxically effective amount of an organophosphorus compound



$$(XCH_2)_2\overset{\overset{\displaystyle O}{\|}}{P}R$$

wherein X is bromine or iodine, R is selected from the group consisting of



R′ being in turn selected from the group consisting of CCl_3, CF_3, fluorine, chlorine, bromine, iodine, linear alkyl containing from 1 to 20 carbon atoms and linear alkoxy containing from 1 to 20 carbon atoms, R″ is selected from the group consisting of unsubstituted and substituted alkyl containing from 1 to 20 carbon atoms, alkenyl containing from 2 to 4 carbon atoms and aryl, and n is 0 or 1.

4,130,412
N-ORGANO-N-PHOSPHONOMETHYLGLYCINE-N-OXIDES AND PHYTOTOXICANT COMPOSITIONS CONTAINING SAME

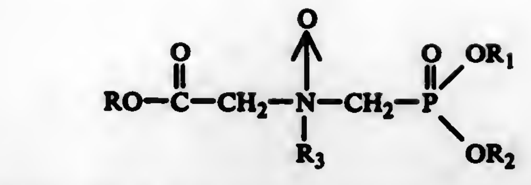
John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 613,708, Sep. 9, 1975, Pat. No. 4,062,669, which is a division of Ser. No. 313,706, Dec. 11, 1972, abandoned. This application Sep. 26, 1977, Ser. No. 836,187

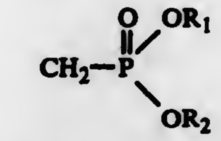
Int. Cl.² A01N *9/36*

U.S. Cl. 71—86 **11 Claims**

1. A herbicidal composition comprising an inert adjuvant and an effective amount of a compound of the formula



wherein R_1 and R_2 are each independently selected from the group consisting of hydrogen, salt forming alkali or alkaline earth metal cations, ammonium or organic ammonium groups, said organic ammonium group being derived from an organic amine having a molecular weight below about 300 and containing not more than two amine groups, R is selected from the same group as R_1 plus lower alkyl, and R_3 is selected from the group consisting of $C_nH_{2n}COOR$ wherein n is an integer from 1 to 10 and R is as above defined, and



wherein R_1 and R_2 are as above defined, provided that at least one R must be lower alkyl.

4,130,413
HETEROCYCLIC PHENYL ETHERS AND HERBICIDES CONTAINING SAME

Reinhard Handte, Hofheim am Taunus; Gerhard Hörlein, Frankfurt am Main; Helmut Köcher, and Peter Langelüddeke, both of Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

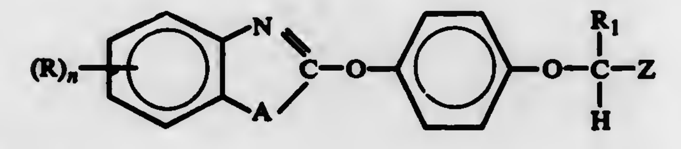
Filed Sep. 8, 1977, Ser. No. 831,480

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1976, 2640730

Int. Cl.² C07D *277/62*

U.S. Cl. 71—90 **15 Claims**

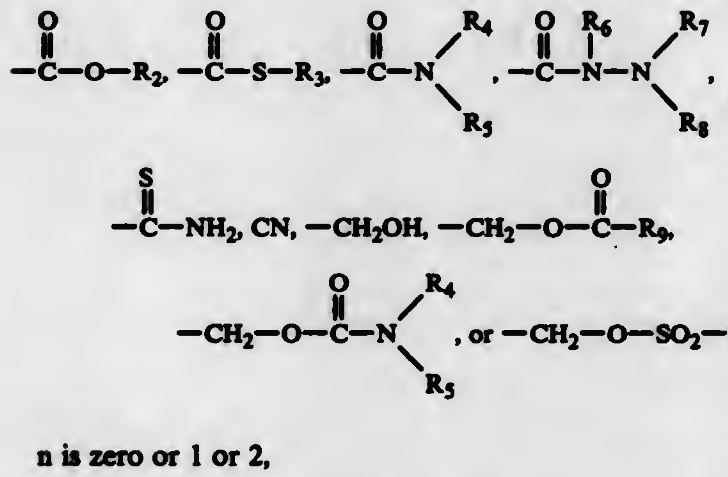
1. A compound of the formula



I

in which

R is halogen, CF_3, NO_2, CN, C_1–C_4alkyl, C_1–C_4 alkoxy or C_1–C_4alkylthio,
A is O, S, NH, or N—(C_1–C_4)alkyl,
R_1 is H or C_1–C_4alkyl,
Z is a group of the formula



n is zero or 1 or 2,

R_2 is H, C_1–C_{12}alkyl (optionally substituted by 1 to 6 halogen atoms), OH, C_1–C_6alkoxy, C_1–C_4alkylthio, C_1–C_6alkoxy-C_2–C_6alkoxy, halo-C_1–C_2alkoxy, methoxyethoxyethoxy, C_1–C_4alkylamino, di-C_1–C_4alkylamino, phenyl, oxiranyl and/or phenoxy which latter may be substituted once or twice by halogen or C_1–C_4alkyl; C_5–C_6cycloalkyl (optionally substituted by halogen or methyl); C_3–C_6alkenyl, halo-C_3–C_6-alkenyl or C_5–C_6cycloalkenyl, C_3–C_4alkinyl (optionally substituted once or twice by C_1–C_6alkyl, phenyl, halogen or C_1–C_2 alkoxy); phenyl (optionally substituted one to three times by C_1–C_4alkyl, C_1–C_4alkoxy, halogen, NO_2, or CF_3); furfuryl, tetrahydrofurfuryl, or the cation equivalent of an organic or inorganic base;

R_3 is C_1–C_6alkyl, phenyl-(C_1–C_2)-alkyl, the phenyl radical optionally being substituted once or twice by C_1–C_4alkyl and/or halogen, C_3–C_6alkenyl, or phenyl (optionally substituted once or twice by C_1–C_4alkyl and/or halogen)

R_4 and R_5; which are identical or different, are H, C_1–C_6alkyl, hydroxy-(C_1–C_6)-alkyl, C_5–C_6cycloalkyl, or phenyl (optionally substituted one to three times by C_1–C_4alkyl, C_1–C_4alkoxy, halogen, or CF_3), with the proviso that R_4 and R_5 cannot be phenyl at the same time; or wherein R_4 and R_5 together form a methylene chain having 2,4 or 5 CH_2-groups in which one CH_2 group may be replaced by O, NH, or $N(CH_3)$;

R_6 is H or CH_3,

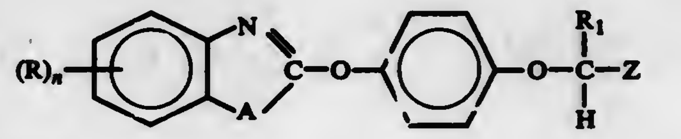
R_7 is H, CH_3, or C_2H_5,

R_8 is H, CH_3, C_3H_5 or phenyl,

R_9 is C_1–C_6alkyl (optionally substituted one to three times by halogen), cyclopropyl, C_3–C_6alkenyl, phenyl, C_1–C_4alkylphenyl C_1–C_4alkoxyphenyl, halophenyl, trifluoromethylphenyl or nitrophenyl and

R_{10} is C_1–C_4alkyl or phenyl (optionally substituted once or twice by halogen, CF_3, NO_2, or C_1–C_4alkyl).

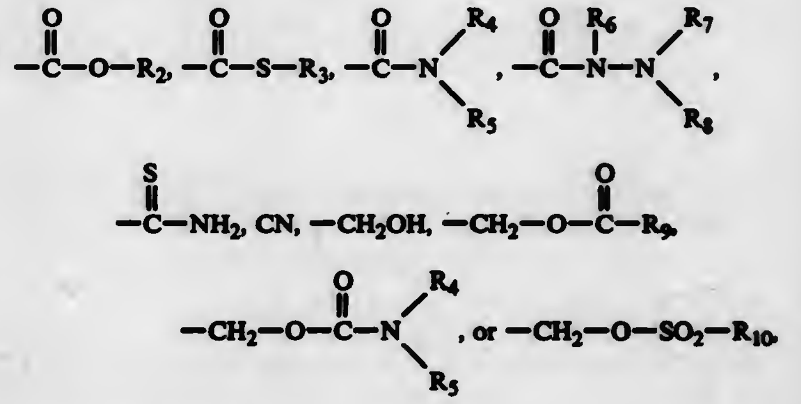
14. An herbicidal composition consisting essentially of an inert carrier and an herbicidally effective amount of a compound of the formula



I

in which

R is halogen, CF_3, NO_2, CN, C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4alkylthio,
A is O, S, NH, or N-(C_1–C_4)alkyl,
R_1 is H or C_1–C_4alkyl,
Z is a group of the formula



n is zero or 1 or 2,

R_2 is H, C_1–C_{12}alkyl (optionally substituted by 1 to 6 halogen atoms, OH, C_1–C_6alkoxy, C_1–C_4alkylthio, C_1–C_6alkoxy-C_2–C_6alkoxy, halo-C_1–C_2alkoxy, methoxyethoxyethoxy, C_1–C_4alkylamino, di-C_1–C_4alkylamino, phenyl, oxiranyl and/or phenoxy which latter may be substituted once or twice by halogen or C_1–C_4alkyl); C_5–C_6cycloalkyl (optionally substituted by halogen or methyl); C_3–C_6alkenyl, halo-C_3–C_6alkenyl or C_5–C_6cycloalkenyl, C_3–C_4-alkinyl (optionally substituted once or twice by C_1–C_6alkyl, phenyl, halogen or C_1–C_2alkoxy); phenyl (optionally substituted one to three times by C_1–C_4alkyl, C_1–C_4alkoxy, halogen, NO_2, or CF_3); furfuryl, tetrahydrofurfuryl, or the cation equivalent of an organic or inorganic base;

R_3 is C_1–C_6alkyl, phenyl-(C_1–C_2)-alkyl, the phenyl radical optionally being substituted once or twice by C_1–C_4alkyl and/or halogen, C_3–C_6alkenyl, or phenyl (optionally substituted once or twice by C_1–C_4alkyl and/or halogen),

R_4 and R_5, which are identical or different, are H, C_1–C_6alkyl, hydroxy-(C_1–C_6)-alkyl, C_5–C_6cycloalkyl, or phenyl (optionally substituted one to three times by C_1–C_4alkyl, C_1–C_4alkoxy, halogen or CF_3), with the proviso that R_4 and R_5 cannot be phenyl at the same time; or wherein R_4 and R_5 together form a methylene chain having 2, 4 or 5 CH_2-groups in which one CH_2 group may be replaced by O, NH, or $N(CH_3)$;

R_6 is H or CH_3,

R_7 is H, CH_3, or C_2H_5,

R_8 is H, CH_3, C_2H_5 or phenyl,

R_9 is C_1–C_6alkyl (optionally substituted one to three times by halogen), cyclopropyl, C_3–C_6alkenyl, phenyl, C_1–C_4alkylphenyl C_1–C_4alkoxyphenyl, halophenyl, trifluoromethylphenyl or nitrophenyl and

R_{10} is C_1–C_4alkyl or phenyl (optionally substituted once or twice by halogen, CF_3, NO_2, or C_1–C_4alkyl).

4,130,414

1,2,3-THIADIAZOLE-5-YL-UREA DERIVATIVES, PROCESS FOR MAKING THE SAME AND PLANT RETARDATION AND DEFOLIATION COMPOSITION CONTAINING SAME

Friedrich Arndt; Hans-Rüdolf Kruger, and Reinhart Rusch, all of Berlin, Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

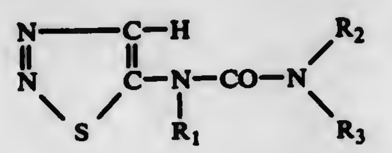
Filed Apr. 28, 1977, Ser. No. 792,016

Claims priority, application Fed. Rep. of Germany, May 3, 1976, 2619861

Int. Cl.² A01N *9/22;* C07D *417/12*

U.S. Cl. 71—90 **12 Claims**

1. A 1,2,3-thiadiazole-5-yl-urea derivative of the formula



in which

R_1 is hydrogen or alkyl of 1 to 5 carbon atoms;

R_2 is hydrogen or alkyl of 1 to 5 carbon atoms;

R_3 is a pyridine residue which residue may also be substituted by one or more of the same or different substituents, the substituents being selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen, nitro- and trifluoromethyl.

12. A method of causing growth retardation and defoliation in plants comprising applying to the plant or to the ground in which the plant is grown the composition of claim 10 in an amount of about 0.05 to 5 kg per about 2.5 acres of ground.

4,130,415

COPPER FLOTATION WITH ANTI-5-NONYL-2-HYDROXYBENXOPHENONE OXIME

D. R. Nagaraj, 435 W. 119 St., Apt. 7B, and Ponisseril Somasundaran, 560 Riverside Dr., both of New York, N.Y. 10027

Filed Jun. 2, 1977, Ser. No. 802,359

Int. Cl.² B03D *1/02;* C22B *3/00*

U.S. Cl. 75—2 **5 Claims**

1. In a process of froth flotation for the separation of a metal including copper from a material bearing the metal, the improvement which comprises; carrying out the flotation in the presence of anti-5-nonyl-2-hydroxybenzophenone oxime as the collector reagent and recovering at least copper.

4,130,416

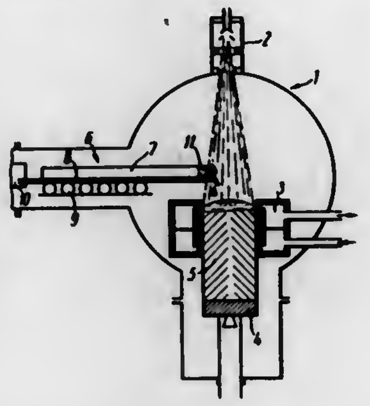
METHOD OF PREPARING A FURNACE CHARGE WHEN SMELTING REFRACTORY METALS AND ALLOYS

Georgy F. Zaboronok, pereulok Obukha, 4, kv. 56; Vladimir E. Efimov, Leninsky prospekt, 37, kv. 268, both of Moscow, and Alexandr T. Kozlov, ulitsa Elektrifikatsii, 24a, kv. 130, Lubertsy, Moskovskoi oblasti, all of U.S.S.R.

Continuation of Ser. No. 352,632, Apr. 19, 1973, abandoned. This application Oct. 27, 1976, Ser. No. 736,269

Int. Cl.² C22B *4/00*

U.S. Cl. 75—10 R **5 Claims**



1. A method of preparing a furnace charge for drop smelting refractory metals and alloys having a melting point of at least 1900° C. in electron-beam and plasma-arc furnaces with an approximately horizontal feed of a charge therein, comprising the steps of: introducing deoxidant metals into a powdery charge, the metals having a melting point lower than that of the charge and a vapor pressure at least 100 times higher than that of a base metal in the charge at its melting point to permit evaporation in solid state before a fusing zone at a level substantially different from the content in the initial charge and being selected from the group of metals consisting of aluminum, titanium, zirconium and their combinations, in an amount of up to 5 weight percent by mass of the charge; mixing the charge components until a uniform mass is obtained; pressing the mass of said charge into porous briquettes having a density of 50% to 70% of the theoretical and a strength sufficient for being transported on trays; and disposing the briquettes on the trays, made of metal, being readily evaporable at the alloy melting point for making the charge to be fed into the furnace for subsequent drop melting, and substantially completely evaporating deoxidant metals.

4,130,417

PROCESS FOR REFINING HIGH-CARBON FERRO-ALLOYS

Friedrich Breuer, Eschweiler; Günter Duderstadt, Ratingen; Werner Dresler, Bardenberg; Rudolf Fichte, Nüremberg; Peter Kunert, Oberasbach, and Gerd Nassauer, Inden, all of Germany, assignors to GfE Gesellschaft für Elektrometallurgie mit beschränkter Haftung, Düsseldorf, Germany

Continuation of Ser. No. 704,098, Jul. 9, 1976, abandoned. This application Nov. 9, 1977, Ser. No. 850,003

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1975, 2531034; Sep. 10, 1975, 2540290

Int. Cl.² C21C *5/34, 7/06*

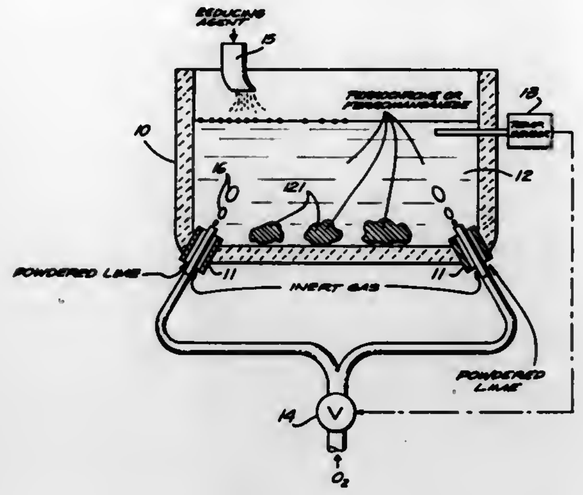
U.S. Cl. 75—60 **15 Claims**

1. A process for refining a high-carbon ferro-alloy, comprising the steps of:

preparing a bath of melted high-carbon ferro-alloy to be refined, said ferro-alloy being selected from the group which consists of ferrochrome and ferromanganese;

preheating said bath to an overall temperature higher than the melting point of said ferro-alloy;

blowing oxygen together with an enveloping protective gas into the preheated bath, in jets trained upon a region spaced from the boundaries of the bath and located below the surface thereof, at a rate sufficient to cause local superheating of the melt, due to interaction of the oxygen with the ferro-alloy, in said region to a reaction temperature higher than said overall temperature at which carbon contained in the melt is oxidized by contact with the products of said interaction;



determining changes in said overall temperature; and

controlling the flow of oxygen to prevent a rise of said overall temperature above a predetermined limit.

4,130,418

AUSTENITIC WEAR-RESISTANT STEEL

Tor Hartvig, Raufoss, Norway, assignor to Raufoss Ammunisjonsfabrikker A/S, Raufoss, Norway

Filed Oct. 3, 1977, Ser. No. 839,127

Int. Cl.² C22C *38/04, 38/14, 38/28, 38/38*

U.S. Cl. 75—126 B **4 Claims**

1. An austenitic wear-resistant steel having good wear resistance when subjected to abrasive and combined abrasive/impact stresses, the steel consisting essentially of, by weight:

16–23% Mn,
1.1–1.5% C,
0–4% Cr,
0.1–0.5% Ti,

and the remainder being Fe.

4,130,419

PROCESS FOR THE PURIFICATION, MODIFICATION AND HEATING OF A CAST-IRON MELT

Roland Hummer, Leoben-Göss; Wolfgang Thury; Wilfried Westerholt, both of Leoben, all of Austria; Gundolf Höllerling, Ottobrunn, and Reinhard Strigl, Munich, both of Germany, assignors to Linde AG, Wiesbaden, Germany

Filed Mar. 11, 1977, Ser. No. 777,153

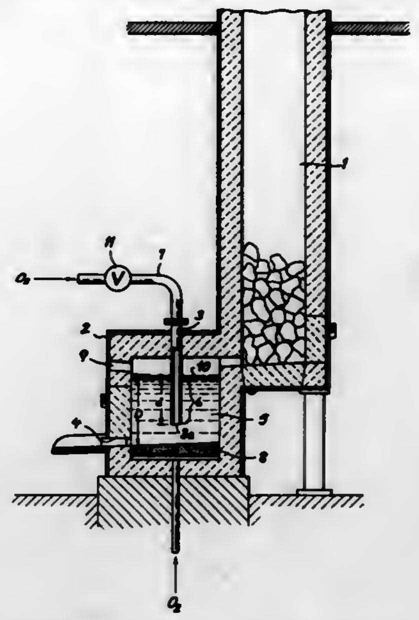
Int. Cl.² C21C *5/34*

U.S. Cl. 75—130 R **10 Claims**

1. A process for the treatment of an iron melt, for the production of malleable-iron or globular-graphite iron castings, with oxygen which comprises the steps of:

introducing 0.5 to $2m^3$ (STP) of oxygen per minute per ton of melt directly into the iron melt in a forehearth of a cupola furnace through a refractory inlet pipe immersed in said melt; and

controlling the quantity of oxygen per unit time introduced into said melt such that it is substantially the maximum below that at which smoke development above the surface of said melt occurs as determined by visual observation thereof.



4,130,420

NICKEL-CHROMIUM ALLOYS

Miles Firnhaber, Rte. 3, Pewaukee, Wis. 53072

Filed Dec. 5, 1977, Ser. No. 857,125

Int. Cl.² C22C *19/00*

U.S. Cl. 75—134 F **2 Claims**

1. An alloy consisting of the following ingredients in percentages by weight:

Ni	41.8 – 46.2
Cr	36.72 – 40.58
W	2.23 – 2.47
Fe	2.71 – 2.99
C	.13 – .17
Si	1.23 – 1.37
Mn	.99 – 1.09
Co	3.48 – 3.84
Mo	5.70 – 6.30

said alloy being characterized by resistance to corrosive attack by molten glass, having superior creep resistance, having strength at elevated temperatures, and imparting resistance to deformation to articles made thereform.

4,130,421

FREE MACHINING Cu-Ni-Sn ALLOYS

John T. Plewes, Berkeley Heights, and Philip R. White, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 30, 1977, Ser. No. 866,023

Int. Cl.² C22C *9/06*

U.S. Cl. 75—154 **16 Claims**

1. Article of manufacture comprising a copper based alloy which is shaped by machining, an aggregate amount of at least 90 weight percent of said alloy consisting of Cu, Ni, Sn, and at least one additive, said aggregate amount having a Ni content in the range of three weight percent to 30 weight percent, said aggregate amount having a Sn content in a range of three weight percent to an upper limit which is a linear function of said Ni content, said upper limit being ten weight percent when said Ni content is three weight percent and said upper limit being 12 weight percent when said Ni content is 30 weight percent, and CHARACTERIZED IN THAT said additive is selected from the group consisting of Se in the range of 0.1–0.5 weight percent of said aggregate amount, Te in the range of 0.1–0.5 weight percent of said aggregate amount, Pb in the range of 0.1–0.2 weight percent of said aggregate

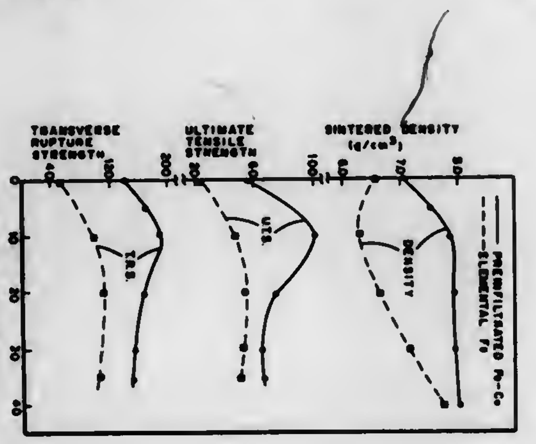
amount, and MnS in the range of 0.2–2.0 weight percent of said aggregate amount.

4,130,422
COPPER-BASE ALLOY FOR LIQUID PHASE SINTERING OF FERROUS POWDERS

John L. Wang, San Francisco; Milton R. Pickus, Oakland, and Meng-Hsiu Chen, San Francisco, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 16, 1977, Ser. No. 807,106
Int. Cl.² C22C *1/04;* B22F *3/16*

U.S. Cl. 75—246 **12 Claims**



1. A powder mixture for the production of a sintered ferrous product comprising an iron-base powder and a copper-base intermetallic compound consisting essentially of about 85–89% copper, about 2–4% manganese, and about 8–11% silicon in an amount sufficient to provide a liquid phase at the material sintering temperature.

8. A sintered ferrous product produced by liquid phase sintering of a powder mixture as defined in claim 1, said sintered product consisting essentially of iron-base particles enriched in manganese and silicon and bonded by a copper-base matrix depleted in manganese and silicon.

4,130,423
PULVERULENT COMPOSITION FOR FORMING PROTECTIVE LAYER ON STEEL MELTS

Marc Chastant, and Paul-Victor Riboud, both of Metz, France, assignors to Institut de Recherches de la Siderurgie Francaise (Irsid), Saint-Germain-en-Laye, France

Filed Mar. 31, 1977, Ser. No. 783,198
Claims priority, application France, Apr. 5, 1976, 76 09879
Int. Cl.² C22B *9/10*

U.S. Cl. 75—257 **11 Claims**

1. Composition for forming a protective layer over molten steel in continuous casting processes, the said composition comprising a mixture of a natural silicate, a flux selected from the group consisting of sodium carbonate, fluorspar (CaF_2) cryolite, borates and alkali or earth alkali fluorides and pulverulent carbon,

the natural silicate being a rock of the system Na Al SiO_4 - K Al SiO_4 - SiO_2,

and the said rock having a solidification temperature below 1100° C. and including oxides of sodium and potassium at a ratio as follows

$$\{\%\ Na_2O\} + 0.73\ \{\%\ K_2O\}\ 10\%.$$

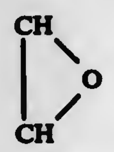
4,130,424
PROCESS USING RADIATION CURABLE EPOXY CONTAINING RESIST AND RESULTANT PRODUCT

Eugene D. Feit, Berkeley Heights, and Larry F. Thompson, Gillette, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 712,394, Aug. 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 408,927, Oct. 23, 1973. This application Jul. 1, 1977, Ser. No. 812,231
Int. Cl.² G03C *1/71*

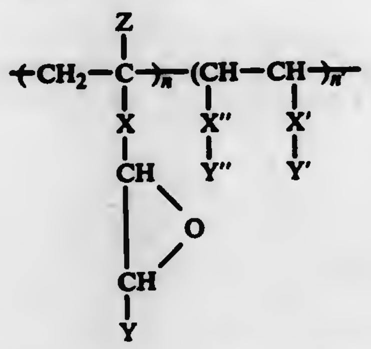
U.S. Cl. 96—35.1 **62 Claims**

1. Article including a substrate provided with an intimately contacting coating of a radiation-sensitive negative resist material, said material consisting essentially of a polymer, said polymer comprising a carbonaceous chain with substituent branches at least some of which contain epoxy groupings which cross-link responsive to impinging radiation, characterized in that the said polymer is substantially ethylenically saturated; that the said polymer has a weight average molecular weight of about 10^3 to 10^6; that the said epoxy groupings:

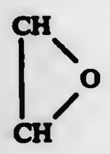


are connected to the main polymer chain through at least one branch atom; and that the molecular weight distribution of the said polymer defined as M_w/M_n, in which M_w is the weight average molecular weight and M_n is the number average molecular weight, is numerically equal to a value of less than 5.

22. Article including a substrate to be pattern delineated provided with an intimately contacting coating of negative resist material, said material consisting essentially of a polymer consisting of a primarily carbonaceous chain with side branches containing radiation sensitive groupings which result in cross-linking, said sensitive groupings comprising epoxy groupings, characterized in that the polymer is of a composition represented by the formula:



in which X is any grouping, X′ is any grouping, Z, Y, and Y′ are optional carbonaceous substituents containing from 0 to 4 carbon atoms, and X″ is hydrogen or X″ and Y″ are optional substituents of the class represented by X′ and Y′, respectively, the said polymer being substantially ethylenically saturated, the said polymer having a molecular weight M of from about 10^3 to 10^6 in which said polymer the epoxy grouping



are present in a number of at least one such substituent for every ten carbon atoms in the main polymer chain, in which the molecular weight distribution is defined as M_w/M_n, in which M_w is the weight average molecular weight and M_n is the number average molecular weight, is less than 5, in which the glass transition temperature T_g is below any temperature attained prior to exposure, said polymer being produced by a single step addition polymerization process in which monomers contain the side chains shown in the formula, in which the order of the groupings one designated by the subscript n and one designated by the subscript n′ is random and in which the groupings designated by the subscript n and/or groupings designated by the subscript n′, while necessarily falling within the chamical classification set forth, are not necessarily identical.

4,130,425
SUBTRACTIVE DEVELOPER FOR LITHOGRAPHIC PLATES

Timothy M. Boyd, Warminster, Pa., assignor to Marcole, Inc., Upper Darby, Pa.

Filed Dec. 29, 1976, Ser. No. 755,449
Int. Cl.² G03C *5/24;* G03F *7/02*

U.S. Cl. 96—48 R **4 Claims**

1. A composition for developing presensitized negative, subtractive lithographic plates comprising between 40% and 50% of a first part and between 50% and 60% of a second part, said first part comprising alcohols of lower-alkyls and said second part comprising a mixture of water, ethylene glycol monobutyl ether, nonionic surface active synthetic detergent, soap of the group comprising potassium oleate and linoleate, free fatty carboxylic acid of the group comprising oleic and linoleate acid, and inorganic phosphate.

4,130,426
HEAT DEVELOPABLE LIGHT-SENSITIVE DIAZOTYPE MATERIALS AND PROCESS OF USE

Keiji Takeda, and Masayoshi Tsuboi, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

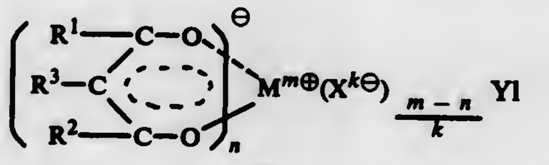
Filed Apr. 22, 1975, Ser. No. 570,316
Claims priority, application Japan, Apr. 22, 1974, 49/45332
Int. Cl.² G03C *1/58, 5/34*

U.S. Cl. 96—49 **10 Claims**

1. A heat-developable light-sensitive material comprising a support having thereon at least one layer with

a light-sensitive diazonium salt; and

a metal-β-diketonate chelate compound represented by the following general formula (II):



(II)

wherein R^1, R^2 and R^3 represent an aliphatic group or an aryl group and R^3 can also be a hydrogen atom; M is a metal ion or a complex metal ion capable of forming a chelate compound with a β-diketone and m is an integer corresponding to the positive charge of the metal ion or the complex metal ion; X is an anion; Y is a neutral ligand selected from the group consisting of ammonia and water; k is an integer of 1 to (m-n); n is an integer of 1 to m; m is an integer of from 2 to 4; and l is an integer of 0 to 3 with the proviso that when M is a Co ion, the Co ion is the Co++ ion;

said diazonium salt and said metal-β-diketonate chelate compound being contained in the same layer or different layers, respectively, and being present in sufficient quantity that a positive colored image to an original is produced upon imagewise exposure and heat development.

8. A method of forming an image comprising imagewise exposing the heat-developable light-sensitive material of claim 1 to radiation to which the light-sensitive diazonium salt is sensitive and heating the exposed heat-developable light-sensitive material at a temperature of about 50° C. to about 200° C.

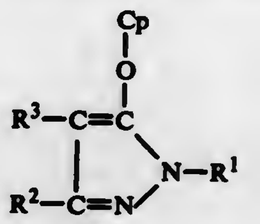
4,130,427
SILVER HALIDE EMULSION CONTAINING TWO-EQUIVALENT COLOR COUPLERS FOR YELLOW

Marcel J. Monbaliu, Mortsel, and Raphaël K. Van Poucke, Berchem, both of Belguim, assignors to AGFA-GEVAERT, N.V., Mortsel, Belgium

Filed May 31, 1977, Ser. No. 802,053
Claims priority, application United Kingdom, Jun. 9, 1976, 23917/76
Int. Cl.² G03C *7/00, 1/40*

U.S. Cl. 96—56.5 **5 Claims**

1. A photographic material comprising at least one silver halide emulsion layer and a 2-equivalent colour coupler for yellow which corresponds to the formula



I

wherein:

Cp represents a pivaloyl acetanilide or benzoylacetanilide yellow forming colour coupler residue which is capable of oxidative coupling with an aromatic primary amino developing agent and which is linked to the 5-pyrazolyl-oxy group at its coupling position,

R^1 represents an alkyl group or an aryl group,

R^2 represents an alkyl group, an aryl group, a carboxyl, an alkoxycarbonyl or an amino group,

R^3 an alkyl group, or

R^2 and R^3 together represent a tri- or tetramethylene group, forming with the carbon atoms to which they are attached a 5- or 6-membered carboxylic ring,

and wherein the 5-pyrazolyloxy group is split off during oxidative coupling with an aromatic primary amine colour developer and forms a competing coupler molecule, which is capable of coupling with the oxidation products of an aromatic primary amino colour developer to form a colourless compound.

4,130,428
COMBINATION OF PHOTOSENSITIVE ELEMENTS SUITED FOR USE IN RADIOGRAPHY

Marcel K. Van Doorselaer, 's-Gravenwezel, Belgium, assignor to AGFA–GEVAERT, N.V., Mortsel, Belgium

Continuation-in-part of Ser. No. 303,384, Nov. 3, 1972, abandoned. This application Oct. 20, 1975, Ser. No. 624,259
Claims priority, application United Kingdom, Nov. 5, 1971, 51628/71; May 31, 1972, 25529/72
Int. Cl.² G03C *1/92, 1/76*

U.S. Cl. 96—68 **25 Claims**

1. A combination of photosensitive materials suited for radiography comprising:

(1) two separate fluorescent screens each of which has more than half of its spectral emission above 410 nm and its maximum of emission in the wavelength range of 450–570 nm and an intensification factor of at least 20 at 40 kV and at least 25 at 80 kV,

(2) a photosensitive material comprising a support and at both sides of said support a layer of silver halide, the silver halide being capable of yielding by development a visible, negative silver image, a covering power of more than about 50, and being present in each layer in a corresponding equivalent amount of less than about 4 g of silver per square meter and being spectrally sensitized with (a) sensitizing dye(s) in such a way that it is sensitive for light in the wavelength range of 450–570 nm, and

each of said fluorescent screens being arranged adjacent to one of said emulsion layers.

4,130,429

COMBINATION OF PHOTOSENSITIVE ELEMENTS SUITED FOR USE IN RADIOGRAPHY

Marcel K. Van Doorselaer, 's-Gravenwezel, Belgium, assignor to AGFA-GEVAERT, N.V., Mortsel, Belgium

Continuation-in-part of Ser. No. 303,386, Nov. 3, 1972, abandoned. This application Oct. 20, 1975, Ser. No. 624,258

Int. Cl.² G03C *1/92*

U.S. Cl. 96—82 **30 Claims**

1. A combination of photosensitive materials suited for radiography comprising:

(1) at least one X-ray fluorescent screen material having more than half its spectral emission above about 410 nm and having its emission maximum in the wavelength range of 480 to 600 nm and having a coverage of 250 to 600 g per sq.m of fluorescent substance(s) in a fluorescent layer having a thickness in the range of 70 to 250 microns, the intensification factor of the screen being at least 20 at 40 kV and at least 25 at 80 kV, said screen material containing a dye or a pigment or a mixture of dyes and/or pigments absorbing light within the emission spectrum of the fluorescent substance(s);

(2) a photosensitive silver halide recording material which comprises a support and incorporates at least one silver halide emulsion layer and wherein the combined absorption of the support and of the layers at one side of the support is such that (i) the light absorption spectrum thereof mainly (at least for 50%) corresponds with the light emission spectrum of the fluorescent screen material in the wavelength range of 360 to 600 nm and (ii) the said combined absorption is such that in the range of overlap of said absorption and emission spectrum the optical density resulting therefrom comprises values in the range of 0.6 to 1.3 due to the inherent absorption of the silver halide emulsion layer(s) and the presence of (a) colouring substance(s) in one or more layers of the recording material including the support and the silver halide emulsion layer(s) in which silver halide grains are present that have been spectrally sensitized for visible light situated in the wavelength range of 480 to 600 nm.

4,130,430

SILVER HALIDE LIGHT-SENSITIVE MATERIAL CONTAINING DYE

Masatoshi Sugiyama, and Eiichi Kato, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

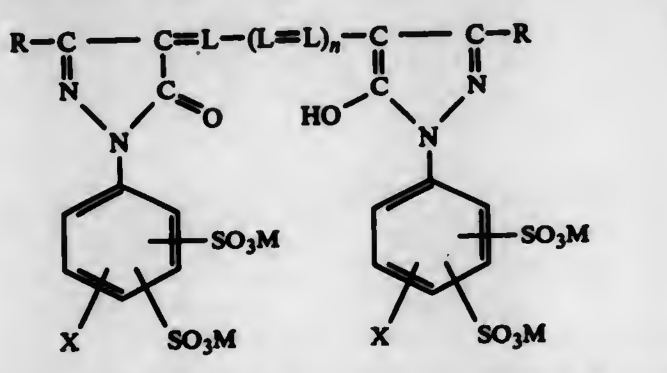
Filed Apr. 19, 1977, Ser. No. 788,948

Claims priority, application Japan, Apr. 20, 1976, 51-44788

Int. Cl.² G03C *1/84*

U.S. Cl. 96—84 A **14 Claims**

1. A siver halide light-sensitive material comprising a support having thereon a silver halide light-sensitive emulsion layer and at least one hydrophilic colloid layer containing a basic polymer and at least one oxonol dye represented by the following general formula (I):



(I)

wherein R represents an aliphatic residue having 4 or more carbon atoms, an arylalkyl group or a member selected from the class consisting of a 2-furyl group, a 2-, 3- or 4-pyridyl group or a 2-thienyl group; X represents a hydrogen atom, a halogen atom, a sulfo group, an alkyl group having 1 to 4 carbon atoms, or a hydroxy group; L represents a methine group; M represents a cation; and n represents 0, 1 or 2.

4,130,431

METAL SURFACE TREATMENT LIQUID AND RUST PREVENTIVE PAINT

Hideo Kogure, Hiratsuka, Japan, assignor to Kansai Paint Co., Ltd., Japan

Filed Jul. 5, 1977, Ser. No. 815,532

Claims priority, application Japan, Jul. 5, 1976, 51-80276; Sep. 8, 1976, 51-107531

Int. Cl.² C09D *5/08*

U.S. Cl. 106—14.33 **6 Claims**

1. In a rust preventive paint comprising a vehicle containing a solvent and at least one member of the group consisting of butyral resin, alkyd resin, phenoxy resin, polybutadiene, phenolic resin, epoxy resin, acrylic resin and hydrolyzed ethyl silicate, and a corrosion inhibiting agent; the improvement comprising, as said agent, 0.0025 to 2.5 ion mol of oxytitanic ion, peroxytitanic ion or mixtures thereof per 1000g of paint, said paint having a pH of less than 6.

4,130,432

TRIORGANOTIN CYANOMETALLATE COMPOUNDS

Hermann W. Wehner, Zwingenberg, and Joachim Lorenz, Bensheim-Auerback, both of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

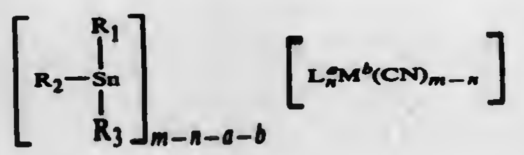
Filed Dec. 16, 1976, Ser. No. 751,229

Claims priority, application Switzerland, Dec. 23, 1975, 16699/75

Int. Cl.² C09D *5/14, 5/16, 5/18*

U.S. Cl. 106—15 R **10 Claims**

1. A compound of the general formula I



$$\left[R_2-\overset{\displaystyle R_1}{\underset{\displaystyle R_3}{Sn}}\right]_{m-n-a-b}\left[L_n^aM^b(CN)_{m-n}\right]$$

(I),

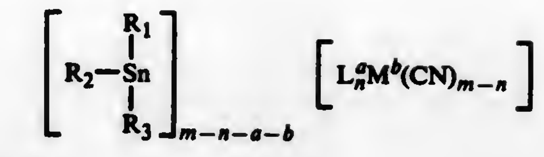
wherein
m is 4, 6 or 8
n is 0 or 1,
a is 0 or 1,
b is 1, 2, 3, 4 or 5,
each of

R_1, R_2 and R_3 independently represents an alkyl group of 1 to 18 carbon atoms, an alkenyl group of 2 to 18 carbon atoms, a cycloalkyl group of 5 to 12 carbon atoms, an alkylcycloalkyl group of 6 to 18 carbon atoms, or an aryl group of 6 to 16 carbon atoms which is unsubstituted or substituted by alkyl, alkoxy or alkylthio or oxoalkyl or carbalkoxyalkyl, each of 1 to 12 carbon atoms, or by 1 to 2 halogen atoms or by a nitro group, or an aralkyl group of 7 to 17 carbon atoms which is unsubstituted or substituted by alkyl of 1 to 12 carbon atoms or by 1 to 2 halogen atoms or by a nitro group,

L represents NH_3, pyridine, water, CO, NO or a halogen atom, and

M if m is 4, represents Ni(0), Ni(I), Ni(II), Pd(II), Pt(II), Cu(I), Cu(II), Ag(I), Au(III), Zn(II), Cd(II), Hg(II), and if m is 6 represents Ti(III), V(II), V(III), Cr(I), Cr(II), Cr(III), Mn(I), Mn(II), MN(III), Te(I), Re(I), Re(II), Re(III), Re(IV), Fe(II), Fe(III), Ru(II), Ru(III), Os(II), Co(I), Co(II), Co(III), Rh(III), Ir(III), Pt(IV), and if m is 8, represents Ti(III), Mo(IV), Mo(I), W(IV), W(V), Mn(IV) or Re(V), and with the proviso that R_1, R_2 and R_3 may not all be methyl or all be phenyl at the same time when M is Fe(II) or Fe(III).

2. An antifouling paint composition containing 0.5 to 40% by weight of the composition of a biocidal compound, or mixture of said compounds, of the general formula I



$$\left[R_2-\overset{\displaystyle R_1}{\underset{\displaystyle R_3}{Sn}}\right]_{m-n-a-b}\left[L_n^aM^b(CN)_{m-n}\right]$$

(I),

wherein
m is 4, 6 or 8,
n is 0 or 1,
a is 0 or 1,
b is 1, 2, 3, 4 or 5,
each of

R_1, R_2 and R_3 independently represents an alkyl group of 1 to 18 carbon atoms, an alkenyl group of 2 to 18 carbon atoms, a cycloalkyl group of 5 to 12 carbon atoms, an alkylcycloalkyl group of 6 to 18 carbon atoms, or an aryl group of 6 to 16 carbon atoms which is unsubstituted or substituted by alkyl, alkoxy or alkylthio or oxoalkyl or carbalkoxyalkyl, each of 1 to 12 carbon atoms, or by 1 to 2 halogen atoms or by a nitro group, or an aralkyl group of 7 to 17 carbon atoms which is unsubstituted or substituted by alkyl of 1 to 12 carbon atoms or by 1 to 2 halogen atoms or by a nitro group,

L represents NH_3, pyridine, water, CO, NO or a halogen atom, and

M if m is 4, represents Ni(0), Ni(I), Ni(II), Pd(II), Pt(II), Cu(I), Cu(II), Ag(I), Au(III), Zn(II), Cd(II), Hg(II), and if m is 6 represents Ti(III), V(II), V(III), Cr(I), Cr(II), Cr(III), Mn(I), Mn(II), Mn(III), Te(I), Re(I), Re(II), Re(III), Re(IV), Fe(II), Fe(III), Ru(II), Ru(III), Os(II), Co(I), Co(II), Co(III), Rh(III), Ir(III), Pt(IV), and if m is 8, represents Ti(III), Mo(IV), Mo(I), W(IV), W(V), Mn(IV) or (Re(V).

4,130,433

INDUSTRIAL BIOCIDES

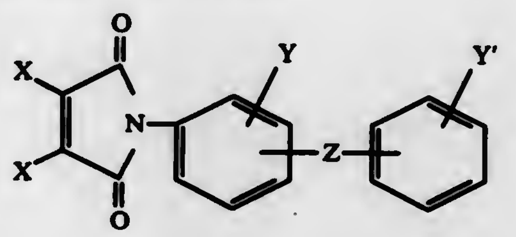
Frank C. Becker, Gurnee, and Jorge P. Li, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Jun. 10, 1977, Ser. No. 805,243

Int. Cl.² C09D *5/14*

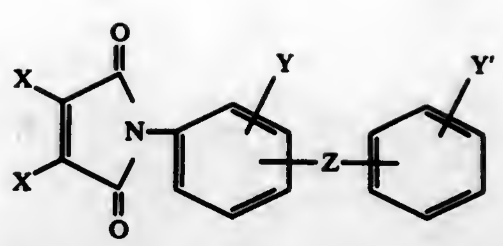
U.S. Cl. 106—15 R **15 Claims**

1. A compound of the formula



wherein substituents X both are either hydrogen or chlorine, Y represents 0–1 and Y' represents 0–2 substituents taken from the group consisting of halogen, trifluoromethyl, alkoxy with 1–4 carbon atoms, nitro, carboxy and loweralkoxycarbonyl, and Z is O or S, with the proviso that when Z is O, at least one substituent Y or Y' must be present.

9. The method of protecting a cellulosic, plastic or film-forming polymeric composition, knitted, woven, molded or extruded into a continuous form, against bacterial or fungal attack upon exposure to an environment containing common bacteria and fungi, comprising incorporating into said continuous form or coating said composition with a biocidally effective amount of a maleimide of the formula



wherein both substituents X are either hydrogen or chlorine, Y represents 0–2 and Y' represents 0–2 substituents taken from the group consisting of halogen, trifluoromethyl, alkoxy with 1–4 carbon atoms, nitro, carboxy and loweralkoxycarbonyl, and Z is O or S, with the proviso that when Z is O, at least one substituent Y or Y' must be present.

4,130,434

PAINT COMPOSITIONS

Francis W. Arbir, Itasca, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 763,390, Jan. 28, 1977, which is a continuation-in-part of Ser. No. 728,338, Sep. 30, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,594

Int. Cl.² C09D *5/14*

U.S. Cl. 106—15 R **6 Claims**

1. The process of preventing or reducing yellowing in paint compositions containing a biocide of the formula $R\text{-}SO_2\text{-}CHI_2$ wherein R is phenyl, alkylphenyl, benzyl, chlorobenzyl, dichlorobenzyl or an alkyl group of 2–8 carbons consisting essentially in adding to said paint composition between 0.25 and 5.0 lbs. per pound of said biocide of a phenylmercury acylate consisting essentially of a compound having the formula $R'\text{-}COOHgC_6H_5$ or $R''\text{-}(COOHgC_6H_5)_2$, wherein R is an alkyl group of 1–19 carbon atoms and R" is an alkylene group of 2–18 carbon atoms, said alkyl or alkylene containing between 0 and 1 double bond.

4,130,435

PROCESS FOR PREPARING A BALL-POINT PEN INK

Ira L. Hall, Penns Grove, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 18, 1975, Ser. No. 614,687

Int. Cl.² C09D *11/18*

U.S. Cl. 106—22 **9 Claims**

1. Improved process for preparing a stable liquid dye solution which is of low inorganic salt content and which is directly useful as a ball-point pen ink, said process comprising admixing and reacting at 20°–80° C. approximately stoichiometric amounts of a water-soluble cationic dye and a water-soluble anionic dye in a liquid medium, which comprises a solvent for said water-soluble ionic dyes, to form a cationic-anionic dye salt which is substantially insoluble in water; without isolating the dye salt, dissolving said salt in the lower phase of a two-phase liquid medium comprising an upper aqueous phase and a lower ball-point pen ink solvent phase, said ball-point pen ink solvent being substantially insoluble in water, the two-phase liquid medium either being present during said admixing and reacting or being added subsequent to said admixing and reacting; and thereafter separating the aqueous and solvent phases which provides a stable liquid dye solution which is useful as a ball-point pen ink.

4,130,436

PROCESS FOR RECLAIMING FOUNDRY SAND WASTES

Karl V. Hauser, Ann Arbor, and Fred Menceaberg, Taylor, both of Mich., assignors to Edw. C. Levy Co., Detroit, Mich.

Filed May 11, 1977, Ser. No. 796,018

Int. Cl.² B28B *7/34*

U.S. Cl. 106—38.9 **4 Claims**

1. A method for reclaiming waste foundry molding sand having carbon and clay additives, comprising the steps of

heating said sand to a temperature range of 1400° to 1600° F. with air available so as to burn off the carbon additives, continuing to heat the sand to a temperature range of 1800° to 2200° F., and treating the sand in that temperature range for a specified time with a resultant change in sand surface characteristics in that the clay additives fuse onto the surface of the sand and become nonabsorptive, and then cooling the sand.

4,130,437
PHOTOCHROMIC GLASSES SUITABLE FOR SIMULTANEOUS HEAT TREATMENT AND SHAPING

Jean P. Mazeau, Avon, France, and Thomas P. Seward, III, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Apr. 12, 1978, Ser. No. 895,646
Int. Cl.² C03C *3/26, 3/08, 21/00*
U.S. Cl. 106—54 **12 Claims**

1. A glass composition consisting essentially, in weight percent on the oxide basis as calculated from the batch, of about 54–66% SiO_2, 7–15% Al_2O_3, 10–25% B_2O_3, 0.5–4% Li_2O, 3.5–15% Na_2O, 0–10% K_2O, 6–16% total of $Li_2O + Na_2O + K_2O$, 0–1.25% PbO, 0.1–0.3% Ag, 0.2–1% Cl, 0–0.3% Br, 0.002–0.02% CuO, and 0–2.5% F, having a viscosity at the liquidus of at least 10^4 poises, long term stability against devitrification in contact with platinum at temperatures corresponding to glass viscosities in the range of 10^4–10^6 poises, excellent chemical durability, and being chemically strengthenable to modulus of rupture values in excess of 45,000 psi with a depth of compression layer between about 0.0035–0.004 inch, said glass, in bodies of about 1.3–1.7 mm cross section, exhibiting the following photochromic properties:

(a) at about 25°–30° C. will darken to a luminous transmittance below 30% in the presence of actinic radiation; will fade to a luminous transmittance at least 1.75 times the darkened transmittance after 5 minutes' removal from the actinic radiation; and will fade to a luminous transmittance in excess of 80% of its clear luminous transmittance in no more than one hour after being removed from the actinic radiation;
(b) at about 40° C. will darken to a luminous transmittance below 50% in the presence of actinic radiation and will fade to a luminous transmittance in excess of 80% of its clear luminous transmittance in no more than one hour after being removed from the actinic radiation;
(c) at about −18° C. will not darken to a luminous transmittance below 5% in the presence of actinic radiation; and
(d) in the undarkened state will exhibit a luminous transmittance of at least 60%.

4,130,438
BASIC COMPOSITE UNBURNED BRICK

Akira Watanabe, Okayama; Yukio Kusaka, and Yoshihiro Suzuki, both of Bizen, all of Japan, assignors to Kyushu Taikarenga Kabushiki Kaisha, Bizen, Japan
Filed Nov. 23, 1977, Ser. No. 854,497
Claims priority, application Japan, Dec. 11, 1976, 51-149280
Int. Cl.² C04B *35/52*
U.S. Cl. 106—56 **4 Claims**

1. A composite unburned brick comprising:
a magnesia-carbonaceous refractory body portion; and
a basic refractory body portion integrally molded to one side of magnesia-carbonaceous refractory body portion.

4,130,439
METHOD OF PREPARING BATCH FOR MANUFACTURE OF CLAY BRICK

Stanislav I. Gashenko, ulitsa Gorkogo, 159, kv. 76; Alexandr A. Rogatkin, ulitsa 40 let Sovetskoi Ukrainy, 76, kv. 3; Grigory I. Silakov, ulitsa Yatsenko, 4a, kv. 59; Leonid P. Khlopkov, ulitsa 40 let Sovetskoi Ukrainy, 58, kv. 39, all of Zaporozhie; Sergei G. Nesterovsky, ulitsa D. Donskogo, 4a, kv. 9, Dnepropetrovsk; Andrei I. Starun, ulitsa Ogorodnaya, 91, Dnepropetrovsk; Viktor D. Mironov, ulitsa Kossiora, 1a, kv. 36, Dnepropetrovsk; Gennady D. Dibrov, ulitsa Poligonnaya, 18a, kv. 119, Dnepropetrovsk, and Anatoly A. Panasenko, prospekt Vorontsova, 75, kv. 299, Dnepropetrovsk, all of U.S.S.R.
Filed Feb. 24, 1977, Ser. No. 771,515
Int. Cl.² C04B *33/00*
U.S. Cl. 106—67 **5 Claims**

1. A method of preparing a batch of clay for the manufacture of clay bricks, wherein the properties of said batch are improved, which comprises mixing said clay with an aqueous solution of the chloride wastes of non-ferrous metallurgy in a quantity of 5–20 percent based on the weight of said clay, wherein said aqueous solution of chloride wastes is obtained by dissolving chloride wastes of non-ferrous metallurgy having a particle size of about 10–100 microns in water and adjusting the pH of the obtained solution to 1–5 and the density of 1.03–1.1 g./cc., depending on the mineralogical composition of the clay.

4,130,440
SELF-CURABLE INORGANIC COMPOSITION

Shinji Nose, Kobe, and Shingo Tokuda, Nishinomiya, both of Japan, assignors to Osaka Soda Co., Ltd., Osaka, Japan
Filed Dec. 1, 1977, Ser. No. 856,324
Claims priority, application Japan, Nov. 8, 1977, 52-134367
Int. Cl.² C04B *35/16;* **C09J** *1/02*
U.S. Cl. 106—74 **9 Claims**

1. A self-curable inorganic composition consisting of
(A) an alkali silicate as a binder,
(B) about 30 to about 300% by weight, based on the solids content of the binder (A), of a hardener composed of
  (i) 100 parts by weight of a compound selected from the group consisting of calcium sulfite and calcium thiosulfate,
  (ii) about 50 to about 300 parts by weight of calcuim silicate,
  (iii) about 40 to about 300 parts by weight of zinc oxide, and
  (iv) 0 to about 150 parts by weight of an aluminum-containing inorganic compound selected from the group consisting of aluminum hydroxide, alumina and hydrated alumina,
(C) 0 to about 20% by weight, based on the weight of composition in the uncured state, of coloring agents, thickeners, water repellents, curing retarders, dispersants, defoamers or levelling agents, and
(D) 0 to about 80% by weight, based on the weight of the composition in the uncured state, of a filler, aggregate or reinforcing material.

4,130,441
CEMENT AND PROCESS FOR PRODUCING SAME

Boris I. Nudelman, Chilanzar, kvartal 8, 27, kv. 48; Alexandr S. Sventsitsky, Severo-Vostok, 50, kv. 64; Marsel Y. Bikbau, massiv Junus-Abad, B-2, 21, kv. 58; Ada M. Prikhozhan, F-100, Mukimi, 1, kv. 95, and Isak M. Ibragimov, ulitsa Biruni, proezd Temir-Tau, 38, all of Tashkent, U.S.S.R.
Filed Jul. 19, 1977, Ser. No. 817,035
Claims priority, application U.S.S.R., Aug. 20, 1976, 2397382
Int. Cl.² C04B *7/02*
U.S. Cl. 106—89 **2 Claims**

1. A cement consisting of
(a) clinker minerals, viz. a highly-basic calcium chlorosilicate, calcium ortho-chlorosilicate, calcium chloroaluminate, calcium chloroalumoferrite;
(b) calcium oxychloride;
(c) calcium chloride chemisorbed on said clinker materials, the components being present in the following proportions, percent by weight:

a highly basic calcium chlorosilicate	35 to 75
calcium chloro-orthosilicate	10 to 55
calcium chloroaluminate	2 to 30
calcium chloroalumoferrite	4 to 16
calcium oxychloride	0.5 to 2
calcium chloride chemisorbed on said minerals	1.2 to 2.5

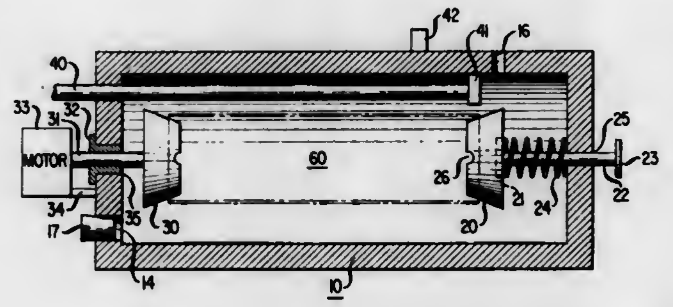
4,130,442
METHOD FOR RENEWING GROUT

Arthur W. Petersen, Chatham Township, Morris County; Arthur Cimiluca, Carlstadt, and Leonard Hirschberger, Marlboro, all of N.J., assignors to Frederick G. Schwarzmann, Kearny, N.J.
Filed Jun. 6, 1977, Ser. No. 803,843
The portion of the term of this patent subsequent to Jun. 7, 1994, has been disclaimed.
Int. Cl.² B08B *7/00*
U.S. Cl. 134—4 **5 Claims**

1. The method of renewing the surface of grout comprising applying a composition consisting essentially of an aqueous suspension of 0.1 to 10% by weight of a surfactant, 10 to 60% by weight on a dry basis of a water-soluble or water-dispersible organic binder which dries to a water resistant film and a pigment, the weight ratio of binding agent to pigment being 1:5 to 5:1 to the grout, allowing the composition to dry to form a water resistant film of the organic binding agent on the grout and removing excess composition from the tile.

4,130,443
APPARATUS FOR CLEANING ROLLER APPLICATORS

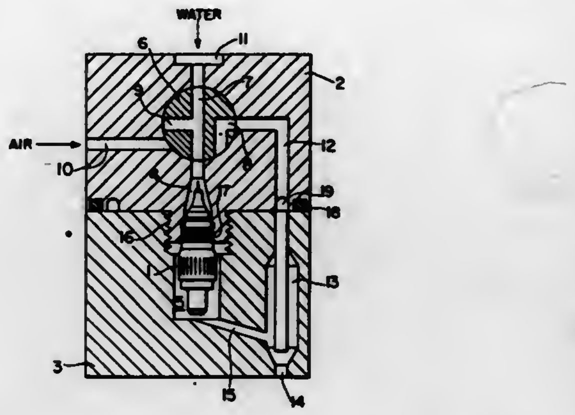
Henry Dulin, 39 Washington Ave., Whippany, N.J. 07981
Filed May 17, 1977, Ser. No. 797,831
Int. Cl.² B08B *7/00, 3/00*
U.S. Cl. 134—33 **6 Claims**



1. Apparatus adapted for cleaning unmounted as well as mounted paint roller type applicators comprising:
a closeable container;
a first support means in said container for engaging a first end of an applicator whether or not said applicator is mounted on a handle assembly;
a second support means in said container for engaging a second end of said applicator whether or not said applicator is mounted on a handle assembly;
means in the interior of said container for spraying said applicator with solvent; and
means for rotating said applicator to cause contaminated solvent to be expelled from said applicator by centrifugal force.

4,130,444
DEVICE FOR CLEANING INK PEN POINTS

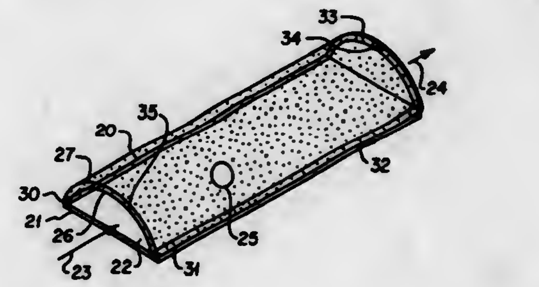
Gerold Anderka, Ellerbek, Fed. Rep. of Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.
Filed Apr. 25, 1978, Ser. No. 900,046
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724888
Int. Cl.² B08B *3/02*
U.S. Cl. 134—96 **5 Claims**



1. A device for cleaning ink pen points comprising:
A. A housing having a lower section and an upper section;
  i. said lower section defining:
    a. a chamber for support and cleaning of an ink pen point and,
    b. a jet pump communicable with said chamber, as well as a source of cleaning water and including a drain conduit;
  ii. said upper section defining;
    a. a lug like extension having an axial bore communicating with said chamber and complementally engagable at its exterior with the wall of said chamber;
    b. an air inlet conduit communicating with said chamber in said lower section;
    c. a water inlet conduit communicating with said jet pump in said lower section; and
    d. a valve having water and air conduits therethrough, said valve being rotatably supported intermediate said air inlet conduit and said water inlet conduit in said upper section, so as to be rotatable from a water cleaning position in which said water conduit is aligned with said water inlet conduit and with said chamber, to an air drying position in which said air drying conduit is aligned with said air inlet conduit and with said chamber and said water conduit is aligned said water inlet conduit and with said jet pump.

4,130,445
LIGHT COLLECTOR

Harry R. Blieden, Los Angeles, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Mar. 20, 1978, Ser. No. 888,095
Int. Cl.² H01L *31/04*
U.S. Cl. 136—89 PC **9 Claims**

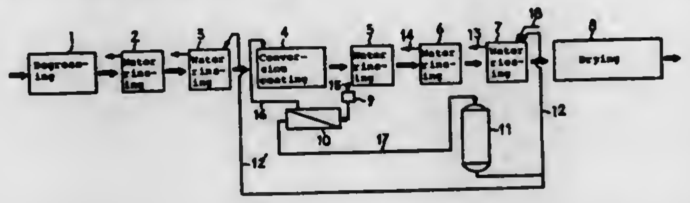


1. A luminescent photovoltaic device comprising a curvilin-

ear luminescent member having a plurality of sides, photovoltaic means on at least one of said sides, conduit means in heat exchange relationship with at least one of said sides, said conduit means being adapted to have a cooling fluid passed therethrough to cool said luminescent member.

4,130,446
PROCESS FOR PHOSPHATE CONVERSION COATING WITH TREATMENT OF RINSE WATER BY REVERSE OSMOSIS AND ION EXCHANGE

Ryoichi Murakami, Kyoto, and Masahiro Zinnouti, Kobe, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan
Filed Apr. 19, 1977, Ser. No. 788,964
Claims priority, application Japan, Apr. 19, 1976, 51-45120
Int. Cl.^{2} C23F *7/10*
U.S. Cl. 148—6.15 Z **4 Claims**



1. In a process for phosphating a substrate of iron or steel which comprises treating the substrate with a phosphating solution containing phosphate ions, zinc ions and, as an accelerator, at least one member selected from the group consisting of nitrite ions, chlorate ions and bromate ions, and rinsing the thus treated substrate with water in multiple steps, the improvement wherein a part of the rinsing water containing the phosphating solution rinsed from the surface of the substrate is passed through a reverse osmosis membrane having a pore size of 1 to 10 A to form a concentrate and a filtrate, the concentrate is recycled for use in the phosphating solution, and the filtrate is treated with ion-exchange resins of the H-type and the OH-type to remove undesirable ions therefrom and the thus treated filtrate is then recycled for use in the rinsing water.

4,130,447
ANNEALING SEPARATOR AND STEEL SHEET COATED WITH SAME

Edmondo Marianeschi; Sandro Basevi, both of Terni; Mario Barisoni, Albano Laziale (Rome); Paolo Marini; Carlo Borgianni, both of Rome, and Roberto Ricci Bitti, Lanuvio (Rome), all of Italy, assignors to Centro Sperimentale Metallurgico S.p.A. and Terni-Societa per l'Industria e l'Elettricita S.p.A., both of Rome, Italy
Filed Aug. 15, 1977, Ser. No. 824,611
Claims priority, application Italy, Apr. 27, 1977, 49142 A/77
Int. Cl.^{2} B23K *35/24*
U.S. Cl. 148—27 **6 Claims**

1. Annealing separator compositions for grain-oriented silicon steel strip, said separator compositions having a magnesium oxide base and containing 0.8 to 35% by weight of at least one member selected from the group consisting of rare earth metal oxides and rare earth metal compounds which yield oxides upon heating, with the provision that when said at least one compound is present in an amount between 0.8 and 5% by weight, said compound has a particle size of less than 325 mesh, and a fraction of 35–55% by weight smaller than 500 mesh.

4,130,448
HIGH-PERMEABILITY MAGNETIC ALLOY

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan
Continuation of Ser. No. 694,969, Jun. 11, 1976, abandoned. This application Nov. 9, 1977, Ser. No. 850,004
Claims priority, application Japan, Jun. 12, 1975, 50/70129
Int. Cl.^{2} C22C *38/02, 38/04*
U.S. Cl. 148—31.57 **1 Claim**

1. A magnetic alloy body which has been rolled to reduce its thickness by at least 84.1% and consisting by weight essentially of 3 to 8% aluminum, 4 to 8% silicon, 0.1 to 1% of a component containing at least one element selected from the group which consists of niobium and tantalum and the balance iron in an amount of 85 to 92% by weight.

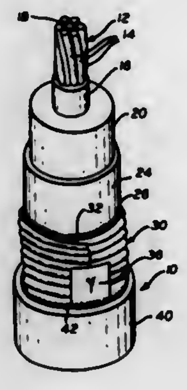
4,130,449
THICKENED AQUEOUS SLURRY EXPLOSIVE COMPOSITIONS

Joseph F. M. Craig, Beloeil, Canada, assignor to Canadian Industries Limited, Montreal, Canada
Filed May 22, 1978, Ser. No. 907,970
Claims priority, application Canada, Jun. 23, 1977, 281298
Int. Cl.^{2} C06B *31/12*
U.S. Cl. 149—62 **6 Claims**

1. In a slurry explosive composition containing water, inorganic oxidizer salt, fuel, thickener, thickener cross-linker and, as a sensitizer, a soluble organic nitrate, the improvement comprising a thickener consisting essentially of a combination of unmodified guar gum and hydroxypropyl-modified guar gum, which thickener provides slurry composition viscosities suitable for extrusion packaging and which develops post-packaging viscosities resulting in firm, shape-retaining, tampable cartridges.

4,130,450
METHOD OF MAKING EXTRUDED SOLID DIELECTRIC HIGH VOLTAGE CABLE RESISTANT TO ELECTROCHEMICAL TREES

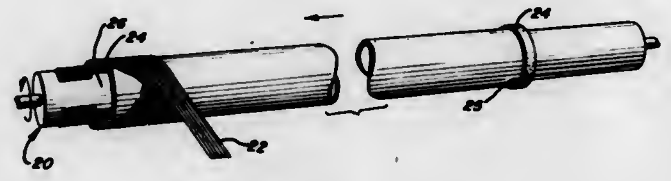
George Bahder, Edison; George S. Eager, Jr., Upper Montclair, and David A. Silver, Livingston, all of N.J., assignors to General Cable Corporation, Greenwich, Conn.
Continuation-in-part of Ser. No. 631,314, Nov. 12, 1975, abandoned, which is a division of Ser. No. 467,607, May 6, 1974, Pat. No. 3,943,271. This application Apr. 6, 1977, Ser. No. 785,192
Int. Cl.^{2} H01B *13/06*
U.S. Cl. 156—48 **7 Claims**



1. A method of making an insulated high-voltage power transmission cable resistant to the formation of electrochemical trees, which cable comprises a multi-stranded metal conductor comprising bare individual strands twisted together along helical paths, and a layer of extruded polyethylene insulation material surrounding the conductor, said insulation being subject to the formation of electrochemical trees starting at the inner surface of the insulation where the voltage stress in the insulation is at a maximum and from which said trees progress away from the inner surface and radially outward, comprising preventing air from entering the cable at the ends thereof by completely filling the spaces between the bare strands of the multistranded conductor and any space between the bare conductor strands and the inside surface of the insulation with a flexible sealant material to eliminate access of air to the inside surface of the extruded polyethylene insulation that surrounds the conductor, said sealant comprising a semi-conducting sealant having a drip point and characteristics required for high voltage power transmitting cables, providing a semi-conducting layer between the conductor and the inside surface of the insulation and maintaining a tight contact between the extruded insulation and such layers of the cable as are adjacent to the insulation to prevent access of air into the cable at the ends thereof.

4,130,451
PROCESS FOR THE MANUFACTURE OF FILAMENT WOUND PIPE USING DEFORMABLE MATERIAL AT THE WIND STOPS

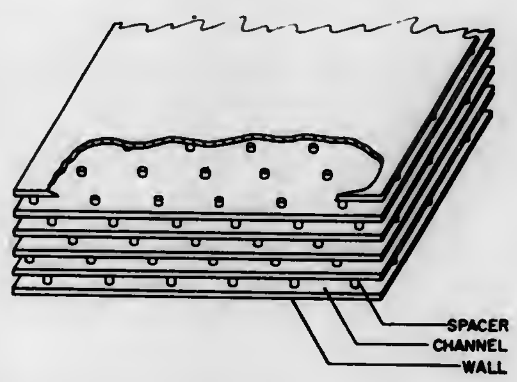
Alan D. Hamilton, Aurora; Gregory P. Peterson, Carol Stream, and Walter R. McGuire, Aurora, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.
Filed Apr. 29, 1977, Ser. No. 792,320
Int. Cl.^{2} B65H *81/00*
U.S. Cl. 156—86 **5 Claims**



1. In a process for making filament wound pipe wherein filamentary roving is wound on a mandrel, a resin composition is used which decreases in volume during a cure and wherein at least one wind-stop is employed which prevents the pipe from relieving longitudinal stresses that arise during said cure, the improvement comprising fitting a deformable material to said wind-stop which is (1) capable of substantially withstanding the compressive forces arising during winding of said roving onto said mandrel and remaining substantially unaffected by any temperature occurring during manufacture of said pipe, (2) substantially inert to said resin composition and (3) adapted to yield to the compressive forces which arise during cure so as to relieve stresses and avoid creation of significant longitudinal strains.

4,130,452
PROCESS OF CONSTRUCTING A CERAMIC CATALYST SUPPORT

John L. Indri, Rte. #33 R.D. #1 Box 523, Hightstown, N.J. 08520
Filed May 10, 1977, Ser. No. 795,379
Int. Cl.^{2} C04B *39/12*
U.S. Cl. 156—89 **30 Claims**

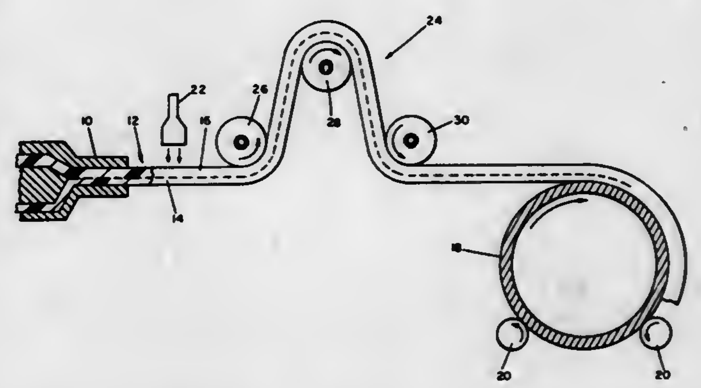


1. A method of making a ceramic device having a plurality of thin walls of microporous ceramic material separated by spacers possessing channels open at both ends and a large exposed internal surface area; said device suitable upon coating with appropriate catalyst for use in the catalytic conversion of harmful exhaust pollutants into innocuous materials; said method comprising the following steps:

i. coating a mixture containing a ceramic powder, a curable organic binder, and a liquid suspending medium onto a substrate sheet wherein the characteristics of said sheet allows it to be subsequently removed in later stages of the method;
ii. solidifying the coating by removal of the suspending medium to form a bicomponent sheet;
iii. assembling the bicomponent sheet into a structure by cutting the sheet into individual sheets and stacking these upon one another or by rolling said sheet upon itself to form a cylinder;
iv. forming a series of holes at right angles to the plane of the sheets;
v. filling the holes so formed with a mixture of ceramic powder in a curable organic binder;
vi. curing the organic binders of steps i. and v.;
vii. removing the material of the original substrate sheet;
viii. heating to burn off the organic binder and fire the ceramic.

4,130,453
PIPE COATING METHOD AND APPARATUS

John H. Hollister, Acton, Mass., assignor to The Kendall Company, Boston, Mass.
Filed Jul. 28, 1977, Ser. No. 819,973
Int. Cl.^{2} B29C *19/00*
U.S. Cl. 156—187 **16 Claims**



1. Method of coating pipe which comprises
forming by extrusion a band of heat-softened thermoplastic,
cooling at least one surface of said band to decrease its fluidity and passing said cooled band through tension isolating means, and applying the surface of said band to the surface of said pipe while simultaneously rotating said pipe about its axis and advancing said pipe along its axis with respect to the point of extrusion to wrap said band helically about said pipe and to pull said band from said tension isolating means, said band being self-supporting and being maintained free from contact with external surfaces between said tension isolating means and said pipe surface and
controlling said tension isolating means and the rate of rotation and advance of said pipe with respect to the rate of extrusion to maintain a first tension on said band between the point of extrusion and the point of contact with the tension isolating means at substantially constant value and to maintain a second tension on said band between said tension isolating means and the contact of said band with said pipe surface at a value substantially higher than said first tension.

4,130,454
ETCHANT AND PROCESS OF ETCHING WITH THE SAME

Oleh B. Dutkewych, 54 Highland Ave., Maplewood, N.J. 07040; Charles A. Gaputis, 423 Maple Blvd., Apt. 3W, Kansas City, Mo. 64124; Michael Gulla, 24 Ivy La., Sherborn, Mass. 01770, and Leonard R. Levy, 6 Colonial Dr., Framingham, Mass. 01701

Continuation-in-part of Ser. No. 646,476, Jan. 5, 1976, abandoned. This application Sep. 30, 1977, Ser. No. 822,002
Int. Cl.^{2} C23F *1/02*
U.S. Cl. 156—659 **18 Claims**

11. An etchant comprising an oxidant combination in a sulfuric acid solution, said oxidant combination comprising hydrogen peroxide and molybdenum, the sulfuric acid concentration varying between 0.01 and 2.5 moles per liter, the hydrogen peroxide concentration varying between about 0.1 and 10 moles per liter, the molybdenum concentration varying between about 0.02 and 0.5 moles per liter and the ratio of the peroxide to the molybdenum being at least 1 to 1.

17. In a process for the manufacture of a printed circuit board including the steps of applying a resist over a copper cladding and removing unwanted copper by etching, the improvement comprising etching said unwanted copper with the etchant of claim 11 to leave a pattern of copper behind.

4,130,455
DISSOLUTION OF METALS-UTILIZING H_2O_2-H_2SO_4-THIOSULFATE ETCHANT

Moenes L. Elias, and Millard F. Good, both of Canfield, Ohio, assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Nov. 8, 1977, Ser. No. 849,685
Int. Cl.^{2} C09K *13/06;* C23F *1/00*
U.S. Cl. 156—666 **15 Claims**

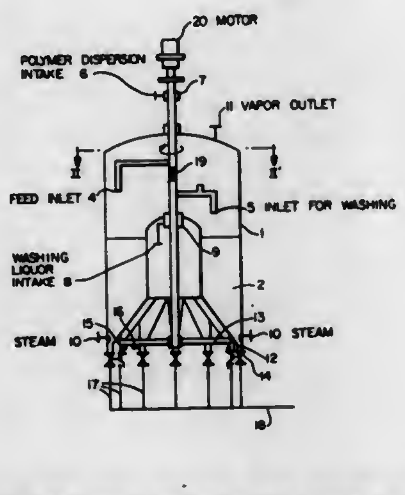
1. A method of metal dissolution which comprises contacting a metal with an aqueous solution containing from about 0.2 to about 4.5 gram moles per liter of sulfuric acid, from about 0.25 to about 8 gram moles per liter of hydrogen peroxide and a catalytically effective amount of an additive selected from thiosulfates of sodium or potassium.

4. The method of claim 1, wherein the aqueous solution contains sodium phenolsulfonate as a stabilizer to reduce the degrading effect of heavy metal ions on hydrogen peroxide.

4,130,456
APPARATUS FOR REMOVING UNREACTED MONOMER FROM SLURRY

Iko Itoh; Tsukasa Takahashi; Shinkichi Takamuku; Azuma Aramaki, and Manabu Serada, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed Apr. 25, 1977, Ser. No. 790,619
Claims priority, application Japan, Apr. 26, 1976, 51/48305
Int. Cl.^{2} B01D *1/14*
U.S. Cl. 159—165 **12 Claims**



1. An apparatus for the removal of unreacted monomers from polymer suspension liquors or latices which comprises:

(a) a vessel partitioned into a plurality of vertically disposed, open topped compartments in the lower portion thereof;
(b) said vessel having a vertical revolving shaft at center thereof, said shaft comprising a feed inlet for said polymer suspension liquors or latices to be supplied therethrough, said feed inlet rotatably mounted above said open topped compartments so as to permit introduction of said polymer suspension liquors or latices into each of said open topped compartments;
(c) a gas outlet at upper part of said vessel; and
(d) said compartments each having a feed inlet for steam and/or an inert gas and an outlet at the bottom thereof.

4,130,457
METHOD OF PULPING WITH POLYSULFIDE

Richard G. Barker, Princeton Junction, N.J., assignor to Union Camp Corporation, Wayne, N.J.

Continuation of Ser. No. 366,758, Jun. 4, 1973, abandoned. This application Dec. 16, 1974, Ser. No. 533,193
Int. Cl.^{2} D21C *3/04*
U.S. Cl. 162—82 **12 Claims**

1. A process for pulping lignocellulosic materials which comprises;

(a) impregnating said materials with a polysulfide pulping liquor having from 5 to 60 gms. per liter of sulfur where from 43 to 80 percent of the sulfur is present as alkali metal polysulfide, from 15 to 40 percent is present as alkali metal sulfide and less than 17 percent is present as alkali metal thiosulfate; said impregnation being carried out at a temperature of from about 60° C. to about 100° C. for a period of from about 30 to about 120 minutes and the ratio of pulping liquor to lignocellulosic material being at least 4.5:1.0 by weight;
(b) separating the impregnated materials from unabsorbed pulping liquor;
(c) steaming the separated materials to a temperature of between 140° C. and 165° C. in a period of less than 10 minutes; and
(d) maintaining the steamed and separated from unabsorbed pulping liqor materials at a temperature of from 140° C. to 165° C. until said materials are pulped.

4,130,458
PRODUCT CONTAINING ALUMINA TRIHYDRATE AND A SOURCE OF B_2O_3 AND METHOD

Gregory R. Moore, West Chicago, and Craig A. Fischer, Sycamore, both of Ill., assignors to Masonite Corporation, Chicago, Ill.

Continuation of Ser. No. 588,687, Jun. 20, 1975, abandoned. This application May 13, 1977, Ser. No. 796,509
Int. Cl.^{2} D21H *3/66*
U.S. Cl. 162—159 **25 Claims**

1. A fibrous product comprising combustible fibers, an alumina hydrate in an amount in the range of 10–60% by weight of said product, and a boron containing compound selected from the group consisting of boric acid, mixture of boric acid and borax, and an ammonium borate, said borate containing compound being present in said product in an amount of at least ½% by weight of said product.

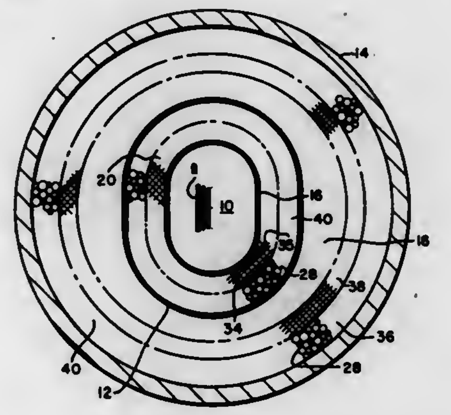
12. A method of making a fibrous product having a reduced flamespread comprising:

mixing together a slurry of components comprising water and combustible fibers,
depositing at least a portion of said slurry onto a water pervious support member to form a wet mat,
adding to the wet mat alumina trihydrate, and a source of B_2O_3 effective in reducing the flamespread of the fibrous product, said source of B_2O_3 selected from the group consisting of boric acid, mixture of boric acid and borax, and an ammonium borate, wherein said alumina trihydrate is added in an amount sufficient to provide 10–60% alumina trihydrate in said fibrous product and wherein said source of B_2O_3 is added in an amount sufficient to provide at least ½% B_2O_3 in said fibrous product, and
consolidating the fibrous product.

4,130,459
POISON AND DILUENT SYSTEM FOR NUCLEAR POWER PLANTS

Walter G. Parker, West Newton; Jack M. Ravets, Pleasant Hills, and Bruce S. Preble, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 29, 1976, Ser. No. 671,887
Int. Cl.^{2} G21C *9/00*
U.S. Cl. 176—38 **11 Claims**



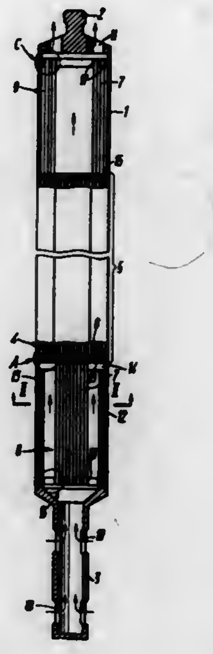
1. A dilution system for nuclear power plants comprising:

a nuclear core containing nuclear fuel, said fuel having a density and a melting point, said fuel emitting neutrons;
an inner wall encapsulating said nuclear core, said inner wall being of a material with a melting point less than said fuel melting point;
a pressure vessel encapsulating said inner wall, said pressure vessel being of a material with a melting point less than said fuel melting point, said pressure vessel and said inner wall forming an inner space therebetween;
an inner screen disposed within said inner space located adjacent said inner wall, said inner screen being of a material having a melting point greater than said fuel melting point, said inner screen having openings therein;
an inner layer of low-density particles disposed within said inner space, said inner layer being positioned adjacent said pressure vessel, said low-density particles being of a material with a melting point greater than said fuel melting point, said particles having a density less than said fuel density;
a generally spherical outer shield encapsulating said pressure vessel, said outer shield comprising a generally spherical outer layer of low-density pellets adjacent said containment vessel and a generally spherical outer screen coupled to said containment vessel, said outer screen being positioned radially inward of said outer layer of low-density pellets, said outer screen having openings of a size smaller than said low-density pellet size, said outer screen being of a material having a melting point greater than said fuel melting point; and
a generally spherical containment vessel encapsulating said outer shield.

4,130,460
FUEL ASSEMBLY FOR FAST REACTOR

Vladimir G. Iljunin, ulitsa Zvezdnaya, 15, kv. 70; Viktor M. Murogov, ulitsa Lenina, 13/1, kv. 4; Mikhail F. Troyanov, ulitsa Lenina, 36a, kv. 30; Anatoly A. Rineisky, ulitsa Lyashenko, 2, kv. 35; Gennady G. Ustinov, ulitsa Koroleva, 18, kv. 18, all of Obninsk Kaluzhskoi oblasti, and Anatoly N. Shmelev, Proletarsky prospekt, 77, kv. 96, Moscow, all of U.S.S.R.

Filed Apr. 6, 1977, Ser. No. 785,053
Int. Cl.^{2} G21C *3/02*
U.S. Cl. 176—68 **12 Claims**



1. In an improved fuel assembly for a fast-neutron nuclear reactor comprising a shroud, an upstream end, a downstream end and a plurality of fuel elements each having an individual gas plenum for collection of gaseous fission products and divided into two groups; an inner group including fuel elements adjacent to the longitudinal axis of the fuel assembly, and an outer group occupying the space between said shroud and the fuel elements of said inner group, the gas plenums of said inner group of the fuel elements being arranged at the coolant inlet side of the assembly, while the gas plenums of the outer group of the fuel elements are arranged at the coolant outlet side of the assembly, the improvement comprising an additional partition means or shell disposed within the space between the wall of said shroud and the bundle of gas plenums of said inner group of the fuel elements at the coolant inlet side, and said partition means or shell is connected to the wall of said shroud at the coolant inlet side to form a coolant stagnation zone open at the assembly fission zone; whereby stresses in the wall of said shroud are reduced.

4,130,461
CONTINUOUS PROCESS FOR THE PRODUCTION OF POLYSACCHARIDE UNDER PHOSPHATE LIMITING CONDITIONS

Renton C. Righelato, and Lynda Deavin, both of Reading, England, assignors to Tate & Lyle Limited, London, England

Filed May 20, 1977, Ser. No. 798,762
Claims priority, application United Kingdom, May 28, 1976, 22318/76
Int. Cl.^{2} C12D *13/04*
U.S. Cl. 195—31 P **5 Claims**

1. In a process for the production of a polysaccharide comprising subjecting to continuous cultivation a bacterium of the species *Azotobacter vinelandii* under aerobic conditions to allow an oxygen uptake in an aqueous culture medium containing as essential ingredients at least one monosaccharide or disaccharide as carbon source and sources of phosphate, molybdenum, iron, magnesium, potassium, sodium, calcium and sulphate, said medium being provided with a source of nitrogen selected from the group consisting of a fixed nitrogen source and gase-

ous nitrogen, and recovering the resulting polysaccharide the improvement which comprises maintaining the concentration of phosphate in the medium such that it limits the concentration of the bacteria and is at least 1.0 millimolar, and maintaining the pH of the medium during cultivation within the range of about 6.0 to about 8.2.

4,130,462
RECEPTOR STERIC HINDRANCE IMMUNOASSAY FOR RECEPTOR DETERMINATION

Kenneth E. Rubenstein, Menlo Park, and Richard K. Leute, Mountain View, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Dec. 16, 1976, Ser. No. 751,805

The portion of the term of this patent subsequent to Jan. 27, 1993, has been disclaimed.

Int. Cl.² G01N *31/14;* A61K *39/00, 43/00*

U.S. Cl. 195—103.5 A **13 Claims**

1. A method for determining the presence of antiligand in an unknown suspected of containing said antiligand which comprises:

combining in an aqueous medium said unknown, anti(detector ligand) and reagent, wherein said reagent has a pair of epitopes in close proximity so that simultaneous binding of receptors to said pair of epitopes is sterically inhibited, wherein one of said pair of epitopes is recognized by said antiligand and the other said pair of epitopes is recognized by said anti(detector ligand);

determining by a detectant the amount of remaining unbound anti(detector ligand) or anti(detector ligand) bound to reagent; and

determining the presence of antiligand by comparing said amount determined with the amount determined with a medium having a known amount of antiligand.

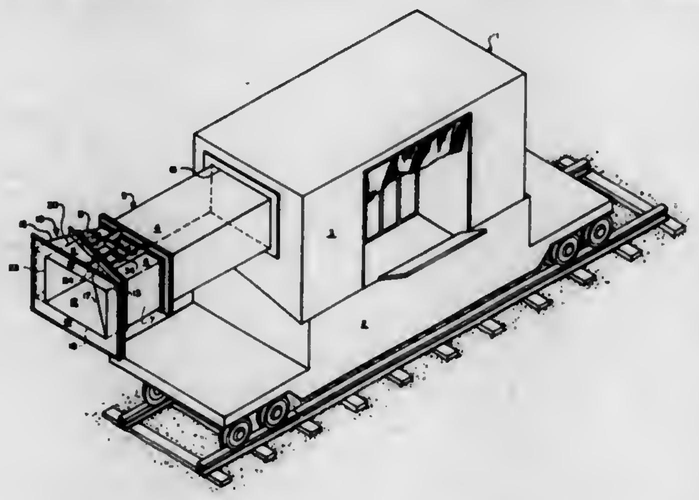
4,130,463
DUCT SWIVEL JOINT

Samuel N. Klavir, Bellmore, N.Y., assignor to Envirotech Corporation, Menlo Park, Calif.

Filed Aug. 10, 1977, Ser. No. 823,256

Int. Cl.² C10B *27/06, 33/00;* F16L *27/12*

U.S. Cl. 202—263 **2 Claims**



1. In a gas cleaning system including first and second vehicles mechanically coupled together in spaced-apart relationship, where the first vehicle is adapted to receive coke from a coking oven and the second vehicle contains gas cleaning equipment to clean fumes from coke received by the first vehicle, improved apparatus for effecting gaseous flow communication for the fumes between said vehicles comprising:

a. a first duct means including:
   (i) a first open-ended, rigid duct member fixed at one of its ends in gaseous flow communication with the interior of the first vehicle; and
   (ii) a first rigid coupling duct having an inlet end and an outlet end; said coupling duct being pivotably mounted to said first duct member so that its inlet end is in sealed, gaseous flow communication with the opposite end of said first duct member; said first coupling duct having an arcuate wall and said first duct member having a complimentary arcuate wall at its said opposite end; said first coupling duct being mounted to pivot about a single, generally vertical axis so that said arcuate wall of said first coupling duct is pivotably movable side-by-side in an arc concentric with said arcuate wall of said first duct member;

b. first biasing means connected between said first duct member and said first coupling duct to urge said coupling duct to pivot about said vertical axis;

c. a first frame member fixed to circumferentially surround the outlet end of said first coupling duct to provide a first planar bearing surface perpendicular to said outlet end;

d. a second duct means including:
   (i) a second open-ended, rigid duct member fixed at one of its ends in gaseous flow communication with the interior of the second vehicle; and
   (ii) a second rigid coupling duct having an inlet end and an outlet end; said coupling duct being pivotably mounted to said second duct member so that its inlet end is in sealed, gaseous flow communication with the opposite end of said second duct member; said second coupling having an arcuate wall and said second duct member having a complimentary arcuate wall at its said opposite end; said second coupling duct being mounted to pivot about a single, generally vertical axis so that said arcuate wall of said second coupling duct is pivotably movable side-by-side in an arc concentric with said arcuate wall of said second duct member;

e. second biasing means connected between said second duct member and said second coupling duct to urge said coupling duct to pivot about said vertical axis;

f. a second frame member fixed to circumferentially surround the outlet end of said second coupling duct to present a second planar bearing surface perpendicular to said outlet end of said second coupling duct; said first and second rigid duct members being located so that, when the first and second vehicles are coupled together, said first and second coupling ducts normally pivot in opposite directions so that said first and second frame members present mating faces which are in abutting and sliding engagement, one with the other, under the urging of said first and second biasing means to provide sealed gaseous flow communication between the first and second vehicles.

4,130,464
METHOD OF EVALUATING THE CORROSION RATES OF METALS

Kenichi Kanno; Masayuki Suzuki, both of Yokohama, and Yuichi Sato, Atsugi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed May 18, 1977, Ser. No. 798,168

Claims priority, application Japan, May 18, 1976, 51-56076; Oct. 22, 1976, 51-127016

Int. Cl.² G01N *27/46, 27/30*

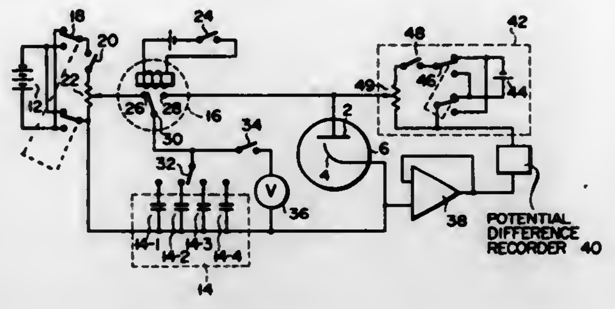
U.S. Cl. 204—1 T **6 Claims**

1. A method of evaluating the corrosion rate of metal in corrosive solution comprising:

feeding a given amount of charge q to the electrical double layer of a metal test piece having a given area S disposed in corrosive solution, said metal test piece being corroded to emit metal ions in the corrosion solution;

measuring the amount of polarization potential η_t of said metal test piece, the amount of which potential sharply increases due to the application of the given amount of charge and which gradually decays due to the corrosion reaction back to the open circuit electrode potential measured versus a reference electrode disposed with said test metal piece in said corrosive solution, said amount of polarization potential being measured as a function of time;

calculating the initial polarization potential η_0 at time $t = 0$ after the cessation of said charge feeding from a plot of said polarization potential η_t measured as a function of time, and



deriving the polarization resistance R_p which is inversely proportional to the corrosion rate from said initial amount of polarization potential η_0 and the charge q fed to said metal test piece;

whereby the corrosion rate of the metal is calculated by means of said polarization resistance R_p.

4,130,465
TREATMENT OF CARBON FIBERS

Kojiro Arai, Okayama, and Noriaki Sugai, Fukuoka, both of Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Mar. 1, 1978, Ser. No. 882,890

Claims priority, application Japan, Mar. 30, 1977, 52-36839

Int. Cl.² C25D *7/00, 11/00*

U.S. Cl. 204—27 **10 Claims**

1. A method of treating carbon fibers characterized by supplying carbon fibers into an aqueous electrolytic solution comprising a vinyl monomer, said carbon fibers being negatively charged so that they act as the cathode thereby causing a polymerization reaction to occur on the surface of said carbon fibers uniformly covering them with the polymerization product of said polymerization reaction.

4,130,466
ANTIFOULING COATING FOR ALUMINUM STRUCTURES

Irvin R. Kramer, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 31, 1978, Ser. No. 911,267

Int. Cl.² C25D *5/48;* B32B *15/08*

U.S. Cl. 204—38 A **9 Claims**

1. A process for protecting aluminum objects from fouling, comprising the steps of:

anodizing the surface of the object exposed to fouling to produce a porous oxide layer thereon; and

impregnating said oxide layer with a molten antifouling compound selected from the group consisting of tributyltin, tripropyltin esters of vinyl, polymers of tributyltin, tripropyltin esters of acrylic acids, and tripropyltin esters of methacrylic acids.

4,130,467
PROCESS FOR PLATING LEAD DIOXIDE

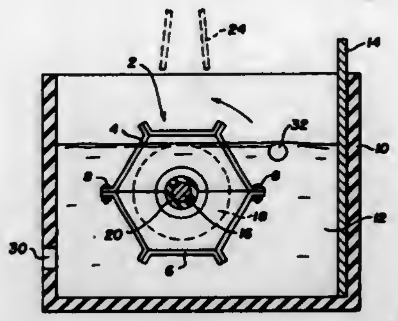
Klaus H. Oehr, Surrey, Canada, assignor to British Columbia Research Council, Vancouver, Canada

Continuation-in-part of Ser. No. 774,673, Mar. 7, 1977, abandoned. This application Apr. 21, 1978, Ser. No. 898,826

Int. Cl.² C25B *1/30*

U.S. Cl. 204—57 **10 Claims**

1. A method of completely coating a plurality of substrates with lead dioxide by electrolysis while the substrates are immersed in an electrolyte containing a lead salt, each substrate having curved surfaces and being able to roll freely, comprising tumbling the substrates in a porous barrel rotating about a central anode feeder at a speed of three to eight revolutions per minute with substrates contacting the anode feeder throughout the electrolysis, the anode feeder being of a material that does not dissolve or passivate in the electrolyte under the reaction conditions during the elecrolysis, maintaining the temperature during the electrolsis at less than 70° C., applying a positive current to the anode feeder to maintain an anode current density in the range 1 to 8 milliamps per square centimeter throughout the electrolysis and applying a negative current to a cathode spaced from the anode.



4,130,468
METHOD OF OPERATION OF AN ELECTROLYSIS CELL WITH VERTICAL ANODES AND CATHODES

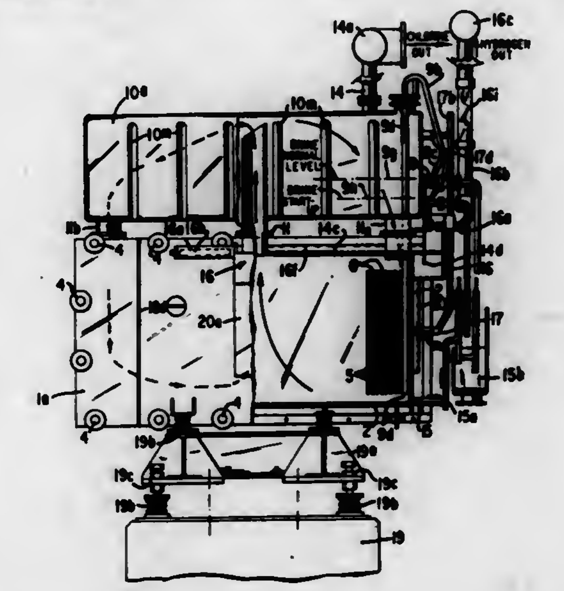
Oronzio De Nora, Milan, Italy, and Vittorio De Nora, Nassau, The Bahamas, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Division of Ser. No. 655,493, Feb. 5, 1976, Pat. No. 4,073,715. This application Dec. 15, 1977, Ser. No. 860,679

Claims priority, application Italy, Nov. 28, 1975, 29782 A/75

Int. Cl.² C25B *1/34, 9/00, 11/03*

U.S. Cl. 204—98 **10 Claims**



1. In an electrolysis cell unit having a diaphragm separating said cell unit into an anode compartment and a cathode compartment, metal anodes in hollow finger form in said anode compartment, nested with cathodes in hollow finger form in said cathode compartment, the bases of said anodes being mounted in a support wall spaced from the anode compartment end wall of said cell unit, an electrolyte in said cell unit, means in said support wall to permit restricted flow of electrolyte therethrough, means to feed electrolyte into said cell unit and means to pass an electrolysis current through said cell unit, the method which comprises circulating the said electrolyte upwardly in the electrolysis gap between said anodes and cathodes and in the interior of said hollow fingers of said anodes by the lifting effect of the anodic gases formed in the electrolysis, separating the gases from the electrolyte and passing a portion of said electrolyte downward in the space between the anode support wall at the base of said anodes and the anode compart-

ment end wall to circulate said anolyte upwardly in the front of said anode support wall and downwardly in the rear of said anode support wall.

4,130,469
AQUEOUS COATING COMPOSITION FROM A MERCAPTAN CONTAINING POLYMER AND A BIS-MALEIMIDE

Vincent D. McGinniss, Valley City, Ohio, assignor to SCM Corporation, New York, N.Y.

Division of Ser. No. 781,549, Mar. 28, 1977, Pat. No. 4,094,843, which is a continuation-in-part of Ser. No. 708,106, Jul. 23, 1976, Pat. No. 4,035,272, which is a continuation-in-part of Ser. No. 595,448, Jul. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 519,409, Oct. 31, 1974, Pat. No. 3,925,181. This application Feb. 13, 1978, Ser. No. 877,021

Int. Cl.^{2} 427 *54;* C08F *8/00;* C08J *3/00*

U.S. Cl. 204—159.16 **9 Claims**

1. A coating composition in aqueous dispersion for forming an ultraviolet radiaton curable film thereof, which comprises:
- a water-dispersed polymer having at least about 5% by weight pendant mercaptan groups;
- at least about 5% by weight of said polymer of a bis-maleimide cross-linking agent; and
- at least about 0.5% by weight of said polymer of an ultraviolet photosensitizer,
- said bis-maleimide having alpha-, beta-ethylenic unsaturation for cross-linking said polymer through said marcaptan groups by addition polymerization upon subsequent ultraviolet radiation curing of said curable film.

4,130,470
METHOD FOR GENERATING A pH-FUNCTION FOR USE IN ELECTROPHORESIS

Ake Rosengren, Enskede; Bengt Bjellqvist, Stockholm, and Vesna Gasparic, Nacka, all of Sweden, assignors to Aminkemi AB, Bromma, Sweden

Filed Dec. 7, 1976, Ser. No. 748,184

Claims priority, application Sweden, Dec. 12, 1975, 7514049

Int. Cl.^{2} G01N *27/26*

U.S. Cl. 204—180 G **14 Claims**

1. Method for generating a pH function for use in electrophoresis, characterized in that the pH function at least along parts of the separation path is generated from the protolysis equilibriums with the separation medium of charged and/or chargeable groups immobilized to vary the pH function in a matrix along parts of the separation path with chemically affixed groups of various concentrations along said path to thereby prevent transport of said groups with respect to the matrix upon application of an outer electrical field, said groups containing one or several of the elements C, S, P, B cr N.

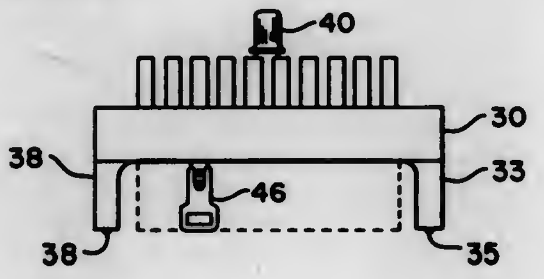
4,130,471
MICROELECTROPHORETIC APPARATUS AND PROCESS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of and Benjamin W. Grunbaum, Moraga, Calif.

Filed Nov. 10, 1977, Ser. No. 850,507

Int. Cl.^{2} G01N *27/26*

U.S. Cl. 204—180 G **14 Claims**



1. A microelectrophoretic process for the simultaneous separation and identification of the components of two or more protein systems, comprising:
- (a) applying an unknown protein sample of a protein system different in nature or in origin and a standard protein sample for the system selected to each compartment of a shallow rib-divided tray containing a suitable gel;
- (b) subjecting the samples so applied to electrophoresis;
- (c) overlaying upon the sample-carrying gel in the tray a membrane divided into strips by slots so placed that they accept the dividing ribs of the tray in a manner such that close contact is established and maintained between the surface of the gel and the surface of the membrane;
- (d) allowing the proteins distributed on the gel to react with suitable specific substrates and color-forming reagents preimpregnated on each strip of the membrane in an arrangement corresponding to that of the protein systems located in the individual compartments of the gel; and
- (e) removing and drying the membrane to produce a composite electrophoretogram.

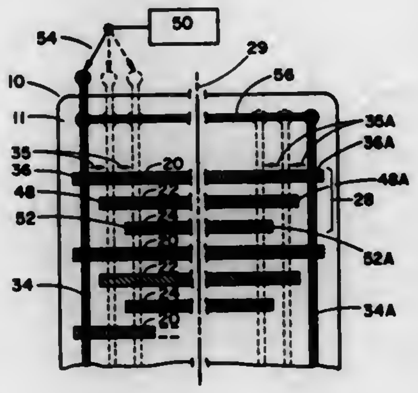
4,130,472
PROCESS FOR MAKING COLOR TELEVISION SCREENS BY ELECTROPHORETIC DEPOSITION

Sam H. Kaplan, Chicago; Philomena C. Libman, Mt. Prospect, and William E. Wainscott, Rockford, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Mar. 28, 1978, Ser. No. 891,098

Int. Cl.^{2} C25D *13/02, 13/16*

U.S. Cl. 204—181 N **3 Claims**



1. For use in the production of a striped-screen television image display faceplate, a process for electrophoretically depositing patterns of image-related compounds on said faceplate, the process comprising:
- depositing a pattern of groups of periodically repeating electrically conductive stripes on said faceplate, said stripes in said groups being of a predetermined graduated length from relatively long to relatively short;
- electrically exciting by means of conductive contact strips with a charge of a first polarity both ends of said relatively long stripes during immersion of said faceplate in an electrolytic bath including an image-related compound having particles charged with a potential of a second polarity opposite to said polarity for electrophoretic deposition of said particles on said stripes;
- serially electrically exciting both ends of stripes of successively shorter lengths, accompanying each such exciting with a different bath including a different image-related compound for electrophoretic deposition on the respective stripes;
- whereby, by electrically contacting both ends of said conductive stripes, the effect of a single discontinuity in electrical conductivity of any of said stripes is nullified as any stripe having such a discontinuity is electrophoretically coated along its entire length with said compound.

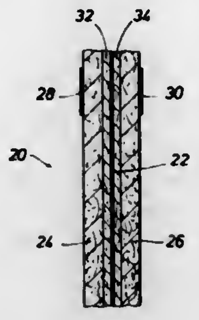
4,130,473
ELECTRODE STRUCTURE FOR USE IN METAL IN EXCHANGE APPARATUS USEFUL IN PURIFYING SPENT ACIDS AND THE LIKE

William L. Eddleman, 6638 Westchester, Houston, Tex. 77005

Continuation-in-part of Ser. No. 664,240, Mar. 5, 1976, abandoned. This application Jun. 27, 1977, Ser. No. 810,494

Int. Cl.^{2} C25C *1/00, 7/00, 7/02, 7/04*

U.S. Cl. 204—252 **9 Claims**



1. An apparatus for use in electrically separating metal ions and acid cations in an aqueous solution, comprising:
- a diaphragm which is:
  - (a) cation and anion permeable;
  - (b) impermeable to water;
  - (c) provided with two sides and has a thickness of about one mil;
  - (d) acid resistant;
  - (e) a flexible sheet to enable rolling into a tube from sheet stock;
  - (f) has exposed sides accepting an adhesive at least sufficient to attach an electrode thereto;
- two electrodes formed of a flexible matted fibrous body impregnated with an electrically conductive material, one of said electrodes attached to one side of said diaphragm and the other attached to the opposite side of said diaphragm; and
- means for connecting said electrodes in a DC circuit so that, on contact of said diaphragm with a solution of metal anions and acid cations, either the metal anions or acid cations move across said diaphragm dependent on current flow and the respective polarities of said electrodes.

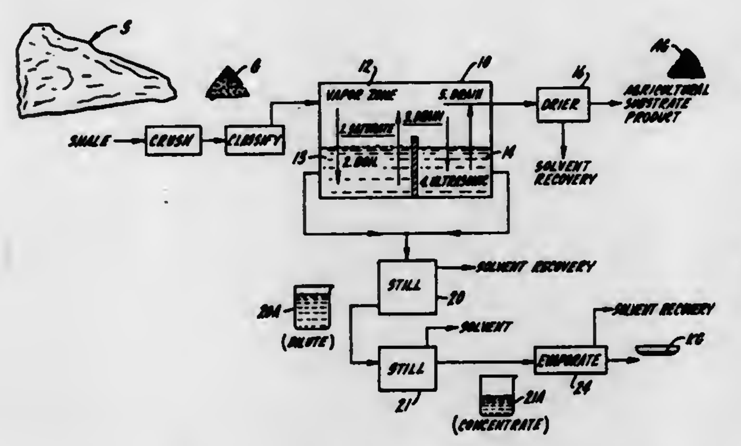
4,130,474
LOW-TEMPERATURE OIL SHALE AND TAR SAND EXTRACTION PROCESS

Myron L. Anthony, LaGrange, Ill., assignor to Shoilco, Inc., Grand Junction, Colo.

Continuation-in-part of Ser. No. 570,007, Apr. 21, 1974, abandoned. This application Jun. 9, 1976, Ser. No. 694,231

Int. Cl.^{2} C10G *1/04;* C05D *1/00*

U.S. Cl. 208—11 LE **43 Claims**



1. The process of treating oil shale, reduced to particulate granular form, to produce at least two usable products, one being an unconverted organic extract principally kerogen which contains shale oil and the other a dross suitable as an agricultural substrate, comprising the following steps:
- A. Treating the particulate shale with a hot perchloroethylene solvent in which kerogen is soluble at a temperature below 350° F. and at a temperature of not more than about 350° F. for a time sufficient to extract a substantial kerogenous fraction from the particulate shale without converting any appreciable part of the kerogen while leaving an unextracted inorganic residue in the particulate shale having a water soluble fertilizer constituent selected from the group consisting of nitrates, phosphates, potash and water soluble trace minerals;
- B. Separating the kerogenous fraction and solvent from the treated particulate shale, leaving a granular dross in the form of a granular water-permeable substrate material which will support plant life;
- C. Distilling said fraction and solvent to separate said fraction leaving the solvent in substantially pure form which is recycled to step A; and
- D. At least partly separating the fertilizer constituent from the granular dross.

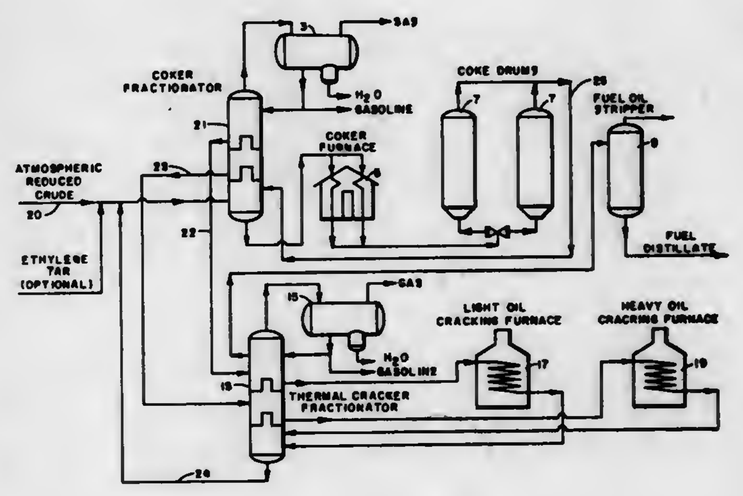
4,130,475
PROCESS FOR MAKING PREMIUM COKE

Daniel F. Cameron, London; Gary C. Hughes, Louth, both of England, and Harry R. Janssen, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 398,372, Sep. 18, 1973, abandoned, which is a continuation-in-part of Ser. No. 261,871, Jun. 12, 1972, abandoned. This application Nov. 10, 1977, Ser. No. 850,176

Int. Cl.^{2} C10G *9/14, 37/02*

U.S. Cl. 208—54 **7 Claims**



1. A process for producing premium coke from an atmospheric reduced crude feedstock comprising:
- (a) charging a feedstock of from 90 to 100 volume percent of an atmospheric reduced crude and up to 10 volume percent ethylene tar to a coker fractionator, said atmospheric reduced crude having an API gravity of from 20 to 30, a Conradson carbon residue of no more than 6.0 percent, and a boiling distribution as follows:

Volume Percent	Temperature - ° F
5	450-700
10	500-750
20	570-820
30	630-880
40	670-940
50	720-990
60	900+

(b) charging a bottom stream from said coker fractionator to a coker furnace and heating said bottom stream to coking temperature;
(c) charging said heated bottom stream to a coking drum maintained at premium coking conditions to produce premium coke therein;
(d) passing overhead vapors from said coking drum to said coker fractionator;
(e) withdrawing gas oil from said coker fractionator and charging it to a thermal cracking unit where it is thermally cracked in thermal cracking furnace means to produce an effluent thermally cracked material including thermal tar;
(f) passing effluent from said thermal cracking furnace means to a thermal cracker fractionator;
(g) withdrawing thermal tar from said thermal cracker fractionator and combining said thermal tar and said atmospheric reduced crude; and
(h) recovering premium coke from said coke drum, said premium coke being the sole coke product produced in said process.

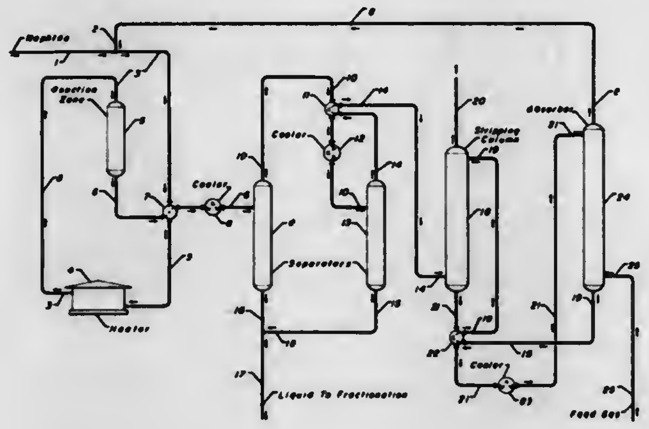
4,130,476
SEPARATION AND USE OF A GASEOUS STRIPPING MEDIA IN A HYDROTREATING PROCESS

Robert S. Loboda, Hacienda Heights, Calif., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 706,858, Jul. 19, 1976, Pat. No. 4,058,452. This application Aug. 11, 1977, Ser. No. 823,774

Int. Cl.² C10G *23/02, 34/00*

U.S. Cl. 208—212 **5 Claims**



1. A catalytic hydrotreating process having a once-through hydrogen gas flow which comprises the steps of:
(a) passing a feed gas stream comprising hydrogen and C_2 to C_4 paraffins through an absorption zone operated under conditions effective to remove C_2 to C_4 paraffins from said gas stream, including countercurrent contact of said gas stream with a stripping zone liquid effluent stream thereby forming a hydrogen-rich gas stream and an absorption zone liquid effluent stream;
(b) passing the absorption zone liquid effluent stream into a stripping zone operated at conditions effective to cause the removal of C_2 to C_4 paraffins from said absorption zone liquid effluent stream, including countercurrent contact with a gaseous stripping media, as hereinafter delineated, thereby forming said stripping zone liquid effluent stream of step (a) and an off-gas stream comprising hydrogen and C_2 to C_4 paraffins;
(c) admixing the hydrogen-rich gas stream of step (a) with a hydrocarbon fraction to form a reaction zone feed stream;
(d) passing said reaction zone feed stream through a catalytic hydrotreating zone containing a catalyst comprising a metal or oxide of a metal selected from the group consisting of Group VIII, Group VIB, and the combination of Group VIB and Group VIII of the Periodic Table to treat said hydrocarbon with said hydrogen to form a catalytic hydrotreating reaction zone effluent;
(e) cooling and effecting a partial condensation of said reaction zone effluent and passing said effluent into a first vapor-liquid separation zone operated at a temperature of from about 20° F. to 300° F. and a pressure of about 100 psig to about 1500 psig to form a first condensate stream and a first separation zone gas stream;
(f) passing said first condensate stream to a product recovery zone;
(g) cooling and then passing said first separation zone gas stream into a second vapor-liquid separation zone operated at a lower pressure within 25 psi of the pressure of said first vapor-liquid separation zone and a temperature about 40° to 100° F. below said temperature of said first-liquid separation zone to form a second condensate stream and a second separation zone gas stream;
(h) heating the second separation zone gas stream by indirect heat exchange to provide said cooling of said first separation zone gas stream in step (g) and passing said heated second separation zone gas stream into a lower porton of the stripping zone as the gaseous stripping media in step (b); and
(i) passing said second condensate stream to said product recovery zone.

4,130,477
FROTH FLOTATION PROCESS

Donald M. Podobnik, Cuajone, Peru, and Guy H. Harris, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 754,764, Dec. 27, 1976, abandoned. This application Dec. 21, 1977, Ser. No. 862,998

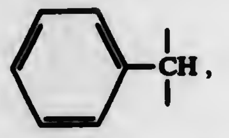
Int. Cl.² B03D *1/02*

U.S. Cl. 209—166 **22 Claims**

1. In a process for collecting mineral values from an ore which comprises mixing ground ore with water to form an ore pulp and aerating said pulp in the presence of an effective amount of a frother, the improvement which comprises carrying out said process with a frother of the formula:

$$R[S(EO)_x(PO)_y(BO)_zH]_n$$

wherein, in said formula,
$EO = C_2H_4O$, $PO = C_3H_6O$ and $BO = C_4H_8O$,
$n = 1$ or 2,
$x = 0$–4,
$y = 1$–10,
$z = 0$–2,
and where $n = 1$,
the average sum of the x, y and z groups is from 2 to about 12,
R represents alkenyl of 3–5 carbon atoms, an alkyl group of from 1 to about 8 carbon atoms or an aryl group, and
where $n = 2$
the average sum of all $x+y+z$ groups is from 2 to about 12,
R represents, a bridging —$(CH_2)_m$—radical wherein $m =$ 1–6, or a bridging benzylidene radical



or frother mixtures of the above formula.

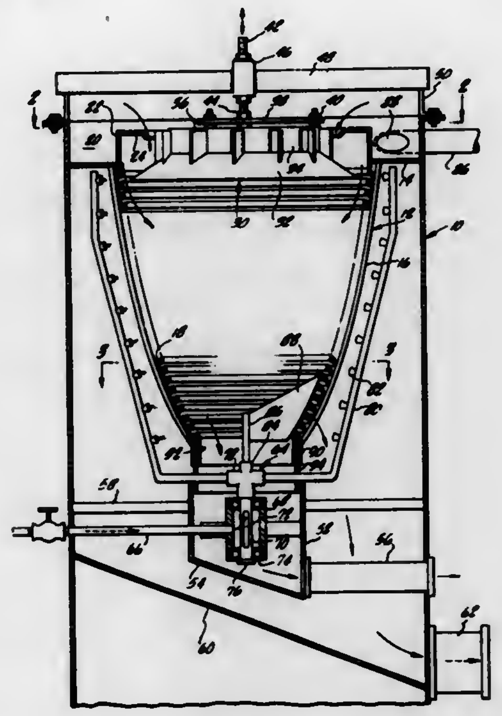
4,130,478
BOWL SHAPED SCREENING APPARATUS

Douglas M. Swallow, Toronto, Canada, assignor to Sweco, Inc., Los Angeles, Calif.

Filed Aug. 25, 1977, Ser. No. 827,461

Int. Cl.² B07B *1/06*

U.S. Cl. 209—254 **3 Claims**



1. A screening apparatus having a support structure, a stationary screen fixedly mounted in said support structure, said screen being bowl-shaped with a first opening centrally located at the upper end thereof and a second, smaller opening centrally located at the lower end thereof, an influent passage located near the top of said support structure, an effluent receiver about said screen and a concentrate receiver below said second opening; wherein the improvement comprises, in combination,
an influent manifold having an annular channel, a tangential inlet for said influent passage and an inner wall defining one side of said annular channel and extending to an edge over which influent can flow towards said screen;
a distributor cone mounted to said support structure and positioned in said first opening to receive influent from said influent manifold and distribute the influent outwardly and downwardly to said screen, said distributor cone extending to near said screen forming an annular orifice therebetween; and
means for rotatably mounting said cone to said support structure.

4,130,479
REPLACEABLE LINER FOR CENTRIFUGE SIEVE

Herbert Schiele, Kettwig, Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany

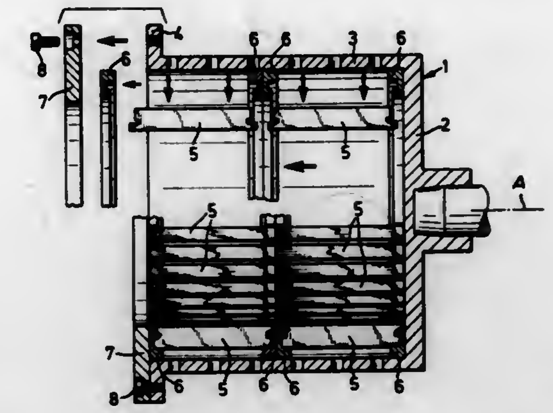
Filed Dec. 17, 1975, Ser. No. 641,621

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1974, 2460167

Int. Cl.² B07B *1/46*

U.S. Cl. 209—395 **7 Claims**

1. A centrifuge sieve comprising:
a support drum rotatable about an axis;
a pair of axially spaced rings secured in said drum and centered on said axis; and
a multiplicity of sieve bars disposed in a cylindrical array and having radially inner sides defining a sieve surface of revolution centered on said axis, said bars being held together at their opposite ends by said ring by engaging same with a shape-locking plug-in connection, each of said plug-in connections comprising an element on the respective bar and a mating element on the respective ring, the mating elements interengaging in a claw-like manner, both of said rings and all of said elements being totally outside said surface, each of said bars being formed at each of its ends with a laterally extending projection engageable with the adjacent end of the adjacent bar and serving to space said bars circumferentially apart, said projections being radially inward and axially aligned with said rings to shield same, each of said projections having a radially inner surface radially outwardly of said body.



4,130,480
APPARATUS FOR SORTING, COUNTING AND GROUPING ITEMS

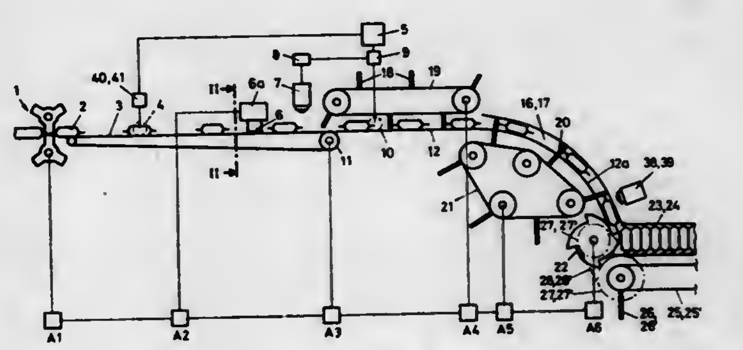
Horst Loewenthal, Tiengen, Fed. Rep. of Germany, assignor to S I G Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed May 16, 1977, Ser. No. 797,399

Claims priority, application Switzerland, May 14, 1976, 6092/76

Int. Cl.² B07C *5/38*

U.S. Cl. 209—551 **17 Claims**



1. An apparatus for sorting, counting and grouping items, including conveyor means, defining a conveying path, for advancing the items in succession, comprising
(a) sorting means disposed along said conveying path for removing defective items and including a pusher device supported along said conveying path for periodical movement transversely to said conveying path between successive items for laterally removing interconnected successive items from said conveyor means;
(b) counting means disposed along said conveying path downstream of said sorting means for counting the advancing items unaffected by said sorting means;
(c) at least two branch conveyors forming part of said conveyor means and defining said conveying path downstream of said counting means;
(d) a routing device arranged along said conveying path upstream of the branch conveyors and downstream of said counting means for directing the items onto a selected one of said branch conveyors; said counting means being

connected to said routing device for switching said routing device upon reaching a predetermined count for alternatingly directing a predetermined number of items onto separate branch conveyors;

(e) stacking means arranged at downstream ends of said branch conveyors for stacking the items into item groups each consisting of the predetermined number of items; and

(f) collecting conveyor means forming part of said conveyor means and defining said conveying path downstream of said stacking means for advancing the item groups.

4,130,481

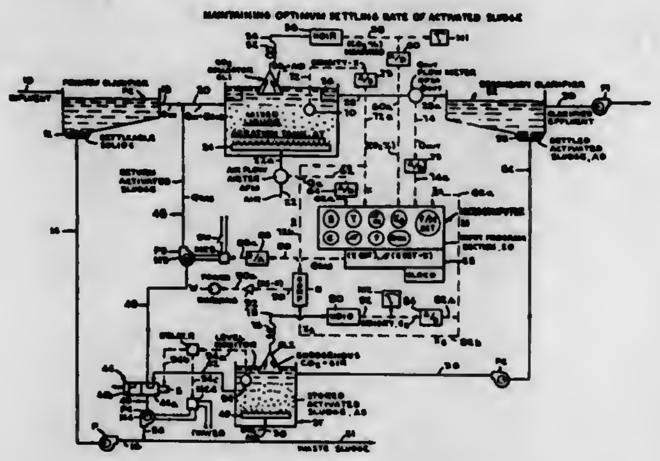
MAINTAINING OPTIMUM SETTLING RATE OF ACTIVATED SLUDGE

Lee M. Chase, Los Gatos, and Julius J. Muray, Los Altos, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 768,255, Feb. 14, 1977, abandoned. This application Sep. 16, 1977, Ser. No. 833,923

Int. Cl.² C02C *1/06, 5/10*

U.S. Cl. 210—6 **6 Claims**



5. The method of maintaining the optimum settling rate of the activated sludge in the secondary clarifier of an activated sludge sewage treatment process; said process being of the type wherein sewage influent is fed to an aeration tank for consumption by bacteria under aerobic conditions, said aeration tank containing a mixed liquor water, organic substrate and comprising a mass of suspended activated sludge and wherein metabolic oxygen for the activated sludge cells in supplied to the mixed liquor, said activated sludge consuming organic substrate in the mixed liquor with a resultant respiration of CO_2, mixed liquor being continuously withdrawn from the aeration tank and fed to the secondary clarifier wherein the activated sludge is permitted to settle out leaving a clarified effluent and a portion of the settled activated sludge is returned to the aeration tank; the improvement comprising the steps of continuously measuring the actual density of the mass of activated sludge in the aeration tank; continuously collecting the gases leaving a predetermined area of the surface of said mixed liquor, continuously measuring the percentage of CO_2 in said collected gases, continuously determining the volume of CO_2 collected during a given period of time as an index of the metabolic rate of the mass of activated sludge in the tank; continuously determining the rate of substrate consumption in the tank based on said CO_2 volume determination; continuously determining the rate at which a given weight of sewage enters the tank based on said substrate consumption rate, said rate to be termed food, selecting the food to mass ratio which provides the optimum activated sludge settling rate at the final clarifier, continuously determining an optimum set density of the mass of activated sludge in the tank based upon the aforesaid determination of the food entering the tank, the substrate consumption rate and the aforesaid selected food to mass ratio; continuously comparing the measured activated sludge density with the optimum set activated sludge density to determine the difference between the set and the measured densities, and regulating the amount of the portion of activated sludge that is returned to the tank in response to the aforesaid density difference to thereby bring the said density difference to zerio.

4,130,482

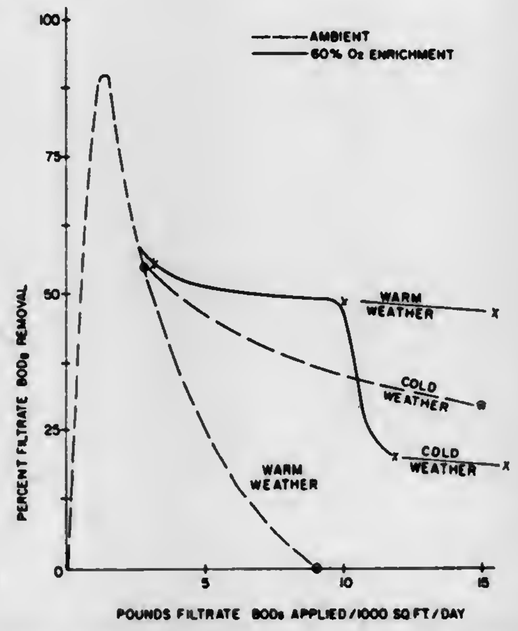
WASTEWATER TREATMENT

Wilbur N. Torpey, New York, N.Y., assignor to Autotrol Corporation, Milwaukee, Wis.

Continuation of Ser. No. 749,542, Dec. 10, 1976, abandoned, which is a continuation of Ser. No. 602,578, Aug. 7, 1975, abandoned. This application Jun. 30, 1977, Ser. No. 811,510

Int. Cl.² C02C *1/04*

U.S. Cl. 210—17 **2 Claims**



1. A method of treating wastewater containing filtrate BOD_5 and at a wastewater temperature of less than 60° F., comprising the steps of:

(a) supplying said wastewater to a first stage biological treatment unit at a first loading rate,

(b) supplying the effluent wastewater from said first stage biological treatment unit to a second stage biological treatment unit at a second loading rate,

(c) said first and second stages employing rotatable biological contactors having surface area for the growth and maintenance of biological slimes,

(d) said second stage including at least about 30% to not more than about 70% of the contactor surface area of said first stage,

(e) rotating said biological contactors of said first and second stages at a predetermined rotational rate of between 0.6 and 2.0 RPM to alternately expose said surface area to a gaseous atmosphere and to grow and maintain biological slimes on said surface area,

(f) said gaseous atmosphere comprising from about 30% to about 80% oxygen by volume,

(g) said first and second loading rates, expressed as pounds of filtrate BOD_5 per day per 1,000 square feet of contactor surface, being from about 6 to about 10.

4,130,483

SEWAGE TREATING AND CONVERSION PROCESS

Owen R. Waltrip, Roseville, Calif., assignor to Nuclear Supreme, Casper, Wyo.

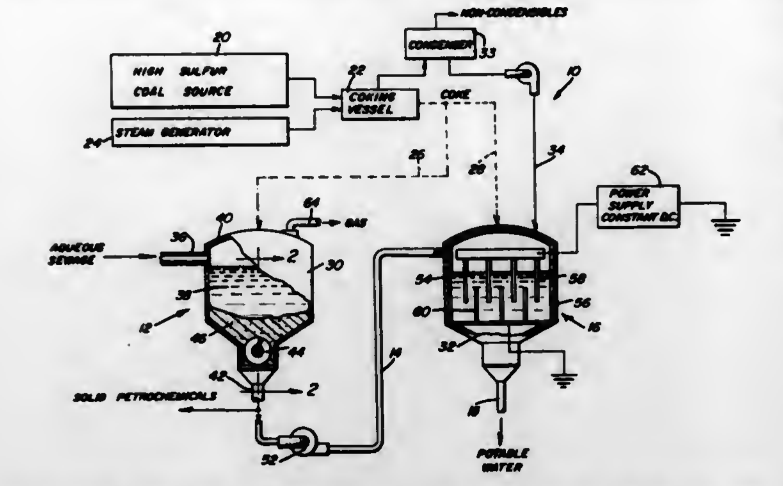
Filed Oct. 14, 1977, Ser. No. 842,370

Int. Cl.² B01D *15/00*

U.S. Cl. 210—40 **3 Claims**

1. A process for decontaminating sewage by use of coal having a high sulfur content, including the steps of: coking the coal to form a particulate product and a gaseous product; charging first and second filter zones with said particulate product to form filter beds therein; passing the sewage through the first of the filter zones to extract a liquid effluent and form a settled solid product; electrically charging the filter bed in

the second of the settling zones; condensing the gaseous product to form a condensate; and conducting said condensate and the liquid effluent to said second of the settling zones for passage through the electrically charged filter bed to extract a decontaminated liquid product therefrom.



4,130,484

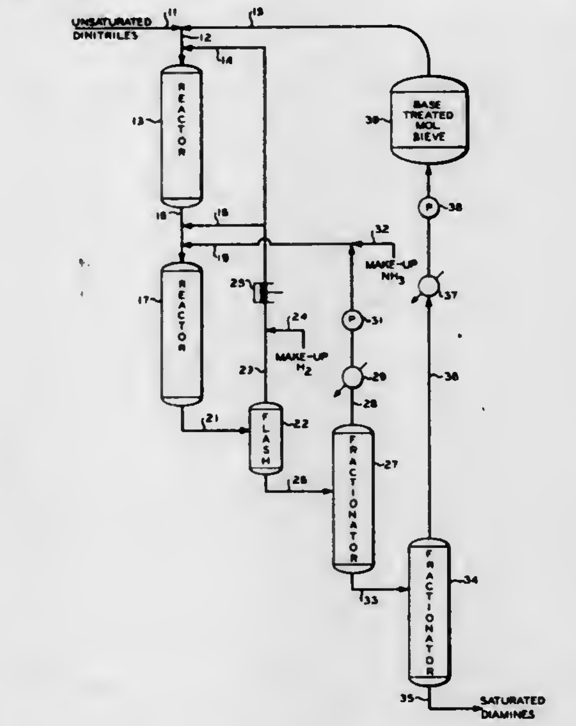
PURIFICATION PROCESS

Stanley J. Marwil, and Ernest A. Zuech, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 28, 1976, Ser. No. 700,422

Int. Cl.² B01D *15/00*

U.S. Cl. 210—41 **18 Claims**



1. In a process for removing at least a substantial portion of at least one contaminant from a fluid containing said at least one contaminant and at least one dehydration sensitive compound, said at least one contaminant being selected from the group consisting of water and nitrogen compounds having the formula XNH_2 wherein X is selected from the group consisting of hydrogen and linear alkyl radicals having 1 to 22 carbon atoms wherein said fluid is contacted with a molecular sieve having an effective pore diameter in the range of about 2 to about 6 Angstrom units, thereby causing substantial dehydration of said dehydration sensitive compound; the improvement comprising treating said molecular sieve with at least one base selected from the group consisting of alkali metal hydroxides, alkali metal carbonates, alkaline earth hydroxides and alkaline earth carbonates and utilizing the thus treated molecular sieve to contact said fluid to thereby at least substantially reduce the dehydration of said dehydration sensitive compound.

4,130,485

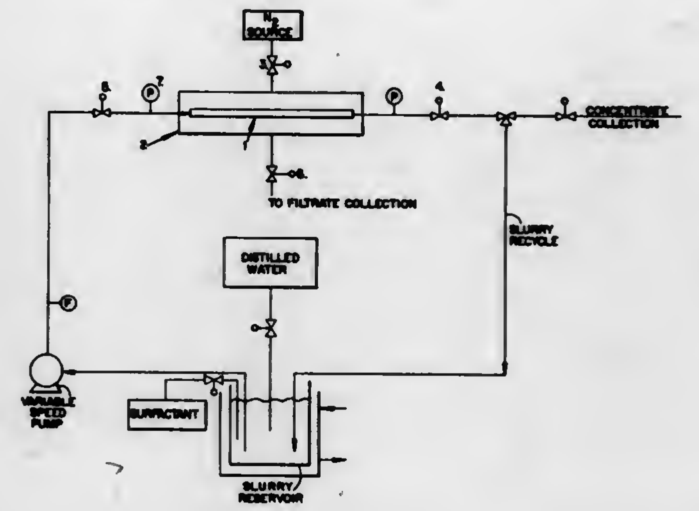
NOVEL FILTRATION PROCESS AND APPARATUS

Gerald T. Dyer, Weston, and Michael A. Ryan, Framingham, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 613,618, Sep. 15, 1975, abandoned, which is a continuation-in-part of Ser. No. 418,058, Nov. 21, 1973, abandoned. This application May 10, 1977, Ser. No. 795,653

Int. Cl.² B01D *29/00*

U.S. Cl. 210—66 **24 Claims**



1. A process for filtering solid/fluid dispersions wherein said dispersion comprises solids having a particle size distribution between about 0.1μ to about 50μ and which comprises the step of circulating said dispersion through apparatus having filtration means comprising at least one tubular member having a rigid, porous wall providing pores having a micron rating between about 0.5 to about 5 microns and maintaining said dispersion at a flux rate sufficient to prevent any substantial number of particles having a particle size less than said micron rating from passing through said pores whereby filtration of said dispersion is achieved by removing fluid through said pores while increasing the concentration of solids in said dispersion as said dispersion is circulated through said hollow member.

4,130,486

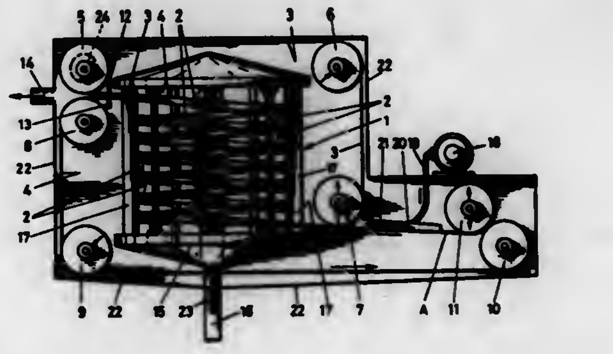
METHOD AND DEVICE FOR THE SEPARATION OF A LIQUID-CONTAINING MIXTURE

Uilke van Essen, Gorinchem, Netherlands, assignor to Pollutex Milieutechniek B.V., Rijswiji, Netherlands

Filed Feb. 23, 1976, Ser. No. 660,186

Int. Cl.² B01D *33/02*

U.S. Cl. 210—78 **12 Claims**



1. A method for the separation of a liquid-containing mixture into two phases using a first endless liquid permeable flexible belt disposed about spaced guide rollers, said method comprising the steps of guiding said belt about the spaced guide rollers along a generally helicoidal path with the portions of said belt between adjacent rollers and in said generally helicoidal path

extending along linear paths and the portions of the belt about the rollers extending along spiral segments of the helicoidal path, depositing said material on said endless liquid-permeating first flexible belt while said first belt is moving in a linear path, thereafter moving said belt in said generally helicoidal path with said material on an interior surface of said belt and at a speed sufficient to cause the liquid portion of said mixture to pass through said belt by centrifugal force, and removing the solid part of said mixture from said belt at the end of said helicoidal path.

9. A device for separation of a liquid-containing mixture into two phases, in a mechanical way, by application of centrifugal force, said device comprising an endless moisture permeable, first flexible belt, drive means driving said belt, guide means for said belt causing said belt to move through a generally helicoidal path including spaced guide rollers, said belt being disposed about said rollers in said helicoidal path with the portions of said belt between adjacent rollers and along said helicoidal path extending along linear paths and the portions of the belt about said rollers extending along spiral segments of the helicoidal path, means introducing the mixture to be separated onto said belt before it enters said helicoidal path, said mixture being retained on an inner surface of said belt through said helicoidal path, the liquid portion of said mixture permeating said belt by centrifugal force.

4,130,487

FILTERS FOR LIQUIDS OR GASES

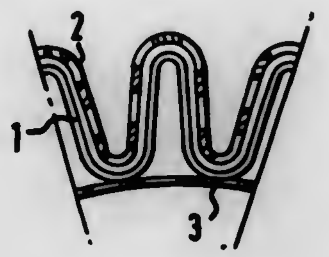
George S. Hunter; Susanne P. Hunter, both of Houghton-le-Spring, and Brian Walker, Washington, all of England, assignors to Process Scientific Innovations Ltd., Durham, England

Filed Apr. 4, 1977, Ser. No. 784,320

Claims priority, application United Kingdom, Apr. 5, 1976, 13640/76; Nov. 11, 1976, 46969/76; Mar. 8, 1977, 9680/77; May 10, 1976, 19083/76

Int. Cl.^{2} B01D *53/02, 46/02*

U.S. Cl. 210—85 **9 Claims**



1. A filter element for fluids comprising at least one cylindrical sheet of nonwoven microporous fibrous filter material impregnated with a synthetic resin binder, said filter material consisting of an amorphous mass of borosilicate glass fibers, a substantial quantity of said borosilicate glass fibers each having a diameter of between 0.5 to 9.0 microns and a length of between 1 and 2 mm, the remaining fibers having a length of up to 6 mm, said sheet being at least about 0.03 inches thick and formed with pleats over its entire area, said pleats being substantially parallel to the axis of said cylindrical sheet and presenting peaks internally and externally of said cylindrical sheet, the internal peaks being spaced from the external peaks by approximately 0.6 cm, and at least one perforate supporting cylinder of comparatively rigid material formed with perforations substantially over its whole area, said supporting cylinder being mounted closely adjacent to said cylindrical sheet to provide support for said sheet, said synthetic resin binder providing support for said borosilicate microporous fibrous material between said peaks.

4,130,488

DEVICE FOR CLEANING AND CIRCULATING A LIQUID

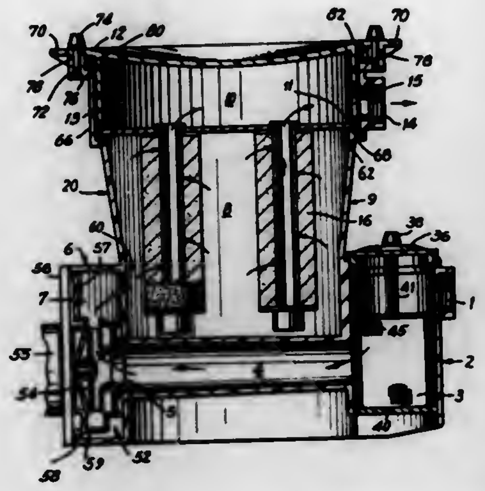
Walter Speck, Hilpoltstein, and Willy Speck, Behringers-dorf, both of Germany, assignors to Speck-Pumpen Daniel Speck & Sohni, Germany

Filed Jun. 24, 1977, Ser. No. 809,804

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1976, 2639854

Int. Cl.^{2} B01D *27/08*

U.S. Cl. 210—232 **16 Claims**



1. In a device for circulating and cleaning a liquid, a one-piece plastic body which substantially in its entirety is in the form of a unitary wall structure incapable of being disassembled into subsidiary components, said body having a strainer housing portion for receiving raw liquid which is to be cleaned, a filter housing portion from which cleaned liquid is to be discharged, and a pump housing portion for housing a pump and formed with a pressure outlet communicating with said filter housing portion and through which pumped liquid is delivered to said filter housing portion to be filtered therein, said pump housing portion also being formed with a suction inlet for delivering liquid to a pump housed by said pump housing portion to be pumped thereby to said pressure outlet, said filter housing portion being formed with a passage communicating on the one hand with said suction inlet and on the other hand with said strainer housing portion so that raw liquid received in said strainer housing portion will flow therefrom through said passage to said suction inlet.

4,130,489

APPARATUS FOR REMOVING RAINBOWS FROM FLOWING WATER

Gerall A. Black, 7532 Oakland Ave. South, Minneapolis, Minn. 55423

Continuation-in-part of Ser. No. 566,386, Apr. 9, 1975, abandoned. This application Sep. 26, 1977, Ser. No. 836,601

Int. Cl.^{2} E02B *15/04*

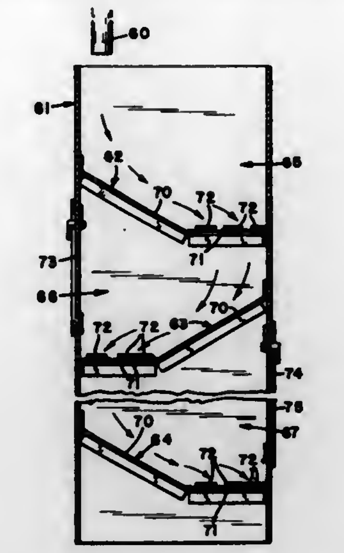
U.S. Cl. 210—242 AS **2 Claims**

1. Apparatus for removing oil from moving water, comprising, in combination:

first and second purifier stages comprising chambers containing free floating pads of buoyant material preferentially absorptive of oil in the presence of water, each said chamber having a bottom comprising a downwardly and inwardly sloping solid baffle portion and an abutting horizontal perforated portion supporting the buoyant material;

means admitting liquid to be treated to fall on said baffle portion of said first stage;

and means mounting the second chamber below and vertically spaced from first chamber so that liquid flowing from the perforated bottom portion of the bottom of said first chamber impinges upon the baffle portion of said second chamber.



4,130,490

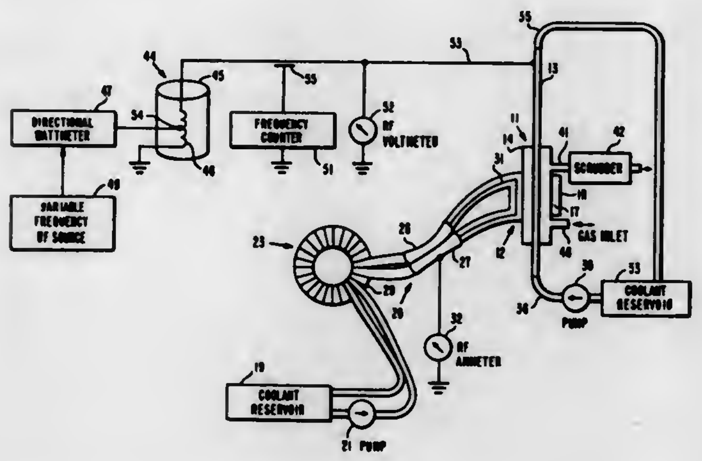
ELECTRIC DISCHARGE FOR TREATMENT OF TRACE CONTAMINANTS

Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Daniel L. Flamm, Chatham Township, Morris County, N.J., and Theodore J. Wydeven, Jr., Sunnyvale, Calif.

Filed May 23, 1977, Ser. No. 799,832

Int. Cl.^{2} B01K *1/00*

U.S. Cl. 250—531 **11 Claims**



1. A radio-frequency glow discharge reactor for the chemical processing of an oxygen-bearing gas containing trace contaminants comprising:

a first electrode facing a dielectric wall backed by a second electrode;

first cooling means for cooling said first electrode;

second cooling means for cooling said dielectric wall and said second electrode;

means for channeling the oxygen-bearing gas containing trace contaminants between said first electrode and said dielectric wall; and

a supply of high-voltage radio-frequency energy generated by a helical resonator, said supply being connected between said first and second electrodes to subject the oxygen bearing gas to a radio frequency glow discharge whereby the trace contaminants in the oxygen-bearing gas are oxidized into a few simple products.

4,130,491

USE OF BETAINES IN MINERAL OIL RECOVERY

Helmut Wagner, Bachstrasse 2, 6834 Ketsch, and Hans-Joachim Neumann, Neukollnerweg 4, 3340 Wolfenbuttel, both of Germany

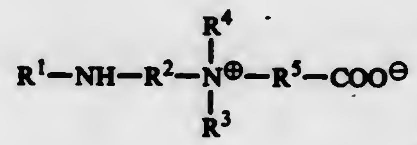
Filed Jul. 16, 1976, Ser. No. 705,766

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1975, 2532469

Int. Cl.^{2} E21B *43/22*

U.S. Cl. 252—8.55 D **1 Claim**

1. In a method for recovering mineral oil from deposits thereof wherein the deposit is flooded with an aqueous solution and the oil is then recovered from the flooding water, the improvement which comprises employing as said aqueous flooding solution an aqueous solution containing from about 0.001 to 10% by weight of a surface active betaine having the formula:



$$R^1—NH—R^2—\overset{\displaystyle R^4}{\underset{\displaystyle R^3}{N^{\oplus}}}—R^5—COO^{\ominus}$$

wherein

R^1 is the acyl radical from naphthenic acids,

R^2 is an alkylene residue with 2 to 6 carbon atoms,

R^3 and R^4 may be the same or different and are low molecular weight alkyl residues, and

R^5 is an alkylene residue with 1 to 3 carbon atoms.

4,130,492

MXY_3 SOLID LUBRICANTS

John M. Longo, New Providence, and John J. Steger, Scotch Plains, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 870,033 Jan. 16, 1978, abandoned which is a continuation of Ser. No. 788,686, Apr. 18, 1977, abandoned.

This application Mar. 30, 1978, Ser. No. 891,749

Int. Cl.^{2} C10M *3/18, 5/14, 7/20, 7/24*

U.S. Cl. 252—18 **37 Claims**

29. A lubricant comprising a major amount of lubricating oil and about 0.1 to 20 wt. % of material of the formula MXY_3 wherein M is selected from the group consisting of Mg, V, Mn, Fe, Co, Ni, Zn, Cd, Sn, Pb and mixtures thereof, X is a pnictide selected from the group consisting of phosphorus, arsenic, antimony and mixtures thereof and Y is a chalcogenide selected from the group consisting of sulfur, selenium and mixtures thereof.

4,130,493

MACHINING FLUID

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jul. 19, 1977, Ser. No. 816,966

Claims priority, application Japan, Jul. 20, 1976, 51-86330; Sep. 17, 1976, 51-112301; Dec. 21, 1976, 51-153892; Jan. 18, 1977, 52-3512

Int. Cl.^{2} C10M *1/10, 3/02, 5/02;* **C05B** *11/16*

U.S. Cl. 252—28 **12 Claims**

1. A method of machining a metallic workpiece, comprising the steps of: cultivating a microorganism in an aqueous cultivation bath containing a saccharide, an inorganic salt and a nitrogen source to produce an organic compound of the spiculisporic acid structure, introducing 50 to 20,000 ppm of said organic compound into an aqueous machining liquid to form a corrosion resistant fluid, and displacing a tool and said workpiece relative to machine said workpiece in the presence of said fluid.

2. A machining fluid comprising an aqueous basic flushing component adapted to facilitate a workpiece-machining opera-

tion and an anti-rusting component including an organic compound which is produced by a fermentation process comprising cultivating a microorganism in a culture medium containing a saccharide, a nitrogen source and an inorganic salt and accumulated in a culture broth and separated and recovered from the culture broth and comprising an aliphatic acid or anhydrous derivative thereof having at least ten carbon atoms, three carboxy radicals and one hydroxyl radical.

4,130,494
SYNTHETIC LUBRICANT COMPOSITION

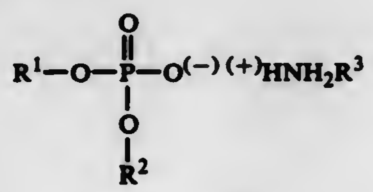
Harold Shaub, New Providence, and Stephen J. Metro, Scotch Plains, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 683,266, May 5, 1976, abandoned. This application Feb. 6, 1978, Ser. No. 875,633

Int. Cl.² C10M *1/44, 3/38, 5/24, 7/24*

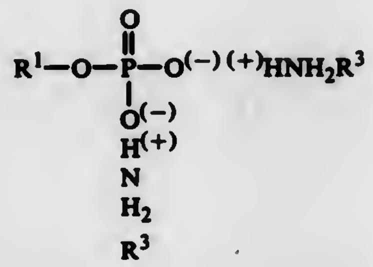
U.S. Cl. 252—32.5 **22 Claims**

1. A synthetic lubricating oil composition comprising a major amount of a synthetic ester base oil stock, from about 0.01 to about 10.0 parts per 100 parts by weight of the ester base oil stock of an organo amine salt of a phosphoric acid ester selected from the group consisting of organo amine salts characterized by the formula:



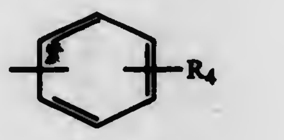
$$R^1\text{—O—}\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle R^2}{|}}{\underset{|}{\overset{}{P}}}}\text{—}O^{(-)}\,{}^{(+)}HNH_2R^3 \quad (\text{P bonded below to O—}R^2)$$

or the formula:

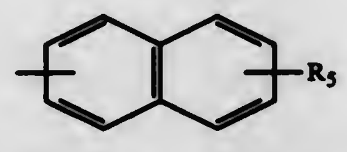


$$R^1\text{—O—}\overset{\overset{\displaystyle O}{\|}}{P}\text{—}O^{(-)}\,{}^{(+)}HNH_2R^3,\quad \text{P}\text{—}O^{(-)}\,H^{(+)}NH_2R^3$$

and mixtures thereof, wherein R^1 is an alkyl or alkenyl group containing from 1 to 10 carbon atoms, R^2 is either the same or a different alkyl or alkenyl group containing from 1 to 10 carbon atoms and R^3 is either hydrogen, an alkyl or alkenyl group containing from 1 to 22 carbon atoms or an arylalkyl group characterized by the formula:



or the formula:



wherein R_4 is hydrogen, or an alkyl or alkenyl group containing from 1 to 12 carbon atoms and R_5 is hydrogen or an alkyl or alkenyl group containing from 1 to 6 carbon atoms; and from about 0.01 to about 5.0 parts per 100 parts by weight of the ester base oil stock of an organo sulfonic acid ammonium salt, said synthetic ester base oil stock selected from the group consisting of (a) simple esters derived from monohydric aliphatic alcohols having 1 to 18 carbon atoms and monobasic aliphatic acids having 2 to 22 carbon atoms or dibasic aliphatic acids having 2 to 25 carbon atoms, (b) complex esters formed from the reaction of two or more of the following compounds:

(i) monohydric aliphatic alcohols having 1 to 18 carbon atoms,
(ii) monobasic aliphatic acids having 2 to 22 carbon atoms,
(iii) aliphatic glycols or polyglycols having from 2 to 70 carbon atoms,
(iv) polyhydric aliphatic alcohols having 4 to 25 carbon atoms,
(v) dibasic aliphatic acids having from 2 to 22 carbon atoms, and
(iv) polybasic aliphatic acids having 3 to 30 carbon atoms,

where at least one polyfunctional alcohol and at least one polyfunctional acid are employed and (c) polyesters derived from polyhydric aliphatic alcohols containing from 2 to 10 hydroxyl groups and 4 to 25 carbon atoms and monobasic aliphatic acids having from 2 to 22 carbon atoms.

15. The synthetic lubricating oil composition of claim 1, further comprising at least one antioxidant selected from the group consisting of di(alkylphenyl) amines, phenyl-α-naphthylamine, phenyl-β-naphthylamine and alkylphenyl-α-naphthylamine and alkylphenyl-β naphthylamine, and mixtures thereof.

4,130,495
LIQUID JOJOBA OIL DERIVATIVES

Jaime Wisniak, and Hanoch Benajahu, both of Beer Sheva, Israel, assignors to Ben-Gurion University of the Negev Research and Development Authority, Beer Sheva, Israel

Filed Nov. 18, 1976, Ser. No. 743,012

Claims priority, application Israel, Dec. 2, 1975, 48585

Int. Cl.² C08G *75/00;* **C10M** *1/38*

U.S. Cl. 252—48.4 **12 Claims**

1. A non-factice sulfohalogenated jojoba oil characterized by a M.W. under 4,500, and an iodine value greater than 5, a sulfur content below 8.7% by weight and having a sulfur to halogen mole ratio of about 1.1:1.0 to about 1.0:1.1.

4,130,496
PROCESS OF PREPARING MONOARYL PHOSPHONATES AND LUBRICANT COMPOSITIONS CONTAINING SAME

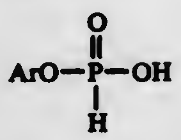
Robert F. Bridger, Hopewell, and Kirk D. Schmitt, Pennington, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 717,815, Aug. 26, 1976, Pat. No. 4,092,254. This application Jan. 9, 1978, Ser. No. 867,850

Int. Cl.² C10M *1/10*

U.S. Cl. 252—49.8 **14 Claims**

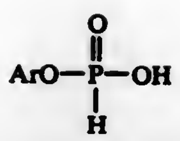
1. A process for the preparation of monoaryl phosphonates of the following general structure:



$$ArO\text{—}\underset{\underset{\displaystyle H}{|}}{\overset{\overset{\displaystyle O}{\|}}{P}}\text{—}OH$$

wherein Ar is selected from the group consisting of phenyl, alkyl phenyl, halophenyl, haloalkyl phenyl, ketoalkyl phenyl, alkoxy phenyl, carbalkoxy phenyl, naphthyl, alkyl naphthyl, halonaphthyl, haloalkyl naphthyl, ketoalkyl naphthyl, alkoxy naphthyl, and carbalkoxy naphthyl, said alkyl and alkoxy substituents thereof having from 1 to about 30 carbon atoms, comprising heating the corresponding aryl di - t - C_4–C_{30} alkyl phosphite at a temperature of from about 60°–150° C. in the presence of a heterogeneous acid cation exchange resin catalyst and recovering the desired monoaryl phosphonate.

10. A method for reducing wear between moving metal surfaces which comprises introducing between said surfaces a lubricant composition comprising a major amount of an oil of lubricating viscosity or a grease prepared therefrom and a minor amount sufficient to improve the antiwear properties of said composition of a monoaryl phosphonate of the following general structure:



$$ArO\text{—}\underset{\underset{\displaystyle H}{|}}{\overset{\overset{\displaystyle O}{\|}}{P}}\text{—}OH$$

wherein Ar is selected from the group consisting of phenyl, alkyl phenyl, halophenyl, haloalkyl phenyl, ketoalkyl phenyl, alkoxyphenyl, carbalkoxy phenyl, naphthyl, alkyl naphthyl, halonaphthyl, haloalkyl naphthyl, ketoalkyl naphthyl, alkoxy naphthyl, and carbalkoxy naphthyl said alkyl and alkoxy substituents thereof having from 1 to about 30 carbon atoms.

4,130,497
DETERGENT COMPOSITION

Francis E. J. Oneto, Clichy-sous-Bois; André J. E. Benzoni, Livry-Gargan; Jacques L. Poret, Mitry-Mory, and Fernand B. Simon, Margency, all of France, assignors to Lever Brothers Company, New York, N.Y.

Filed Jan. 12, 1977, Ser. No. 758,819

Claims priority, application United Kingdom, Jan. 16, 1976, 1793/76

Int. Cl.² C11D *1/10*

U.S. Cl. 252—89 R **8 Claims**

1. A single liquid phase detergent composition comprising:
(i) from 15 to 50% by weight of a cosmetically acceptable oil;
(ii) from 40 to 75% by weight of an anionic detergent mixture comprising
  (a) an anhydrous amine salt of a C_8 to C_{18} fatty alcohol sulphate containing an average of from 0 to 4 moles of ethylene oxide; and
  (b) an anhydrous alkyl or alkylaryl substituted ethoxylated oxacarboxylic acid or a sodium or an amine salt thereof having the empirical formula:

$$R\text{—}(OCH_2CH_2)_n\text{—}OCH_2COOX$$

where
  R is C_8 to C_{18} alkyl or C_6 to C_{12} alkylphenyl;
  n has an average value of from 1 to 15; and
  X is hydrogen, sodium or an amine residue; and
(iii) from 0 to 5% water.

4,130,498
DETERGENT COMPOSITIONS

Frank Lee, Bolton; James Allan, Cheadle, and Charles Fearnley, Romiley, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Sep. 14, 1976, Ser. No. 723,118

Claims priority, application United Kingdom, Sep. 17, 1975, 38146/75

Int. Cl.² C11D *7/56*

U.S. Cl. 252—99 **9 Claims**

1. A detergent composition consisting essentially of
(a) 0 to 50% by weight of a non-ionic synthetic surfactant selected from the group consisting of
  (1) monoethers of polyglycols with long-chain fatty alcohols,
  (2) monoesters of polyglycols with long-chain fatty acids,
  (3) monoethers of polyglycols with alkylphenols,
  (4) N,N-polyethoxylated long-chain fatty amines,
  (5) N,N-polyethoxylated long-chain fatty acid amides, and
  (6) mixtures thereof,
(b) 50 to 80% by weight of water-soluble builder and extender
(c) 0 to 25% by weight of a water-soluble anionic surfactant and
(d) 0.01 to 2.5% by weight of a highly-dispersed, solid, water-insoluble urea-formaldehyde condensation product having a molecular weight greater than 1000 and a specific surface area of 15 to 30 m^2/g, said condensation product being one which is produced in the presence of sulphamic acid

each of the percentages being based on total finished detergent, with the proviso that at least 5% by weigh of either a non-ionic or an anionic surfactant is present in the detergent composition.

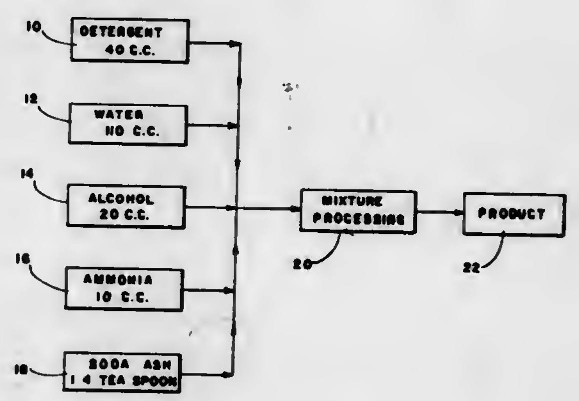
4,130,499
CORK CLEANING FORMULA

Vernon T. Cameron, 1500 Marquette Ave., South Milwaukee, Wis. 53172

Filed Aug. 15, 1977, Ser. No. 824,491

Int. Cl.² C11D *3/02, 3/10, 3/43, 17/08*

U.S. Cl. 252—153 **3 Claims**



1. A cleaning formula comprising
a detergent in a quantity of 40 cc;
water in a quantity of 110 cc;
rubbing alcohol in a quantity of 20 cc;
ammonia in a quantity of 10 cc; and
sodium carbonate in a quantity of one-fourth teaspoon.

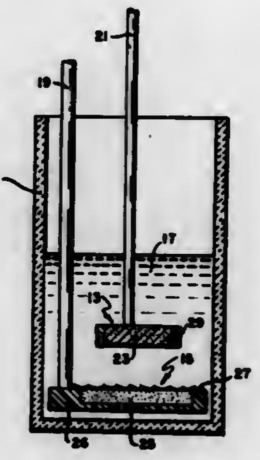
4,130,500
LITHIUM-ALUMINUM-MAGNESIUM ELECTRODE COMPOSITION

Carlos A. Melendres, Bolingbrook, and Stanley Siegel, Downers Grove, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 14, 1977, Ser. No. 860,655

Int. Cl.² H01M *4/40, 4/46*

U.S. Cl. 252—182.1 **8 Claims**



1. A solid electrode composition for use in the negative electrode of a high-temperature, secondary electrochemical cell having molten salt electrolyte including alkali metal halides or alkaline earth metal halides and in a positive electrode including a chalcogen or a transition metal chalcogenide, said solid electrode composition comprising about 5 to 50 atom percent lithium and about 95 to 50 atom percent alloy of alumi-

num and magnesium, said aluminum-magnesium alloy comprising about 5 to 20 atom percent magnesium.

4,130,501

STABLE VISCOUS HYDROGEN PEROXIDE SOLUTIONS CONTAINING A SURFACTANT AND A METHOD OF PREPARING THE SAME

Charles W. Lutz, Princeton, and Leon E. Cohen, Somerset, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Sep. 20, 1976, Ser. No. 724,780

Int. Cl.² C01B *15/02*

U.S. Cl. 252—186 **14 Claims**

1. A stable viscous aqueous solution of hydrogen peroxide having a viscosity within the range of about 60 cps-6000 cps consisting essentially of from about 3% to about 30% hydrogen peroxide and as a thickening agent from about 0.05 to about 0.5 weight percent of a water dispersible cross-linked interpolymer of a monomeric mixture comprising a monomeric polymerizable alpha-beta monoolefinically unsaturated lower aliphatic carboxylic acid, and a polyether of a polyol selected from the class consisting of oligo saccharides, reduced derivatives thereof in which the carbonyl group is converted to an alcohol group and pentaerythritol, the hydroxyl groups of said polyol which are modified being etherified with allyl groups, said polyol having at least two allyl ether groups per polyol molecule, and from about 0.5 to 4.0 weight percent of a surfactant selected from the group consisting of:

(1) alkali metal alkyl sulfates;
(2) linear alkylaryl alkali metal sulfonates;
(3) straight chain primary aliphatic ethoxylated alcohols having a melting point above room temperature; and
(4) block copolymer polyols;
  (a) characterized by a hydrophilic lipophilic balance value of about 30.5 and a molecular weight of about 4,750; said block copolymer polyol being obtained by adding poly(oxyethylene) groups to a poly(oxypropylene) chain having a molecular weight of about 950;
  (b) characterized by a hydrophilic lipophilic balance value of about 24 and a molecular weight of about 7,500; said block copolymer polyol being obtained by adding poly(oxyethylene) groups to a poly(oxypropylene) chain having a molecular weight of about 2,250;
  (c) characterized by a hydrophilic lipophilic balance value of about 13.5 and a molecular weight of about 4,585; said block copolymer polyol being obtained by adding poly(oxy-ethylene) groups to a poly(oxypropylene) chain having a molecular weight of about 2,750;
  (d) characterized by a hydropholic lipophilic balance value of about 15 and a molecular weight of about 6,500; said block copolymer polyol being obtained by adding poly(oxyethylene) groups to a poly(oxypropylene) chain having a molecular weight of about 3,250;
  (e) characterized by a hydrophilic lipophilic balance value of about 22 and a molecular weight of about 13,333; said block copolymer polyol being obtained by adding poly(oxyethylene) groups to a poly(oxypropylene) chain having a molecular weight of about 4,000.

4,130,502

LIQUID CRYSTALLINE CYCLOHEXANE DERIVATIVES

Rudolf Eidenschink; Joachim Krause, and Ludwig Pohl, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit, Darmstadt, Germany

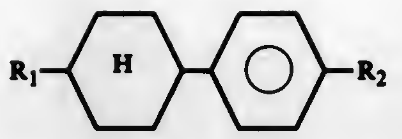
Filed Aug. 10, 1977, Ser. No. 823,308

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636684

Int. Cl.² C09K *3/34;* G02F *1/13*

U.S. Cl. 252—299 **12 Claims**

1. Compounds of the formula:



wherein R_2 is cyano and R_1 is R, OR, OCOR or OCOOR, in which R is alkyl of up to 12 carbon atoms.

12. A mixed liquid crystalline dielectric composition containing at least 40% of a compound of claim 1.

4,130,503

PHOSPHITE IN MGX_2 SUPPORTED $TiX_3/AlCl_3$ CATALYST SYSTEM

Lawrence M. Fodor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 23, 1977, Ser. No. 864,120

Int. Cl.² C08F *4/02, 4/16*

U.S. Cl. 252—429 B **12 Claims**

1. A catalyst which forms on mixing $MgCl_2$, $TiCl_3$, $AlCl_3$ and an organic phosphite to form a first component which first component is combined with a cocatalyst comprising an organoaluminum compound, said $MgCl_2$ being present in an amount within the range of 50 to 95 weight percent, said Ti Cl_3 being present in an amount within the range of 2 to 20 weight percent, said Al Cl_3 being present in an amount of 0.1 to 10 weight percent and said organic phosphite being present in an amount of 1 to 20 weight percent, based on the total weight of said first component.

4,130,504

OXIDATIVE COUPLING OF PHENOLS AND NAPHTHOLS

Thomas F. Rutledge, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 655,104, Feb. 4, 1976, Pat. No. 4,070,383, which is a continuation-in-part of Ser. No. 550,445, Feb. 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 499,826, Aug. 23, 1974, abandoned. This application Oct. 31, 1977, Ser. No. 846,811

Int. Cl.² B01J *31/02, 31/04*

U.S. Cl. 252—430 **4 Claims**

1. A catalyst composition consisting essentially of
(a) a copper compound selected from the group consisting of cupric halides, basic cupric halohydroxides, cupric carboxylates, cupric nitrate, cupric sulfate, cupric alkylsulfates, cupric aryl sulfonates, cupric carbonate, basic cupric carbonate, cupric hydroxide, cupric chlorate, cuprous halides, and cuprous red oxide,
(b) an anionic surfactant in which the hydrophilic moiety is selected from the group consisting of carboxylate, phosphate, sulfate and sulfonate, and
(c) an alkaline material selected from the group consisting of alkali metal hydroxides, alkali metal carbonates, and alkali metal bicarbonates.

4,130,505

TWO STAGE ACTIVATION OF FLUORIDED CHROMIUM-CONTAINING CATALYST

Benny E. Nasser, Jr., and Richard E. Dietz, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 26, 1974, Ser. No. 509,640

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.² B01J *21/02, 27/06, 29/00*

U.S. Cl. 252—432 **12 Claims**

1. A process for producing a catalyst comprising:
calcining a chromium-containing silicon-containing support;

cooling said thus calcined support and incorporating therewith an anhydrous fluorine-containing compound; and
thereafter heating said support containing said fluorine-containing compound at a temperature within the range of 300° to 1000°F, which temperature is lower than the temperature used for said calcining.

4,130,506

METAL POWDERS

Owen N. Collier, and Stephen J. Hackett, both of London, England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Jul. 6, 1976, Ser. No. 702,727

Claims priority, application United Kingdom, Jul. 4, 1975, 28264/75

Int. Cl.² B01J *21/04, 21/08, 23/40, 23/48*

U.S. Cl. 252—438 **5 Claims**

1. A method of making a metal powder comprising (i) activating particles of a heat resistant substrate which is a refractory material selected from the group consisting of clay, silica, alumina, titania, zirconia, silicon nitride, silicon carbide and mixtures thereof by boiling the particles in water or dilute mineral acid whereby the maximum surface area thereof becomes available for the nucleation and growth of metal or alloy thereon, then (ii) mixing said activated substrate particles with an aqueous or organic solution of a reducible compound of platinum, palladium, rhodium, ruthenium, iridium, osmium, gold or silver and reducing said compound by a reducing agent to the metal whereby the metal is nucleated onto the surface of individual substrate particles and, thereafter, (iii) growing further metal onto the resulting nucleated particles by further reduction.

4,130,507

NONACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

John C. Hayes, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 642,648, Dec. 19, 1975, Pat. No. 4,072,602, which is a continuation-in-part of Ser. No. 442,714, Feb. 14, 1974, Pat. No. 3,928,177, which is a continuation-in-part of Ser. No. 216,739, Jan. 10, 1972, Pat. No. 3,806,446, which is a division of Ser. No. 17,886, Mar. 9, 1970, abandoned. This application Sep. 6, 1977, Ser. No. 830,943

The portion of the term of this patent subsequent to Sep. 13, 1994, has been disclaimed.

Int. Cl.² B01J *27/04, 23/64*

U.S. Cl. 252—439 **17 Claims**

1. A nonacidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.01 to about 5 wt. % Group IV-A metal, about 0.01 to about 3 wt. % Group VI-B transition metal and about 0.1 to about 5 wt. % alkali metal or alkaline earth metal; wherein the platinum group metal, Group IV-A metal, Group VI-B transition metal, and alkali metal or alkaline earth metal are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group metal is present in the elemental metallic state; wherein substantially all of the Group IV-A, Group VI-B transition metal, and alkali metal or alkaline earth metal are present in an oxidation state above that of the elemental metal; and wherein the atomic ratio of Group VI-B transition metal to platinum group metal is about 0.05:1 to about 4:1.

4,130,508

PERFUME COMPOSITIONS CONTAINING CYCLOHEXADIENE DERIVATIVES

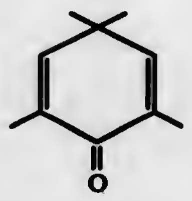
Kenneth K. Light, Long Branch; Bette M. Spencer, Ocean Grove; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y.; Manfred H. Vock, Locust, N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 774,058, Mar. 3, 1977, Pat. No. 4,076,854. This application Dec. 13, 1977, Ser. No. 860,123

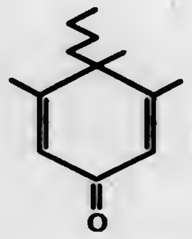
Int. Cl.² C11B *9/00*

U.S. Cl. 252—522 **2 Claims**

1. A perfume composition comprising a cyclohexadiene derivative selected from the group consisting of 2,4,4,6-tetramethylcyclohexa-2,5-diene-1-one having the structure:



and 4-butyl-3,4,5-trimethyl-2,5-cyclohexadiene-1-one having the structure:



and one or more auxiliary perfume ingredients compatible with said cyclohexadiene derivative selected from the group consisting of alcohols, aldehydes, nitriles, esters, cyclic esters and natural essential oils.

4,130,509

PERFUME COMPOSITIONS CONTAINING CIS- AND TRANS-TRIMETHYLCYCLOHEXYLETHYL ETHERS

Jens Conrad, Hilden; Klaus Bruns, Krefeld-Traar, and Peter Meins, Mettmann, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Germany

Filed Dec. 21, 1977, Ser. No. 862,675

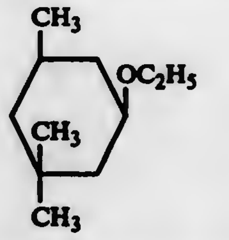
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658567

Int. Cl.² C11B *9/00*

U.S. Cl. 252—522 **4 Claims**

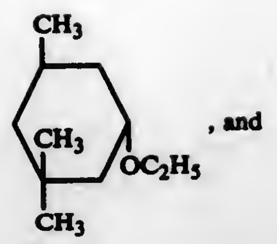
1. A perfumery composition comprising from about 1% to 50% by weight of a perfume selected from the group consisting of

(1) cis-3,3,5-trimethylcyclohexylethyl ether of the formula



,

(2) trans-3,3,5-trimethylcyclohexylethyl ether of the formula



, and

(3) mixtures thereof, and the remainder customary constituents of perfumery compositions.

4,130,510

CURING OF EPOXY RESIN SYSTEMS USING HALFESTER COMPOUNDS CONTAINING ALIPHATIC TERTIARY AMINO GROUPS

Goro Tanaka, and Hiroshi Suzuki, both of Hitachi, Japan, assignors to Hitachi Chemical Co., Ltd. and Hitachi, Ltd., both of, Japan

Filed Apr. 14, 1977, Ser. No. 787,488

Claims priority, application Japan, Apr. 14, 1976, 51/41363

Int. Cl.^{2} C08L *63/00*

U.S. Cl. 260—823 **34 Claims**

1. In the curing of epoxy resin systems which are normally catalyzed by tertiary amines, the improvement that comprises employing a latent curing catalyst comprising a half-ester compound which contains at least one ester group terminated by an aliphatic tertiary amino group and which contains at least one carboxyl group, with said at least one carboxyl group forming at least one intramolecular salt with said tertiary amino group, said at least one ester group and said at leat one carboxyl group being directly connected to an aliphatic or aromatic polyvalent group, the amount of said half-ester compound being about 0.05 to 15% by weight based on the epoxy resin.

4,130,511

CURABLE EPOXIDE RESIN COMPOSITIONS

Christopher M. Andrews, Cambridge, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 5, 1977, Ser. No. 794,278

Claims priority, application United Kingdom, May 19, 1976, 20630/76

Int. Cl.^{2} C08G *59/68*

U.S. Cl. 528—92 **10 Claims**

1. Composition comprising
(a) an aromatic compound having more than one amino group directly attached to an aromatic ring and
(b) a nitrate of magnesium, lanthanum, manganese, zinc, or cobalt.

4,130,512

ION EXCHANGE MATERIALS

Michael Streat, Wembley, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 420,439, Nov. 30, 1973, abandoned. This application Feb. 19, 1976, Ser. No. 659,496

Claims priority, application United Kingdom, Jan. 10, 1973, 12777/73

Int. Cl.^{2} C08J *5/20*

U.S. Cl. 521—31 **13 Claims**

1. A process for the production of a particulate ion exchange material of increased resistance to acid and alkali attack which comprises heating a particulate inorganic material selected from the group consisting of inorganic oxide gels and inorganic silicates, to a temperature of from 100° to 550° C. to produce a porous inert inorganic substrate, adsorbing an ethylenically unsaturated organic monomer into the substrate and polymerising the adsorbed monomer so that the resultant polymer is retained within the pores of the substrate, and, if necessary, introducing ion exchange functional groups into the polymer.

4,130,513

FLAME RETARDED POLYURETHANE FOAMS WITH IMPROVED COLOR QUALITIES

Michael J. Reale, Brewster, N.Y., and Barry Jacobs, Bethel, Conn., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 22, 1977, Ser. No. 808,753

Int. Cl.^{2} C08K *5/18, 5/34, 5/51*

U.S. Cl. 521—107 **10 Claims**

1. A flame retardant polyurethane foam comprising a low density polyurethane foam, a flame retardant amount of a flame retardant comprised of a poly(haloethyl-ethyleneoxy) phosphoric acid ester and from about 0.5 percent to about 5.0 percent by weight of said flame retardant of a mixture of diphenyl p-phenylene diamine and the reaction product of diphenylamine and acetone wherein the components of said mixture are in a weight ratio from about 1:20 to about 20:1.

4,130,514

SYNTHESIS OF PEPTIDES

Takashi Enkoji, Park Forest, and Martin O. Skibbe, Kankakee, both of Ill., assignors to Armour Pharmaceutical Company, Phoenix, Ariz.

Filed Feb. 10, 1978, Ser. No. 876,752

Int. Cl.^{2} C08L *37/00;* **C07C** *103/52;* **A61K** *37/00*

U.S. Cl. 260—8 **19 Claims**

1. A peptide having the structure

$$\underset{1}{\text{X}}—\underset{2}{\text{tyr}}—\underset{3}{\text{ser}}—\underset{4}{\text{met}}—\underset{5}{\text{glu}}—\underset{6}{\text{his}}—\underset{7}{\text{phe}}—\underset{8}{\text{arg}}—\underset{9}{\text{trp}}—\underset{10}{\text{gly}}—\underset{11}{\text{lys}}—$$
$$—\underset{12}{\text{pro}}—\underset{13}{\text{val}}—\underset{14}{\text{gly}}—\underset{15}{\text{lys}}—\underset{16}{\text{lys}}—\underset{17}{\text{arg}}—\underset{18}{\text{arg}}—\text{Q}$$

in which
X is D-ala or β-ala, and
Q is asn, pro-asn, pro-val-asn, pro-val-lys-asn, pro-val-lys-val-asn, pro-val-lys-val-tyr-asn, or pro-val-lys-val-tyr-pro-asn.

4,130,515

LIGNIN-BASED COMPOSITION BOARD BINDER COMPRISING A COPOLYMER OF A LIGNOSULFONATE, MELAMINE AND AN ALDEHYDE

Leopold F. Bornstein, Atlanta, Ga., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Jun. 30, 1977, Ser. No. 811,596

Int. Cl.^{2} C08L *97/00*

U.S. Cl. 260—17.5 **36 Claims**

1. A thermosetting resin composition board binder comprising a copolymer of lignosulfonate, melamine, and an aldehyde, said copolymer prepared by the in situ reaction under alkaline conditions of a lignosulfonate salt, melamine, and an aldehyde.

4,130,516

HIGH DUCTILITY ASPHALT

Duane W. Gagle, and Homer L. Draper, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 12, 1976, Ser. No. 676,259

Int. Cl.^{2} C08L *95/00;* **C09D** *3/24*

U.S. Cl. 260—28.5 AS **4 Claims**

1. A composition of matter obtained by hot-blending asphalt and about 5 wt. % of sulfur at a temperature below 300° F. further comprising about 1 wt. % of a rubber selected from the group consisting of natural rubber and synthetic rubber.

4,130,517

MULTIPHASE BLOCK AND GRAFT COPOLYMERS COMPRISING A HYDROPHILIC CONTINUOUS PHASE AND HYDROPHOBIC DOMAINS

Robert D. Lundberg, Somerville, and Neville G. Thame, Edison, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 553,613, Feb. 27, 1975, Pat. No. 4,057,598, which is a continuation of Ser. No. 327,831, Jan. 29, 1973, abandoned. This application Mar. 21, 1977, Ser. No. 779,902

The portion of the term of this patent subsequent to Nov. 8, 1994, has been disclaimed.

Int. Cl.^{2} C08L *53/00*

U.S. Cl. 260—29.2 N **6 Claims**

1. A water swollen gel composition which consists of:
(a) a thermoplastic block copolymer having an average molecular weight of at least 10,000, said block copolymer having the general formula XB—[AB]$_n$—yA wherein n is an integer $\geqq 1$, X and y are 0 or 1, and y is 1 when n is 1, A is a thermoplastic hydrophobic polymer block having a softening point of at least about 35° C. and a molecular weight of at least about 2,000, and B is a thermoplastic hydrophilic polymer block having a molecular weight of at least 6,000 which comprises from about 30-97 wt. % of said copolymer; and
(b) about 30 to about 98 wt. % of water based on the water swollen gel.

4,130,518

PREPARATION OF ACRYLATED OR METHACRYLATED POLYMERS UTILIZING A PARTIALLY SOLUBILIZED HYDROCARBON FRACTION AS THE AZEOTROPING MEDIUM

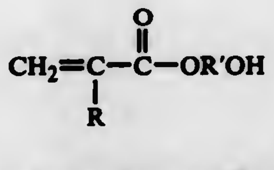
Charles B. Rybny, Franklin Township, Sussex County, and Eli Levine, Union, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 744,491, Nov. 24, 1976. This application Nov. 21, 1977, Ser. No. 853,611

Int. Cl.^{2} C08L *91/00;* **C08G** *63/12*

U.S. Cl. 260—22 CB **9 Claims**

1. A process for preparing an ultraviolet curable polymer having pendant acrylate or methacrylate groups which comprises co-reacting in the presence of a vinyl polymerization inhibitor and a nitrogen-oxygen sparge a polymer containing the C-OOH moiety with a monomer having the general formula



$$CH_2{=}\underset{\displaystyle R}{\underset{|}{C}}{-}\overset{\displaystyle O}{\overset{\|}{C}}{-}OR'OH$$

wherein R is hydrogen or methyl, and R' is C_1-C_6 alkyl, utilizing a partially solubilized hydrocarbon fraction as an azeotroping solvent, wherein said solvent contains up to about 15 percent, by weight, aromatics, about 40 to about 80 percent, by weight, saturated aliphatics, and about 20 to about 50 percent, by weight, cyclic aliphatics.

8. The process of claim 1 wherein the polymer is prepared by the alcoholysis of a fatty oil and the further condensation of this product with polyols and polybasic acids.

4,130,519

STABILIZED HALOGENATED BUTYL RUBBER

Robert Roper, Summit; Neil F. Newman, Edison, both of N.J., and Pierre Hous, Steenokkerzeel, Belgium, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 3, 1978, Ser. No. 892,645

Int. Cl.^{2} C08K *5/10*

U.S. Cl. 260—23.7 H **21 Claims**

1. A stabilized halogenated butyl rubber composition comprising a copolymer of 85 to 99.5 weight percent of a C_4 to C_8 isoolefin with 15 to 0.5 weight percent of a C_4 to C_{14} multiolefin containing at least about 0.5 weight percent combined halogen in its structure and an effective amount of stabilizer, said stabilizer comprising
(a) an alkali metal carboxylate or an alkaline earth metal carboxylate,
(b) an ether, and
(c) an oxide or hydroxide of a metal selected from Group IIA of the Periodic Table.

4,130,520

AQUEOUS POLYESTER COATING COMPOSITION, METHOD OF MAKING, AND COATED CONDUCTOR

Charles H. Thomas, Monroeville, and Barbara R. Garland, Elizabeth Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 25, 1977, Ser. No. 781,260

Int. Cl.^{2} C08G *63/18, 63/20, 63/68*

U.S. Cl. 260—29.2 N **11 Claims**

1. A method of producing a water dispersible polyester resin solution, which comprises esterifying a mixture consisting of:
(a) about 2.0 moles to about 5.0 moles of an organic, dicarboxylic acid selected from the group consisting of aromatic dicarboxylic acids, tetrahydrophthalic acid, and mixtures thereof,
(b) about 0.1 mole to about 1.5 moles of an organic, unsaturated aliphatic dicarboxylic acid,
(c) about 0.1 mole to about 6.5 moles of an organic saturated aliphatic dicarboxylic acid,
(d) about 1.0 mole to about 5.0 mole of an organic, alicyclic dihydric alcohol,
(e) 0 mole to about 5.0 moles of an organic, aliphatic dihydric alcohol, and
(f) about 0.6 mole to about 1.2 moles of an organic compound selected from the group consisting of tris (2 hydroxy alkyl) isocyanurate where alkyl is from 2 to 6 carbons, and polyhydric alcohols containing more than two hydroxyl groups per molecule, and then adding an amount of organic solvent effective to provide a solution of between about 50 wt.% to about 90 wt.% solids content, and finally, diluting the polyester resin solution with a plurality methylated melamine formaldehyde resin, and adding an organic aliphatic amine in an amount effective to provide pH of between about 8 and about 9; wherein the esterification reaction is continued until the acid value drops to between about 45 and about 65, and wherein the mole ratio of OH/COOH = 0.30 to 0.90.

4,130,521

DENSIFICATION OF POLYPYRROLIDONE

Kiyoshi Katsumoto, El Cerrito, and Edward L. Nimer, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Apr. 25, 1977, Ser. No. 790,777

Int. Cl.^{2} C08G *20/16*

U.S. Cl. 528—326 **14 Claims**

1. A method for reducing the water content and improving the bulk density of finely powdered polypyrrolidone to facilitate the melt extrusion thereof, which comprises compressing powdered polypyrrolidone, having a water content of about from 5-60% by weight, at a temperature of at least about 50° C but below the melting point of polypyrrolidone and a pressure of about from 50 to 300 psi, thereby yielding a solid polypyrrolidone product having a dry bulk density in the range of about from 20-50 pounds per cubic foot.

7. The process of claim 1 wherein said polypyrrolidone powder has a particle size in the range of about from U.S. standard sieve No. 200 to No. 3.

11. A solid polypyrrolidone having a bulk density of about 20-50 pounds per cubic foot produced according to the process of claim 7.

4,130,522

AQUEOUS COATING COMPOSITION AND PROCESS

Vincent D. McGinniss, Valley City, Ohio, assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 689,105, May 24, 1976, Pat. No. 4,035,273. This application Mar. 28, 1977, Ser. No. 781,660

Int. Cl.² C08F *265/06, 273/00, 283/04;* **C08J** *3/06*

U.S. Cl. 260—29.2 TN **16 Claims**

1. A coating composition in aqueous dispersion for forming a curable film thereof on a substrate comprising:

(a) a water-solubilized positively charged polymer produced from one having at least about 5% by weight pendant mercaptan groups; and

(b) at least about 5% by weight of said polymer of an alpha-, beta-ethylenically unsaturated carbonyl cross-linking agent having at least two pendant alpha-, beta-ethylenically unsaturated carbonyl groups,

said cross-linking agent for cross-linking said polymer by addition polymerization upon subsequent curing of said curable film on said substrate.

4,130,523

HIGH SOLIDS LATEXES

Kenneth L. Hoy, and Roland H. Peterson, both of St. Albans, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jul. 18, 1977, Ser. No. 816,472

Int. Cl.² C08L *31/02*

U.S. Cl. 260—29.6 R **14 Claims**

1. A process for producing an aqueous polymer latex having a high solids content which comprises the steps of:

(A) initiating latex formation by feeding an emulsion polymerizable monomer to an aqueous polymerization medium containing a sufficient amount of a polymerization catalyst to initiate polymerization of the monomer; then

(B) forming a stable seed latex by continuing to feed said emulsion polymerizable monomer to the reaction zone and simultaneously feeding to the reaction zone a polymerization catalyst and an emulsion stabilizing amount of a surfactant and buffer; then

(C) forming an intermediate latex by continuing to feed said emulsion polymerizable monomer to the reaction zone and simultaneously feeding to the reaction zone a catalyst and an emulsion stabilizing amount of a surfactant and a buffer;

(D) during steps (B) and (C) continuously withdrawing a portion of the latex being formed from the reaction zone to a storage zone, said steps (C) and (D) being conducted until the intermediate latex in the reaction zone has a solids content of from 55 to 65 volume percent; and then

(E) forming a final latex by continuing to feed said emulsion polymerizable monomer to the reaction zone and simultaneously continuously feeding the withdrawn latex to the reaction zone until the desired solids content is obtained.

4,130,524

CORROSION INHIBITING COMPOSITIONS

Fred P. Boerwinkle, St. Paul, and Tadeusz Szauer, Anoka, both of Minn., assignors to Northern Instruments Corporation, Lino Lakes, Minn.

Filed Dec. 1, 1977, Ser. No. 856,403

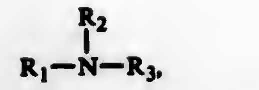
Int. Cl.² C23F *11/14, 11/16*

U.S. Cl. 260—29.6 HN **23 Claims**

9. An aqueous coating composition comprising, in an aqueous medium:

(a) an effective amount of a first salt of a carboxylic acid and a first organic amine, wherein said acid has 8 to 20 carbon atoms and wherein said amine is selected from the group consisting of:

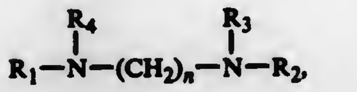
(i)



$$R_1-\overset{R_2}{\overset{|}{N}}-R_3,$$

where R_1 is alkyl or alkenyl of 11 to 20 carbons, R_2 and R_3 are —H, —CH_3 or —CH_2CH_2OH; and

(ii)

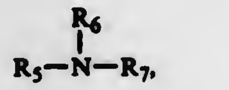


$$R_1-\overset{R_4}{\overset{|}{N}}-(CH_2)_n-\overset{R_3}{\overset{|}{N}}-R_2,$$

where n is an integer of 2-4, R_4 is —H, —CH_3 or —CH_2CH_2OH; and

(b) a second salt selected from:

(i) salt of phosphoric acid and a second organic amine of the formula:



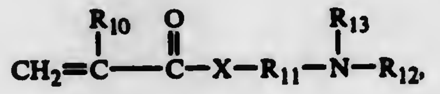
$$R_5-\overset{R_6}{\overset{|}{N}}-R_7,$$

where R_5, R_6 and R_7 are selected from —H, alkyl and cycloalkyl, hydroxy-substituted alkyl and cycloalkyl, alkenyl and cycloalkenyl, and hydroxy-substituted alkenyl and cycloalkenyl, wherein the sum of the carbon atoms in R_5, R_6 and R_7 is in the range of 6 to 12; and

(ii) salt of said second organic amine and an alkyl acid phosphate, wherein said alkyl group has from 1 to 8 carbons; and

(c) a water dispersible polymer derived from the free-radical-initiated addition polymerization of the following monomers in the mol percentages given:

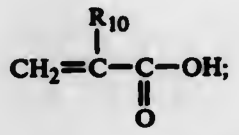
(i) an amine monomer of the formula:



$$CH_2=\overset{R_{10}}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}-X-R_{11}-\overset{R_{13}}{\overset{|}{N}}-R_{12},$$

where R_{10} is —H, —CH_3 or —CH_2CH_3, R_{11} is —CH_2CH_2— or —$CH_2CH_2CH_2$—, R_{12} and R_{13} are H or alkyl of 1–4 carbons, X is —O—, —NH— or —S—; present in an amount of about 40 to 100 mol percent;

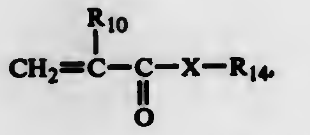
(ii) an acidic monomer of the formula:



$$CH_2=\overset{R_{10}}{\overset{|}{C}}-\underset{\underset{O}{\|}}{C}-OH;$$

present in an amount ranging from 0 to about 50 mol percent; and

(iii)



$$CH_2=\overset{R_{10}}{\overset{|}{C}}-\underset{\underset{O}{\|}}{C}-X-R_{14},$$

wherein R_{14} is hydrogen or alkyl of 1 to 4 carbons; present in an amount ranging from 0 to about 20 mol percent;

wherein the total mol percent of acidic monomer in said polymer is not greater than the mol percent of said amine monomer.

4,130,525

STABLE AQUEOUS EMULSION OF ACRYLONITRILE POLYMER, ITS PRODUCTION AND DYEABILITY IMPROVING AGENT COMPRISING SUCH EMULSION

Toshiyuki Kobashi; Hirotaka Shiota, and Haruki Umetani, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Japan

Filed Feb. 25, 1977, Ser. No. 772,334

Claims priority, application Japan, Mar. 5, 1976, 51-24334

Int. Cl.² C08L *33/20*

U.S. Cl. 260—29.6 AN **10 Claims**

1. A stable aqueous emulsion of an acrylonitrile polymer which comprises a dispersion system of said acrylonitrile polymer having a particle size of substantially less than 1μ in water and contains substantially no emulsifying agent nor dispersing agent, said emulsion being produced by a process comprising; polymerizing acrylonitrile alone or in a monomer mixture comprising more than 60% by weight of acrylonitrile and as another component, at least one other ethylenically unsaturated compound, under stirring at a temperature higher than 120° C. and at least autogenous pressure, in an aqueous system consisting essentially of water in an amount of 45 to 95% by weight based on the total weight of water and monomer(s), to thereby introduce at least 2×10^{-5} mol per gram polymer of sulfonic acid groups or salts thereof and/or carboxylic groups or salts thereof into the resulting polymer, whereby an aqueous dispersion system comprising fine droplets of the polymer in substantially molten state is formed, and then cooling said aqueous dispersion system under stirring so that said polymer droplets may not gather together to form aggregates, said cooling of said aqueous dispersion system being to a temperature less than 100° C. while maintaining said system at a pressure higher than the autogeneous pressure.

4,130,526

AQUEOUS COATING COMPOSITION

Yasuharu Nakayama; Tadashi Watanabe; Reiziro Nishida, all of Hiratsuka, and Satoru Enomoto, Tokyo, all of Japan, assignors to Kansai Paint Co., Ltd., Tokyo, Japan

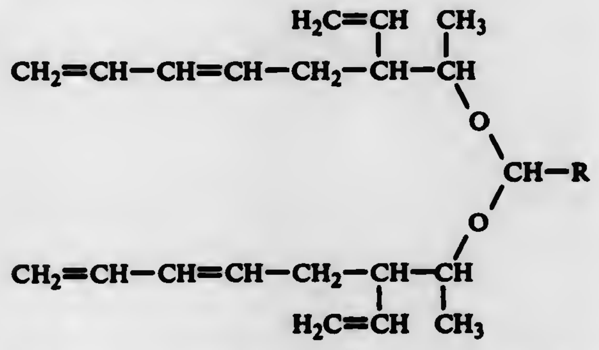
Filed Jun. 30, 1977, Ser. No. 811,563

Claims priority, application Japan, Jul. 5, 1976, 51-80274

Int. Cl.² C08L *33/00*

U.S. Cl. 260—29.6 RB **10 Claims**

1. An aqueous coating composition which is prepared by radically polymerizing unsaturated vinyl monomer in the presence of a surface active agent of ionic or nonionic compound to produce an emulsion, and impregnating said emulsion with 0.1 to 150 parts per hundred resin solid content of said emulsion of a compound (A) represented by the general formula:



in which R is a hydrogen atom or an alkyl group having 1 to 18 carbon atoms, phenyl group, 1–18 carbon atom alkyl phenyl group, cyclohexyl group or 1–18 carbon atom alkyl cyclohexyl group.

4,130,527

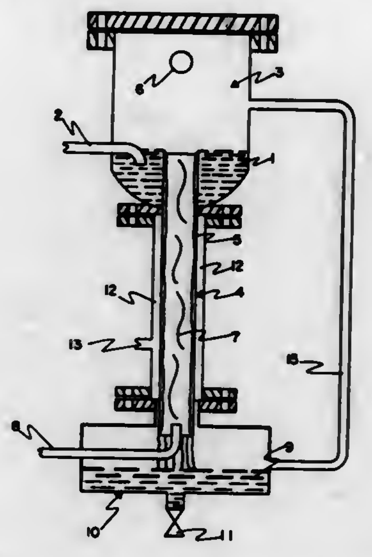
METHOD OF TREATING A POLYMER LATEX TO REMOVE UNREACTED MONOMER BY TREATMENT IN A COLUMN

Robert S. Miller, Chappaqua, N.Y., and Francis J. Doyle, Newark, Del., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 29, 1977, Ser. No. 865,648

Int. Cl.² C08L *27/00*

U.S. Cl. 260—29.6 R **10 Claims**



1. A process for removal of unreacted, residual monomer from an aqueous latex of polymer which comprises introducing the latex without any substantial mechanical shear stress being imparted thereto to a substantially vertical column so that it flows down the interior surface of said column in a thin film countercurrent to a flow of steam while being maintained at subatmospheric pressure.

4,130,528

CARBOXYLATED NEOPRENE LATEX CONTAINING ALKALI-PRETREATED ZINC OXIDE OR HYDROXIDE

Mark C. Chen, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

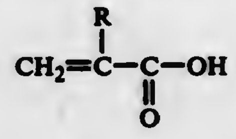
Filed Nov. 2, 1977, Ser. No. 847,932

Int. Cl.² C08L *11/02, 33/02*

U.S. Cl. 260—29.7 WA **10 Claims**

1. A neoprene composition comprising as its essential components:

(1) a latex obtained by polymerizing in an emulsion substantially free of carboxylic soaps a mixture of chloroprene with a carboxylic acid having the formula



$$CH_2=\overset{R}{\overset{|}{C}}-\underset{\underset{O}{\|}}{C}-OH$$

where R is hydrogen, an alkyl radical containing 1–4 carbon atoms, or a carboxymethyl radical, the proportion of said acid being about 0.4–10 mole percent of the total monomer content, in the presence of

(a) about 3–10 parts of polyvinyl alcohol and

(b) about 0.3–2 parts of a chain transfer agent selected from dialkyl xanthogen disulfides and alkyl mercaptans,

both (a) and (b) being expressed in parts by weight based on 100 parts of total monomers, the polymer in the latex containing 10–95% gel, polyvinyl alcohol not being completely recoverable by extraction of the polymer with water; and

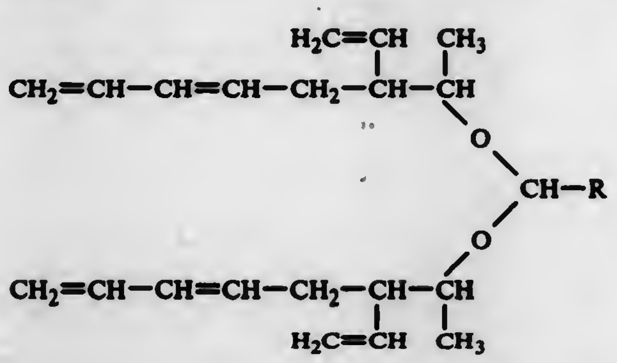
(2) about 2–10 parts of a zinc compound selected from zinc oxide and zinc hydroxide based on the copolymer content of the latex, and zinc compound having been previously contacted with an aqueous solution of an alkali metal hydroxide selected from NaOH, KOH, and LiOH, the respective proportions of these ingredients being about

0.5–10 moles of zinc compound per mole of alkali metal hydroxide.

4,130,529
AQUEOUS FILM-FORMING COMPOSITION

Yasuharu Nakayama; Tadashi Watanabe; Reiziro Nishida, all of Hiratsuka, and Satoru Enomoto, Tokyo, all of Japan, assignors to Kansai Paint Co., Ltd., Tokyo, Japan
Filed Jun. 30, 1977, Ser. No. 811,559
Claims priority, application Japan, Jul. 5, 1976, 51-80273
Int. Cl.^{2} C08L *9/00*
U.S. Cl. 260—29.7 UA **10 Claims**

1. An aqueous film-forming composition which is prepared by radically polymerizing unsaturated vinyl monomer which produces radicals having a Q value of not less than 0.1 in the Q-e scheme in the presence of an amount of emulsion stabilizer of oxidation curing polymeric water-soluble resin to produce an emulsion whose acid number is 3–150, and impregnating said emulsion with 0.1 to 150 parts per hundred resin solid content of said emulsion of a compount (A) represented by the general formula:

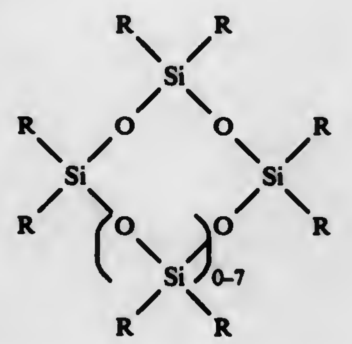


in which R is a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, phenyl group, 1–18 carbon atom alkyl phenyl group, cyclohexyl group or 1–18 carbon atom alkyl cyclohexyl group.

4,130,530
CYCLIC SILOXANE PLASTICIZED POLYCARBONATE COMPOSITION

Victor Mark Evansville, Ind., and Phillip S. Wilson, Louisville, Ky., assignors to General Electric Company, Pittsfield, Mass.
Filed Apr. 8, 1977, Ser. No. 785,822
Int. Cl.^{2} C08K *5/54*
U.S. Cl. 260—29.1 SB **6 Claims**

1. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer and a minor amount of a cyclic siloxane plasticizer of the following formula:



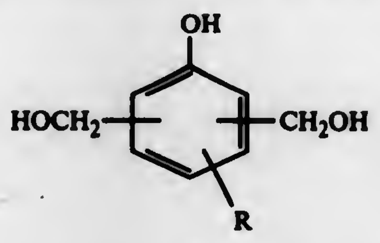
wherein R is independently selected from the group consisting of C_1 to C_{36} alkyl, aryloxy of 6 to 14 carbon atoms, aralkoxy of 7 to 36 carbon atoms, halogen substituted aryl of 6 to 14 carbon atoms and C_5 to C_{30} alkyl substituted aryl of 6 to 14 carbon atoms, wherein said alkyl substituted aryl is bonded to said silicon atom through an intervening oxygen atom.

4,130,531
HIGH SOLIDS, LOW VISCOSITY THERMOSETTING PHENOLIC/EPOXY COATING SYSTEM

Frederick C. Purcell, Johnstown, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.
Continuation-in-part of Ser. No. 519,507, Oct. 31, 1974, abandoned, and Ser. No. 571,979, Apr. 28, 1975, abandoned. This application Oct. 22, 1975, Ser. No. 624,819
Int. Cl.^{2} C08J *3/24;* **C08L/***61/04;* **C08K** *5/04;* **C08L** *63/00*
U.S. Cl. 260—31.4 EP **20 Claims**

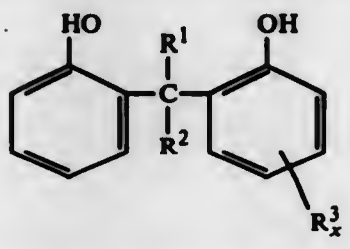
1. A curable coating composition having a viscosity of between 100 and 1000 cps comprising:

(a) a normally liquid phenolic component consisting essentially of alkyl dimethylol phenol of the structure:



where R is an alkyl group containing 1–16 carbon atoms in the para or ortho position and where the methylol groups are in the 2 remaining ortho and para positions;

(b) a normally liquid phenolic component consisting essentially of an alkylene phenol of the structure:



where R^1 and R^2 are methyl or hydrogen, x is 1 or 2 and R^3 is an alkyl group containing 1–16 carbon atoms;

(c) a normally liquid 1,2 - epoxy component consisting of an aliphatic epoxy compound, an epoxy compound containing aromaticity or mixtures thereof and having an epoxy equivalent of between . .0 and 200;

(d) 3–25% of the combined weight of (a), (b), (c) and (d) of a non-volatile polyol;

(e) less than 25% of the combined volume of (a), (b), (c), (d) and (e) of a non-reactive organic solvent; and

(f) an amine catalyst.

4,130,532
POLYESTER PLASTICIZERS

Frank Lamb, Oldham, England, assignor to Ciba-Geigy AG, Basel, Switzerland
Continuation of Ser. No. 603,999, Aug. 12, 1975, abandoned. This application Mar. 7, 1977, Ser. No. 774,727
Claims priority, application United Kingdom, Aug. 21, 1974, 36726/74
Int. Cl.^{2} C07C *69/34;* **C08K** *5/11, 5/12;* **C08L** *27/06*
U.S. Cl. 260—31.6 **12 Claims**

1. A polyester having the formula

$$M(P)_a(D)_b(L)_cM \qquad \text{I}$$

in which M is the residue of one or more aliphatic monocarboxylic acids containing from 4 to 12 carbon atoms or one or more saturated straight or branched chain monohydric alcohols containing from 4 to 12 carbon atoms, P is the residue of one or more saturated straight or branched chain aliphatic diols containing from 2 to 4 carbon atoms, D is the residue of a mixture of one or more aliphatic dicarboxylic acids containing from 4 to 6 carbon atoms and a proportion above 10 mole % of the total acids used, of one or more aromatic dicarboxylic acids or anhydrides selected from the group consisting of o-phthalic acid, phthalic anhydride and isophthalic acid, L is the residue of 6-hydroxy caproic acid, each of the residues being joined together by ester linkage, residues P, D and L being distributed at random throughout the molecule, a, b and c each having a value greater than 0, the amount of residue of hydroxy acid being from 10 mole % to 90 mole % based on the total number of moles of reactants and the molar ratios of the remaining reactants being chosen so that the average molecular weight of the product is from 500 to 1400, which is prepared by reacting in one-step a mixture of the following components (a) from 10 to 90 mole % of epsilon caprolactone or the corresponding hydroxy acid, (b) a hydroxylic component which comprises one or more saturated straight or branched chain aliphatic diols containing from 2 to 4 carbon atoms, (c) an acidic component which comprises a mixture of one or more aliphatic dicarboxylic acids containing from 4 to 6 carbon atoms and a proportion above 10 mole % of the total acids used of one or more aromatic dicarboxylic acids or anhydrides selected from the group consisting of o-phthalic acid, phthalic anhydride and isophthalic acid, and, (d) one or more aliphatic monocarboxylic acids containing from 4 to 12 carbon atoms or one or more saturated straight or branched chain monohydric alcohols containing from 4 to 12 carbon atoms such that the hydroxylic components are used in stoichiometric amounts or up to 20% excess over the stoichiometric amounts related to the acidic components.

11. A composition comprising (a) a thermoplastic polymer selected from the group consisting of poly(vinyl chloride) and poly(vinyl chloride) copolymers and (b) a plasticizing amount up to 60% by weight of the plasticized composition of a polyester according to claim 1.

4,130,533
POLYESTER PLASTICIZERS

Frank Lamb, Oldham, England, assignor to Ciba-Geigy AG, Basel, Switzerland
Continuation of Ser. No. 540,375, Jan. 13, 1975, abandoned. This application Feb. 10, 1977, Ser. No. 767,601
Claims priority, application United Kingdom, Mar. 28, 1974, 13772/74
Int. Cl.^{2} C07C *69/76;* **C08K** *5/11, 5/12;* **C08L** *27/06*
U.S. Cl. 260—31.6 **14 Claims**

1. A compound, having the formula

$$A(P)_a(D)_b(L)_cA \qquad \text{(I)}$$

in which A is the residue of one or more saturated straight or branched chain monohydric alcohols containing from 1 to 20 carbon atoms, P is the residue of one or more saturated straight or branched chain aliphatic diols containing from 2 to 6 carbon atoms, D is the residue of one or more acids or anhydrides selected from the group consisting of o-phthalic acid, phthalic anhydride, isophthalic acid, tetrahydrophthalic acid, tetrahydrophthalic anhydride and any of the aforementioned acids or anhydrides substituted with 1 to 4 alkyl groups, said alkyl groups containing 1 to 4 carbon atoms, or with 1 to 4 chlorine or bromine atoms, L is the residue of one or more saturated hydroxy acids containing from 4 to 12 carbon atoms, each of the residues being joined together by ester linkages residues P, D and L being distributed at random throughout the molecule, a, b and c each having a value greater than 0, the amount of residue of hydroxy acid being from 10 mole % to 90 mole % based on the total number of moles of reactants and the ratio of the number of moles of alcohol to the number of moles of diol being from 2.2 to 0.93 such that the average molecular weight is from 500 to 1400, which is prepared by reacting in one-step a mixture of the following components (a) from 10 to 90 mole % of lactone or hydroxy acid containing from 4 to 12 carbon atoms (b) from 22 to 2 mole % of a hydroxylic component which comprises one or more saturated straight or branched chain aliphatic diols containing from 2 to 6 carbon atoms c) from 33 to 12 mole % of an acidic component which comprises one or more acids or anhydrides selected from the group consisting of o-phthalic acid, phthalic anhydride, isophthalic acid, tetrahydrophthalic acid, tetrahydrophthalic anhydride and any of the aforementioned acids or anhydrides substituted with 1 to 4 alkyl groups, said alkyl groups containing 1 to 4 carbon atoms, or with 1 to 4 chlorine or bromine atoms, and d) one or more saturated straight or branched chain monohydric alcohols containing from 1 to 20 carbon atoms such that the hydroxylic components are used in stoichiometric amounts or up to 15% excess over the stoichiometric amounts related to the acidic components.

14. A composition comprising (a) a thermoplastic polymer selected from the group consisting of poly(vinyl chloride) and poly(vinyl chloride) copolymers and (b) a plasticizing amount up to 60% by weight of the plasticized composition of a compound according to claim 1.

4,130,534
ELASTOPLASTIC COMPOSITIONS OF BUTYL RUBBER AND POLYOLEFIN RESIN

Aubert Y. Coran, and Raman P. Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.
Filed Dec. 27, 1976, Ser. No. 754,412
Int. Cl.^{2} C08F *299/00;* **C08L** *23/22*
U.S. Cl. 260—33.6 AQ **13 Claims**

1. An elastoplastic composition comprising a blend of from about 20 to 45 parts by weight of thermoplastic crystalline polyolefin resin and from about 80 to 55 parts by weight of butyl rubber, chlorobutyl rubber, or bromobutyl rubber per 100 total parts by weight of polyolefin resin and rubber wherein the rubber is dispersed particles of cross-linked rubber which composition is processable as a thermoplastic and is elastomeric.

4,130,535
THERMOPLASTIC VULCANIZATES OF OLEFIN RUBBER AND POLYOLEFIN RESIN

Aubert Y. Coran; Balbhadra Das, and Raman P. Patel, all of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 597,639, Jul. 21, 1975, abandoned. This application Apr. 30, 1976, Ser. No. 679,812
Int. Cl.^{2} C08L *23/16, 23/32*
U.S. Cl. 260—33.6 AQ **52 Claims**

1. A thermoplastic elastomeric composition comprising a blend of about 25 to about 85 parts by weight of crystalline thermoplastic polyolefin resin and about 75 to about 15 parts by weight of vulcanized monoolefin copolymer rubber per 100 parts total weight of said resin and rubber, and extender oil up to 300 parts by weight per 100 parts by weight of rubber provided that, when the amount of resin is greater than 75 parts by weight, extender oil must be present in an amount sufficient to satisfy the equation $(W_o + W_R)/W_P$ is equal to or greater than 0.33 wherein W_o is the weight of extender oil, W_R is the weight of rubber and W_p is the weight of resin, wherein the rubber in said blend is a polymer of monomers comprising ethylene or propylene, and at least one other alpha olefin of the formula $CH_2 = CHR$ in which R is alkyl of 1–12 carbon atoms and from none to a minor portion of at least one copolymerizable diene in the form of small dispersed particles essentially of a size of about 50 microns or below and is vulcanized to the extent that no more than about three percent of the rubber is extractable in cyclohexane at 23° C. or that the cross-link density determined on the same monoolefin copolymer rubber as in the blend is greater than about 7×10^{-5} moles per ml of rubber, the composition being processable in an internal mixer to a product which, upon transferring, with the resin in the molten state, to the rotating rolls of a rubber mill forms an essentially continuous sheet.

4,130,536
HIGH HUMIDITY RESISTANT ELECTRICAL GRADE POLYMER CONCRETE

David H. Reighter, Roslyn, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 13, 1977, Ser. No. 841,724

Int. Cl.² C08L *63/00*

U.S. Cl. 260—37 EP **10 Claims**

1. An electrical insulation grade polymer containing concrete comprising a polymer and a silane treated crushed electrical insulation grade porcelain aggregate.

4,130,537
ASBESTOS FREE FRICTION ELEMENT

George J. Bohrer, Pittsburgh, Pa., assignor to H. K. Porter Company, Inc., Pittsburgh, Pa.

Filed Feb. 2, 1977, Ser. No. 765,006

Int. Cl.² C08K *3/40, 5/06*

U.S. Cl. 260—38 **37 Claims**

1. In a composition for use in forming an asbestos free friction element which exhibits aggressive behavior during operation, said composition including a cross-linkable polymeric binder and glass fibers, the improvement comprising:

infusible organic fibers in said composition to mitigate said aggressive behavior, said infusible organic fibers being present in the range of 10 to 185 percent by weight based on the weight of the glass fibers.

4,130,538
PREPARATION OF SMOKE AND FLAME RETARDANT RESINOUS COMPOSITIONS

Thomas C. Shutt, St. Louis, Mo., assignor to Vitrofil Corporation, Denver, Colo.

Filed Sep. 19, 1977, Ser. No. 834,741

Int. Cl.² C08K *3/22, 3/34, 3/40*

U.S. Cl. 260—40 R **46 Claims**

1. Composition for providing improved smoke and flame retardant high structural strength resinous products comprising an admixture of resin, fractured finely ground solid powder particles of soda-containing silicate glass having a high and irregular surface area and an average particle size below about 40 mesh, and a finely divided solid oxidic boron material capable of forming inert glass upon being heated and having an average particle size below about 40 mesh, said boron material being present in an effective amount for imparting an active cured resin flame retarding property, and said boron material and particles of glass correspondingly being present in a combined effective amount for imparting an active cured resin smoke retarding property.

4,130,539
PROCESS FOR THE PRODUCTION OF READILY DISPERSIBLE PREPARATIONS OF DYES AND POLYVINYLACETALS

Jacques E. Wegmann, Bettingen, Switzerland, assignor to Ciba-Geigy AG, Switzerland

Filed Oct. 8, 1976, Ser. No. 730,967

Int. Cl.² C08J *3/20*

U.S. Cl. 260—42.55 **17 Claims**

1. A process for producing a readily dispersible, non-dusty dye preparation in granulated form, which consists essentially of:

- a. forming a dispersion of a difficultly water soluble to water insoluble dye, pigment or optical brightener with 5 to 60% by weight, based on the weight of said dye, pigment or optical brightener, of a water insoluble polyvinylacetal carrier resin and a polar organic solvent soluble in water between 1 and 30% on a weight/volume basis;
- b. adding water to the dispersion of a., under vigorous aggitation whereby the particles of said dye, pigment or optical brightener are precipitated;
- c. separating said particles from said water and organic solvent and then;
- d. rinsing and drying said particles.

4,130,540
OLEFIN POLYMERS STABLE TO COPPER

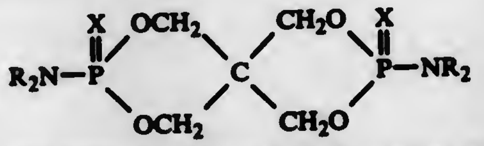
Leo L. Valdiserri, Belpre, Ohio, and Elyse M. Bullock, Parkersburg, W. Va., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 25, 1977, Ser. No. 854,860

Int. Cl.² C08K *5/51*

U.S. Cl. 260—45.8 R **7 Claims**

1. An olefin polymer composition in contact with a copper metal article, said composition comprising a major proportion of an olefin polymer normally susceptible to deterioration at high temperatures in the presence of copper, and a minor proportion sufficient to inhibit such deterioration, of a bisphosphoramidate having the structure



where R is the same or different alkyl, aryl or cycloalkyl or where both R's taken with the nitrogen to which they are attached are one heterocyclic radical and X is oxygen or sulfur.

4,130,541
PRODUCTION OF THERMALLY STABILIZED POLYESTER

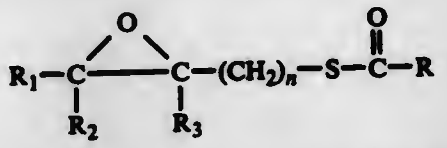
Stanley D. Lazarus, Petersburg, and Kalidas Chakravarti, Richmond, both of Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 819,654, Jul. 27, 1977. This application Mar. 23, 1978, Ser. No. 889,572

Int. Cl.² C08K *5/04;* **C08G** *63/70, 63/76*

U.S. Cl. 260—45.8 A **11 Claims**

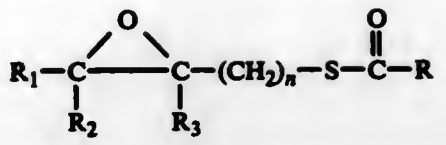
1. A thermally stabilized high molecular weight linear terephthalate condensation polyester having incorporated therein a thermally stabilizing amount of a stabilizer consisting of an epoxy compound having 5 to 25 carbon atoms in the molecule and selected from the group having the formula



$$R_1-\underset{R_2}{\underset{|}{C}}\overset{O}{\frown}\underset{R_3}{\underset{|}{C}}-(CH_2)_n-S-\overset{O}{\overset{\|}{C}}-R$$

where R represents the radical remaining after removal of the carboxyl group from a monocarboxylic acid, R_1, R_2, and R_3 represent hydrogen or hydrocarbon radicals, and n is an integer that can be 0 to 3, said thermally stabilized polyester having a free carboxyl concentration of less than 15 gram equivalents of carboxyl groups per 10^6 grams of polyester.

6. In a process for the preparation of a high molecular weight linear terephthalate condensation polyester wherein terephthalic acid is reacted with a glycol containing 2 to 10 carbon atoms per molecule under esterification conditions and the resulting esterification product is polycondensed, the improvement which comprises providing a reduction in the free carboxyl content of the polyester to a carboxyl concentration of less than 15 gram equivalents per 10^6 grams of polyester by adding to the polyester after final polycondensation of the polyester a thermally stabilizing amount of a stabilizer comprising an epoxy compound having 5 to 25 carbon atoms in the molecule and selected from the group having the formula



$$R_1-\underset{R_2}{\underset{|}{C}}\overset{O}{\frown}\underset{R_3}{\underset{|}{C}}-(CH_2)_n-S-\overset{O}{\overset{\|}{C}}-R$$

where R represents the radical remaining after removal of the carboxyl group from a monocarboxylic acid, R_1, R_2, and R_3 represent hydrogen or hydrocarbon radicals, and n is an integer from 0 to 3.

4,130,542
POLYURETHANES STABILIZED AGAINST ULTRAVIOLET LIGHT AND NITROGEN OXIDE DETERIORATION

Eugene Y. C. Chang, and Samuel Kaizerman, both of Bridgewater Township, Somerset County, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 567,567, Apr. 14, 1975, abandoned, which is a continuation of Ser. No. 349,335, Apr. 9, 1973, abandoned. This application May 26, 1976, Ser. No. 690,126

Int. Cl.² C08K *5/29, 5/13;* **C08L** *75/04*

U.S. Cl. 260—45.9 KB **11 Claims**

1. A polyurethane polymer stabilized against the deteriorative effects of ultraviolet light and nitrogen oxides, which comprises a polyurethane polymer and a stabilizing amount of an aliphatic isocyanate selected from the group consisting of alkylisocyanates, alkylenediisocyanates, cycloalkylisocyanates and cycloalkylenediisocyanates, said polyurethane polymer comprising an isocyanate terminated prepolymer obtained by reacting a polyether or a polyester with an excess of an aromatic diisocyanate, forming an emulsion thereof and subsequently chain-extending the prepolymer with water.

4,130,543
AR-CYCLIC SULFONIUM ARENETHIOL SALTS AND THEIR ZWITTERIONS

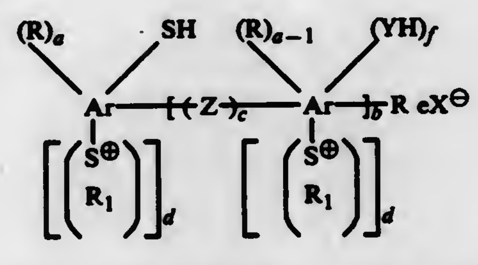
George A. Doorakian, Bedford, and Lawrence G. Duquette, Maynard, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 5, 1976, Ser. No. 673,579

Int. Cl.² C08G *65/44*

U.S. Cl. 528—125 **14 Claims**

1. An ar-cyclic sulfonium mercaptoarene salt represented by the formula:



wherein each Ar is independently a cyclic aromatic polyyl, each Y is independently sulfur or oxygen, each R is independently a suitably inert monovalent radical capable of existing as a ring substituent on Ar, each R_1 is independently a suitably inert divalent organic radical capable of forming a heterocyclic ring containing $—S^{\ominus}—$ in which heterocyclic ring any other heteroatom is S or O, each Z is independently a suitably inert divalent radical bridging the substituted Ar groups, X is a neutralizing anion, each a is independently a positive number corresponding to the number of remaining available ring positions on Ar, b is 0 or a positive number, c is 0 or 1, each d is independently 1 or Z, e is a number such that the salt is electrically neutral and each f is independently 0 or 1.

4,130,544
OXIDATIVE COUPLING OF PHENOLIC MONOMERS BY THE PROGRAMMED ADDITION OF COMPLEXED MANGANESE CATALYSTS

Walter K. Olander, Mt. Vernon, Ind., assignor to General Electric, Pittsfield, Mass.

Filed Aug. 8, 1977, Ser. No. 823,103

Int. Cl.² C08G *65/44*

U.S. Cl. 528—215 **25 Claims**

1. In a process for the preparation of a polyphenylene oxide resin by the oxidative coupling of a phenolic monomer in the presence of oxygen and a complex manganese catalyst, the improvement which comprises adding the catalyst to the reactor in incremental amounts during the polymerization reaction.

4,130,545
MELT PROCESSABLE THERMOTROPIC WHOLLY AROMATIC POLYESTER COMPRISING BOTH PARA-OXYBENZOYL AND META-OXYBENZOYL MOIETIES

Gordon W. Calundann, North Plainfield, N.J., assignor to Celanese Corporation, New York, N.Y.

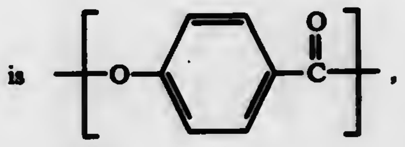
Filed Sep. 12, 1977, Ser. No. 832,713

Int. Cl.² C08G *63/18, 63/60, 63/66*

U.S. Cl. 260—40 P **18 Claims**

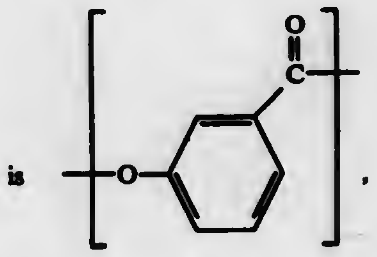
1. A melt processable wholly aromatic polyester capable of forming a thermotropic melt phase at a temperature below approximately 310° C., consisting essentially of the recurring moieties I, II, III, and IV wherein:

I is



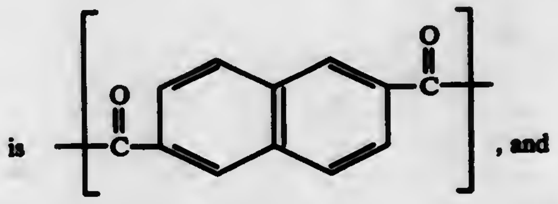
,

II is



,

III is



, and

and IV is a symmetrical dioxy aryl moiety of the formula $+\!\!\!-O—Ar—O-\!\!\!+$ where Ar is a divalent radical comprising at least one aromatic ring, wherein said polyester comprises approximately 30 to 70 mole percent of moiety I and approximately 3 to 10 mole percent of moiety II.

4,130,546
THERMOSETTING RESIN COMPOSITION

Kazuo Goto, Hitachi; Shinichi Toyoda, Katsuta, and Masahiko Sakai, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Japan

Filed Oct. 18, 1977, Ser. No. 843,206

Claims priority, application Japan, Oct. 19, 1976, 51-125227; Oct. 21, 1976, 51-126645; Oct. 30, 1976, 51-131418; Nov. 4, 1976, 51-132553

Int. Cl.² C08L *63/00*

U.S. Cl. 528—73 **11 Claims**

1. A thermosetting resin composition comprising

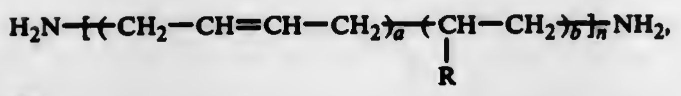
(a) one or more polyfunctional epoxy compounds,

(b) one or more polyfunctional isocyanates,

(c) one or more curing agents, and

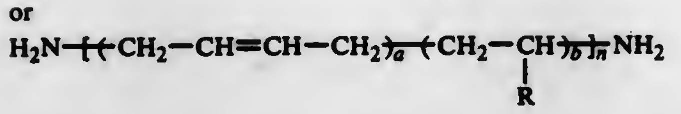
(d) at least one flexibility imparting agent selected from the group consisting of

a polymer of butadiene having terminal amino groups represented by the formula:



$$H_2N{-}[(CH_2{-}CH{=}CH{-}CH_2)_a{-}(\underset{\underset{R}{|}}{CH}{-}CH_2)_b]_n NH_2,$$

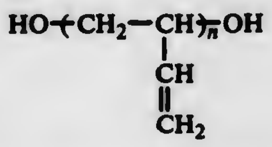
or



$$H_2N{-}[(CH_2{-}CH{=}CH{-}CH_2)_a{-}(CH_2{-}\underset{\underset{R}{|}}{CH})_b]_n NH_2$$

wherein R is hydrogen, alkyl, alkenyl, nitrilo, or phenyl; $a \geqq 0.7$, $b \leqq 0.3$, and $a + b = 1$; and n is an integer which determines the molecular weight of the polymer of butadiene in the range of from 500 to 5,000,

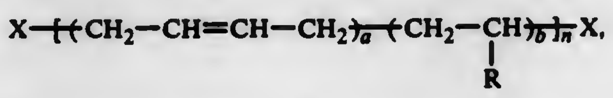
a polybutadiene having terminal hydroxyl groups represented by the formula:



$$HO{-}(CH_2{-}\underset{\underset{\underset{\underset{CH_2}{\|}}{CH}}{|}}{CH})_n OH$$

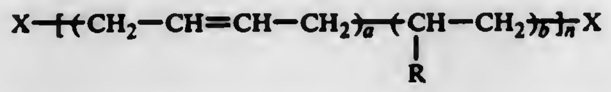
wherein n is an integer which determines the molecular weight of the polybutadiene in the range of from 500 to 5,000,

a reaction product obtained by reacting a polyfunctional epoxy compound or an epoxy compound containing one or more halogen atoms with a copolymer of butadiene of the formula:



$$X{-}[(CH_2{-}CH{=}CH{-}CH_2)_a{-}(CH_2{-}\underset{\underset{R}{|}}{CH})_b]_n X,$$

or



$$X{-}[(CH_2{-}CH{=}CH{-}CH_2)_a{-}(\underset{\underset{R}{|}}{CH}{-}CH_2)_b]_n X$$

wherein X is hydroxyl or carboxyl; and R, a, b and n are as defined above.

4,130,547

CHEMICAL MODIFICATION OF POLY(BIS-ARYLOXYPHOSPHAZENE) WITH AMINES

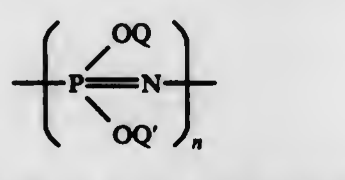
John W. Fieldhouse, Mogadore, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Oct. 20, 1977, Ser. No. 844,018

Int. Cl.^{2} C08G *79/04*

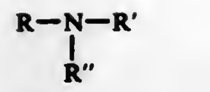
U.S. Cl. 260—823 **13 Claims**

1. A process for improving the physical properties of phosphazene polymers represented by the general formula



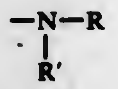
in which Q and Q' are each selected from the group consisting of alkyl, alkylaryl and aryl and may be substituted or not, and some of which contain some unsaturation, and n is an integer between about 20 and about 50,000, which polymers are initially tough, fibrous materials which comprises;

adding to the phosphazene polymer between 1 and 10 parts by weight of an amine per 100 parts by weight of phosphazene polymer, said amine being selected from the group consisting of quinolines and amines represented by the general formula



$$R{-}\underset{\underset{R''}{|}}{N}{-}R'$$

wherein R is selected from the group consisting of H, alkyl, and cycloalkyl; R' is selected from the group consisting of aryl and H; R'' is selected from the group consisting of aryl and aryl substituted in the ortho, meta or para position with —NHR or



$${-}\underset{\underset{R'}{|}}{N}{-}R$$

and

recovering the amine modified phosphazene polymer as a relatively soft, readily processed elastomer.

4,130,548

PREPARATION OF POLYESTER CARBONATES FROM POLYANHYDRIDE ESTER INTERMEDIATES

John E. Kochanowski, Hinsdale, Mass., assignor to General Electric, Pittsfield, Mass.

Filed Oct. 21, 1977, Ser. No. 844,285

Int. Cl.^{2} C08G *63/62*

U.S. Cl. 528—197 **16 Claims**

1. A process for the preparation of a copolyester containing both carboxylate and carbonate groups, said process comprising:

(a) forming a polymeric mixed anhydride ester from by contacting a salt of a di carboxylic acid with a halogen acid ester of a polyhydroxy compound;

(b) contacting said polymeric mixed anhydride ester with at least one molar equivalent of a dihydroxy compound; and

(c) thereafter contacting the excess of the dihydroxy compound with a carbonate forming reagent to form the copolyester containing both carboxylate and carbonate groups.

4,130,549

PROCESS FOR PREPARING EPOXY RESINS FROM HYDROXY BENZOIC ACID AND BISPHENOL

Ryuzo Ueno, Nishinomiya, and Hiroyasu Matsumoto, Sakai, both of Japan, assignors to Kabushiki Kaisha Venoseiyaku oyo Kenkyuso, Osaka, Japan

Filed Feb. 21, 1978, Ser. No. 879,520

Claims priority, application Japan, Mar. 7, 1977, 52/23965

Int. Cl.^{2} C08G *59/24*

U.S. Cl. 528—93 **5 Claims**

1. A process for preparing an epoxy resin, which comprises reacting p-hydroxybenzoic acid and bisphenol A with an epihalohydrin in the presence of a base using a quaternary ammonium salt as a catalyst, the amount of the p-hydroxybenzoic acid being 10 to 90 mole% and the amount of the bisphenol A being 90 to 10 mole%, both based on the total amount of the hydroxybenzoic acid and bisphenol A.

4,130,550

PHENOL-FORMALDEHYDE COMPOSITION USEFUL AS A RAW MATERIAL FOR THE PREPARATION OF PHENOLIC RESINS

Yoshihiro Kitsuda, and Takahisa Konyama, both of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan

Continuation of Ser. No. 711,670, Aug. 4, 1976, abandoned. This application Mar. 2, 1978, Ser. No. 883,083

Claims priority, application Japan, Aug. 4, 1975, 50-95259; Aug. 7, 1975, 50-96460

Int. Cl.^{2} C08G *8/10*

U.S. Cl. 260—29.3 **6 Claims**

1. A process for preparing water-soluble resols which comprises carrying out a reaction to form resols in a composition comprising, as a main component, one or more phenols, about 1 to about 3 moles per 1 mole of said one or more phenols of formaldehyde and about 0.05 to about 4 moles per 1 mole or said one or more phenols of water in the presence of calcium hydroxide and/or barium hydroxide at a pH of 7.5 to 9.

4,130,551

SOLID STATE POLYMERIZATION

Ronald E. Bockrath, Aurora, and Carl Serres, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 21, 1974, Ser. No. 525,866

Int. Cl.^{2} C08G *63/70*

U.S. Cl. 528—481 **3 Claims**

1. The method of producing a relatively high inherent viscosity polyester resin without agglomeration which comprises polymerizing a polyester having an initial starting inherent viscosity of about 0.3 dl/g in 60:40 phenol:tetrachloroethane at 30° C. and at 0.4 dl/g under solid state polymerization conditions together with a sodium chloride anti-stick agent and removing said sodium chloride from the polyester after solid state polymerization with an aqueous medium, wherein the sodium chloride anti-stick agent is present in a concentration of 0.05 to 10 parts by weight per each 100 parts by weight polyester.

4,130,552

POLYESTER CATALYST SYSTEM AND PROCESS

Ronald L. Muntz, Bedford Hills, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 729,752, Oct. 5, 1976, abandoned. This application Aug. 26, 1977, Ser. No. 828,052

Int. Cl.^{2} C08G *63/32*

U.S. Cl. 528—285 **6 Claims**

1. A process for preparing polyester comprising condensing glycol terephthalate in the presence of a polycondensation catalyst system consisting essentially of the reaction product of an unsaturated α, β-dicarboxylic acid anhydride having 4 to 12 carbon atoms and an antimony alkoxide.

4,130,553

PROCESS FOR IMPROVING THE NUTRITIONAL VALUE OF GREEN PLANT PROTEIN

William R. Batley, Jr., P.O. Box 216, Brawley, Calif. 92227, and Walter J. Bray, 510 Pine Top Trail, Bethlehem, Pa. 18017

Filed Jan. 5, 1977, Ser. No. 757,011

Int. Cl.^{2} A23J *1/14*

U.S. Cl. 260—112 R **27 Claims**

1. In a process for recovering protein from leafy green plants comprising the steps of (1) extracting from freshly cut leafy green plants a chloroplastic and cytoplasmic protein containing juice at a temperature of less than about 60° C., (2) separating the insoluble matter from said juice, (3) coagulating the protein in said juice, and (4) recovering the coagulated protein, wherein the improvement comprises the step of, prior to said step (2), contacting said protein containing juice with a quantity of an alkaline solution sufficient to raise the pH of said juice to within the range of from greater than 8.5 to less than 12.0 for a sufficient time to allow conversion of a portion of the chloroplastic protein to soluble cytoplasmic protein whereby at least about 50% of the total protein recovered from the process is cytoplasmic protein.

4,130,554

PROCESS FOR PREPARING SOMATOSTATIN ANALOG

Frederick W. Holly, Glenside; William J. Paleveda, Lansdale; Robert G. Strachan, Warrington, and Daniel F. Veber, Ambler, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 8, 1975, Ser. No. 566,150

Int. Cl.^{2} C07C *103/52;* A61K *37/00*

U.S. Cl. 260—112.5 R **9 Claims**

1. The peptide having the structure: S-Acm-β-mercaptopropionyl-(ϵ-INOC)Lys-Asn-Phe-Phe-Trp-(ϵ-INOC)Lys-Thr-Phe-Thr-Ser-(Acm)Cys-OH.

4,130,555

PEPTIDE MIXTURES DERIVED FROM COLLAGENOUS MATERIAL OR GELATIN

Kazumasa Ohtsuka, Yokohama; Zen Mitsui, Kana, and Hajime Wada, Tokyo, all of Japan, assignors to Nippi Incorporated, Tokyo, Japan

Filed Sep. 6, 1977, Ser. No. 830,763

Int. Cl.^{2} A23J *1/10;* C09H *3/00*

U.S. Cl. 260—117 **12 Claims**

1. A peptide mixture prepared by hydrolyzing a collagen-containing material or gelatin which has a number average molecular weight of from 300–500 and contains 40–60 hydroxylysine plus lysine residues, 55–70 arginine residues, 360–390 glycine residues 50–70 proline residues and 60–80 hydroxyproline residues per 1,000 amino acid residues; pouring the hydrolysate into a column filled with a cation-exchange resin; eluting the peptide absorbed on the resin with an alkaline solution; and collecting and condensing the eluate.

4,130,556

CHEMICAL PRODUCTS AND METHODS

Michael P. Wachter, Bloomsbury, and Ramesh M. Kanojia, Somerville, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 672,918, Apr. 2, 1976, Pat. No. 4,086,358, and a continuation-in-part of Ser. No. 547,415, Feb. 6, 1975, abandoned. This application Oct. 3, 1977, Ser. No. 838,527

Int. Cl.^{2} C07G *17/00;* C07D *301/00;* A61K *35/78, 31/335*

U.S. Cl. 260—236.5 **16 Claims**

1. The method of purifying crude extracts containing biologically active materials obtained from the zoapatle plant selected from the species consisting of *Montanoa tomentosa* and *Montanoa floribunda* which comprises the steps of:

dissolving the crude extract in a water-immiscible organic solvent, washing the resulting solution with an aqueous solution of a mild base and separating the organic phase from the aqueous phase, chromatographing the solution through a column of adsorbent material, eluting the column with a mixture of a polar and a non-polar solvent, combining the fractions containing biologically active materials and removing the solvent therefrom, dissolving the residue in a water-immiscible organic solvent, chromatographing the solution through a column of an organic polymeric gel, eluting the column with a non-polar organic solvent and collecting the fractions containing biologically active materials.

4,130,557

METHOD FOR THE HYDROLYSIS OF AZETIDINOTHIAZOLINE COMPOUNDS

Yoshio Hamashima, Kyoto; Teruji Tsuji, Takatsuki; Mitsuru Yoshioka, Toyonaka; Masayuki Narisada, Ibaraki; Taichiro Komeno; Hiroshi Tanida, both of Osaka, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Japan

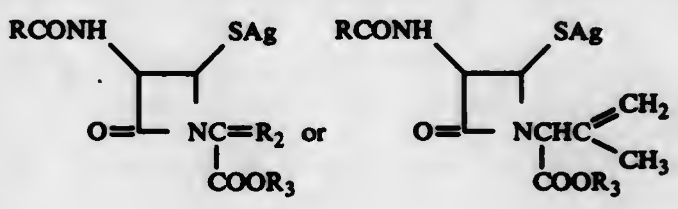
Filed Jan. 29, 1976, Ser. No. 653,629

Claims priority, application Japan, Jan. 30, 1975, 50-13157

Int. Cl.^{2} C07D *205/08, 403/04;* B01J *1/10*

U.S. Cl. 260—239 A **5 Claims**

1. A process for preparing compounds having the formula:

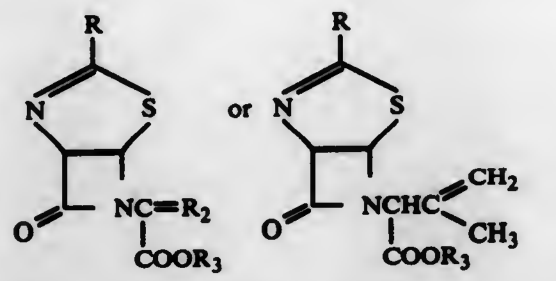


wherein R is phenoxymethyl or benzyl;

R_2 is 1-methoxyethylidene, 1-hydroxyethylidene, or 1,1-dimethoxyethylidene; and

R_3 is trichloroethyl, diphenylmethyl, p-nitrobenzyl, trityl, phenyl, naphthyl, or trimethylstannyl;

which comprises treating a compound of the following formula:



wherein R, R_2 and R_3 are as defined above,

with $AgClO_4$, $AgBF_4$, $AgIO_4$, $AgPF_6$, CF_3COOAg, CH_3SO_3Ag, CF_3SO_3Ag, CH_3COOAg, or Ag NO_3 in aqueous dioxane, aqueous tetrahydrofuran or mixtures thereof.

4,130,558

PROCESS FOR PREPARATION OF ALKALI METAL SALTS OF AMPICILLIN

Otto Roos, Ingelheim am Rhein, and Dieter Essig, Bad Kreuznach, both of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Filed May 18, 1977, Ser. No. 797,928

Claims priority, application Fed. Rep. of Germany, May 28, 1976, 2623835

Int. Cl.^{2} C07D *499/68*

U.S. Cl. 260—239.1 **2 Claims**

1. The method of preparing an alkali metal salt of ampicillin, which comprises the steps of adding to a liquid aqueous suspension of ampicillin at a temperature not exceeding about 4° C. an aqueous solution of an equimolar amount or up to 10% less than an equimolar amount, based on the ampicillin, of an alkali metal base or basic alkali metal salt, while avoiding local over-alkalization in the suspension, immediately sterile-filtering the resulting aqueous solution, immediately freezing the filtrate, and lyophilizing the frozen filtrate.

4,130,559

METHOD FOR THE PREPARING OF 6-AMINOPENICILLINIC ACID DERIVATIVES

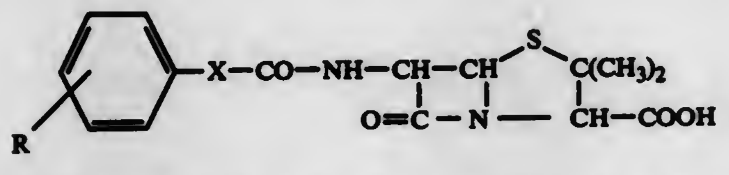
Maia G. Tsinker, ulitsa Amiriana 34, kv. 13; Julya Z. Ter-Zakharian, ulitsa Tumaniana 5, kv. 6; Shushanik G. Oganian, ulitsa Khandzhiana 43, kv. 8; Aram R. Ovakimian, ulitsa Alabiana 39, kv. 47; Shushanik L. Mndzhoian, ulitsa Sundukiana, 1, kv. 2, all of Erevan, U.S.S.R.; Armenak L. Mndzhoian, deceased, late of Erevan, U.S.S.R., by Alza A. Mndzhoian, administratrix, ulitsa Barekamutina, 118, Kv. 24, Erevan, U.S.S.R.

Continuation of Ser. No. 687,211, May 17, 1976, abandoned, which is a continuation of Ser. No. 566,824, Apr. 10, 1975, abandoned. This application Mar. 15, 1977, Ser. No. 777,631

Int. Cl.^{2} C07D *499/46*

U.S. Cl. 260—239.1 **1 Claim**

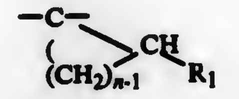
1. 6-aminopenicillanic acid derivatives having the general formula:



wherein R is selected from the group consisting of H and alkoxy groups of normal and iso-structure having

1 to 4 carbon atoms;

X is selected from the group consisting of



wherein n = 4, 3, 2; and

R_1 is selected from the lower alkyls, phenyl, benzyl, halogen, NH_2, NO_2, and OH.

4,130,560

DICARBOXYLIC ACID DERIVATIVES CONTAINING HETEROCYCLIC RADICALS

Jürgen Habermeier, Pfeffingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 20, 1975, Ser. No. 633,772

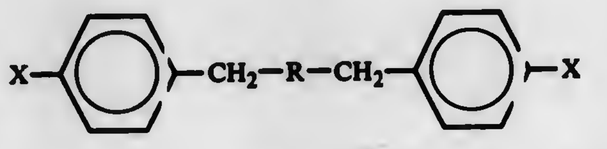
Claims priority, application Switzerland, Nov. 29, 1974, 18565/74

Int. Cl.^{2} C07D *239/52, 239/64, 233/72, 233/96;* C09K *5/06*

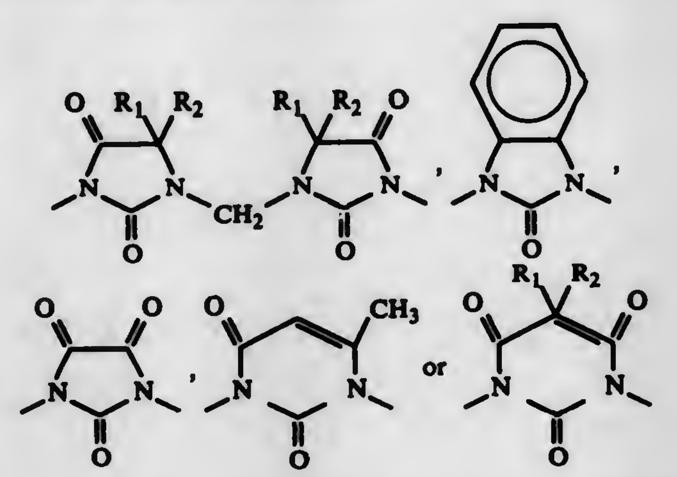
U.S. Cl. 544—302 **10 Claims**

1. A compound of formula I

(I)



wherein each X denotes a nitrile group or alkoxycarbonyl group having 1 to 12 C atoms and R denotes a divalent N,N-heterocyclic radical of the formula



wherein R_1 and R_2 independently of one another each denote a hydrogen atom or an alkyl group having 1 to 3 C atoms.

4,130,561

POLYCYCLOANILINES

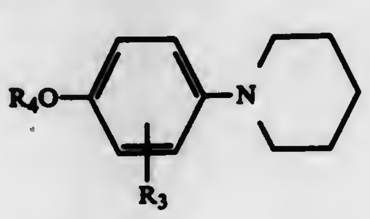
Daniel Lednicer, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 576,342, May 12, 1975, Pat. No. 4,036,977, which is a continuation-in-part of Ser. No. 507,462, Sep. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 416,402, Nov. 16, 1973, abandoned. This application May 26, 1977, Ser. No. 800,802

Int. Cl.^{2} C07D *295/08*

U.S. Cl. 546—204 **5 Claims**

1. A compound of the formula



wherein R_3 is hydrogen, fluorine, or chlorine; R_4 is 1-adamantyl, 2-methyl-2-adamantyl, 1-diamantyl and 4-diamantyl and pharmacologically acceptable acid addition salts thereof.

4,130,562

ODORANT OR FLAVORING THIAZOLYL DISULPHIDES

Paul Dubs, Zug, and Heiner Kuntzel, Dubendorf, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Filed Sep. 24, 1976, Ser. No. 726,100

Claims priority, application Switzerland, Jan. 10, 1975, 12728/75; Jul. 20, 1976, 9280/76

Int. Cl.^{2} C07D *277/36;* A23L *1/226*

U.S. Cl. 260—302 S **7 Claims**

1. A compound selected from the group consisting of
2-thiazolyl-methyl-disulphide,
2-thiazolyl-ethyl-disulphide,
2-thiazolyl-isopropyl-disulphide,
2-thiazolyl-butyl-disulphide,
[1-(2-thiazolyl)-2-methylpropyl]-methyl-disulphide and
[2-(4-methyl-5-thiazolyl)-ethyl]-methyl-disulphide.

4,130,563

Δ4-OXAZOLIN-2-ONES AND PROCESS THEREFOR

Karl-Heinz Scholz; Willy Hartmann, and Hans-Georg Heine, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

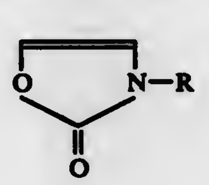
Filed Feb. 18, 1977, Ser. No. 770,259

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1976, 2610676

Int. Cl.^{2} C07D *263/38*

U.S. Cl. 260—307 C **2 Claims**

1. A Δ^4-oxazolin-2-one of the formula



I

in which

R is an acyl radical of the formula R_1—CO—,

in which

R_1 is C_1–C_8-alkyl; C_1–C_4-alkyl substituted by C_1–C_2-alkoxy or halogen; allyl, methallyl or cinnamyl; C_5–C_6-cycloalkyl; C_5–C_6-cycloalkyl substituted by C_1–C_4 alkyl; benzyl; benzyl substituted by C_1–C_4-alkyl, C_1–C_2-alkoxy or halogen; phenyl; phenyl substituted by C_1–C_4-alkyl, C_1–C_2-alkoxy or halogen; 1- or 2-naphthyl, 4-benzoylphenyl; C_1–C_4-alkoxy; phenoxy; phenoxy substituted by C_1–C_4-alkyl, C_1–C_2-alkoxy or halogen; C_1–C_8-alkylamino; di-C_1–C_8-alkylamino; phenylamino; or phenylamino substituted by C_1–C_4-alkyl, C_1–C_2-alkoxy or halogen.

4,130,564

PROCESS FOR THE MANUFACTURE OF MALEIMIDES

Theobald Haug, Frenkendorf; Jürg Kiefer, Reinach, and Alfred Renner, Münchenstein, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 30, 1977, Ser. No. 782,681

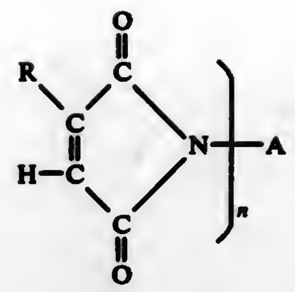
Claims priority, application Switzerland, Apr. 9, 1976, 4535/76

Int. Cl.^{2} C07D *207/00, 207/02*

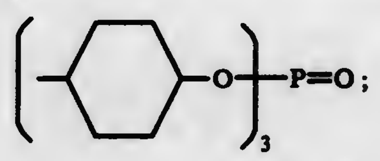
U.S. Cl. 260—326.26 **11 Claims**

1. In a process for manufacture of maleimides of the formula I

(I)

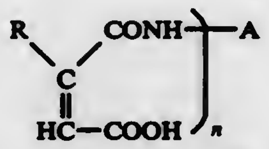


wherein n is one of the integers 1, 2 or 3, R represents hydrogen or a linear or branched alkyl having 1 to 4 carbon atoms, and where n is 1, A represents phenyl, tolyl, hydroxyphenyl, carboxyphenyl or 4-hydroxy-3,5-di-tert-butylphenyl; where n is 2, A represents alkylene of 2 to 12 carbon atoms, cyclohexylene, phenylene, naphthylene, pyridylene, xylylene or a plurality of phenylene or cyclohexylene radicals linked by a simple valence bond or by an atom or group which is inert under reaction conditions; or where n is 3, A represents



by cyclodehydrating the corresponding maleamic acid of the general formula II

(II)



in the presence of a low molecular weight, dehydrating carboxylic acid anhydride and a tertiary amine in an amount of 0.1 to 0.5 mole of amine per mole of maleamic acid group, and in the presence or absence of an organic solvent, the improvement which comprises

carrying out the cyclodehydration at a temperature between 10° C. and 50° C.

4,130,565

NOVEL TYPE OF OXA- AND THIA-STEROIDS

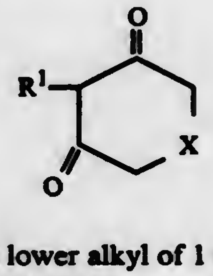
Tadao Terasawa, Ibaraki, and Toshihiko Okada, Nara, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 739,448, Nov. 5, 1976, Pat. No. 4,083,852. This application Jan. 16, 1978, Ser. No. 869,861

Int. Cl.^{2} C07D *309/10, 335/02*

U.S. Cl. 260—327 TH **5 Claims**

1. A compound of the formula



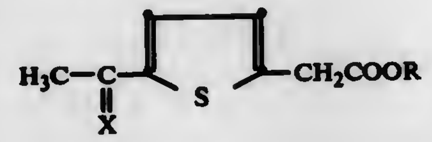
wherein R^1 represents lower alkyl of 1 to 5 carbon atoms and X represents oxygen or sulfur.

4,130,566
PROCESS FOR PRODUCING 5-CARBOXY-2-ACETYLTHIOPHENE

Toshihiko Hibino, Takarazuka, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed Oct. 28, 1977, Ser. No. 847,063
Int. Cl.^{2} C07D *333/24*
U.S. Cl. 260—332.2 C **9 Claims**

1. A process for producing 5-carboxy-2-acetylthiophene which comprises

oxidizing a compound of the formula



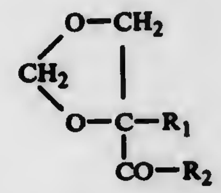
wherein X is a conventional carbonyl-protecting group and R is a conventional ester residue, with a hypohalite in a mixture of water and an alcohol at a temperature from 0° to 60° C., and then removing the carbonyl-protecting group.

5. A process for producing 5-carboxy-2-acetylthiophene which comprises oxidizing 5-acetyl-2-thienylacetic acid with a chromic anhydride-acetic acid complex, a chromic anhydride-pyridine complex, a chromic anhydride-dimethylformamide complex or a dichromate, in a solvent at a temperature from 0° to 100° C.

4,130,567
PROCESS FOR THE PREPARATION OF ARYL DIOXOLANES

George Rosen, Wayne, N.J., assignor to Sun Chemical Corporation, New York, N.Y.
Filed Sep. 20, 1977, Ser. No. 834,961
Int. Cl.^{2} C07D *317/26*
U.S. Cl. 260—340.9 R **6 Claims**

1. In the process for preparing a compound having the formula

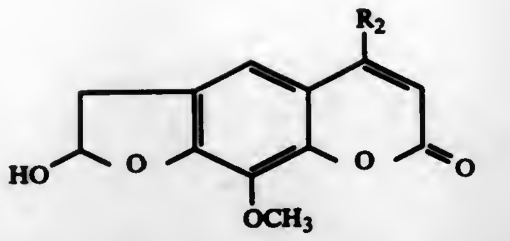


by reacting formaldehyde with a compound having the formula R_1—CHOH—CO—R_2 wherein R_1 and R_2 is each an aromatic or a heteroaromatic group which may be substituted with at least one halogen, hydroxy, lower alkyl, aryl, alkaryl, cycloalkyl, or nitro group and R_1 and R_2 may be the same or different, the improvement which comprises carrying out the reaction under autogenous pressure.

4,130,568
8-METHOXYPSORALEN DERIVATIVES

Pasquale N. Confalone; Elizabeth D. Lollar, both of Bloomfield; Giacomo Pizzolato, Belleville, and Milan R. Uskokovic, Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Continuation-in-part of Ser. No. 723,116, Sep. 14, 1976, abandoned. This application Aug. 10, 1977, Ser. No. 823,257
Int. Cl.^{2} C07D *493/04*
U.S. Cl. 260—343.21 **3 Claims**

1. A compound of the formula

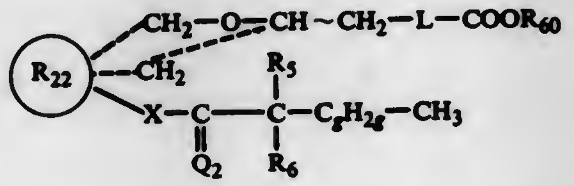


wherein R_2 is selected from the group consisting of hydrogen, lower alkyl or a substituent selected from the group consisting of phenyl, pyridyl, furyl, halo-substituted phenyl, lower alkyl-substituted phenyl, benzyl and alkoxy, halo, nitro or alkyl substituted benzyl.

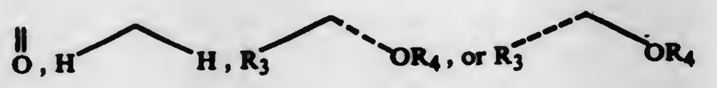
4,130,569
9-DEOXY-6,9-EPOXYMETHANO-PROSTAGLANDIN DERIVATIVES

Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Filed Apr. 19, 1977, Ser. No. 788,145
Int. Cl.^{2} C07D *311/02;* A61K *31/35, 31/41*
U.S. Cl. 260—345.2 **29 Claims**

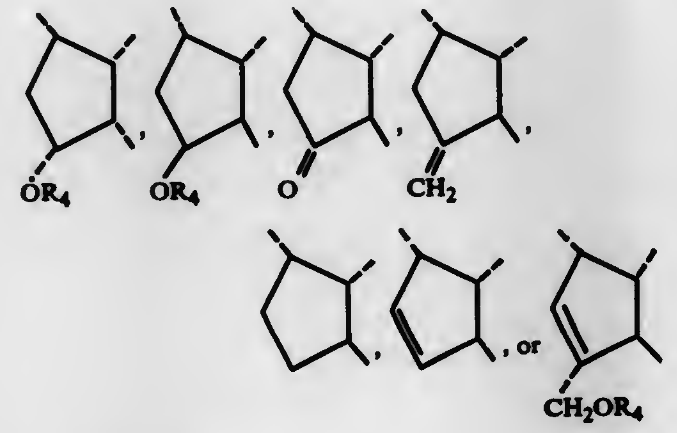
1. A cyclic ether of the formula



wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —CR_5R_6— and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro; wherein L is (1) a valence bond, (2) —$(CH_2)_d$— wherein d is one to 5 inclusive, (3) —$(CH_2)_t$—CF_2— wherein t is 2,3 or 4, (4)—CH_2—(CH═CH—A— wherein A is a valence bond or —$(CH_2)_h$— wherein h is one, 2, or 3, or (5) —CH_2—O—CH_2—Y— wherein Y is a valence bond or —$(CH_2)_k$— wherein K is one or 2; wherein Q_2 is



wherein R_3 is hydrogen or alkyl of one to 4 carbon atoms, inclusive, and wherein R_4 is hydrogen; wherein (R_{22}) is



wherein R_4 is hydrogen;

wherein R_{60} is (a) hydrogen, (b) alkyl of one to 12 carbon atoms, inclusive, or (c) a pharmacologically acceptable cation; wherein X is cis— or trans—CH═CH—, —C{C—, or —CH_2CH_2—; and wherein ~ indicates attachment in alpha or beta configuration; including the lower alkanoates thereof.

4,130,570
METHOD OF PRODUCING ETHYLENE OXIDE

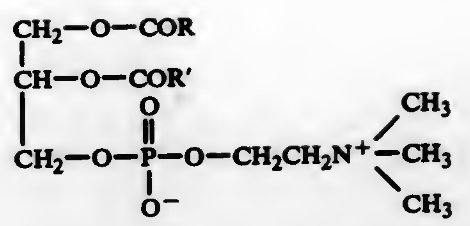
Georgy K. Boreskov, Zolotodolinskaya ulitsa, 85; Mikhail G. Slinko, ulitsa Voevodskogo, 2, both of Novosibirsk; Anatoly I. Gelbshtein, ulitsa Fersmana, 11, kv. 76, Moscow; Lidia A. Vasilevich, 2 Sovetskaya ulitsa, 6, kv. 27, Moscow; Boris B. Chesnokov, Malaya Filevskaya ulitsa, 16, kv. 54, Moscow; Irina T. Frolkina, Khokhovsky pereulok, 11, kv. 40, Moscow; Oskar N. Dyment, 6 Parkovaya ulitsa, 12/1, kv. 70, Moscow; Jury N. Stepanov, shosse Entuziastov, 192, kv. 33, Moscow; Valery A. Davydov, Nalesny pereulok, 15/7, kv. 3, Moscow; Irina G. Talaeva, ulitsa Partizanskaya, 18, korpus 2, kv. 3, Moscow; Ninel S. Utkina, ulitsa Izumrudnaya, 32, kv. 23, Moscow; Vera V. Stroganova, ulitsa Karla Marxa, 34, Ljubertsy Moskovskoi oblasti; Maria S. Aksenova, ulitsa Gerasima Kurina, 8, korpus 2, kv. 53, Moscow, all of U.S.S.R.; Anna G. Filippova, deceased, late of Moscow, U.S.S.R.; by Olga B. Prosvirova, administrator, Uralskaya ulitsa, 17, kv. 169, and by Irina B. Zakharova, administrator, 11 Parkovaya ulitsa, 44, korpus 3, kv. 123, both of Moscow, U.S.S.R.
Continuation of Ser. No. 407,837, Oct. 19, 1973, abandoned.
This application Sep. 16, 1975, Ser. No. 613,806
Int. Cl.^{2} C07D *301/22*
U.S. Cl. 260—348.35 **17 Claims**

1. A method of producing ethylene oxide with an oxidizing agent selected from the group consisting of molecular oxygen and air, in a reactor having a fluidized bed of a silver catalyst therein consisting essentially of from 9.5 to 19 wt. % of metallic silver; from 0.5 to 1 wt. % of a cadmium compound selected from the group consisting of cadmium carbonate, cadmium oxide, and mixtures thereof, said wt. % of both the silver and cadmium components being based on continuously reacting ethylene on a single pass-recycle basis with said oxidizing agent at a temperature of from 200° to 300° C. at a partial pressure of oxygen of from 0.1 to 2 atm., and at a partial pressure of ethylene of from 0.6 to 15 atm., and an aggregate pressure of from 2 to 20 atm., said catalyst being prepared by precipitating carbonate salts of silver and cadmium; impregnating same into a porous fused alumina carrier having a particle size of from 0.1 to 0.5 mm with a porosity of from 25 to 45 vol. % and a specific surface area of from 0.2 to 0.8 M^2/gm in an 20–70% aqueous solution of ethylene glycol while gradually increasing the temperature up to between 60° and 100° C.; and drying said impregnated alumina carrier with heating at a temperature of from 120° to 150° C., the silver component of said catalyst being reduced to metallic silver during the impregnating and drying steps.

4,130,571
PROCESS FOR PREPARING 1,2-DIACYL-3-GLYCERYLPHOSPHORYLCHOLINES

Tadashi Nakajima, Takatsuki; Yasuji Soda, Kobe; Kenichi Kashima, Fujiidera; Haruyoshi Kudoh, Ibaraki, and Akira Miyamoto, Nishinomiya, all of Japan, assignors to Nippon Shoji Kaisha, Ltd., Osaka, Japan
Filed Jan. 26, 1976, Ser. No. 652,319
Claims priority, application Japan, Feb. 4, 1975, 50-15143
Int. Cl.^{2} A23J *7/00*
U.S. Cl. 260—403 **23 Claims**

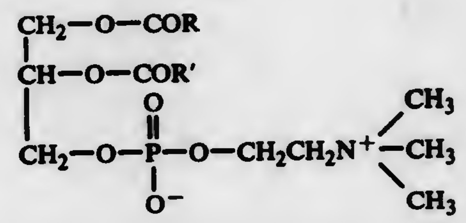
1. A process for preparing a 1,2-diacyl-3-glycerylphosphorylcholine of the formula:



(I)

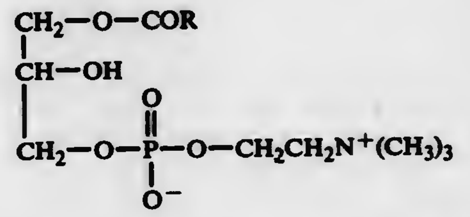
wherein R and R′ are the same and are each a residue of a saturated fatty acid having 10 to 22 carbon atoms or an unsaturated fatty acid having 14 to 20 carbon atoms, which comprises acylating glyceryl-phosphorylcholine or a cadmium chloride salt thereof with an acylating agent selected from the group consisting of 1-acylimidazole and 4-acyl-3-phenyl-1,2,4-oxadiazol-5-one in the presence of a catalyst selected from the group consisting of an alkali salt of a nitrogen-containing 5-membered heterocyclic compound and sodium oxide in anhydrous tetrahydrofuran.

6. A process for preparing a 1,2-diacyl-3-glycerylphosphorylchlorine of the formula:



(I)

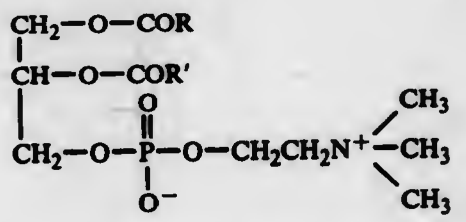
wherein R and R′ are different from each other and are each a residue of a saturated fatty acid having 10 to 22 carbon atoms or an unsaturated fatty acid having 14 to 20 carbon atoms, which comprises acylating a 1-monoacyl-3-glycerylphosphorylcholine of the formula:



(III)

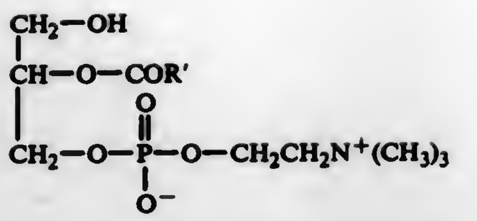
wherein R is a residue of a saturated fatty acid having 10 to 22 carbon atoms or an unsaturated fatty acid having 14 to 20 carbon atoms or a cadmium chloride salt thereof with an acylating agent selected from the group consisting of 1-acylimidazole and 4-acyl-3-phenyl-1,2,4-oxadiozol-5-one wherein the acyl group is a residue of a saturated fatty acid having 10 to 22 carbon atoms or an unsaturated fatty acid having 14 to 20 carbon atoms in the presence of imidazole sodium salt in anhydrous tetrahydrofuran at room temperature.

15. A process for preparing a 1,2-diacyl-3-glycerylphosphorylcholine of the formula:



(I)

wherein R and R′ are different from each other and are each a residue of a saturated fatty acid having 10 to 22 carbon atoms or an unsaturated fatty acid having 14 to 20 carbon atoms, which comprises acylating a 2-monoacyl-3-gylcerylphosphorylchlorine of the formula:



wherein R′ is a residue of a saturated fatty acid having 10 to 22 carbon atoms or an unsaturated fatty acid having 14 to 20 carbon atoms or a cadmium chloride salt thereof with an acylating agent selected from the group consisting of 1-acylimidazole and 4-acyl-3-phenyl-1,2,4-oxadiazol-5-one wherein the acyl group is a residue of a saturated fatty acid having 10 to 22 carbon atoms or an unsaturated fatty acid having 14 to 20 carbon atoms in the presence of imidazole sodium salt in anhydrous tetrahydrofuran at room temperature.

4,130,572

PHYSIOCHEMICALLY DESIGNED FAT COMPOSITIONS FROM TALLOW

Francis E. Luddy, Hatboro; James W. Hampson; Samuel F. Herb, both of Philadelphia, and Herbert L. Rothbart, Flourtown, all of Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 642,837, Dec. 22, 1975, Pat. No. 4,049,839, which is a division of Ser. No. 337,789, Mar. 5, 1973, Pat. No. 3,944,585. This application Aug. 18, 1977, Ser. No. 825,742

Int. Cl.^{2} A23D *5/00*

U.S. Cl. 260—410.7 **1 Claim**

1. A liquid tallow fraction useful as a base material in the production of salad oils, margarines, shortenings, and synthetic sperm oil consisting essentially of monosaturated, triunsaturated glycerides having a gas-liquid chromatographic profile indicating a composition having 5%, 22%, 44% and 29% of glycerides having carbon numbers of 48, 50, 52 and 54, respectively, and a thermal profile indicating that it is not completely solid at −15° C. and that the portion that does solidify at −15° C. melts at about 5° C.

4,130,573

PROCESS FOR MAKING ORGANOTIN DIHALIDES AND TRIHALIDES

Ronald E. Hutton, Southport, and Joseph W. Burley, Wallasey, both of England, assignors to Akzo N.V., Arnhem, Netherlands

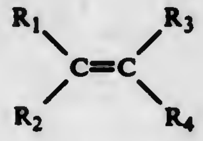
Division of Ser. No. 660,631, Feb. 23, 1976, Pat. No. 4,080,363. This application Apr. 28, 1977, Ser. No. 791,775

Claims priority, application Netherlands, Mar. 17, 1975, 7503116

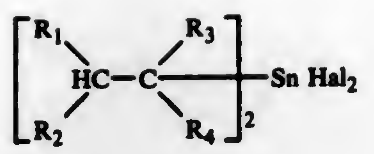
Int. Cl.^{2} C07F *7/22*

U.S. Cl. 260—429.7 **5 Claims**

1. A process for the preparation of organotin halides which comprises reacting metallic tin with a hydrogen halide and an olefin having the formula



wherein R_1, R_2, R_3 and R_4 represent hydrogen or a hydrocarbon group, provided that of R_1 and R_2 at least one is an oxygen-containing group with a carbonyl group adjacent to the olefinic double bond to form an organotin dihalide having the formula



4,130,574

METHOD FOR INCREASING THE HYDROGEN:CARBON RATIO OF AN ORGANIC COMPOUND

James L. Fry, Toledo, Ohio, assignor to University of Toledo, Toledo, Ohio

Filed Aug. 1, 1977, Ser. No. 820,734

Int. Cl.^{2} C07C *1/22, 29/14, 121/75*

U.S. Cl. 260—465 F **3 Claims**

1. A method for increasing the hydrogen to carbon ratio of an organic compound having at least one hydroxyl, carbonyl, epoxide, acetal, ketal, hemiacetal or hemiketal function, said method comprising introducing the organic compounds and a silicon hydride into a liquid which is either chemically inert or acidic and introducing BF_3 into the liquid to produce a reaction product having a higher hydrogen to carbon ratio than the starting organic compound.

4,130,575

PROCESS FOR PREPARING METHANE RICH GASES

Ernst Jørn, Lyngby, Denmark, assignor to Haldor Topsøe A-S, Søborg, Denmark

Filed Oct. 22, 1975, Ser. No. 624,818

Claims priority, application United Kingdom, Nov. 6, 1974, 47924/74; Apr. 22, 1975, 16641/75

Int. Cl.^{2} C07C *1/04*

U.S. Cl. 260—449 M **3 Claims**

1. In a process for producing a methane rich gas in at least one adiabatically operated methanation reactor in which process an inlet stream of a preheated methane synthesis gas containing 40–80% hydrogen, 0–35% carbon dioxide and 10–50% carbon monoxide is combined with a recycle stream of product gas from the methanation reactor to form a combined stream which thereafter is passed through a bed of a methanation catalyst contained in the methanation reactor, the outlet stream from the methanation reactor being divided into the recycle stream and a stream of product gas to be passed on, the improvement which comprises the steps of:

(a) in forming the combined stream, the ratio of the recycle stream to the inlet stream being selected within a range of from 1:1 to 5:1 to provide in the combined stream such contents of hydrogen and carbon oxides which upon methanation to equilibrium produce sufficient heat to raise the temperature of the outlet stream leaving the methanation reactor to a temperature of between 500° C. and 700° C.,

(b) cooling the outlet stream from the temperature of between 500° C. and 700° C. to a temperature of between 250° C. and 350° C. and being at least 50° C. above the dew point of the outlet stream at its actual pressure and composition, and

(c) after the cooling in step (b) and substantially at the temperature obtained therein, withdrawing the recycle stream from the outlet stream by means of an ejector and without further treatment combining it with the inlet stream.

4,130,576

METHOD FOR PREPARING ISOCYANATES FROM HALOSILYL CARBAMATES

Eddie Hedaya, White Plains, and Theodoropulos Spyros, Yorktown Heights, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 687,160, May 17, 1976, Pat. No. 4,064,151. This application Dec. 19, 1977, Ser. No. 862,208

Int. Cl.^{2} C07C *118/00*

U.S. Cl. 260—453 P **14 Claims**

1. A process of preparing isocyanates in a liquid phase reaction from primary amines which comprises reacting a primary amine with carbon dioxide to form the corresponding carbamic acid salt, reacting the carbamic acid salt to form a halosilyl carbamate having the formula:

$RNHCOOSiXY_2$

wherin R is the organic moiety of the primary amine, X is halogen and Y is a member selected from the group consisting of halogen, hydrogen, lower alkyl, alicyclics, aryl, alkaryl and aralkyl, each having no more than about 10 carbon atoms, and heating the halosilyl carbamate to a temperature and for a time sufficient to yield the isocyanate.

4,130,577

PROCESS FOR PREPARING α, α-DIMETHYLBENZYL ISOCYANATES

Nobuyuki Nagato, Wako, and Taketoshi Naito, Yokohama, both of Japan, assignors to Showa Denko K.K., Tokyo, Japan

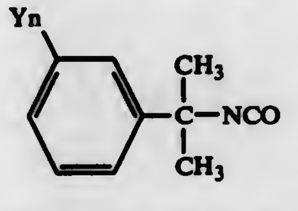
Filed Oct. 25, 1977, Ser. No. 844,815

Claims priority, application Japan, Oct. 25, 1976, 51-127168

Int. Cl.^{2} C07C *118/00*

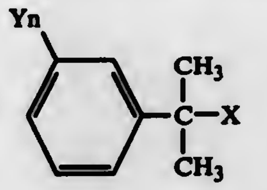
U.S. Cl. 260—453 P **9 Claims**

1. A process for preparing α,α-dimethylbenzyl isocyanate or its ring-substituted derivatives of the formula



wherein Y is a halogen atom or an alkyl, haloalkyl or alkoxy group each having 1 to 4 carbon atoms and n is an integer of 0, 1 or 2,

which comprises reacting an α,α-dimethylbenzyl halide or its ring-substituted derivative of the formula



(1)

wherein X is chlorine or bromine, and Y and n are as defined above,

with an alkali metal cyanate in an organic solvent in a substantially anhydrous condition at a temperature of between 0° C. and 150° C. in the presence of, as a catalyst, at least one member selected from the group consisting of metallic V, Mn, Co, Zn, Pd and Sn and oxides and mineral acid salts or carboxylic acid salts of these metals, said organic solvent being an aprotic solvent which forms no salt or adduct with a hydrogen halide.

4,130,578

IMMUNOSUPPRESSIVE DITHIOCARBANILATES

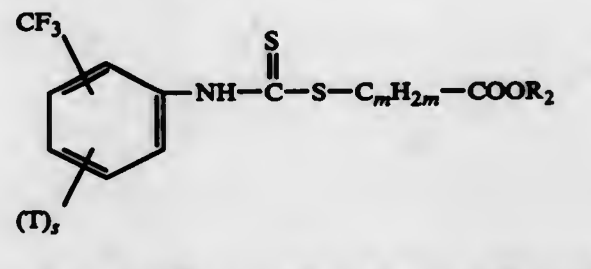
Hewitt G. Wight; Tracey G. Call, both of San Luis Obispo, Calif., and Marvin L. Mortensen, Kila, Mont., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 773,064, Feb. 28, 1977, Pat. No. 4,110,444, which is a continuation-in-part of Ser. No. 579,449, May 21, 1975, abandoned. This application Nov. 4, 1977, Ser. No. 848,433

Int. Cl.^{2} C07C *153/09*

U.S. Cl. 260—455 A **6 Claims**

1. A compound of the formula



wherein T is nitro, fluoro, chloro, bromo, trifluoromethyl, lower alkylsulphonyl, phenylsulphonyl, or (lower alkyl)-phenylsulphonyl;

wherein s is the integer 0 or 1;

wherein C_mH_{2m} is alkylene of 1 to 5 carbon atoms, inclusive; and

wherein R_2 is alkyl of 1 to 12 carbon atoms, inclusive.

4,130,579

BIS(2-METHYL-2-CYANOPROPYL) AROMATICS

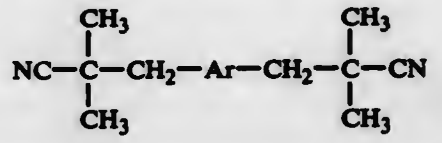
August H. Frazer; John F. Harris, Jr., and Elmore L. Martin, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 8, 1977, Ser. No. 804,855

Int. Cl.^{2} C07C *121/66*

U.S. Cl. 260—465 H **6 Claims**

1. Aromatic-aliphatic dinitriles of the formula



$$NC-\underset{CH_3}{\overset{CH_3}{C}}-CH_2-Ar-CH_2-\underset{CH_3}{\overset{CH_3}{C}}-CN$$

in which Ar is an arylene selected from the group consisting of 1,2-phenylenes, 1,3-phenylenes, 1,4-phenylenes, 2,2′-biphenylenes, 3,3′-biphenylenes, 4,4′-biphenylenes, 4,4′-phenyleneoxyphenylenes, 4,4′-phenylenemethylenephenylenes and 2,6-naphthylenes, said arylene being unsubstituted or substituted with halo, lower alkyl or phenyl.

4,130,580

SODIUM ION REMOVAL FROM ACETONE CYANOHYDRIN

Michael Cholod, Cornwells Heights, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 3, 1977, Ser. No. 848,166

Int. Cl.^{2} C07C *121/36*

U.S. Cl. 260—465.6 **4 Claims**

1. In a process for the preparation of acetone cyanohydrin by the reaction of acetone and hydrocyanic acid in the presence of a sodium hydroxide catalyst, the method of removal of corrosion inducing sodium ion during purification of crude acetone cyanohydrin, comprises the steps of

(a) passing a cooled, crude acetone cyanohydrin feedstream through a cationic ion exchange resin in the acid form to remove substantially all of said sodium ion;

(b) regenerating exhausted ion exchange resin;

(c) acidifying said substantially sodium ion-free crude feedstream to a pH of 1.5–2.0 to stabilize said crude acetone cyanohydrin;

(d) feeding said acidified substantially sodium ion-free crude feedstream to a first concentrator;

(e) removing overhead from said first concentrator unreacted acetone and sending the bottoms from said first concentrator to a second concentrator; and

(f) removing purified acetone cyanohydrin as bottoms from said second concentrator and recycling the overhead from said second concentrator for further generation of acetone cyanohydrin.

4,130,581
PREPARING J ACID BY FUSION USING PHENOLIC FLUXING AGENT

Lawrence J. Ross, Martinsville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 3, 1977, Ser. No. 838,780
Int. Cl.² C07C *143/66*

U.S. Cl. 260—509 **4 Claims**

1. In the process for preparing 7-amino-4-hydroxy-2-naphthalenesulfonic acid by the fusion reaction of 6-amino-1,3-naphthalenedisulfonic acid with a caustic alkali at an elevated temperature followed by cooling and neutralization with an acid, the improvement which comprises providing an effective amount of a phenolic compound selected from the group consisting of phenol, cresol and alkali metal salts thereof as a fluxing agent to the reaction mixture.

4,130,582
PREPARATION OF PHENOLIC ETHYLENEDIAMINEPOLYCARBOXYLIC ACIDS

Harris E. Petree, Kernersville; Hal L. Myatt, Greensboro, and Alex M. Jelenevsky, Nashville, all of N.C., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 19, 1977, Ser. No. 788,712
Int. Cl.² C07C *51/00*

U.S. Cl. 562—448 **4 Claims**

1. A process for the preparation of ethylene-bis(α-imino-hydroxyphenylacetic acid) wherein a major portion thereof is an orto isomeric form, said process comprising reacting, at a temperature of from about 45° to 80° C., phenol with ethylenediamine, glyoxylic acid and a base; said phenol, ethylenediamine, glyoxylic acid and base being present in a molar ratio of 3 to 20, 0.5 to b 0.55, 0.95 to 1.25 and 0.75 to 1.25.

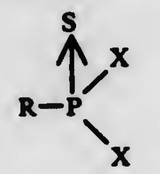
4,130,583
PROCESS FOR PREPARING ALKYL- OR ARYLPHOSPHONOTHIOIC DIHALIDES

Eugene H. Uhing, Ridgewood, N.J., and Arthur D. F. Toy, Stamford, Conn., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 551,805, Feb. 20, 1975, abandoned. This application Feb. 17, 1977, Ser. No. 769,474
Int. Cl.² C07F *9/34, 9/04*

U.S. Cl. 260—543 P **6 Claims**

1. A method of preparing compounds of the formula:


$$R-P(\rightarrow S)X_2$$

(I)

wherein R is selected from the group consisting of C_1 to C_2O alkyl; the aryl substituted derivatives thereof; said aryl having 1 or 2 fused rings, cycloalkyl of 5–6 carbons in the ring; aryl of up to 3 fused rings; biphenyl and the C_1–C_4 alkyl substituted derivatives of said cycloalkyl, aryl and biphenyl and X is chlorine or bromine, comprising contacting under at least an autogenous pressure at a temperature of from about 200° C. to about 400° C. a dialkyl or diaryl thioether reactant of the formula:

wherein R is as defined above, with phosphorus and halogen containing reactants selected from the group consisting of PX_3 and $P(S)X_3$, where X is as defined above; and with reactants selected from the group consisting of P_4S_3, P_4S_5, P_4S_7 *and* P_4S_{10}; and additionally, elemental phosphorus.

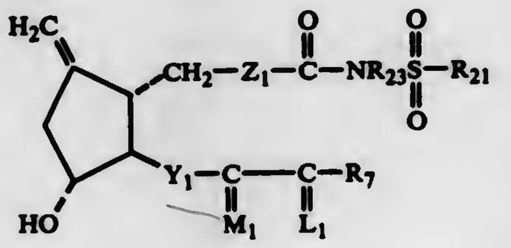
4,130,584
9-DEOXY-9-METHYLENE-PGF SULFONYLAMIDES

Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 786,250, Apr. 11, 1977, Pat. No. 4,098,805. This application Apr. 7, 1978, Ser. No. 894,271
Int. Cl.² C07C *177/00*

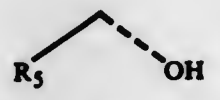
U.S. Cl. 260—556 A **32 Claims**

1. A prostaglandin analog of the formula

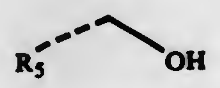


wherein Y_1 is trans—CH=CH—, —C≡C—, or —CH_2CH_2—

wherein M_1 is

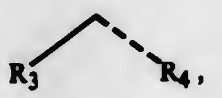


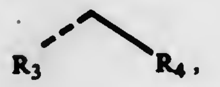
or



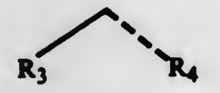
wherein R_5 is hydrogen or methyl;

wherein L_1 is

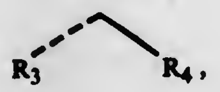




or a mixture of



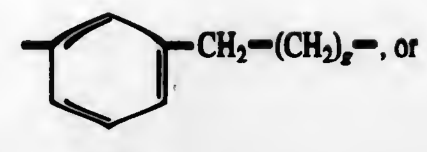
and



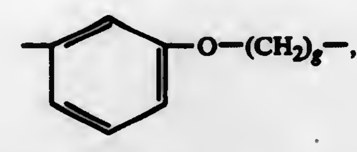
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein Z_1 is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7) —C≡C—CH_2—$(CH_2)_g$—CH_2—,
(8) —CH_2—C≡C—$(CH_2)_g$—CH_2—,

(9)



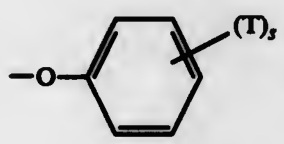
(10)



wherein g is one, 2 or 3;

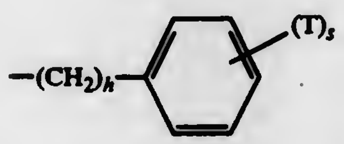
wherein R_7 is
(1) —$(CH_2)_m$—CH_3,

(2)

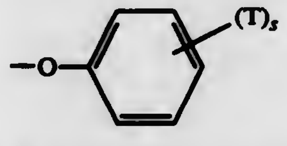


, or

(3)



wherein m is one to 5, inclusive, h is zero or one, T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and s is zero, one, 2 or 3, the various T's being the same or different, with the proviso that not more then two T's are other than alkyl, with the further proviso that R_7 is



wherein T and s are as defined above, only when R_3 and R_4 are hydrogen or methyl, being the same or different; and

wherein R_{21} is hydrogen, alkyl of one to 12 carbon inclusive; aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive; and R_{23} is hydrogen or alkyl of one to 4 carbon atoms.

4,130,585
BIS-TRIAMINOGUANIDINE DECAHYDRODECABORATE, PROCESS FOR PREPARATION, AND HIGH ENERGY PROPELLANT

Terrence P. Goddard, Aptos, Calif., assignor to Teledyne McCormick Selph, an operating division of Teledyne Industries, Inc., Hollister, Calif.

Filed Jan. 24, 1977, Ser. No. 762,229
Int. Cl.² C07C *123/00*

U.S. Cl. 260—564 D **5 Claims**

1. The triaminoguanidinium salt of decahydrodecaboric acid, having the formula $(C(NHNH_2)_3)_2\ B_{10}H_{10}$.

4,130,586
PROCESS FOR PRODUCING IMINE COMPOUNDS

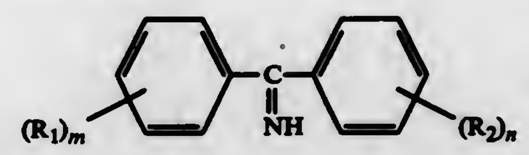
Tomiya Isshiki; Tetsuo Tomita; Mitsuo Abe, all of Tokyo, and Norio Takeda, Matsudo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Aug. 25, 1977, Ser. No. 827,791
Claims priority, application Japan, Sep. 14, 1976, 51-110448
Int. Cl.² C07C *119/00*

U.S. Cl. 260—566 R **8 Claims**

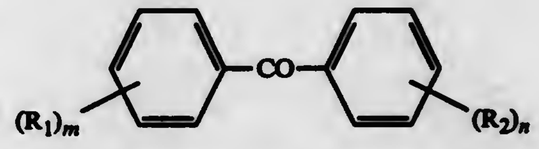
1. A process for producing an imine compound represented by the general formula:

(I)



which comprises reacting, at a temperature of 50°–350° C., a compound represented by the general formula:

(II)



wherein R_1 and R_2 represent hydrogen atoms, halogen atoms and alkyl, alkoxy and nitro groups, and R_1 and R_2 may be the same or different from each other, and m and n are integers of 1 to 5, with ammonia at a pressure of 1–50 atmospheres in the presence of 0.01–10% by wt. based on compound II of a carboxylic acid from the group consisting of formic acid, acetic acid, propionic acid, butyric acid, isobutyric acid, valeric acid, pivalic acid, caproic acid, ethanic acid, caprylic acid, pelargonic acid, capric acid, undecanoic acid, lauric acid, dodecanoic acid, myristic acid, palmitic acid, stearic acid, chloracetic acid, bromacetic acid, fluoracetic acid, trichloracetic acid, trifluoracetic acid, glycollic acid, lactic acid, thioglycollic acid, acrylic acid, phenylacetic acid, α-naphthylacetic acid, oxalic acid, malonic acid, succinic acid, adipic acid, maleic acid, malic acid, citric acid, azelaic acid, phthalic acid, isophthalic acid, terephthalic acid, trimellitic acid, trimesic acid, nicotic acid, isonicotic acid, benzoic acid, tolylic acid, chlorobenzoic acid, nitrobenzoic acid, salicylic acid, anthranilic acid, lutidinic acid, glycine, alanine, methionine or leucine.

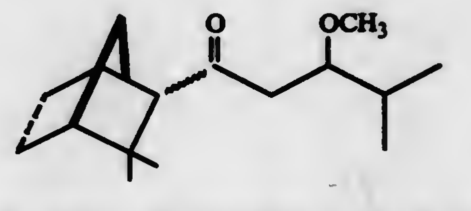
4,130,587
SUBSTITUTED NORBORNANE DERIVATIVES

Kenneth K. Light, Long Branch; James M. Sanders, Eatontown; Manfred H. Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin Vinals, Red Bank, N.J.; William L. Schreiber, Jackson, NJ; John B. Hall, Rumson, N.J.; Denis E. Hruza, Sr., Bricktown, N.J.; Venkatesh Kamath, Red Bank, N.J.; Braja D. Mookherjee, Holmdel, N.J.; Ching Y. Tseng, Middleton, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 765,847, Feb. 4, 1977, Pat. No. 4,076,853. This application Dec. 13, 1977, Ser. No. 860,136
Int. Cl.² C07C *49/61, 49/42*

U.S. Cl. 260—586 G **3 Claims**

1. The compound having the structure:



wherein the dashed line represents a carbon-carbon single bond or a carbon-carbon double bond.

4,130,588

PROCESS FOR PRODUCING METHYLENE DIANILINE

Alton E. Martin; Warren D. White, and Samuel L. Smolik, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 2, 1977, Ser. No. 764,671

Int. Cl.² C07C *85/26*

U.S. Cl. 260—570 D **10 Claims**

1. In a process for the preparation of polyamines wherein an aryl amine is reacted with formaldehyde in the presence of an acid catalyst to form said polyamine, sufficient water is employed to cause separation of the reactant mixture during extraction of said mixture with the aryl amine into an organic phase and an aqueous phase and subsequently returning the aqueous phase to the reactor and recovering the resultant polyamine from the organic phase by known means, the improvement which comprises conducting the extraction at a temperature of from about 10° C. to about 50° C. and

conducting the extraction in the presence of a water soluble inorganic salt which is non-reactive with any of the components of the process in quantities of from about 1% to about 25% by weight based upon the feed stream from the reactor to the extractor.

6. In a process for the preparation of polyamines wherein an aryl amine is reacted with formaldehyde in the presence of an acid catalyst to form said polyamine sufficient water is employed to cause separation of the reactant mixture during extraction of said mixture with the aryl amine into an organic phase and an aqueous phase and subsequently returning the aqueous phase to the reactor and recovering the resultant polyamine from the organic phase by known means, the improvement which comprises conducting the extraction in a single unit multi-stage extraction vessel at a temperature of from about 10° C. to about 50° C. employing a dual solvent system wherein one solvent is the aryl amine and the other is water, and

conducting the extraction in the presence of a water soluble inorganic salt which is non-reactive with any of the components of the process in quantities of from about 1% to about 25% by weight based upon the feed stream from the reactor to the extractor.

4,130,589

OXYALKYLATED ALKYL POLYAMINES AS DEFOAMING AGENTS

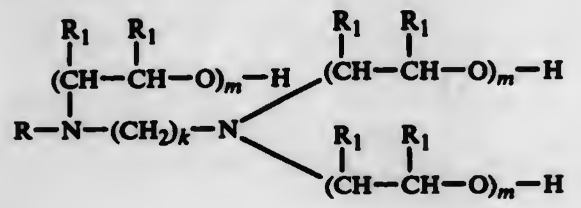
Guido Grassi, Basel; Hans-Peter Baumann, Ettingen, and Helmut Pummer, Therwil, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 745,307, Nov. 26, 1976, abandoned, which is a continuation-in-part of Ser. No. 637,717, Dec. 4, 1975, abandoned. This application Feb. 14, 1978, Ser. No. 877,579

Int. Cl.² C07C *93/04*

U.S. Cl. 260—584 B **15 Claims**

1. A compound of the formula

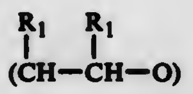


$$\mathrm{R-\overset{(\overset{R_1}{\overset{|}{CH}}-\overset{R_1}{\overset{|}{CH}}-O)_m-H}{\overset{|}{N}}-(CH_2)_k-N\begin{array}{l}\diagup(\overset{R_1}{\overset{|}{CH}}-\overset{R_1}{\overset{|}{CH}}-O)_m-H\\ \diagdown(\overset{R_1}{\overset{|}{CH}}-\overset{R_1}{\overset{|}{CH}}-O)_m-H\end{array}}$$

wherein

R is a C_{10}–C_{30} alkyl or alkenyl group,

one of the R_1's in each

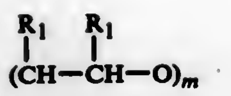


$$\mathrm{(\overset{R_1}{\overset{|}{CH}}-\overset{R_1}{\overset{|}{CH}}-O)}$$

unit is hydrogen and the other is hydrogen or methyl,

k is an integer 2 to 8,

and each m is, independently, an integer 2 to 221, each



$$\mathrm{(\overset{R_1}{\overset{|}{CH}}-\overset{R_1}{\overset{|}{CH}}-O)_m}$$

chain consists of a polyethylene-oxy block and a polypropylene-oxy block, wherein the polyethylene-oxy blocks are attached directly to the amino nitrogen atoms, the number of all ethylene-oxy groups per molecule of the compound being from 5 to 35 and the number of all the propylene-oxy groups per molecule of the compound being from 170 to 190,

which compound is in free base, acid addition salt and/or quaternary ammonium salt form.

4,130,590

PRODUCTION OF UNSATURATED AMINES

Charles F. Hobbs, Des Peres, and Dudley E. McMackins, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 21, 1976, Ser. No. 697,900

Int. Cl.² C07C *85/18*

U.S. Cl. 260—585 D **27 Claims**

1. The process of producing N-(alkadienyl)amines at a rapid rate and in high yield by reaction of conjugated dienes and ammonia or amines having from one to about 20 carbon atoms in a hydroxylic solvent medium in the presence of a catalyst comprising a palladium compound co-catalyzed with a phosphonite ligand.

4,130,591

2-DECARBOXY-2-HYDROXY-METHYL-13,14-DIDEHYDRO-16-PHENOXY PGF COMPOUNDS

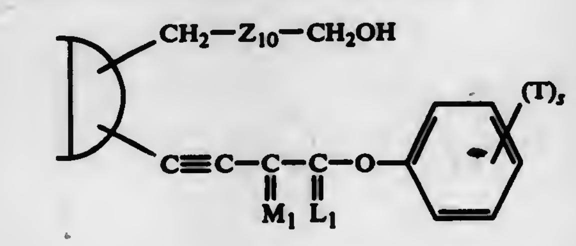
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 814,410, Jul. 11, 1977, which is a division of Ser. No. 708,752, Jul. 26, 1976, Pat. No. 4,058,564. This application Feb. 24, 1978, Ser. No. 880,742

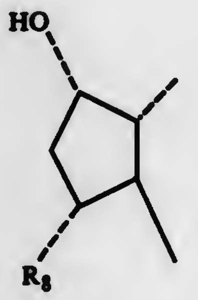
Int. Cl.² C07C *177/00*

U.S. Cl. 568—645 **66 Claims**

1. A prostaglandin analog of the formula



wherein is



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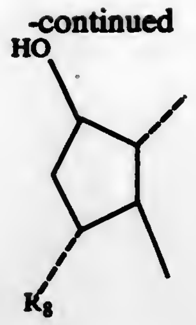
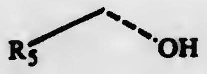
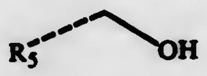


wherein R_8 is hydrogen or hydroxy;

wherein M_1 is

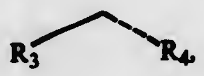


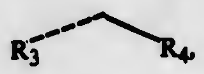
or



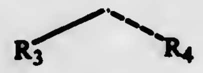
wherein R_5 is hydrogen or methyl;

wherein L_1 is

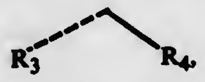




of a mixture of



and



wherein R_3 and R_4 are hydrogen or methyl being the same or different;

wherein Z_{10} is

(1) cis-$CH{=}CH\text{-}CH\text{-}(CH_2)_g\text{-}CH_2$—,

(2) cis-$CH{=}CH\text{-}CH_2\text{-}(CH_2)_g\text{-}CF_2$—,

(3) cis-$CH_2\text{-}CH{=}CH\text{-}(CH_2)_g\text{-}CH_2$—,

(4) —$(CH_2)_3\text{-}(CH_2)_g\text{-}CH_2$,

(5) —$(CH_2)_3\text{-}(CH_2)_g\text{-}CF_2$—, or

(6) —$CH_2\text{-}O\text{-}CH_2\text{-}(CH_2)_g\text{-}CH_2$—,

wherein g is one, 2, or 3; and

wherein s is one to 3, inclusive and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, the various T's being the same or different, with the proviso that not more than two are other than alkyl, with the further proviso that Z_3 is oxa only when R_3 and R_4 are hydrogen or methyl, being the same or different.

4,130,592

METHOD FOR THE PREPARATION OF CHLOROACETALDEHYDEDIMETHYL ACETAL

Wilhelm Vogt, Koeln-Suelz, and Herman Richtzenhain, Post Marialinden, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf Bez. Koeln, Germany

Continuation of Ser. No. 182,861, Sep. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 169,494, Aug. 5, 1971, Pat. No. 3,784,612, which is a continuation-in-part of Ser. No. 774,216, Nov. 7, 1968, abandoned. This application Feb. 27, 1973, Ser. No. 336,286

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1967, 1643899; Mar. 16, 1968, 1693017

Int. Cl.² C07C *41/00, 43/30, 41/10*

U.S. Cl. 568—604 **8 Claims**

1. In the process of producing chloroacetaldehydedimethylacetal and 2,2-dichloroethylmethylether which comprises reacting vinyl chloride with chlorine and methanol at a temperature between −20 ° C. and 100° C., the improvement which comprises carrying out the reaction in the presence of a stoichiometric amount, based on the amount of HCl formed in the process, of an HCl acid binding material selected from the group consisting of aliphatic 1,2-epoxides, hydroxides, oxides, carbonates and alcoholates, of elements of the first and second sub-group of the Periodic Table, ammonia, amines and basic ion exchange resins, said methanol containing less than 2% by weight water, and being present in a molar excess with respect to said chlorine and neutralizing the reaction mixture by addition of an acid binding material.

4,130,593

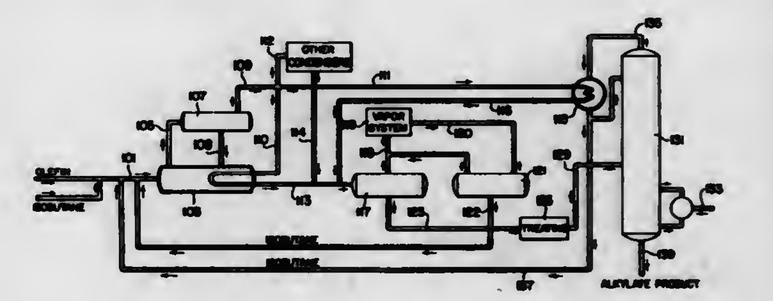
ALKYLATION PROCESS UTILIZING THE HYDROCARBON PHASE FROM A REACTOR FOR CONDENSING A VAPOROUS DISTILLATION EFFLUENT

Richard H. Jones, South Euclid, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 650,341, Jan. 19, 1976, abandoned. This application Nov. 18, 1976, Ser. No. 742,949

Int. Cl.² C07C *23/02*

U.S. Cl. 260—683.48 **37 Claims**



12. In a continuous process for producing alkylate in which olefin and a molar excess of isobutane are reacted together in an alkylation zone in the presence of an acid catalyst to form a liquid reaction effluent, said liquid reaction effluent is separated into an acid catalyst phase and a hydrocarbon mixture, and said hydrocarbon mixture is subjected to fractionation to recover alkylate therefrom, said fractionation including separating said hydrocarbon mixture to form a vaporous fraction and thereafter condensing said vaporous fraction by cooling, the improvement wherein said vaporous fraction is cooled by passing a portion of said hydrocarbon mixture from said alkylation zone in indirect heat exchange with said vaporous fraction.

4,130,594

LIQUID PHASE FLUORINATION PROCESS

Lawrence P. Sendlak, Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation of Ser. No. 829,847, Sep. 1, 1977. This application Mar. 20, 1978, Ser. No. 888,588

Int. Cl.² C07C *25/04*

U.S. Cl. 260—651 F **22 Claims**

1. A process for the preparation of compounds of the formula

$R_nAr(CF_wX_{p'})_Z$

comprising contacting compounds of the formula

$R_nAr(CF_wX_p)_Z$

in liquid phase, with hydrogen fluoride in the presence of a molybdenum halide catalyst selected from the group consisting of $MoCl_3$, $MoCl_4$, $MoOCl_4$, MoO_2Cl_2 and MoF_6

wherein

Ar is aryl;

R is a substituent on the aryl nucleus selected from the group

consisting of aryl, substituted aryl, halogen, alkyl, alkoxy, and substituted alkyl;
n is 0 to 9;
X is a halogen atom other than fluorine;
w is 0 to 2;
p is 1 to 3;
w' is 1 to 3, and is greater than w;
p' is 0 to 2, and is less than p
w + p is 3;
w' + p' is 3;
Z is 1–10; and
the maximum value of n + Z is 10.

4,130,595
MELT OXYCHLORINATION PROCESS

Harold E. Bellis, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 547,017, Feb. 4, 1975, abandoned, which is a continuation-in-part of Ser. No. 206,157, Dec. 8, 1971, abandoned, and Ser. No. 764,649, Oct. 2, 1968, and Ser. No. 740,762, Jun. 27, 1968, Pat. No. 3,583,949. This application Aug. 20, 1976, Ser. No. 716,292

Int. Cl.² C07C *21/00*

U.S. Cl. 260—654 R **5 Claims**

1. A process which comprises chlorinating a material of the group consisting of C_2 hydrocarbons, incompletely chlorinated derivates of C_2 hydrocarbons, and mixtures thereof, containing at least 50% by weight of at least one of 1,1,2-trichloroethane and dichloroethylene to produce a chlorinated product containing one or more of trichloroethylene and perchloroethylene, at a temperature within the range of 300°–500° C., by means of a melt consisting essentially of iron chloride, copper chloride and alkali metal chloride by dispersing the material to be chlorinated in the melt whereby said material is chlorinated by the melt; withdrawing a gaseous effluent from the reaction zone which contains unreacted starting material and the resulting chlorinated hydrocarbon products and recovering the chlorinated hydrocarbon products from the effluent as the product of the process wherein:

(a) the alkali metal chloride is selected from the group consisting of sodium chloride, potassium chloride, rubidium chloride, cesium chloride, and mixtures thereof;
(b) the mole ratio of iron chloride to copper chloride is from about 0.1:1 to about 2:1,
(c) the mole ratio of alkali metal chloride to combined moles of iron and copper chlorides is from about 0.5:1 to about 2:1; and
(d) at least some of the copper chloride is cupric chloride and substantially all of the iron chloride is ferric chloride.

4,130,596
PROCESS FOR PRODUCING CHLOROPRENE MONOMER HAVING A LITTLE CONTENT OF ACETALDEHYDE

Takashi Kadowaki; Michio Nishimura; Seiichi Watanabe, and Koichi Abe, all of Ohmi, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

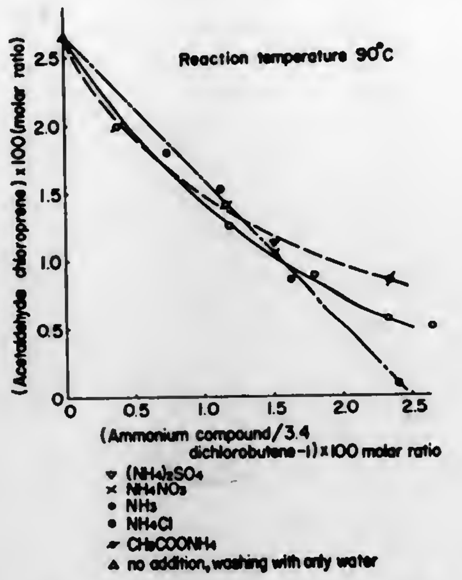
Continuation of Ser. No. 21,740, Mar. 23, 1970, abandoned. This application Jan. 22, 1975, Ser. No. 543,107

Claims priority, application Japan, Mar. 24, 1969, 44-21900; Apr. 21, 1969, 44-30375

Int. Cl.² C07C *21/20*

U.S. Cl. 260—655 **12 Claims**

1. A method for producing chloroprene which comprises: dehydrochlorinating 3,4-dichlorobutene-1 with an aqueous solution of an alkali metal hydroxide in the presence of an ammonium ion donor chosen from the group consisting of ammonium acetate, ammonium nitrate and ammonium sulfate, said ammonium ion donor being present in an amount of from 0.5 mol % to 2.5 mol % based on 3,4-dichlorobutene-1.



4,130,597
DEHYDROGENATION USING MULTIMETALLIC CATALYST

Frederick C. Wilhelm, 1600 Huron Pkwy., P.O. Box 1568, Ann Arbor, Mich. 48106

Division of Ser. No. 597,626, Jul. 21, 1975, which is a continuation-in-part of Ser. No. 479,231, Jun. 13, 1974, Pat. No. 3,915,846, which is a continuation-in-part of Ser. No. 353,925, Apr. 23, 1973, Pat. No. 3,839,195, which is a continuation-in-part of Ser. No. 152,467, May 28, 1971, abandoned, which is a division of Ser. No. 835,218, Jun. 20, 1969, abandoned. This application Jul. 21, 1977, Ser. No. 817,769

Int. Cl.² C07C *5/36*

U.S. Cl. 260—666 A **29 Claims**

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon, at dehydrogenation conditions, with a non-acidic catalytic composite consisting essentially of a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to about 2 wt. % rhodium, and lead in an amount sufficient to result in an atomic ratio of lead to platinum or palladium of about 0.05:1 to about 0.9:1, wherein substantially all of the platinum or palladium, rhodium, and lead are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum or palladium and rhodium are present in the elemental metallic state, and wherein substantially all of the lead is present in an oxidation state above that of the elemental metal.

4,130,598
2,5-DIMETHYL-2,4-HEXADIENE PRODUCTION

Warren Hewertson; David Holland, and David J. Milner, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 2, 1976, Ser. No. 702,130

Claims priority, application United Kingdom, Jul. 2, 1975, 27923/75

Int. Cl.² C07C *11/12*

U.S. Cl. 260—680 R **5 Claims**

1. A process for the production of 2,5-dimethyl-2,4-hexadiene which comprises (1) dehydrodimerizing isobutene by heating it at a temperature in the range of 200°–600° C. and in the vapour phase in the presence of a peroxide which is a free-radical generator and a 1,1,2-trihaloethylene to produce 2,5-dimethyl-1,5-hexadiene; (2) isomerizing the 2,5-dimethyl-1,5-hexadiene to the conjugated 2,5-dimethyl-2,4-hexadiene prior to isolation of the 2,5-dimethyl-1,5-hexadiene, by heating the latter at a temperature in the range 100° to 170° C. in the presence of p-toluene sulphonic acid and (3) subsequently isolating the said conjugated isomer.

4,130,599
SILANOL-FREE RESINS

Duane F. Merrill, Ballston Spa, and Richard C. Cooke, Jr., Elnora, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 578,983, May 19, 1975, abandoned, which is a continuation of Ser. No. 231,403, Mar. 2, 1972, abandoned. This application Jun. 16, 1976, Ser. No. 696,663

The portion of the term of this patent subsequent to Sep. 18, 1990, has been disclaimed.

Int. Cl.² C08L *43/04*

U.S. Cl. 260—825 **10 Claims**

1. A silicone molding composition with improved thermal shock resistance having therein a base silicone resin having $R^1SiO_{3/2}$ unit and $R_2{}^1SiO$ units where R^1 is selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, a filler and comprising the improvement in which there is present a plasticizing amount of a low-silanol content silicone resin having less than 0.5 weight silanol groups and an R to Si ratio that varies from 1.0:1 to 1.9:1 that is produced by the process comprising (a) adding a mixture of hydrolyzable silanes of the formula,

$$R_aSiX_{4-a}$$

to water where there is present at least 2 parts of water per part of said silanes and 1 to 5 parts of a water-immiscible organic solvent per part of said silanes at a temperature range of 25° C. to 85° C. and where the silanes are added to said water slowly so as to form a hydrolyzate; (b) continually agitating said mixture; (c) separating the organic layer and adjusting it to 10–40% solids; (d) within 24 hours from the formation of said hydrolyzate catalyzing said organic layer with 300–600 ppm of an alkali metal hydroxide per part of solid, and refluxing the resulting mixture at 100°–160° C.; (e) neutralizing the alkali metal hydroxide in the refluxed mixture with acetic acid; and (f) stripping from the organic layer excess acetic acid and solvent, where R is selected from the group consisting of alkyl radicals of 1 to 8 carbon atoms, cycloalkyl radicals of 5 to 7 carbon atoms, alkenyl radicals of 2 to 8 carbon atoms, mononuclear aryl radicals, mononuclear aryl lower alkyl radicals where the alkyl portion is 1 to 6 carbon atoms and halogenated derivatives of the above radicals, where X is a chlorine radical and a is a whole number that varies from 1 to 2 and such that 40 mole percent to 60 mole percent of the R radicals are selected from the class consisting of mononuclear aryl radicals and mononuclear aryl lower radicals and halogenated derivatives of the foregoing radicals.

4,130,600
EPOXIDE RESIN MIXTURES

Abdul-Cader Zahir, Oberwil, and Siegfried Wyler, Dornach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 6, 1977, Ser. No. 803,497

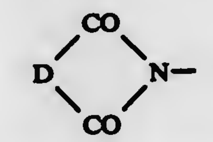
Claims priority, application Switzerland, Jun. 17, 1976, 7747/76

Int. Cl.² C08L *63/00*

U.S. Cl. 260—830 P **13 Claims**

1. A storage-stable, thermosetting mixture which comprises:

(a) a polyimide containing in the molecule at least two radicals of the general formula

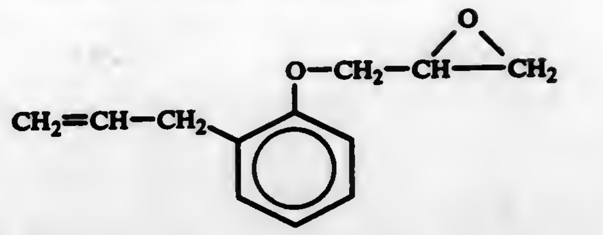


(I)

wherein d represents a bivalent radical containing a carbon-carbon double bond;

(b) 0.05 to 10 moles per equivalent of polyimide of an epoxide compound which contains at least one allyl group selected from the group consisting of

(α) glycidyl ethers of the formula



(II)

(β) glycidyl ethers of novolaks (x) which contain two or more epoxide groups per molecule and are substituted on an aromatic nuclei with at least one allyl group,
(γ) polyepoxy adducts (Y), having two or more epoxy groups per molecule, produced by an advancement reaction of one or more diepoxide compounds with one or more bisphenols, where at least one reactant is substituted on an aromatic nuclei with at least one allyl group,
(δ) epoxide compounds (Z) produced by the reaction of bisphenols, which are substituted on an aromatic nuclei with at least one allyl group, with epichlorohydrin in alkaline solution;

(c) up to 2 moles of a curing agent for epoxide compounds per equivalent of polyimide; and,
(d) up to 3 percent by weight, relative to the polyimide, of a curing accelerator for epoxide resins.

4,130,601
RESIN COMPOSITION FOR POWDER PAINT

Masataka Ohoka, Nara; Mitsuko Yamada, Izumi; Akio Shoji, Osaka, and Shunji Arimoto, Izumi-otsu, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Feb. 21, 1978, Ser. No. 879,760

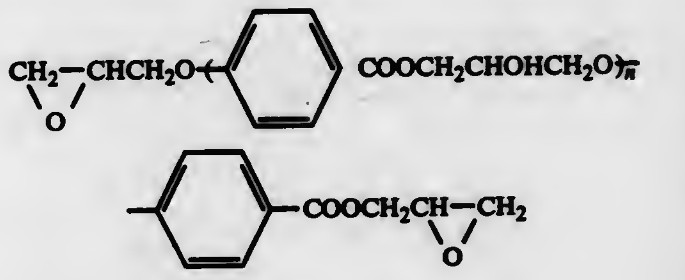
Claims priority, application Japan, Mar. 11, 1977, 52-26040

Int. Cl.² C08L *63/02*

U.S. Cl. 260—835 **6 Claims**

1. A resin composition for powder paints, said composition comprising (I) 70 to 97% by weight of a polyester resin containing free carboxyl groups in the molecule and having an acid value of 20 to 100 KOH mg/g and a softening point of 70° to 150° C. and (II) 3 to 30% by weight of glycidyl p-glycidyloxybenzoate.

4. The composition of claim 1 wherein the glycidyl p-glycidyloxybenzoate (II) is expressed by the general formula



wherein n is 0 or an integer of 1 to 10.

4,130,602
BLOCK COPOLYMER OF POLY(DIOXA-AMIDE) AND POLYAMIDE

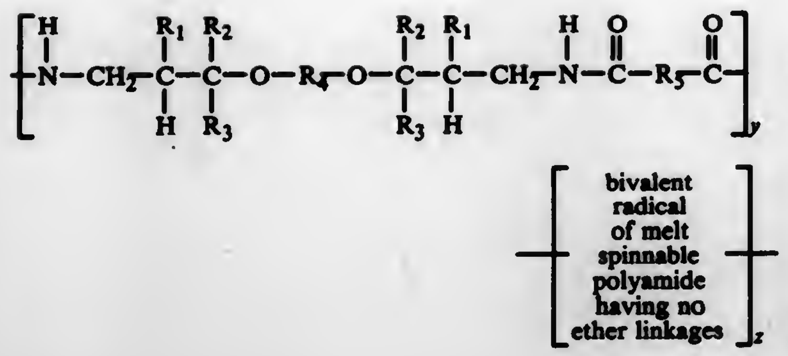
Robert M. Thompson, Wilmington, Del., assignor to Sun Ventures, Inc., Radnor, Pa.

Continuation-in-part of Ser. No. 557,717, Mar. 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 418,524, Nov. 14, 1973, abandoned. This application Feb. 16, 1977, Ser. No. 769,246

Int. Cl.² C08L *77/00*

U.S. Cl. 260—857 TW **47 Claims**

1. A block copolymer of poly(dioxa-amide) and polyamide having a molecular weight of about 5000–100,000 and the following repeating structural formula:



$$\left[-\overset{H}{\underset{|}{N}}-CH_2-\overset{R_1}{\underset{H}{C}}-\overset{R_2}{\underset{R_3}{C}}-O-R_4-O-\overset{R_2}{\underset{R_3}{C}}-\overset{R_1}{\underset{H}{C}}-CH_2-\overset{H}{N}-\overset{O}{\overset{\|}{C}}-R_5-\overset{O}{\overset{\|}{C}}-\right]_y \left[-\text{bivalent radical of melt spinnable polyamide having no ether linkages}-\right]_z$$

wherein

R_1, R_2 and R_3 are selected from the group consisting of H, C_1–C_{10} alkyls and C_3–C_{10} isoalkyls;

R_4 is selected from the group consisting of C_1–C_{10} alkylenes and C_3–C_{10} isoalkylenes;

R_5 is selected from the group consisting of C_0–C_{10} alkylenes and C_3–C_{10} isoalkylenes;

and $y = 4$–200, $z = 4$–200.

4,130,603

THERMOPLASTIC LINEAR BLOCK COPOLYETHER-POLYESTERS AS HOT MELT ADHESIVES FOR TEXTILES

Chiaki Tanaka, Chita; Yatabe Yoko, and Morikawa Masanobu, both of Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Feb. 4, 1977, Ser. No. 765,608

Int. Cl.² C08L *67/02*

U.S. Cl. 260—860 **2 Claims**

1. A dry cleaning resistant hot-melt adhesive for textiles which comprises a thermoplastic linear block copolyether-polyester consisting essentially of a dicarboxylic acid unit derived from 40 to 60 mol % of terephthalic acid and 60 to 40 mol % of isophthalic acid, a diol unit derived from 1,4-butanediol and a polyether unit derived from poly tetramethylene glycol having a molecular weight of about 600 to 1300, wherein the amount of the polyether unit is 10 to 33% by weight on the basis of the block copolyether-polyester and the block copolyether-polyester has a relative viscosity of 1.3 to 1.7 as measured using 0.5 g. of polymer per 100 ml. of orthochlorophenol at 25° C. and a melting point of 95° to 145° C.

4,130,604

PRODUCTION OF AN IMPROVED POLYOXYMETHYLENE MOLDING COMPOSITION WHICH FORMS REDUCED MOLD DEPOSITS UPON MOLDING

Robert Edelman, Staten Island, N.Y., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 751,849, Dec. 17, 1976, abandoned. This application Oct. 28, 1977, Ser. No. 846,662

Int. Cl.² C08L *69/00*

U.S. Cl. 260—860 **25 Claims**

1. A process for producing an improved polyoxymethylene molding composition comprising heating a mixture of:

(1) a polyoxymethylene polymer which exhibits a propensity to form mold deposits upon molding, and

(2) about 1 to about 4 percent by weight based on the weight of the polyoxymethylene polymer of an aromatic polycarbonate having an intrinsic viscosity of about 0.35 to 0.75 in methylene chloride at 25° C. which is derived from a non-hindered non-halogenated dihydric phenol,

for at least about 2 minutes at a temperature at which the polyoxymethylene polymer is molten to yield a molding composition which forms a reduced quantity of mold deposits upon molding.

4,130,605

METHOD FOR REDUCING THE DRIPPING IN FLAMING POLYSTYRENE COMPOSITIONS

Raymond A. Barkhuff, Jr., Hampden, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 26, 1976, Ser. No. 679,942

Int. Cl.² C08L *51/04*

U.S. Cl. 260—876 R **18 Claims**

1. A method for reducing the tendency of fire retardant polystyrene to drip under flaming conditions, which method comprises incorporating into the polystyrene composition from 1 to 10 percent by weight, based on the total weight of the polystyrene based composition of a polychloroprene rubber whereby the tendency to drip is reduced.

4,130,606

RUBBER COMPOSITIONS

Hendrik Van Ballegooijen; Frederik L. Binsbergen; Jacob Raadsen, and Arie D. Vreugdenhil, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 701,831, Jul. 1, 1976, abandoned. This application Mar. 28, 1977, Ser. No. 782,209

Claims priority, application United Kingdom, Jul. 9, 1975, 28899/75

Int. Cl.² C08L *9/00*

U.S. Cl. 260—894 **10 Claims**

1. A rubbery composition having an intrinsic viscosity of between about 1.3 and 5.0 dl/g prepared by blending together components A and B wherein:

(a) A comprises 40 to 94 percent by weight of the total rubbery composition and component B comprises 60 to 6 percent by weight;

(b) the ratio of the intrinsic viscosity of component A to component B varies from 3.0 to 50.0;

(c) component A is selected from the group consisting of styrene-butadiene copolymers, polybutadiene, polyisoprene, and mixtures thereof produced by solution polymerization employing an alkyl lithium initiation and a coupling agent wherein at least 60 percent by weight of the polymers and copolymers in the A component have a branched structure having at least 20 monomer units per branch, said branched structure having at least three arms; and

(d) component B is selected from the group consisting of styrene-butadiene copolymers, polybutadiene, polyisoprene, and mixtures thereof.

4,130,607

PREPARATION OF DITHIOPHOSPHORIC ACID DIESTER HALIDES

Hermann Arold, Wuppertal, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

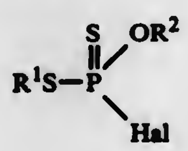
Filed Sep. 2, 1977, Ser. No. 830,381

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2642982

Int. Cl.² C07F *9/20*

U.S. Cl. 260—973 **10 Claims**

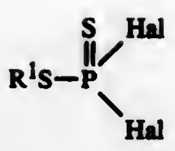
1. A process for the preparation of a dithiophosphoric acid diester halide of the formula



in which

R^1 and R^2 each independently is alkyl with 1 to 5 carbon atoms, and

Hal is halogen, comprising reacting an S-alkyl dihalide of the formula



with an alcohol of the formula

R^2OH

at a temperature of about −5° to −90° C. in the presence of about a 5 to 200% molar excess of potassium hydroxide.

4,130,608

KICK-UP DEVICE FOR A SECONDARY THROTTLE VALVE IN A DIAPHRAGM-TYPE TWO BARREL CARBURETOR

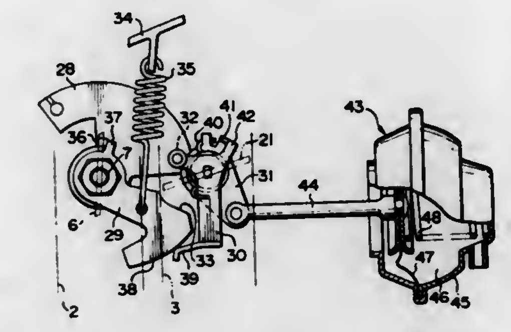
Isamu Ota, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 23, 1977, Ser. No. 835,971

Claims priority, application Japan, May 19, 1977, 52-57915

Int. Cl.² F02M *11/02*

U.S. Cl. 261—23 A **6 Claims**



1. In a diaphragm-type two barrel carburetor having primary and secondary bores including primary and secondary venturi portions respectively, primary and secondary main fuel nozzles provided in said primary and secondary venturi portions respectively, primary and secondary throttle valves provided in said primary and secondary bores respectively, primary and secondary throttle shafts supporting said primary and secondary throttle valves respectively, and a diaphragm means adapted to be actuated by substantially the venturi vacuum of said primary venturi portion so as to open said secondary throttle valve, a kick-up device for said secondary throttle valve comprising a kick lever connected with said primary throttle shaft and having a cam portion, a follower lever connected with said secondary throttle shaft and having a cam follower portion, said cam and cam follower portions being so designed that said secondary throttle valve begins to open when said primary throttle valve is opened beyond a predetermined opening, is gradually more opened as said primary throttle valve is more opened beyond said predetermined opening, and is finally opened up to a predetermined relatively small opening when said primary throttle valve is fully opened, said predetermined relatively small opening being so determined that the air flow caused by such opening of said secondary throttle valve through said secondary venturi portion causes no substantial delivery of fuel from said secondary main fuel nozzle.

4,130,609

STAGED ACCELERATOR PUMP

Timothy Fiedler, Florissant, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed Dec. 23, 1977, Ser. No. 863,883

Int. Cl.² F02M *7/08*

U.S. Cl. 261—23 A **14 Claims**

9. An accelerating pump, comprising:

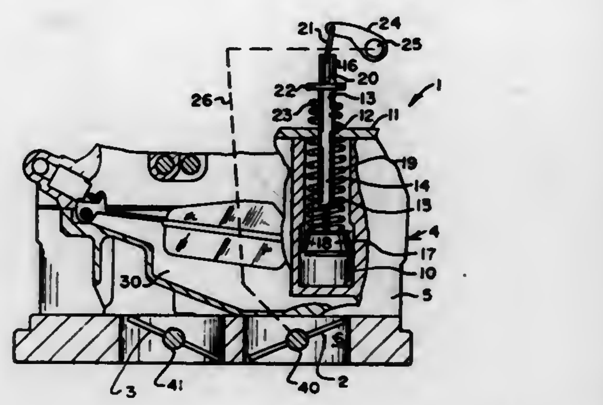
a valve stem having a first end and a second end, said valve stem having a pump means mounted to said first end;

first spring means biased to urge said stem in a pumping direction;

second spring means unbiased in a first position of said stem;

boss means mounted to said stem along the second end thereof; and

drive means including a movable part for urging said valve stem in a pumping direction, said drive means being operatively connected to the second end of said valve stem, movement of said drive means permitting said first spring to urge said stem in a pumping direction until said boss engages said second spring, further movement of said drive means including a first lost motion movement portion and a second direct drive portion whereby said drive means overcomes the force of said second spring and directly drives said stem in a pumping direction.



4,130,610

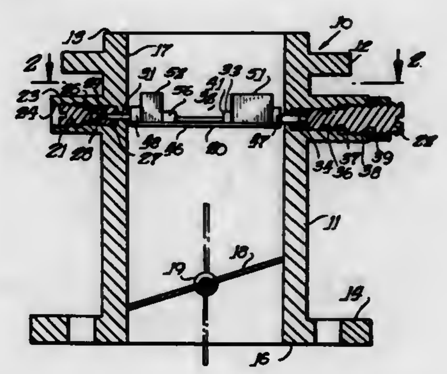
CHARGE FORMING APPARATUS WITH VANE ACTUATED FUEL AIR RATIO CONTROL

Howard C. Paul, Des Plaines, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 29, 1977, Ser. No. 865,649

Int. Cl.² F02M *7/14*

U.S. Cl. 261—36 A **2 Claims**



1. Charge forming apparatus for forming a fuel and air mixture including a body member having an air induction passage defined therein, a fuel channel extending across said air induction passage, said fuel channel including an exposed fuel dispersion gap permitting entrainment of fuel in air for forming a fuel-air mixture in said passage, and a movable throttle member disposed downstream of said fuel channel for regulating the rate of flow of air in said induction passage, wherein the improvement comprises means for varying the proportions of fuel mixed with air in said passage in accordance with the rate of flow of air in said passage, including a rotatable mask mounted for rotation with respect to said fuel dispersion gap, and a rotatable vane mounted in said passage and connected to said mask movable responsive to rate of flow of air in said passage for rotating said mask in a direction progressively covering portions of said fuel dispersion gap responsive to increasing rate of flow of air providing desired fuel air ratios over an extended range of air flow rates.

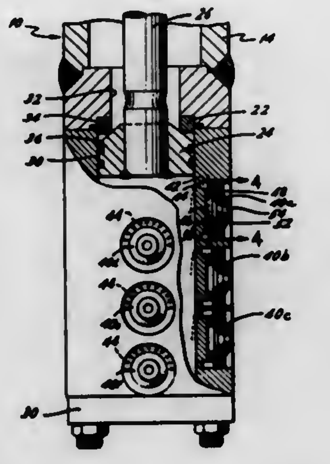
4,130,611
ATTEMPERATOR

Warren H. Brand, Blue Bell, Pa., assignor to Yarway Corporation, Blue Bell, Pa.

Filed Dec. 6, 1976, Ser. No. 748,117

Int. Cl.² B01F *3/04*

U.S. Cl. 261—66 **10 Claims**



1. An attemperator for spraying a liquid into a gaseous stream, said attemperator comprising a spray tube, means for connecting said spray tube to a high pressure source of liquid, valve means at the entrance to said spray tube for allowing or preventing the flow of liquid into said spray tube, a plurality of nozzle means on said spray tube injecting a fine spray of liquid droplets travelling along an expanding helical path from each nozzle means into the gaseous stream, a plurality of small ports formed in said spray tube with some of said ports being spaced about each nozzle means, each of said small ports communicating between the interior of said spray tube and said nozzle means and each one of said small ports being axially spaced from the other of said small ports, said valve means including a plug member slidably received in sealing engagement with the interior of said spray tube whereby said plug member opens said ports sequentially and controls the flow of liquid of each of said nozzle means.

4,130,612
AERATOR FOR BIOLOGICAL WASTE-WATER PURIFICATION

Albert Wilop, Essen, Germany, assignor to Gottfried Bischoff Bau kompl. Gasreinigungs- und Wasserrückkühlanlagen GmbH & Co. Kommanditgesellschaft, Essen, Germany

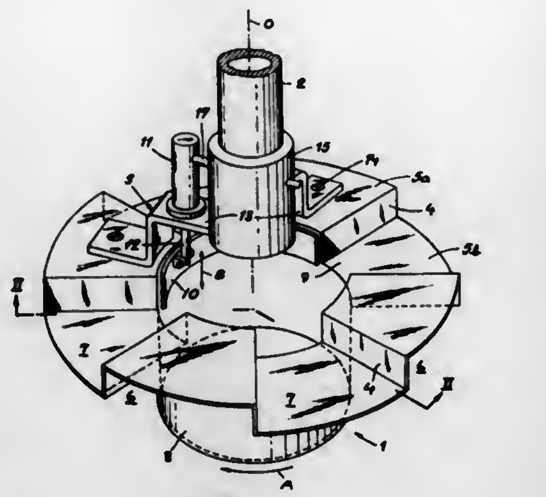
Filed Sep. 2, 1977, Ser. No. 830,335

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2734963

Int. Cl.² B01F *3/04*

U.S. Cl. 261—91 **10 Claims**

1. An aerator for the biological purification of waste water, comprising:
- a rotor centered on a substantially vertical axis, said rotor forming sets of first and second radial channels laterally bounded by radially extending webs, said channels having inner ends proximal to said axis and open outer ends remote from said axis;
- inlet means on said rotor giving access to the inner ends of said first and second channels from different regions of a surrounding body of water to be purified, said inlet means including an axially extending open-ended central sleeve communicating with the inner ends of said second channels and defining a flow path along which atmospheric air is entrainable by water outflowing through said second channels upon limited immersion of said rotor into said body; and
- adjustable control means on said rotor including a cylindrical annular shutter axially displaceable within said sleeve for blocking the inner ends of said second channels to a variable extent.



4,130,613
LOW NOISE COOLING TOWER

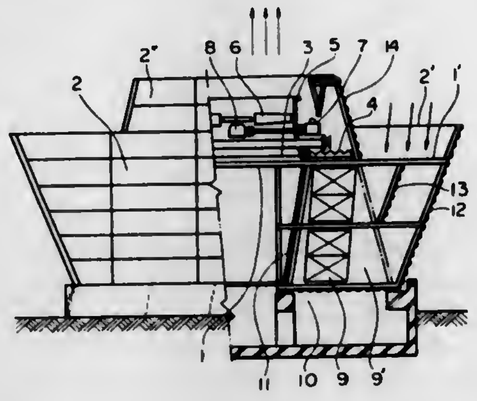
Akimasa Hourai, Amagasaki, Japan, assignor to Shinko-Pfandler Company, Ltd., Kobe, Japan

Filed Dec. 20, 1976, Ser. No. 752,431

Claims priority, application Japan, Jan. 17, 1976, 51-4308

Int. Cl.² F28C *1/04*

U.S. Cl. 261—109 **3 Claims**



1. A crossflow water cooling tower comprising, in combination, a cold water tank serving also as foundation; hot water distribution means arranged above, said cold water tank; fill means arranged between said cold water tank and hot water distribution means, the fill means having an upper surface receiving water from said hot water distribution means, a lower surface discharging water into said cold water tank, an outer side adapted to serve as an air inlet face, an inner side adapted to serve as an air outlet face, a front side and a rear side; a pair of substantially vertical, horizontally spaced, substantially imperforate side walls covering said front and rear sides and extending inwardly and outwardly therefrom; a fan deck connecting said side walls; air draft means on said deck having an air outlet for forcing air from said air inlet face through said fill means to said air outlet face in a direction transverse to the flow of water from said hot water distribution means to said cold water tank, and through said air outlet in an upward direction; means for connecting said air draft means to said vertical side walls inwardly of said air outlet face of said fill means; said cold water tank extending outwardly from said air inlet face of said fill means and having an end edge along its outward extremity; and further comprising a first inclined substantially imperforate wall extending outwardly upward from said end edge of said cold water tank along the entire height of said fill means; and each of said vertical side walls having an outer edge connected to said first inclined wall along the full height thereof and a lower edge sealed to said cold water tank, thereby defining, with said first inclined wall, an upwardly widening air inlet space having substantially imperforate walls preventing horizontal propagation of low frequency noise, said first inclined wall further causing high frequency noise components to be directed upwards.

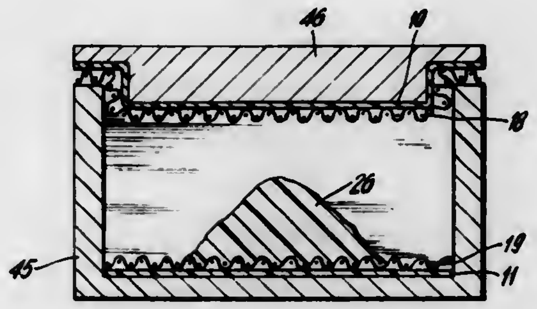
4,130,614
METHOD FOR MAKING STRUCTURAL FOAMS WITH FACING SHEETS

Glen E. W. Saidla, Hampton Falls, N.H., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 2, 1976, Ser. No. 654,617

Int. Cl.² B29D *27/04*

U.S. Cl. 264—46.4 **12 Claims**



1. In forming a fiber-reinforced structural foam having an exterior layer of a substantially nonporous film material on at least one surface thereof and adherent to said foam by foaming a foamable resin composition in place in a mold first lined with an exterior layer of said film material and next with a first layer of fiber-reinforcing sheet material whereby after the resin composition foams the resulting foam is bonded to the facing sheet without adhesive, the improvement consisting essentially of: charging in the mold on said fiber-reinforcing sheet material a foamable resin composition for foaming therein, said resin composition being charged in an amount sufficient to fill the mold on foaming, and said resin composition having a viscosity prior to foaming such that under the conditions in which the resin composition is charged into the mold the resin would not flow by gravity through the openings between the fibers in the fiber-reinforcing material and form beads on the underside thereof in a time shorter than the foam initiation time; and allowing said resin composition to foam in place and completely fill the mold whereby a fiber-reinforced structural foam having a facing sheet on at least one surface is obtained.

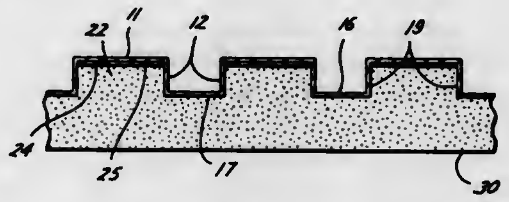
4,130,615
METHOD FOR MAKING AN INSULATED CONTAINER HAVING A SHOCK-RESISTANT BOTTOM

Joseph A. Decker, Jr.; Bipinchandra Amin, and William R. Magruder, all of Houston, Tex., assignors to Igloo Corporation, Houston, Tex.

Filed Apr. 13, 1978, Ser. No. 895,894

Int. Cl.² B29D *27/04;* B29G *7/02;* B29D *9/00, 9/10*

U.S. Cl. 264—46.5 **7 Claims**



1. A method for making an insulated container having a shock-resistant bottom comprising the steps of:
- (a) supporting a pliable sheet of a heated plastic-like material near the edges of said material;
- (b) forming a liner having a plurality of substantially aligned ridges of the material of step (a), each of said ridges having a top with two sides joining the top with a floor of the plastic-like material, by contacting the material of step (a) with a mold having a plurality of substantially aligned ridges thereon;
- (c) cooling the liner of step (b);
- (d) applying a quantity of a non-adhering material to the top inside surface of the ridges of step (c);
- (e) substantially drying the non-adhering material;
- (f) forming a lower container body having a bottom, four sides and an open top;
- (g) positioning the lower container body of step (f) in a female fixture whereby the open top of the lower container body is substantially unobstructed;
- (h) applying a multiple component, expanding exothermic foam onto the inside bottom surface of the container body of step (g);
- (i) positioning the ridged liner of step (e) inside the lower container body of step (h) such that the non-adhering material of step (e) is disposed between the expanding foam of step (h) and top inside surface of the ridges; and
- (j) expanding the foam of step (h) such that the expanding exothermic foam heats the non-adhering material and urges and non-adhering material toward the top inside surface of the ridges such that the foam adheres to the floor and the sides of the ridges not in contact with the non-adhering material and to the lower container body thereby producing an insulated container having a bonded inside liner, the bottom of said liner having ridges therealong, the tops of which are reasonably shock-resistant.

4,130,616
TUBULAR EXTRUDATE

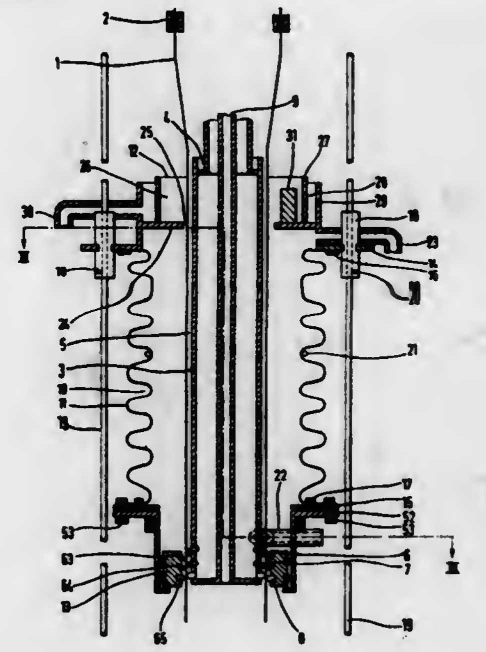
Michael L. Clifford, St-Martens-Latem, Belgium, assignor to Imperial Chemical Industries Limited, London, England

Filed Jun. 7, 1977, Ser. No. 804,375

Claims priority, application United Kingdom, Mar. 21, 1977, 11808/77

Int. Cl.² B29C *17/00;* B29D *23/04*

U.S. Cl. 264—514 **9 Claims**



1. A method of producing a polymeric tubular film comprising
- extruding a tube of a film-forming polymeric material,
- passing the extruded tube over and around an internal cooling mandrel,
- axially withdrawing the tube while supported on the mandrel through a bath of cooling liquid such that the external surface of the tube contacts in sequence
  - (a) a quiescent zone, of surface area A, of cooling liquid exhibiting laminar flow,
  - (b) a zone, of restricted cross-sectional area B, of cooling liquid exhibiting transitional flow, and

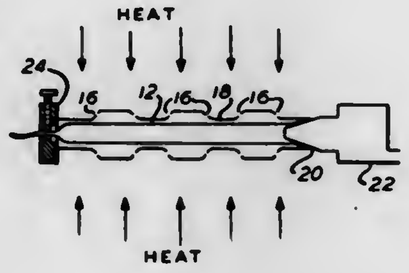
(c) a zone, of cross-sectional area C, of cooling liquid exhibiting substantially spiral turbulent flow around the surface of the tube,
the flow of cooling liquid in each of said zones being substantially countercurrent to the direction of movement of the tube, and
the surface areas of said zones being such that $A>\lambda$ $B<C$, and

thereafter converting the cooled tube to tubular film.

4,130,617
METHOD OF MAKING ENDOTRACHEAL TUBE CUFFS

Dean R. Wallace, Ft. Myers, Fla., assignor to Airco, Inc., Montvale, N.J.

Filed Dec. 30, 1977, Ser. No. 865,825
Int. Cl.^{2} B29C *17/07*
U.S. Cl. 264—528 **8 Claims**



1. A method of producing cuffs for endotracheal tubes comprising the steps of:
(a) providing an elastomeric thermoplastic tube of predetermined elasticity, diameter and wall thickness;
(b) positioning the tube within a vented hollow mold having an internal configuration in the shape of at least one desired cuff;
(c) prestretching the tube a predetermined amount along its longitudinal axis, and maintaining said prestretch throughout steps (d) and (e) to minimize longitudinal expansion during pressurizing;
(d) pressurizing the interior of said tube while contained within said mold and retaining said pressure within said tube throughout step (e);
(e) heating the mold and the tube contained within, at a temperature sufficient to soften said tube and cause it to expand into said mold, thereby forming a cuff;
(f) removing the heat from the mold and tube to allow said mold and tube to return to ambient temperature; and
(g) removing the at least one formed cuff from the mold.

4,130,618
ETHYLENE POLYMER-PETROLEUM WAX COMPOSITIONS

Donald R. J. Hill, Houston, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Dec. 1, 1977, Ser. No. 856,475
Int. Cl.^{2} B29G *7/00*
U.S. Cl. 264—123 **15 Claims**

1. A process for the manufacture of a finely-divided, particulate, free-flowing thermohardening ethylene polymer composition which consists essentially of intimate mixing 40 to 150 parts by weight of melted petroleum wax with 100 parts by weight of a finely-divided particle form ethylene polymer having a bulk density of less than about 20 lbs/ft.^{3}, an annealed density of at least 0.95 and an intrinsic viscosity of at least about 3, adsorbing said melted wax on the polymer particles and recovering a free-flowing particulate product that is essentially physically indistinguishable from the initially charged ethylene polymer; said petroleum wax being selected from the group consisting of a paraffin wax, an intermediate wax, and a microcrystalline wax; said paraffin wax having a melting point range of 120°-160° F., a molecular weight range of 340-400, a density range of 0.80-0.917, a gravity range of 35°-60° API at 210° F. and a 5% distillation point of 750°-810° F. (vacuum corrected to 760 mm Hg); said intermediate wax having a melting point range of 130°-160° F., a molecular weight range of 360-550, a density range of 0.85-0.93, a gravity range of 30°-55° API at 210° F. and a 5% distillation point of 825°-900° F. (vacuum corrected to 760 mm Hg); said microcrystalline wax having a melting point range of 130°-180° F., a molecular weight range of 500-600, a density range of 0.89-0.94, a gravity range of 30°-50° API at 210° F. and a 5% distillation point of 950°-1,050° F. (vacuum corrected to 760 mm Hg).

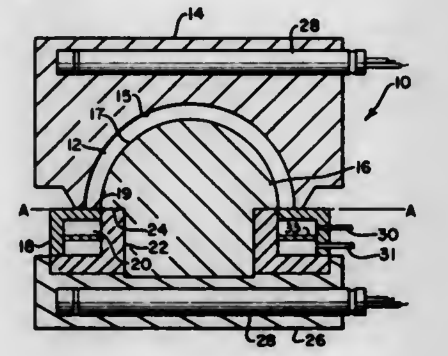
6. A finely-divided, particulate, free flowing thermohardening ethylene polymer composition prepared by the method of claim 1.

7. A pressure free process for preparing castings of an ethylene polymer composition which consists essentially of filling a mold with a thermohardening ethylene polymer composition of claim 6, melting the ethylene polymer composition, and then cooling the mold to ambient temperature to solidify the ethylene polymer composition therein.

4,130,619
APPARATUS AND METHOD OF MAKING HOLLOW ARTICLES

Franklin W. Held, San Diego, Calif., assignor to Ektelon, San Diego, Calif.

Filed Jun. 16, 1977, Ser. No. 806,997
Int. Cl.^{2} B29C *5/00, 17/00;* **B29H** *7/02*
U.S. Cl. 264—162 **11 Claims**

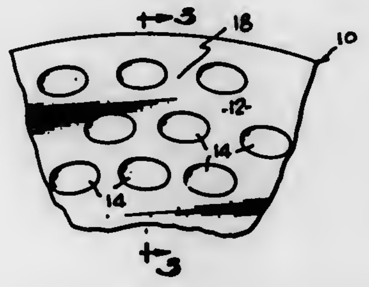


1. A method of making hollow articles from a vulcanizable, elastic material comprising the steps of; shaping and molding a mass of the elastic material to a hollow, semi-spherical form in a first mold cavity, heating the mass of elastic material and simultaneously cooling the edge of the semi-sphere of the elastic material, continuing the heating and cooling until the mass of elastic material is vulcanized but the continuous edge portion of the material is not fully vulcanized, removing the semi-sphere from a first mold, roughening said edges of said semi-sphere, transferring two of said semi-spheres to a second mold having a spherical cavity therein, and abutting the edges of said two semi-spheres and forcing the edges together while heating at least the edge portions to vulcanize them together and form a hollow sphere, said first mold including a first mold member having a semi-spherical cavity, a second mold member having a convex semi-spherical portion adapted to mate with said first mold member in spaced relation thereto and an annular cooling means abutting said first mold and said second mold and defining said first mold cavity therebetween, and passing a cooling fluid through said cooling means while heating said second mold, said fluid being insulated from said second mold.

4,130,620
METHOD FOR MAKING VIDEO DISCS AND VIDEO DISC MOLDS

Manfred H. Jarsen, Encino, Calif., assignor to MCA Disco-Vision, Inc., Universal City, Calif.

Division of Ser. No. 406,686, Oct. 15, 1973, abandoned. This application Dec. 22, 1976, Ser. No. 753,184
Int. Cl.^{2} B29C *5/00, 5/04;* **B29H** *3/042*
U.S. Cl. 264—225 **3 Claims**



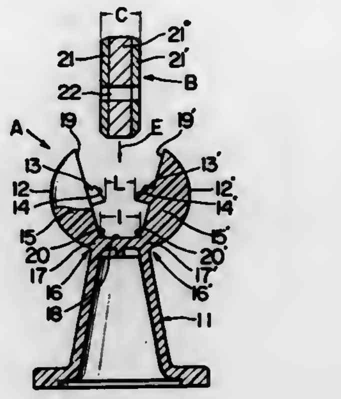
1. A process for producing a video disc comprising the steps of:
forming a master matrix including a substrate having a flat first surface carrying a video information track, and said information track being in the form of a series or photoresist members, and said members are generally arranged in a concentric, spiral track, and each member having a constant dimension in a radial direction and a constant maximum dimension in a direction perpendicular to said surface, and the length of each member in the circumferential direction and the distance between adjacent member in the circumferential direction being representative of the video information; pouring a silicone rubber compound over the surface of the master matrix to a uniform depth; applying a uniform pressure over said poured compound, heating said compound until cured while applying said uniform pressure, separating said cured elastomer from said matrix thereby forming an elastomeric mold member and casting a replica video disc from said mold member, and said replica video disc having a first surface carrying a replicated copy of said information track carried by said first surface of said substrate.

4,130,621
METHOD FOR MANUFACTURING A DOOR CATCH MADE OF A SYNTHETIC RESIN

Seiji Sugasawara, Chiba, Japan, assignor to Sugatsune Industrial Co., Ltd., Chiba, Japan

Filed Jan. 27, 1978, Ser. No. 872,799
Claims priority, application Japan, Jan. 31, 1977, 52-9454
Int. Cl.^{2} B29C *27/00, 27/30*
U.S. Cl. 264—230 **4 Claims**

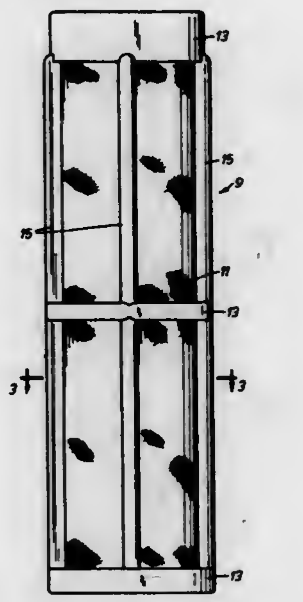
1. A method for manufacturing a door catch made of a synthetic resin, comprising:
forming a support member by molding right and left support elements and a leg portion of said member integrally by the use of a shrinkable thermoplastic synthetic resin, said right and left support elements having mounting arbors, for a magnet board for attracting and holding a door, protruding therefrom and opposed to each other, base ends of said support elements being continuous to an upper end of said leg portion, lower parts of the opposing support elements being made a spacing corresponding to a thickness of said magnet board; expanding upper parts of said opposing support elements to a spacing permitting said magnet board to be sandwiched therebetween, overlay parts being disposed in the shape of diagonal bracing at those inner corner parts in said base ends of said support elements which are formed by an upper end face of said leg portion and inner faces of the respective support elements; interposing said magnet board between both said support elements said magnet board being provided with a mounting hole; and causing the resin material to shrink, to snugly fit said mounting arbors into said mounting hole of the interposed magnet board and to sandwich and fix said magnet board between said support elements.



4,130,622
METHOD OF MAKING SELF-SUPPORTING TUBULAR FILTER

Kenneth E. Pawlak, Mundelein, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 770,890, Feb. 22, 1977, abandoned. This application Nov. 23, 1977, Ser. No. 854,161
Int. Cl.^{2} B29F *1/00*
U.S. Cl. 264—255 **5 Claims**



1. The process of making a self-supporting tubular filter comprising the steps of:
(a) providing a sleeve of filter material having a longitudinal line of weakness therealong,
(b) providing a core pin having outer dimensions slightly less than the inner dimensions of said sleeve and including a longitudinal channel therealong,
(c) inserting said core pin into said sleeve with said longitudinal line of weakness aligned above said channel,
(d) providing a first female mold having a cavity complementary to said ensleeved pin, said cavity including a longitudinal groove therealong,
(e) enclosing said ensleeved pin inside said first female mold

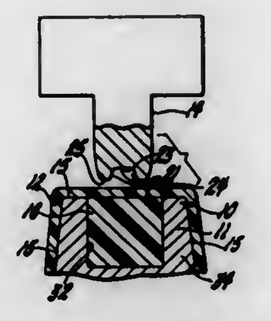
with said line of weakness, said channel and said groove in alignment,
- (f) injecting a thermoplastic material into said channel of said core pin until said channel becomes filled and said injected thermoplastic material forces outwardly against said sleeve at said longitudinal line of weakness separating said sleeve thereat and filling said groove of said female mold,
- (g) allowing said thermoplastic material to solidify while in contact with said separated sleeve so that said solidified material in said filled channel and groove form an integral rib splicing said sleeve, said rib being attached to the internal surfaces of said sleeve adjacent to said separation and extending through said separation a predetermined distance external to said sleeve,
- (h) removing said ensleeved core pin from said first female mold,
- (i) providing a second female mold having a cavity complementary to said ensleeved pin, said second female mold cavity including a longitudinal groove therealong having the capacity to receive said portion of said rib external to said sleeve,
- (j) enclosing said ensleeved pin inside said second female mold with said portion of said rib external to said sleeve and said groove of said second female mold cavity in alignment,
- (k) injecting thermoplastic material into said groove of said second female mold cavity until said groove is filled and allowing said injected thermoplastic material to solidify so that it overlies and attaches to the external surfaces of said sleeve adjacent to said separation,
- (l) removing said ensleeved pin from said second female mold; and
- (m) removing said sleeve from said core pin; whereby a self-supporting tubular filter having an integral rib splicing a longitudinal separation of said sleeve both internally and externally is formed.

4,130,623

METHOD OF EMBOSSING

John O. Walter, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 12, 1976, Ser. No. 675,875
Int. Cl.^{2} B29C *3/00;* B29F *5/00*
U.S. Cl. 264—293 3 Claims



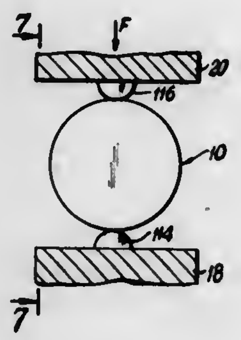
1. A method of embossing a linear simulated stitiching design onto the surface of a thermoformable plastic sheet which has been preheated to a thermoforming temperature and which has a thickness in the range of from about 15 to about 100 mils, said method comprising the steps of:
- (a) pressing the preheated sheet between an embossing die having features to impart said stitching design onto said sheet and an elastomeric anvil which is inlaid into the surface of a support member and being arranged in the course of said design, the support member restricting the lateral displacement of the anvil closely adjacent the design during pressing so that the anvil reacts to the pressure of the die by forcing the sheet closely against the entire embossing surface of the die to more faithfully reproduce the stitching design thereon; and then
- (b) separating the die and the anvil and removing the embossed sheet therefrom.

4,130,624

PIEZO-ELECTRIC DISC MOUNTING METHODS AND APPARATUS

Richard K. Walker, Convent Station, N.J., assignor to Ohaus Scale Corporation, Florham Park, N.J.

Filed Nov. 3, 1977, Ser. No. 848,134
Int. Cl.^{2} H01L *41/10*
U.S. Cl. 310—328 36 Claims



21. A mounting for a piezo-electric disc comprising opposing anvils for respectively engaging opposing segments of the edge of the disc in seats formed in the anvils by applying a proof load to the edge of the disc through the anvils while an extreme pressure lubricant is present between the edge of the disc and the anvils so that the anvils are plastically deformed by the edge of the disc to form the seats, the material of the anvils being selected to have an initial yield stress at least 50% of the critical yield stress and a yield stress after plastic deformation less than 200% of the initial yield stress at the point of maximum plastic deformation, and the selected anvil material being elastic after plastic deformation.

4,130,625

RECOVERY AND PURIFICATION OF IRIDIUM

Ann P. Evers, Roodepoort; Roderick I. Edwards, Honeydew, and Monika M. Fieberg, Johannesburg, all of South Africa, assignors to The National Institute for Metallurgy, Randburg, South Africa

Filed Jun. 15, 1977, Ser. No. 806,818
Claims priority, application South Africa, Jun. 21, 1976, 76/3681
Int. Cl.^{2} C01G *55/00*
U.S. Cl. 423—22 9 Claims

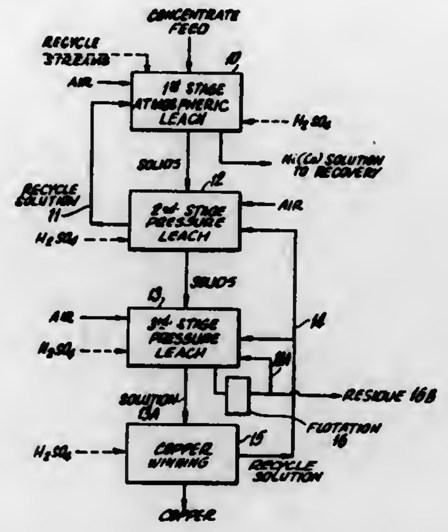
1. A method of separating iridium from a solution thereof also containing rhodium the method comprising the steps of:
- (1) oxidizing the solution in the presence of hydrochloric acid to convert the iridium contained therein to the Ir(IV) oxidation state;
- (2) passing the solution into contact with an anion exchange resin to retain the oxidized iridium on the resin;
- (3) washing the resin with a dilute hydrochloric acid solution to remove any solution entrained therein;
- (4) contacting the washed resin with a substantially chloride free solution of sulphur dioxide in water thereby reducing the iridium to the Ir(111) oxidation state and simultaneously forming iridium sulphito-chloro-complexes;
- (5) eluting the resin with a hydrochloric acid solution to remove the iridium sulphito-chloro complexes therefrom;
- (6) boiling the resultant solution containing the iridium sulphito-chloro complexes to convert the iridium to the chloro-complex with the iridium in the Ir(III) oxidation state and to simultaneously remove sulphur dioxide; and
- (7) recovering the iridium from the solution resulting from step (6) above.

4,130,626

FLOTATION SEPARATION OF IRON OXIDE FROM UNDIGESTED MATTE PARTICLES OBTAINED FROM AUTOCLAVE LEACH RESIDUES

Raul M. Hoover, Arvada, Colo., assignor to Amax Inc., Greenwich, Conn.

Filed Oct. 31, 1977, Ser. No. 847,256
Int. Cl.^{2} C01G *3/10, 53/10*
U.S. Cl. 423—26 11 Claims



5. In the acid leaching of comminuted copper nickel matte containing about 30% to 70% nickel, about 5% to 40% copper, 0.5% to 20% iron, about 5% to 25% sulfur, the sum of the nickel, copper, iron and sulfur contents being at least about 85% be weight of said matte, wherein said comminuted matte is atmospherically leached with a sulfuric acid-containing solution to effect selective dissolution of a substantial amount of nickel in said matte and provide an atmospheric leach matte residue which in the form of a slurry is thereafter subjected to at least one high pressure high temperature oxidation leach in an autoclave to dissolve substantial amounts of nickel and copper from said atmospheric leach residue and provide a pregnant liquor thereof and a residue comprising undigested matte and iron oxide in flotation separable form, and wherein said slurry is subjected to liquid/solid separation to effect separation of said pregnant liquor from said residue containing said iron oxide and said undigested matte, the improvement comprising,
- subjecting an aqueous slurry of said autoclave leach residue to flotation in a flotation cell without the addition of a flotation agent by bubbling air therethrough,
- continuing bubbling air through said aqueous medium to float selectively said undigested matte and form a froth containing undigested matte particles and a tailings containing substantially said iron oxide,
- collecting said froth and disposing of said iron oxide-containing tailings.

4,130,627

PROCESS FOR RECOVERING MINERAL VALUES FROM FLY ASH

James J. Russ, 1702 Tamarack La., Germantown, Tenn. 38138; James S. Russ, 504 Glen Arden Pl., Pittsburgh, Pa. 15208, and Richard T. Heagy, 1877 Brierbrook Rd., Germantown, Tenn. 38138

Filed Jun. 20, 1977, Ser. No. 807,807
Int. Cl.^{2} C01F *7/02;* C25C *1/06*
U.S. Cl. 423—127 11 Claims

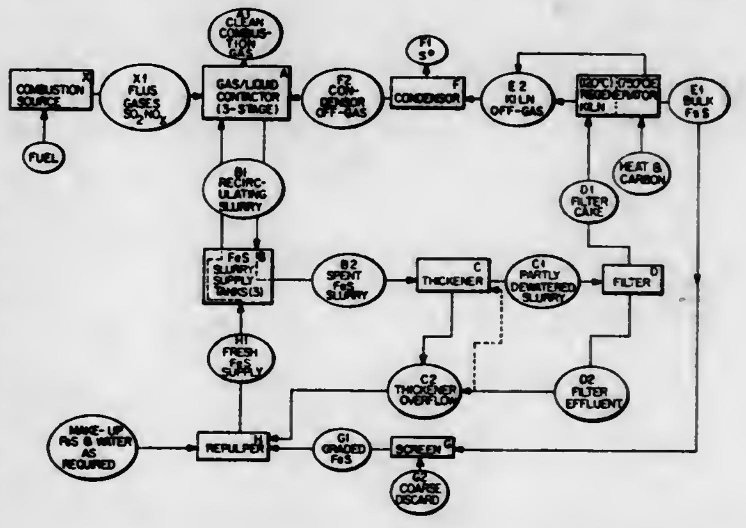
1. A process comprising:
- (a) blending and heating fly ash with water at a temperature in the range of about 90° C. to about 135° C. and a pH in the range of about 11 to about 14 to form an alkaline aqueous blend;
- (b) filtering said alkaline aqueous blend and recovering solids therefrom;
- (c) leaching said solids with hydrochloric or hydrofluoric acid to form dissolved chloride or fluoride compounds comprising iron and aluminum;
- (d) electrolyzing said dissolved chloride or fluoride compounds to plate out at least said iron; and
- (e) separating silicon dioxide as a precipitate from the electrolyzed solution and recovering the electrolyzed solution free of silicon dioxide.

4,130,628

PROCESS FOR REMOVING SO_2 AND NO_x FROM GASES

Hubert L. Barnes, State College, and Edward Shapiro, Pittsburgh, both of Pa., assignors to Pittsburgh Environmental and Energy Systems, Inc., Pittsburgh, Pa.

Filed Aug. 22, 1977, Ser. No. 826,962
Int. Cl.^{2} C01B *21/00*
U.S. Cl. 423—235 4 Claims



1. A process for removing sulfur dioxide and nitrogen oxides from gases which comprises:
- a. Scrubbing said gases in a scrubber with ferrous sulfide in the presence of H_2O wherein the mole ratio of FeS to SO_2 in the scrubber is at least 1.5 to 1 at a temperature of ambient to 100° C. and a pH of at least 5.5, to produce FeS_2 and $FeSO_4$ with minimal formation of Fe_2O_3 and sulfur;
- b. Removing said FeS_2 and $FeSO_4$ and heating in a reducing atmosphere at a temperature of 650° to 900° C. to regenerate said FeS and form sulfur;
- c. Recycling said regenerated FeS to said scrubber to scrub additional SO_2 and NO_x containing gases.

4,130,629

CONTROL OF HALOMETHYL ETHER EMISSIONS

Joseph J. Velenovsky, Linthicum Heights, Md., and Manuel Alvarez, East Brunswick, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Dec. 16, 1977, Ser. No. 861,143
Int. Cl.^{2} B01D *53/34*
U.S. Cl. 423—240 3 Claims

1. A method for removing halomethyl ethers from a gaseous effluent stream comprising contacting said stream with an aqueous scrubbing solution consisting essentially of water, an alkali metal hydroxide, a lower alkylene glycol having 2 to 4 carbon atoms and a lower dialkanolamine having 4 to 6 carbon atoms.

4,130,630

PROCESS OF STABILIZATION OF ANHYDROUS DIBASIC CALCIUM PHOSPHATE AGAINST FLUORINE IONS WITH CYCLIC AMINOPHOSPHONIC ACIDS

Walter Plöger, Hilden; and Claus Gutzschèbauch, Neuss, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Düsseldorf-Holthausen, Germany

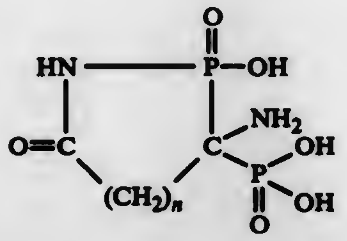
Filed Dec. 1, 1975, Ser. No. 636,733

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1974, 2456667

Int. Cl.² C01B *15/16, 25/26*

U.S. Cl. 423—265 **5 Claims**

1. A process for stabilizing anhydrous dibasic calcium phosphate against reaction with fluorine ions consisting essentially of suspending anhydrous dibasic calcium phosphate in an aqueous medium at a pH of from 5 to 10, containing from 0.01% to 5% by weight based on the content of dibasic calcium phosphate of a cyclic amino-phosphonic compound selected from the group consisting of (A) compounds of the formula



wherein n is an integer from 1 to 3, and (B) water-soluble salts thereof, and separating said stabilized anhydrous dibasic calcium phosphate.

4,130,631

BN BONDED BN FIBER ARTICLE FROM BORIC OXIDE FIBER

Robert S. Hamilton, Youngstown, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Mar. 2, 1977, Ser. No. 773,588

Int. Cl.² C01B *35/08;* **H01M** *8/14*

U.S. Cl. 423—290 **32 Claims**

1. A method for manufacturing a boron nitride article comprising:

(a) blending from about 0.5 to about 40 weight percent of boric acid with from about 60 to about 99.5 weight percent of boron oxide fiber;

(b) forming a shaped article with the resulting blend;

(c) heating the article in an anhydrous gas selected from the group consisting of inert gases, nitrogen, ammonia and mixtures thereof to a temperature above the melting temperature of the boric acid and below about 265° C. for a time sufficient to melt at least some of the boric acid to the fibers; and

(d) heating the article in an ammonia atmosphere to a sufficient temperature and for a sufficient time to convert essentially all of the boric acid and boron oxide to boron nitride.

31. In an electric cell incorporating molten lithium chloride and a porous separator, the improvement wherein said separator comprises a flexible boron nitride fiber mat manufactured by:

(a) blending from about 0.5 to about 40 weight percent of boric acid with from about 60 to about 99.5 weight percent of boron oxide fiber;

(b) forming a shaped mat with the resulting blend;

(c) heating the mat in an anhydrous gas selected from the group consisting of inert gases, nitrogen, ammonia and mixtures thereof to a temperature above the melting temperature of the boric acid and below about 265° C. for a time sufficient to melt at least some of the boric acid to the fibers; and

(d) heating the mat in an ammonia atmosphere to a sufficient temperature and for a sufficient time to convert essentially all of the boric acid and boron oxide to boron nitride.

4,130,632

PROCESS FOR THE MANUFACTURE OF TRICHLOROSILANE AND SILICON TETRACHLORIDE

Johann Braunsperger, Buch, Inn; Winfried Lang, and Thorgard Zainer, both of Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft für Elecktronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed May 10, 1977, Ser. No. 795,467

Claims priority, application Fed. Rep. of Germany, May 25, 1976, 2623290

Int. Cl.² C01B *33/08;* **C01F** *7/56;* **C01G** *49/10*

U.S. Cl. 423—342 **2 Claims**

1. A process for the preparation of trichlorosilane and silicon tetrachloride, comprising the steps of:

reacting silicon containing up to 2% by weight of aluminum and iron in a reaction zone with a member selected from the group consisting of hydrogen chloride and chlorine at a temperature of between 260° C. and 1200° C. to produce silicon-containing reaction gases comprising trichlorosilane and silicon tetrachloride;

passing the reaction gases with a velocity flow of between about 6 and 15 meters per second through a water-cooled tube to effect cooling thereof to a temperature of between about 40° C. and 130° C. to cause precipitation of solid substances composed of aluminum chloride and ferric chloride within said tube but to prevent precipitation of said solid substances on the walls of said tube;

passing the cooled gases containing the precipitated solid substances leaving said tube to a filtering device to filter off said solid substances and then passing the gases leaving the filtering device to a condensation system to separate out the trichlorosilane and silicon tetrachloride, said filtering device having filters on which said solid substances are deposited and a container in which the precipitated solid substances may be collected.

4,130,633

REMOVAL OF SELENIUM FROM URETHANE SOLUTIONS

Edward T. Shawl, Wallingford, Pa.; Ming N. Sheng, Cherry Hill, N.J., and John G. Zajacek, Devon, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 27, 1977, Ser. No. 864,172

Int. Cl.² C01B *19/00*

U.S. Cl. 423—509 **19 Claims**

1. A process for the recovery of selenium from selenium-containing urethane solutions derived from the selenium catalyzed reaction of an organic compound containing at least one hydroxyl group with carbon monoxide and a nitrogenous organic compound at elevated temperatures and pressures in the presence of a base and/or water, which comprises the steps of:

distilling the reaction product seleniumcontaining urethane solution at a temperature of from about ambient to about 200° C. to remove unreacted hydroxyl compounds and any contained amine base compunds and/or water;

adding an essentially water insoluble aromatic hydrocarbon or nitro, phenyl, alkyl or halogen substituted aromatic hydrocarbon to said distilled urethane solution forming a hydrocarbon-urethane-selenium containing solution;

contacting the hydrocarbon-urethane-selenium solution at a temperature of between about 25° C. and 120° C. with an aqueous hydrogen peroxide solution having a hydrogen peroxide concentration of between about 0.5 and 50 weight percent to react with and extract selenium compounds from said solution and form a selenium-containing aqueous hydrogen peroxide phase and a urethane-containing hydrocarbon phase;

separating the selenium-containing aqueous hydrogen peroxide phase from the hydrocarbon phase;

treating the aqueous hydrogen peroxide phase to separate selenium compounds therefrom; and

recovering said selenium.

4,130,634

METHOD FOR DETECTING AND QUANTIFYING ANTIGENS

Giuseppe A. Molinaro, and Sheldon Dray, both of Chicago, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Continuation-in-part of Ser. No. 451,685, Mar. 15, 1974, abandoned. This application Aug. 11, 1976, Ser. No. 713,348

Int. Cl.² G01N *13/00, 21/06, 31/00, 33/00*

U.S. Cl. 424—8 **4 Claims**

1. A method for detecting the presence of a particular antigen in a composition which method comprises contacting said composition with erythrocytes having coupled thereto antibodies specific to said antigen, adding a developer comprising antibody reactive with said antigen, adding complement, and noting lysis of said erythrocytes as a positive indication of the presence of said antigen.

4,130,635

CALCULUS INHIBITION

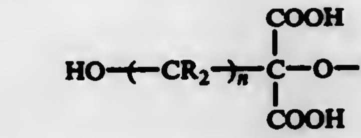
David R. Dyroff, Creve Coner, Mo., and Walton F. Suchanek, Jr., Belleville, Ill., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 22, 1976, Ser. No. 744,220

Int. Cl.² A61K *7/16, 7/24*

U.S. Cl. 424—48 **17 Claims**

1. An oral composition effective in inhibiting formation of dental calculus, said composition comprising (1) a propanedioic acid compound selected from the group consisting of acids having the structural formula:



$$HO{-}\!\left(CR_2\right)_n\!{-}\underset{\displaystyle COOH}{\overset{\displaystyle COOH}{\underset{|}{\overset{|}{C}}}}{-}O{-}CRR'{-}COOH$$

wherein R is hydrogen or lower alkyl, R' is lower alkyl, n is 1 or 2 and each R can be the same as or different from any other R in said formula, and pharmaceutically acceptable salts of said acids and (2) a carrier suitable for use in the oral cavity, said compound being present in said composition in amount and concentration sufficient to substantially inhibit formation of dental calculus.

4,130,636

DENTIFRICE

Kenneth Tomlinson, Bramhall, England, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jul. 27, 1977, Ser. No. 819,528

Int. Cl.² A61K *7/16, 7/18*

U.S. Cl. 424—52 **14 Claims**

1. A dental cream dentifrice free from bitter taste of surfactant comprising about 15–75% by weight a water-insoluble dental polishing agent in a dental cream vehicle and containing therein as the essential surfactant about 0.05–5.0% by weight of a substantially tasteless surfactant having the general formula, $R(OCH_2CH_2)_xOCH_2COOM$, wherein R is a $C_{8\text{-}18}$ alkyl, x is an integer of about 1–9 and M is selected from the group consisting of non-toxic alkali and alkaline earth metals, ammonium and C_2 to C_3 alkylol amines.

4,130,637

ANTI-PLAQUE AGENTS

Robert A. Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 764,122, Jan. 31, 1977, abandoned. This application Oct. 3, 1977, Ser. No. 839,154

Int. Cl.² A61K *7/22*

U.S. Cl. 124—54 **9 Claims**

1. A non-staining, anti-plaque oral composition containing an effective antimicrobial amount of a betaine represented by the general formula:

$$RN^+(CH_3)_2(CH_2)_nCOO^-,$$

wherein R is an alkyl group containing 12 to 18 carbon atoms and n is an integer from 8 to 12, in an oral vehicle.

4,130,638

MOUTHWASH COMPOSITIONS

Dadi J. Dhabhar; Allen Heyd, both of Norwalk, Conn., and Eugene H. Gans, Hastings-on-Hudson, N.Y., assignors to Richardson-Merrell Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 738,584, Nov. 3, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,221

Int. Cl.² A61K *7/16, 7/24*

U.S. Cl. 424—55 **7 Claims**

1. A sodium ricinoleate mouthwash composition substantially free of haze and precipitation comprising about:

10 to 25% v/v	alcohol
5 to 15% v/v	sorbitol
0.5 to 2.5% w/v	surfactant
0.25 to 1% w/v	sodium chloride
0.05 to 0.2% w/v	insoluble saccharin
0.01 to .25% w/v	flavoring
0.1 to 2% w/v	sodium ricinoleate
q.s.	water

and wherein the flavoring agent is selected from the group consisting of menthol, thymol, eucalyptol and anethol or mixtures thereof with peppermint oil.

4,130,639

ABSORBABLE PHARMACEUTICAL COMPOSITIONS BASED ON ISOMORPHIC COPOLYOXALATES

Shalaby W. Shalaby, Long Valley, and Dennis D. Jamiolkowski, Paterson, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Sep. 28, 1977, Ser. No. 837,060

Int. Cl.² A61K *31/74, 31/56*

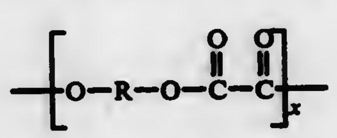
U.S. Cl. 424—78 **15 Claims**

1. In a pharmaceutical depot composition for parenteral administration of effective amounts of a drug released slowly over an extended period of time which comprises a combination of

(a) from 1 percent to 99 percent by weight of composition of a drug in an effective depot amount greater than the single dose amount, and

(b) a solid, absorbable polymer which is nonreactive toward body tissue and which undergoes biodegradation in the presence of body fluids into products which are metabolized or excreted by the body without adverse body reaction,

the improvement comprising employing as said absorbable polymer isomorphic polyoxalate polymers comprising units of cyclic and linear oxalates and having the general formula



$$-\!\left[O{-}R{-}O{-}\overset{\displaystyle O}{\overset{\|}{C}}{-}\overset{\displaystyle O}{\overset{\|}{C}}\right]_x\!-$$

wherein each R is

$-(CH_2)_n - A - (CH_2)_n -$ I

or

$-(CH_2)-4+2n$ II

and from about 5 to 95 mole percent of the R units are I; A is trans 1,4-cyclohexylene or p-phenylene, n is 1 or 2 and is the same for I and II, and x is the degree of polymerization resulting in a polymer having an inherent viscosity of at least 0.20 determined at 25° C. in a 0.1 g/dl solution of polymer in chloroform or hexafluoroisopropanol.

4,130,640

GERMICIDAL CLEANING COMPOSITIONS

Reuwen R. Chazan, deceased, late of Savyon, Israel by Dan Chazan, heir; David Y. Chazan, heir, both of Savyon, Israel, and Eliezer Z. Fischer, 8 Levitan St., Ramat-Aviv, Tel-Aviv, Israel

Continuation of Ser. No. 609,842, Sep. 2, 1975, abandoned. This application Jul. 7, 1977, Ser. No. 813,779

Claims priority, application Israel, Sep. 10, 1974, 45639

Int. Cl.² A61K ***31/79***

U.S. Cl. 424—80 **7 Claims**

1. A germicidal composition in, bar-soap form comprising in combination:

- a. 20 weight-% to 70 weight-% of a member selected from the group consisting of sulfated fatty alcohols (C_{14} to C_{26}), sulfosuccinates of fatty alcohols (C_{12} to C_{24}) and mixtures thereof;
- b. between 1 and 20 weight-% of an iodophor selected from the group consisting of an organic iodine complex, and iodine in combination with potassium or sodium iodide;
- c. a quantity not exceeding about 10 weight-% of water;
- d. 20 weight-% to 60 weight-% of a member selected from the group consisting of saturated fatty alcohols (C_{14} to C_{26}), saturated fatty acids (C_{14} to C_{20}), succinates or maleates of fatty alcohols (C_{10} to C_{24}) and mixtures thereof.

4,130,641

INDUCTION OF INTERFERON PRODUCTION BY MODIFIED NUCLEIC ACID COMPLEXES

Paul O. P. Ts'o, 2117 Folkstine Rd., Timonium, Md. 21093, and William A. Carter, Orchard Park, N.Y.

Division of Ser. No. 411,119, Oct. 30, 1973, Pat. No. 4,022,222. This application Sep. 24, 1976, Ser. No. 722,293

Int. Cl.² A61K ***45/04;*** **C07H** ***21/02***

U.S. Cl. 424—85 **11 Claims**

5. A method of therapeutically inducing interferon production in a human in need of such therapy, which method comprises:

administering to the human an effective amount of a complex selected from the group consisting of poly(I)·poly(C_n,U) and poly(I)·poly(C_n,G), wherein n is an integer having a value of from 4 to 29 to induce interferon.

4,130,642

METHOD OF SEPARATING BLOOD CELLS COMPONENTS

Kiyomi Kikugawa, Mino, and Kyoko Minoshima, Tokyo, both of Japan, assignors to Terumo Corporation, Tokyo, Japan

Filed Oct. 28, 1977, Ser. No. 846,369

Claims priority, application Japan, Nov. 2, 1976, 51-132191

Int. Cl.² A61K ***35/14, 35/18***

U.S. Cl. 424—101 **10 Claims**

1. A method of separating blood cells components, comprising the step of passing blood cells suspension containing red cells and at least one of leukocytes or blood platelets through a column packed with a de-fatted and bleached Egyptian cotton so as to allow the blood cells components other than red cells to be adsorbed on the Egyptian cotton and to isolate the red cells portion alone.

4,130,643

DERMATOLOGICAL COMPOSITIONS

Donald E. Smith, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 647,943, Jan. 12, 1976, Pat. No. 4,046,886, which is a division of Ser. No. 541,902, Jan. 17, 1975, Pat. No. 3,925,099, which is a division of Ser. No. 340,787, Jul. 22, 1975, Pat. No. 3,896,238, which is a continuation-in-part of Ser. No. 241,404, Apr. 5, 1972, abandoned. This application Jun. 13, 1977, Ser. No. 805,668

Int. Cl.² A61K ***31/56, 31/58, 47/00***

U.S. Cl. 424—238 **2 Claims**

1. A composition in liquid or semi-liquid form adapted to topical application to animal tissue comprising:

(1) from about 0.025% to about 2.5% by weight of a steroid;
(2) from about 0.1% to about 1.0% by weight of a sugar ester selected from the group consisting of
  sucrose monoctanoate,
  sucrose monodecanoate,
  sucrose monolaurate,
  sucrose monomyristate,
  sucrose monopalmitate,
  sucrose monostearate,
  sucrose monooleate, and
  sucrose dioleate; and
(3) from about 0.1% to about 10.0% by weight of a sulfoxide compound selected from the group consisting of
  octyl methyl sulfoxide,
  nonyl methyl sulfoxide,
  decyl methyl sulfoxide,
  undecyl methyl sulfoxide,
  dodecyl methyl sulfoxide,
  2-hydroxydecyl methyl sulfoxide,
  2-hydroxyundecyl methyl sulfoxide, and
  2-hydroxydodecyl methyl sulfoxide.

4,130,644

7-ACYLAMINE-3-(SULFOALKYL SUBSTITUTED OXADIAZOLYLTHIOMETHYL) CEPHALOSPORINS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

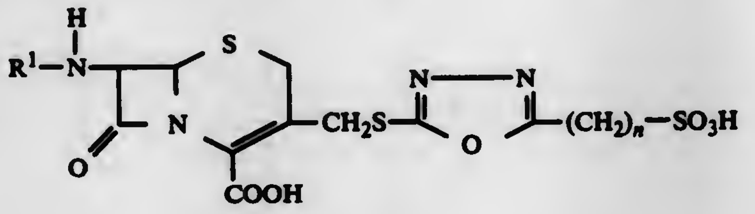
David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 666,095, Mar. 11, 1976, Pat. No. 4,041,162. This application Apr. 25, 1977, Ser. No. 790,715

Int. Cl.² A61K ***31/545;*** **C07D** ***501/50, 271/10***

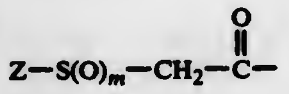
U.S. Cl. 424—246 **9 Claims**

1. A compound of the formula:



in which:

R^1 is an acyl group selected of the formula:



$$Z-S(O)_m-CH_2-\overset{O}{\overset{\|}{C}}-$$

where:

Z is methyl, trifluoromethyl, trifluoroethyl, pyridyl or cyanomethyl;
m is zero to two; and
n is one to five, or a non-toxic pharmaceutically acceptable salt thereof.

6. An antibacterially effective pharmaceutical composition comprising a compound as claimed in claim 1 and a pharmaceutically acceptable carrier therefor.

8. A method of treating bacterial infections comprising administering internally by injection to an infected or susceptible warm-blooded animal an antibacterially effective but non-toxic dose of a compound as claimed in claim 1.

4,130,645

FUNGICIDAL PHENYLNITRAMINES AND NEW PHENYLNITRAMINES

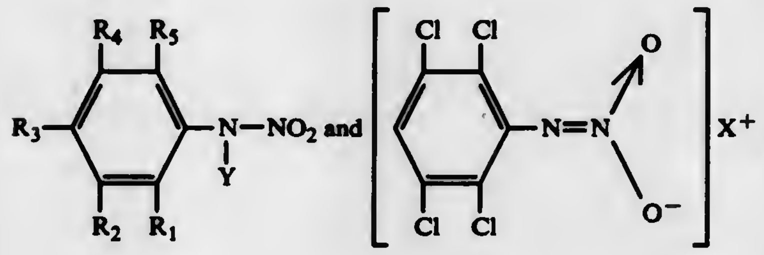
Barrington Cross, Rocky Hill, and David H. Dawe, Hightstown, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 21, 1978, Ser. No. 879,340

Int. Cl.² A61K ***31/535, 31/135;*** **C07C** ***79/00;*** **C07D** ***295/22***

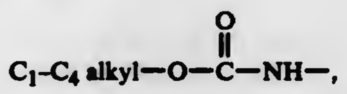
U.S. Cl. 424—226 **24 Claims**

1. A method for the control of fungi, comprising contacting said fungi with a fungicidally effective amount of a compound selected from formulae (I) and (III):



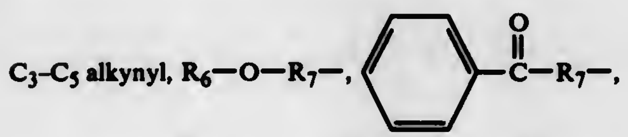
(I) (III)

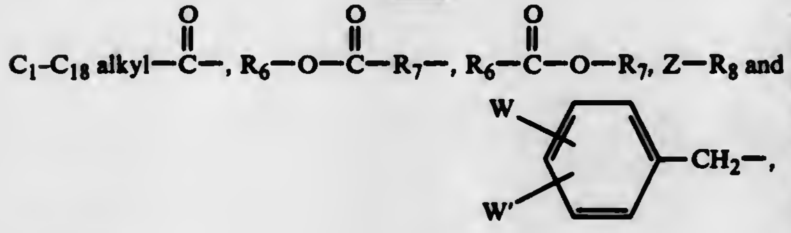
wherein the formula (I) R groups R_1 to R_5 each represent a member selected from the group consisting of hydrogen, halogen, C_1–C_4 alkyl, halo(C_1–C_4) alkyl, C_1–C_4 alkylthio, C_1–C_4 alkylsulfonyl, C_1–C_4 alkanoylamino,



$$C_1\text{–}C_4\ \text{alkyl}-O-\overset{O}{\overset{\|}{C}}-NH-,$$

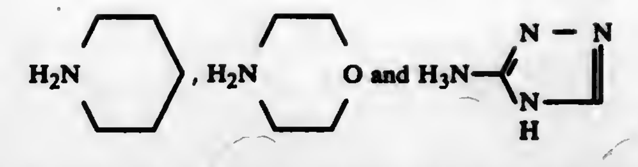
cyano and nitro; Y is a member selected from the group consisting of hydrogen, C_1–C_8 alkyl, C_3–C_8 alkenyl,



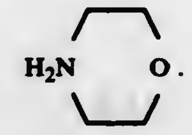


wherein

R_6 is C_1–C_4 alkyl, C_3–C_5 alkenyl or C_3–C_5 alkynyl; R_7 is C_1–C_4 alkylene; R_8 is C_2–C_4 alkylene; W and W' each are hydrogen or halogen; Z is hydroxy or halogen; with the provisos, that at least two of the R groups R_1 to R_5 are other than hydrogen; and that not more than two of the R groups R_1 to R_5 are C_1 –C_4 alkylthio, C_1 –C_4 alkylsulfonyl or nitro; and wherein the formula (III) cation X represents a member selected from the group H_3NR', $H_2NR'R''$, $HNR'R''R'''$, and $NR'R''R'''R''''$. wherein the R groups R' to R'''' each represent a member selected from C_1–C_{18} alkyl, aryl and benzyl, and where R' and R'' taken together with the nitrogen to which they are attached form a cyclic moiety selected from



12. A method according to claim 1, wherein said compound is the salt of 2,3,5,6-tetrachlorophenylnitramine where X is



4,130,646

1,2,3,4-TETRAHYDRO-2-((4-(PHENYL)-1-PIPERAZINYL)-METHYL)-1-NAPHTHALENOLS AND DERIVATIVES AND ANALOGS THEREOF

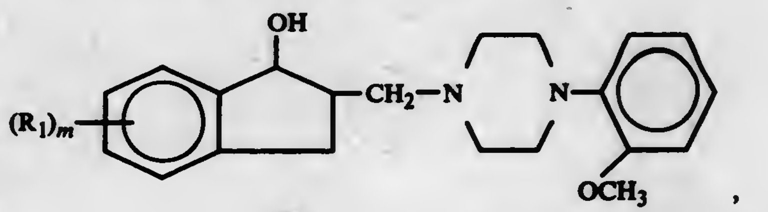
B. Richard Vogt, Yardley, Pa., and David A. Callison, Princeton, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

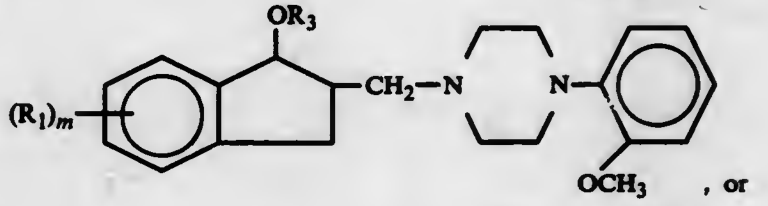
Continuation-in-part of Ser. No. 599,308, Jul. 25, 1975, abandoned. This application Apr. 22, 1976, Ser. No. 679,411

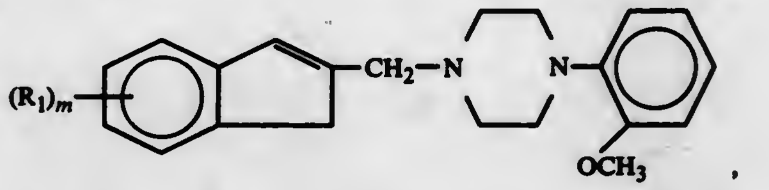
Int. Cl.² A61K ***31/495;*** **C07D** ***295/08***

U.S. Cl. 424—250 **13 Claims**

1. A compound having the formula



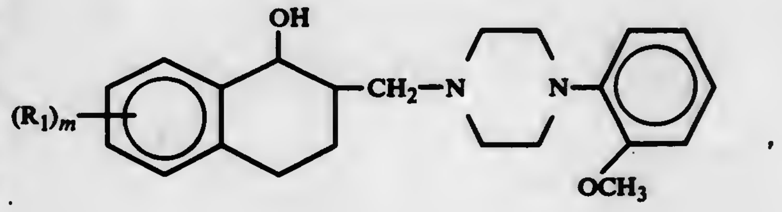




or a pharmaceutically acceptable salt thereof, wherein R_1 is hydrogen, halogen, hydroxy, alkanoyloxy, alkoxy, alkylthio, alkyl or trifluoromethyl, and m is 1 or 2 or R_1 is a single methylenedioxy group; R_3 is formyl or alkanoyl; wherein the terms "alkyl", "alkoxy" and "alkylthio" refer to groups having 1 to 10 carbon atoms; the term "alkanoyl" refers to groups having 2 to 10 carbon atoms; and the term "alkanoyloxy" refers to groups having 2 to 11 carbon atoms.

6. A composition useful for treating psychotic states in mammalian species which comprises a therapeutic amount of a compound as defined in claim 1 and a pharmaceutically acceptable carrier therefore.

7. A compound having the formula



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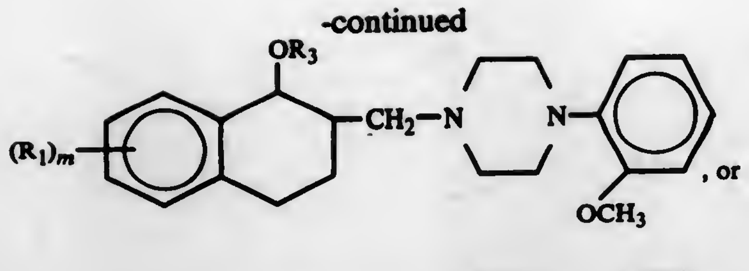
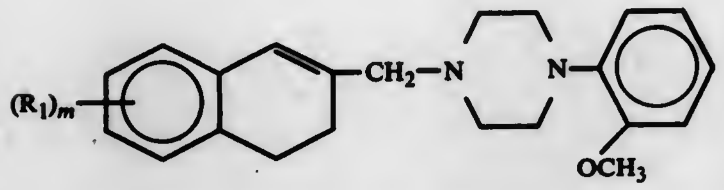


, or



,

or a pharmaceutically acceptable salt thereof, wherein R_1 is hydrogen, halogen, hydroxy, alkanoyloxy, alkoxy, alkylthio, alkyl or trifluoromethyl, and m is 1 or 2 or R_1 is a single methylenedioxy group; R_3 is formyl or alkanoyl; wherein the terms "alkyl", "alkoxy" and "alkylthio" refer to groups having 1 to 10 carbon atoms; the term "alkanoyl" refers to groups having 2 to 10 carbon atoms; and the term "alkanoyloxy" refers to groups having 2 to 11 carbon atoms.

12. A composition useful for treating psychotic states in mammalian species which comprises a therapeutic amount of a compound as defined in claim 7 and a pharmaceutically acceptable carrier therefore.

4,130,647
METHODS FOR TREATING CONGESTIVE HEART FAILURE AND ISCHEMIC HEART DISEASE

Colin R. Taylor, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jul. 8, 1977, Ser. No. 814,267
Int. Cl.² A61K *31/505*
U.S. Cl. 424—251 6 Claims

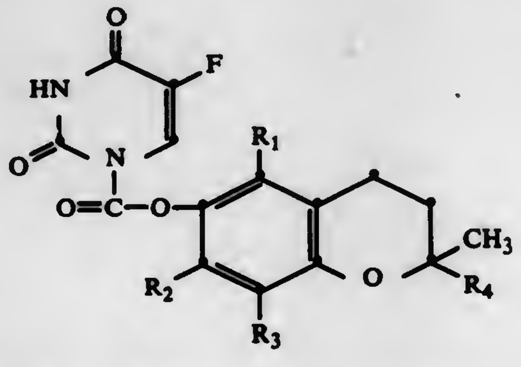
1. A method of treating congestive heart failure in a human subject having such condition which comprises orally or parenterally administering to said human subject a congestive heart failure treating amount of a compound selected from the group consisting of prazosin and trimazosin and the pharmaceutically acceptable acid addition salts thereof.

4,130,648
5-FLUOROURACIL DERIVATIVES AND ANTITUMOR PREPARATIONS CONTAINING THE SAME

Shizumasa Kijima, Tokyo; Hiroshi Shionoya, Saitama; Kimio Hamamura, Kashiwa; Haruyoshi Arai, Kokubunji, and Nozomu Koyanagi, Saitama, all of Japan, assignors to Eisai Co., Ltd., Japan

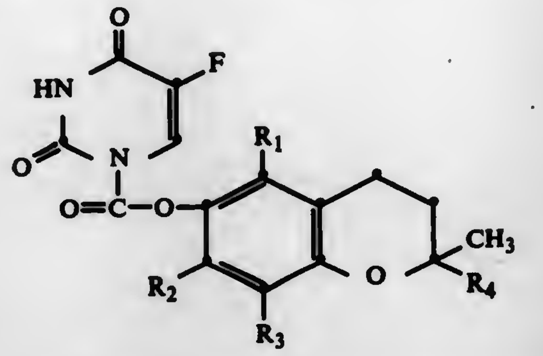
Filed Dec. 14, 1977, Ser. No. 860,319
Claims priority, application Japan, Dec. 24, 1976, 51-154941
Int. Cl.² A61K *31/505;* C07D *239/54*
U.S. Cl. 424—251 10 Claims

1. A 5-fluorouracil derivative represented by the general formula:



wherein R_1, R_2 and R_3 each represent hydrogen or methyl, and R_4 represents a straight or branched chain alkyl or alkenyl group.

10. An antitumor agent containing an effective anti-tumor amount of a 5-fluorouracil derivative represented by the general formula



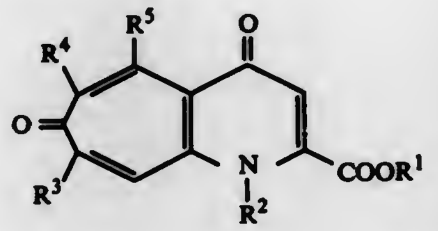
wherein R_1, R_2 and R_3 each represent hydrogen or methyl, and R_4 represents a straight or branched chain alkyl or alkenyl group having 1-16 carbons and a pharmaceutically acceptable carrier therefor.

4,130,649
CYCLOPHETA [b]PYRIDINE-2-CARBOXYLIC ACID DERIVATIVES

Jehan F. Bagli, Kirkland, and Tibor Bogri, Montreal, both of Canada, assignors to Ayerst, McKenna & Harrison Limited, Montreal, Canada

Filed Apr. 21, 1977, Ser. No. 789,397
Int. Cl.² A61K *31/455*
U.S. Cl. 424—266 37 Claims

1. A compound of the formula



in which R^1 is hydrogen or lower alkyl; R^2 is hydrogen, lower alkyl, lower alkenyl, lower alkynyl or a radical of formula —Alk—COOR^6 wherein Alk is lower alkylene, lower alkenylene or lower alkynylene and R^6 is hydrogen or lower alkyl; R^3 is hydrogen, bromo, chloro, iodo, lower alkoxy or phenoxy; R^4 is hydroxy, amino, lower alkanoylamino, lower alkoxy, lower alkenyloxy, lower alkynyloxy or a radical of formula —O—Alk—COOR^6 wherein Alk is lower alkylene, lower alkenylene or lower alkynylene and R^6 is hydrogen or lower alkyl; and R^5 is hydrogen, hydroxy, lower alkoxy or phenoxy; R^4 and R^5 together form a O—C(CH_3)=CH chain having the oxygen atom attached to the carbon atom bearing R^4; with the proviso that when R^1 is hydrogen then R^6 is hydrogen; or a therapeutically acceptable salt thereof.

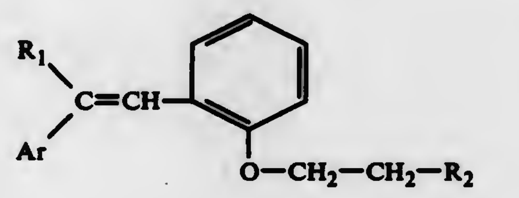
36. A method for preventing or treating allergic conditions in a mammal which comprises administering to said mammal an effective allergy alleviating amount of a compound of claim 1, or a therapeutically acceptable salt thereof.

4,130,650
ANTIARRHYTHMIC METHOD OF USE

Erich Müller; Willi Diederen, both of Biberach, Germany, and Robin G. Shanks, Belfast, Northern Ireland, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Filed May 25, 1977, Ser. No. 800,309
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1976, 2624918
Int. Cl.² A61K *31/44*
U.S. Cl. 424—263 4 Claims

1. The method of alleviating cardiac arrhythmia in a warm-blooded animal, which comprises perorally or parenterally administering to said animal an effective antiarrhythmic amount of a compound of the formula



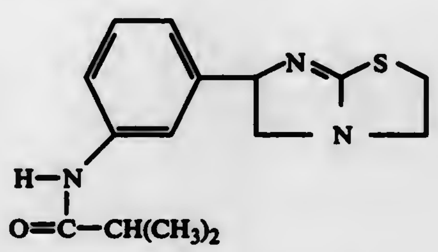
wherein
R_1 is hydrogen or methyl,
Ar is 2-pyridyl or 6-methyl-2-pyridyl, and
R_2 is dimethylamino or monomethylamino
or a non-toxic, pharmaceutically acceptable acid addition salt thereof.

4,130,651
BUTAMISOLE INJECTABLE FORMULATIONS HAVING IMPROVED MARGIN OF SAFETY IN DOGS

Larry D. Spicer, Princeton, and Karl L. Simkins, Jr., Princeton Junction, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 31, 1978, Ser. No. 892,001
Int. Cl.² A61K *31/425*
U.S. Cl. 424—270 17 Claims

1. A liquid anthelmintic composition for injection comprising an anthelmintically effective amount of a solution of a compound of formula:



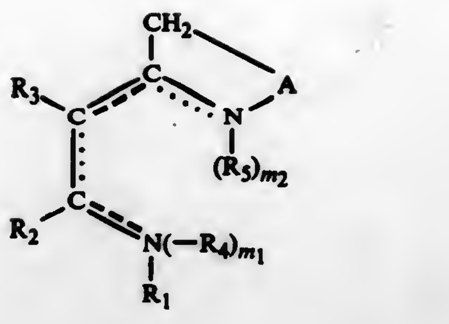
the racemic mixtures, the optical isomers thereof as the pharmaceutically acceptable acid addition salts thereof in aqueous propylene glycol.

4,130,652
2-(IMINOETHYLIDENE)-PYRROLIDINES AND TAUTOMERIC 2-(AMINOETHENYL)-1-PYRROLINES

Atso Ilvespää, Allschwil, and Walter Fuhrer, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 23, 1977, Ser. No. 771,294
Claims priority, application Switzerland, Feb. 27, 1976, 2441/76
Int. Cl.² A61K *31/40;* C09B *23/00*
U.S. Cl. 424—274 15 Claims

1. A compound of the formula I



(I)

wherein
- R_1 represents an aliphatic or cycloaliphatic hydrocarbon radical having a maximum of 12 carbon atoms, phenyl which is unsubstituted or substituted by lower alkyl, lower alkoxy, halogen up to atomic number 35 and/or trifluoromethyl, or phenyl-lower alkyl or diphenyl-lower alkyl, which radicals are unsubstituted or substituted in the phenyl ring(s) as hereinbefore indicated for phenyl,
- R_2 represents phenyl which is unsubstituted or substituted by lower alkyl, lower alkoxy, halogen up to atomic number 35 and/or trifluoromethyl,
- R_3 represents hydrogen or lower alkyl,
- R_4 represents, if present, lower alkyl,
- R_5 represents, if present, hydrogen or lower alkyl,
- A represents ethylene, and
- m_1 and m_2 represent 0 or 1 and together always represent 1, and wherein two additional bonds, either corresponding to the dashed lines or corresponding to the dotted lines, are present, with m_1 representing 0 in the former case and m_2 representing 0 in the latter case, and its acid addition salts.

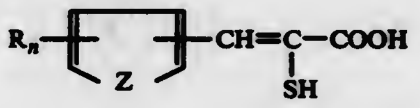
13. A method for the treatment of hyperglycaemia in a mammal comprising oral administration to said mammal of a hypoglycaemically effective amount of a compound according to claim 1 having the formula I defined in claim 1, or of a pharmaceutically acceptable acid addition salt thereof.

4,130,653
METHOD OF TREATING HYPERTENSION

Eugene L. Giroux, Cincinnati, Ohio; Nellikunja J. Prakash, and Paul J. Schechter, both of Strasbourg, France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Filed Mar. 31, 1978, Ser. No. 892,213
Int. Cl.² A61K *31/40*
U.S. Cl. 424—274 8 Claims

1. A method of treating hypertension in a patient in need thereof which comprises administering to said patient an antihypertensive effective amount of an α-mercapto-β-arylacrylic acid of the formula:



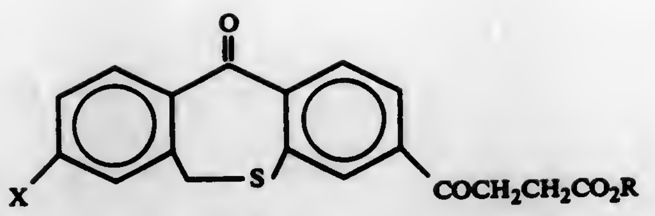
wherein Z is C=C, O, S or NH; R is H, CH_3, C_2H_5, OH, CH_3O, C_2H_5O, Cl, Br, F, I or CF_3; and n is 1, 2 or 3; or a pharmaceutically acceptable non-toxic salt thereof.

4,130,654
NOVEL
4-(8X-6,11-DIHYDRODIBENZO/[b.e.]-THIEPIN-11-ONE-3-YL)-4-OXOBUTYRIC ACIDS, METHODS OF PREPARATION, COMPOSITIONS AND USES THEREOF

Jack Ackrell, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jan. 30, 1978, Ser. No. 873,300
Int. Cl.² A61K *31/385;* C07D *337/12*
U.S. Cl. 424—275 19 Claims

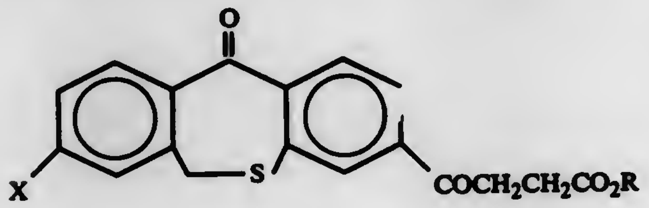
1. A compound of the formula:



(A)

wherein X is hydrogen, methoxy or chloro, and R is hydrogen, an alkyl group containing from one to twelve carbon atoms, or a pharmaceutically acceptable salt thereof when R is hydrogen.

13. A composition for treating inflammation, pain or pyrexia in mammals consisting essentially of a pharmaceutically acceptable non-toxic excipient and a therapeutically effective amount of a compound represented by the formula:



(A)

wherein X is hydrogen, methoxy or chloro, and R is hydrogen, an alkyl group containing from one to twelve carbon atoms, or a pharmaceutically acceptable salt thereof when R is hydrogen.

4,130,655
PESTICIDAL 2,2-DIMETHYL-3-ISOBUTYL-CYCLOPROPIONATES

Jozef Drabek, Allschwil; Saleem Farooq, Aesch; Laurenz Gsell, Füllinsdorf; Odd Kristiansen, Möhlin, and Willy Meyer, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

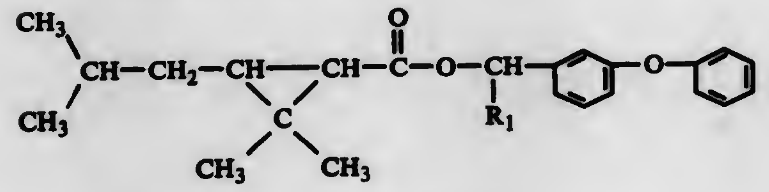
Filed Jul. 1, 1977, Ser. No. 812,088

Claims priority, application Switzerland, Jul. 12, 1976, 8901/76; Apr. 27, 1977, 5218/77

Int. Cl.² A01N *9/20, 9/24;* C07C *69/74, 121/75*

U.S. Cl. 424—304 5 Claims

1. A compound of the formula



wherein R₁ represents cyano or ethynyl.

4. An insecticidal and acaricidal composition comprising an insecticidally or acaricidally effective amount of a compound according to claim 1, together with a suitable carrier therefor.

4,130,656
PESTICIDAL 1-(PHENYL)-CYCLOBUTANE-1-CARBOXYLATES

Hans Greuter, Eiken; Pierre Martin, Basel; Daniel Bellus, Riehen; Laurenz Gsell, Füllinsdorf, and Willy Meyer, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

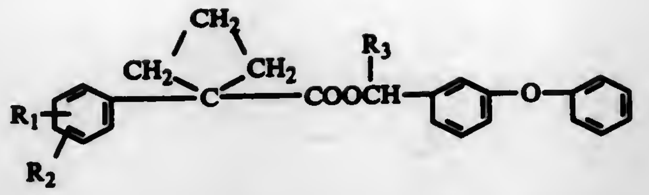
Filed Jul. 25, 1977, Ser. No. 818,899

Claims priority, application Switzerland, Jul. 29, 1976, 9737/76; Oct. 27, 1976, 13540/76; Apr. 29, 1977, 5370/77; Jun. 13, 1977, 7237/77

Int. Cl.² A01N *9/20, 9/24;* C07C *69/76, 121/75*

U.S. Cl. 424—304 11 Claims

1. A compound of the formula



wherein R₁ and R₂ each represent hydrogen, fluorine, chlorine, bromine or methyl, and R₃ represents hydrogen, cyano or ethynyl.

10. An insecticidal and acaricidal composition which comprises an insecticidally or acaricidally effective amount of a compound according to claim 1, together with a suitable carrier therefor.

4,130,657
[1,1'-BIPHENYL]-3-YLMETHYL 3-(2,2-DIHALOETHENYL)-2,2-DIMETHYLCYCLOPROPANECARBOXYLATES

Ernest L. Plummer, North Tonawanda, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Filed Oct. 20, 1977, Ser. No. 844,099

Int. Cl.² C07C *69/74;* A01N *9/30*

U.S. Cl. 424—305 10 Claims

1. A [1,1'-Biphenyl]-3-ylmethyl 3-(2,2-dihaloethyenyl)-2,2-dimethylcyclopropanecarboxylate wherein the halogen is chlorine or bromine.

4,130,658
NOVEL PHENETHYLAMINES

Lucien Nédelée, Le Raincy; Daniel Fréchet, Paris, and Claude Dumont, Nogent-sur-Marne, all of France, assignors to Roussel Uclaf, Paris, France

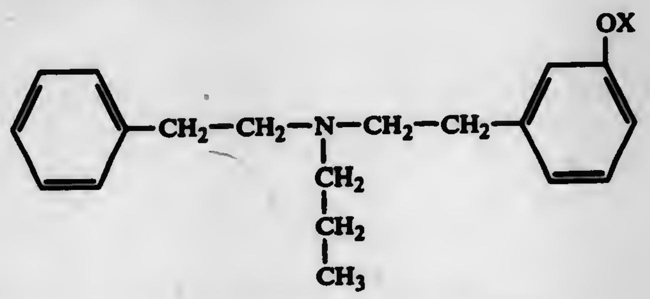
Filed Jun. 24, 1977, Ser. No. 809,810

Claims priority, application France, Jul. 1, 1976, 76 20140

Int. Cl.² A61K *31/135;* C07C *87/28, 69/02, 69/78*

U.S. Cl. 424—308 21 Claims

1. A compound selected from the group consisting of phenethylamines of the formula



wherein X is selected from the group consisting of hydrogen, acyl of an aliphatic carboxylic acid of 2 to 6 carbon atoms and benzoyl and Y is selected from the group consisting of hydrogen and —OX and their non-toxic, pharmaceutically acceptable acid addition salts.

4,130,659
POLYPRENYL CARBOXYLIC ACID COMPOUND AND HYPOTENSIVE AGENT CONTAINING IT AS ACTIVE INGREDIENT

Shizumasa Kijima, Tokyo; Toshiji Igarashi, Tokorozawa; Isao Yamatsu, Tokyo; Kimio Hamamura, Kashiwa; Yoshikage Nakajima, Tokyo; Norio Minami, Kawasaki; Youji Yamagishi, and Yuithi Inai, both of Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 796,693, May 13, 1977, Pat. No. 4,107,193.

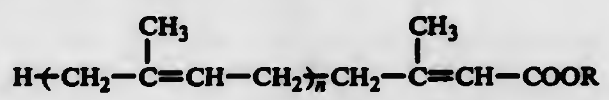
This application May 8, 1978, Ser. No. 903,395

Claims priority, application Japan, May 27, 1976, 51-60583

Int. Cl.² A61K *31/23, 31/20*

U.S. Cl. 424—312 10 Claims

1. A method for treating hypertension which comprises administering to a warm-blooded hypertensive subject, a therapeutically effective amount of a polyprenyl carboxylic acid compound having the formula:



$$\mathrm{H}\!\left(\mathrm{CH_2}-\overset{\mathrm{CH_3}}{\overset{|}{\mathrm{C}}}=\mathrm{CH}-\mathrm{CH_2}\right)_{n}\mathrm{CH_2}-\overset{\mathrm{CH_3}}{\overset{|}{\mathrm{C}}}=\mathrm{CH}-\mathrm{COOR}$$

wherein R is selected from the group consisting of hydrogen, alkyl having 1 to 5 carbon atoms, alkenyl having 1 to 5 carbon atoms, cycloalkyl and aryl, and n is an integer of 6 to 11, together with a pharmaceutical carrier.

4,130,660
METHOD OF INHIBITING THE COMPLEMENT SYSTEM WITH TRISUBSTITUTED NAPHTHALENE COMPOUNDS

Ransom B. Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

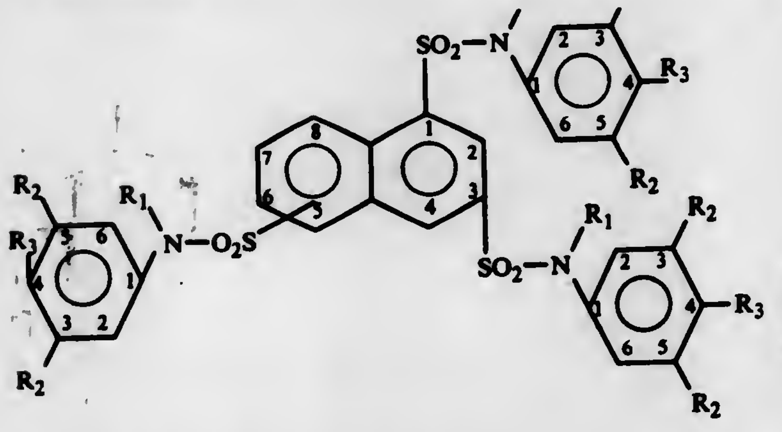
Division of Ser. No. 782,212, Mar. 28, 1977, Pat. No. 4,087,613.

This application Oct. 28, 1977, Ser. No. 846,489

Int. Cl.² A61K *31/195, 31/18*

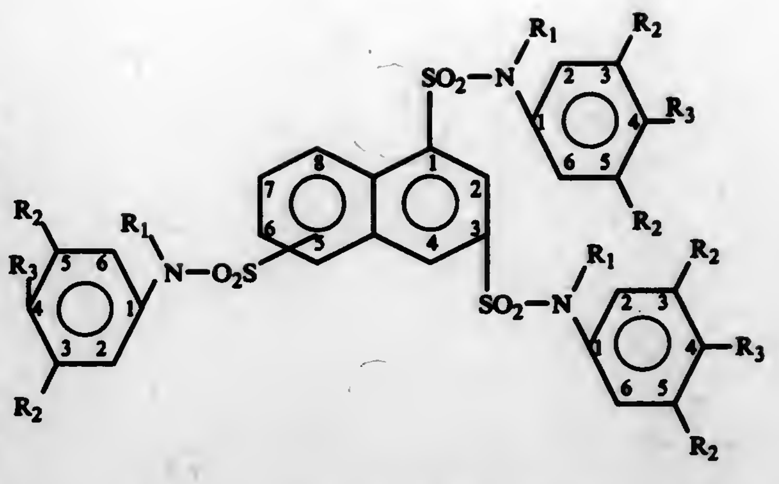
U.S. Cl. 424—319 20 Claims

1. A method of inhibiting the complement system in a body fluid which comprises subjecting said body fluid to the action of an effective complement inhibiting amount of a compound of the formula:



wherein R₁ is selected from the group consisting of hydrogen and methyl; R₂ is selected from the group consisting of hydrogen, carboxyl and COOR₄, wherein R₄ is selected from the group consisting of alkali metal and alkaline earth metal; R₃ is selected from the group consisting of hydrogen, hydroxy and COOR₄, wherein R₄ is as previously defined; with the proviso that each phenyl must contain at least one COOR₄; and the nontoxic pharmaceutically acceptable salts thereof.

11. A method of inhibiting the complement system in a warm-blooded animal which comprises internally administering to said animal an effective complement inhibiting amount of a compound of the formula:



wherein R₁ is selected from the group consisting of hydrogen and methyl; R₂ is selected from the group consisting of hydrogen, carboxyl and COOR₄, wherein R₄ is selected from the group consisting of alkali metal and alkaline earth metal; R₃ is selected from the group consisting of hydrogen, hydroxy and COOR₄, wherein R₄ is as previously defined; with the proviso that each phenyl must contain at least one COOR₄; and the non-toxic pharmaceutically acceptable salts thereof.

4,130,661
SUBSTITUTED BENZOYLACRYLANILIDES

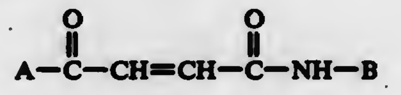
Peter Kulsa, Plainfield; Dale R. Hoff, Basking Ridge, and Helmut H. Mrozik, Matawan, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 629,438, Nov. 6, 1975, abandoned, which is a continuation-in-part of Ser. No. 521,708, Nov. 7, 1974, abandoned, which is a continuation-in-part of Ser. No. 416,134, Nov. 15, 1973, abandoned. This application Jun. 30, 1977, Ser. No. 812,027

Int. Cl.² C01B *33/00;* C07C *103/22, 103/28, 103/38*

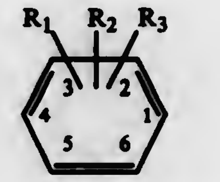
U.S. Cl. 424—324 25 Claims

19. A composition for the treatment of coccidiosis comprising an inert carrier and an anticoccidal amount of a compound of the formula:



$$\mathrm{A}-\overset{\mathrm{O}}{\overset{\|}{\mathrm{C}}}-\mathrm{CH}=\mathrm{CH}-\overset{\mathrm{O}}{\overset{\|}{\mathrm{C}}}-\mathrm{NH}-\mathrm{B} \qquad \text{(I)}$$

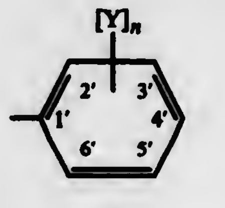
where A is:



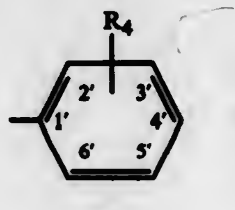
(a)

where in formula (a) R₁, R₂ and R₃ are independently hydrogen, halo, loweralkylsulfide, loweralkylsulfonyl, loweralkyl, loweralkoxy, loweralkanoylamino or trihaloloweralkyl;

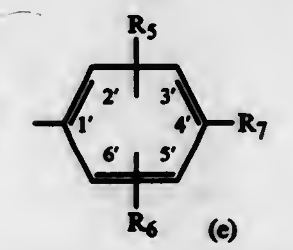
In formula I above, B represents:



(c)



(d)



(e)

where in formula (c), Y is halo and n is an integer of 4 to 5; in formula (d), R₄ is halo, loweralkyl, loweralkoxy, loweralkylsulfide or trihaloloweralkyl; and in formula (e) R₅ and R₆ are independently hydrogen, loweralkyl, loweralkoxy, trihaloloweralkyl or halo and R₇ is halo, loweralkyl or hydrogen, and at least one of R_5, R_6 and R_7 being other than hydrogen with the provisos that when 1) A is mono-substituted at the para (4) position with hydrogen, loweralkyl, loweralkoxy or halo, R_4 is other than hydrogen, loweralkyl, loweralkoxy or halo at the para (4') position, and at least one of R_5 and R_6 is other than hydrogen; and 2) further that in formula (e) when R_5 is 2-loweralkyl, R_6 is 6-loweralkyl, and R_7 is hydrogen, at least one of the R_1, R_2 and R_3 substituents in formula (a) is other than hydrogen or loweralkyl.

4,130,662

ACYLFORMANIDINE INSECTICIDAL AND MITICIDAL COMPOUNDS

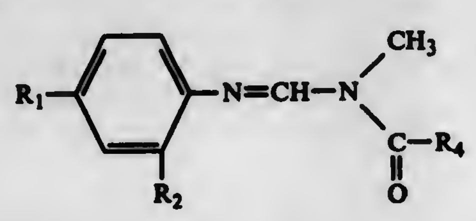
Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 666,520, Mar. 12, 1976, Pat. No. 4,056,570, which is a division of Ser. No. 575,313, May 7, 1975, Pat. No. 3,962,305, which is a division of Ser. No. 439,507, Feb. 4, 1974, abandoned. This application Sep. 12, 1977, Ser. No. 834,256

Int. Cl.² A01N *9/20, 9/24*

U.S. Cl. 424—324 **6 Claims**

1. A method of controlling insects consisting of applying to said insects or the habitat thereof an insecticidally effective amount of a compound having the formula



wherein R_1 and R_2 are independently methyl or halogen and R_4 is either haloalkyl or ketoalkyl.

4,130,663

STYRYLAMIDINES

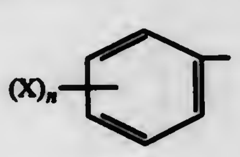
William L. Matier, and William T. Comer, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Division of Ser. No. 825,996, Aug. 19, 1977, which is a division of Ser. No. 601,563, Aug. 4, 1975, Pat. No. 4,052,455, which is a continuation-in-part of Ser. No. 459,152, Apr. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 368,547, Jun. 11, 1973, abandoned. This application Apr. 10, 1978, Ser. No. 894,889

Int. Cl.² A61K *31/155*

U.S. Cl. 424—326 **10 Claims**

1. A method for preventing aggregation of blood platelets in a mammal having a thromboembolic condition which comprises administering to said mammal an antithrombogenic effective dose of a styrylamidine or a salt thereof of a pharmaceutically acceptable acid to provide a blood level of from 0.5 to 90 mcg. of said styrylamidine per 0.5 ml. blood, said styrylamidine being selected from the group consisting of the compounds having the formula



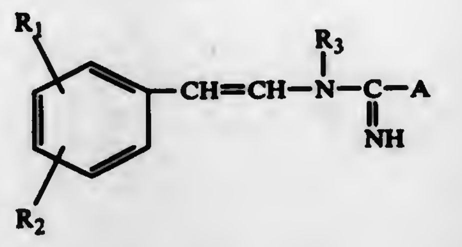
wherein

R_1 is selected from lower alkyl of 1 to 4 carbon atoms inclusive, hydrogen, nitro, amino, halogen, cyclohexyl, carbamoyl, lower alkylsulfonyl from 1 to 4 carbon atoms inclusive, sulfamoyl or lower alkanoylamido of from 2 to 4 carbon atoms inclusive;

R_2 is selected from hydrogen or halogen with the proviso that when R_1 is halogen, R_2 can represent up to two additional halogen;

R_3 is hydrogen, cyclopropyl or lower alkyl of 1 to 4 carbon atoms inclusive;

A is selected from lower alkyl of from 1 to 8 carbon atoms inclusive, di(lower)alkylaminophenyl, phenyl, benzyl, β-naphthyl, styryl, phenylbutadienyl, cycloalkyl of 3 to 6 carbon atoms inclusive, or a substituted phenyl radical represented by the symbol



wherein

X is selected from (lower) alkoxy from 1 to 4 carbon atoms inclusive, halogen, nitro, amino, lower alkanoylamido of from 2 to 4 carbon atoms inclusive, and

n represents the integer 1 or 2.

4,130,664

BIS(DIPHENYLAMINOMETHANE) ANTIMICROBIAL AGENTS

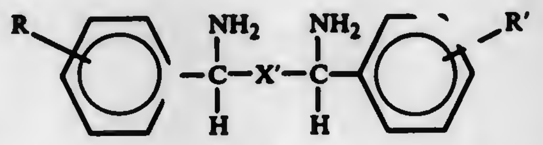
Bogislav von Schmeling, Hamden, Conn., and Walter R. Boos, Guelph, Canada, assignors to Uniroyal, Inc., New York, N.Y. and Uniroyal Ltd., Ontario, Canada

Division of Ser. No. 658,004, Feb. 13, 1976, Pat. No. 4,044,139, which is a division of Ser. No. 440,941, Feb. 8, 1974, Pat. No. 3,954,868, which is a division of Ser. No. 231,385, Mar. 2, 1972, Pat. No. 3,808,316. This application Jun. 15, 1977, Ser. No. 806,650

Int. Cl.² A01N *9/20*

U.S. Cl. 424—330 **8 Claims**

1. A method of controlling bacteria or fungi which comprises applying, to a locus subject to attack by said bacteria or fungi, a bactericidally or fungicidally effective amount of a compound of the formula:



wherein X' is phenylene and R and R' are the same or different and are selected from the group consisting of hydrogen, methyl, methoxy, and phenoxy.

4,130,665

A-NORANDROSTANE DERIVATIVES

Arthur F. Marx, Delft, and Cornelis Vos, Pijnacker, both of Netherlands, assignors to Gist-Brocades N.V., Netherlands

Filed Mar. 28, 1978, Ser. No. 891,288

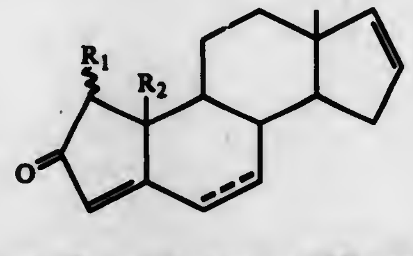
Claims priority, application United Kingdom, Mar. 28, 1977, 13003/77

Int. Cl.² A61K *31/12;* **C07C** *49/46*

U.S. Cl. 424—331 **7 Claims**

1. A-nor-androsta-3(5),16-dien-2-one derivatives of the formula:

I



wherein R_1 and R_2 are the same or different and each represents a hydrogen atom or a methyl group, the dotted line in the 6-7 position indicates the optional presence of an additional double bond and the wavy line in the 1 position indicates that the substituent R_1 is either in α- or β-configuration.

4,130,666

ANTI-INFLAMMATORY METHOD

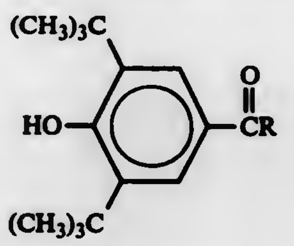
George G. I. Moore, Birchwood, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Continuation of Ser. No. 797,138, May 16, 1977, abandoned. This application Apr. 6, 1978, Ser. No. 894,101

Int. Cl.² A61K *31/12*

U.S. Cl. 424—331 **7 Claims**

1. A method for combatting inflammatory processes in a mammal which comprises administering an effective dose less than the toxic amount of a compound of the formula:



wherein R is cycloalkyl of 3 to 6 carbon atoms, ethyl, n-propyl or n-butyl to said mammal.

4,130,667

DERMATOLOGICAL COMPOSITIONS

Donald E. Smith, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 647,943, Jan. 12, 1976, Pat. No. 4,046,886, which is a division of Ser. No. 541,902, Jan. 17, 1975, Pat. No. 3,925,099, which is a division of Ser. No. 340,787, Jul. 22, 1975, Pat. No. 3,896,238, which is a continuation-in-part of Ser. No. 241,404, Apr. 5, 1972, abandoned. This application Jun. 13, 1977, Ser. No. 805,667

Int. Cl.² A61K *47/00*

U.S. Cl. 424—361 **1 Claim**

1. A composition for enhancing the penetration of pharmacologically active agents into and through animal tissue comprising:

(1) at least about 0.1% by weight of a sugar ester selected from the group consisting of
  sucrose monooctanoate,
  sucose monodecanoate,
  sucrose monolaurate,
  sucrose monomyristate,
  sucrose monopalmitate,
  sucrose monostearate,
  sucrose monooleate, and
  sucrose dioleate; and

(2) at least about 0.1% by weight of a phosphine oxide compound selected from the group consisting of
  octyl dimethyl phosphine oxide,
  nonyl dimethyl phosphine oxide,
  decyl dimethyl phosphine oxide,
  undecyl dimethyl phosphine oxide,
  dodecyl dimethyl phosphine oxide,
  2-hydroxydecyl dimethyl phosphine oxide,
  2-hydroxyundecyl dimethyl phosphine oxide, and
  2-hydroxydodecyl dimethyl phosphine oxide.

4,130,668

METHOD FOR CHEMICALLY PEELING FRUITS AND VEGETABLES

Shigeru Otsuka, Toyonaka; Zenichi Mōri, Wakayama; Tetsuhiko Tominaga, Takarazuka; Junichi Tamura, Wakayama; Yoshio Shimoda, Ikeda; Takashi Takeuchi, Wakayama; Masakazu Oku, Hyogo, and Kan Mori, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd. and Toyo Seikan Kaisha, Ltd., both of Tokyo, Japan

Continuation of Ser. No. 679,018, Apr. 21, 1976, abandoned. This application Aug. 8, 1977, Ser. No. 822,705

Claims priority, application Japan, Apr. 30, 1975, 50-52192

Int. Cl.² A23L *1/212*

U.S. Cl. 426—287 **9 Claims**

1. A method for peeling fruits or vegetables, which consists essentially of the step of: immersing the fruit or vegetable in an aqueous alkaline solution having a temperature in the range of from room temperature to 90° C., for a time period of from 1 to 30 minutes, said aqueous alkaline solution consisting essentially of

I. from 0.1 to 1.5 weight percent of alkali,

II. from 0.005 to 1.0 weight percent of a mixture of
  (a) polyoxyethylene (3–60) sorbitan fatty acid (C_8–C_{18}) ester having an HLB value higher than 9, and
  (b) glycerine fatty acid (C_8–C_{18}) ester having an HLB value not higher than 9, said mixture containing from one to 5 parts by weight of component (a) and from one to 5 parts by weight of component (b) and

III. The balance being essentially water.

4. A method for peeling fruits or vegetables, which consists essentially of the step of: immersing the fruit or vegetable in an aqueous alkaline solution having a temperature in the range of from room temperature to 90° C., for a time period of from one to 30 minutes, said aqueous alkaline solution consisting essentially of

I. from 0.1 to 1.5 weight percent of alkali,

II. from 0.005 to 1.0 weight percent of a mixture of
  (a) polyoxyethylene (3–60) sorbitan fatty acid (C_8–C_{18}) ester having an HLB value higher than 9, and
  (b) sorbitan fatty acid (C_8–C_{18}) ester having an HLB value not higher than 9, said mixture containing from one to 5 parts by weight of component (a) and from one to 5 parts by weight of component (b) and

III. the balance being essentially water.

7. A method for peeling fruits or vegetables, which consists essentially of the step of: immersing the fruit or vegetable in an aqueous alkaline solution having a temperature in the range of from room temperature to 90° C., for a time period of from one to 30 minutes, said aqueous alkaline solution consisting essentially of

I. from 0.1 to 1.5 weight percent of alkali,

II. from 0.005 to 1.0 weight percent of a mixture of
  (a) polyoxyethylene (3–60) sorbitan fatty acid (C_8–C_{18}) ester having an HLB value higher than 9, and
  (b) propylene glycol fatty acid (C_8–C_{18}) ester having an HLB value not higher than 9, said mixture containing from one to 5 parts by weight of component (a) and from one to 5 parts by weight of component (b) and

III. the balance being essentially water.

4,130,669

METHOD OF MAKING AN IMPROVED TEA VOLATILES CONCENTRATE

Richard Gregg, Greenhills, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 22, 1977, Ser. No. 808,759

Int. Cl.² A23F *3/00*

U.S. Cl. 426—385 **7 Claims**

1. A method for preparing a tea volatiles concentrate from ground tea leaves comprising the steps of:

(a) uniformly wetting said ground tea with from about 0.1 to about 3.0 parts water per part of ground tea, said water being at a temperature of from about 32° F. to about 160° F.;

(b) contacting said ground tea while, in a state of fluidization in free space, with from about 0.005 to about 0.20 parts steam, per part of ground tea, thereby to provide volatiles-laden steam and devolatilized ground tea; said contact being conducted under an absolute pressure of from about 5 to about 250 mm of mercury, the steam having a temperature of from about 32° F. to about 160° F., said ground tea making contact with said steam for about 0.1 to about 45 minutes;

(c) collecting the volatiles-laden steam as a frost by freeze condensation at a temperature of from about −100° F. to about −320° F. and at an absolute pressure of from about 0 to about 80 mm of mercury;

(d) melting the frost to form a tea volatiles concentrate by contacting the frost with at least an equal weight of an aqueous tea extract having a solids content of from about 15% to about 65%; and wherein said fluidization is mechanically induced within a horizontal mixing shell by mixing tools which rotate within said shell at high speeds sufficient to impart rapid hurling-and-whirling motion to the ground tea leaves, said mixing tools being so designed such as to lift, drop and push the ground tea leaves from the walls of said shell into free space so that intimate steam contact takes place without adverse effect on said ground tea leaves.

4,130,670

PROCESS FOR FIXING TONER IMAGES

Yvan K. Gilliams, Hever; Walter F. De Winter, 's-Grevenwezel; August J. Van Paesschen, Antwerp, and Daniël M. Timmerman, Mortsel, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Sep. 14, 1976, Ser. No. 723,189

Claims priority, application United Kingdom, Sep. 16, 1975, 38070/75

Int. Cl.² G03G *13/20*

U.S. Cl. 427—16 **15 Claims**

1. A process for electrophoretically depositing and fixing an electrophoretic toner particle image on a sheet or web material comprising a support and permanently adhered to said support a fixing layer of a thermo-adhesive defining the surface of said material on which said toner image particles are deposited, said process comprising the steps of passing said material with an electrostatic charge pattern carried in said thermo-adhesive fixing layer through an electrophoretic developing liquid comprising finely divided resin-coated pigment particles suspended in an insulating carrier liquid to imagewise deposit said particles on said fixing layer, said resin-coated particles being adapted to form with said thermo-adhesive when the latter is in melted condition a contact angle smaller than 90° so that said particles will be wet by molten thermo-adhesive and heating for a time not longer than about 20 seconds to a temperature which is above 90° C at least those parts of such layer corresponding with the toner image but below a temperature at which permanent deformation of the sheet or web material occurs, said heating being of a sufficient intensity as to melt said thermo-adhesive and maintain the same melted until said particles sink into embedded relation within the melted fixing layer in the absence of applied mechanical pressure, and allowing said imaged layer to cool and solidify with said image particles embedded in said layer, said thermo-adhesive fixing layer comprising an organic polymeric material, having a surface resistance above 10^{10} Ohm/square, freedom from blocking at least up to 35° C, a melt viscosity at 190° C of not more than 120 P and an abrasion resistance at 20° C above 175 g, said blocking, abrasion resistance, melt viscosity and contact angle values being determined according to the respective "standard tests" described in the specification.

4,130,671

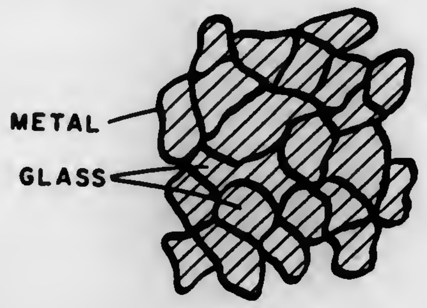
METHOD FOR PREPARING A THICK FILM CONDUCTOR

Voddarahalli K. Nagesh, Berkeley, Calif., and Richard M. Fulrath, deceased, late of Berkeley, Calif. (by Marilyn M. Fulrath, executrix), assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 30, 1977, Ser. No. 838,273

Int. Cl.² B05D *5/12;* C03C *17/06, 15/00*

U.S. Cl. 427—125 **17 Claims**



1. A method for preparing a thick film conductor wherein a composite of glass particles and a metal is formed on an insulator base material, which method comprises:

providing glass particles that have been surface activated by hydrogen ion emplacement on the surface thereof;

mixing the surface active glass particles with an amount of a thermally decomposable organo-compound of the metal sufficient to provide a metal content of at least about 20 weight percent in the glass-metal composite;

applying the surface active glass particle mixture to an insulator base material;

decomposing the organometallic compound by heating, thereby chemically depositing metal particles on the glass particles; and

heating the resulting system in an oxidizing atmosphere under conditions to provide a thick film conductor, said conductor consisting essentially of the insulator base material having formed thereon a glass-metal composite having a microstructure of glass particles surrounded by an interconnecting metallic film chemically bonded to the glass particles at the glass-metal interface;

the resulting thick film conductor having a sheet resistivity of less than about 230 milliohms per square.

4,130,672

METHOD FOR COATING ANTI-REFLECTION FILM ON SURFACE OF OPTICAL MATERIAL

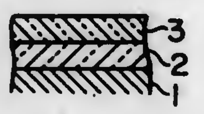
Fumio Onoki, Tokorozawa, and Hajime Kamiya, Kokubunji, both of Japan, assignors to Hoya Lens Co., Ltd., Japan

Filed Sep. 11, 1974, Ser. No. 504,977

Claims priority, application Japan, Oct. 16, 1973, 48-116117

Int. Cl.² B05D *5/06*

U.S. Cl. 427—164 **2 Claims**



1. A method for coating an anti-reflection film on the surface of an optical material, comprising

a first step of vacuum-depositing under a first condition of vacuum-deposited a silicon oxide SiO film having a predetermined thickness on said surface of said optical material while said optical material is placed in a vacuum chamber having a first vacuum degree and kept at temperatures below 120° C. at which the quality and the shape of said material are not changed, and

a second step of vacuum-depositing under a second condition of vacuum-deposition different from said first condition a silicon dioxide SiO_2 film having a predetermined thickness on said SiO film while the temperature of said optical material is kept the same as in said first step but said first vacuum degree is changed to a second vacuum degree different from said first vacuum degree.

4,130,673

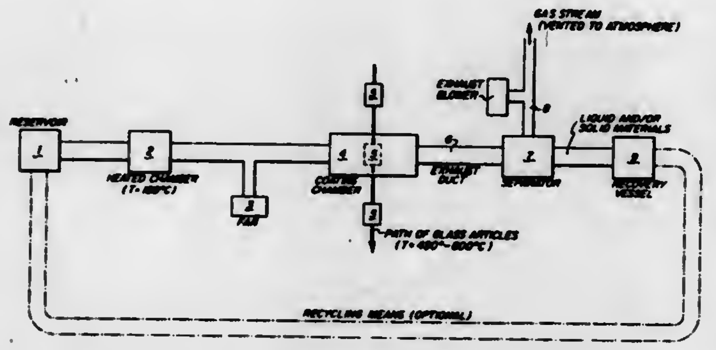
PROCESS OF APPLYING TIN OXIDE ON GLASS USING BUTYLTIN TRICHLORIDE

William A. Larkin, Morristown, N.J., assignor to M&T Chemicals Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 592,474, Jul. 2, 1975, abandoned, which is a division of Ser. No. 507,074, Sep. 18, 1974. This application Jan. 27, 1978, Ser. No. 872,765

Int. Cl.² C03C *17/32, 17/10*

U.S. Cl. 427—255 **2 Claims**



1. A method for reducing the coefficient of friction and susceptibility to scratching exhibited by glass surfaces, the method consisting essentially of the following sequence of operations:

(1) Maintaining said glass surface at a temperature of between 450 and 600° C. while applying to said glass surface vaporized or finely divided butyltin trichloride,

(2) Maintaining the glass surface at a temperature of 350° C. or below while applying to the glass surface a coating of a natural wax or synthetic polymer.

4,130,674

PROCESS OF CONTROLLING ORGANIC COATINGS IN AQUEOUS SPRAY BOOTH SYSTEMS

Wilbert J. Roberts, Plymouth, and Gerald R. Weissman, Southfield, both of Mich., assignors to Detrex Chemical Industries, Inc., Detroit, Mich.

Filed Aug. 17, 1977, Ser. No. 825,328

Int. Cl.² B05D *1/40, 1/02*

U.S. Cl. 427—331 **10 Claims**

1. In a process for controlling the overspray of organic coatings in an aqueous spray booth system, the improvement which comprises the step of adding to the water supply of an aqueous spray booth system adapted to remove the overspray of organic coatings, an effective amount of a mixture of (1) a long carbon chain surface active nitrogen derivative containing one or more hydrocarbon chains of about C_8 to C_{18} in length and (2) at least one member selected from the class consisting of (a) a polyvalent water soluble or dispersible metal salt of a metal selected from the class consisting of calcium, iron, zinc, barium, magnesium, strontium and aluminum, and (b) a nonionic or anionic high molecular weight polymer selected from the class consisting of homopolymers, copolymers or terpolymers of acrylic acid, acrylamide, acrylonitrile, polyhydroxy-alcohols, polyamines, polytetraethylenediamine, vegetable gums, polyisocyanates, polyglycidyl and aldehydes, or a blend of said polymers, whereby any organic coating over-sprayed into said water supply becomes removable therefrom as a non-sticky, non-tacky, readily handled sludge.

4,130,675

POLYARYLENE SULFIDE RESIN COATING METHOD

Eustathios Vassiliou, Newark, Del., and Edward J. Welch, Springfield, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 666,055, Mar. 11, 1976. This application Nov. 28, 1977, Ser. No. 855,416

Int. Cl.² B05D *1/36, 3/02*

U.S. Cl. 427—333 **3 Claims**

1. A process for producing light colored coatings of polyarylene sulfide resin which are produced by polyarylene sulfide resin coating compositions; the process comprising

(a) placing upon a substrate a modifying compound which is a citrate, carbonate, sulfate or hydroxide of sodium, potassium, rubidium, or cesium;

(b) overcoating with a polyarylene sulfide resin composition; and then

(c) heating until the polyarylene sulfide resin is fused.

4,130,676

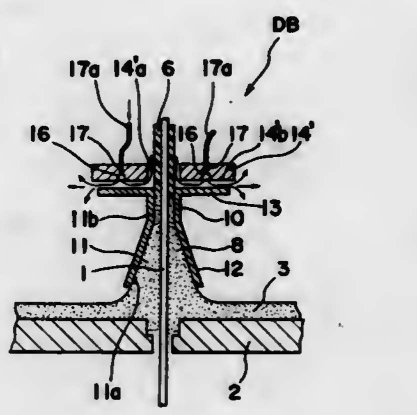
COATING APPARATUS AND METHOD

Takashi Ichiyanagi; Takashige Akiyama, both of Hirakata, and Ichizo Otoda, Ikeda, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 14, 1977, Ser. No. 777,549

Int. Cl.² B05C *3/02;* B44D *1/42*

U.S. Cl. 427—358 **8 Claims**



8. A method for applying a coating solution onto a material to be coated by employing a coating apparatus which includes a floating die member having an opening therethrough, said opening gradually narrowing in the direction of advance of said material to be coated, and a thrust bearing member having an opening therein and lubricating means for reducing friction in the radial direction thereof between said floating die member and said thrust bearing and extending in a direction normal to the advancing direction of said material to be coated, said opening of said thrust bearing member being aligned with said opening in said floating die member, said coating solution applying method comprising the steps of passing the material to be coated upwardly through the coating solution and then through said opening in said floating die member for causing the die member to float on the coating solution drawn upwardly by the material to be coated and for removing excess coating solution and subsequently passing said material to be coated through said opening in said thrust bearing member for improving the follow-up performance of said floating die member with respect to lateral movement of said material to be coated as it is advancing through said floating die member and said thrust bearing member for formation of coating film of the coating solution having a uniform thickness on said material to be coated.

4,130,677

PROCESS FOR APPLYING TO GLASS AN ORGANIC COATING HAVING CONTROLLED BOND STRENGTH

James R. Huntsberger, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 21, 1977, Ser. No. 844,519
Int. Cl.^{2} B05D *1/36, 1/38*
U.S. Cl. 427—379 **12 Claims**

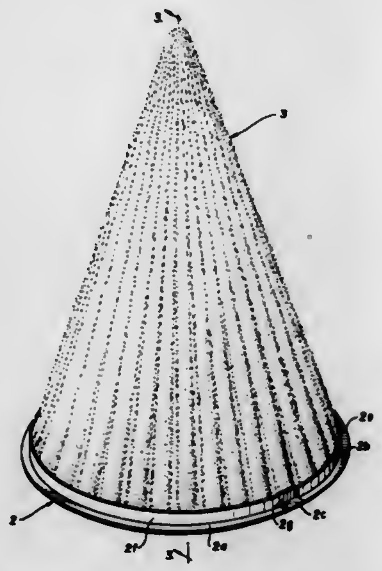
1. A process for applying to glass a coating capable of delamination and stretching upon impact resulting in glass breakage, said process comprising:
(1) applying to a glass surface free from materials which are non-dispersible in water a two-component coating which contains as one component γ-aminopropyltriethoxysilane that bonds directly to the glass, and as the other component polyethylene having an average molecular weight within the range of approximately 1000 to 2000 in an amount such that the γ-aminopropyltriethoxysilane/-polyethylene layer will be about 0.05–0.25 μm thick when dry, the proportion of γ-aminopropyltriethoxysilane being approximately 5–30% based on the weight of the polyethylene;
(2) drying the coating applied in step (1);
(3) applying to the above dry coating a second coating of a copolymer of an α-olefin having 3–10 carbon atoms and of an α,β-unsaturated carboxylic acid having 3–8 carbon atoms, the mole proportion of the carboxylic acid being about 0.2–5% of the total monomers; and
(4) heating the coating to a sufficiently high temperature to form a continuous film; the amount of the copolymer being such that the dry copolymer film is about 0.07–0.40 mm thick.

4,130,678

COLLAPSIBLE ARTIFICIAL CHRISTMAS TREE

James R. Higgins, 9516 Ferry Harbour Ct., Alexandria, Va. 22309

Filed Oct. 21, 1976, Ser. No. 734,555
Int. Cl.^{2} A47G *33/06*
U.S. Cl. 428—9 **9 Claims**



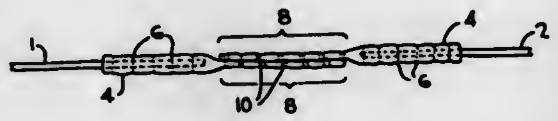
1. A collapsible artificial Christmas tree comprising, a base, one end of a telescopic mast being connected to said base, garland means extending between the base and the opposite end of the mast to form a generally conically-shaped configuration; said base comprising a plurality of panel members, and hinge means interconnecting said panel members, whereby in the erected position the panel members are disposed in a substantially horizontal plane to support the tree, and in the collapsed position certain panel members are foldable to a substantially vertical plane to thereby form a storage compartment for the collapsed tree, and wall means connected to said panel members in proximity to the edges thereof to thereby provide a gallery for the base when in the erected position, and a wall of the storage compartment when the panels are in the folded position.

4,130,679

SPLICE FOR USE DURING THE THERMAL STABILIZATION OF A FLAT MULTIFILAMENT BAND OF AN ACRYLIC FIBROUS MATERIAL COMPRISING AT LEAST TWO SEGMENTS

Robert A. Breznak, Clifton, and James A. Parker, Somerville, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 641,066, Dec. 15, 1975, Pat. No. 4,048,277. This application Apr. 25, 1977, Ser. No. 790,540
Int. Cl.^{2} B32B *7/08*
U.S. Cl. 428—58 **6 Claims**



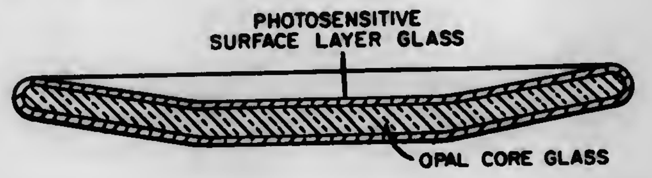
1. A substantially flat multifilament band of an acrylic fibrous material which is capable of undergoing thermal stabilization by continuous passage through a thermal stabilization zone in the direction of its length having at least two discrete band segments which are joined in an end to end relationship by a splice comprising:
(1) fabric capable of withstanding the thermal stabilization treatment having a weave configuration through which heat of reaction is permitted to dissipate which surrounds an end of each band segment and extends beyond the end of said band segment to form a substantially flat fabric extension,
(2) stitches capable of withstanding the thermal stabilization treatment which join said fabric to the end of each band segment, and
(3) stitches capable of withstanding the thermal stabilization treatment which unite a pair of said substantially flat fabric extensions while in an overlapping opposing relationship in the absence of any substantial overlap of the acrylic fibrous material of each band segment within said splice.

4,130,680

STRONG, LIGHTWEIGHT PHOTOSENSITIVE LAMINATE

Joseph Ference, and John E. Megles, Jr., both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 8, 1977, Ser. No. 822,879
Int. Cl.^{2} C03C *3/26;* B32B *17/00*
U.S. Cl. 428—68 **8 Claims**



1. An integrally colored laminated glass article consisting of a tensilely stressed core layer composed of a spontaneous opal core glass of alkali aluminosilicate composition and a compressively stressed surface layer fused to and substantially enveloping said core layer composed of a surface layer glass having at least one integrally colored region containing microcrystals of alkali metal fluoride and a coloring metallic silver phase, wherein:
(a) the ratio of the thickness of said core layer to the thickness of said surface layer is at least about 8:1;
(b) the thickness of said surface layer is at least about 0.002 inches;

(c) the core glass has an average linear coefficient of thermal expansion (0°–300° C.) of at least about $75 \times 10^{-7}/°$ C.;
(d) the surface layer glass has an average linear coefficient of thermal expansion (0°–300° C.) which is at least $10 \times 10^{-7}/°$ C. less than that of the core glass;
(e) the surface layer glass contains at least about 0.01% silver by weight;
(f) the core glass is essentially free of Li_2O; and
(g) the integrally colored region of the surface layer glass contains microcrystals of alkali metal fluoride in a concentration of at least 0.005% by volume and further contains:
 (i) discrete colloidal particles of metallic silver less than about 200A in the smallest dimension and/or
 (ii) metallic silver contained within at least a part of said alkali metal fluoride microcrystals, said silver-containing part of the microcrystals being less than about 200A in the smallest dimension and/or
 (iii) a coating of metallic silver on at least a portion of the surface of the alkali metal fluoride microcrystals, the portion of the microcrystals coated with silver being less than about 200A in the smallest dimension.

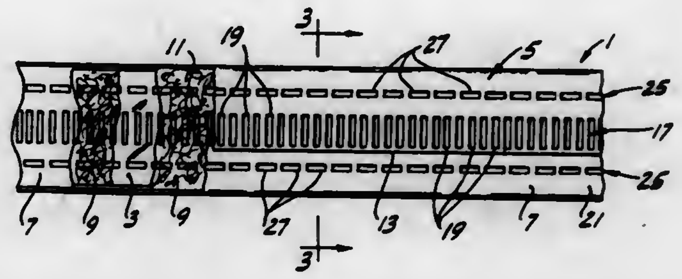
5. A method for producing an integrally colored laminated glass article consisting of a tensilely stressed core layer composed of a spontaneous opal core glass of alkali aluminosilicate composition and a compressively stressed surface layer fused to and substantially enveloping said core layer composed of a surface layer glass having at least one integrally colored region containing microcrystals of alakli metal fluoride and a coloring metallic silver phase, which method comprises the steps of:
(a) providing a first melt of an alkali aluminosilicate core glass having an average linear coefficient of thermal expansion (0°–300° C.) of at least about $75 \times 10^{-7}/°$ C. and a composition which is essentially free of Li_2O, the viscosity of said first melt being in the range of about 400–4000 poises;
(b) providing a second melt of a photosensitive surface layer glass having an average linear coefficient of thermal expansion (0°–300° C.) which is at least about $10 \times 10^{-7}/°$ C. less than that of the core glass and a composition which includes at least about 0.01% silver by weight, the viscosity of said second melt being in the range of about 700–3000 poises;
(c) combining the first and second melts into laminated glass sheet and shaping the sheet to provide a laminated glass article comprising a core layer and a photosensitive surface layer, the ratio of the thickness of the core layer to the thickness of the surface layer being at least about 8:1 and the thickness of the surface layer being at least about 0.002 inches;
(d) developing selected regions of the photosensitive surface layer into integrally colored regions, said regions containing microcrystals of alkali metal fluoride in a concentration of at least about 0.005% by volume and further containing:
 (i) discrete colloidal particles of metallic silver less than about 200A in the smallest dimension and/or
 (ii) metallic silver contained in at least part of said alkali metal fluoride microcrystals, said silver-containing part of the microcrystals being less than about 200A in the smallest dimension and/or
 (iii) a coating of metallic silver on at least a portion of the surface of the alkali metal fluoride microcrystals, the portion of the microcrystals coated with silver being less than about 200A in the smallest dimension.

4,130,681

STRAPPING FOR ORTHODONTIC HEADGEAR AND OTHER USES

Irvin S. DeWoskin, St. Louis, Mo., assignor to Orthoband Company, Inc., Barnhart, Mo.

Filed Jan. 10, 1977, Ser. No. 757,914
Int. Cl.^{2} B32B *3/06, 9/00;* A61C *3/00*
U.S. Cl. 428—102 **6 Claims**



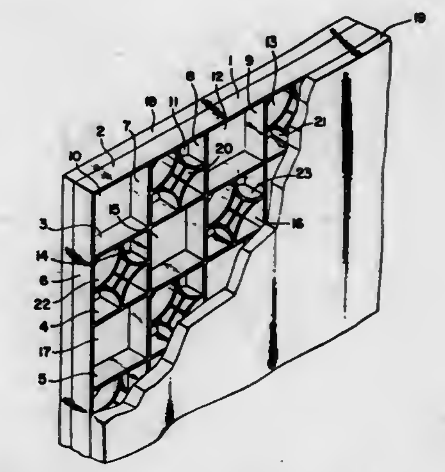
1. Strapping for orthodontic headgear or other uses comprising a core constituted by a strip of substantially nonstretchable thermoplastic plastic material and a wrapper for the core constituted by a composite strip comprising a layer of thermoplastic film and a layer of thermoplastic padding material bonded to the film, said composite strip being wrapped around the side edges of the core with the layer of film on the outside and the layer of padding material on the inside and having its marginal edges overlapped on one face of the core along the length of the strapping, said overlapping edges being stitched together to form a longitudinal overlap seam for the composite strip by a series of discrete thermoplastic stitches, said series extending longitudinally of the strip and generally centrally of the strip, said stitches being relatively closely spaced longitudinally of the strapping and penetrating through the strapping from one face thereof to the other, whereby the wrapper is thermoplastically sealed by said stitches to the core at opposite faces of the core as well as being thermoplastically longitudinally seamed.

4,130,682

SOUND ABSORBING DEVICE

John W. Lauko, 33 N. Center, Perry, N.Y. 14530

Filed Mar. 24, 1978, Ser. No. 889,820
Int. Cl.^{2} B32B *3/12, 3/10;* E04B *1/99*
U.S. Cl. 428—116 **1 Claim**



1. A sound absorbing device, comprising
a lattice-type structure having a plurality of equidistantly spaced parallel horizontal strips and a plurality of equidistantly spaced parallel vertical strips intersecting the horizontal strips at right angles to form a matrix structure having a plurality of substantially square open compartments each bordered by a pair of spaced parallel horizontal strip segments and a pair of spaced parallel vertical strip segments,

a plurality of sound absorbing units in alternate compartments of the structure each of the sound absorbing units comprising four concave strip segments each extending from the midpoint of a corresponding one of the strip segments of a corresponding one of the compartments to the midpoint of a corresponding other of the strip segments of the corresponding one of the compartments to form a concave-sided square in said one of said compartments rotated 90° relative to said one of said compartments,

each of the sound absorbing units further comprising a pair of intersecting cross strip segments extending between the midpoints of opposite concave strip segments of its concave sides, and

a pair of sheets covering the open sides of the matrix structure, thereby providing a completely enclosed integral structure.

4,130,683
SPONGE-LIKE MATERIAL HAVING IMPROVED SCRUBBING AND CLEANING ABILITY

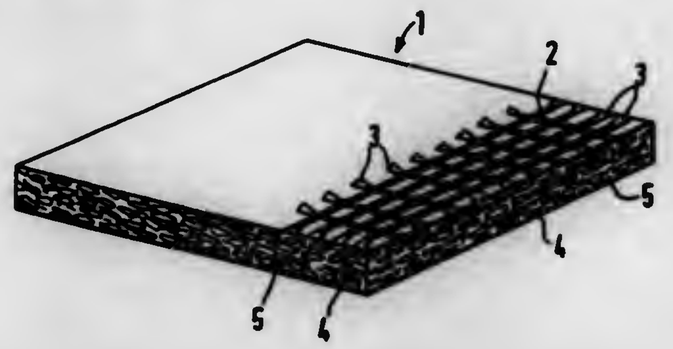
Wolfgang Michel, Wiesbaden, and Heinz Kälberger, Oberwalluf, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 15, 1978, Ser. No. 886,818

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1977, 2711698

Int. Cl.^{2} B32B *3/02*

U.S. Cl. 428—194 **16 Claims**



1. A porous sponge-like material suitable for use in cleaning comprising a porous cellulose hydrate body having at least one netting attached to at least a portion of the surface thereof, said porous cellulose hydrate body containing a filler material of thermoplastic synthetic resinous particulate material selected from the group consisting of thermoplastic synthetic resinous powders, fibers, or fibrids on at least that portion of the surface of said body which is in contact with said netting.

4,130,684
MULTILAYERED SAFETY GLASS

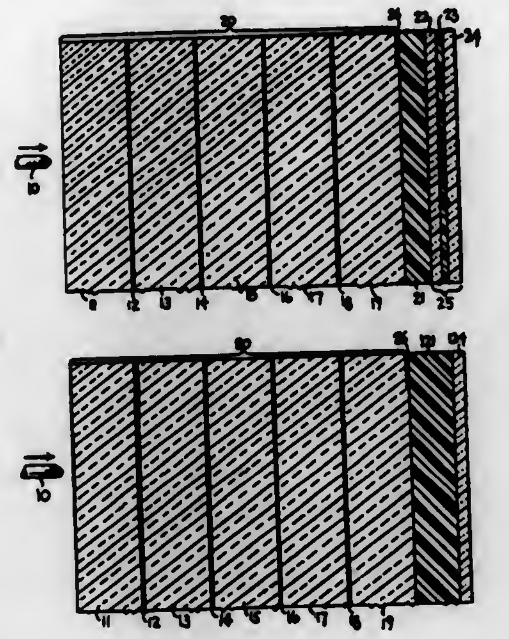
Harry E. Littell, Jr., Allison Park, and Shorr, Norman, Mount Lebanon, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 819,045, Apr. 24, 1969, Pat. No. 3,864,204. This application Jun. 9, 1969, Ser. No. 831,286

Int. Cl.^{2} B32B *7/02;* F41H *5/26*

U.S. Cl. 428—212 **6 Claims**

1. In a multilayered safety glass laminate comprising a plurality of alternate plies of glass and plasticized polyvinyl butyral resin arranged to provide an impact striking section, a transition section and an impact absorption section, the improvement comprising a plurality of plies of said resin in said impact striking section having a relatively low plasticizer content equivalent to less than 25 parts by weight of triethylene glycol di-(2-ethyl butyrate) per 100 parts of said resin and said transition section comprising said plasticized polyvinyl butyral resin having a relatively high plasticizer content equivalent to more than 35 parts by weight of triethylene glycol di-(2-ethyl butyrate) per 100 parts of said resin.



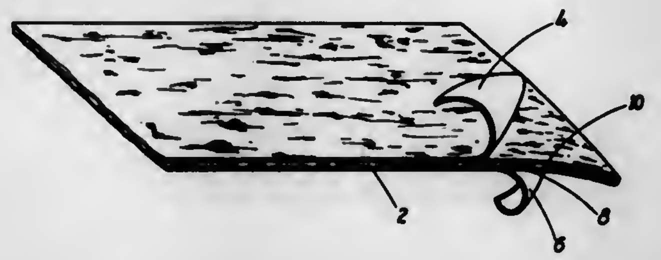
4,130,685
CORK WALL COVERING

John A. Tarullo, 4700 Robards La., Louisville, Ky. 40218

Filed Sep. 20, 1974, Ser. No. 507,725

Int. Cl.^{2} B32B *21/08, 27/30, 27/36*

U.S. Cl. 428—247 **6 Claims**



1. A cork wall covering comprising a sheet of cork material of from about 0.006 to 0.040 inches in thickness adhesively secured to one side to a backing material of from about 0.005 to 0.008 inches in thickness by a first adhesive and having on the opposite side thereof a facing material of from about 0.005 to 0.010 inches in thickness adhesively secured thereto with a second adhesive, said backing material being cloth or paper, said facing material being a vinyl film, said first adhesive being a thermoplastic adhesive and said second adhesive being a cured polyester resin.

4,130,686
STRAPPING BAND HAVING CORE FORMED FROM A THERMOSETTING RESIN AND A COVERING FORMED FROM A THERMOPLASTIC RESIN

Mitsuhiro Takahashi, Yokohama; Tadao Senoo, Hino; Shigeo Minekawa, Minokamo, and Toshiharu Hirai, Gifu, all of Japan, assignors to Ube-Nitto Kasei Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1977, Ser. No. 803,306

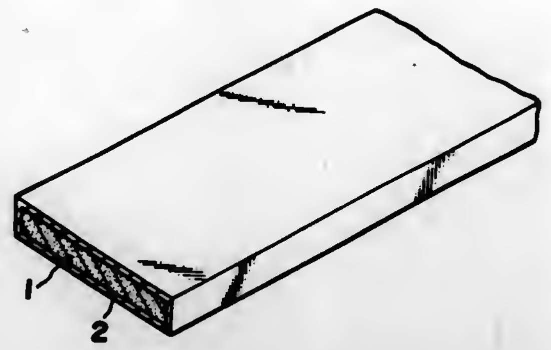
Claims priority, application Japan, Jun. 17, 1976, 51/78202[U]

Int. Cl.^{2} B65D *63/10*

U.S. Cl. 428—294 **8 Claims**

1. A strapping band comprising a tape-shaped core having continuous reinforcing fibers combined together with a thermosetting resin, and an outer layer of thermoplastic resin covering said tape-shaped core, wherein said thermoplastic resin

and said thermosetting resin each has polymeric units derived from the same monomer.



4. A strapping band as claimed in claim 1, wherein said reinforcing fibers are several continuous glass rovings arranged in parallel with each other.

4,130,687
INORGANIC FOAM

Denis G. H. Ballard; Colin S. Cundy, and Graham R. Rideal, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 14, 1977, Ser. No. 787,377

Int. Cl.^{2} B32B *3/26*

U.S. Cl. 428—310 **27 Claims**

1. A rigid foam comprising an inorganic cellular structure composed of lamellae of vermiculite.

25. A polyurethane foam panel faced on at least one side with a coating of the foam as claimed in claim 1.

4,130,688
ELECTROCONDUCTIVE RESINS AND INTERMEDIATES AND ELECTROCONDUCTIVE COATED PAPER

Joseph L. Garner, Sanford, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 668,335, Mar. 19, 1976, Pat. No. 4,071,666. This application Jan. 3, 1978, Ser. No. 868,095

Int. Cl.^{2} C08K *5/03*

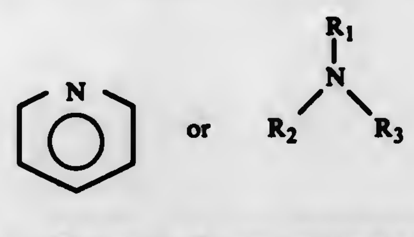
U.S. Cl. 428—342 **9 Claims**

1. A process for producing an electroconductive coated paper comprising coating a copying paper base with about 0.1 to about 3 pounds of an electroconductive composition per 3,000 square feet per side of the copying paper base said electroconductive composition having been prepared by chloromethylating or bromomethylating a first composition which comprises, by weight,

Component (A) from about 85 to about 95 parts of a polystyrene characterized by a weight average molecular weight, $\overline{M}_w$, of about 5,000 to about 45,000 and an average molecular weight distribution, $\overline{M}_w/\overline{M}_n$, of about 2 to about 6; and

Component (B) from about 15 to about 5 parts of a cyclic hydrocarbon of from 9 to about 25 carbon atoms which may contain up to two hetero-oxygen atoms, comprising 1 to 3 benzoaromatic rings;

thereby introducing chloromethyl or bromomethyl groups on about 70 to 90 percent of the aromatic rings of said first composition and obtaining as a result thereof a chloromethylated or bromomethylated second composition and thereafter reacting the second composition with a tertiary amine of the formula



wherein —R_1, —R_2 and —R_3 are independently —CH_2CH_2OH, —$CH_2CHOHCH_3$, —$CH_2CHOHCH_2OH$, alkyl, aryl, cycloalkyl or aralkyl, in an amount sufficient to convert at least about 90 percent of the chloromethyl or bromomethyl groups of the second composition to quaternary ammonium groups.

4,130,689
PRODUCTION OF HIGH STRENGTH HOLLOW RAYON FIBERS

Eugene Costa, Jr., Goshen, N.Y., assignor to International Paper Company, New York, N.Y.

Continuation-in-part of Ser. No. 694,918, Jun. 11, 1976, abandoned. This application May 20, 1977, Ser. No. 798,874

Int. Cl.^{2} D01F *2/08*

U.S. Cl. 428—398 **25 Claims**

1. A process for producing hollow rayon fibers resistant to collapse after drying, which process comprises spinning a viscose solution containing alkali cellulose, a blowing agent selected from the class consisting of alkali-metal carbonates and bicarbonates, carbon disulfide, and ripened to a Salt Index of from about 6 to 12 cubic centimeters of sodium chloride, into an aqueous acidic coagulating bath containing from about 150 to 220 grams per liter of sodium sulfate, from about 120 to 160 grams per liter of sulfuric acid, and from about 30 to 80 grams per liter of zinc sulfate, and thereafter stretching the resulting hollow rayon fibers by between about 40 and 120%.

4,130,690
ABRASION RESISTANT COATINGS CURED IN THE PRESENCE OF PF_5, SbF_5, OR $HSbF_6$

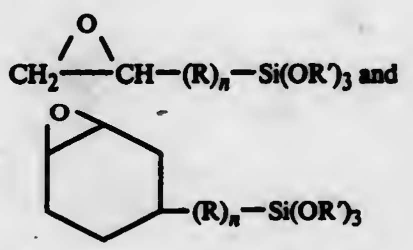
Larry A. Lien, White Bear Lake, and J. Lamar Zollinger, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Sep. 12, 1977, Ser. No. 832,400

Int. Cl.^{2} B32B *27/36, 27/06, 9/04*

U.S. Cl. 428—412 **4 Claims**

1. An abrasion resistant coating on a substrate, said coating having at most 30% haze according to ASTM D 968-51 using 1 liter of sand in 10–11 seconds and comprising a polymer having at least 15% by weight units derived from an epoxy-terminated silane of the formulae:



cured in the presence of a catalytically active amount of PF_5, SbF_5 or $HSbF_6$.

4,130,691
CHEMICAL COMPOSITION

Pierre Canard, Versailles, and Albert Levy, Orly, both of France, assignors to Rhone Poulenc Industries, Paris, France

Filed Mar. 12, 1976, Ser. No. 666,489

Int. Cl.^{2} D21H *1/28*

U.S. Cl. 428—511 **6 Claims**

1. A coated offset printing paper comprising a paper base sheet and a coating on the paper base sheet, consisting essentially of a pigment and binder in which the principal film-forming constituent consists of an aqueous latex of a copomer of butadiene, styrene and unsaturated carboxylic acid, consisting essentially of 35 to 40% by weight of butadiene, 50 to 63% by weight of styrene, and 2 to 10% by weight of at least one unsaturated carboxylic ethylenic acid, the particles of which have a diameter in the range 0.20 to 0.30 micron in which the film forming constituent is present in the ratio of 14–15 parts by weight per 100 parts by weight of pigment.

4,130,692
COATING COMPOSITIONS COMPRISING ALKOXYMETHYLAMINOTRIAZINES, POLYOLS AND POLYETHER TRIOLS

George J. Anderson, East Longmeadow; Timothy F. Desmond, Longmeadow, and J. Owen Santer, East Longmeadow, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 20, 1976, Ser. No. 734,080

Int. Cl.² C08L *61/28*

U.S. Cl. 428—524 **19 Claims**

1. A liquid composition consisting essentially of a polyol, a polyoxypropylene triol of molecular weight in the range of about 500 to about 1000 and a substantially completely methylolated polyaminotriazine substantially fully etherified with at least one C_1 to C_4 alcohol, wherein the polyol is selected from the group consisting of 1,5-pentanediol, 1,4-dimethylolcyclohexane, and 2,2-dimethyl-3-hydroxypropyl 2,2-dimethyl-3-hydropropionate, wherein the weight ratio of polyol to polyoxypropylene triol is in the range of about 90:10 to about 55:45, and wherein the ratio of hydroxyl groups of the polyol and the polyoxypropylene triol to alkoxymethyl groups of. the polyaminotriazine is in the range of about 1:1 to about 1:2.

4,130,693
ELECTROLYTE-CATHODE ASSEMBLY FOR A FUEL CELL

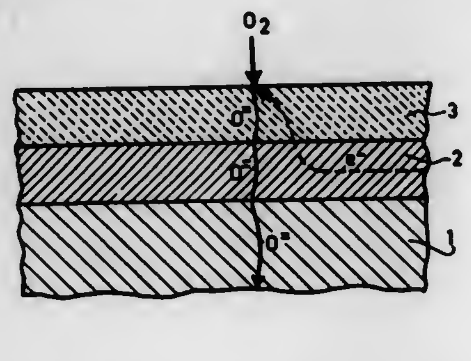
Paul Van Den Berghe, 43, Cours Sablon, 63000 Clermont Ferrand, France, and Helmut Tannenberger, La Villette 218, 1451 Le Chateau de Ste Croix, Switzerland

Filed May 27, 1977, Ser. No. 801,392

Claims priority, application Switzerland, May 28, 1976, 6737/76

Int. Cl.² H01M *4/86*

U.S. Cl. 429—41 **6 Claims**



1. An electrolyte-cathode assembly for a solid electrolyte fuel cell suitable for operation at high temperatures, which assembly comprises a gas-tight body made of a solid ceramic electrolyte capable of conducting oxygen ions, and at least one layer of an electron-conducting material in contact with the electrolyte and deposited thereon, wherein said layer of electron-conducting material is a compact layer having a thickness of at least 1 micron and at most 200 microns and made of a mixture containing from 20 to 80% by volume of indium oxide In_2O_3 doped with tin oxide, the remainder being a ceramic material capable of conducting oxygen ions at the cell operating temperature and which is a mixed oxide solid solution, crystallized in the cubic system, consisting essentially of zirconium oxide ZrO_2 and at least one oxide stabilizing the cubic phase of zirconium oxide, said layer being covered by a compact surface layer having a thickness of at least 1 micron and at most 10 microns of ceramic material capable of conducting electrons and oxygen ions and which is a mixed oxide solid solution crystallized in the cubic system, consisting essentially of (1) zirconium oxide ZrO_2, (2) at least one oxide stabilizing the cubic phase of zirconium oxide and (3) uranium oxide UO_2.

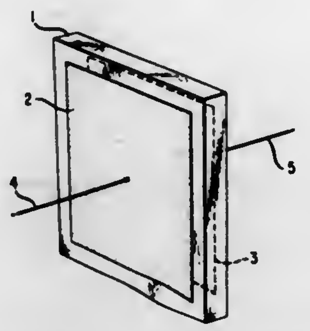
4,130,694
AMORPHOUS METAL OXIDE MATERIAL BETWEEN ELECTRODES OF A CELL

Alastair M. Glass; Malcolm E. Lines, both of Millington, and Kurt Nassau, Bernardsville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 15, 1977, Ser. No. 824,419

Int. Cl.² H01M *6/18;* H01G *9/02*

U.S. Cl. 429—193 **13 Claims**



1. Device comprising a portion of material together with spaced electrodes intimately contacting the portion, the said material being amorphous within a region defining a continuous path intermediate the said electrodes, the amorphous state being characterized by absence of long-range ordering over a distance of at least 100 Angstrom units as indicated by X-ray diffraction, CHARACTERIZED IN THAT the said material comprises a composition which may be represented by the stoichiometry $X_{0.5\text{-}1.2}Z_{1.1\text{-}0.96}O_3$ in which X is at least one element selected from the group consisting of Li, Na, K; Z is at least one element selected from the group consisting of Nb, Ta; and O is oxygen.

4,130,695
LEAD-ACID STORAGE BATTERY AND ELECTRODE THEREFOR

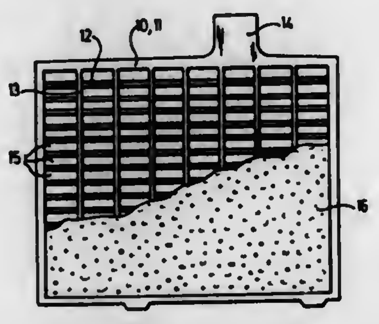
Hermann Dietz, Gerlingen, and Siegfried Ziegler, Hildesheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 21, 1977, Ser. No. 853,431

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658493

Int. Cl.² H01M *4/14, 10/06*

U.S. Cl. 429—215 **9 Claims**



1. An electrode for a lead-acid storage battery comprising a metal support consisting at least partly of lead and an electrochemically active composite mass (16) supported thereon, said composite mass containing between 0.001 and 0.1% by weight of finely divided polytetrafluoroethylene powder, said percentage being referred to the total weight of said composite mass.

4,130,696
CONDUCTIVE DILUENT FOR PRESSED NICKEL ELECTRODES

Ronald G. Gunther, Mystic, Conn., assignor to Yardney Electric Corporation, Pawcatuck, Conn.

Filed Sep. 9, 1976, Ser. No. 721,910

Int. Cl.² H01M *4/32*

U.S. Cl. 429—223 **13 Claims**

1. In a pressed nickel electrode comprising an apertured current collector, and an electrode admixture pressed therein, said electrode admixture comprising an active nickel-containing electrode material, a conductive diluent and a binder, the improvement which comprises:

having as said an conductive diluent admixture homogeneously mixed with said active electrode material and said binder, and consisting essentially of nickel flake and powdered carbon in amounts between about 4% and about 10% by weight and between about 5% and about 10% by weight, respectively, of the total weight of said active electrode material, said conductive diluent admixture, and said binder, said conductive diluent admixture being between about 10% and about 15% by weight of said total weight.

4,130,697
PROCESS FOR THE PRODUCTION OF FOAMED PLASTICS WITH IMPROVED COMBUSTION CHARACTERISTICS

Gerhard Stern, and Karlheinz Wegleitner, both of Linz, Austria, assignors to Chemie Linz Aktiengesellschaft, Austria

Filed Jul. 26, 1977, Ser. No. 819,504

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1976, 2634417

Int. Cl.² C08G *18/54, 18/15*

U.S. Cl. 521—106 **9 Claims**

1. In a process for production foamed plastics with improved combustion characteristics by a condensation reaction of aminoplast resins with isocyanates which are at least bifunctional, the improvement comprising using as starting material an aqueous solution of a precondensate of formaldehyde with an aminoplast forming compound selected from the group consisting of urea and melamine, which solution contains from 0.5 to 20 parts by weight of the precondensate per part by weight of water, adding to the isocyanate or its mixture with the aqueous solution of the precondensate but separately from the solution of the precondensate an acid catalyst in an amount of 1 part by weight per at least 20 parts by weight of the precondensate and condensing the precondensate with the isocyanate at temperatures of between 20° to 100° C., whereby the weight ratio of precondensate to isocyanate used is from 0.20 to 15:1.

6. A process according to claim 1, in which the acid catalyst used is phosphoric acid.

7. A process according to claim 1, in which the acid catalyst used is phosphorus trichloride.

4,130,698
POLYURETHANE FOAM CONTAINING INTERNAL MOLD-RELEASE AGENT

David J. Sparrow, Korbeek-lo, and Willy Van Autgaerden, Heverlee, both of Belgium, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 1, 1977, Ser. No. 773,230

Claims priority, application United Kingdom, Mar. 29, 1976, 12536/76

Int. Cl.² C08G *18/14, 18/08;* C09K *3/00*

U.S. Cl. 521—130 **12 Claims**

1. A process for the production of polyurethane foam mouldings which comprises foaming a reaction mixture which comprises (A) an aromatic polyisocyanate containing at least two isocyanate groups, (B) at least one compound containing at least two isocyanate reactive groups, (C) a foaming agent, (D) a foam stabiliser and (E) 2% to 8% by weight based on the weight of (B) of at least one processing aid which is an ester of fatty acid containing 6 to 25 carbon atoms and an aliphatic saturated alcohol containing 2 to 4 hydroxyl groups, said reaction being carried out in a closed mould.

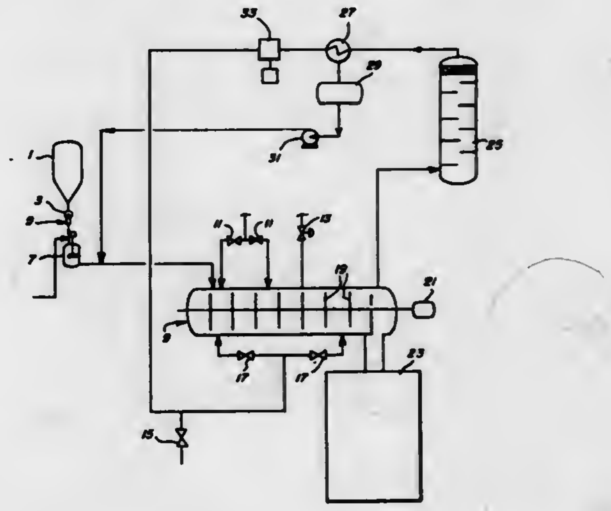
4,130,699
VAPOR PHASE POLYMERIZATION WITH TEMPORARILY INACTIVE TITANIUM CATALYST

Glen R. Hoff; John L. Melquist, both of Naperville, Ill., and Peter Fotis, Highland, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 25, 1977, Ser. No. 854,831

Int. Cl.² C08F *2/34, 10/00*

U.S. Cl. 526—67 **22 Claims**



1. The method of producing a resinous polymer of olefin by vapor phase polymerization of an olefin which comprises conveying inactive high yield titanium catalyst component to a vapor phase polymerization reactor with a liquid comprising recycled quench liquid, reactivating said inactive high yield titanium catalyst component inside the reactor with a metal alkyl reducing agent and polymerizing olefin under gas phase polymerization conditions with reactivated high yield catalyst to form a resinous polymer of an olefin having a low level of catalyst residues.

4,130,700
POLYMERIZATION PROCESS USING DIPEROXY KETALS AS FINISHING CATALYSTS

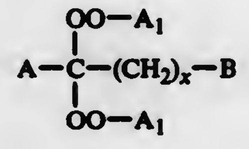
Vasanth R. Kamath, Tonawanda, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 6, 1977, Ser. No. 757,189

Int. Cl.² C08F *2/00, 4/38, 12/02, 112/02*

U.S. Cl. 526—73 **9 Claims**

1. A process for the free-radical polymerization of vinyl monomers, including vinyl aromatic monomers, comprising polymerizing said vinyl monomers, at least two distinct progressively high polymerization temperatures, each between the temperatures of about 70° C. to about 150° C. in the presence of at least two free-radical initiators, one of which initiators, used in relatively minor proportions as a finishing catalyst, has the formula

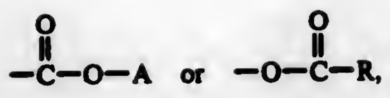


$$A-\underset{\displaystyle OO-A_1}{\overset{\displaystyle OO-A_1}{\underset{|}{\overset{|}{C}}}}-(CH_2)_x-B$$

wherein

x is a numeral from 1 to 5 inclusive,

B is



$$-\overset{\overset{O}{\|}}{C}-O-A \quad \text{or} \quad -O-\overset{\overset{O}{\|}}{C}-R,$$

A is hydrocarbyl
A_1 is tertiary hydrocarbyl, and
R is A, hydrocarbyloxy or alkylperoxy,

and the other initiator, used in relatively major proportions, has a 10 hour half-life temperature below about 100° C., wherein the same solvent is used for measuring the half-life of all initiators and wherein the time to produce polymer without more than 0.1 weight percent residual monomer is reduced by at least 20% of the time required than when the diperoxyketal finishing initiator is not present.

4,130,701
PETROLEUM RESINS CONTAINING VINYL NORBORNENE OR TETRAHYDROINDENE

André Lepert, Rhode Saint Genese, Belgium, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 12, 1977, Ser. No. 841,345

Claims priority, application United Kingdom, Oct. 19, 1976, 43305/76

Int. Cl.² C08F *2/00, 4/14, 32/08, 232/08*

U.S. Cl. 526—76 **9 Claims**

1. A process for preparing a resin suitable as a tackifier which comprises polymerizing using a Friedel Crafts catalyst:

(1) a petroleum resin feed comprising C_5 olefins and diolefins, C_6 olefins and diolefins or a mixture of C_5 and C_6 olefins and diolefins, said feed being obtained from the cracking of petroleum feedstock, and
(2) an additive comprising a non-aromatic cyclic compound, said compound being vinyl norbornene or tetrahydroindene.

4,130,702
POLYACRYLOYLAMINOBENZOIC ACID, POLYMETHACRYLOYLAMINOBENZOIC ACID AND METHOD OF PREPARATION

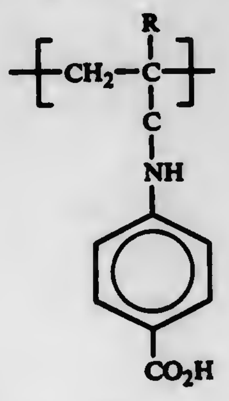
Eui W. Choe, Randolph, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jan. 23, 1978, Ser. No. 871,280

Int. Cl.² C08F *4/30, 2/10, 20/64, 20/58*

U.S. Cl. 526—93 **12 Claims**

1. A polymer capable of forming an anisotropic melt consisting essentially of recurring units of the formula:



wherein R is hydrogen or methyl.

4,130,703
HETEROGENEOUS ANIONIC POLYMERIZATION PROCESS

Ilia Rashkov, Sofia, Bulgaria; Jean Golé, Thurins, France; Daniel Guérard, Malzeville, France; Albert Hérold, Laxou, France; Gérard Merle, Oullins, France; Ivan M. Panayotov, Sofia, Bulgaria; Jean-Pierre Pascault, Villeurbanne, France; Quang T. Pham; Christian Pillot, both of Caluire, France, and Robert Salle, Lyon, France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Division of Ser. No. 793,551, May 4, 1977, which is a division of Ser. No. 695,837, Jun. 14, 1976, Pat. No. 4,035,562. This application Mar. 2, 1978, Ser. No. 882,932

Claims priority, application Bulgaria, Jul. 14, 1975, 30292

Int. Cl.² C08F *4/02, 4/08, 36/06, 36/08*

U.S. Cl. 526—173 **4 Claims**

1. In a heterogeneous anionic polymerization process wherein at least one monomer having a conjugated diene structure is being polymerized, wherein at least one catalyst comprising a carbon with a graphitic structure and at least one element, such as lithium, is inserted in said carbon catalyst, and wherein an aromatic hydrocarbon is also inserted in said graphitic structure, the improvement in the process comprising dissolving said monomer and suspending said catalyst in an aromatic solvent.

4,130,704
PROCESS FOR PRODUCING SULFUR MODIFIED POLYCHLOROPRENE IN THE PRESENCE OF QUATERNARY AMMONIUM SALTS

Akihiko Shimizu, and Atsushi Kita, both of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

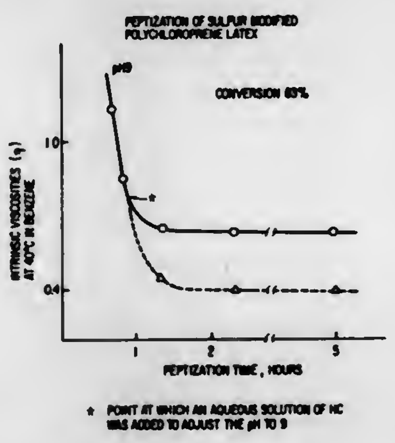
Continuation of Ser. No. 601,997, Aug. 5, 1975, Pat. No. 4,076,927. This application Apr. 4, 1977, Ser. No. 784,512

Claims priority, application Japan, Aug. 6, 1974, 49-89497

The portion of the term of this patent subsequent to Feb. 28, 1995, has been disclaimed.

Int. Cl.² C08F *2/28, 136/18*

U.S. Cl. 526—217 **7 Claims**



1. A process for producing sulfur modified polychloroprene polymers, which comprises:

polymerizing chloroprene or a mixture of chloroprene and a comonomer with sulfur and a peroxide initiator in a neutral or acidic aqueous emulsion in the presence of a nitrogen containing cationic emulsifier; and then
peptizing the resulting sulfur modified polychloroprene latex by adding a peptizing agent consisting of an alkaline aqueous solution to said latex in a quantity to adjust the pH of the latex to a value greater than 8.

4,130,705
POLYMERS OF PIVALOYLOXYALKYL METHACRYLATES, METHOD FOR THEIR PREPARATION AND MODIFICATION

Stanislav Sevcik; Jiri Trekoval; Jan Holata, and Jiri Stamberg, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

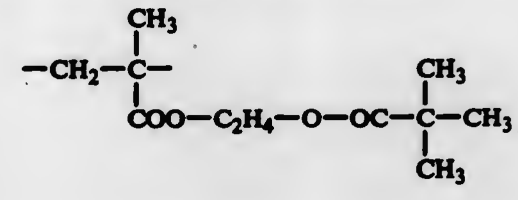
Continuation-in-part of Ser. No. 590,635, Jun. 26, 1975, abandoned. This application Mar. 31, 1977, Ser. No. 783,398

Claims priority, application Czechoslovakia, Jun. 27, 1974, 4540-74; Jun. 27, 1974, 4541-74; Jun. 27, 1974, 4542-74

Int. Cl.² C08F *22/10, 4/32, 4/34*

U.S. Cl. 526—230 **5 Claims**

1. Pivaloyloxyethyl methacrylate polymers containing structural units having the general formula:



$$-CH_2-\underset{\underset{COO-C_2H_4-O-OC-\overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}}-CH_3.}{|}}{\overset{\overset{CH_3}{|}}{C}}-$$

4,130,706
HYDROPHILIC, OXYGEN PERMEABLE CONTACT LENS

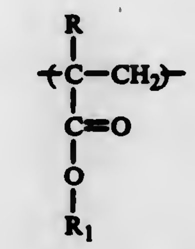
Louis Plambeck, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 8, 1977, Ser. No. 822,719

Int. Cl.² C08F *214/18;* **G02C** *7/04*

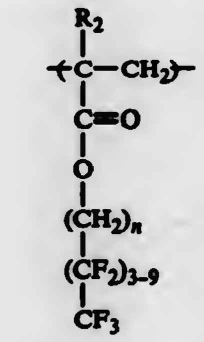
U.S. Cl. 526—245 **8 Claims**

1. A contact lens having a surface formed of a polymer consisting essentially of from 20 to 80 weight percent units of the structure



$$-\!\!(\overset{\overset{R}{|}}{\underset{\underset{\underset{\underset{R_1}{|}}{O}}{|}}{\underset{C=O}{|}}}{C}}-CH_2)\!\!-$$

wherein —R is selected from the class consisting of —H and —CH_3 and —R_1 is a group containing from 2 to 10 carbon atoms which contains at least one polar group selected from the class consisting of —OH, —COOH, $CONH_2$, and —SO_3H, and from 80 to 20 weight percent units of the structure



$$-\!\!(\overset{\overset{R_2}{|}}{\underset{\underset{\underset{\underset{\underset{\underset{CF_3}{|}}{(CF_2)_{3-9}}}{|}}{(CH_2)_n}}{\underset{|}{O}}}{\underset{C=O}{|}}}{C}}-CH_2)\!\!-$$

wherein —R_2 is selected from the class consisting of —H and —CH_3 and n is an integer from 1 to 4, which polymer on being saturated with water has an oxygen permeability of at least 500 centibarrers and a receding contact angle with water of less than 35°.

4,130,707
ADHESIVE COMPOSITIONS

Manfred Leiser; Karl-Heinrich Wegehaupt, and Wilhelm Marsch, all of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Division of Ser. No. 546,246, Feb. 3, 1975, Pat. No. 4,051,454, which is a continuation of Ser. No. 443,533, Feb. 19, 1974, abandoned. This application May 4, 1977, Ser. No. 793,576

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1973, 2307776

Int. Cl.² C08G *77/04*

U.S. Cl. 528—15 **5 Claims**

1. A method for bonding plastic films prepared from organic polymers which comprises coating each surface of the plastic film with a composition consisting essentially of (a) a vinyl containing organopolysiloxane having the formula

$$R_2(CH_2{=}CH)SiO(R'_2SiO)_n\,SiR_2\,(CH{=}CH_2)$$

wherein R is selected from the group consisting of methyl and phenyl radicals, R' is selected from the group consisting of methyl, vinyl and phenyl radicals, n is a number sufficient to provide an organopolysiloxane having a viscosity of at least 100,000 cP at 25° C. in which 0.1 to 1 mol percent of the diorganopolysiloxane units are vinylmethylsiloxanes and at least 90 percent of the remaining organic radicals consist of methyl radicals, (b) an organopolysiloxane containing at least three Si-bonded hydrogen atoms in which the Si-bonded hydrogen atoms are present in an amount of from 0.01 to 1.7 weight percent and (c) a catalyst which promotes the addition of Si-bonded hydrogen atoms to the vinyl groups, intimately contacting the coated surfaces and thereafter heating to a temperature of from 100° to 200° C.

4,130,708
SILOXANE URETHANE ACRYLATE RADIATION CURABLE COMPOUNDS FOR USE IN COATING COMPOSITIONS

Charles B. Friedlander, Glenshaw, and John C. McMullen, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 9, 1977, Ser. No. 858,974

Int. Cl.² C08G *77/04*

U.S. Cl. 528—28 **14 Claims**

1. Radiation polymerizable compound comprising the reaction product of:

(A) at least one siloxy-containing polycarbinol compound;
(B) a polyisocyanate; and
(C) a polyfunctional compound having at least one functional group which is reactive with an isocyanato group of said polyisocyanate and which polyfunctional compound after reaction with said isocyanato group provides at least one ethylenic functional group in said reaction product.

4,130,709
PLEUROMUTILIN GLYCOSIDE DERIVATIVES

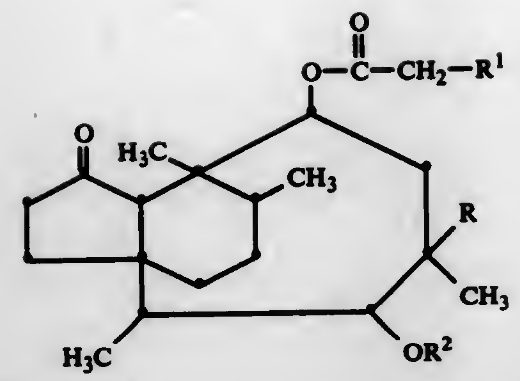
Ramakrishnan Nagarajan, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 8, 1977, Ser. No. 858,507

Int. Cl.² C07G *11/00*

U.S. Cl. 536—17 **39 Claims**

1. A compound of the formulaa:



wherein R is ethyl or vinyl; R^1 is selected from the group consisting of:

(a) the α- and β-anomers of the following hexopyranoses and hexofuranoses: D- and L-glucose; D- and L-galactose; D- and L-mannose; D- and L-gulose; D- and L-idose; D- and L-altrose; L- and D-rhamnose; D- and L-fucose; 1-thio-D- and L-glucose; 1-thio-D- and L-galactose; 1-thio-D- and L-mannose; 1-thio-D- and L-gulose; 1-thio-D- and L-idose; 1-thio-D- and L-altrose; 1-thio-L- and D-rhamnose; and 1-thio-D- and L-fucose;

(b) the α- and β-anomers of the following pentopyranoses and pentofuranoses: D- and L-lyxose, D- and L-ribose, L- and D-arabinose, D- and L-2-deoxyribose; 1-thio-D- and L-lyxose, 1-thio-D- and L-ribose, 1-thio-L- and D-arabinose; and D- and L-2-deoxy-1-thioribose;

(c) the α- and β-anomers of the following pentofuranoses: D- and L-xylose and 1-thio-D- and L-xylose;

(d) the α- and β-anomers of the pentopyranose forms of L-xylose and 1-thio-D- and L-xylose;

(e) the α-anomer of the pentopyranoses form of D-xylose;

(f) the α- and β-anomers of the following pyranose and furanose aminosugars: 2-deoxy-2-amino-D- and L-glucose; 2-deoxy-2-amino-D- and L-mannose; 2-deoxy-2-amino-D- and L-xylose; 2-deoxy-2-amino-D- and L-lyxose, 2-deoxy-2-amino-D- and L-galactose; 4-deoxy-4-amino-D- and L-xylose; 2-deoxy-2-amino-1-thio-D- and L-glucose; 2-deoxy-2-amino-1-thio-D- and L-mannose; 2-deoxy-2-amino-1-thio-D- and L-xylose; 2-deoxy-2-amino-1-thio-D- and L-lyxose; 1-thio-D- and L-galactosamine; 4-deoxy-4-amino-1-thio-D- and L-xylose; and the N-mono(C_1–C_4)alkyl and N,N-di(C_1–C_4)alkyl derivatives of these aminosugars;

(g) the α- and β-anomers of the following disaccharides: maltose, cellobiose; lactose; gentiobiose; isomaltose; melibiose; raffinose; and xylobiose; 1-thiomaltose; 1-thiocellobiose; 1-thiolactose; 1-thiogentiobiose; 1-thioisomaltose; 1-thiomelibiose, 1-thioraffinose; and 1-thioxylobiose;

(h) the α- and β-anomers of the trisaccharides maltotriose; cellotriose; xylotriose; 1-thiomaltotriose; 1-thiocellotriose and 1-thioxylotriose;

(i) 2-deoxy-2-(hydroxyimino)-3,4,6-tri-O-acetyl-α-D-glucopyranoxyl; 2-deoxy-2-(hydroxyimino)-3,4,6-tri-O-acetyl-α-D-galactopyranosyl; 2-deoxy-2-(hydroxyimino)-α-D-galactopyranosyl; 2-deoxy-2-amino-4,6-di-O-acetyl-α-D-glucopyranosyl; 2-deoxy-2-acetamido-3,4,6-tri-O-acetyl-α-D-glucopyranosyl;

(j) and any of the (a) through (h) moieties peracylated with C_2–C_4-alkanoyl or benzoyl;

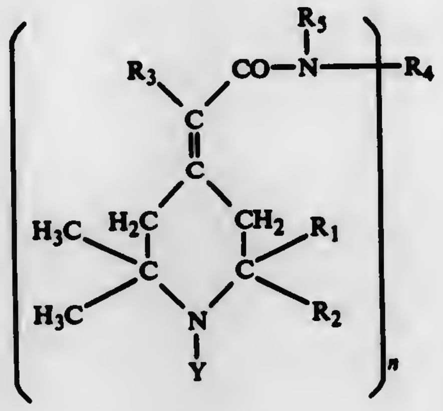
R^2 is hydrogen or, when R^1 is selected from the group defined in (j), C_2–C_6-alkanoyl or benzoyl; and the pharmaceutically acceptable acid-addition salts of the compounds wherein R^1 is selected from the group defined in (f).

4,130,710

PIPERIDINE DERIVATIVES

Barry Cook, Flixton, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Division of Ser. No. 380,041, Jul. 17, 1973, Pat. No. 3,971,795.
This application Apr. 23, 1976, Ser. No. 679,530
Claims priority, application United Kingdom, Jul. 28, 1972, 35486/72
Int. Cl.² C07D *211/32*
U.S. Cl. 542—418 **19 Claims**

1. A compound of the formula I



I

wherein

n is 1, 2, 3 or 4,

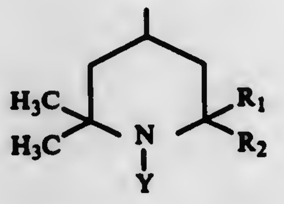
Y is hydrogen or a straight- or branched alkyl group having from 1 to 12 carbon atoms, an alkenyl group having from 3 to 12 carbon atoms or an aralkyl group having from 7 to 12 carbon atoms

R_1 and R_2 are the same or different and each is a straight-or branched alkyl group having from 1 to 12 carbon atoms or R_1 and R_2, together with the carbon atom to which they are attached, form a cycloalkyl group having from 5 to 12 carbon atoms,

R_3 is hydrogen, a straight- or branched alkyl group having from 1 to 4 carbon atoms, an aralkyl group having from 7 to 12 carbon atoms, or a cycloalkyl group having from 5 to 6 carbon atoms

R_4 is a group having from 1 to 20 carbon atoms which is selected from the group consisting of

when n is 1, alkyl group which is unsubstituted or substituted, with alkyl, alkoxy, thioalkyl, halogen, phenyl or alkyl or chlorine substituted benzyl; alkenyl group which is unsubstituted or substituted with alkyl or phenyl; alkynyl group; aryl group which is unsubstituted or substituted with alkyl or alkoxy; cycloalkyl group which is unsubstituted or substituted with alkyl, alkoxy, or halogen; hydrogen or the structure:



wherein Y, R_1 and R_2 are as defined above,

when n is 2, alkylene group which is unsubstituted or substituted with alkyl and which may be oxygen or sulfur interrupted or possess an unsaturation; cycloalkylene group; arylene;

when n is 3, a trivalent alkyl group of 3 to 15 carbons which is saturated or unsaturated; a trivalent cycloalkyl group of 5 to 15 carbons; a trivalent aralkyl group of 9 to 15 carbon atoms or a trivalent aryl group of 6 to 15 carbons;

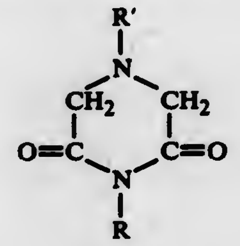
when n is 4, a tetravalent alkyl group of 4 to 12 carbons which is saturated or unsaturated or a tetravalent cycloalkyl group of 5 to 12 carbons; and R_5 has the same significance as R_3 or when n is 1, R_5 and R_4, together with the nitrogen atom to which they are bound form a heterocyclic group having from 4 to 10 carbon atoms and nitrogen as the only hetero atom, or R_5 and R_4, together with the nitrogen atom to which they are bound, form 1- morpholinyl group and a salt of the amine function of a compound of formula I.

4,130,711

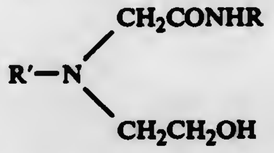
PROCESS FOR PRODUCTION OF PIPERAZINEDIONES

George D. Shier, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 718,292, Aug. 27, 1976, Pat. No. 4,082,748.
This application Dec. 5, 1977, Ser. No. 857,062
Int. Cl.² C07D *241/08*
U.S. Cl. 544—385 **4 Claims**

1. A process for making a compound having the formula



wherein R and R′ are each independently a hydrocarbon group of 1–8 carbon atoms, which process comprises dehydrogenating by contacting a compound of the formula



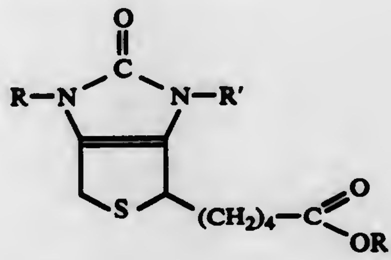
with a reduced copper dehydrogenation catalyst in the presence of hydrogen at a temperature of about 200°–300° C.

4,130,712

SYNTHESIS OF BIOTIN

Janis Vasilevskis, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Continuation-in-part of Ser. No. 704,157, Jul. 12, 1976, abandoned. This application Jun. 17, 1977, Ser. No. 807,760
Int. Cl.² C07D *495/04*
U.S. Cl. 548—303 **7 Claims**

1. A compound of the formula



III

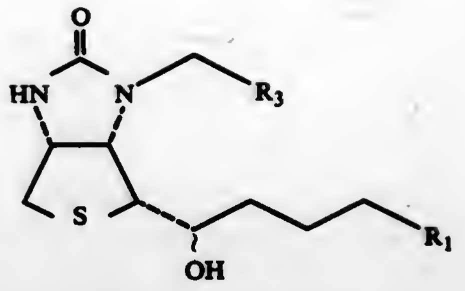
wherein R and R′ are lower alkanoyl; and R_1 is hydrogen, lower alkyl or lower alkanoyl.

4,130,713

BIOTIN INTERMEDIATES

Enrico G. Baggiolini, Nutley; Hsi L. Lee, West Paterson, and Milan R. Uskokovic, Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Aug. 5, 1977, Ser. No. 822,119
Int. Cl.² C07D *495/04*
U.S. Cl. 548—303 **2 Claims**

1. Compounds of the formula:



the enantiomers and racemates thereof,

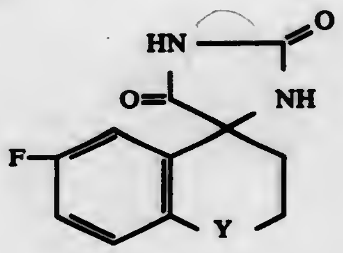
wherein R_1 is lower alkyl or —CH_2OR_4, where R_4 is lower alkyl or benzyl; and R_3 is phenyl, naphthyl, anthryl, phenanthryl or azulyl which may be unsubstituted or substituted in one or more positions with lower alkylenedioxy, halogen, nitro, lower alkyl or lower alkoxy.

4,130,714

HYDANTOIN THERAPEUTIC AGENTS

Reinhard Sarges, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.
Filed May 23, 1977, Ser. No. 799,586
The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.
Int. Cl.² C07D *491/10, 495/10*
U.S. Cl. 548—309 **5 Claims**

1. A compound selected from the group consisting of the dextrorotatory isomers of asymmetric spiro-hydantoins of the formula:



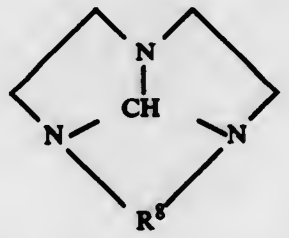
and the base salts thereof with pharmacologically acceptable cations, wherein Y is oxygen or sulfur.

4,130,715

TRICYCLIC TRISAMINOMETHANES

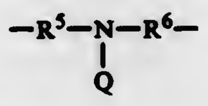
Thomas J. Atkins, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 647,643, Jan. 7, 1976, Pat. No. 4,085,106.
This application Jan. 26, 1978, Ser. No. 872,663
Int. Cl.² C07D *497/18, 478/18*
U.S. Cl. 548—324 **9 Claims**

1. A tricyclic trisaminomethane of the formula



in which

R^8 is a divalent group selected from the group consisting of alkylene of 2 to 6 carbons containing 2 carbons in the backbone,



$$-R^5-\underset{\underset{\textstyle Q}{|}}{N}-R^6-$$

where

R^5 and R^6, alike or different, are alkylene of 2 to 6 carbons containing 2 carbons in the backbone, and Q is hydrogen or alkyl of 1 to 18 carbons, and

$—R^5\text{-O-}R^6—$

where

R^5 and R^6, alike or different, are alkylene of 2 to 6 carbons containing 2 to 3 carbons in the backbone.

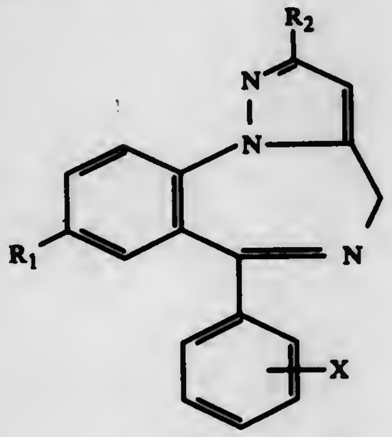
4,130,716
PYRAZOLO BENZODIAZEPINES

Norman Gilman, Wayne, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

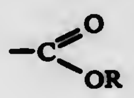
Filed Mar. 7, 1977, Ser. No. 775,346
Int. Cl.² C07D *487/04*

U.S. Cl. 548—369 6 Claims

1. A compound of the formula

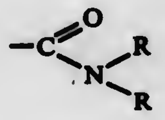


wherein R_1 is selected from the group consisting of hydrogen, amino, halogen and nitro; R_2 is selected from the group consisting of hydrogen, lower alkyl, carboxaldehyde, cycloalkyl up to 7 cabon atoms, a substituent of the formula



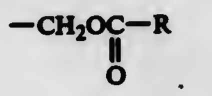
$$—C(=O)OR$$

wherein R is hydrogen or lower alkyl, a substituent of the formula



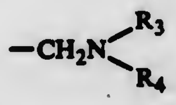
$$—C(=O)N(R)R$$

wherein R is hydrogen or lower alkyl, C_1 to C_7 alkylhydroxy, a substituent of the formula



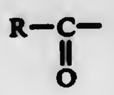
$$—CH_2O\overset{}{\underset{\underset{O}{\|}}{C}}—R$$

wherein R is lower alkyl, a substituent of the formula



$$—CH_2N\begin{matrix}R_3\\R_4\end{matrix}$$

wherein R_3 and R_4 are hydrogen or lower alkyl or R_3 is hydrogen and R_4 is a substituent of the formula



$$R—\underset{\underset{O}{\|}}{C}—$$

wherein R is hydrogen or C_1 to C_6; and X is hydrogen or halogen and the pharmaceutically acceptable salts thereof.

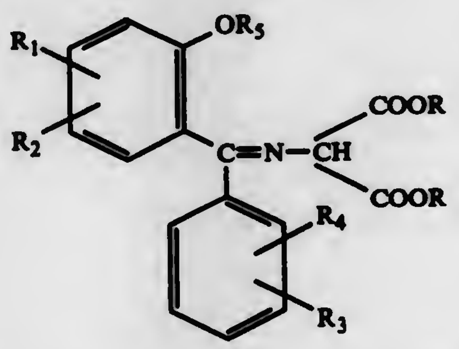
4,130,717
PROCESS AND INTERMEDIATES FOR ISOINDOLE DERIVATIVES

Roland Jaunin, Basel, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 813,590, Jul. 7, 1977, Pat. No. 4,089,875.
This application Feb. 17, 1978, Ser. No. 878,627
Claims priority, application Austria, Aug. 2, 1976, 5704/76
Int. Cl.² C07C *101/20, 119/14*

U.S. Cl. 560—35 7 Claims

1. A malonic acid ester of the formula



II

wherein R is alkyl, R_1, R_2, R_3 and R_4, independently, are hydrogen, halogen, alkyl, alkoxy or trifluoromethyl, and R_5 is hydrogen, alkanoyl or aroyl.

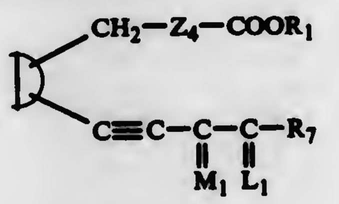
4,130,718
CIS-4,5-DIDEHYDRO-13,14-DIDEHYDRO-11-DEOXY-17-PHENYL-18,19,20-TRINON-PGE, COMPOUNDS

Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

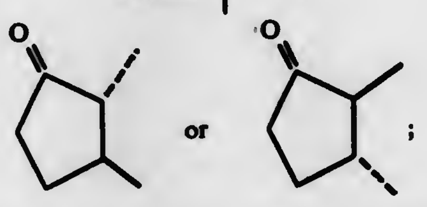
Division of Ser. No. 657,740, Feb. 13, 1976. This application Aug. 1, 1977, Ser. No. 820,980
Int. Cl.² C07C *177/00*

U.S. Cl. 560—53 73 Claims

1. A prostaglandin analog of the formula

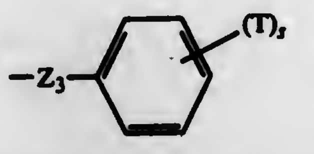


wherein | is



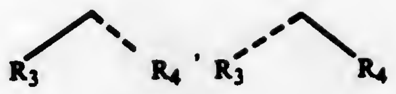
wherein Z_4 is cis—CH_2—CH═CH—$(CH_2)_g$—CH_2—, wherein g is one, 2, or 3;

wherein R_7 is

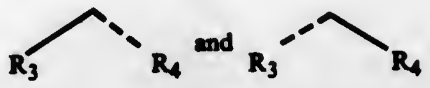


wherein Z_3 is oxa or methylene, s is zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl;

wherein L_1 is

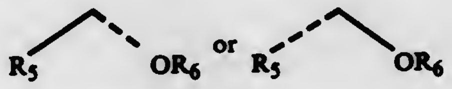


or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl, with the further proviso that one or both of R_3 and R_4 is fluoro only when Z_3 is methylene;

wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,130,719
METHOD OF MAKING HIGH PURITY MONOMERS FROM DICARBOXYLIC ACID MONOESTERS AND RESULTANT POLYMERS

Steven A. Cerefice, Naperville; Ellis K. Fields, River Forest; Kerford A. Marchant, Jr., Evanston, and Edward E. Paschke, Glen Ellyn, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 1, 1976, Ser. No. 701,902
Int. Cl.² C07C *69/78*

U.S. Cl. 528—305 7 Claims

1. As a composition of matter, poly (m-methylenebenzoate) characterized by an inherent viscosity of at least about 0.44 dl./g.

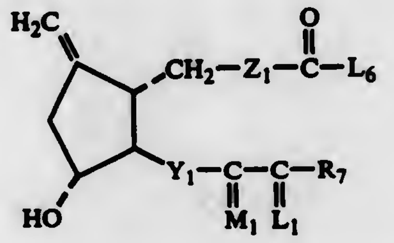
4,130,720
9-DEOXY-9-METHYLENE-PGF-p-SUBSTITUTED PHENYL ESTERS

Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 786,250, Apr. 11, 1977, Pat. No. 4,098,805. This application Apr. 7, 1978, Ser. No. 894,272
Int. Cl.² C07C *177/00*

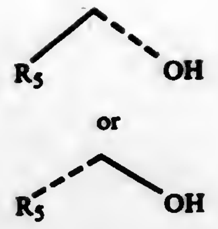
U.S. Cl. 560—61 17 Claims

1. A prostaglandin analog of the formula



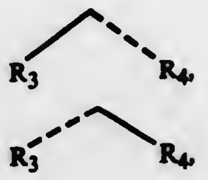
wherein Y_1 is trans—CH═CH—, —C≡C—, or —CH_2CH_2—

wherein M_1 is

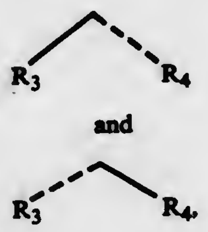


wherein R_5 is hydrogen or methyl;

wherein L_1 is



or a mixture of

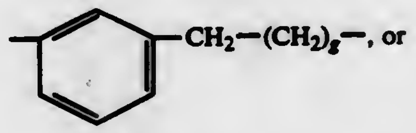


wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

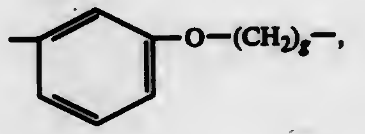
wherein Z_1 is

(1) cis—CH═CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH═CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH═CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7) —C≡C—CH_2—$(CH_2)_g$—CH_2—,
(8) —CH_2—C≡C—$(CH_2)_g$—CH_2—,

(9)



(10)

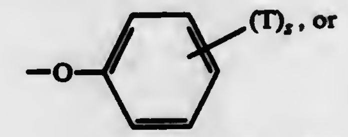


wherein g is one, 2 or 3;

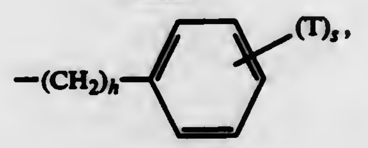
wherein R_7 is

(1) —$(CH_2)_m$—CH_3,

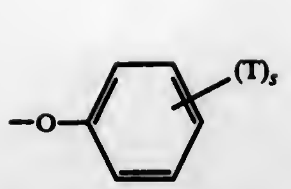
(2)



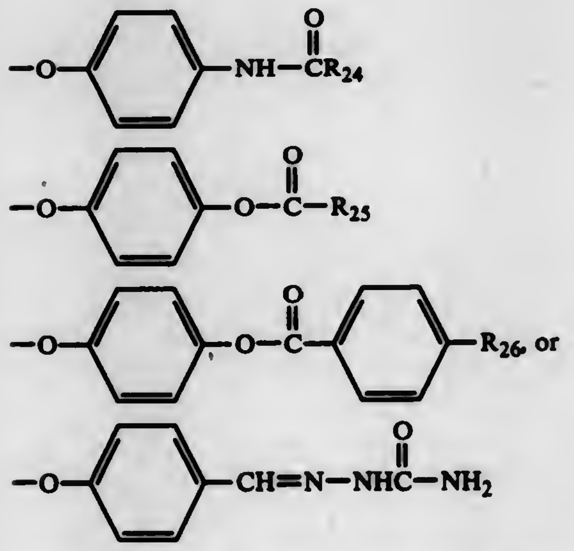
(3)



wherein m is one to 5, inclusive, h is zero or one, T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and s is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that R_7 is



wherein T and s are as defined above, only when R_3 and R_4 are hydrogen or methyl, being the same or different; and wherein L_6 is p-substituted phenoxy selected from the group consisting of



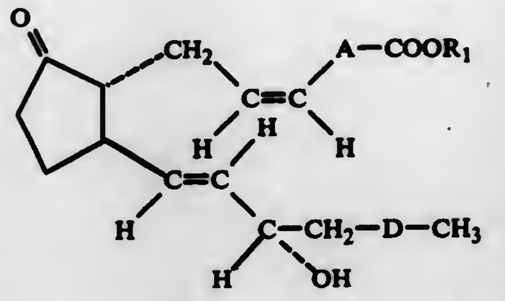
wherein R_{24} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or $—NH_2$; R_{25} is methyl, phenyl, $—NH_2$, or methoxy; and R_{26} is hydrogen or acetamido.

4,130,721
11-DEOXY PGE_2 COMPOUNDS

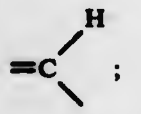
Gordon L. Bundy, Portage, and Norman A. Nelson, Galesburg, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 24, 1972, Ser. No. 274,650
Int. Cl.² C07C *177/00*
U.S. Cl. 560—121 **3 Claims**

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein A is alkylene of one to 10 carbon atoms, inclusive, with one to five carbon atoms, inclusive, between $—COOR_1$ and



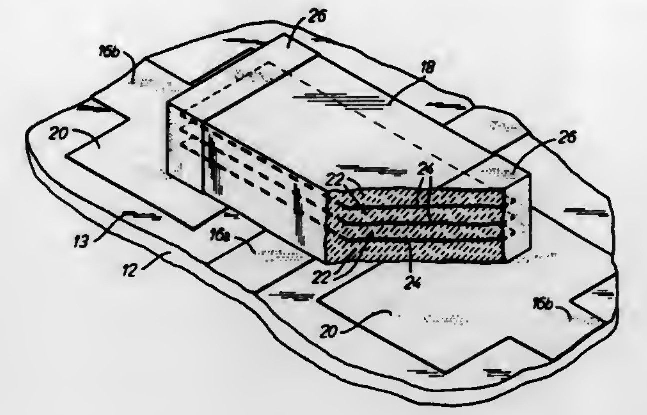
wherein D is either a valence bond or alkylene of one to nine carbon atoms, inclusive, with one to five carbon atoms, inclusive, in the chain between $—CH_2—$ and terminal methyl; inclusive; and wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of three to 10 carbon atoms, inclusive, aralkyl of seven to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, two, or three chloro or alkyl of one to four carbon atoms, inclusive; including the pharmacologically acceptable salts thereof when R_1 is hydrogen.

ELECTRICAL

4,130,722
THICK-FILM CIRCUIT MODULE INCLUDING A MONOLITHIC CERAMIC CROSS-OVER DEVICE

David H. Levijoki, Milwaukee, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Jan. 10, 1977, Ser. No. 758,075
Int. Cl.² H05K *1/00*
U.S. Cl. 174—68.5 **9 Claims**



1. A non-signal altering ceramic cross-over device for use in a film-type circuit comprising:

a plurality of generally planar layers of ceramic dielectric material disposed in laminated stacked relationship, said layers having opposite ends and opposite edges;

at least one generally thin planar non-signal altering electrically conductive path interposed between two of said layers of ceramic material, said conductive path having opposite ends and opposite edges, said opposite edges of the electrically conductive path being spatially positioned inwardly of the opposite edges of said layers of ceramic material, the layers of ceramic dielectric material and interposed conductive path forming a laterally surfaced dielectric monolithic structure;

a first termination end cap of electrically conductive material supported on said monolithic structure and coating at least a portion of one of said opposite ends of each of said layers of ceramic material, and said first termination end cap being in electrically conductive communication with one of said opposite ends of said conductive path; and

a second termination end cap of electrically conductive material supported on said monolithic structure and coating at least a portion of the other of said opposite ends of each of said layers of ceramic material and being in electrically conductive communication with the other of said opposite ends of said electrically conductive path.

4,130,723
PRINTED CIRCUIT WITH LATERALLY DISPLACED GROUND AND SIGNAL CONDUCTOR TRACKS

Antony J. Wakeling, Fleet, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Filed Oct. 18, 1977, Ser. No. 843,195
Claims priority, application United Kingdom, Nov. 19, 1976, 48301/76
Int. Cl.² H05K *1/02*
U.S. Cl. 174—68.5 **5 Claims**

1. A printed circuit for use as a multi-line signal transmission circuit comprising:

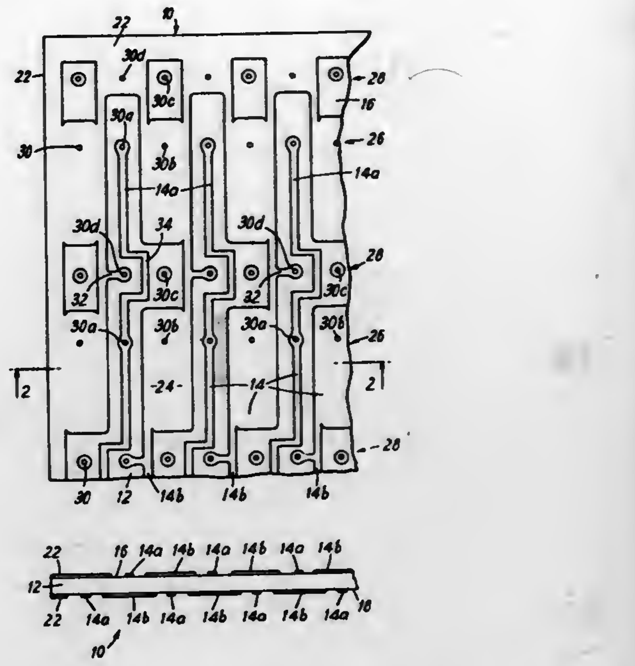
a double-sided support made from an electrically insulating material;

a first set of printed circuit tracks on one side of the support; and

a second set of printed circuit tracks on the other side of the support;

each set of tracks including alternate signal tracks and ground tracks disposed side by side;

the signal tracks and ground tracks on said one side of the support being disposed substantially opposite the ground tracks and signal tracks respectively on the other side of the support;

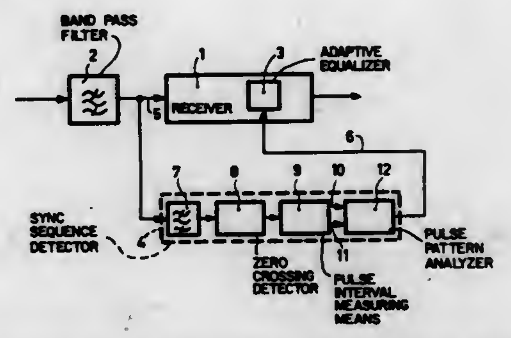


substantially all the respective ground tracks of each set being electrically interconnected at a plurality of points along their length via plated through holes to the ground tracks of the other set.

4,130,724
DATA RECEIVER WITH SYNCHRONIZING SEQUENCE DETECTION CIRCUIT

Michel A. M. J. Bousmar, and Michel J. P. Christiaens, both of Brussels, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

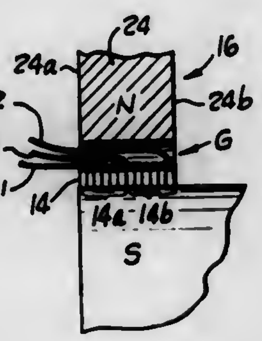
Filed May 11, 1977, Ser. No. 795,877
Claims priority, application Netherlands, May 18, 1976, 7605275
Int. Cl.² H04L *7/00*
U.S. Cl. 178—69.1 **4 Claims**

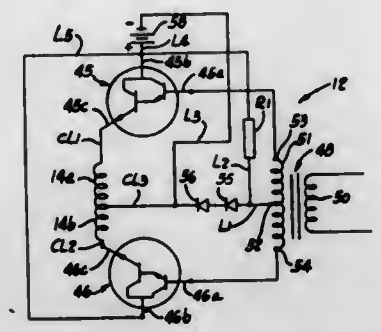


1. A receiver for a data transmission system in which data signals are transmitted in the form of a channel signal which is obtained by means of double sideband quadrature modulation of a carrier wave and in which prior to the data signals a synchronizing sequence is transmitted which comprises a synchronizing period and an immediately subsequent training period for effecting in the receiver an initial synchronization of local oscillators and a correct preadjustment of an adaptive equalizer respectively, the spectrum of the channel signal during the synchronizing period comprising a spectral line at the carrier frequency f_c and two spectral lines located symmetrically relative to f_c, said spectrum during the training period comprising a spectral line at the carrier frequency f_c having a phase which is opposite to that of f_c during the synchronizing period and a plurality of spectral lines which are symmetrical relative to f_c, which receiver comprises a detection circuit means coupled to the receiver input for generating an output signal which starting from a first value assumes a second value during the reception of the synchronizing period and which again assumes the first value on receipt of the training period

and the subsequent data signals, said detection circuit comprising a bandpass filter means for selecting a channel signal component at f_c, a zero crossing detector means coupled to said filter for generating output pulses at the zero crossings of said channel signal component, pulse interval measuring means having a first and a second output and being coupled to the zero-crossing detector for measuring the interval between successive output pulses thereof to produce a pulse at said first output each time the length of the interval measured is within a predetermined range and to produce a pulse at said second output each time the length of the interval measured is outside said predetermined range, and a pulse pattern analyzer means coupled to said first and second outputs of the pulse interval measuring means to produce said output signal of said first value which after a prescribed pattern of successive pulses has occurred at least once at the first output of the pulse interval measuring means assumes said second value and which again assumes the first value in response to the occurrence of a pulse at the second output of the pulse interval measuring means.

4,130,725
SPLIT-COIL SPEAKER WITH DIRECT COUPLING
Martin J. Nagel, Russell Township, Geauga County, Ohio, assignor to Tenna Corporation, Warrensville Heights, Ohio
Filed Dec. 2, 1976, Ser. No. 746,796
Int. Cl.² H04R *3/00, 9/04*
U.S. Cl. 179—1 A **8 Claims**





1. A power amplifier and speaker unit comprising a speaker having a cone, a magnet assembly defining a gap across which a magnetic flux extends to form a magnetic field, two wire coils secured in tandem to said cone and movable axially in said gap, said coils having a combined axial length essentially equal to the length of the useful magnetic field in the direction of the gap depth, and means biasing said coils to a location within the extent of the useful magnetic field; and an amplifier circuit directly coupled to said coils for alternately electrically energizing said coils to move each when energized in a direction further into the magnetic field.

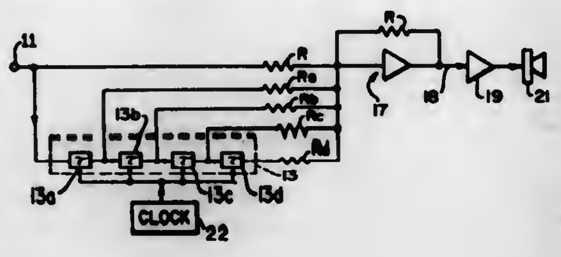
4,130,726
LOUDSPEAKER SYSTEM EQUALIZATION
James M. Kates, Norfolk, and Robert A. Berkovitz, Lexington, both of Mass., assignors to Teledyne, Inc., Los Angeles, Calif.
Filed Jun. 29, 1977, Ser. No. 811,297
Int. Cl.² H04R *3/04*
U.S. Cl. 179—1 D **8 Claims**

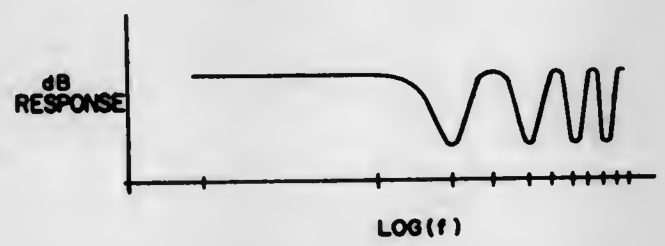
1. In audio transducer apparatus comprising audio transducer means having an amplitude-frequency response characteristic including plural resonances and drive means for producing electrical driving signals for driving said transducer means responsively to an input audio signal, the improvement wherein said drive means includes

signal delay means for providing a plurality of delayed replicas of said input signal, each replica including a component corresponding to said input signal delayed by a respective delay period substantially equal to half the period of a corresponding one of said resonances;

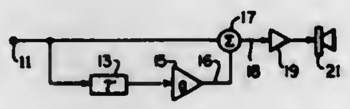
signal summing means responsive to said input signal and delayed replicas to provide said drive signal as a linear combination thereof, and

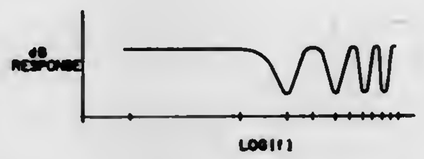
means for reducing the noise with respect to at least the least delayed of said plurality of delayed replicas, whereby substantial equilization of said apparatus is achieved.





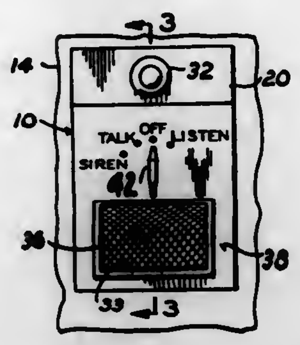
4,130,727
LOUDSPEAKER EQUALIZATION
James M. Kates, Norfolk, Mass., assignor to Teledyne, Inc., Los Angeles, Calif.
Filed Jun. 29, 1977, Ser. No. 811,894
Int. Cl.² H04R *3/04*
U.S. Cl. 179—1 D **24 Claims**





1. Audio transducer system comprising audio transducer means having an amplitude-frequency response characteristic including at least one resonance, and drive means for producing electrical driving signals thereto, said drive means being responsive to an input audio signal to provide said drive signal for the transducer means as a linear combination of said input signal and at least one delayed replica of said input signal, said replica including a component corresponding to said input signal delayed by a delay period substantially equal to half the period of said resonance, whereby substantial equalization of said response characteristic is achieved.

4,130,728
COMBINED MOUNTING FOR THROUGH-THE-WALL VIEWER AND INTERCOM
Stephen L. Grauel, 907 W. Broadway, Ardmore, Okla. 73401
Filed Mar. 23, 1978, Ser. No. 889,789
Int. Cl.² H04M *1/00;* H04R *1/28*
U.S. Cl. 179—1 H **3 Claims**



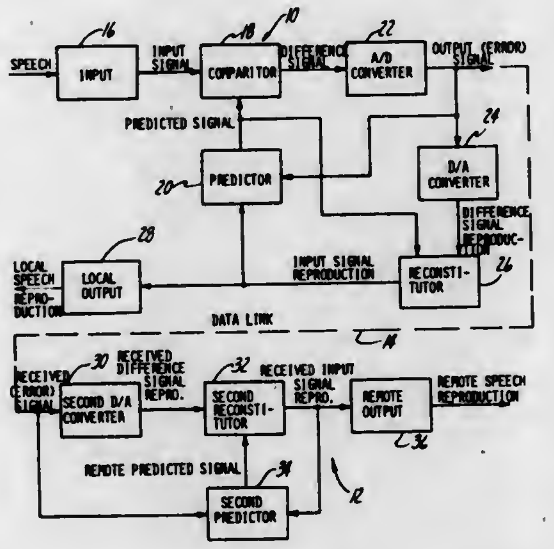
1. An improved through the wall audio visual communication apparatus for a door, or the like, having a one-way viewing tube extending therethrough, the improvement comprising:

a pair of hollow housings containing a two-way communication circuit including a pair of microphone/speakers; a circuit control switch in one of the housings; each housing having a back wall for flatly contacting opposing vertical wall surfaces of said door and each having a centrally apertured flange projecting beyond one end of the housing in the plane of the respective back wall for receiving respective end portions of said one-way tube and securing said housings to said door,

each said housing having an opening in its wall opposite said back wall for the passage of audio waves to and from the microphone/speakers; and,

a circuit control switch arm rotatably mounted on said one housing connected with the circuit control switch.

4,130,729
COMPRESSED SPEECH SYSTEM
Richard T. Gagnon, Rochester, Mich., assignor to Scitronix Corporation, Ann Arbor, Mich.
Filed Sep. 19, 1977, Ser. No. 834,642
Int. Cl.² G10L *1/00*
U.S. Cl. 179—1 SA **16 Claims**



1. A compressed speech system of the type which reduces speech to a minimum of binary digits through prediction of redundancy in said speech, said system comprising:

input means operative to receive a speech stimulus and to generate an input signal as a function of said speech stimulus;

predictor means operative for generating a signal predictive of the waveform of said input signal;

comparison means operative to receive and compare said input signal and predictive signal and to generate a difference signal proportional to the difference therebetween;

conversion means operative to receive said difference signal, and to generate a synonymous binary error signal;

reconversion means operative to receive said error signal and to generate a difference signal reproduction, said difference signal reproduction being substantially identical to said difference signal;

and reconstitution means operative to receive said predictive signal and said difference signal reproduction and to generate and input signal reproduction proportional to the sum thereof, said input signal reproduction being substantially identical to said input signal;

said predictor means being operative to receive said error signal and said input signal reproduction, said predictive signal being a function of said error signal and said input signal reproduction.

4,130,730
VOICE SYNTHESIZER
Carl L. Ostrowski, Sterling Heights, Mich., assignor to Federal Screw Works, Detroit, Mich.
Filed Sep. 26, 1977, Ser. No. 836,589
Int. Cl.² G10L *1/00*
U.S. Cl. 179—1 SM **18 Claims**

1. In an electronic device for phonetically synthesizing human speech including

input means responsive to input data identifying a desired sequence of phonemes for producing a plurality of control signals that electronically define each phoneme in said desired sequence of phonemes, including a first control signal for controlling the amplitude of the voiced component of speech and a second control signal for controlling the amplitude of the unvoiced component of speech;

vocal source means for producing a voiced excitation signal;

fricative source means for producing an unvoiced excitation signal; and

vocal tract means responsive to said voiced and unvoiced excitation signals and certain of said plurality of control signals for substantially producing the frequency spectrums of each of said desired sequence of phonemes, including a first resonant filter tunable under the control of a third of said control signals for producing the first formant in said frequency spectrums and a second resonant filter serially connected to said first resonant filter and tunable under the control of a fourth of said control signals for producing the second formant in said frequency spectrums;

the improvement comprising controller means for injecting said voiced and unvoiced excitation signals into said vocal tract means including first controller means for injecting excitation energy in parallel into said first and second resonant filters under the control of said first control signal and second controller means for injecting excitation energy into said vocal tract means under the control of said second control signal.

16. In an electronic device for phonetically synthesizing human speech including

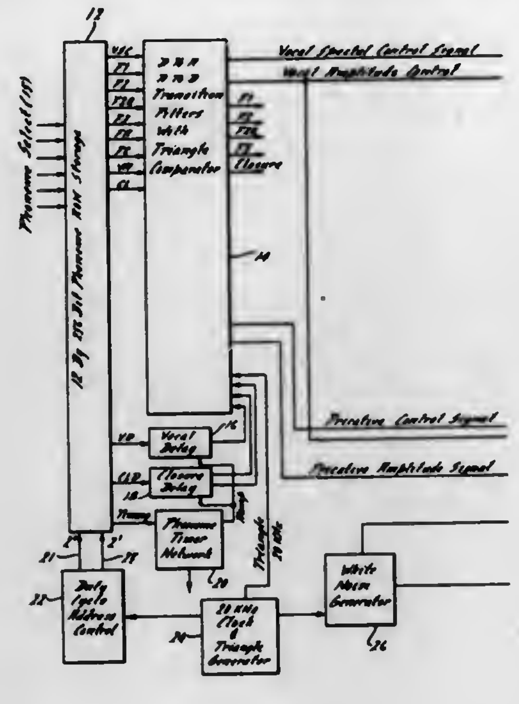
vocal source means for producing a voiced excitation signal;

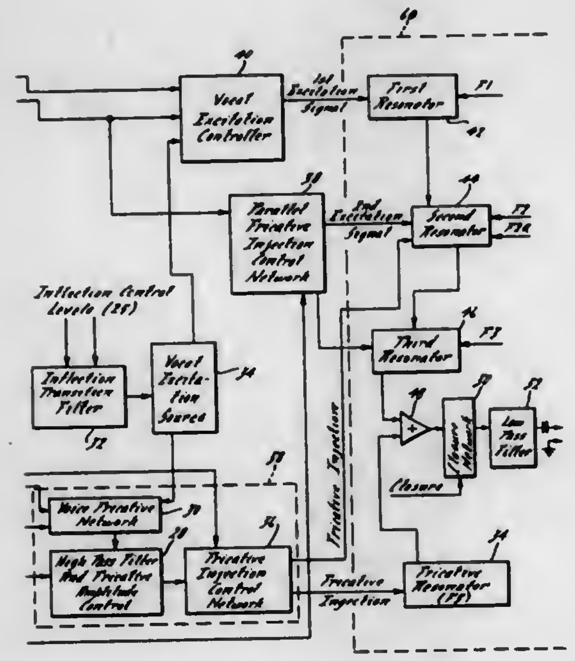
fricative source means for producing an unvoiced excitation signal;

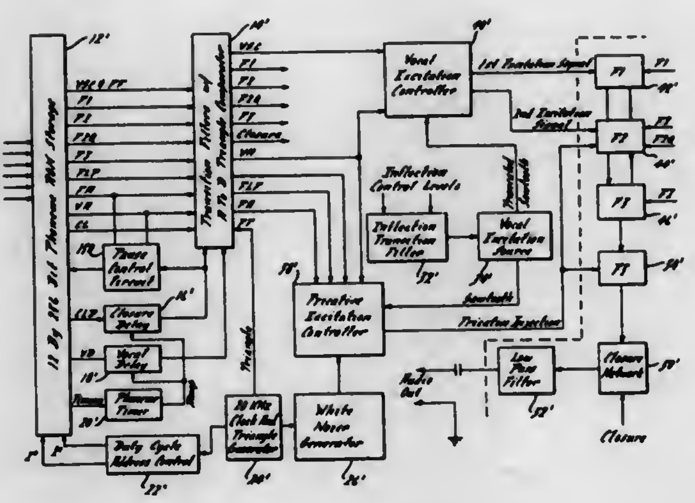
input means responsive to input data identifying a desired sequence of phonemes for producing a plurality of control signals that electronically define each phoneme in said desired sequence of phonemes, including a first control signal for controlling the amplitude of said voiced excitation signal and a second control signal for controlling the amplitude of said unvoiced excitation signal; and

vocal tract means responsive to said voiced and unvoiced excitation signals and certain of said plurality of control signals for substantially producing the frequency spectrums of each of said desired sequence of phonemes;

the improvement comprising pause control means connected to said input means for producing an output signal that is effective to cause said input means to maintain the current values of certain of said control signals beyond the normal phoneme period whenever both said first and second control signals are absent.


Vocal Spectral Control Signal
Vocal Amplitude Control
Transition Filters With Triangle Comparator
Fricative Control Signal
Fricative Amplitude Signal
Vocal Delay
Closure Delay
Phoneme Timer Network
Duty Cycle Address Control
White Noise Generator

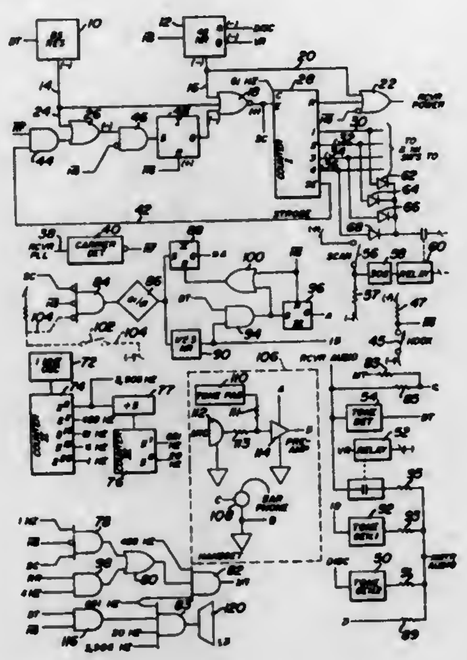



Vocal Excitation Controller
Inflection Control Levels
Inflection Transition Filter
Fricative Excitation Controller
White Noise Generator
Phoneme Timer
Duty Cycle Address Control
Low Pass Filter
Closure Network
Audio Out
Closure

4,130,731
PORTABLE TELEPHONE SYSTEM

Duane R. Bolgiano, Bala Cynwyd; Joel M. Benjamin, Jr., Pottstown, and Victor Meyer, Jr., Telford, all of Pa., assignors to International Mobile Machines Incorporated, Bala Cynwyd, Pa.

Filed Dec. 29, 1976, Ser. No. 755,615
Int. Cl.^{2} H04Q *7/04*
U.S. Cl. 179—2 EB **22 Claims**



1. A portable telephone system comprising:

at least one subscriber station having a transmitter, a receiver, a control section, and a plurality of communication channels, said control section including scanning means and means to monitor for identification signals specific to said subscriber station, said scanning means when activated, causing said receiver to be tuned sequentially to each channel for a specific interval of time,

said control section further having a monitor state for causing all said channels to be monitored periodically for said identification signals, an originate state for causing all said channels to be monitored periodically until a channel having no carrier thereon is found, and an active state for causing said transmitter and said receiver to remain tuned to one channel,

power-conserving means operative when said control section is in the monitor state to cause total suspension of power to said receiver except during periodic intervals of time when said scanning means scans all the channels an integral number of times,

and a base station having a plurality of base station communication channels corresponding to the channels of said subscriber station and having a transmitter and a receiver to establish communication with said subscriber station through the corresponding channel at said subscriber station, said base station, when originating a call, transmitting said identification signals on a fixed channel for a period of time sufficient to insure that the subscriber station will monitor said fixed channel at least once when said subscriber station is in the monitor state.

4,130,732
REMOTE ALARM RESET APPARATUS

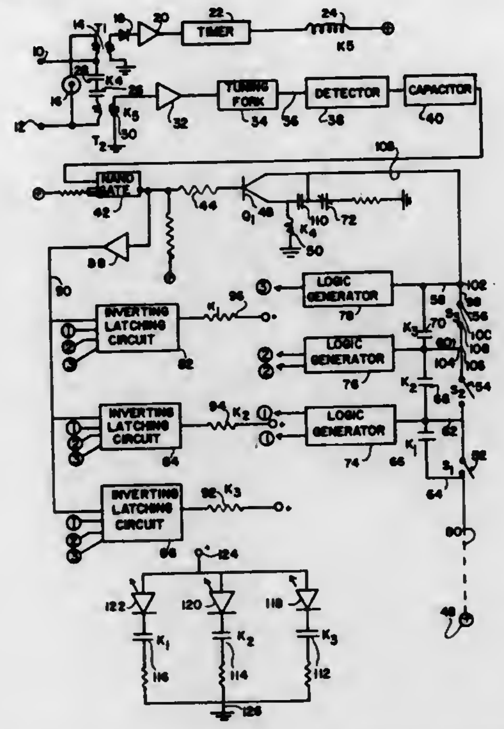
George Giovagnoni, 1228 Wantagh Ave., Wantagh, N.Y. 11793

Filed May 12, 1977, Ser. No. 796,326
Int. Cl.^{2} G08B *19/00;* H04Q *9/00*
U.S. Cl. 179—5 R **7 Claims**

1. In a burglar alarm apparatus having a series circuit including a plurality of switch sensing elements and an electrical device energized when said plurality of switch sensing elements are in a closed condition, and a pair of wires utilized in a telephone communication system, the improvement comprising:

a. first means responsive to a ringing signal transmitted over said pair of wires for energizing a first relay for a predetermined time period,

b. second means responsive when said first relay is energized only to a coded tone signal transmitted over said pair of wires for producing an enabling voltage, said enabling voltages being produced only after said electrical device is de-energized,



c. third means for detecting the position of each of said plurality of switch sensing elements,

d. fourth means for initially applying a bridging short circuit across those of said plurality of switch sensing elements which are open circuited when said open circuited condition and said enabling voltage occur simultaneously,

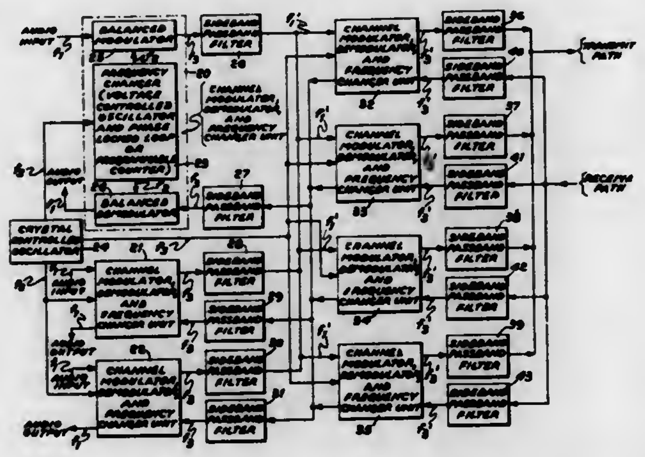
e. fifth means for indicating the location of said open circuited condition, and

f. sixth means for maintaining said bridging short circuit after said enabling voltage is reduced to zero.

4,130,733
FREQUENCY CHANNEL UNITS FOR A FDM SYSTEM

Donald A. Ashford, Stamford, Conn., assignor to International Telephone & Telegraph Corp., Nutley, N.J.

Filed Jan. 10, 1977, Ser. No. 758,107
Int. Cl.^{2} H04J *1/06*
U.S. Cl. 179—15 FD **21 Claims**


AUDIO INPUT
BALANCED MODULATOR
SIDEBAND PASSBAND FILTER
FREQUENCY CHANGER (VOLTAGE CONTROLLED OSCILLATOR AND PHASE LOCKED LOOP OR PROGRAMMABLE COUNTER)
CHANNEL MODULATOR, DEMODULATOR AND FREQUENCY CHANGER UNIT
SIDEBAND PASSBAND FILTER
TRANSMIT PATH
RECEIVE PATH
AUDIO OUTPUT

1. In a frequency division multiplex (FDM) system, a plurality of FDM frequency channel units each comprising:

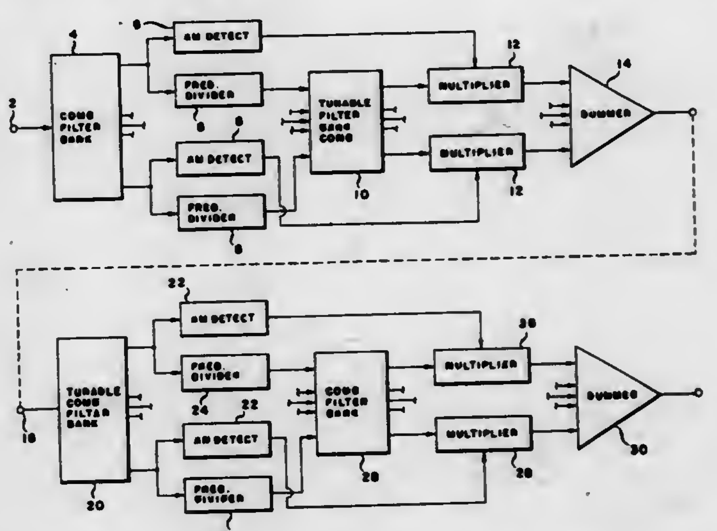
first means responsive to a single reference signal having a predetermined first frequency, said reference signal being coupled in common to all of said units to produce a carrier signal having a different predetermined second frequency in each of said units; and

second means directly coupled to said first means and an audio input to modulate and to transmit an associated one of said carrier signals with audio information.

4,130,734
ANALOG AUDIO SIGNAL BANDWIDTH COMPRESSOR

Harry T. Lee, Sunnyvale, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Dec. 23, 1977, Ser. No. 863,959
Int. Cl.^{2} H04J *3/18;* G10L *1/00*
U.S. Cl. 179—15.55 R **11 Claims**



1. An analog bandwidth compressor comprising:

means for separating incoming voice signal energy into individual channels,

first and second means connected to each of said individual channels,

each of said first means providing an output having a magnitude representative of the magnitude of the signal received from its respective individual channel,

each of said second means providing an output having a frequency equal to the output frequency of the respective separating means times a predetermined constant, where said constant is less than one,

tunable filter means for suppressing harmonic distortions connected to the output of said second means,

multiplier means connected to each of said first means and the respective output of said filter means for superimposing the magnitude information onto the respective frequency output from said filter means,

summing means attached to the output of each of said multiplier means for summing said outputs from the multiplier means and providing an output signal having reduced signal bandwidth from that of the original input signal to said bandwidth compressor.

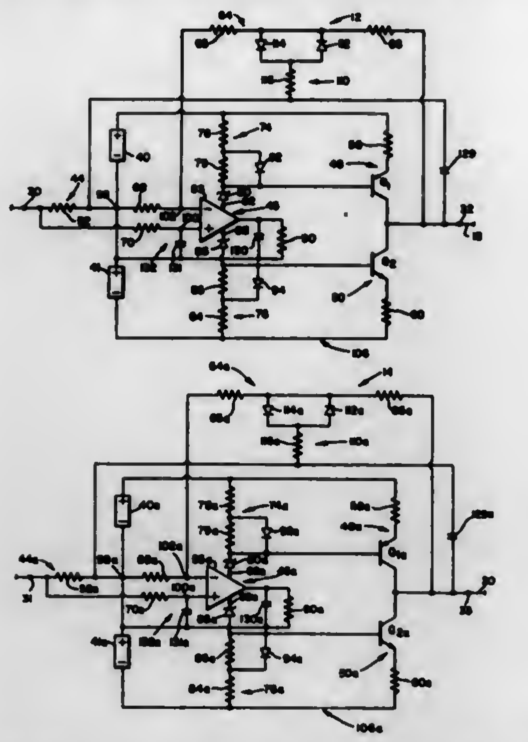
4,130,735
LOOP EXTENDER

Charles W. Chambers, Jr., Amherst; Frederick J. Kiko, Lorain, and Robert J. Kretschmann, Elyria, all of Ohio, assignors to Lorain Products Corporation, Lorain, Ohio

Filed Apr. 11, 1977, Ser. No. 786,563
Int. Cl.^{2} H04Q *1/30*
U.S. Cl. 179—16 F **26 Claims**

1. A voltage booster for supplying a d.c. boost voltage to a two wire transmission line in a telephone system and comprising a d.c. voltage supply, an amplifier circuit cooperating with said voltage supply for developing said boost voltage, feedback means connected to said amplifier circuit for controlling the gain of said amplifier circuit, and means connected to and cooperating with said feedback means for increasing said gain in response to a rise in the magnitude of direct current flowing

in said line above a pre-selected threshold, and said amplifier circuit having means providing a connection to said line for

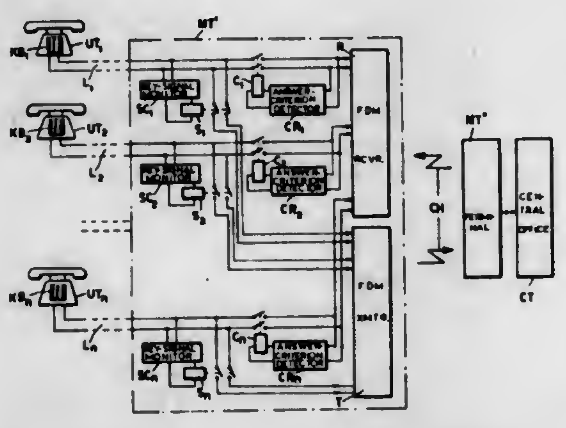


applying said boost voltage thereto and being rendered effective by said increase in said gain for increasing the magnitude of the boost voltage applied to said line.

4,130,736
TELECOMMUNICATION SYSTEM WITH KEYBOARD SELECTION

Franco De Marco, and Costantino Panzeri, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.P.A., Milan, Italy

Filed Nov. 22, 1977, Ser. No. 853,853
Claims priority, application Italy, Nov. 24, 1976, 29654 A/76
Int. Cl.^{2} H04M *3/00*
U.S. Cl. 179—16 EC **5 Claims**



1. In a telecommunication system comprising a two-way communication channel extending between a terminal and a remote exchange, and a multiplicity of local lines linking said terminal with subscriber stations equipped with multifrequency generators for the emission of selection signals accompanied by a key signal not transmissible over said channel, said channel having an incoming branch and an outgoing branch both normally disconnected from said subscriber lines,

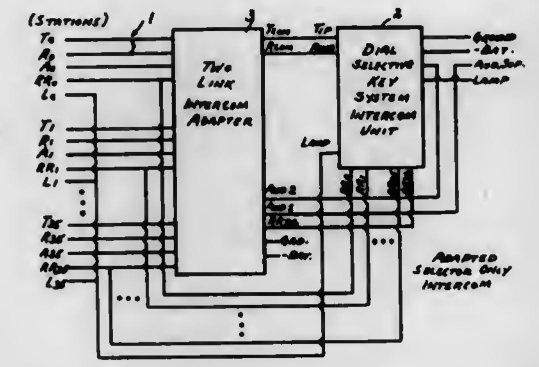
the improvement wherein said terminal includes monitoring means connected to said local lines for detecting the arrival of a key signal from any calling subscriber station and call-extending switch means controlled by said monitoring means for connecting the line of the calling subscriber to an outgoing branch of said channel normally disconnected therefrom, and

detector means at said terminal responsive to an answer criterion from the exchange and other switch means controlled by said detector means for extending said incoming branch to the line of the calling subscriber already connected to said outgoing branch, said monitoring means and detector means being responsive to a call-terminating signal for restoring the switch means controlled thereby to disconnect the line of the calling subscriber from both said branches.

4,130,737
TWO-LINK INTERCOM SYSTEM

Barry C. Breen, Woodinville, Wash., assignor to Melco, Bellevue, Wash.

Filed Sep. 28, 1977, Ser. No. 837,410
Int. Cl.^{2} H04M *9/06*
U.S. Cl. 179—18 AD **23 Claims**



(STATIONS)
1
3
2
T0
R0
A0
RR0
L0
T1
R1
A1
RR1
L1
TWO LINK INTERCOM ADAPTER
DIAL SELECTIVE KEY SYSTEM INTERCOM UNIT
TIP
RING
GROUND
-BAT.
LAMP
GND.
-BAT.
ADAPTED SELECTOR ONLY INTERCOM

1. An intercom system comprising dial-responsive station-selecting means provided with means to transmit ringing signals to called stations, and a plurality of stations which can go offhook and onhook and which are provided with dialing means for calling stations in the system, first link circuit means normally connected to all said stations, second link circuit means normally connected to said selecting means and defining an exclusive talk path, link-selecting means to connect a calling station and a called station via said second link circuit means responsive to the establishment of a first call by the calling station to the called station when the system is idle, leaving the first link circuit means available on a non-exclusive basis for subsequent calls between the other stations of the system, wherein said link-selecting means comprises respective relay means connected to the stations, means to switch the stations from said first link circuit means to said second link circuit means responsive to activation of said respective relay means, respective station relay activating means comprising a J-K flipflop having J and K inputs and Q and $\overline{Q}$ outputs, means establishing a first state of the flipflop wherein $J = 1$ and $K = 0$ and Q is high and $\overline{Q}$ is low, means normally holding the associated station relay means deenergized in said first state of the flipflop, whereby all onhook stations are connected to the first link means, means changing the flipflop of a calling station to a second state wherein $J = 0$ and $K = 1$ and Q is low and $\overline{Q}$ is high when said calling station goes offhook with the system idle, and means to activate the calling station relay means responsive to the changing of its associated flipflop to said second state, whereby the calling station is switched to said second link circuit means, and means switching a called station to said second link circuit means when it goes offhook after receiving a ringing signal.

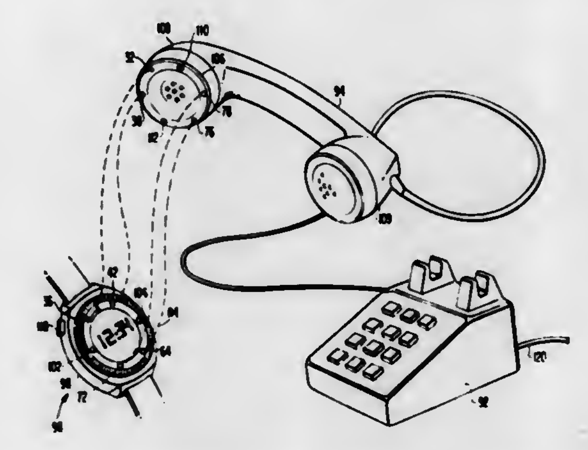
4,130,738
BIDIRECTIONAL DATA TRANSFER AND STORAGE SYSTEM

Gary O. Sandstedt, 3837 Harrison Blvd., Kansas City, Mo. 64109

Continuation-in-part of Ser. No. 694,660, Jun. 10, 1976, abandoned. This application Sep. 20, 1977, Ser. No. 834,911
Int. Cl.^{2} H04M *1/42*
U.S. Cl. 179—90 B **38 Claims**

27. A bi-directional data transfer and storage system for on-line communication with telephone apparatus wherein selected data from telephone apparatus is first fed to a portable random access memory which subsequently operates on demand to display said data and/or output selected storage data to external means for dialing a telephone and when desirable thereafter communicating data over a telephone channel, the improvement comprising:

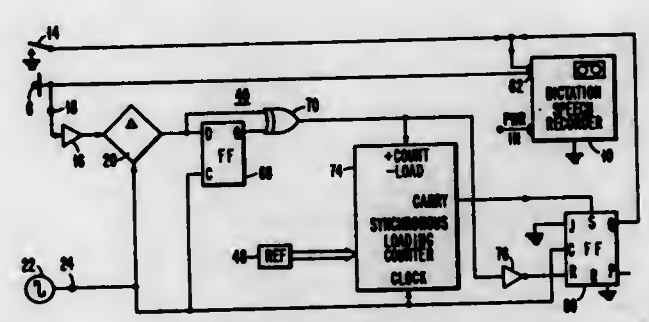
a device carried or worn by the user including a casing, said random access memory housed within said casing, said memory having a plurality of selectable memory addesses for storing respective data signals thereat, address circuitry therefor, manual address selector means on said casing coupled to said address circuitry for accessing a desired memory address, at least one electromagnetic energy input communications channel including electromagnetic energy coupling means coupled to said memory for coupling externally applied alpha-numeric data and clock signals thereto for reading selected data signals into a desired address of said memory under the control of said clock signals, an internal source of clock signals and at least one electromagnetic energy output communications channel also including electromagnetic energy coupling means coupled to said memory and said internal source of clock signals for reading out on demand selected data signals from a desired address of said memory and coupling said data signals and said clock signals to said external means.



4,130,739
CIRCUITRY FOR COMPRESSION OF SILENCE IN DICTATION SPEECH RECORDING

Michael A. Patten, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 9, 1977, Ser. No. 804,955
Int. Cl.^{2} G11B *19/02, 5/00*
U.S. Cl. 179—100.1 VC **9 Claims**



1. Circuitry for the compression of silence in dictation speech and like electric wave recording apparatus, comprising

a source of electric waves representing intelligence sound separated by silence periods,

a recorder of said electric waves having a sound wave input terminal to which said source is coupled, and having electrically controllable transducing apparatus for making a record on a record medium and having an input terminal at which a control electric level is to be applied,

a source of clocking wave,

a delta modulator circuit having a carrier wave input terminal to which said source of clocking wave is connected, signal wave input terminals connected to said sound wave input terminals and a binary data output terminal,

one flip-flop circuit having input terminals connected to said binary data output terminal and to said carrier wave input terminal, and having an output terminal,

an eXclusive OR (XOR) gating circuit having one input lead connected to said binary data output terminal, another input lead connected to said output terminal of said flip-flop circuit, and having an output lead, and

a counting circuit coupled to said output lead of said XOR gating circuit and having at least one output lead for producing an electric potential indicative of a predetermined count,

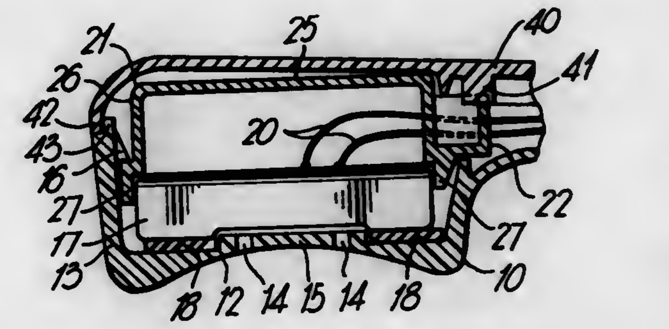
at least one other flip-flop circuit having input terminals coupled to said output lead of said counting circuit and to said carrier wave input circuit, and having at least one output terminal connected to said control electric level input terminal of said recorder,

whereby said recorder is controlled in accordance with the presence of said silence periods interrupting said intelligence.

4,130,740
TELEPHONE HANDSET WITH ROTATABLY LOCKING RECEIVER

Fredrick T. Cogan, London, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 9, 1978, Ser. No. 876,211
Int. Cl.^{2} H04M *1/03*
U.S. Cl. 179—103 **15 Claims**



1. A telephone handset having an elongate top part and an elongate lower part, each part of hollow concave form and adapted to fit together at their peripheries, said lower part housing a receiver and a transmitter; said lower part formed at one end to define a circular recess having a perforated base and a side wall extending upward from said base; a receiver positioned in said recess and facing towards said base; a cover member fitting on said receiver and rotatable about a central axis in said recess; and interengaging formations on said cover and on an inner surface of said side wall, whereby on rotation of said cover member said formations of the cover member engage with said formations on the inner surface of the side wall and lock the cover member and receiver in position.

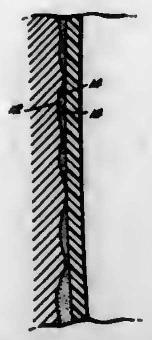
4,130,741
HEARING AID RELINER AND APPARATUS FOR RELINING HEARING AID EAR MOLDS

Benjamin Gottlieb, 3760 Royal Palm Ave., Miami Beach, Fla. 33140

Filed Jan. 19, 1978, Ser. No. 871,090
Int. Cl.^{2} H04R *1/10, 25/00*
U.S. Cl. 179—107 E **6 Claims**

1. The process of relining an ear mold sized to fit the ear canal of a particular wearer which comprises the steps of applying a coating to the exterior surface of the ear mold wherein said coating comprises an adhesive of flowable mate-

rial and inserting the coated ear mold into the ear canal wherein the coating comprises means for effecting a seal between the surface of the ear mold and the tissues within the ear canal to reduce feedback.



4,130,742
SWITCH ACTUATOR FOR ONE-PIECE TELEPHONE

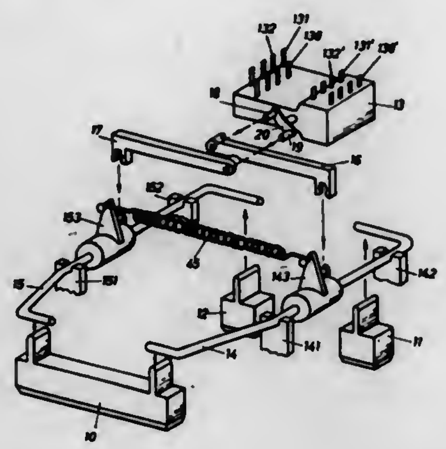
Borje L. Lindman, Tyreso, and Carl-Axel Stromer, Bromma, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Mar. 16, 1977, Ser. No. 778,063

Claims priority, application Sweden, May 3, 1976, 76050343

Int. Cl.² H04M *1/08*

U.S. Cl. 179—167 **7 Claims**



1. A switch actuating device for a telephone instrument of the one-piece type having a base portion with a flat base surface and including a contact switch assembly for deactivating and activating the telephone instrument by placing the instrument upon a support surface and lifting the instrument respectively, said device comprising: spaced apart actuating members protruding from said flat base, each of said members being axially displaceable and biased to protrude from said flat base surface upon lifting of the instrument; and switch actuating means coacting with said axially displaceable actuating members for closing the contact switch assembly upon lifting of the telephone instrument and opening the contact switch assembly upon placing the instrument upon a support, said contact switch actuating means comprising elongate links coacting with each of said actuating members, a plurality of mounting means each supporting one of said links rotatable about its lengthwise axis; and spring means coacting with said links for biasing the same into a position in which one end of each of said links coacts with one of said axially displaceable actuating members for turning the respective links in response to the displacement of the respective link ends; and transmission means coupled with the other end of the links and with the contact switch assembly so that inward displacement of any of said actuating members causes opening of the contact switch assembly and displacement of all said actuating members into the outward position causes closing of the contact switch assembly.

4,130,743
TERMINAL EQUIPMENT FOR A MULTIPLEX CARRIER CURRENT TELEPHONE SYSTEM

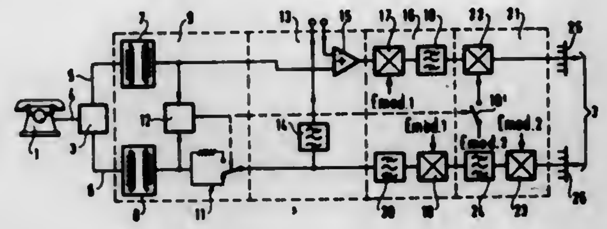
Claude Boulanger, Chevilly Larue, and Christian Poinas, Boulogne, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Aug. 2, 1977, Ser. No. 821,218

Claims priority, application France, Aug. 24, 1976, 76 25577

Int. Cl.² H04B *3/24*

U.S. Cl. 179—170.2 **3 Claims**



3. An improved carrier multiplex terminal of a type that comprises a transmit path including, in succession, a first and a second modulation stage; a band-pass filter intermediate said first and second modulation stages; a receiving path including a demodulator means; a hybrid circuit for combining said transmit and receiving paths; and a differential, half-echo suppressor, which is fed by signals from said transmit and receiving paths, for controlling a receiving path attenuator and a blocking means, said blocking means comprising a switch which is situated in the carrier input line to said second modulation stage, wherein said attenuator and said blocking means are activated during that interval of time wherein the speech level from the local subscriber exceeds the speech level from a distant subscriber.

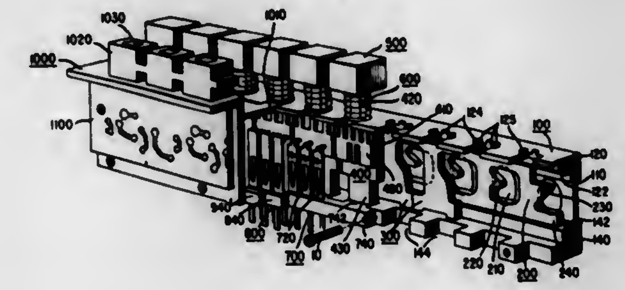
4,130,744
CAM ACTUATED MULTIPLE CONTACT SPRING SWITCH

Robert L. Beecher, II; Harold J. Hershey, and Robert S. Zieles, all of Indianapolis, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 25, 1977, Ser. No. 790,461

Int. Cl.² H01H *1/28, 9/00*

U.S. Cl. 200—1 A **13 Claims**



1. A switch comprising: a movable actuator having

a body portion on which a plurality of cam surfaces are located, and

a pair of aligned guide portions that extend oppositely from the body portion;

a frame for supporting the actuator comprising a rigid metal channel having an upper and a lower element respectively molded to the extremities thereof, the upper and lower element each including a notch, the notches being aligned with one another and accommodating the guide portions of the actuator and cooperating with the guide portions to direct the movement of the actuator; and

a first and second contact spring positioned adjacent to one another, each contact spring being associated with an individual cam surface of the actuator and at least one contact spring being deflected responsive to the movement of the actuator, each contact spring being associated with a cam follower in the proximity of one end thereof that extends into juxtaposition with the associated cam surface of the actuator and each contact spring having a mounting element molded thereon in the proximity of the other end thereof, the mounting elements of the contact springs being positioned in engagement with one another and secured to the frame and serving to orient the contact springs at a particular angle with respect to one another and with respect to the cam surfaces of the actuator, and the cam followers in combination with the associated cam surfaces serving to locate and provide a predetermined bias to the contact springs.

4,130,745
DIFFERENTIAL PRESSURE THRESHOLD DETECTOR

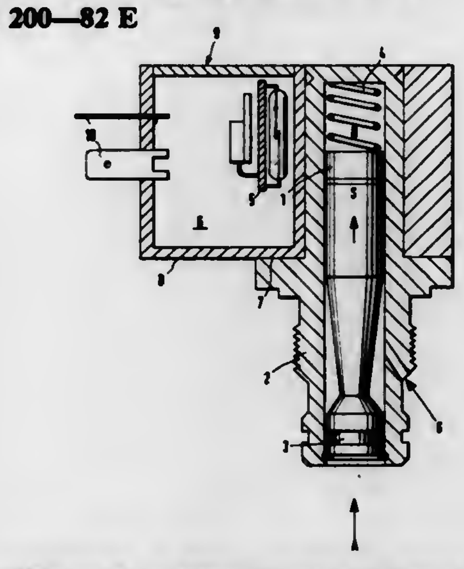
Fritz Hetzer, Isny, Germany, assignor to Purolator Filter G.m.b.H., Germany

Filed Aug. 23, 1977, Ser. No. 828,169

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1976, 2640529

Int. Cl.² H01H *35/38*

U.S. Cl. 200—82 E **2 Claims**



1. A differential pressure threshold detector comprising a control magent and a reed switch actuated thereby having two contact reeds, characterised by the features:

(a) a first housing,

(b) a reed switch mounted within said housing,

(c) a second housing, a portion of which is formed as a guide capable of entering an aperture in the first housing when the latter is pushed onto said guide,

(d) a stop element in said second housing for locating the first housing on said second housing in a predetermined position, and

(e) a control magnet for said reed switch movable along a displacement path within said second housing in dependence upon a differential pressure applied to said magnet, the axis of said displacement path being parallel to a plane containing the axis of said reeds,

(f) said first housing containing the reed switch being pushable on to the guide of the second housing according to choice in one of two positions turned through 180° about an axis lying perpendicularly of the axis of the displacement path,

(g) said reed switch being disposed in relation to the axial dimension of the first housing, eccentrically therein in such a way that the mode of operation of the reed switch as an off-on switch or an on-off switch is determinable by the selection of said positions.

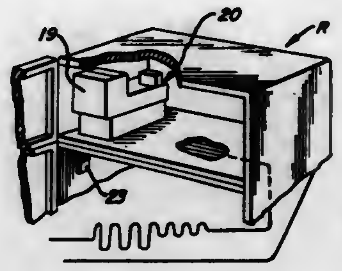
4,130,746
SNAP-ACTION CAM FOR TIMER SWITCH

William J. Linstromberg, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 11, 1977, Ser. No. 786,564

Int. Cl.² H01H *43/10;* G05D *23/32;* F16H *53/00;* H01H *3/32*

U.S. Cl. 200—38 R **17 Claims**



1. In a control having an electrical switch, a first spring means for biasing the switch to a first operational condition, a switch actuator biased by the spring means to a first disposition when the switch is biased to said first operational condition, a cam follower, and means responsive to selective urging of the spring biased switch actuator to said first disposition to urge said cam follower in a first direction, the improvement comprising:

drive means;

a single cam driven by said drive means and having a first portion selectively engaged by said urged cam follower to oppose said urging of the cam follower by the switch actuator spring means and dispose said switch actuator in a second disposition causing the switch to be in a second operational condition, and a second portion with which the cam follower becomes associated as a result of the driving of said cam by said drive means, said second portion being arranged to permit the cam follower to be moved in said first direction by said spring biased switch actuator sufficiently to permit said switch to be disposed in said first operational condition during a preselected timed portion of the driven cam movement; and

second spring means carried by the cam and arranged to urge said cam follower in a second direction opposed to said first direction to overcome said first spring means to return said switch actuator to said second disposition and correspondingly throw said switch substantially instantaneously to said second operational condition.

4,130,747
MINIATURE OVERTRAVEL SNAP ACTION SWITCH WITH PIVOTAL CAM MOUNTING FOR THE SWITCH BLADE

John S. Resh, Valparaiso, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.

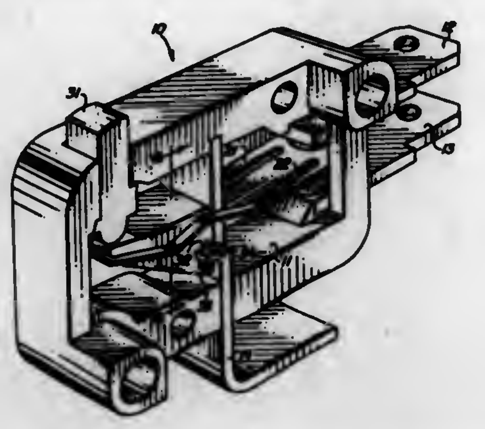
Filed Oct. 12, 1977, Ser. No. 841,477

Int. Cl.² H01H *21/04*

U.S. Cl. 200—67 D **8 Claims**

1. In a snap action overcenter type switch including a tensionable switch blade having two oppositely disposed end portions, a stationary mount having oppositely disposed faces for mounting said switch blade in said switch, with one end portion of said switch blade being in operative connection with one of said faces of said stationary mount in a fixed pivot mounting and the other of said faces of said stationary mount having a non-recessed portion, said other end portion of said switch blade being in operative connection with said other face of said mount at said non-recessed portion, the improvement comprising said latter operative connection which comprises a cam with a cam edge having a portion thereof of a rounded configuration which engages said other face of said stationary mount in a rolling movement, said cam connecting with said switch blade at a portion thereof displaced from said cam edge, with said cam edge in the operation of said switch rolling over

a linear dimension longitudinally of said other face at said non-recessed portion and pivoting at a plurality of points over said linear dimension, and said cam correspondingly moving said switch blade upon said rolling movement of said cam edge.



4,130,748
PLUG-TYPE SWITCH

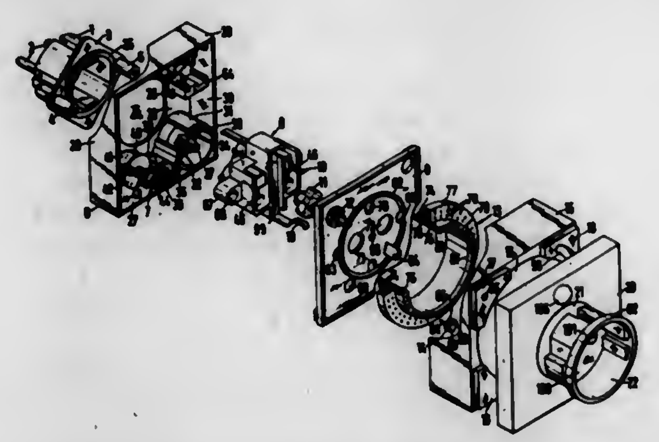
Lukas Schwer, Haigerloch, Germany, assignor to Theben-Werk Zeitautomatik GmbH & Co. KG., Germany

Filed Mar. 17, 1977, Ser. No. 778,590

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1976, 2611154

Int. Cl.² H01H *43/00*

U.S. Cl. 200—38 D 11 Claims



1. An electric power supply operated switch clock for an appliance plug, comprising a housing, constant speed drive motor means in said housing, a plug head mounted in said housing adjacent a back wall thereof and centrally located in said back wall having pin contacts adapted to be engaged in the power supply and being connected to said drive motor means, a plug socket in said housing coaxial with and spaced from said plug head adjacent an opposite front wall of said housing having pin bushings axially aligned with said pin contacts and a socket cup having an opening in said front wall for receiving the appliance plug, a switch ring rotatably mounted in said housing coaxially disposed about said plug socket for timed rotary movement about said plug socket connected to said drive motor means for rotation thereby, a quick-break switch gear in said housing outside said switch ring including at least one pair of switch contacts connected between at least one of said pin contacts and at least one of said pin bushings, said switch ring having an annular shoulder with a plurality of switch rider receiving bores which are angularly equidistantly spaced from each other in said annular shoulder, at least one switch rider in at least one of said receiving bores, said quick-break switch gear having a switching element disposed in the path of movement of said at least one of said switch riders for actuation of movement of said switch rider with said switch ring to make and break contact between said pair of switch contacts, said housing being substantially square in shape with the diameter of said switching ring being slightly smaller than the length of a side of said housing, said drive motor means including a synchronous motor, a timer mechanism having a pinion gear connected between said synchronous motor and said switch ring to rotate said switch ring at a constant timed speed and accommodate it in said housing between said plug head and said plug socket and connected between said plug head and said plug socket, a substantially cylindrical guide body located within said switch ring and connected thereto and extending axially beyond each end thereof with one end portion having a toothed rim engaged with said pinion gear of said timed mechanism and its opposite end portion having an outer grip surface, said housing including a partition wall with a circular rib extending therefrom, said switch ring engaged over and guided for rotation on said rib and said cylindrical guide body engaged around and guided for rotation on said socket cup, said synchronous motor, timing mechanism and quick-break switch gear being disposed around said plug socket in said housing.

4,130,749
MICROWAVE OVEN

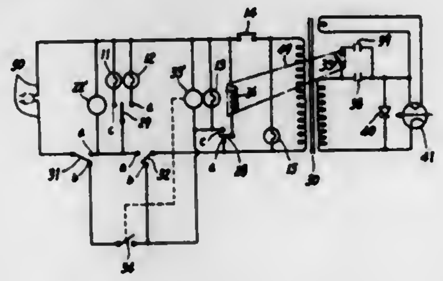
Junzo Tanaka, Fujiidera; Masatomo Orita, and Chikao Urashima, both of Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

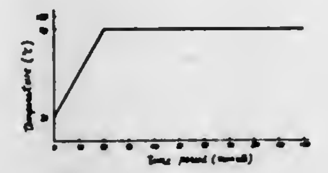
Filed Mar. 4, 1977, Ser. No. 774,340

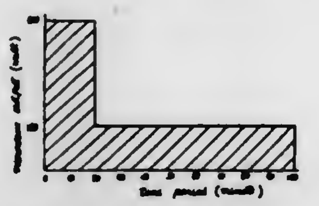
Claims priority, application Japan, Mar. 9, 1976, 51-26426; Mar. 17, 1976, 51-29491; Mar. 9, 1976, 51-28884[U]; Sep. 2, 1976, 51-118568[U]

Int. Cl.² H05B *9/06*

U.S. Cl. 219—10.55 B 9 Claims







1. A microwave oven of the type including
a heating chamber and means for the closing thereof;
a microwave generator for generating microwave energy inside said heating chamber, output controlling means for changing the microwave power output level of said microwave generator, and timer means, cooperating with said output controlling means, and adapted to cooperate with a power supply, for selectively applying power to said microwave generator, wherein:
said timer means comprises:
a first timer motor for defining a first time period;
first and second change-over switches, each having, a pole and first and second contacts and both responsive to said first timer motor, the pole of said first change-over switch being adapted for connection to said power source, said second contact of said first change-over switch being connected to said first timer motor and said second change-over switch second contact, respectively, and said second change-over switch pole being coupled to said microwave generator, selectively connecting, thereby, said first timer motor and said microwave generator to said power source;
a second timing motor connected to said second change-over switch first contact;
a normally off switch coupling said respective first and second change-over switch first contacts, said normally off switch being responsive to said second timer motor and closed in response to the energization of said second timer motor;
a cooking selection dial having indications of kinds of foods and cooking operations and amounts thereof and having a pointer movably linked to said change-over switches;
cooperating with said timer motors for initially setting said first and second timer motors and said first and second change-over switches in accordance with a desired cooking operation; and
switch means for effecting switching of said output controlling means, said switch means being linked with said cooking selection dial and responsive to the selection of a desired cooking operation.

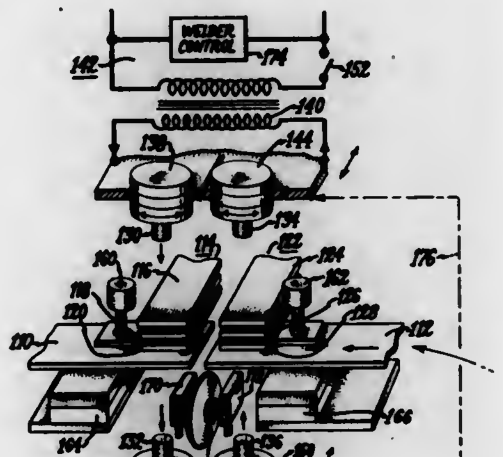
4,130,750
MACHINE FOR WELDING ALUMINUM TO ALUMINUM

Moreland P. Bennett, Hickory, N.C., and William L. Bowers, Shreveport, La., assignors to General Electric Company, Philadelphia, Pa.

Division of Ser. No. 638,300, Dec. 8, 1975, Pat. No. 4,048,463. This application Jun. 28, 1976, Ser. No. 700,609

Int. Cl.² B23K *11/16*

U.S. Cl. 219—78.15 3 Claims



1. A machine for welding a pair of aluminum leads to an aluminum coil comprising two pairs of opposed electrodes made of hard, high-electrical resistance material mounted in holders, said electrodes being formed of a material selected from the group consisting of molybdenum, tungsten, and alloys thereof, means for moving each said pair of opposed electrodes toward and away from each other, means for connecting one electrode of each said pair to the secondary of a welding transformer, means connecting the other electrode of each said pair in electrical series circuit, means for mounting a portion of an aluminum coil between the opposed electrodes of each said pair, and means for severing said portion of said aluminum coil between said pairs of opposed electrodes.

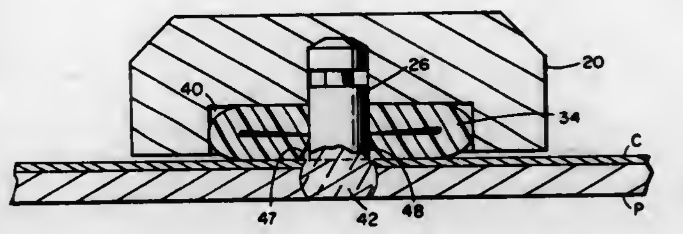
4,130,751
METAL ORNAMENTATION AND METHOD OF WELDING

Stanley H. Gordon, 75 Laurel St., Concord, Mass. 01742

Filed Nov. 1, 1976, Ser. No. 737,169

Int. Cl.² B23K *9/20*

U.S. Cl. 219—98 7 Claims



1. A part structure adapted for attachment to an underlying metal surface by electric welding, comprising
a metallic, electrically conductive body member having an exterior side and an interior side, said interior side having a continuous outer edge adapted for contact with said metal surface and a central recess spaced within said outer edge
a metallic weld stud permanently mounted in said body member at one end thereof within said recess and spaced from said continuous outer edge of said interior side with its free end extending beyond said interior side of said body member for contact with said metal surface prior to contact therewith by said outer edge of said body member
a resilient and deformable elastomeric seal element surrounding said weld stud and having one end thereof in contact with the bottom wall of said recess and the other end adjacent the end of said weld stud for contact with said metal surface substantially simultaneously therewith, said seal element having a substantial volume less than that of said recess
whereby, upon application of electrical current and mechanical force to the exterior side of said body member, said free end of said weld stud will contact said metal surface for electrical connection and welding of said stud to said metal surface while said seal element continuously deforms within said recess to maintain a resilient seal in contact with said underlying surface around said weld stud and the weld produced thereby providing containment of welding products during the welding cycle while said outer edge of said interior side of said part structure moves toward said metal surface as said weld stud shortens and thereafter.

4,130,752
ELECTROTHERMAL PRINT HEAD

Renato Conta, Ivrea (Turin); Lucio Montanari, Cascinette (Turin), and Riccardo Brescia, Ivrea (Turin), all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Continuation of Ser. No. 675,352, Apr. 9, 1976, Pat. No. 4,055,743, which is a division of Ser. No. 512,564, Oct. 7, 1974, Pat. No. 3,967,092. This application Aug. 11, 1977, Ser. No. 823,658

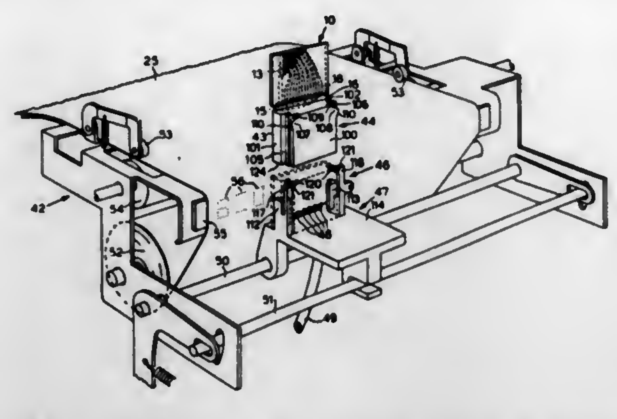
Claims priority, application Italy, Oct. 23, 1973, 70117 A/73

Int. Cl.² H05B *1/00*

U.S. Cl. 219—216 5 Claims

1. A thermal print head for the non-impact printing of dot matrix characters on a heat sensitive medium comprising: a support provided with an electrically insulating surface, a single heating strip of resistive material on said surface, a pattern of conductors on said surface for selectively energizing and heating segments of said strip and including a first group of conductors extending transversely and spaced along one side of the strip and contacting the strip and a second group of conductors extending transversely and spaced along the other side of the strip and contacting the strip in an interleaved relationship to the conductors of the first group wherein each

conductor of the second group is partly opposed to two adjacent conductors of the first group and each resistive segment of said strip lying between a given conductor of the first group



and a given conductor of the second group is selectively heated upon application of an electric voltage between the given conductors.

4,130,753

CONTROL SYSTEMS

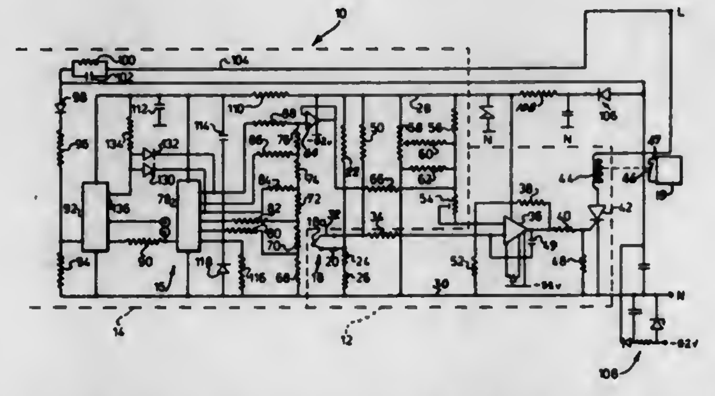
Kenneth R. Wade, Parbold, England, assignor to Pactrol Controls Limited, England

Filed Jul. 13, 1976, Ser. No. 704,891

Claims priority, application United Kingdom, Jul. 15, 1975, 29537/75

Int. Cl.² H05B *1/02*

U.S. Cl. 219—492 **28 Claims**



1. A control system comprising a sensor for monitoring a selected variable and providing an electrical signal which is a function of said variable; a reference source including an electronic timing circuit comprised of buffer means and a counting circuit having a plurality of outputs coupled by said buffer means to an output of the reference source and triggerable to progressively increase the output voltage of the buffer means to provide a reference signal at said output of the reference source which varies in a predetermined step-wise manner over a predetermined time period; and a comparator circuit coupled to said sensor and said reference source and operable to compare said electrical signal with said reference signal and provide a control signal in dependence upon the comparison.

4,130,754

PARTICLE COUNTING

Egil Fosslien, Tampa, Fla., assignor to Cortex Research Corporation, Tampa, Fla.

Filed Jun. 16, 1977, Ser. No. 807,251

Int. Cl.² G06M *11/00;* G01N *27/10*

U.S. Cl. 235—92 PC **49 Claims**

1. Apparatus for counting particles, such as blood cells, suspended in a liquid medium, comprising:

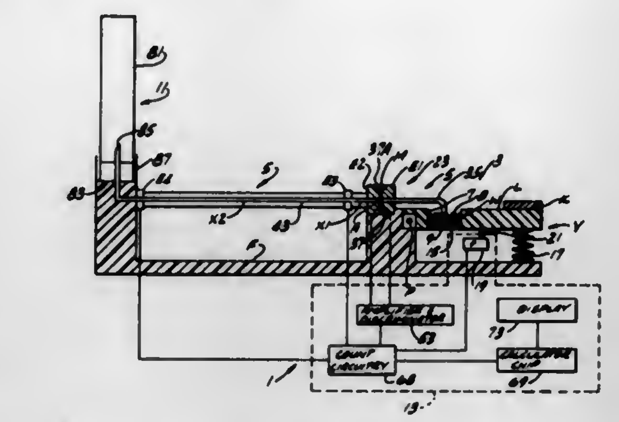
a chamber for receiving a sample of the liquid medium containing suspended particles;

a conduit for flow of the sample from the chamber;

means normally closing the conduit adapted to be opened for flow of the sample therethrough;

means for drawing the sample through the conduit concurrently with opening of said conduit-closing means;

means for counting particles in the sample as it flows through the conduit; and



manually operable means for opening said conduit-closing means for flow of a sample therethrough and concomitantly actuating the counting means to count the particles in the sample flowing through the conduit.

4,130,755

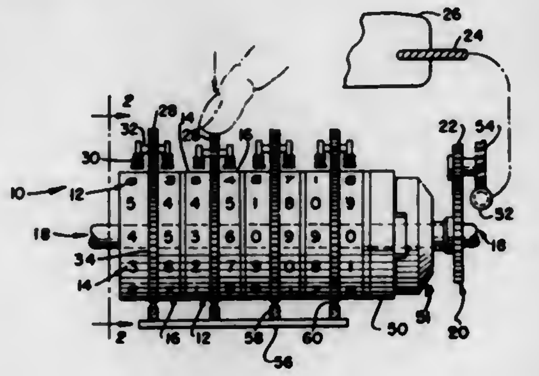
CB TWENTY METER

Nathaniel E. Schochat, 620 Forest Hill Rd., Macon, Ga. 31204

Filed Oct. 5, 1976, Ser. No. 729,829

Int. Cl.² G01C *27/00*

U.S. Cl. 235—95 R **4 Claims**



1. A mileage location indicator for indicating the position of a moving vehicle with respect to mile post indicators in a moving vehicle having a power train comprising:

a casing;

a plurality of indicator members disposed on a longitudinal axis in said casing, each indicator member containing a pair of columns, one column having a set of continuously ascending numerals from zero to nine, inclusive, and the other column having a set of continuously descending numerals from nine to zero, inclusive;

tens-transfer indexing means connected to the power train of the vehicle and said indicator members for indexing said indicator members after each unit of distance has been traversed by the vehicle;

shutter means disposed in said casing for longitudinal movement thereon along said axis, said shutter means containing a single aperture for each of said indicator members, whereby when said shutter means is in a first position, a single numeral of only each ascending column is displayed and when said shutter means is in second position, a single numeral of only each descending column is displayed; and

manual indexing means engageable with each of said indicator members for setting each of said indicator members to a specific numeral determined by the mile post indicators.

4,130,756

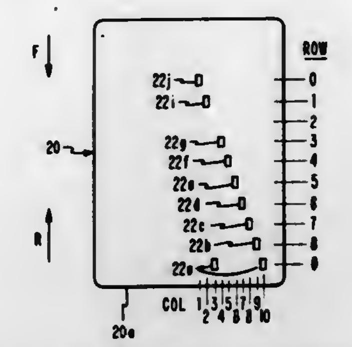
ENCODING MECHANISM FOR HOLED BADGE READERS

Richard L. Arndt, Byron; Wilfred L. Meyerhofer, Jr., Oronoco, and David M. Steinbauer, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1976, Ser. No. 735,858

Int. Cl.² G06K *7/016, 13/04, 7/10*

U.S. Cl. 235—474 **3 Claims**



1. A reader for reading data representative sensor actuating elements of a badge which are disposed in equally spaced rows extending across the badge, said reader comprising:

a row of data reading sensors actuated by the sensor actuating elements of the badge as it passes across the sensors in moving in a certain direction,

a carriage movable with the badge as it passes across said sensors,

encoding mechanism actuated by said carriage and including a stationary encoder bar and a pair of control sensors carried by said carriage, said encoder bar including two parallel rows of sensor actuating bar portions defined by holes in said bar, said control sensors being respectively in registry with said two rows of bar portions as said carriage moves along with the badge as the badge passes across said sensors and being in a row extending at right angles to said direction, said bar portions having the same lengths and spacings in said two rows and having spacings on their centers double the spacings on centers of said rows of sensor actuating elements of the badge and being staggered for a distance of less than one-half of the lengths and spacings of said bar portions in either of said rows, and

means connected with said control sensors and effective when either of said control sensors is active and the other is inactive for gating data from said data reading sensors at that time.

4,130,757

APPARATUS FOR MICROSCOPICALLY VIEWING A SPECIMEN WHILE DETECTING RADIATION PARTICLES THEREFROM

Wallace G. Frasher, Pasadena; Daniel J. Netto, and Carol S. Marcus, both of Los Angeles, all of Calif., assignors to University of Southern California, Los Angeles, Calif.

Filed Jun. 28, 1977, Ser. No. 810,707

Int. Cl.² G01J *1/00;* G01N *23/00;* G02B *7/00*

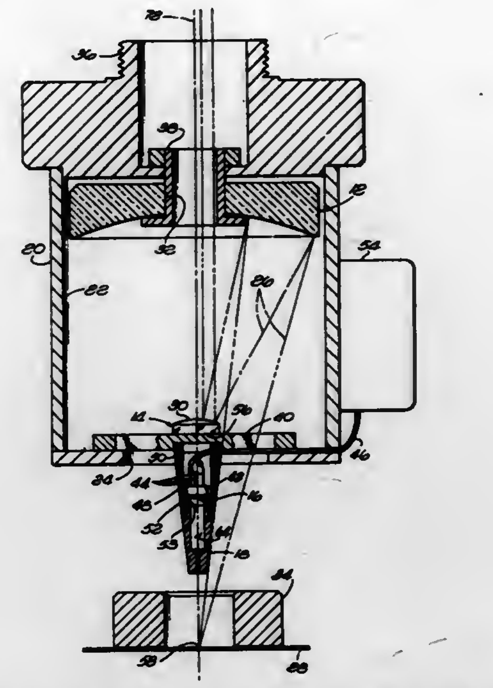
U.S. Cl. 250—336 **21 Claims**

1. Apparatus for detecting species of radiation from a specimen while microscopically viewing the specimen, comprising:

a primary mirror for receiving light directly from a specimen;

a secondary mirror positioned to receive light on a first side from the specimen reflected from said primary mirror and to reflect it for viewing; and

a detector for said radiation species disposed on the opposite side of said secondary mirror to receive said radiation species directly from the specimen.



2. The apparatus of claim 1 wherein said detector is disposed substantially in the optical shadow of said secondary mirror.

4,130,758

DEVICE FOR DETERMINING GASEOUS COMPONENTS

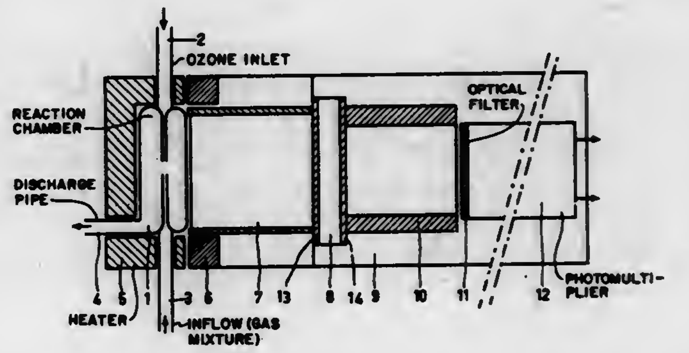
Sybrandus van Heusden, and Leonardus P. J. Hoogeveen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 20, 1977, Ser. No. 789,100

Claims priority, application Netherlands, Apr. 21, 1976, 7604197

Int. Cl.² G01T *1/20*

U.S. Cl. 250—361 C **5 Claims**



1. A device for determining the concentration of vaporous components in a gas current, comprising

(a) a reaction chamber, comprising an inlet pipe for ozone, an inlet for the gas mixture to be analyzed, which inlets end close to one another, a discharge for the reacted gases and means for heating the reaction chamber, wherein said device is constructed such that the ozone is introduced so that heating of the ozone does not take place until said ozone is in situ for the reaction,

(b) a photoelectric measuring cell and

(c) means for interposing at least one optical filter.

4,130,759

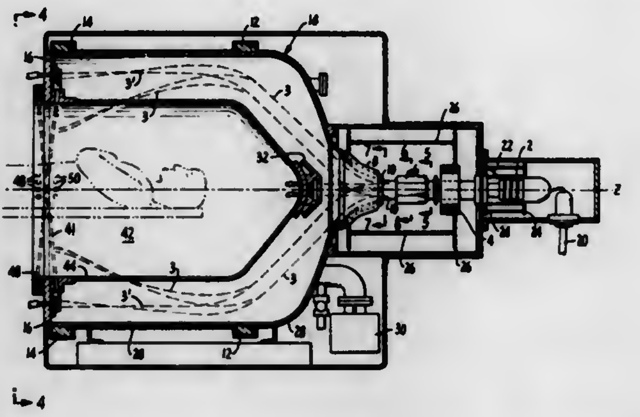
METHOD AND APPARATUS INCORPORATING NO MOVING PARTS, FOR PRODUCING AND SELECTIVELY DIRECTING X-RAYS TO DIFFERENT POINTS ON AN OBJECT

Jacob Haimson, Mountain View, Calif., assignor to Haimson Research Corporation, Palo Alto, Calif.

Filed Mar. 17, 1977, Ser. No. 778,615

Int. Cl.² G03B *41/16*

U.S. Cl. 250—445 T **65 Claims**



1. Apparatus for producing x-rays of sufficient intensity for full body tomography and directing such x-rays toward an object of interest from any of a plurality of preselected coplanar points spaced from that object and spaced radially about a line extending through that object, said apparatus having no moving parts and comprising

means for producing an electron beam;

stationary target means substantially surrounding a portion of said line and encompassing said coplanar points for receiving said electron beam and producing x-rays from said target points and directing said x-rays toward said object of interest;

an evacuated housing containing said beam producing means adjacent one end and said target means adjacent the opposite end;

means for directing said electron beam selectively to preselected said points on said target means; and

beam shaping means for correcting beam aberrations introduced by said beam directing means and for shaping said beam to a predetermined cross-sectional configuration adjacent its point of incidence upon said target, said configuration having a predetermined orientation relative to a line extending radially outwardly from said line through said object to said target point of incidence, and for maintaining said beam configuration and orientation for each said target point of incidence such that the projected beam of x-rays upon said object remains substantially constant from each said target point of incidence, whereby x-rays may be directed toward the object of interest from the target with the combination of the beam directing means and beam shaping means compensating for the effect of space charge forces acting on the beam and correcting for field aberrations imposed thereupon.

4,130,760

REUSABLE RADIATION MONITOR

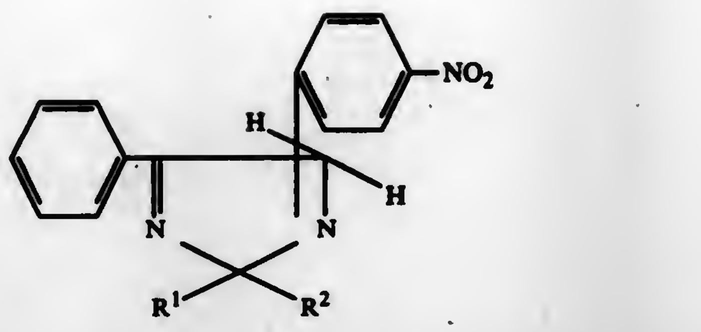
Dan L. Fanselow, White Bear Lake, and Dean A. Ersfeld, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jun. 29, 1977, Ser. No. 811,253

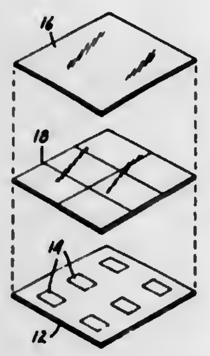
Int. Cl.² G01N *5/00*

U.S. Cl. 250—474 **11 Claims**

1. A integrating, reusable device for monitoring actinic radiation of a preselected character comprising: a substrate having deposited thereon at least one photochromic aziridine compound of the formula



wherein R^1 and R^2 taken separately are hydrogen, alkyl having one to six carbon atoms inclusive, phenyl or ortho or para



lower alkyl or lower alkoxy substituted phenyl, or R^1 and R^2 taken together are alkylene having 4 to 7 carbon atoms inclusive;

an oxygen barrier associated with said aziridine compound to substantially prevent contact of said aziridine compound with oxygen;

filter means disposed between said aziridine compound and the source of actinic radiation to filter out actinic radiation other than that of the preselected character; and

at least one color standard with which to compare the color change of said aziridine compound caused by exposure to the actinic radiation.

4,130,761

ELECTRON BEAM EXPOSURE APPARATUS

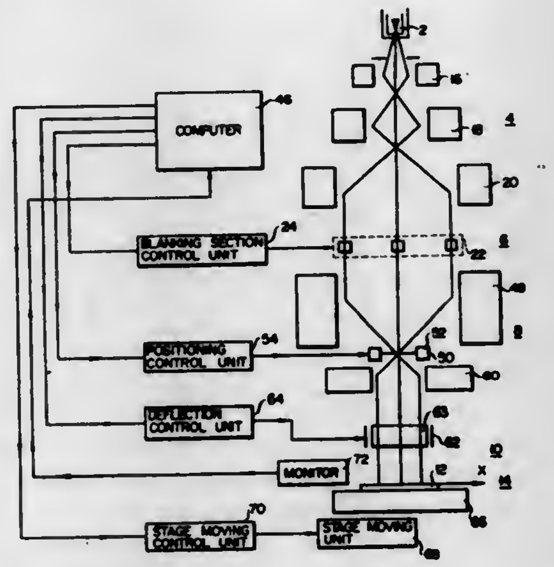
Takashi Matsuda, Kasugai, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1977, Ser. No. 782,755

Claims priority, application Japan, Mar. 31, 1976, 51-35657

Int. Cl.² H01J *37/26*

U.S. Cl. 250—492 A **16 Claims**



1. An electron beam exposure apparatus comprising:

an electron gun for emitting electron beams;

condenser means for parallelling the electron beams emitted from said electron gun;

blanking means for dividing the parallel electron beams passed through said condenser means into a plurality of discrete electron beam bundles and for selectively intercepting any individual ones of said plurality of discrete electron beam bundles;

deflection means for deflecting in a predetermined direction all the discrete bundles of parallel electron beams passed through said blanking means; and

stage means for holding a wafer scanned by the discrete bundles of electron beams deflected by said deflection means and for moving the wafer by a predetermined distance.

4,130,762

ARRANGEMENT FOR THE AUTOMATIC HEATING AND ADJUSTMENT OF A TREATMENT TEMPERATURE FOR THE TREATMENT OF WORKPIECES BY MEANS OF GLOW DISCHARGE

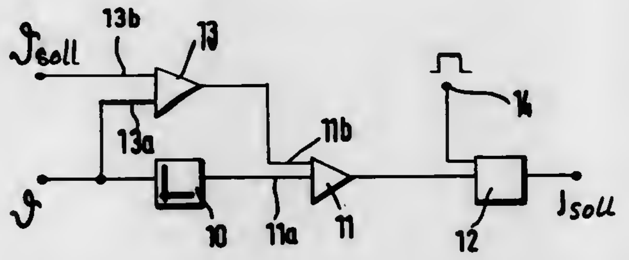
Werner Oppel, Cologne, Fed. Rep. of Germany, assignor to Kloeckner Ionon GmbH, Cologne, Fed. Rep. of Germany

Filed Feb. 16, 1977, Ser. No. 769,162

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1976, 2606396

Int. Cl.² B01K *1/00*

U.S. Cl. 250—531 **7 Claims**



1. Apparatus for the automatic heating and adjustment of a predetermined treatment temperature of workpieces by means of current intensive glow discharge in a container, comprising: temperature measuring means in said container to deliver a value corresponding to the actual treatment temperature; means for supplying a comparison value corresponding to a desired treatment temperature; a differentiator having its input connected to said temperature measuring means to produce at its output a value corresponding to the time derivative of the actual treatment temperature; a comparator having one input connected to the output of said differentiator and the other input connected to said means for supplying the comparison value to produce at its output a control value corresponding to the difference between said time derivative of the actual temperature and the desired temperature; and a current regulator having its input connected to the output of said comparator to readjust the current in said container in response to said control value at the output of said comparator.

4,130,763

MACHINE GUARD INSTALLATIONS

David Mainprize, Tamworth, England, assignor to Wickman Machine Tool Sales Limited, Coventry, England

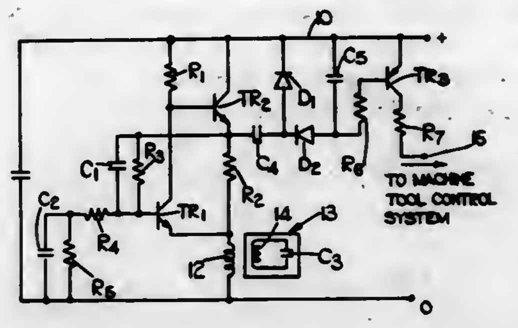
Filed Sep. 30, 1976, Ser. No. 727,996

Claims priority, application United Kingdom, Oct. 4, 1975, 40712/75

Int. Cl.² H01H *35/00*

U.S. Cl. 307—116 **13 Claims**

1. A machine guard installation including a guard movable out of an operative guarding position, a passive tuned circuit mounted on the guard, said tuned circuit includina a coil, and an active detector circuit comprising an amplifier including a pick-up coil which is magnetically coupled to the tuned circuit when the guard is in its operative position, said amplifier having an AC feedback path which includes the pick-up coil so that the increase in the apparent series resistance of the pick-up coil, occuring when the guard moves into its operative position, causes oscillation of the detector circuit.



4,130,764

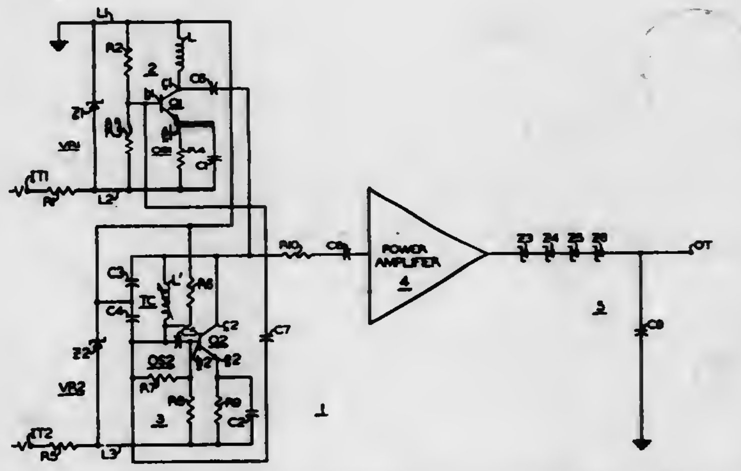
FAIL-SAFE OR LOGIC CIRCUIT

John O. G. Darrow, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Jul. 27, 1977, Ser. No. 819,660

Int. Cl.² H03K *19/02, 19/30*

U.S. Cl. 307—218 **11 Claims**



1. A vital logic circuit comprising at least a first and a second fail-safe level detector, each of said first and said second fail-safe level detecting means including a voltage breakdown device and an oscillating circuit, a frequency determining circuit connected in common with each of said oscillating circuits, an amplifying means coupled to each of said oscillating circuits, and an output means connected to said amplifying circuit and producing an output signal either when a d.c. input signal exceeds the breakdown voltage of one of said breakdown devices of said first and second fail-safe level detecting means or when d.c. input signals exceed the breakdown voltages of both of said breakdown devices of said first and said second fail-safe level detecting means.

4,130,765

LOW SUPPLY VOLTAGE FREQUENCY MULTIPLIER WITH COMMON BASE TRANSISTOR AMPLIFIER

Rafi Arakelian, Khayam Ave., Lashgari St., Noubahar Junction #62, Shiraz, Iran, and Michael M. Driscoll, 4823 W. Parkway, Baltimore, Md. 21229

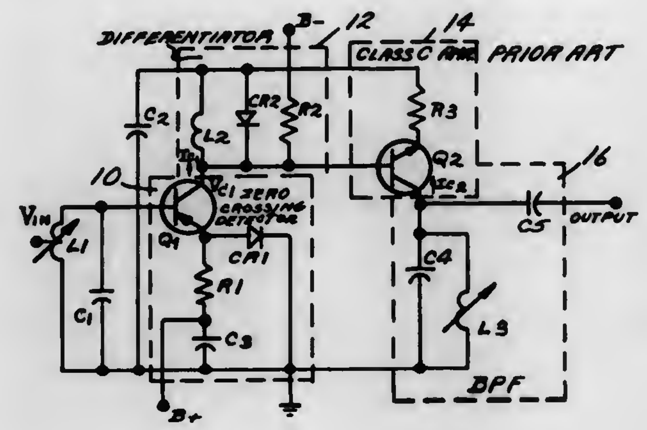
Filed May 31, 1977, Ser. No. 801,994

Int. Cl.² H03B *19/10*

U.S. Cl. 307—220 R **24 Claims**

1. In a circuit for generating an output signal having a frequency equal to a multiple of the frequency of an input signal applied thereto, said circuit being of the type including a zero-crossing detector for providing a signal having frequency components at harmonics of said input signal frequency, and a filter for passing only predetermined ones of said harmonics, the improvement wherein:

said zero-crossing detector comprises:
first and second transistors, each having first and second electrodes defining a conduction path therebetween, and a control electrode, current flow through said conduction path being in accordance with the voltage difference between said control electrode and said second electrode;
said input signal being applied to said first transistor control electrode;
said first transistor first electrode being AC bypassed to ground potential to prevent thereby feedback between said first transistor first and control electrodes;
said first and second transistor second electrodes being coupled to a common node;
said second transistor control electrode being AC coupled to ground potential; and
said second transistor first electrode being coupled to said filter, to provide for, thereby, operation from relatively low supply voltages of said circuit at frequencies in the VHF range.



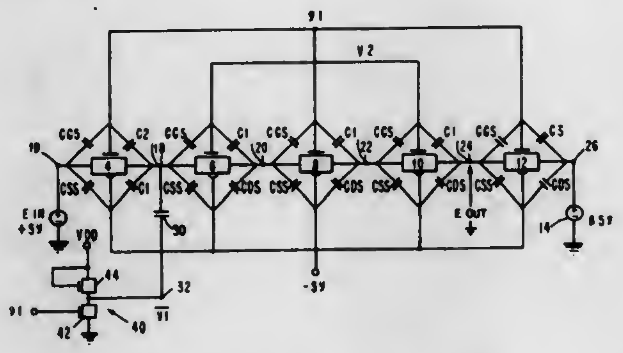
4,130,766
BUCKET BRIGADE CIRCUIT

Mukesh P. Patel, Manassas, Va., and Huo-Bing Yin, Potomac, Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 632,747, Nov. 17, 1975, abandoned. This application Oct. 13, 1977, Ser. No. 842,004

Int. Cl.^{2} G11C *19/28, 19/18;* H03K *17/10, 17/16*

U.S. Cl. 307—221 D **7 Claims**



1. An improved bucket brigade shift register device, comprising:
a first bucket brigade switching device having an input electrode, an output electrode, and a control electrode, whose control electrode is connected to a first phase clock waveform and having a characteristic control electrode-to-output electrode capacitance at a first node, for propagating a charge signal from said input electrode to said first node when said first phase clock waveform is on;
a second bucket brigade switching device having an input electrode connected to said first node, an output electrode, and a control electrode, whose control electrode is connected to a second phase clock waveform which is non-overlapping with said first phase clock waveform, said first and second switching devices forming a bucket brigade shift register, for propagating said charge signal from said first node to said output electrode of said second switching device when said second phase clock waveform is on;
a capacitor of substantially equal magnitude to said characteristic control electrode-to-output electrode capacitance of said first bucket brigade switching device, connected between said first node and the inverse of said first phase clock waveform for supplying a compensating charge to said first node in response to said inverse of said first phase clock waveform to compensate for charge withdrawn through said control electrode-to-output electrode capacitance by said first phase clock waveform during its fall time;
whereby said charge signal can be propagated through said first and second bucket brigade switching devices without diminishing its amplitude, thereby enhancing the charge transfer efficiency and dynamic range of the bucket brigade shift register.

4,130,767
SEMICONDUCTOR SWITCH

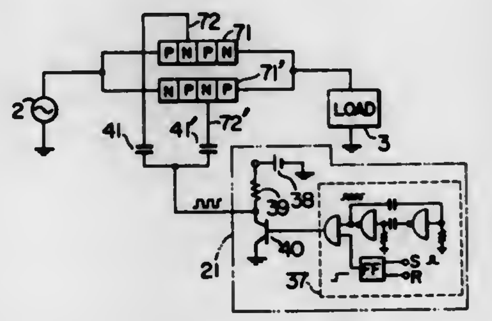
Shinzi Okuhara, Fujisawa, and Ichiro Ohhinata, Yokohama, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 14, 1976, Ser. No. 695,758

Claims priority, application Japan, Jun. 18, 1975, 50-73187

Int. Cl.^{2} H03K *17/72*

U.S. Cl. 307—252 T **13 Claims**



1. A semiconductor switch comprising:
a pair of first and second PNPN switches each having a gate terminal and being connected in inverse-parallel relationship with each other between an AC power supply and a load, so that said PNPN switches are adapted for use where their cathode potentials float from ground potential to positive and negative potentials;
a first and a second capacitive element, each of which is capable of blocking D.C. current flow in both directions therethrough; and
a control circuit having an output terminal for generating a voltage pulse in a repetitive manner, the gate terminal of said first PNPN switch being connected to said output terminal through said first capacitive element, and the gate terminal of said second PNPN switch being connected to said output terminal through said second capacitive element, to thereby drive said PNPN switches.

4,130,768
LOW POWER TRUE/COMPLEMENT DRIVER

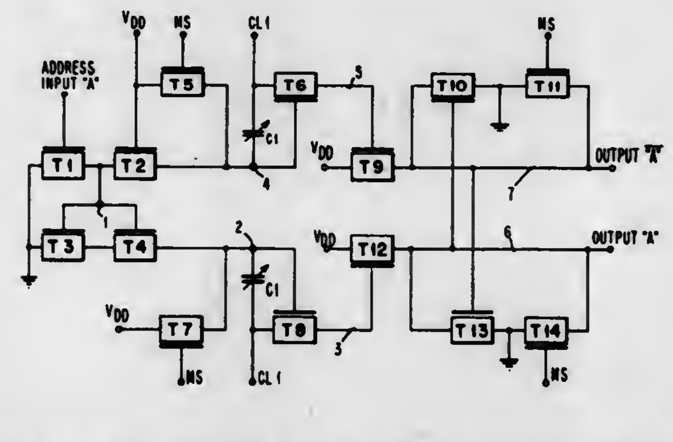
John Bula, Rockville, Md., and Ashok C. Patrawala, Manassas, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1977, Ser. No. 829,416

Int. Cl.^{2} H03K *17/60;* G11C *8/00;* H03K *19/40, 17/16*

U.S. Cl. 307—270 **3 Claims**

1. In a low power ratioless, true/complement generator circuit having an input FET with its gate connected to the input node, and its source connected to ground, and its drain connected to a phase-splitting node, a complement circuit branch and a true circuit branch connected to said phase-splitting node, said complement circuit branch including a first isolation FET, a first charging FET and a first bootstrapped driver FET, said first isolation FET having its source connected to said phase-splitting node and its drain connected to the source of said first charging FET and to the gate of said bootstrapped FET, said first charging FET having its drain connected to a drain potential, and its gate connected to a memory select pulse, said first bootstrapped driver FET having its drain connected to a clock pulse which is non-overlapping with said memory select pulse and its source connected to a complementary output node, for generating the complement form of the signal at the input node when said clock pulse is present, said true circuit branch including an inverting FET, a second isolation FET, a second charging FET and a second bootstrapped driver FET, said inverting FET having its source connected to ground and its gate connected to said phase-splitting node, said second isolation FET having its source connected to the drain of said inverting FET and its drain connected to the source of said second charging FET and to the gate of said second bootstrapped FET, said second charging FET having its drain connected to said drain potential and its gate connected to said memory select pulse, said second bootstrapped driver FET having its drain connected to said clock pulse and its source connected to an output node, for generating the true form of the signal at the input node when said clock pulse is present, the improvement in which comprises:



said second isolation FET having a gate size substantially smaller than the gate size for said inverting FET;
said first isolation FET having its gate connected to said drain potential for isolating said gate of said first bootstrapped FET from said phase-splitting node when the potential of the gate of said first bootstrapped FET approaches its maximum value as it is charged by said charging FET;
said second isolation FET having its gate connected to said phase-splitting node for more rapidly switching from its on-state to its off-state than does said inverting FET;
whereby the number of clock pulse sources necessary to operate the generator circuit is reduced and the speed of the generator circuit is increased.

4,130,769
BRUSHLESS DC MOTOR

Yukuo Karube, Yokohama, Japan, assignor to Canon Kabushiki Kaisha and Canon Seiki Kabushiki Kaisha, both of Tokyo, Japan

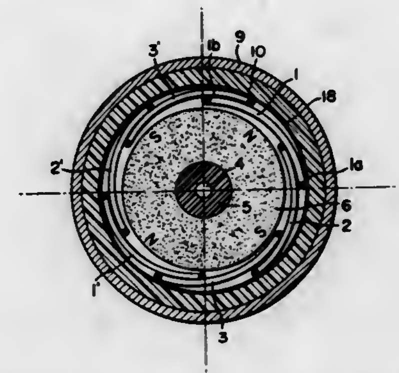
Filed Oct. 31, 1975, Ser. No. 627,844

Claims priority, application Japan, Nov. 1, 1974, 49-126332; Nov. 13, 1974, 49-130632

Int. Cl.^{2} H02K *37/00*

U.S. Cl. 310—46 **15 Claims**

1. A brushless DC motor comprising:
(a) a rotor including:
a rotor shaft and
a rotor permanent magnet fixed on said rotor shaft;
(b) a stator including:
a hollow cylindrical yoke made of soft magnetic material as a magnetic flux return path of the magnetic flux from said rotary magnet and
an armature coil body formed in the shape of a hollow cylinder, wherein said armature coil body is disposed in an annular space between said rotary magnet and said yoke and is fixed on the internal surface of said yoke, said coil body comprising a plurality of coil elements each of which is of planar multiangular ring shape having two sides substantially parallel to the axis of said rotor shaft, and said coil body being constructed such that all of said coil elements are superposed on one another in such a relation that one of said two sides of each coil element appears outside, and another of said two sides of each coil element appears inside, so that a ring shape of coil body is formed, and said coil elements being fixed in a cylindrical structure;



(c) a casing having end walls and supporting said rotor and stator; and
(d) position detecting elements for detecting the position of magnetic poles of said rotary permanent magnet, said elements being mounted on an end wall of said casing adjacent to the end surface of said rotary permanent magnet at the place where it is not covered by said coil body.

4,130,770
AXIAL FLOW FAN HAVING IMPROVED AXIAL LENGTH STRUCTURE

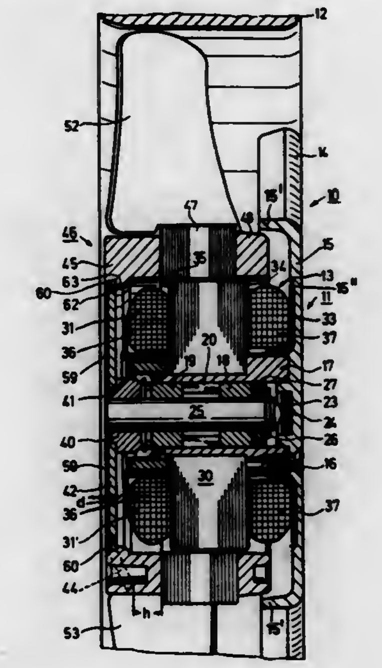
Güenter Wrobel, Villingen, Germany, assignor to Papst-Motoren KG, Germany

Filed May 20, 1974, Ser. No. 471,604

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1974, 7406629[U]

Int. Cl.^{2} H02K *7/00*

U.S. Cl. 310—67 R **28 Claims**



1. In an axial-flow fan motor structure of the type comprising an external rotor including a rotor stack and at least two short-circuit rings, said rotor being mounted for rotation about an axis, a stator structure mounted about said axis, and a rotor

shaft and fitting mounted on said axis, said fitting being a sheet having anchoring elements extending about a peripheral edge of said fitting for connecting said rotor to said rotor shaft by connection of said anchoring elements to one of said two short-circuit rings, the improvement comprising said anchoring elements being disposed at an angle α of less than 45° with respect to the plane of said sheet such that the resistance of said one short-circuit ring is reduced.

wherein said anchoring elements extend at an angle α of about 20° to 35° to the plane of said sheet,
wherein said fitting is a thin steel sheet having reinforcing embossed indentations thereon, and
wherein said steel sheet has a thickness corresponding to a ratio of thickness to motor air gap diameter in the range of about 2 to 3%.

4,130,771

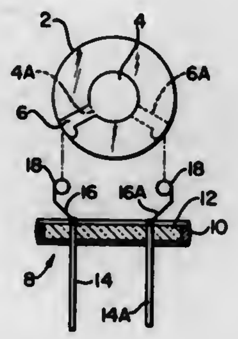
METHOD OF ADJUSTING THE FREQUENCY OF A CRYSTAL RESONATOR AND REDUCING AGEING EFFECTS

Virgil E. Bottom, Abilene, Tex., assignor to Tyco Crystal Products, Inc., Phoenix, Ariz.

Continuation of Ser. No. 658,523, Feb. 17, 1976, abandoned. This application Jun. 9, 1977, Ser. No. 805,072

Int. Cl.² H01L *41/22*

U.S. Cl. 310—312 **11 Claims**



1. Method of producing a piezoelectric crystal unit that is resistant to aging and can maintain a predetermined nominal resonant frequency f_r comprising:

providing a piezoelectric crystal unit having at least one aluminum electrode arranged so that said unit has a resonant frequency greater than f_r and so that the aluminum electrode has at least one exposed surface;
making said at least one aluminum electrode of said unit the anode and a separate aluminum body the cathode, respectively, in an electric circuit comprising a D.C. power supply and a liquid electrolyte which surrounds said unit and aluminum body and which contains oxygen-bearing anions and does not dissolve aluminum oxide; and
adjusting the voltage output by said power supply to said circuit in accordance with the difference between the resonant frequency of said unit and said predetermined nominal resonant frequency so as to cause an oxide layer to be formed on said at least one electrode by anodic oxidation to a thickness of at least about 50A to cause said resonant frequency to be stabilized and changed to substantially said nominal frequency and to make said unit resistant to aging.

4,130,772

LIQUID-COOLED ROTARY ANODE FOR AN X-RAY TUBE

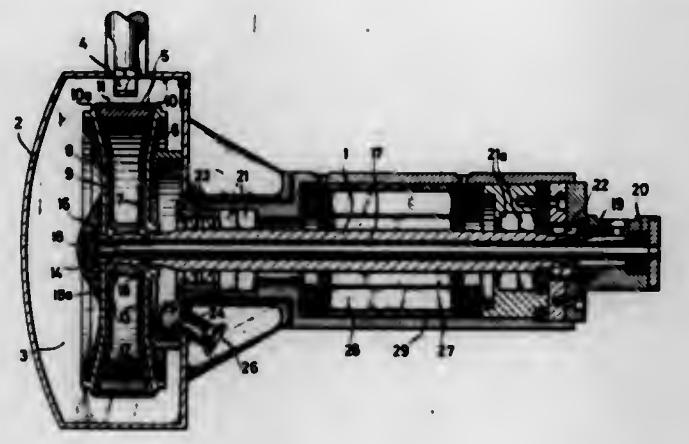
Eckhard Küssel, Düren; Heinz G. Haubold, Julich; Franz Joswig, Jülich, and Karl H. Klatt, Jülich, all of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed Mar. 14, 1978, Ser. No. 886,391

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 2711848

Int. Cl.² H01J *35/10*

U.S. Cl. 313—32 **3 Claims**



1. An axially symmetrical rotary anode for an X-ray tube, comprising a hollow body mounted on a hollow drive shaft and having a substantially cylindrical peripheral wall of a material capable of emitting X-rays when irradiated with electrons and containing ducts for leading a liquid cooling medium into and away from cooling relation with said peripheral wall and from and to respective ducts in said shaft, and comprising the improvement consisting in that:

a plurality of radial cooling medium supply ducts (7) are connected together by a first ring duct (10) and both said radial supply ducts and said first ring duct are located on the inner surface of a first axial-end wall of said hollow body;
a plurality of radial cooling medium discharge ducts (9) are connected together by a second ring duct (10*a*) and both said radial discharge ducts and said second ring duct are located on the inner surface of a second and axially opposite end wall of said hollow body;
a plurality of cooling ducts (11) run parallel to each other, obliquely along the inside of said peripheral wall (5), from said first ring duct (10) to said second ring duct (10*a*), evenly distributed over said peripheral wall (5), and each such cooling duct (11) has a length not less than 150mm nor greater than 250mm, and
said cooling ducts (11) are formed on the outside by the material of said peripheral wall (5) and on the inside by a material of high mechanical strength extending between the cooling ducts and firmly connected to the material of said peripheral wall (5).

4,130,773

X-RAY TUBE WITH LIQUID-COOLED ROTARY ANODE

Eckhard Küssel, Düren, Germany, assignor to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed Mar. 14, 1978, Ser. No. 886,416

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 2711847

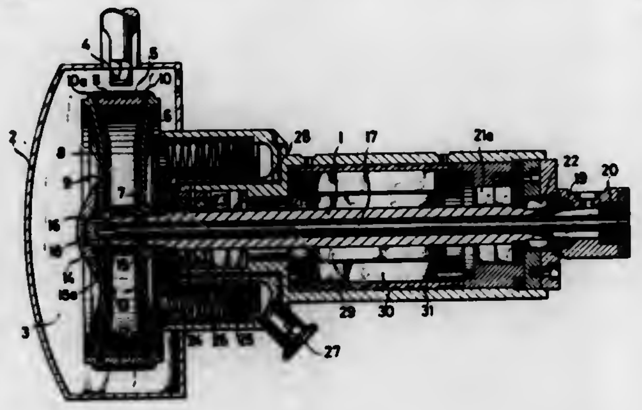
Int. Cl.² H01J *35/10*

U.S. Cl. 313—32 **6 Claims**

1. An X-ray tube having a rotary liquid-cooled anode mounted on a hollow drive shaft and served with cooling medium through radial supply and discharge ducts in the anode and coaxial supply and discharge ducts in said shaft, said shaft being mounted on two bearings and being provided with

a radially disposed vacuum seal between the anode and the one of the shaft bearings that is nearer to the anode, the tube further comprising the improvement that consists in that:

the radial cooling medium supply ducts (7) are connected together by a first set of cross ducts (10), the radial cooling medium discharge ducts (9) are connected together by a second set of cross ducts (10*a*), and the cross ducts of the first set are connected to those of the second set by duct sections (11) directly and firmly adjoining the portion (5) of the rotary anode made of X-ray generating electron-target material, immediately inward of said anode portion, and



between said vacuum seal (22) and the high vacuum space of the X-ray tube a turbomolecular pump coaxial with said drive shaft is interposed having rotor (24) and stator (26) vane arrays, alternatingly disposed in the axial direction, the rotor vane arrays being part of a rotor driven in common with said drive shaft, the stator vane arrays being fixed on the tube casing, the suction side of said pump facing said high vacuum space (3), and a discharge connection (27) being provided for said pump through the tube envelope for the discharge side of the pump for connection to a gas removal suction line.

4,130,774

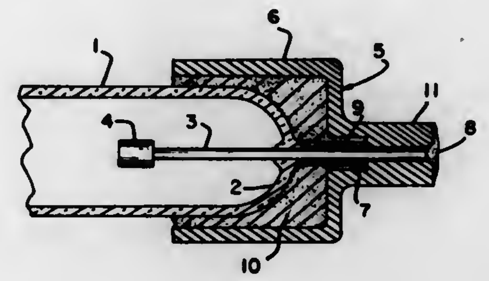
FLASH TUBE HAVING IMPROVED END CAP CONSTRUCTION

Robert J. Cosco, Amesbury; Charles C. Kokinos, Jr., and Charles J. Geleski, both of Lynn, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Nov. 14, 1977, Ser. No. 851,158

Int. Cl.² H01J *5/46*

U.S. Cl. 313—318 **2 Claims**



1. A flash tube comprising: an elongated glass envelope sealed at its end; an end cap having a shoulder portion and a terminal portion, the shoulder portion encircling the end of the envelope and being bonded thereto with bonding material; a lead-in wire extending through the end of the envelope and being connected to the terminal portion of the end cap; and a cushioning sleeve disposed on the lead-in wire and preventing contact of the bonding material with the lead-in wire.

4,130,775

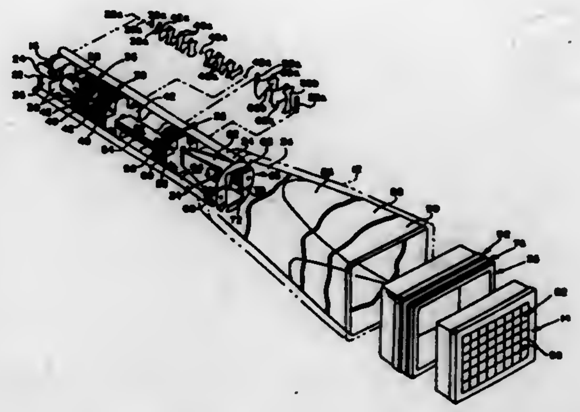
CHARGE IMAGE CHARGE TRANSFER CATHODE RAY TUBE HAVING A SCAN EXPANSION ELECTRON LENS SYSTEM AND COLLIMATION ELECTRODE MEANS

Peter E. Perkins, Tigard, and Stephen F. Blazo, Portland, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 17, 1977, Ser. No. 760,053

Int. Cl.² H01J *31/58, 29/56*

U.S. Cl. 313—397 **14 Claims**



8. A charge image transfer cathode ray tube, comprising:

transmission storage target means including mesh electrode means having mesh openings therethrough and storage dielectric means provided on said mesh electrode means without covering said mesh openings;
flood gun means for generating toward said transmission storage target means flood electron beams of low velocity electrons;
electron gun means including cathode means for generating an electron beam of high velocity electrons, focusing means defining quadrupole lens means for focusing said electron beam into a writing beam and deflection means including elements for deflecting said writing beam along said storage dielectric means in mutually perpendicular directions thereby forming a positive charge image thereon, said quadrupole lens means including first quadrupole lens means positioned between said electron gun means and said deflection means for focusing said electron beam in mutually perpendicular directions and second quadrupole lens means positioned between said elements of said deflection means for amplifying the electron beam deflection while maintaining the electron beam velocity constant; and
collimating electrode means provided between said flood gun means and said transmission storage target means to cause said flood electrons to uniformly bombard said storage dielectric means at a substantially normal direction thereto and to enable said flood electrons to be transmitted through said mesh openings adjacent said charge image at a substantially normal direction thereto.

4,130,776

EL BAR GRAPH FOR DISPLAYING ANALOGUE MEASUREMENTS OF TEMPERATURE AND THE LIKE

Thomas L. Robinson, Sr., East Aurora, N.Y., assignor to T. L. Robinson Co., Inc., East Aurora, N.Y.

Filed Jan. 30, 1978, Ser. No. 873,471

Int. Cl.² H05B *33/02*

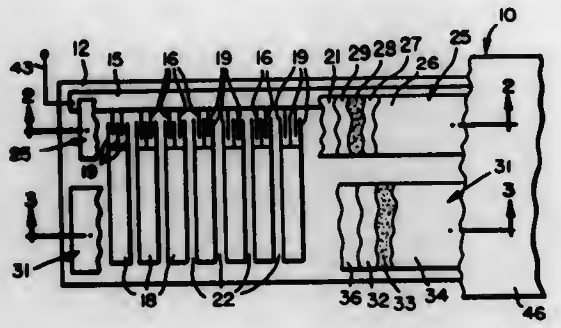
U.S. Cl. 313—507 **10 Claims**

1. An electroluminescent device, comprising

a substrate,
a first EL lamp on said substrate having a plurality of spaced, lower electrodes overlying one surface of said substrate, an upper, light-transmissive electrode overlying one end each of said lower electrodes, and a layer of EL material interposed between said upper electrode and the portions of the lower electrodes positioned therebeneath,
a conductor mounted on said substrate in spaced, confronting relation to the opposite ends of said lower electrodes,

a plurality of spaced, light-responsive switching means for selectively connecting said conductor to said opposite ends of said lower electrodes,

means shielding said spaced switching means from ambient light normally to maintain said switching means substantially in electrically non-conductive modes, and responsive to an electrical signal of variable intensity successively to switch said spaced switching means from non-conductive to conductive modes as the intensity of said signal increases, and vice versa as the intensity of said signal decreases, and



means for applying an AC signal across said conductor and said light-transmissive electrode, whereby as each of said spaced switching means is switched to its conductive mode, said upper electrode is illuminated in an area similar in configuration to the underlying portion of the lower electrode associated with the last-named switch means.

4,130,777

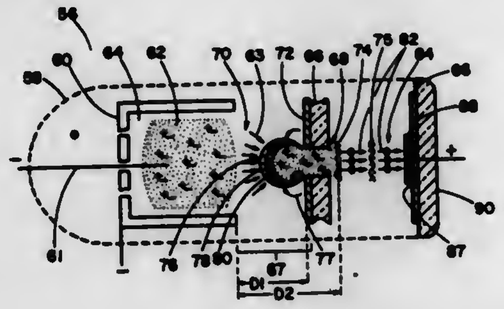
SCANNING MEANS AND METHOD FOR A PLASMA-SAC-TYPE GAS-DISCHARGE IMAGE DISPLAY PANEL

Michael C. De Jule, Chicago, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 769,127, Feb. 16, 1977. This application Aug. 29, 1977, Ser. No. 828,792

Int. Cl.² H05B *37/00, 39/00, 41/00*

U.S. Cl. 315—169 TV **21 Claims**



1. A very-low-pressure, high-voltage cathodoluminescent image display panel having an ordered row-and-column array of individually controllable plasma-sac-type gas-discharge display elements, the panel comprising:

envelope means containing an ionizable gas at a predetermined very low pressure;

plasma-sac-generating means including cathode means and anode means for forming a gas discharge plasma or plasmas, and means for constricting the plasma or plasmas to simultaneously form a plurality of electron-beam-generating plasma sacs; and

scanning means coupled to said plasma-sac-generating means for scanning a row of said display elements by activating in sequence and group-by-group consecutive groups of plasma sacs in said row until the entire row of display elements is scanned.

4,130,778

DC PDP WITH DIVIDED CATHODE

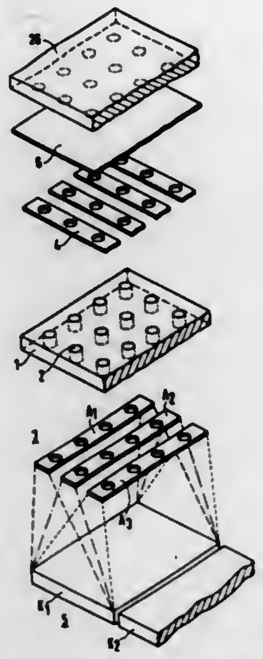
David W. Branston, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 22, 1977, Ser. No. 835,782

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1976, 2643915

Int. Cl.² H05B *37/00, 39/00, 41/00*

U.S. Cl. 315—169 TV **7 Claims**



1. In a pictorial display device with a matrix of gas discharge cells which include an anode and a cathode and having associated auxiliary anodes for controlling the rows and control electrodes for the brightness control of the columns with an auxiliary gas discharge path between the cathode and the auxiliary anodes and an electron acceleration path between the control electrodes and the anode, the improvement comprising the cathode being made up of a plurality of subcathodes and each of said subcathodes being associated with a group of auxiliary anodes.

4,130,779

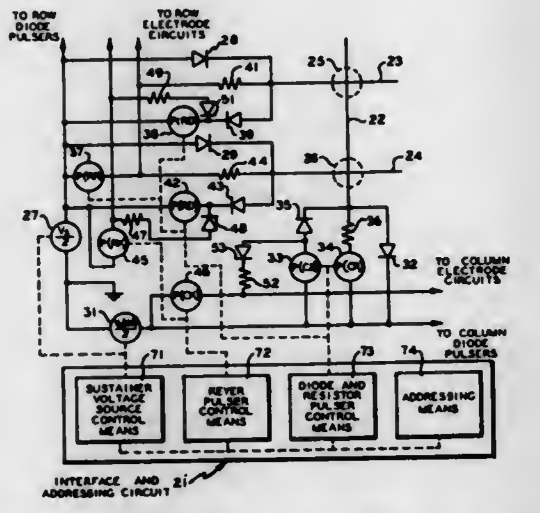
SLOW RISE TIME WRITE PULSE FOR GAS DISCHARGE DEVICE

John W. V. Miller, Toledo, and Ray L. Trogdon, Perrysburg, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 27, 1977, Ser. No. 791,295

Int. Cl.² H05B *37/00, 39/00, 41/00*

U.S. Cl. 315—169 TV **14 Claims**


TO ROW DIODE PULSERS
TO ROW ELECTRODE CIRCUITS
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TO COLUMN ELECTRODE CIRCUITS
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TO COLUMN DIODE PULSERS
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72
73
74
SUSTAINER VOLTAGE SOURCE CONTROL MEANS
KEYER PULSER CONTROL MEANS
DIODE AND RESISTOR PULSER CONTROL MEANS
ADDRESSING MEANS
INTERFACE AND ADDRESSING CIRCUIT
21

1. In an operating system for a multicelled gas discharge display/memory device, said device including a pair of opposed electrode arrays with proximate electrode portions of at least one electrode in each array defining the cells; an ionizable gas volume between the spaced electrode portions of each cell; a dielectric charge storage member in contact with the gas insulating at least one electrode portion of each cell from the gas; a sustainer voltage source connected across each cell to cyclically impose an alternating voltage having a period; pulser means for generating write and erase voltage pulses to manipulate the discharge state of individual cells between an "on state" and an "off state"; and keyer pulser means for generating a steeply rising leading edge on the write and erase voltage pulses, the improvement comprising: said dielectric charge storage member formed from a low operating voltage material; said keyer pulser means including a first keyer pulser connected to one of the electrode arrays and a second keyer pulser connected to the other one of the electrode arrays; and means for maintaining said first keyer pulser in an off condition to generate a relatively slow rise time leading edge on a first half select pulse and for turning on said second keyer pulser to generate a relatively fast rise time leading edge on a second half select pulse, said first and second half select pulses forming said write voltage pulses with a relatively fast rise time leading edge portion followed by a relatively slow rise time leading edge portion whereby crosstalk between adjacent cells is reduced.

4,130,780

ELECTRONIC PHOTOFLASH

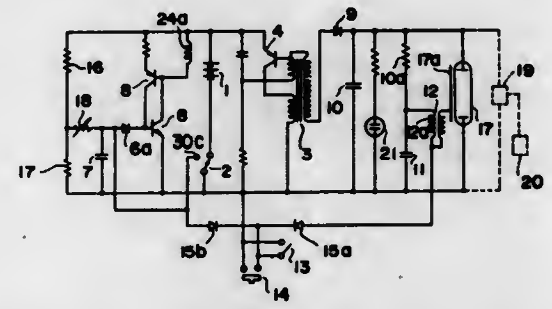
Itsuki Ban, 829, Higashi-Oizumi-machin, Nerima-ku, Tokyo; Kyoichi Inoue, 2-13, Hagiyama-machi, Higashi-murayama-shi, Tokyo, and Takatoshi Kogure, 3-30-24, Soshigaya, Setagaya-ku, Tokyo, all of Japan

Filed Nov. 1, 1977, Ser. No. 847,431

Claims priority, application Japan, Nov. 9, 1976, 51-133782

Int. Cl.² H05B *41/32*

U.S. Cl. 315—241 P **16 Claims**



1. In an electronic photoflash having a light flash generator means for producing light flashes by discharges of high voltage energy stored in a storage capacitor adapted to be charged with current derived from an oscillator adapted to operate when connected to a battery power supply and wherein the flashing of said electronic photoflash is controlled by the closure of an external switch; the improvement comprising:

a switch means for switching the power supply in and out of connection with the flash generator means including an actuator movable between a first position corresponding to connection between the power supply and the flash generator means and a second position corresponding to no connection between the power supply and the flash generator means; a magnet means operably associated with said actuator and adapted to hold said actuator in said first position by mangetic attraction; spring means operably associated with said actuator for urging said actuator to said second position; a knob connected to said actuator and adapted to be manually manipulated for movement of said actuator to said first position or to said second position; a coil operably associated with said actuator and said magnet means and adapted to produce a magnetic field when supplied with current; a control circuit for supply current to said coil, said control circuit including a delay circuit for providing a predetermined time interval from the time at which the actuator is placed in the first position until when said control circuit provides current to said coil; said magnetic field produced by said coil when supplied with current from said control circuit being sufficient to overcome the magnetic attraction of said magnet means so that said actuator is no longer held in said first position and is returned to said second position by said spring means; and said delay circuit including means for resetting said delay circuit each time the electronic photoflash is flashed.

4,130,781

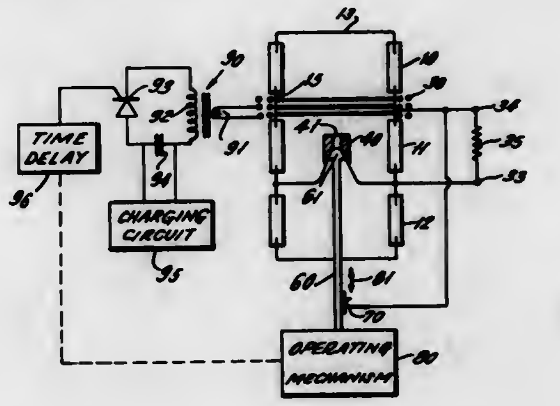
HIGH VOLTAGE D-C VACUUM INTERRUPTER DEVICE WITH MAGNETIC CONTROL OF INTERRUPTER IMPEDANCE WITH MOVABLE CONTACT

Rolf Dethlefsen, Greensburg, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Mar. 14, 1977, Ser. No. 777,453

Int. Cl.² H01J *1/50;* **H01H** *9/44*

U.S. Cl. 315—331 **9 Claims**



1. A circuit interrupter comprising, in combination:

an evacuated housing having an axis;

a ring-shaped anode electrode disposed coaxially with said housing, and a terminal connected to said ring-shaped electrode and accessible externally of said housing;

a cathode electrode disposed within said housing and spaced from and insulated from said anode electrode and being coaxial with said anode electrode, and a terminal connected to said cathode electrode and accessible externally of said housing;

an electrical winding concentrically surrounding said anode electrode for producing a magnetic field in the space between said cathode and anode electrodes to increase the impedance of an arc in said space and to extinguish said arc;

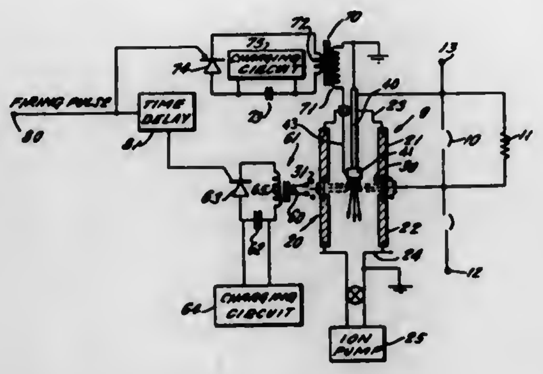
a movable contact disposed within said housing and being relatively movable into and out of engagement with said cathode electrode and operable from regions external of said housing;

and circuit means for connecting said movable contact to said anode electrode when said movable contact engages said cathode electrode, thereby to define a closed circuit between said first and second terminals when said movable contact engages said cathode electrode; said movable contact and cathode electrode being arranged whereby an arc is drawn between said movable contact and said cathode electrode when said movable contact is moved away from said cathode electrode, which arc is rapidly transferred to between said anode and cathode electrodes;

and power supply circuit means for applying current to said electrical winding after said movable contact separates from said cathode electrode.

4,130,782
HIGH VOLTAGE D-C VACUUM INTERRUPTER DEVICE WITH MAGNETIC CONTROL OF INTERRUPTER IMPEDANCE

Rolf Dethlefsen, Greensburg, Pa., assignor to Gould Inc., Rolling Meadows, Ill.
Filed Mar. 14, 1977, Ser. No. 777,479
Int. Cl.² H01J *1/50*; H01H *33/18*
U.S. Cl. 315—335 9 Claims

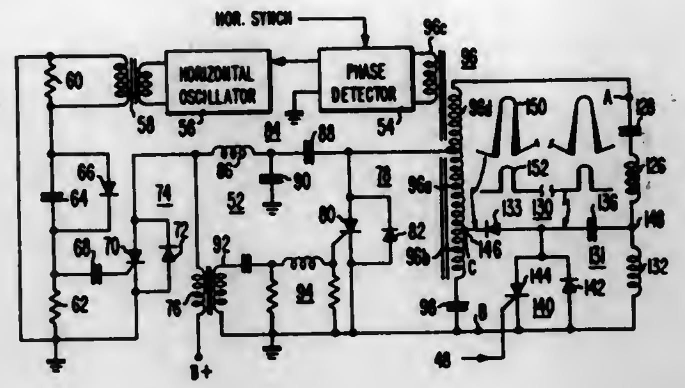


1. A current-limiting device comprising, in combination:
an evacuated container having a cylindrical wall having first and second ends and first and second terminals accessible externally of said container;
a cathode electrode disposed within said container and located generally along the axis of said container and connected to said first terminal;
an anode electrode comprising a ring-shaped member insulated from said cathode electrode; said anode electrode comprising a portion of said cylindrical wall and connected to said second terminal; said anode electrode coaxially surrounding said cathode electrode and being disposed between and spaced from each of said first and second ends of said cylindrical wall;
a winding wound around the outer diameter of said anode electrode;
said current-limiting device being operable to carry current through an arc drawn between said cathode electrode and said anode electrode; said winding being operable to produce a magnetic field which extends through said arc in order to increase the electrical impedance of said arc, and to extinguish said arc;
triggering circuit means connected to said cathode electrode for producing an initial arc plasma which is subsequently transferred to said anode electrode;
and a time delay circuit connecting said triggering circuit means to said winding, whereby a magnetic field pulse is appied to the interelectrode space between said cathode and anode electrodes with a given time delay.

4,130,783
SIDE PINCUSHION CORRECTION CIRCUIT WITH LOW DISSIPATION DAMPING

Willem den Hollander, Schlieren, Switzerland, assignor to RCA Corporation, New York, N.Y.
Filed Aug. 4, 1977, Ser. No. 821,784
Claims priority, application United Kingdom, Sep. 6, 1976, 36864/76
Int. Cl.² H01J *29/56*
U.S. Cl. 315—371 9 Claims

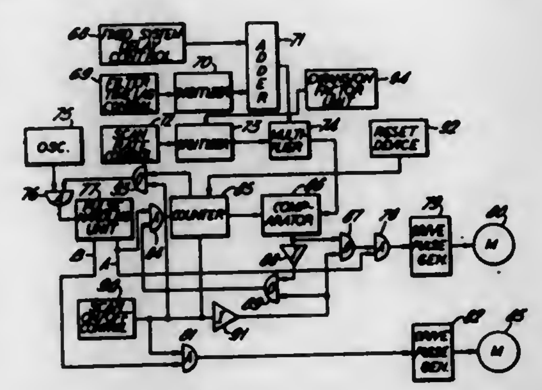
1. A switched East-West raster correction circuit for a television deflection apparatus including a generator of periodic horizontal-rate deflection current, comprising:
a horizontal deflection winding coupled to the horizontal deflection current generator for accepting horizontal deflection current therefrom;
an impedance circuit coupled in circuit with said deflection winding and defining in conjunction with said winding a path for said horizontal deflection current;
controllable switch means coupled in circuit with said impedance circuit and operated at a time during each horizontal period which is progressively altered in a manner to reduce raster distortion; and



damping means including a voltage source and second switch means for coupling said voltage source with said impedance circuit during at least a portion of said horizontal period for reducing oscillations.

4,130,784
APPARATUS FOR COMPENSATING ORDINATE PHASE LAG IN A PLOTTING APPARATUS

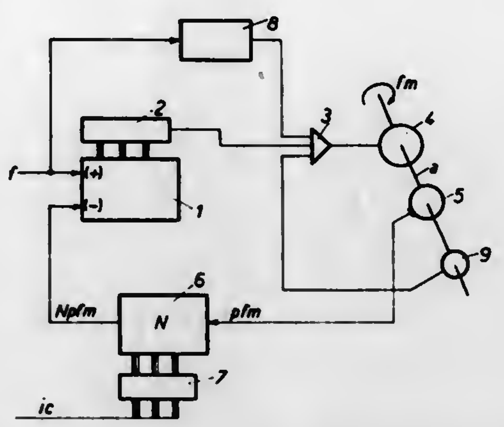
Michael A. Ford, Buckinghamshire, Great Britain, assignor to Perkin-Elmer Limited, Bucks, Great Britain
Filed Sep. 10, 1976, Ser. No. 722,192
Claims priority, application United Kingdom, Sep. 12, 1975, 37509/75
Int. Cl.² H02P *1/58*
U.S. Cl. 318—102 12 Claims



1. In an apparatus for plotting a dependent variable quantity against an independent variable quantity comprising separate means for generating the two variables, the means for generating the dependent variable including a modifying system at least one parameter of which introduces in operation a significant variable time delay between the occurrence of an instantaneous value of the dependent variable and the plotting thereof against the independent variable leading to a variable dependent phase-lag in the plotting of the two variables as the means for generating the independent variable scans through successive values thereof, THE COMBINATION with one of the two means for generating the variables of phase tracking means for producing an output quantity representing any such phase-lag and dependent phase-lag compensating means in operational relationship with the phase tracking means to introduce a phase shift in response to said output in said one of two means, whereby in operation, the effect of dependent phase-lag on plotting fidelity is substantially cancelled.

4,130,785
CONTROL ASSEMBLY FOR A CYCLICALLY OPERATING POWERED UNIT

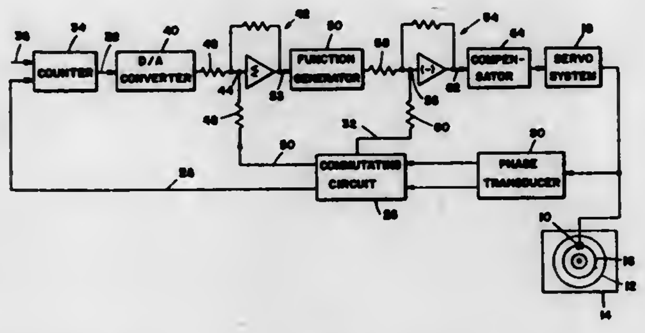
Pierre M. M. Penet, 4 Rue de Bourgogne, Creteil, France (94)
Filed Jan. 24, 1977, Ser. No. 762,179
Claims priority, application France, Jan. 26, 1976, 76 01996
Int. Cl.² H02P *5/00*
U.S. Cl. 318—318 6 Claims



1. A control assembly for a cyclically operating electrically or hydraulically powered unit, which includes a control loop arrangement at least part of which is adapted to handle digital signals, said loop arrangement comprising a reversible counter including a plurality of successive stages and having a count-up series input, a count-down series input and parallel outputs at its successive stages; a sensor associated with said cyclically operating unit for the production of pulses at a multiple of the operating frequency thereof and including sensor output means for deriving a signal from the sensor and applying it to one input of said counter; means for applying a control frequency signal to the other of the inputs of the counter whereby the counter output provides a digital indication of any difference between the control frequency and the sensor output signal; a digital-to-analog converter having a number of successive inputs parallel connected to the respective stage outputs of the reversible counter and a single output providing an analog signal corresponding to the counter digital output; and means connecting the converter output to said cyclically operating unit to control the same.

4,130,786
APPARATUS FOR GENERATING LINEAR AND CONTINUOUS POSITIONAL ERROR AND VELOCITY SIGNALS FOR HIGHER ORDER SERVO SYSTEMS

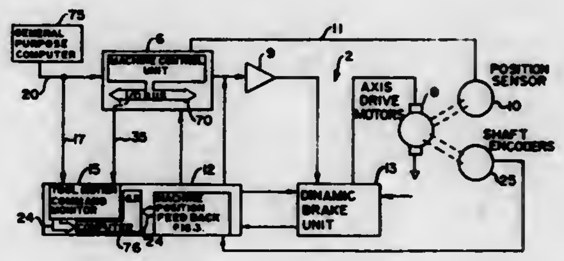
James O. Jacques, Tracy, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 17, 1976, Ser. No. 742,727
Int. Cl.² G05B *13/00*
U.S. Cl. 318—561 24 Claims



1. Apparatus for generating a first continuous, linear waveform from first and second triangular waveforms, the second triangular waveform being phase shifted in relation to the first triangular waveform, comprising:
(a) means, responsive to said first and second triangular waveforms, for generating a sawtooth waveform, each tooth of said sawtooth waveform being of equal amplitude and the amplitude of each transition from one tooth to another tooth being equal;
(b) means for generating a staircase waveform, each step of said staircase waveform being equal in amplitude to the transition from one said tooth to another said tooth, and the commencement of each said step being coincident with a said transition; and
(c) means for summing said sawtooth waveform and said staircase waveform.

4,130,787
RELIABILITY MONITORING SYSTEM

William P. Allaire, St. Peters, Mo.; William J. Mayer, Belleville, Ill., and Thomas A. Zambetis, Hazelwood, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.
Filed Mar. 10, 1977, Ser. No. 776,307
Int. Cl.² G05B *23/02*
U.S. Cl. 318—565 12 Claims



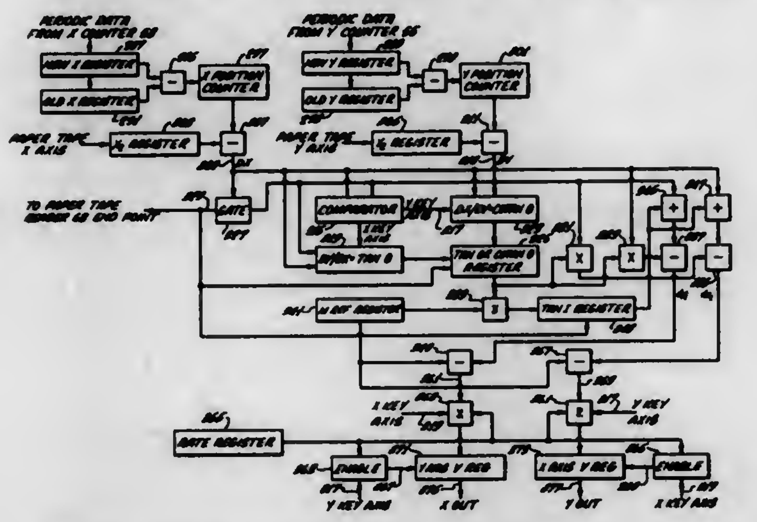
1. A system for monitoring operation of a computer controlled machine tool, said machine tool including a machine control unit having an input operatively connected to said computer and an output operatively connected to said machine tool along an input-output bus, data on the input-output bus of said machine control unit operating said machine tool, comprising:
means for receiving idealized path data for said machine tool from the input side of said machine control unit;
means for detecting changes of state in the transient data on the input-output bus of said machine control unit;
means dedicated to the monitoring system for determining the actual position of said machine tool independently of any other tool position monitoring means;
means for comparing the idealized path data for said machine tool with the actual position of the machine tool as determined by said dedicated means for determining actual machine tool position; and
means for indicating machine tool malfunction when the data collected by said monitoring system from one of the input-output bus of the machine control unit and the actual machine tool position determined by the dedicated means for determining actual tool position falls outside a predetermined value.

4,130,788
NUMERICAL CONTROL SERVO SYSTEM

Allan G. Fiegehen, Orange; Robert P. Houghton, Anaheim; Cecil Earl Bradley, Alta Loma, and Paul F. Richenburg, Orange, all of Calif., assignors to General Automation, Inc., Anaheim, Calif.
Filed Nov. 1, 1973, Ser. No. 412,023
Disclosure was also published under second Trial Voluntary Protest Program on Apr. 6, 1976
Int. Cl.² G05B *19/24, 19/40*
U.S. Cl. 318—574 14 Claims

1. A digital computer circuit arranged to drive a pair of motors, said motors connected to relatively move a tool and a workpiece along two mutually perpendicular axes, said motors being responsive to velocity command digital signals generated by said circuit to relatively move said tool and workpiece

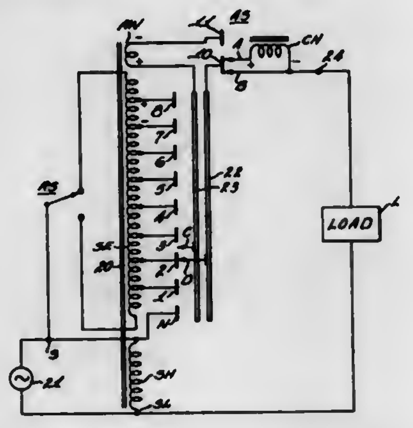
along a line the end points of which are defined by input digital data relative to said mutually perpendicular axes, comprising:
- means for measuring the relative position of said tool and said workpiece and for periodically producing position digital signals defining the actual relative position of said tool and workpiece along each of said perpendicular axis;
- means for adding a reference digital signal defining a predetermined length along one of said perpendicular axes to said position digital signal defining the actual relative position of said tool and workpiece along said one of said perpendicular axes to produce a target digital signal defining the location of a point along said line between said end points;
- means responsive to said position digital signals, said target digital signal and said input digital data for generating a distance digital signal defining the distance between said point along said line between said end points and the actual relative position of said tool and workpiece along the other of said perpendicular axes; and
- means for generating said velocity command signals in proportion to said reference digital signal for one of said pair of motors and in proportion to said distance digital signal for the other of said pair of motors.



4,130,789
TAP CHANGING VOLTAGE REGULATOR WHICH ELIMINATES PREVENTIVE AUTOTRANSFORMER

Manfred E. Neumann, New Berlin, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jul. 25, 1977, Ser. No. 818,987
Int. Cl.^{2} G05F *1/14*
U.S. Cl. 323—43.5 R **9 Claims**

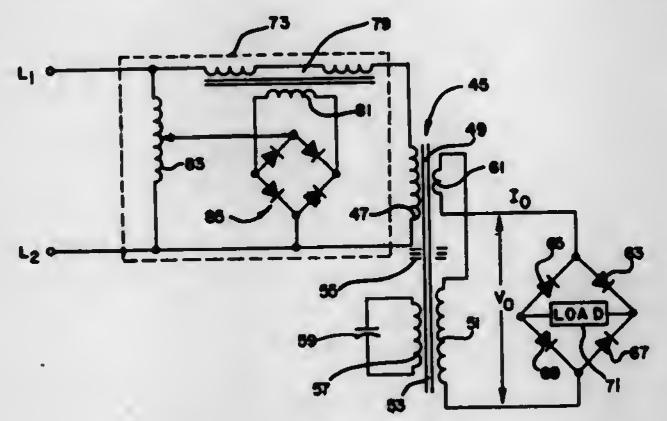


4. Tap changer voltage regulating apparatus comprising, in combination,
- a magnetic core,
- an exciting winding linking said magnetic core,
- a tapped winding linking said magnetic core and having a plurality of taps,
- a half-tap voltage auxiliary winding linking said magnetic core, the number of turns of said auxiliary winding being approximately one-half the number of turns between adjacent taps of said tapped winding,
- first and second tap changer movable selector contacts adapted to sequentially engage said taps,
- an auxiliary switch having first and second stationary contacts, first and second movable contacts normally engaging the same stationary contact, and means for stepping said movable contacts alternately between said first and second stationary contacts so that said first movable contact always disengages one stationary contact and engages the other before said second movable contact disengages said one stationary contact, the first and second ends of said auxiliary winding being respectively coupled to said auxiliary switch first stationary contact and to one of said selector contacts and the other selector contact being coupled to said auxiliary switch second stationary contact, and
- an inductor, said auxiliary switch first movable contact being coupled through said inductor to a lead and said auxiliary switch second movable contact being coupled to said lead, whereby voltage may be regulated without appreciable arcing at said selector contacts or at said auxiliary switch first movable contact.

4,130,790
FERRORESONANT TRANSFORMER POWER SUPPLY

Larry E. Heisey, Troy, Ohio, assignor to Hobart Brothers Company, Troy, Ohio

Filed Apr. 25, 1977, Ser. No. 790,409
Int. Cl.^{2} G05F *1/32*
U.S. Cl. 323—60 **13 Claims**

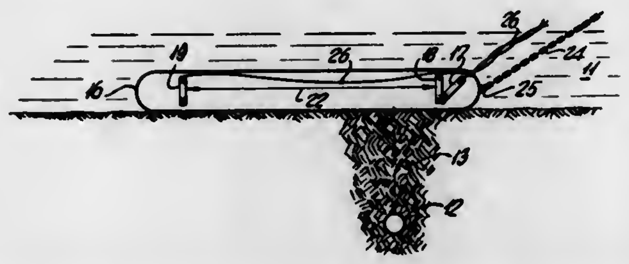


1. A power supply for converting an alternating current electrical power signal to an output electrical power signal, said power supply maintaining the voltage of said output signal at a predetermined level when the current level of said output signal is less than a predetermined value and reducing the voltage of said output signal below said predetermined level when said output signal current level exceeds said predetermined value such that the current level of said output signal is limited, comprising:
- ferroresonant transformer means, having a primary circuit including a primary winding wound on a primary core section and having a secondary circuit including a secondary winding wound on a secondary core section, said primary and secondary core sections being connected by a shunt section providing partial flux linkage between said primary and secondary core sections, said ferroresonant transformer means providing substantially constant output signal voltage on said secondary circuit when the voltage on said primary winding is sufficient to maintain said secondary core section in saturation,
- input terminal means for connection to an alternating current power source; and
- saturable reactor means, connected between said input terminal means and said primary circuit of said ferroresonant transformer means, for reducing the voltage supplied to said primary winding of said ferroresonant transformer means in dependence upon the current therethrough, said saturable means including variable control current supply means for providing a control current to said saturable reactor means such that the impedance of said saturable reactor means may thereby be controlled and the voltage drop across said primary winding determined for each level of current flow through said primary circuit, whereby the current level in said secondary circuit which is sufficient to prevent said secondary core section from being held in saturation may be set and the current of said output electrical power signal thereby limited.

4,130,791
AUTOMATIC PIPE DEPTH LOCATOR

Carlton M. Slough, Spring, Tex., and Earl M. Romero, Broussard, La., assignors to Texaco Inc., New York, N.Y. and The Texas Pipe Line Company, Bellaire, Tex.

Filed Sep. 8, 1977, Ser. No. 831,570
Int. Cl.^{2} G01V *3/08*
U.S. Cl. 324—3 **5 Claims**



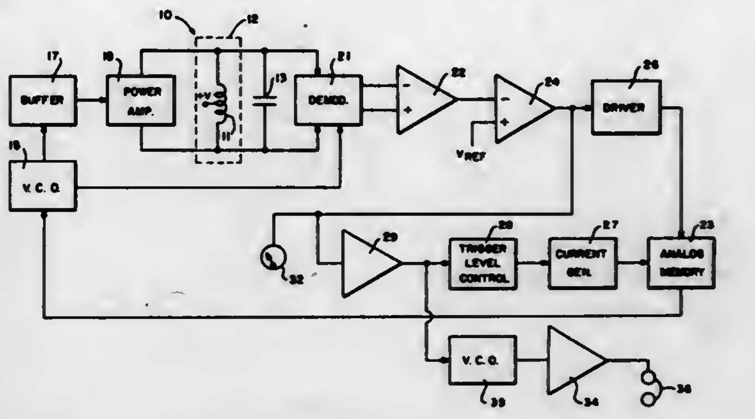
1. Pipe depth locator for use in automatically determining the depth of a pipe beneath a predetermined datum level, said pipe having AC signals impressed thereon and said AC signals having a predetermined frequency, comprising in combination
- an elongated housing adapted for being transported across said pipe location at said datum level,
- at least three pick up coils located in said housing for detecting said AC signals emanating from said pipe,
- said pick up coils having the axes thereof oriented for directional characteristics in order to determine when said signals are emanating from a predetermined direction relative thereto,
- two of said pick up coils being spaced apart a predetermined distance equal to a preselected depth of said pipe from said datum level and being oriented with the axes thereof transverse to the plane of said datum level,
- a third of said pick up coils being located at the same place as one of said two pick up coils and being oriented with the axis thereof at a predetermined angle relative to the plane of said datum level, and
- electric circuit means connected to said pick up coils,
- said circuit means comprising means for detecting null outputs from said pick up coils, and
- timing means for relating said null outputs from said two detectors to said null output from said third detector,
- all whereby said housing may be transported across said pipe location at said datum level at a constant speed in order to indicate when said null outputs have occurred so that said pipe depth may be determined.

4,130,792
METAL DETECTOR WITH FEEDBACK TUNING

John W. Sullivan, 2040 Middlefield Rd., Apt. 9, Mountain View, Calif. 94040

Filed Sep. 30, 1977, Ser. No. 838,096
Int. Cl.^{2} G01V *3/08*
U.S. Cl. 324—3 **3 Claims**

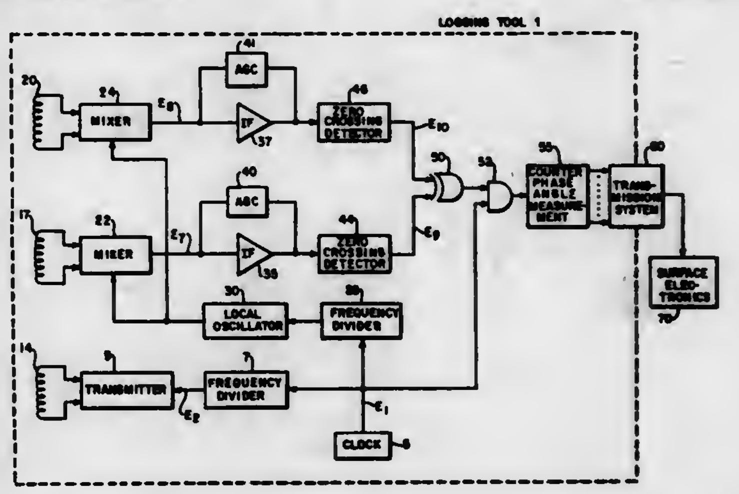
1. In a metal detector: a metal sensing transducer having a resonant frequency dependent upon proximity of the transducer to metal objects, controlled oscillator means for exciting the transducer with a signal of variable frequency to provide an output signal having a level corresponding to the frequency relationship between the excitation signal and the resonant frequency of the transducer, memory means comprising a capacitor connected to the oscillator means for storing a control signal which determines the frequency of the excitation signal, and means responsive to the output signal for adjusting the control signal to maintain the output signal at a predetermined level in the absence of metal objects and for maintaining the control signal at a predetermined frequency when a metal object is detected, said last named means comprising means for charging the capacitor in one direction at a predetermined rate, means for charging the capacitor in the other direction at a rate corresponding to the level of the output signal, and means for inhibiting charging of the capacitor when the output signal reaches a threshold level.



4,130,793
DIELECTRIC WELL LOGGING MEANS AND METHOD UTILIZING THE SIGNALS FROM A PAIR OF RECEIVERS FOR PROVIDING CLOCK PULSES CORRESPONDING TO EARTH FORMATION DIELECTRIC CONSTANT

James R. Bridges; Roland G. Riedesel, Jr., and Larry W. Thompson, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 29, 1976, Ser. No. 755,317
Int. Cl.^{2} G01V *3/18, 3/10;* G01R *25/00*
U.S. Cl. 324—6 **10 Claims**



1. Well logging means adapted to be passed through a borehole traversing an earth formation and for providing a signal corresponding to the dielectric constant of the earth formation comprising pulse means for providing clock pulses at a predetermined frequency substantially greater than the intermediate frequencies; first dividing means connected to the pulse means for providing transmit pulses at a substantially lower frequency than the clock pulses; transmitter means connected to the first divider means for inducing electrical energy into the earth formation at a radio frequency in accordance with the transmit pulses; second dividing means connected to the pulse means for providing beat pulses at a substantially lower frequency than the clock pulse but slightly greater than the frequency of the transmit pulses; at least two receiver means spaced a predetermined distance from each other, each receiver means in-

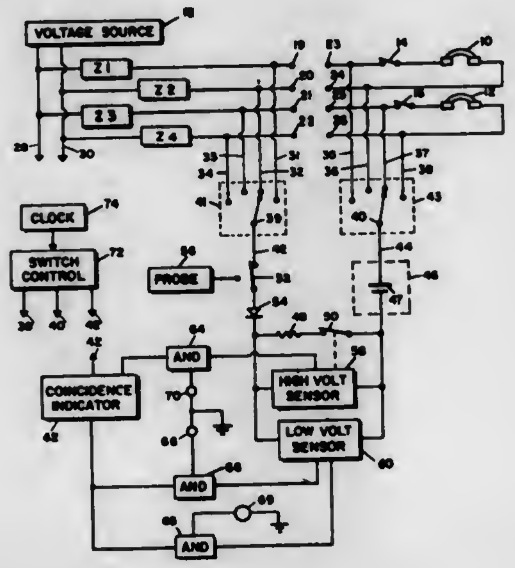
cludes receiver network means connected to the second dividing means for providing a signal, at an intermediate frequency, corresponding to received electrical energy from the earth formation in accordance with the beat pulses, and detector means, each detector means being connected to a corresponding receiver network means for providing a signal whose change in amplitude is representative of the signal from the receiver network means passing through a zero level; an exclusive OR gate connected to both detector means provides a gate signal at one amplitude when the signals from the detector means have different amplitudes and at another amplitude when the signals from the detector means have substantially the same amplitude; an AND gate connected to the pulse means and to the exclusive OR gate is controlled by the gate signal from the exclusive OR gate to pass the clock pulses when the gate signal from the exclusive OR gate is of the one amplitude and to block the clock pulses when the gate signal from the exclusive OR gate is of the other amplitude so as to provide groups of pulses wherein the number of pulses in each group corresponds to the dielectric constant of the earth formation; counter means connected to the AND gate for counting the pulses in each group of pulses so that its count corresponds to the dielectric constant of the earth formation; and means connected to the counter means for providing the signal corresponding to the dielectric constant of the earth formation in accordance with the count in the counter means.

4,130,794

METHODS AND MEANS FOR IDENTIFYING AND TESTING CIRCUIT CONNECTIONS

C. Eugene Cox, 2738 W. Strawberry La., Santa Ana, Calif. 92701

Filed Nov. 5, 1976, Ser. No. 739,060
Int. Cl.² G01R *31/02*
U.S. Cl. 324—51 **15 Claims**



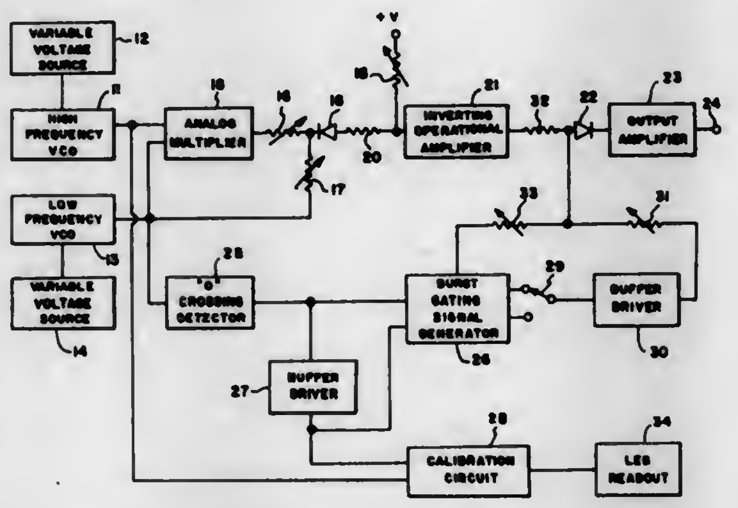
14. In a continuity testing system:
a source of test voltage;
a load impedance and means for connecting the load impedance in series with the source of test voltage;
voltage measuring means for measuring the voltage appearing across said load impedance when the load impedance and test voltage source are connected across terminal points in a circuit to be tested;
means responsive to said voltage measuring means for altering the value of the impedance such that it has a high value when the voltage appearing across the load impedance exceeds the test voltage, and so that it has a lower value when the voltage across the load impedance has a value below the test voltage; and
indicating means comprising said voltage measuring means and means responsive to the voltage measured by said voltage measuring means for indicating whether or not the pair of terminals are or are not interconnected.

4,130,795

VERSATILE LDV BURST SIMULATOR

Otto Youngbluth, Jr., Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 16, 1977, Ser. No. 861,396
Int. Cl.² G01R *27/00*
U.S. Cl. 324—57 R **10 Claims**



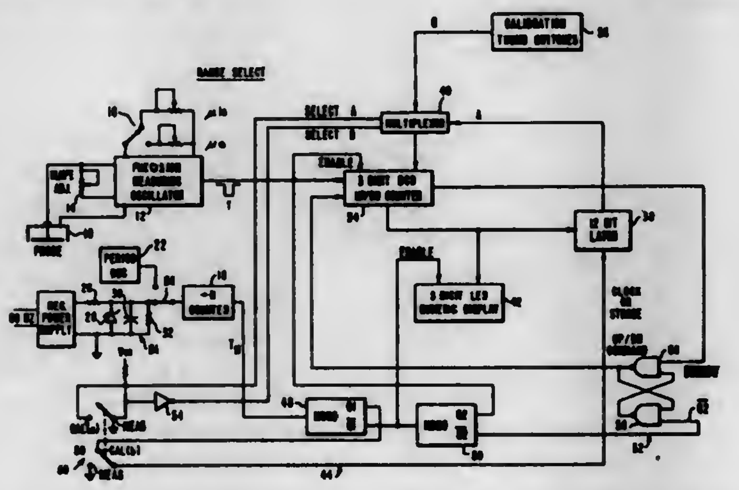
1. A laser doppler velocimeter burst simulator for producing known signals that can be used to determine if a LDV is functioning properly comprising:
means for producing a signal having a frequency equal to the information frequency of said LDV;
means for producing a signal having a frequency equal to the pedestal and envelope frequencies of said LDV;
a modulator means for modulating said information and envelope frequency signals to produce a series of signals with the envelope frequency forming the envelope for the series of signals and with the information frequency signal being the information frequency for the series of signals;
means for adding said envelope frequency signal to said series of signals at the output of said modulating means to form a series of burst signals; and
means for selecting different combinations of the burst signals from said series of burst signals for application to said LDV to determine if it is functioning properly.

4,130,796

CALIBRATING AND MEASURING CIRCUIT FOR A CAPACITIVE PROBE-TYPE INSTRUMENT

Lanson Y. Shum, Salem Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 7, 1977, Ser. No. 858,320
Int. Cl.² G01R *27/26*
U.S. Cl. 324—61 R **6 Claims**



1. A calibrating and measuring circuit for a capacitive probe instrument comprising:

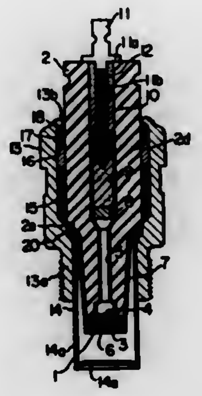
(a) means coupled to said capacitive probe for generating pulses of an adjustable frequency;
(b) means for generating a signal having a time period T_M which is an exact multiple of one over the frequency of the power supply;
(c) means, connected to receive said pulses, for digitally counting up and down, said counting means having an enabling input, a count command input, and a borrow output which is delivered when said counting means reaches zero;
(d) means having an enabling input, connected to the output of said counting means, to display the digital contents of said counting means at the end of period T_M;
(e) means, coupled to said counting means, for storing an offset digital number;
(f) means for generating a digital number signal in the calibration mode;
(g) multiplexer means connected to receive the outputs of said digital number means and said storing means during calibration and measurement, respectively, said multiplexer means having calibration and measurement mode enabling inputs, and having a data output connected to said counting means;
(h) logic control means connected to receive said time period T_M signal as an input, said logic control means being connected to said multiplexer means to respectively enable and disable said multiplexer means for calibration and measurement, said logic means being connected to the enable inputs of said counting means and said display means, said logic means being also connected to said count command input and to said borrow output of said counting means, said logic control means sending a down count command to said count command input upon receiving said T_M signal, and sending an UP count command to said command input upon receiving said borrow signal, said logic control means being connected to said offset digital storing means to command the storage of the digital contents of said counting means at the end of the period T_M, so that during measurement said stored number is the offset number which said counting means must first count down to zero before beginning to count up the pulses received from said oscillator means.

4,130,797

GAS COMPONENT SENSING APPARATUS

Tadashi Hattori, Okazaki, and Hiroaki Yamaguchi, Aichi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 21, 1977, Ser. No. 853,830
Claims priority, application Japan, Nov. 25, 1976, 51/141883; Nov. 25, 1976, 51/141884
Int. Cl.² G01R *27/02*
U.S. Cl. 324—65 P **3 Claims**



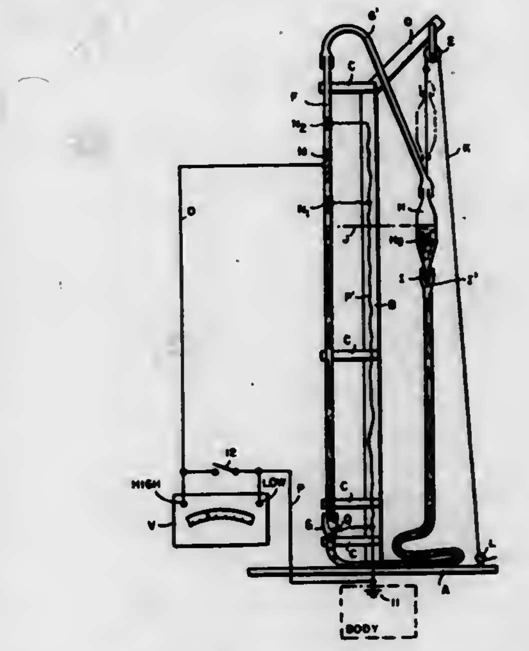
1. A gas component sensing apparatus comprising:
a solid state electrolyte made of metal oxide having an electrical resistance which changes in accordance with a gas component in a gas under test;
a holder made of heat resistive, electrically insulative metal oxide and having an axially extending through-hole formed therein, said solid state electrolyte being held at one end of said through-hole;
a lead member of conductive material fixed to the other end of said through-hole of said holder;
a housing of conductive metal fixed around the outer periphery of said holder;
a pair of electrodes formed on opposite surfaces of said solid state electrolyte in such a manner to prevent electrical shortcircuit therebetween;
a first electrically conductive path means arranged in said through-hole of said holder for electrically connecting one of said pair of electrodes with said lead member; and
a second electrically conductive path means formed in a thin film structure on the outer surface of said holder for electrically connecting the other electrode with said housing; whereby the change in said electrical resistance of said solid state electrolyte is taken across said lead member and said housing.

4,130,798

UNIMETER FOR DETECTION AND INDICATION OF ELECTRIC CHARGE VARIATION

Arthur H. Maclaren, 135 Livingston St., Tewksbury, Mass. 01876

Filed Nov. 25, 1977, Ser. No. 854,807
Int. Cl.² G01R *31/02*
U.S. Cl. 324—72 **12 Claims**



1. The method of sensing the electric potential of a body and indicating variations thereof comprising the steps of
(a) providing a substantially vertical column of conductive fluid which is movable to position the fluid level at variable vertical positions including a second position opposed and closely spaced from a capacitor electrode and a first position remote from and below said capacitor electrode;
(b) establishing a unipotential initial condition between said conductive fluid column and said capacitor electrode by electrical connection of both to said body and providing an electrometer having a short circuit connection between a low terminal and a high terminal which are connected respectively to said column and said capacitor electrodes;
(c) providing an initial position for the level of said conductive fluid column at said first position remote from said capacitor electrode;
(d) moving said conductive fluid column while in contact with said body up and down between said first and second positions;
(e) removing said short circuit connection between said electrometer terminals prior to the motion of said fluid in the upward direction between said first and second positions;
(f) observing the reading on said electrometer and replacing

said short circuit connection between said electrometer terminals after completing said motion in said upward direction one direction and before moving said fluid in the downward direction; and

(g) after a period of stabilization repeating said steps (d) through (f) to indicate variations in said electric potential of said body from the successive readings of said electrometer.

4,130,799

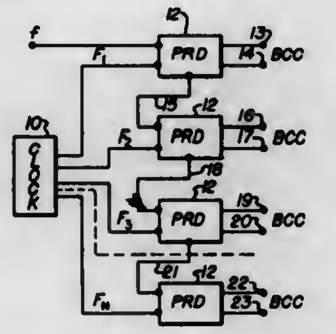
METHOD AND APPARATUS FOR CONTINUOUS FREQUENCY MEASUREMENT

Harvey A. Cherry, 1226 Ferndale Dr., Seabrook, Tex. 77586

Filed Jul. 5, 1977, Ser. No. 813,170

Int. Cl.² G01R *23/14*

U.S. Cl. 324—79 D **33 Claims**



1. A method for deriving from pulses at a known pulse rate a continuous logical output in a preselected base, functionally related to pulses at an unknown pulse rate, comprising the steps of:

generating pulses at an output pulse rate functionally related to a difference between said pulses at an unknown pulse rate and a multiple of said pulses at a first known pulse rate;

generating an output functionally related to said difference;

generating pulses at a second known pulse rate having a predetermined relationship to said pulses at a first known pulse rate;

repeating the above steps to obtain a plurality of said outputs functionally related to said unknown pulse rate to a preselected precision of measurement, wherein said pulses at an output pulse rate become the next said pulses at an unknown pulse rate, and said pulses at a second known pulse rate become said pulses at a first known pulse rate.

4,130,800

MAGNETIC PARTICLE TEST SYSTEM USING MOVABLE TEST PIECE CLAMPING MEANS MOVABLE JOINTLY OR INDEPENDENTLY

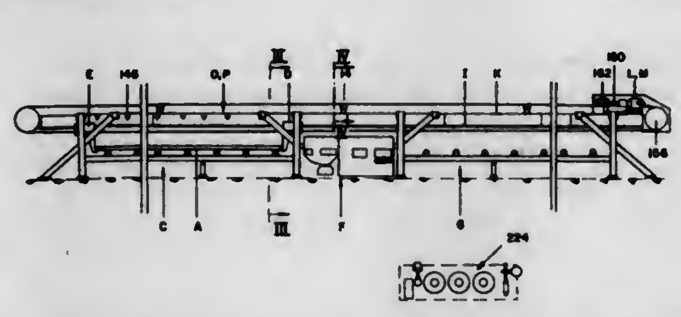
Ernst E. Fuchs, Schmerikon, Switzerland, assignor to Mecafina S.A., Schmerikon, Switzerland

Filed Aug. 25, 1977, Ser. No. 827,607

Claims priority, application Switzerland, Aug. 31, 1976, 11022/76

Int. Cl.² G01R *33/12*

U.S. Cl. 324—216 **12 Claims**



1. An installation for detecting and marking defective locations in the surface of an elongated rigid workpiece of magnetizable material, comprising at least one pair of clamping devices for engaging the ends of the workpiece and to clamp the workpiece in its longitudinal direction, means for connecting said clamping devices to an electric current source for passing a current through the workpiece so as to create magnetic flux lines of a magnetic field at the surface of the workpiece, guide rail means providing a track for at least one pair of first and second carriages movable along said track and each carrying one of said clamping devices, said guide rail means and carriages serving for conveying the workpiece from a feed station to a delivery station while current is passing through the workpiece, a treatment station arranged between said feed station and said delivery station, so that the work piece travels through the treatment station when it is conveyed from the feed station to the delivery station, said treatment station having a spraying device for spraying a ferromagnetic powder on the surface of the workpiece, and a fixing device for fixing the powder which magnetically adheres to defective locations in said surface, said first and second carriages being associated with a first and a second drive cable, respectively, each having two opposite ends which both are connected to the associated carriage, said drive cables being parallel and each running along said guide rail means and over two return pulleys arranged beyond the feed station and the delivery station, respectively, so that the first and second drive cables each form a closed loop, two drive devices operatively connected to said first and second drive cables, respectively, for moving the corresponding first and second carriages along said track, a clutch coupling for connecting together and disconnecting the two drive devices, for selectively allowing joint or independent movement of the carriages, respectively.

4,130,801

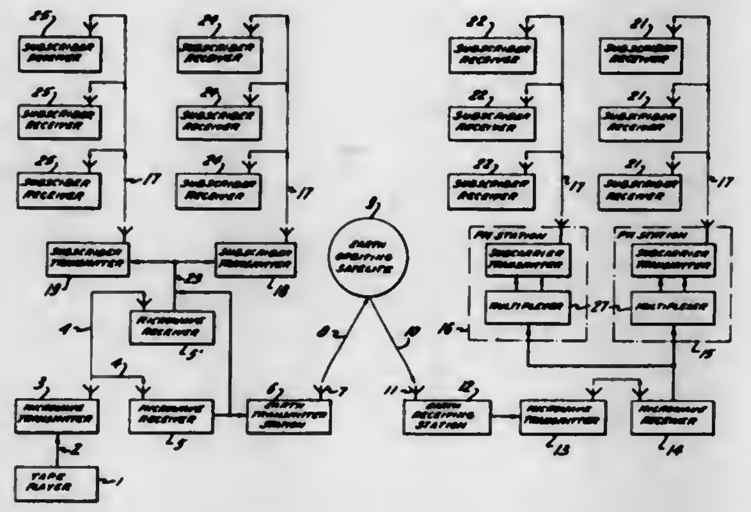
AUDIO MESSAGE BROADCAST SYSTEM

Jack Prygoff, 1088 Rosedale Rd., North Woodmere, N.Y. 11581

Filed Mar. 31, 1976, Ser. No. 672,267

Int. Cl.² H04B *7/20*

U.S. Cl. 325—4 **8 Claims**



1. An audio message broadcasting system comprising:

a source of pre-recorded audio messages and means for producing an audio signal corresponding to said messages;

a microwave transmitter connected to said source for transmitting said signal to an earth based transmitting station, and a microwave receiver connected to said earth based transmitting station so that said signal is transmitted from said source to said earth based transmitting station over land based microwave channels;

means at said earth based transmitting station for upwardly transmitting said signal over a first frequency channel to an earth orbiting spin stabilized geostationary satelite for receiving said signal and for translating said first frequency channel to a second frequency channel for downward relay transmission from said satelite;

an earth based receiving station remote from said earth based transmitting station for receiving said signal carried on said second frequency carrier;

a microwave transmitter connected to said earth based receiving station for transmitting said signal to an FM radio broadcasting station, and a microwave receiver connected to said FM station, so that said signal is transmitted from said earth based receiving station to said FM station over land based microwave channels; and

means for transmitting said signal over subcarrier frequency channels from said FM broadcasting station to subscriber receiving stations for audio broadcast of said prerecorded messages.

4,130,802

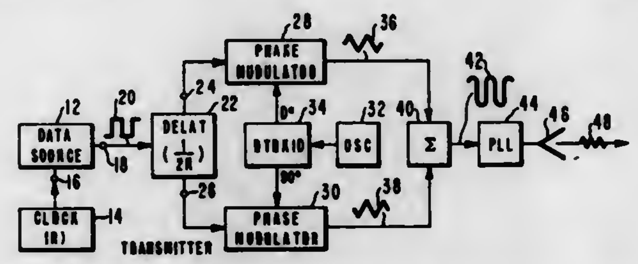
UNIDIRECTIONAL PHASE SHIFT KEYED COMMUNICATION SYSTEM

Edward J. Nossen, Cherry Hill, and Vytas F. Volertas, Delran, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 15, 1976, Ser. No. 649,547

Int. Cl.² H04L *27/10*

U.S. Cl. 325—30 **9 Claims**



1. In a binary data communication system of the type including a transmitter and receiver, said transmitter comprising a data source means for supplying binary data signals having a predetermined bit period, first means for generating first and second carrier signals, said second carrier signal being substantially in quadrature with said first carrier signal, second means responsive to said first and second carrier signals and said data signals for phase-modulating said first and second carrier signals by said binary data signals, and third means for generating an output signal representative of the sum of said phase-modulated signals, the improvement wherein:

said transmitter further includes fourth means for delaying by substantially half the bit period of said data signals the modulation of one of said first and second carrier signals with respect to the other, whereby phase shifting is effected in steps in a predetermined phasor direction to reduce sidebands in the frequency spectrum of the output signal generated by said third means.

4,130,803

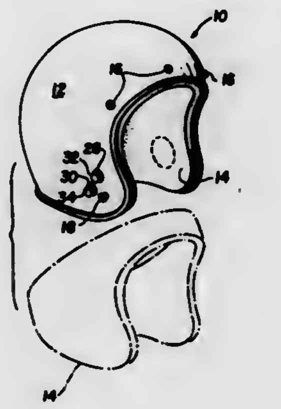
RADIO EQUIPPED PROTECTIVE HELMET

Kenneth L. Thompson, 5201 W. 34th St., #702, Houston, Tex. 77092

Filed May 4, 1977, Ser. No. 793,236

Int. Cl.² H04B *1/08*

U.S. Cl. 325—361 **1 Claim**



1. The combination with a rigid protective helmet constructed and arranged to enclose the forehead, sides and adjacent supporting neck of a wearer's head, one of the sides of the helmet having adjacent apertures for the projection of volume and tuning controls therethrough and the opposite side thereof being provided with an outwardly opening access door; of a thick unitary cushioning pad constructed and arranged to be detachably mounted on the inner peripheral edge surface of said helmet; said unitary pad being substantially symmetrical and having a central portion adapted to engage the forehead and side portions adapted to engage the inner side portions of said helmet; one of said side portions having a radio with tuning and volume controls mounted therein and positioned so that said controls project through said apertures; and an ear phone and a battery positioned in the other of said side portions and being electrically connected with said radio and with each other; said battery being positioned in the outer portion of said pad adjacent said access door for ready replacement thereof.

4,130,804

CHANNEL SELECTING APPARATUS WITH LINEARIZED TUNING

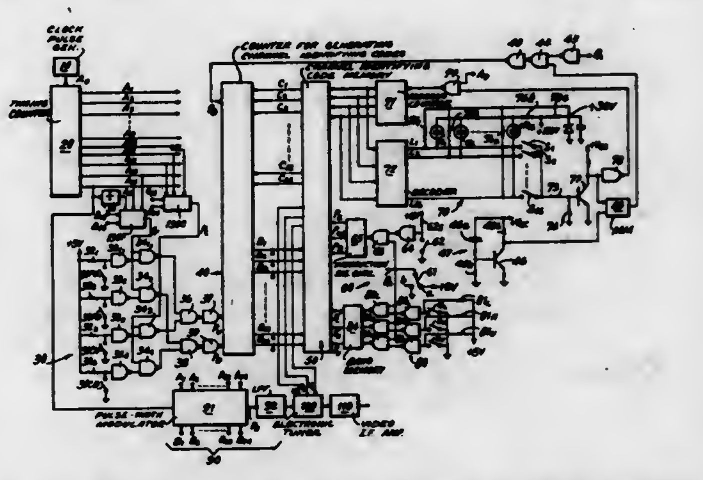
Takao Mogi, Tokyo, and Hisao Okada, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 23, 1976, Ser. No. 716,654

Claims priority, application Japan, Aug. 28, 1975, 50-104444

Int. Cl.² H04B *1/06*

U.S. Cl. 325—464 **12 Claims**



1. A channel selecting apparatus for a television receiver having a tuner with a voltage-controlled, variable reactance device as its tuning element, and in which said tuning element has a non-linear relation between its control voltage and the resulting tuned frequency so that, in different ranges of said control voltage, a predetermined change in said control voltage causes relatively large and small changes, respectively, in said tuned frequency; said channel selecting apparatus comprising sweep pulse generating means operable for producing sweep pulses, counting means for counting said sweep pulses and producing progressively changing binary codes corresponding to the changing counts of said counting means and which represent respective control voltages for said variable reactance device, digital-to-analog converting means receiving said binary codes and converting the same into the respective control voltages for said variable reactance device, and means for automatically varying the repetition rate of said sweep pulses to be higher for the one of said ranges of the control voltage in which said predetermined change in the control voltages causes a relatively small change in the tuned frequency than for another of said ranges in which said predetermined change in the control voltage causes a relatively large change in the tuned frequency.

4,130,805
NOISE CLEARING SYSTEM

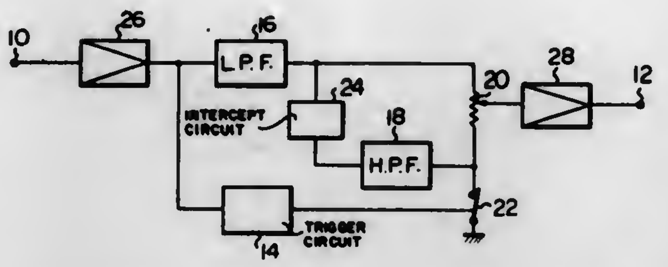
Masaharu Mori, Warabi, and Kiyoshi Amazawa, Ohmiya, both of Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1977, Ser. No. 790,603

Claims priority, application Japan, Apr. 30, 1976, 51/49657

Int. Cl.² H04B *1/10*

U.S. Cl. 325—473 **5 Claims**



1. An impulsive noise clearing system for an FM stereophonic receiver, comprising:

delay means for receiving and delaying an incoming FM stereophonic signal, including a pilot tone and a subcarrier,

intercept means, connected to the output of said delay means, for intercepting said pilot tone and said subcarrier, and for providing the remainder of said incoming FM stereophonic signal at an output,

phase reversing means, connected to the output of said intercept means, for detecting an impulsive noise signal contained within said incoming FM stereophonic signal and for providing a phase reversed impulsive noise signal,

means for receiving continually said incoming FM stereophonic signal, and for providing a trigger pulse signal equal in duration to the period of impulsive noise contained within said incoming FM stereophonic signal,

summing means, connected to said delay means, for summing said incoming FM stereophonic signal with said phase reversed impulsive noise signal from said phase reversing means, and

switching means, connected to the output of said phase reversing means, for applying said phase reversed impulsive noise signal to said summing means upon receipt of said trigger pulse signal, whereby said impulsive noise signal is cleared from said incoming FM stereophonic signal at the output of said summing means.

4,130,806
FILTER AND DEMODULATION ARRANGEMENT

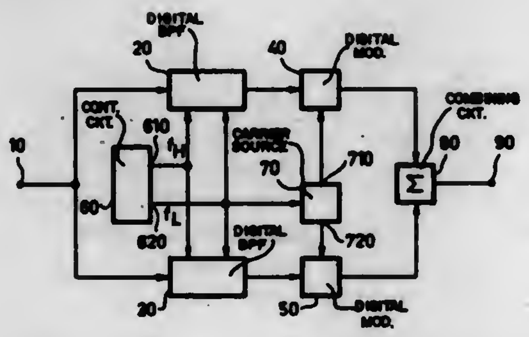
Petrus J. Van Gerwen; Rudolf A. Van Doorn; Wilfred A. M. Snijders, and Hendrik A. Van Essen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 23, 1977, Ser. No. 799,884

Claims priority, application Netherlands, May 28, 1976, 7605726

Int. Cl.² H04B *1/16*

U.S. Cl. 325—487 **1 Claim**



1. An arrangement for filtering and demodulating passband signals which are obtained by modulating a carrier in accordance with a baseband signal whose bandwidth is limited to a given maximum frequency, said arrangement comprising means for filtering the passband signals according to a first and a second bandpass characteristic for generating first and second filtered passband signals, which bandpass characteristics apart from the asymmetrical distortion relative to their central frequency are versions of one another shifted 90° in phase, means for demodulating the first and second filtered passband signals with an inphase carrier and a quadrature carrier respectively for generating first and second demodulated signals, means for combining the first and second demodulated signals, all said means for filtering, demodulating and combining being digital means, the digital filter means including means for sampling frequency reduction for converting signal samples of the passband signals occurring with a first sampling frequency which is higher than twice the highest frequency in the passband signals into signal samples of the first and second filtered passband signals occurring with a second sampling frequency which is not higher than twice said maximum frequency of the baseband signal, and the digital means for demodulating and combining each include means for processing signal samples occurring with the same second sampling frequency.

4,130,807
FEEDFORWARD AMPLIFIERS

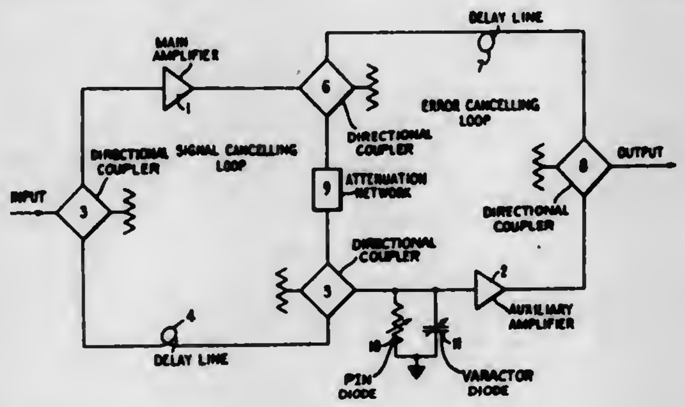
Ralph A. Hall, Sawbridgeworth, and Peter E. Radley, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 24, 1977, Ser. No. 809,584

Claims priority, application United Kingdom, Aug. 19, 1976, 34582/76

Int. Cl.² H03F *1/26, 3/68*

U.S. Cl. 330—124 R **9 Claims**



1. A feedforward amplifier comprising:

a main amplifier disposed in a signal canceling loop coupled to an input of said feedforward amplifier;

an auxiliary amplifier disposed in an error cancelling loop coupled between said signal loop and an output of said feedforward amplifier; and

control means directly connected between said error loop and ground for controlling both the amplitude and phase of signals coupled to said output.

4,130,808
PHASE LOCK STABILIZED SWEPT FREQUENCY SIGNAL SOURCE

Michael S. Marzalek, Cotati, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 9, 1977, Ser. No. 805,195

Int. Cl.² H03B *3/04, 23/00*

U.S. Cl. 331—14 **5 Claims**

1. A swept frequency signal source comprising:

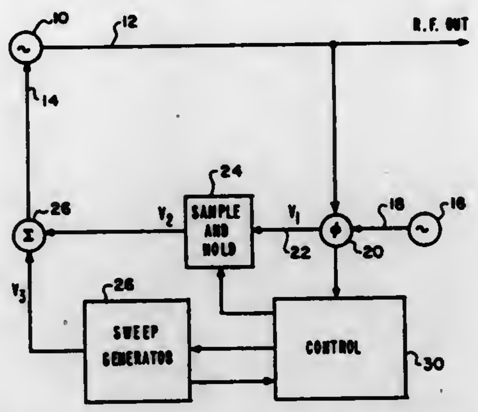
a reference frequency signal source;

a variable frequency signal source having a signal output and a control input;

phase lock means connected to the reference frequency and variable frequency signal sources for producing a control signal for the variable frequency signal source and establishing phase lock between the variable frequency signal source and the reference frequency signal source;

sweep generator means coupled to the variable frequency signal source for producing a periodic sweep signal having a time varying and a constant portion; and

control means connected to the phase lock means and the sweep generator means for causing the phase lock means to phase lock the input signal of the variable frequency signal source to the output signal of the reference frequency signal source during the constant portion of each sweep signal and, in response to the establishment of said phase lock, for opening the phase lock, storing the control signal and adding the control signal to the sweep signal during the time varying portion of each sweep signal to sweep the frequency of the output signal from the variable frequency signal source starting from a frequency established in accordance with the control signal.



4,130,809
TRAVELLING WAVE LASER

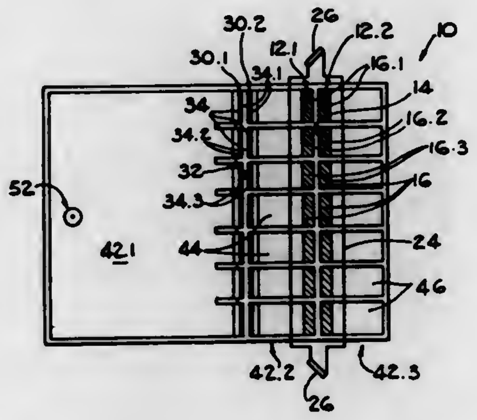
Victor H. Hasson, San Jose, Calif., and Hubertus M. von Bergmann, Pretoria, South Africa, assignors to South African Inventions Development Corporation, Pretoria, South Africa

Filed Jan. 31, 1977, Ser. No. 764,106

Claims priority, application South Africa, Feb. 5, 1976, 76/0674

Int. Cl.² H01S *3/097*

U.S. Cl. 331—94.5 PE **7 Claims**



1. A transversely excited travelling wave gas laser comprising:

(a) a pair of elongate main discharge electrodes that define between them a discharge gap, one of the main discharge electrodes being segmented along its length;

(b) a means for immersing the main discharge electrodes in a lasing gas;

(c) a pair of elongate timing electrodes that define between them a timing discharge gap, one of the timing electrodes being segmented along its length, each of the segments of the segmented main discharge electrode being electrically connected with a different one of the segments of the segmented timing electrode;

(d) an electrical insulating means for insulating the segments of the segmented timing electrode from one another and the segments of the segmented main discharge electrode from one another; and

(e) an excitation pulse applying means for applying a voltage pulse across the timing electrodes; the segments of the segmented timing electrode being such that the distance between each of them and the other timing electrode permits discharges between the said other timing electrode and the segments at instances in time to supply sharpened voltage pulses successively to the segments of the segmented main discharge electrode and thereby cause temporally and spatially separated discharges between the two main discharge electrodes to provide a travelling wave laser discharge along the lasing gap in which the excitation front of the discharge travels at the speed of the laser light.

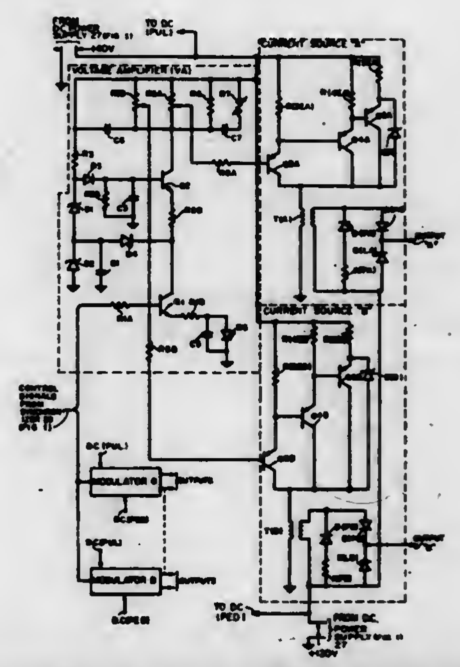
4,130,810
SOLID STATE POWER COMBINER

Ronald M. Wallace, Braintree, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jun. 30, 1977, Ser. No. 814,744

Int. Cl.² H03B *7/06*

U.S. Cl. 331—107 R **1 Claim**



1. In a transmitter of radio frequency energy wherein pulses of radio frequency energy are, in response to control signals periodically produced by a synchronizer, generated by an IMPATT diode, a modulator for converting each successive one of the control signals to an actuating signal for the IMPATT diode, such modulator comprising:

(a) direct current biasing means for continuously applying a direct current signal to the IMPATT diode, the level of such signal being less than the avalanche breakdown level of such diode;

(b) pulse forming means, responsive to each successive one of the control signals, to produce a corresponding voltage pulse having a level always greater than the difference between the level of the direct current signal to the IMPATT diode and the avalanche breakdown level of such diode, the level of such voltage pulse increasing linearly with time;

(c) transformer means, responsive to each corresponding voltage pulse out of the pulse forming means, for coupling to the IMPATT diode an analogous current pulse as an actuating signal for such diode, the level of such analogous current pulse increasing substantially linearly with time; and

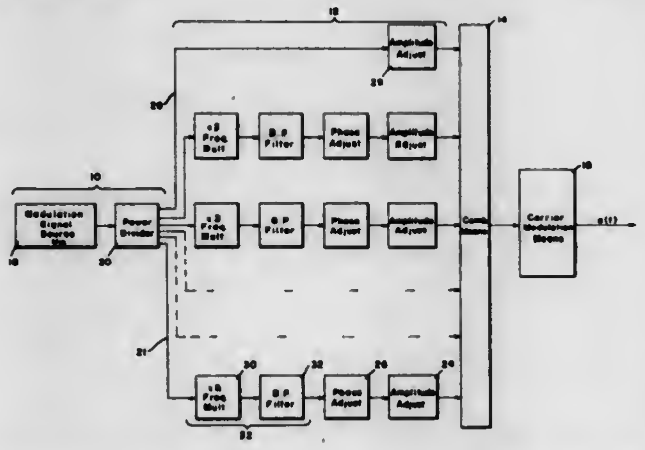
(d) clamping means responsive at the end of each actuating signal to maintain the level of the direct current signal applied to the IMPATT diode at a constant value.

4,130,811

MODULATION SYSTEM

Joel Katz, Los Angeles, and Eugene H. Gregory, Tarzana, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 27, 1977, Ser. No. 864,946
Int. Cl.² H03C *3/00*
U.S. Cl. 332—18 11 Claims



1. Apparatus for generating a modulated wave having the first three sideband pairs of power closely approximating the carrier which comprises:

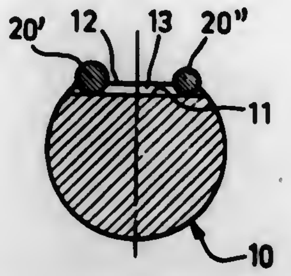
(a) means for producing a sinusoidal signal;
(b) a fundamental channel having an input and an output;
(c) a harmonic channel having an input and an output;
(d) a power divider having an input, a first output and a second output, said input in electrical connection with said means for producing a sinusoidal signal to accept said signal, said first output in connection with said fundamental channel input and said second output in connection with second harmonic channel input to direct said signal to said fundamental channel and to said harmonic channel;
(e) a first amplitude adjustment means in said fundamental channel to scale the amplitude of said signal to β where β is the solution of $J_0(\beta) = J_1(\beta)$;
(f) a second amplitude adjustment means is said harmonic channel to scale the amplitude of said signal to β;
(g) a frequency adjustment means to transform the frequency of said signal within said harmonic channel to two times a fundamental frequency ω_m and to transform the frequency of said signal within said fundamental channel to the fundamental frequency ω_m;
(h) a phase shift means is said harmonic channel to advance said signal in phase by 90°;
(i) a power combiner having a fundamental channel input, a harmonic channel input and an output to add the output of said fundamental channel to that of said harmonic channel;
(j) a voltage controlled phase shifter having a control input and a carrier input and an output channel;
(k) a carrier signal source to supply a sinusoidal carrier signal to the carrier input of said voltage controlled phase shifter; and
(l) the output of said power combiner being input to said control input of said voltage controlled phase shifter whereby the carrier signal is phase modulated by the output of said power combiner.

4,130,812

BAND PASS ELECTROMECHANICAL FILTERS

Michel G. Berniere, Louveciennes, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed May 2, 1977, Ser. No. 793,064
Claims priority, application France, May 15, 1976, 76 13345
Int. Cl.² H03H *9/02, 9/26*
U.S. Cl. 333—71 3 Claims



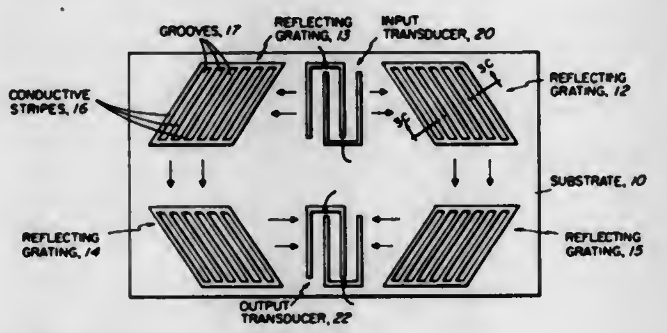
1. A band pass electromechanical filter of the type comprising an input electromechanical transducer and an output electromechanical transducer and a mechanical filter vibrating in compression-extension mode, disposed between said transducers and comprising a plurality of cylindrical resonators connected to one another by coupling rods, each resonator being formed with a flat portion at the end (s) upon which at least one coupling rod is secured, the plane of said flat portion being parallel to the longitudinal axis of the resonator, each coupling rod being welded onto said flat portion along one generatrix thereof, said generatrix being parallel to the resonator axis, each coupling rod having its end in abutment with a shoulder which terminates the flat portion, the cross-sectional area of the resonator outside the flat portion being equal to the sum of the cross-sectional area of the resonator in the section comprising the flat portion and the cross-sectional area of the coupling rod (s) secured on said flat portion.

4,130,813

SURFACE WAVE DEVICE HAVING ENHANCED REFLECTIVITY GRATINGS

Frank Sandy, Lexington, and Clarence J. Dunarowicz, Waltham, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 23, 1977, Ser. No. 799,622
Int. Cl.² H03H *9/02, 9/26;* H01L *41/22, 41/10*
U.S. Cl. 333—72 22 Claims



1. In combination:

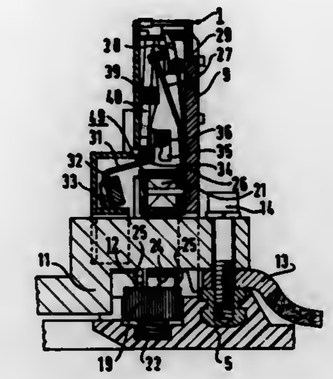
a substrate for supporting surface wave propagation; and one or more means for reflecting surface waves upon said substrate, said reflecting means having a plurality of substantially parallel grooves within said substrate and a plurality of metal stripes positioned on the surface of said substrate, one of said stripes being located between adjacent ones of said grooves, the width of said grooves and said metal stripes being substantially one-half the wavelength of said reflected surface waves.

4,130,814

INTERCHANGEABLE TRIPPING DEVICE FOR A CIRCUIT-BREAKER

Michel Bruchet, St-Quentin, France, assignor to UNELEC S.A., Paris, France

Filed Apr. 13, 1977, Ser. No. 787,267
Claims priority, application France, Apr. 21, 1976, 76 11688
Int. Cl.² H01H *71/74*
U.S. Cl. 335—42 8 Claims



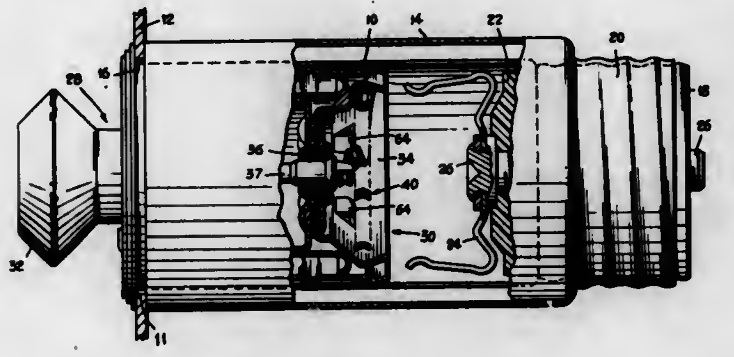
1. An interchangeable tripping device for a circuit-breaker, wherein the circuit-breaker comprises a casing, a current-passing conductor and a control mechanism operable by the tripping device to break the circuit of the current-passing conductor; said tripping device including excess current detection means constituted as a magnetic circuit which, in operation, surrounds the current-passing conductor, the magnetic circuit being made of two separable parts, one of which is installed in said casing and the other separable part being removable and integral with said interchangeable tripping device such that replacement of the interchangeable tripping device in the circuit-breaker can be made without disconnection of the current-passing conductor of the circuit breaker.

4,130,815

FORMED HEATING RIBBON AND COIL

Laurence G. Horwitt, New Haven; Donald J. Mattis, Norwalk, and Harry Greenberger, Bridgeport, all of Conn., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Sep. 13, 1977, Ser. No. 832,834
Int. Cl.² H01C *3/00*
U.S. Cl. 338—282 4 Claims



1. An electric heating element comprising, in combination:

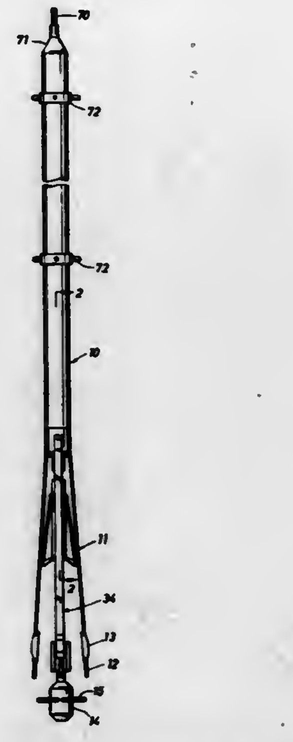
(a) a tight spiral coil of metal heater ribbon,
(b) current-carrying members connected respectively to inner and outer portions of said spiral ribbon, to enable the latter to be electrically energized,
(c) the convolutions of said ribbon having an insulating oxide coating to minimize electrical conduction between contiguous adjacent coil portions,
(d) said ribbon having a cross-sectional shape which produces a bulbous surface on one side and which is characterized by a substantially flat central portion, opposite side flange portions each extending angularly on the same side of the flat central portion and each being of thinner section than said flat central portion, the free edges of said flange portions having longitudinal beads on those sides which are part of the bulbous surface of the ribbon.

4,130,816

CIRCUMFERENTIAL ACOUSTICAL DETECTOR

Charles B. Vogel, and Gene T. Worrell, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 28, 1977, Ser. No. 819,806
Int. Cl.² G01V *1/40*
U.S. Cl. 340—15.5 BH 15 Claims



1. An acoustical logging tool for obtaining a circumferential acoustic log of a borehole, said logging tool comprising:

an elongated housing;
a plurality of elongated arms, said arms comprising flat spring members having one end secured to said housing and having the free ends extending along the axis of said housing;
actuating means mounted in said housing, and disposed to extend the free end of said arms, said arms being retracted by the biasing force of said flat spring members;
a plurality of transducers, one of said transducers being mounted on the free end of each of said arms;
circuit means coupled to some of said transducers to energize said transducers to produce acoustical impulses;
additional circuit means coupled to the remainder of said transducers to receive said acoustical impulses and transmit related signals to the surface; and,
recording means, said additional circuit means being coupled to said recording means to separately record said related signal.

4,130,817

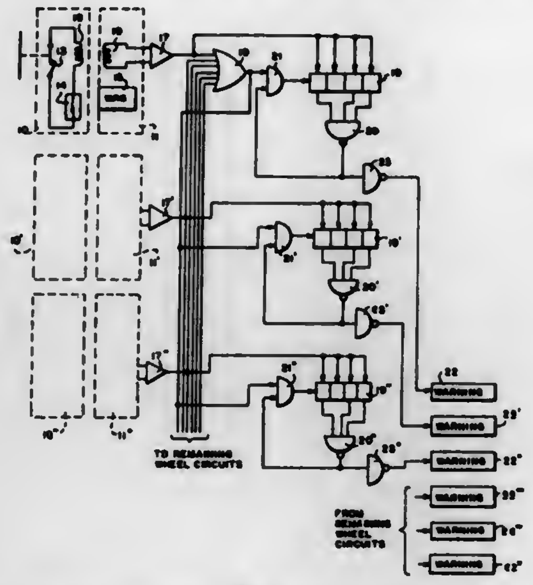
TIRE PRESSURE WARNING DEVICES

William F. Hill, Stafford, and Allan E. Clark, Lichfield, both of England, assignors to The Lucas Electrical Company Limited, Birmingham, England

Filed Jan. 8, 1976, Ser. No. 647,401
Claims priority, application United Kingdom, Jan. 14, 1975, 1482/75
Int. Cl.² B60C *23/02*
U.S. Cl. 340—58 12 Claims

1. A tire pressure warning device comprising the combination of a non-rotating assembly for mounting on a non-rotating part of a vehicle and including a pick-up, and a rotating assembly for mounting on a wheel of the vehicle so that it passes adjacent the non-rotating assembly, said rotating assembly including a single coil adapted to be energized by movement of the rotating assembly past the non-rotating assembly, a pres-

sure actuated switch sensitive to tire pressure and arranged to close at normal tire pressure, and synchronizing switch means operable to permit release of the energy stored by said coil whilst said coil is adjacent said pick-up, said single coil, pressure actuated switch and synchronizing switch means being arranged in series, the arrangement being such that said release of energy is prevented if the pressure operated switch opens.



4,130,818

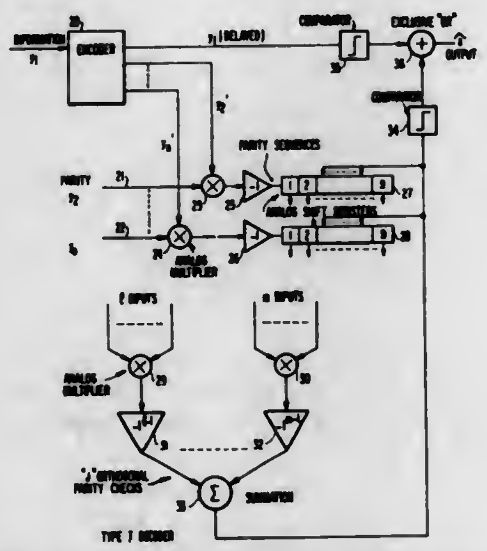
ANALOG THRESHOLD DECODING

John S. Snyder, Jr., Monrovia, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Apr. 21, 1977, Ser. No. 789,589

Int. Cl.² G06F *11/12*

U.S. Cl. 340—146.1 AQ **25 Claims**



1. An analog threshold decoder for decoding convolutionally-coded information and parity sequences with digital information which contains transmission errors comprising:

an array of analog storage devices for receiving the information and parity sequences, each of said analog storage devices having a plurality of stages, selected stages having stage taps for producing outputs;

an analog summation means connected to said analog storage device stage taps for summing analog storage device outputs; and

a comparator means connected to the output of said summation means, said comparator means producing an output which is a binary "1" if the output of said summation means is positive, and a binary "0" if the output of said summation means is negative.

4,130,819

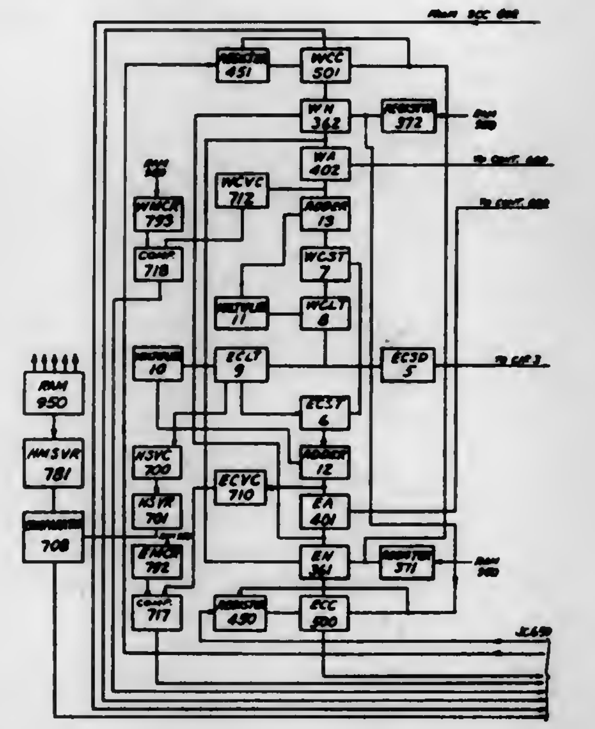
OPTICAL CHARACTER RECOGNITION DEVICE

Rudolph H. Engelmann, St. Paul, Minn., assignor to Hildegarde Seifried, North Hollywood, Calif. and John W. Adams, Minneapolis, Minn.

Filed Jun. 22, 1977, Ser. No. 808,912

Int. Cl.² G06K *9/12*

U.S. Cl. 340—146.3 AC **32 Claims**



1. A method of electronically recognizing characters, comprising:

scanning an area containing characters to be identified and producing electrical signals indicative of scanning positions at which input material of the characters is present;

producing style value criteria for each character to be identified by counting the number of signal producing transitions from each scanning operation;

producing penetration value criteria for each character to be identified by sensing the distance from a predetermined reference location to signal producing portions of the character disposed closest to said reference location;

deriving style value and penetration value signals respectively indicative of the sensed style value criteria and the sensed penetration value criteria for each character to be identified; and utilizing the style value and penetration value signals to identify each character.

4,130,820

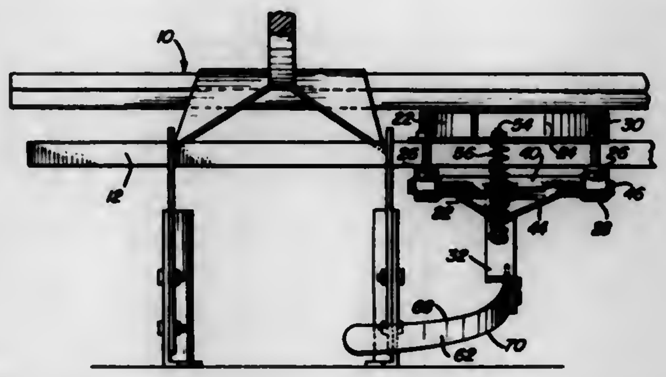
MULCHER ATTACHMENT FOR CULTIVATOR

Henry A. Copenhaver, Rte. 2, Box 65, Walsh, Colo. 81090

Filed Aug. 8, 1977, Ser. No. 822,994

Int. Cl.² A01B *35/24*

U.S. Cl. 172—707 **3 Claims**



1. A mulcher attachment for mounting on the rock shaft of a draft implement, said attachment including bracket means for attachment to said rock shaft, a swing arm having front and rear ends, pivot means pivotally supporting said front end from said bracket means for angular displacement of said arm relative to said bracket about a horizontal axis extending transversely of said arm, the rear end of said arm being inclined downwardly and rearwardly from said bracket means, positioning and limit means operatively connected between said bracket means and arm limiting the downward inclination of said arm relative to said bracket means, allowing upward swinging of the rear end of said arm toward a horizontal position and including force means yieldingly biasing said arm toward its limit of downward inclination, the rear end of said arm including a smoothly laterally curving terminal end constructed of spring material, the front end of the arm including forwardly divergent brace members spaced on opposite sides of the forward terminal end portion of said arm, a sleeve extending and secured between the forward ends of said braces and said forward terminal end portion of said arm, said bracket means comprising a pair of brackets for mounting on said rock shaft at points spaced therealong, a pivot shaft journaled through said sleeve and having its opposite ends supported from said pair of brackets, one of said brackets including a rearwardly projecting arm portion terminating rearwardly over said arm intermediate its front and rear ends, said force means comprising an elongated coiled compression spring, said positioning and limit means including an elongated upstanding rod slidably secured through said arm portion and swing arm at the upper and lower ends thereof, respectively, said compression spring being telescoped over said rod between opposing portions of said bracket means and arm between which said rod extends.

4,130,821

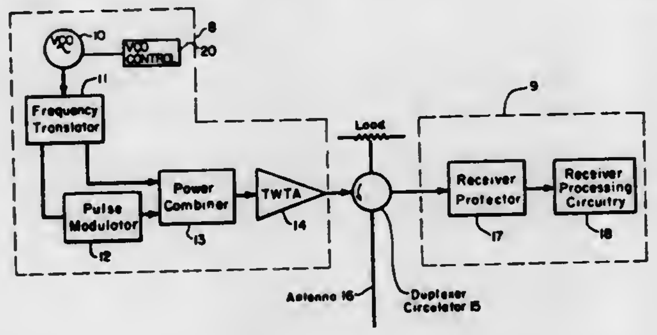
FREQUENCY-AGILE FIRE CONTROL RADAR SYSTEM

Harry Goldie, Randallstown, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 8, 1977, Ser. No. 785,974

Int. Cl.² G01S *7/28*

U.S. Cl. 343—17.1 R **13 Claims**



1. An improved signal processing system comprising:

means for generating a plurality of signals including,

- means for generating a CW rf signal,
- frequency translator means for forming a signal offset in frequency from said CW rf signal,
- means for pulse modulating said offset frequency signal,
- power combiner means for combining said CW and pulse modulated rf signals, and
- means for amplifying said combined signals;

means coupled to said generator means for transmitting and receiving said signals; and

means coupled to said transmitting and receiving means for limiting any of said received signals having a power level above a predetermined threshold and passing any signal having a power level below said predetermined threshold, said means for limiting including a broad band frequency selective limiter.

4,130,822

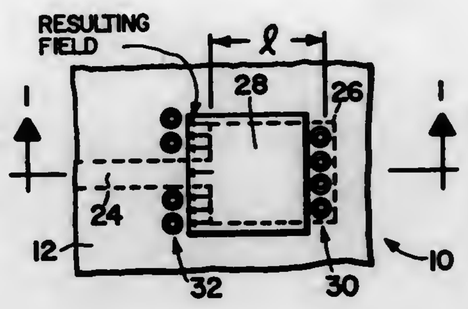
SLOT ANTENNA

Peter J. Conroy, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 30, 1976, Ser. No. 701,481

Int. Cl.² H01Q *1/38*

U.S. Cl. 343—700 MS **5 Claims**



1. An antenna having improved bandwidth characteristics which is suitable for conformal arraying, comprising:

ground plane conductor means;

rectangular transmission means for forming a radiating element which is spaced from said ground plane conductor means;

dielectric spacing means for separating said ground plane conductor means and said rectangular transmission means;

said rectangular transmission means having one end of the length thereof being shorted to said ground plane conductor means with the other end of the length thereof being open circuited, said rectangular transmission means having an optimum feedpoint at a predetermined distance from said short circuited edge so that the input of the antenna at said predetermined distance from said shorted end is matched to a real impedance value;

additional ground plane conductor means being shorted to said ground plane conductor means and surrounding said rectangular transmission means such that a U-shaped slot is formed about the width and open circuited end of said rectangular transmission means; and

feed means for coupling energy to said input of the antenna whereby energy is radiated from the antenna.

4,130,823

MINIATURE, FLUSH MOUNTED, MICROWAVE DUAL BAND CAVITY BACKED SLOT ANTENNA

Gary R. Hoople, San Jose, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 5, 1977, Ser. No. 822,105

Int. Cl.² H01Q *13/18*

U.S. Cl. 343—768 **3 Claims**

1. A miniature, flush mounted, microwave dual band antenna comprising:

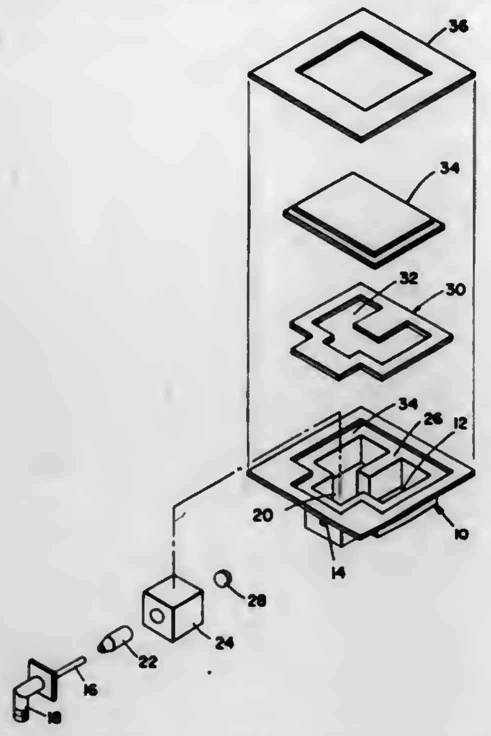
(a) an antenna body of a conductive material having an approximately Y-shaped cavity with a central vane and having an input port at the base of said Y-shaped cavity;

(b) a block of a dielectric material having a central hole, said block being situated in the leg of said Y-shaped cavity with said central hole aligned with said input port;

(c) a probe situated within said hole in said block and electrically insulated from said central vane, said probe having a central hole aligned with said input port into which the center conductor of a coaxial rf transmission line is inserted to excite said probe so that when said probe is excited said antenna resonates a lower frequency band energy primarily in the open non-dielectric spaces of said cavity, and resonates a higher frequency band energy primarily in the dielectric space of said block;

(d) an aperture plate having a slot enclosing the open end of said cavity, the configuration of said slot being a function of the desired polarization of the energy radiated in the lower frequency band;

(e) a dielectric window which covers said slot; and

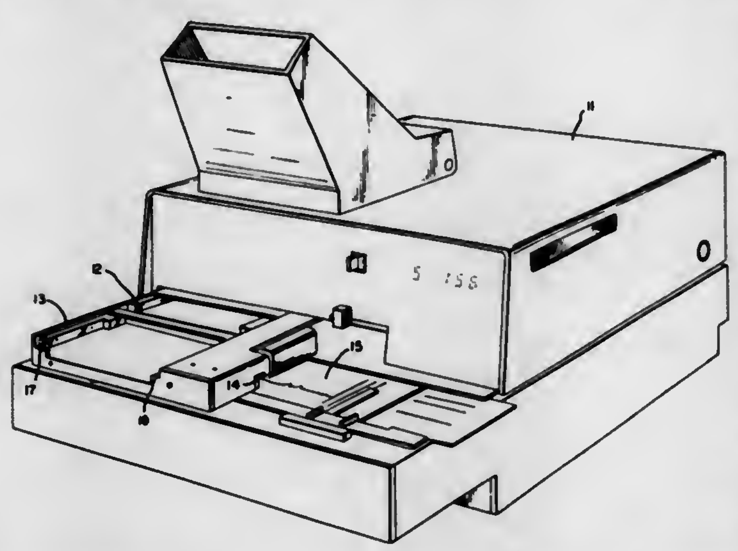


(f) a cover having an opening to accommodate said dielectric window which is attached to said antenna body to hold said dielectric window and said aperture plate in place.

4,130,824
RECORDING ANALYZER FOR ELECTROPHORETIC SAMPLES

Lynn G. Amos, Corning; Howard F. Banks, Horseheads, both of N.Y.; Robert T. Buck, Raleigh, N.C., and William R. Eppes, Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 24, 1977, Ser. No. 799,942
Int. Cl.^{2} G01D *5/26*
U.S. Cl. 346—33 A 11 Claims



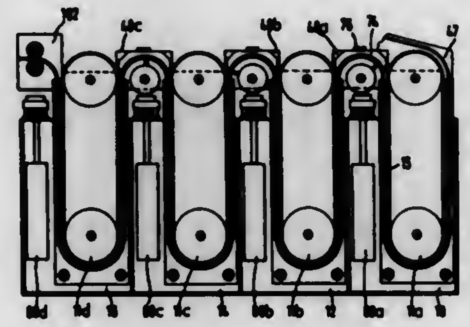
1. An analyzer for fluorescing or absorbing samples comprising:

a fixedly mounted source of analysis energy;
a sample stage having a sample holder,
a transport mechanism for linearly moving said sample stage with respect to said source to scan said sample across said source;
detection means for generating an electrical signal representing the fluorescence or absorption characteristics of said sample as it is scanned across said source, said detection means being fixed with respect to said source;
a recorder pen mounted on said stage and moved along a chart by the same movement which scans said sample across said source, said recorder pen being driven by said electrical signal in a direction orthogonal to the direction of said movement to produce a record of the fluorescence or absorption characteristics across said sample, said record having the same length as the length of the sample which is scanned.

4,130,825
APPARATUS FOR AUTOMATICALLY TREATING PIECES OF EXPOSED PHOTOSENSITIVE PAPER

Osvaldo Fasano, Turin, Italy, assignor to Morenar S.A., Fribourg, Switzerland

Filed Apr. 13, 1977, Ser. No. 787,095
Claims priority, application Italy, Apr. 13, 1976, 67859 A/76; Nov. 26, 1976, 69824 A/76
Int. Cl.^{2} G03D *3/12*
U.S. Cl. 354—322 9 Claims



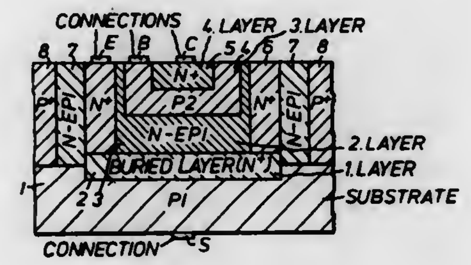
1. Apparatus for automatically treating pieces of exposed photosensitive paper, comprising at least three tanks each of which is adapted to contain a respective treatment bath; at least three dipping mechanisms sequentially actuated, each associated with a respective one of the tanks for sequentially dipping one at a time of said pieces of paper into the respective bath, each dipping mechanism comprising a respective slide guide having an inlet end and an outlet end and an intermediate zone arranged so that, in use, the inlet and outlet ends are external to the bath while the intermediate zone is immersed in the bath, the slide guide being adapted for the piece of paper to slide in the slide guide, each dipping mechanism further comprising a respective conveying mechanism with a respective travelling member adapted to engage the piece of paper in the respective slide guide and to move the piece of paper the entire length along the respective slide guide from the inlet end along the intermediate zone to the outlet end thereof, said travelling member remaining in continuous contact with said photosensitive paper and automatically disengaging from the piece of paper at the outlet end; at least two transfer mechanisms, each arranged between a respective pair of said dipping mechanisms and each comprising a respective slide guide adapted for the piece of paper to slide therein and extending from the outlet end of the slide guide of one dipping mechanism of the said pair to the inlet end of the slide guide of the other dipping mechanism of the said pair, each transfer mechanisms comprising a respective conveying mechanism including at least one respective travelling member adapted to engage the piece of paper in the respective slide guide and to move the piece of paper along the slide guide; control means adapted to stop said photo sensitive piece of paper at a stop position in each dipping mechanism for a period of time while the piece of paper is immersed in the respective bath; and

means for stirring said treatment bath, said stirring means adapted to stir the bath in a zone in close proximity to the stop position of the piece of photosensitive paper in the bath, said stirring means having at least one vertically lamellar blade extending into the respective bath.

4,130,826
MONOLITHIC INTEGRATED SEMICONDUCTOR CIRCUIT

Erich Bachle, Ulm; and Hermann Clauss, Leingarten, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Dec. 3, 1976, Ser. No. 747,222
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1975, 2555047
Int. Cl.^{2} H01L *29/72*
U.S. Cl. 357—34 24 Claims



1. A monolithical semiconductor circuit including an integrated semiconductor array having a plurality of low ON-state resistance switching transistors formed in a common semiconductor body in bipolar technology, particularly for use in switching networks of telephone exchanges and transmission devices, for selectively connecting a series of input lines as desired to one or several output lines, each of said switching transistors being constructed as a vertical NPN transistor which has a large downward current amplification factor and a large upward current amplification factor and is characterized by the following features:

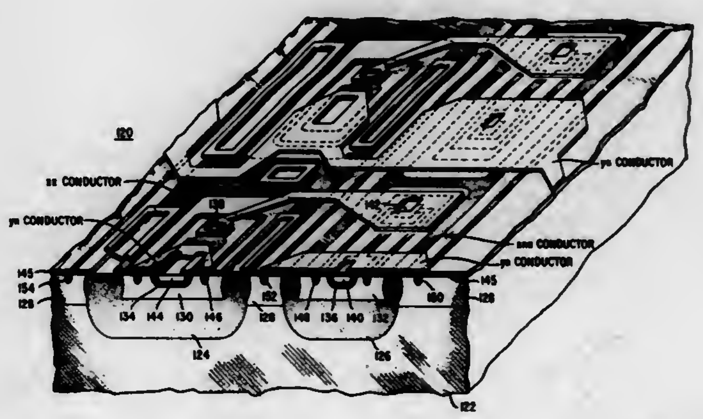
(a) a first selective layer of a second type of conductivity opposite to a first type of conductivity introduced into a substrate region of said semiconductor body and of said first type of conductivity,
(b) a less heavily doped second layer of said second type of conductivity epitaxially grown on said first layer,
(c) a third layer of said first type of conductivity selectively introduced into said second layer,
(d) a fourth layer having as large an area as possible of said second type of conductivity selectively introduced into said third layer,
(e) a region of said second conductivity type encircling said second, third and fourth layer, which form said vertical NPN transistor, and forming a largely tank shaped region of said second type of conductivity with said first layer,
(f) said tank shaped region is surrounded by a first frame-like region of said second type of conductivity,
(g) said first frame-like region is surrounded by a second frame-like region of said first type of conductivity, said second frame-like region extending from the surface of said semiconductor body to said substrate, being more highly doped than said substrate and serving to insulate said vertical NPN transistor, and
(h) said substrate, said tank-shaped region, and said third and fourth layer are provided with respective connections;

and wherein, for each of said switching transistors, said connection of said tank shaped region and the connection of said fourth layer are connected to the respective input and output lines to be switched through, said connection of said third layer is connected to a triggering circuit for the associated switching transistor and, as desired, to a control circuit, and said connection of said substrate is connected to a dc voltage potential which is negative with respect to said tank shaped region.

4,130,827
INTEGRATED CIRCUIT SWITCHING NETWORK USING LOW SUBSTRATE LEAKAGE CURRENT THYRISTOR CONSTRUCTION

Frederick A. D'Altroy, Center Valley, Pa.; Adrian R. Hartman, Westfield, N.J.; Richard M. Jacobs, Allentown; Robert L. Pritchett, Bath, both of Pa., and Peter W. Shackle, Bridgewater, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 3, 1976, Ser. No. 747,366
Int. Cl.^{2} H01L *29/74*
U.S. Cl. 357—38 9 Claims



1. A low voltage, low current junction isolated integrated circuit thyristor for use in high density crosspoint arrays comprising:

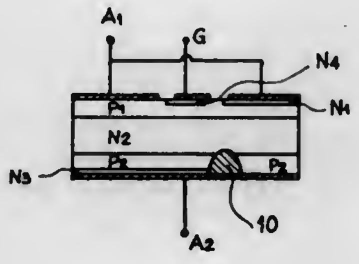
a substrate comprising a bulk and an upper portion that are both of a first conductivity type the substrate being adapted to be electrically connected to a first bias operating voltage source;
a first region of a second conductivity type contained within portions of the bulk and upper portion of the substrate, the first region being adapted to be electrically connected to a reference bias operating voltage source, the first region being characterized in that a portion thereof extends completely through the upper portion of the substrate so as to completely isolate a portion of the upper substrate;
the isolated portion of the upper portion of the substrate defining a second region;
a third region of the same conductivity type as the first region and being contained in a portion of the second region;
a fourth region of the same conductivity type as the second region and being contained within a portion of the third region; the fourth region being adapted to be electrically connected to a second bias operating voltage source;
a background level of recombination centers in said first region; means for suppressing the current gain of the parasitic transistor formed by the substrate, the first region, and the second region comprising additional recombination centers in said first region in combination with sufficient vertical thickness and dopant concentration of said first region, and means for supplying said first, second, and reference bias operating voltage sources, the resulting leakage current associated with transistor action in the parasitic transistor is less than one part in ten thousand of the current conducted between the fourth and first regions.

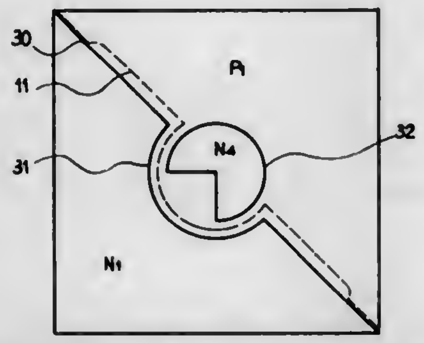
4,130,828

TRIAC STRUCTURE HAVING IMPROVED TRIGGERING SENSITIVITY WITH SINGLE GROOVE EXTENDING FROM GATE REGION

Rene Locqueneux, Paris, France, assignor to Silec-Semi-Conducteurs, Paris, France

Continuation of Ser. No. 732,373, Oct. 14, 1976, abandoned. This application Mar. 28, 1978, Ser. No. 891,125
Claims priority, application France, Oct. 16, 1975, 75 31733
Int. Cl.² H01L *29/747*
U.S. Cl. 357—39 **3 Claims**





1. A triac triggerable according to the four polarization modes by substantially equal gate current intensities in the four modes comprising:

a first P-type semi-conductive layer (P1)
a second N-type semi-conductive layer (N2)
a third P-type semi-conductive layer (P2)
a first N-type region (N4) coated on a small area part of the first P-type layer (P1) and serving as a single gate for the triac,
a second N-type region (N1) coated on a relatively large surface of the first P-type layer (P1) and not connecting the first N-type region (N4), the second region (N1) and the first layer (P1) presenting, in a top view, a first boundary line,
a third N-type region (N3) coated on a relatively large surface of the third P-type layer (P2), and presenting a second boundary line therewith, the improvement being that the projections of the first and second boundary lines on a plan parallel to the plan of the layers are substantially similar, the second and third N-type regions (N1) and (N3) lying, in projection, in substantially complementary regions, and a single groove being formed from the surface comprising the third region (N3), said single groove being substantially centered on said boundary lines and extending from the side of the triac opposite the side in which the gate is formed.

4,130,829

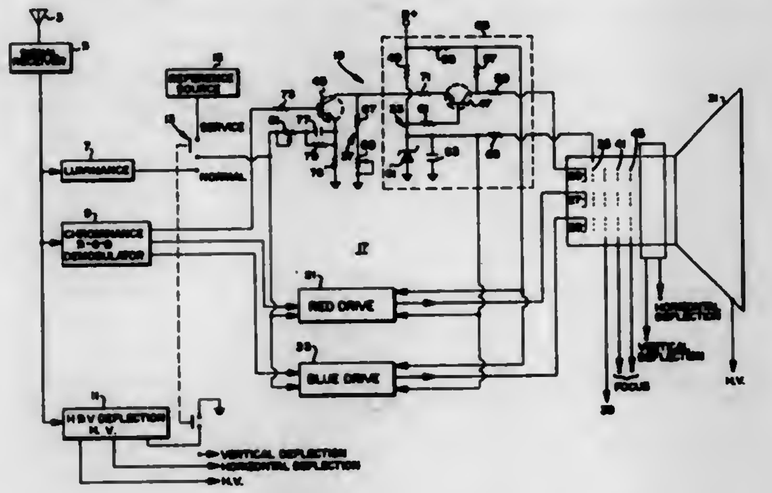
APPARATUS FOR ADJUSTING OPERATING CONDITIONS OF A CATHODE RAY TUBE

George H. Kam, Tonawanda, N.Y., and Robert P. Logan, Framingham, Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Continuation-in-part of Ser. No. 716,124, Aug. 20, 1976, abandoned. This application Jan. 23, 1978, Ser. No. 871,321
Int. Cl.² H04N *9/62, 9/20*
U.S. Cl. 358—10 **16 Claims**

1. In a color television receiver having chrominance, luminance, and reference signal sources and a color cathode ray tube having a plurality of electron guns each with an associated cathode electrode, a control grid electrode, and a screen grid electrode with the control grid electrodes and the screen grid electrodes of the electron guns having a common connection, a cathode ray tube operating condition adjusting apparatus comprising:

switching means having a "normal" positional location for selective coupling to said luminance signal source and a "service" positional location for selective coupling to said reference signal source;
matrixing and amplifying means coupled to said chrominance signal source and to said switching means for selective coupling to said luminance signal source during "normal" operation and to said reference signal source during "service" operation, said matrixing and amplifying means comprising:
(a) a plurality of drive amplifiers;
(b) a plurality of cathode DC bias potential adjustment means coupled to respective ones of said drive amplifiers to effect adjustment of the DC bias applied by said matrixing and amplifying means to said cathode electrodes of said color cathode ray tube whereby electron beam cut-off of each of said electron guns is effected when said switching means is in the "service" positional location; and
(c) control grid DC bias potential development means connected to the drive amplifiers and coupled by an impedance to said common connected control grid electrodes of said color cathode ray tube.



4,130,830

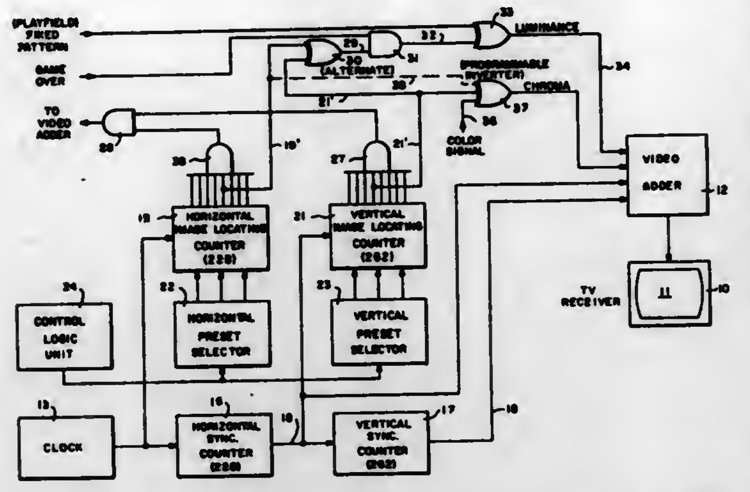
METHOD AND APPARATUS FOR HOMOGENEOUS EXPOSURE OF VIDEO DISPLAY SCREEN

Richard B. Derickson, Sunnyvale, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Sep. 14, 1977, Ser. No. 832,999
Int. Cl.² H04N *5/22*
U.S. Cl. 358—22 **9 Claims**

1. A method of exposing the entire viewing area of a video display screen to the same amount of luminance where the screen normally displays a fixed pattern for prolonged periods of time comprising the following steps: generating a signal for providing a moving pattern across said screen; exclusively ORing said moving pattern signal with a signal corresponding to said fixed pattern; and driving said video display screen with the logical result of the previous step.

6. A method as in claim 1 where said fixed pattern includes a color component provided by a color signal said method including the step of complementing said color signal in accordance with said moving pattern.

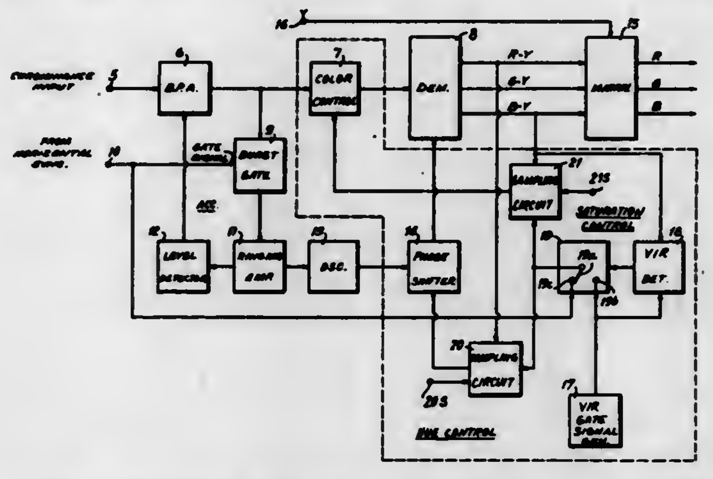

(PLAYFIELD) FIXED PATTERN
GAME OVER
TO VIDEO ADDER
LUMINANCE
(ALTERNATE)
(PROGRAMMABLE INVERTER)
CHROMA
COLOR SIGNAL
VIDEO ADDER
TV RECEIVER
HORIZONTAL IMAGE LOCATING COUNTER (228)
VERTICAL IMAGE LOCATING COUNTER (262)
HORIZONTAL PRESET SELECTOR
VERTICAL PRESET SELECTOR
CONTROL LOGIC UNIT
CLOCK
HORIZONTAL SYNC. COUNTER (228)
VERTICAL SYNC. COUNTER (262)

4,130,831

COLOR TELEVISION CONTROL CIRCUIT FOR USE WITH A VIR SIGNAL

Katsuo Isono, Kawagoe, and Seiji Sanada, Yokosuka, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 23, 1976, Ser. No. 753,868
Claims priority, application Japan, Dec. 26, 1975, 50/157204
Int. Cl.² H04N *9/535*
U.S. Cl. 358—27 **11 Claims**



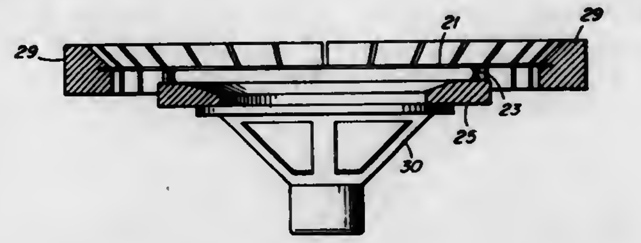
1. Color television receiving apparatus for receiving and demodulating a composite color television signal including horizontal synchronizing signals, color burst signals, a luminance component and a chrominance component, said composite color television signal being of the type which additionally may include a VIR signal provided in a predetermined line interval during the vertical retrace interval, said apparatus comprising means for separating and demodulating said chrominance component into color signal components; first signal means for providing a VIR gate pulse during the predetermined line interval in which said VIR signal is provided; second signal means for providing a burst gate pulse which is time coincident with said color burst signals that are received; switch means for receiving both said VIR gate pulse and said burst gate pulse and for selectively supplying one of said received gate pulses to an output thereof; VIR detecting means coupled to said demodulating means and to said first signal means, said VIR detecting means including a sampling circuit responsive to said VIR gate pulse to sample a selected one of said color signal components for producing a switch control signal as a function of said sampled color signal component if said VIR signal is present, said switch means being coupled to and controlled by the switch control signal produced by said VIR detecting means for supplying said VIR gate pulse to its output if said VIR signal is present and for supplying said burst gate pulse to its output if said composite color television signal does not include said VIR signal; sampling means coupled to said switch means and to said demodulating means and responsive either to said VIR gate pulse or to said burst gate pulse, as supplied by said switch means, to sample selected components produced by said demodulating means; control means responsive to said sampled selected components for controlling the hue and/or saturation characteristics of the demodulated color signal components; and manually operable adjusting means coupled to said sampling means for selectively varying the signals produced by said sampling means in accordance with an operator's preference for particular hue and/or saturation characteristics of a color video picture reproduced from said demodulated color signal components.

4,130,832

THREE-DIMENSIONAL DISPLAY

Lawrence D. Sher, Acton, Mass., assignor to Bolt Beranek and Newman Inc., Cambridge, Mass.

Filed Jul. 11, 1977, Ser. No. 814,711
Int. Cl.² H04N *9/54*
U.S. Cl. 358—89 **11 Claims**



1. A three-dimensional display system comprising:

a circular reflective plate having substantial stiffness and resilience;
weighting means attached to and distributed around the rim of said plate, the mass of said weighting means being greater than that of the plate itself;
means for compliantly supporting said plate along a concentric circular locus which is substantially inside of the rim of said plate;
means for applying an oscillatory force to said plate to drive the plate into oscillation with the motion of the rim being out-of-phase with the motion of said central portion; and
means for generating, in a plane, successive image components which are produced in synchronization with the oscillation of said plate at different phases thereof, the image-generating means being positioned so as to be viewable by way of said reflective plate, whereby the image components so viewed appear juxtaposed in space in accordance with the variation in effective focal length of said mirror.

4,130,833

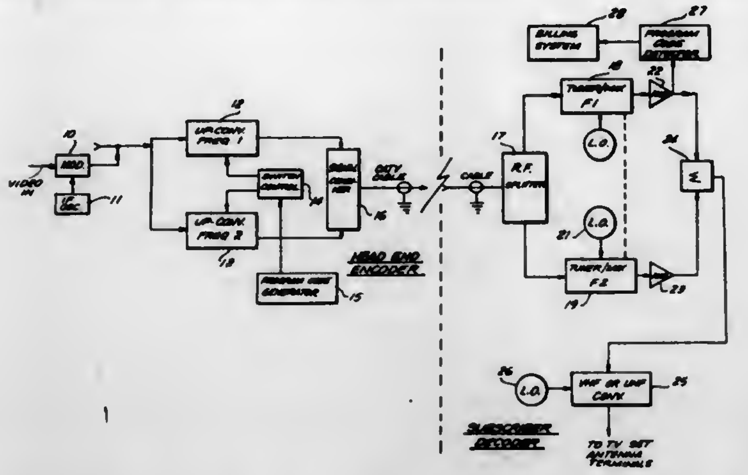
PAY TELEVISION SYSTEM

Marc Chomet, East Northport, N.Y., assignor to Teleglobe Pay-TV System, Inc., Rego Park, N.Y.

Filed Apr. 11, 1977, Ser. No. 786,653
Int. Cl.² H04N *7/16, 7/00*
U.S. Cl. 358—122 **3 Claims**

1. In a pay television system having transmitting means for transmitting a television signal at a first output frequency during first selected time intervals and at a second output frequency during second selected time intervals excluding said first selected time interval, a receiving system comprising, in combination, a television receiver; first receiver means (18) tuned to said first output frequency and rejecting said second output frequency for receiving said encoded television signal and changing said first output frequency to a predetermined decoder frequency, thereby creating a first decoder signal; second receiver means (19) tuned to said second output frequency and rejecting said first output frequency for receiving said encoded television signal and changing said second output

frequency to said predetermined decoder frequency thereby creating a second decoder signal, said first and second decoder signals having the same frequency but occurring alternately; and summing means (22–24) continously and simultaneously connected to both said first and second receiver means for summing said first and second decoder signal and furnishing a combined signal suitable for reception on said television receiver.



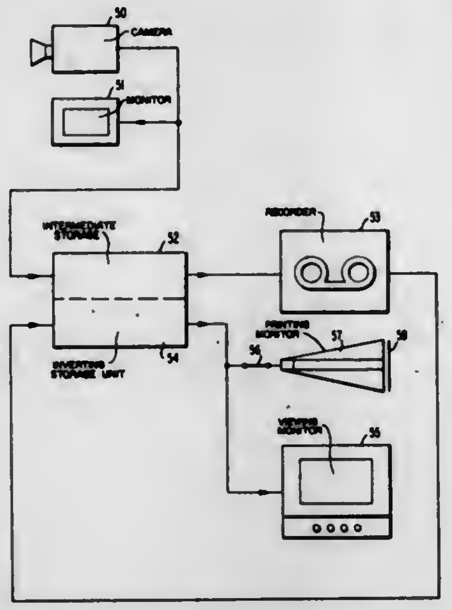
4,130,834
METHOD OF AND APPARATUS FOR THE PRODUCTION OF PHOTOGRAPHIC STILLS

Adolf Mender, Ottobrunn, and Horst Schmidt, Bad Honeff, both of Germany, assignors to Videoprint Gesellschaft fur Industrie-Fernsehen mbH, Ottobrunn, Germany

Filed Dec. 20, 1974, Ser. No. 535,150

Int. Cl.^{2} H04N *9/02, 7/18*

U.S. Cl. 358—127 **16 Claims**



1. A method for producing and processing photographic quality video signals comprising the steps of:

converting an optical image into a video signal by high resolution electronic scanning at a scanning rate of at least about 1,000 lines per image wherein the exposure time for producing the video signal is less than about 10 milliseconds;

writing said video signal into intermediate storage, the time for writing said video signal into intermediate storage being less than about 40 milliseconds; and,

reading said video signal out of intermediate storage into permanent storage, the time for writing the video signal into intermediate storage being shorter than the time for reading the video signal out of intermediate storage into permanent storage.

4,130,835
ELECTRICAL WAVEFORM ANALYSIS

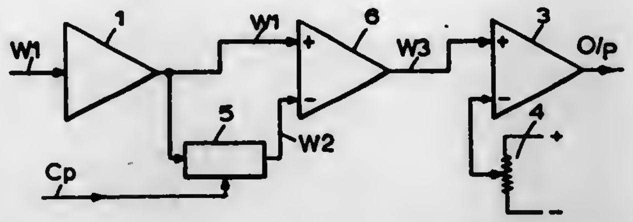
Leslie H. Guildford, Haywards Heath, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 4, 1975, Ser. No. 637,777

Claims priority, application United Kingdom, Dec. 13, 1974, 54007/74

Int. Cl.^{2} H03B *3/04*

U.S. Cl. 358—160 **6 Claims**



1. A circuit arrangement for detecting changes in amplitude of a video signal, said circuit arrangement comprising input means for receiving the video signal in real time, sampling means for producing at least one sample of the received video signal in each picture element period of the video signal, hold and delay means for delaying each sample for a duration of from one to two picture element periods, comparison means for comparing the amplitude of each delayed sample with the amplitude of the real time video signal to produce a resultant sample having a parameter indicative of the difference of said amplitudes and threshold means responsive to the resultant sample to produce an output signifying a detected change in amplitude of the video signal when said parameter exceeds a threshold value.

4,130,836
ARRANGEMENT FOR MOUNTING AND ADJUSTING A DEFLECTION-COIL HOLDER FOR A COLOR-PICTURE TUBE

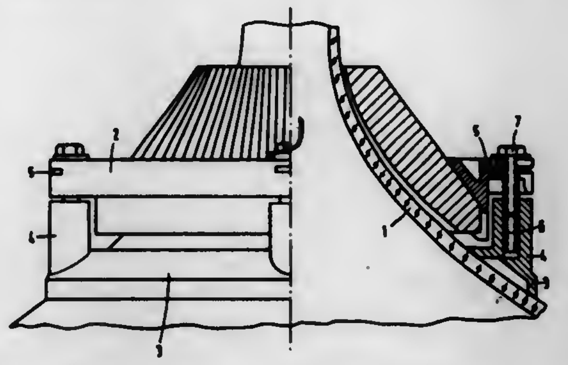
Walter Kornaker, Esslingen-Berkheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 12, 1977, Ser. No. 832,262

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1976, 2641847

Int. Cl.^{2} H04N *5/64*

U.S. Cl. 358—248 **5 Claims**



1. An arrangement for mounting and adjusting a deflection-coil holder for a color-picture tube comprising:

a mounting member connected to the conical portion of an envelope of said tube;

at least three sleeve carriers are secured to said mounting member;

a guide groove in each of said carriers;

straddling dowels floatingly retained in each of said guide grooves and each bore in said sleeve carriers, said straddling dowels being attached to said deflection-coil holder; and

screws to be screwed into each of said straddling dowels where tightening of said screws controls the depth of immersion of said straddling dowels into said bores of said sleeve carriers and the position of said straddling dowels in said guide grooves of said deflection-coil holder is fixed.

4,130,837
ARRANGEMENT FOR MOUNTING THE DEFLECTION SYSTEM ON THE ENVELOPE OF A COLOR-PICTURE TUBE

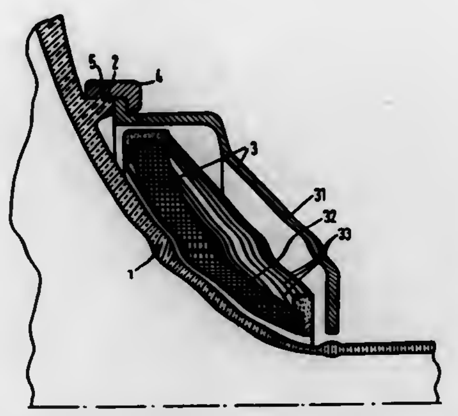
Wolfram Andre, Aichwald, and Walter Kornaker, Esslingen-Berkheim, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 6, 1977, Ser. No. 803,698

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1976, 2626114

Int. Cl.^{2} H01J *29/76*

U.S. Cl. 358—248 **8 Claims**



1. An arrangement for mounting the deflection system of a color picture tube to an envelope thereof on the side facing the screen comprising:

a glass stop collar provided in said envelope, said stop collar having a stop surface against which said deflection system rests;

a plurality of connecting means carried by said stop collar; and

a cap engaging said connecting means and said deflection system to connect said deflection system to said envelope.

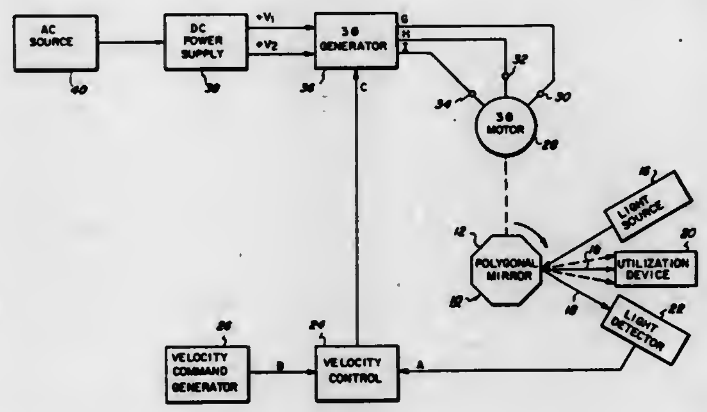
4,130,838
SPEED CONTROL APPARATUS FOR SCANNING SYSTEM

Robert P. St. John, Marina Del Rey, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 11, 1977, Ser. No. 823,812

Int. Cl.^{2} H04N *1/36*

U.S. Cl. 358—267 **18 Claims**



1. Apparatus for controlling the rotational speed of a polygonal mirror adapted to scan a reflected light beam over a desired scanning area as each facet of the mirror is rotated into the path of an incident light beam, said apparatus comprising:

a poly-phase motor coupled to said mirror for driving same, said motor having a plurality of input terminals and a plurality of motor windings connected to said input terminals;

first means responsive to said reflected light beam for generating a first clock signal having a frequency proportional to the actual rotational speed of said mirror;

second means for generating a second clock signal having a frequency proportional to a desired rotational speed of said mirror;

third means coupled to said first and second means and responsive to said first and second clock signals for generating a third clock signal having a frequency representative of the difference in phase between said first and second clock signals; and

a poly-phase generator coupled to said third means and responsive to said third clock signal for generating a plurality of mutually phase-displaced drive signals for respective application to the plurality of input terminals of said motor, whereby a plurality of mutually phase-displaced sinusoidal signals are developed across said motor windings, each sinusoidal signal having a frequency proportional to the frequency of said third clock signal.

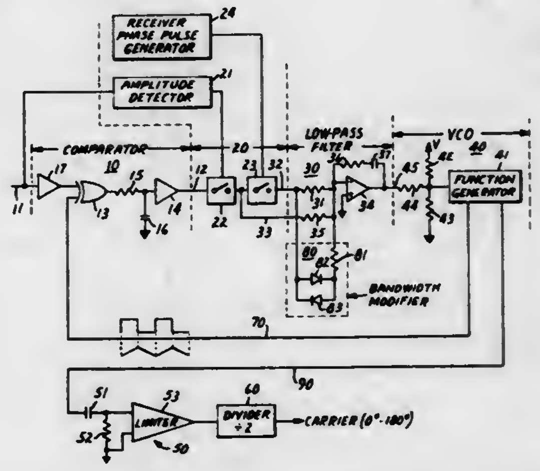
4,130,839
CIRCUITRY FOR A FACSIMILE RECEIVER FOR REGENERATION OF CARRIER FOR AN AMPLITUDE MODULATED SUPPRESSED CARRIER SIGNAL

Timothy L. McCullough, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Sep. 12, 1977, Ser. No. 832,222

Int. Cl.^{2} H04N *1/40*

U.S. Cl. 358—281 **11 Claims**



1. Circuitry for a facsimile receiver for regenerating a carrier signal from the full-wave rectified signal obtained from a received signal which includes an amplitude modulated suppressed carrier signal and periodic short intervals of unmodulated carrier, each short interval being synchronous with a position signal produced at the facsimile receiver each time the phase position of the receiver is reached, including:

a phase lock loop including a phase comparator having first and second inputs, said first input connected for receiving the full-wave rectified signal, a low-pass filter means, a VCO having an input operatively connected to the output of said filter means and output operatively connected to said second input of said comparator, said VCO having a free run frequency that is twice the frequency of the carrier signal;

switch means operatively connected to said facsimile machine for providing a time slot for each of the position signals and operatively connected for responding to the received signal for detecting periods of unmodulated carrier, said switch means connected to said phase lock loop for operatively connecting the output of said comparator to said filter means when one of the short intervals of unmodulated carrier is detected by said switching means during said time slot; and

a divider operatively connected to the output of said VCO for providing a signal having a frequency that is one-half the frequency of the signal presented at the output of the VCO.

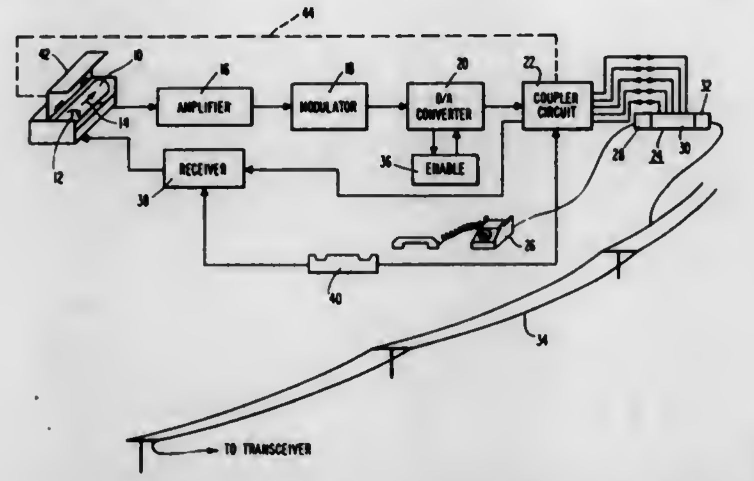
4,130,840
METHOD AND APPARATUS FOR COUPLING FACSIMILE SIGNALS TO A TELEPHONE NETWORK

John M. Vandling, Pleasantville, N.Y., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 21, 1977, Ser. No. 844,298

Int. Cl.² H04H *1/40*

U.S. Cl. 358—281 **15 Claims**



1. A facsimile transmitting apparatus for transmitting signals representing dark and light regions on a document, said apparatus comprising:

sensor means for sensing dark and light regions on the document; and

transmitting means for generating frequency modulated transmission signals representing said dark and light regions on said document, the improvement comprising:

signal generating means for generating a signal having a frequency substantially higher than the modulated transmission signal, the frequency of said higher frequency signal varying in response to said dark and light regions, and

converter means for generating said transmission signal from said higher frequency signal such that a light/dark or dark/light variation between said regions produces a change in frequency of said higher frequency signal which in turn produces a change in frequency in said transmission signal in a fraction of the transmission signal cycle.

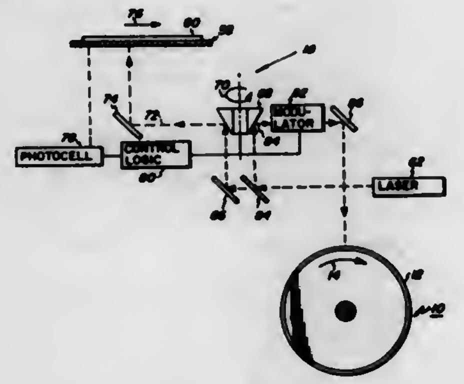
4,130,841
VARIABLE FREQUENCY HALF-TONE IMAGING APPARATUS

Arthur M. Walsh, Pittsford, and Frederick R. Ruckdeschel, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 7, 1977, Ser. No. 775,130

Int. Cl.² H04N *1/04, 1/22*

U.S. Cl. 358—298 **7 Claims**



1. An apparatus for reproducing an original document, including:

a laser arranged to transmit a beam therefrom;

means for splitting the beam into read and write beams;

means for moving the read beam across the original document;

means for detecting the intensity of the read beam transmitted from the original document and generating signals indicative of the tonal graduation of the original document;

control logic arranged to produce a plurality of signals having different frequencies witheach frequency corresponding to different pre-determined ranges of signals from said detecting means; and

an electro-optical modulator, coupled to said control logic, for modulating the write beam to form an image of the original document having a plurality of half-tone dot spacial frequencies with each half-tone dot spacial frequency being selected from a plurality of pre-selected spacial frequencies in response to the signal from said control logic being in a pre-determined range, each of the pre-selected spacial frequencies corresponding to differing pre-determined signal ranges.

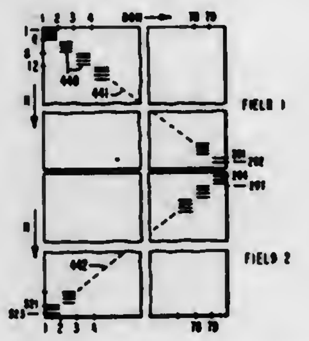
4,130,842
CIRCUIT FOR GENERATING A DIGITAL, DELETED DATA, BLINKING CROSS SIGNAL WHICH IS STORED IN A DELETED TRACK AND SELECTIVELY DISPLAYED FOR DETECTION

Luigi C. Gallo, Redwood City, and Junaid Sheikh, Palo Alto, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 762,903, Jan. 26, 1977, abandoned. This application Feb. 4, 1977, Ser. No. 765,564

Int. Cl.² H04N *5/78;* G06F *3/14*

U.S. Cl. 360—35 **8 Claims**



1. A circuit for generating and displaying a deleted data signal representative of tracks in a storage system from which undesirable data have been deleted, comprising the combination of;

circuit means for generating a plurality of digital words definitive of the deleted data signal, the arrangement of said plurality of digital words being distinctive relative to the undesirable data which is deleted and the data which has not been deleted from said storage tracks;

means for interrogating the distinctive plurality of digital words definitive of the deleted data signal; and new means for displaying the deleted data signal to show that the corresponding storage track is available for subsequent recording of new data.

4,130,843
RECORD INHIBIT DEFEAT IN A RECORDING AND REPRODUCING APPARATUS

Toshio Miyamoto, Tokyo, and Mutsuo Hoshido, Kashiwa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 755,941, Dec. 30, 1976, abandoned. This application Apr. 4, 1977, Ser. No. 784,379

Claims priority, application Japan, Jan. 8, 1976, 51-1117

Int. Cl.² G11B *15/12, 15/04*

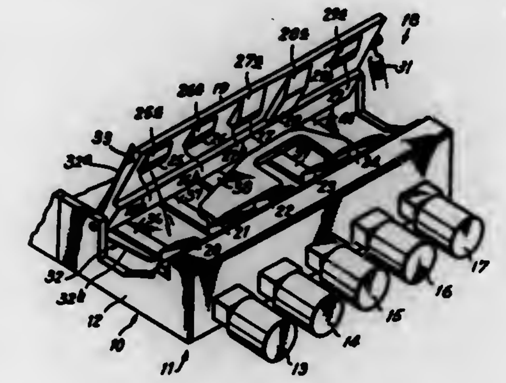
U.S. Cl. 360—62 **16 Claims**

1. A recording and/or reproducing apparatus comprising:

a push-button assembly including a forward push-button actuable from a rest position to an active position for

establishing a reproducing mode of operation of the apparatus, a record push-button actuable from a rest position to an active position for establishing a recording mode of operation of the apparatus upon disposition of said forward push-button in said active position of the latter, and a stop push-button actuable from a rest position to an active position for restoring the apparatus to a stop mode;

first interlocking means operative to prevent actuation of said record push-button to its active position after said forward push-button has been actuated to said active position of the latter and thereby normally inhibiting



change-over of the apparatus directly from its reproducing mode of operation to its recording mode of operation;

second interlocking means operative in response to establishing of said recording mode of operation to disable said first interlocking means and thereafter permit actuation of said record push-button to its active position with said forward push-button already in said active position of the latter; and

means responsive to the restoration of the apparatus to said stop mode thereof for disabling said second interlocking means.

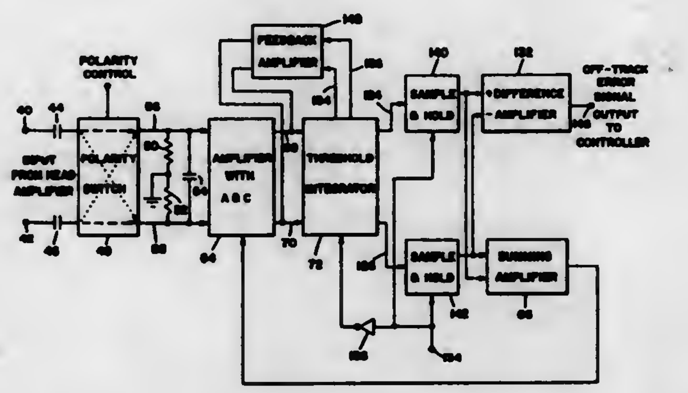
4,130,844
METHOD AND MEANS FOR TRACKING MAGNETIC TRACKS

Lance T. Klinger, Playa Del Rey, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 26, 1976, Ser. No. 735,852

Int. Cl.² G11B *21/10, 5/58*

U.S. Cl. 360—77 **12 Claims**



1. In a magnetic media tracking system of the type using dipulses of alternating polarity to produce an error indication through integration, the improvement comprising:

(a) means for partially integrating said dipulses to form a partially integrated signal;

(b) means for separately integrating only those positive and negative portions of said partially integrated signal whose absolute value exceeds a predetermined threshold; and

(c) means for subtractively combining said positive and negative portions to form said error indication.

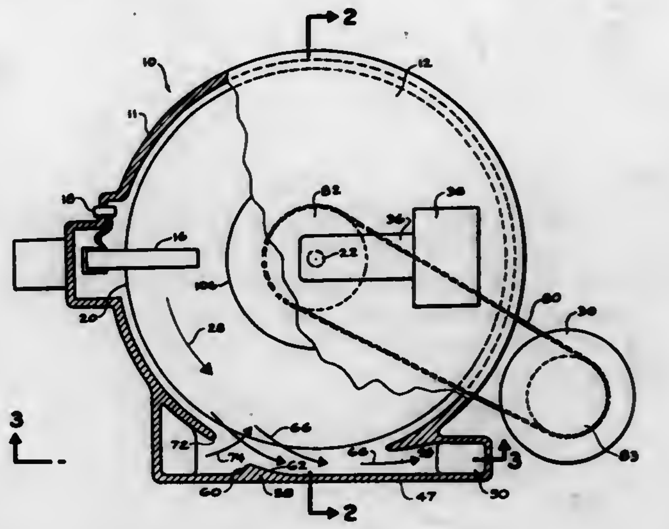
4,130,845
DISC CABINET RECIRCULATING AIR FLOW SYSTEM

Clarence O. Kulma, Huntington Beach, Calif., assignor to Microdata Corporation, Irvine, Calif.

Filed Jul. 8, 1977, Ser. No. 813,942

Int. Cl.² G11B *23/02, 25/04, 17/26, 5/82*

U.S. Cl. 360—97 **20 Claims**



1. An air pressure control system for a cabinet for rotatable discs, comprising:

a disc cabinet having a generally cylindrical shaped interior wall defining an axis and partially defining a cabinet interior, the wall being adapted to surround at least one disc, and a top cover joined to said interior wall and a bottom cover joined to an opposite portion of said interior wall, wherein said top cover defines a first volume of space between the uppermost of said at least one disc and said top cover, and wherein said bottom cover defines a second volume of space between the lowermost of said at least one disc and said bottom cover;

rotating means for rotatably mounting and spinning said at least one disc coaxially within said cylindrically shaped interior wall, said rotating means including a rotating means opening in said cabinet through which opening said rotating means may enter said interior; and

air inlet means for admitting air from outside the cabinet into said interior, said air inlet means including an air inlet means opening positioned opposite said disc from said rotating means opening in said cabinet;

wherein the ratio of said first volume to said second volume is predetermined to maintain air pressure in said interior adjacent said rotating means opening, higher than ambient air pressure when said at least one disc is rotated.

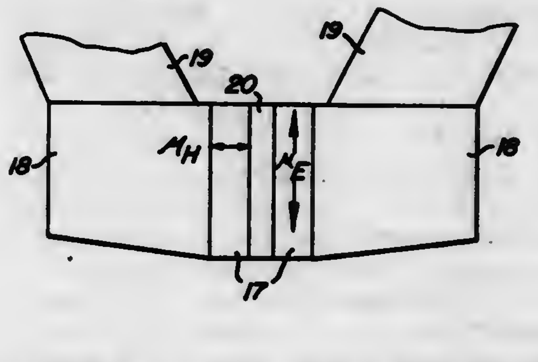
4,130,846
MAGNETIC TRANSDUCER

Donald T. Best, Lafayette Hill, Pa., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 27, 1977, Ser. No. 791,344

Int. Cl.² G11B *5/28*

U.S. Cl. 360—120 **7 Claims**



1. A magnetic read/record transducer structure having a

pair of poles with apposed pole faces spaced from one another by a separation layer which defines a single gap between said pole faces, each of said pole faces comprising a layer of uniaxially anistropic magnetic material characterized by low magnetic permeability in a first direction between the pole faces through the separation layer and characterized by substantially higher magnetic permeability in a direction orthogonal to said first direction, whereby the ratio of magnetic head gap reluctance between the pole faces to the gap reluctance along the fringing flux path through the recording medium is increased to thereby provide sharper more narrowly defined recorded pulses and higher amplitude readback pulses.

4,130,847

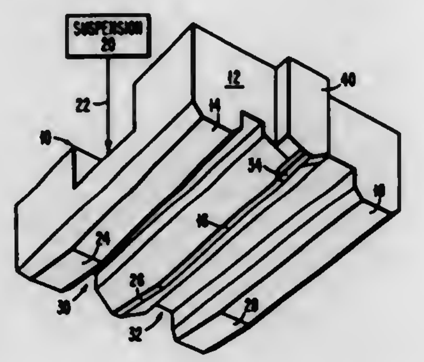
CORROSION RESISTANT THIN FILM HEAD ASSEMBLY AND METHOD FOR MAKING

Nephi L. Head, San Jose; Robert D. Hempstead, Morgan Hill; Thomas N. Kennedy, San Jose, and Fred Y. Lieu, Palo Alto, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1977, Ser. No. 783,373

Int. Cl.^{2} G11B *5/60, 5/12, 5/22, 21/20*

U.S. Cl. 360—122 **9 Claims**



1. A magnetic head assembly comprising:

a slider support having a bearing surface for close association with a magnetic media;

a transducer assembly including at least one film magnetic layer and at least one electrically conductive film layer together with means to activate each conductive layer and having an active face for a transducing action with a magnetic transition from the magnetic media in relative movement therewith, said transducer assembly fastened to said slider support adjacent to its bearing surface, said transducer assembly and a portion of the bearing surface of said slider support adjacent to said transducer assembly being recessed; and

a film layer of a passivation material covering the active face of said transducer assembly and the recess portion, said film layer being protected from excessive contact with the media by the unrecessed portion of the bearing surface of the slider support.

4,130,848

CASSETTE TAPE RECORDING AND/OR REPRODUCING APPARATUS

Kenichi Amano; Yutaka Suzuki, and Yoshio Kishi, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

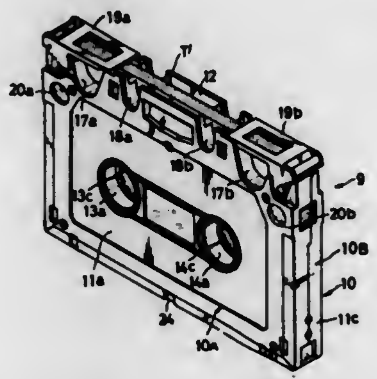
Filed Sep. 7, 1976, Ser. No. 720,742

Claims priority, application Japan, Jan. 27, 1976, 51-7829

Int. Cl.^{2} G11B *23/06*

U.S. Cl. 360—132 **9 Claims**

1. In a tape recording and/or reproducing apparatus for use with a tape cassette including a housing containing a supply of tape and having spaced parallel walls with an opening therebetween at one side of the housing along which a run of the tape is normally guided, and at least one lid mounted on the housing for movement relative to the latter in directions parallel to the planes of said spaced walls between a closed position where the lid extends along the opening for covering a respective part of said run of the tape and an opened position where the lid is displaced from said opening to permit the withdrawal of the tape therethrough; and in which said apparatus includes a chassis, transducer means mounted on said chassis for recording and/or reproducing information signals on a tape engaged therewith, locating means on said chassis engageable with the cassette housing for disposing the latter with said one side thereof facing toward and spaced from said transducer means, and tape withdrawing means engageable with said tape run in a cassette housing engaged with said locating means and being operative to withdraw the tape through said opening and into engagement with said transducer means: a cassette loading device comprising a cassette holder, means mounting said holder for movement in respect to said chassis between an inoperative position spaced from said locating means for the insertion and removal of a cassette in said holder and an operative position where a cassette in said holder is engaged with said locating means, lid opening means mounted for movement in respect to said holder and said chassis between an inactive position at which said lid opening means is spaced from a cassette in said holder in a direction substantially perpendicular to said planes of the walls of the cassette housing so as to avoid interference with said insertion and removal of the cassette in said holder, and an active position at which said lid opening means is engageable with each said lid of a cassette in said holder and is displaced relative to said holder in the direction of movement of the respective lid from its closed position to its opened position, and cam means connecting said lid opening means with said holder and said chassis for disposing said lid opening means in said inactive and active positions upon the disposition of said holder in said inoperative and operative positions, respectively, said cam means being operative, in response to initial movement of said holder in the direction away from said inoperative position, to move said lid opening means relative to said chassis in a direction opposed to said initial movement of the holder relative to said chassis.



4,130,849

INDEXED MEMORY COORDINATOR

Millard F. Freehauf, 135 W. Colfax Ave., Roselle Park, N.J. 07204

Filed May 25, 1977, Ser. No. 800,559

Int. Cl.^{2} G11B *5/00*

U.S. Cl. 360—137 **1 Claim**

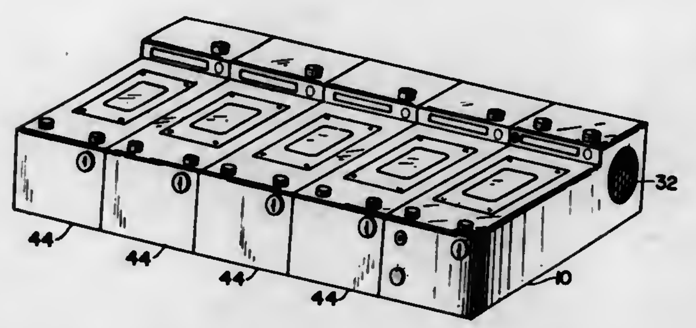
1. An indexed memory coordinator for selective recording on a plurality of recording media comprising:

a plurality of recording units, each including means adapted to receive one of said audio recording media and each further including means responsive to recording signals applied thereto for storing information on said one recording medium, and means for reading information stored on said recording medium to generate information signals, and means for actuating said reading means;

a microphone for converting sound to audio signals;

means responsive to said audio signals applied thereto for generating said recording signals, said recording signal generating means being incorporated in a master unit which includes means for converting said information signals into audible signals, and each of said plurality of recording units being incorporated in a respective one of a plurality of slave units;

switching means operable to couple said microphone to said recording signal generating means and to selectively apply said recording signals to a selected one of said plurality of recording units, said switching means including common bus means for interconnecting said master unit and said plurality of slave units, and further including a plurality of switch units each coupled between said common bus means and a respective one of said plurality of slave units, wherein each of said switch units includes a switch selectively operable to a first state, a second state, and a third state, said switch in said first state applying said recording signals to the corresponding one of said storing means, said switch in said second state applying information signals from the corresponding reading means to said converting means, said switch being arranged to return to said third state when not operated to said first or second state so as to disconnect the associated recording unit from the common bus means when in said third state.



4,130,850

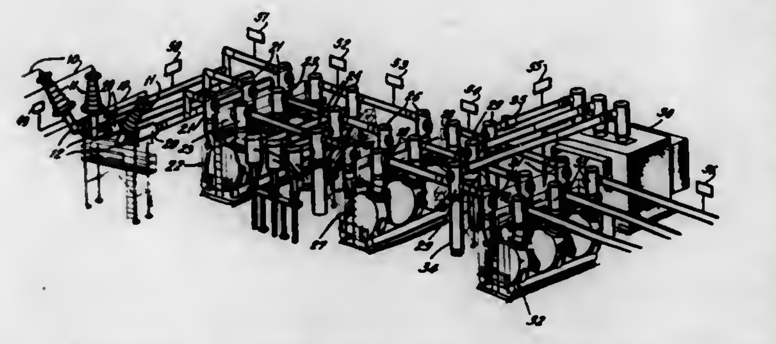
HIGH SPEED FAULT DIVERTER SWITCH FOR GAS-INSULATED SYSTEMS

John C. Cronin, and Willy Schuetz, both of Greensburg, Pa., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Jan. 12, 1977, Ser. No. 758,635

Int. Cl.^{2} H02H *7/22*

U.S. Cl. 361—54 **7 Claims**



1. In a high a-c voltage, high-power gas-insulated substation, a plurality of gas-insulated electrical components each having a gas-filled outer conductive housing connected to ground potential; a plurality of gas-insulated bus members interconnecting each of said gas-insulated electrical components; each of said plurality of gas-insulated bus members comprising a central high-voltage conductor, an outer elongated grounded housing filled with a dielectric gas, and spaced insulation supports for supporting said central conductor within said outer housing; a high speed diverter switch connected to at least one of said plurality of gas-insulated bus members for connecting said central conductor to said outer grounded housing in less than one cycle of said outer grounded having the capability of closing on a fault current and reopening when said fault current is cleared; a high speed operating mechanism for operating said diverter switch in response to an operating signal; and fault signal detector means connected in at least given ones of said plurality of bus members for detecting an arc from said central conductor to said grounded housing within said given bus members and providing an output signal; said fault signal detector means connected to said operating mechanism; said output signals from each of said fault signal detector means comprising said operating signal for said operating mechanism, whereby said high speed diverter switch closes to short said central conductor to ground within less than about one cycle in response to the detection of arcing within said substation; each of said fault signal detector means being responsive to pressure increase within their respective bus members.

4,130,851

DIRECTIONAL RELAYS

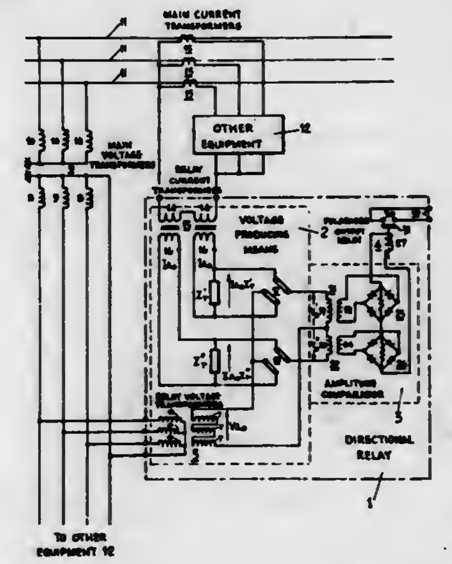
Leonardo Perez-Cavero, Haughton, England, assignor to The General Electric Company Limited, London, England

Filed Jul. 19, 1976, Ser. No. 706,515

Claims priority, application United Kingdom, Jul. 22, 1975, 30603/75

Int. Cl.^{2} H02H *3/26*

U.S. Cl. 361—82 **9 Claims**



1. A directional relay for a polyphase electric power transmission system comprising: means for producing first and second voltages which are respectively of the form $V_A \mp I_A Z_r'$ and $V_A \mp I_A Z_r''$ where V_A is a voltage component of the system at the relaying point; I_A is the corresponding current at the relaying point; and Z_r' and Z_r'' are impedances having values such that said first and second voltage simulate said voltage component at different points so that the amplitude difference of said first and second voltages under fault conditions corresponds in sense to the sense of the variation of said voltage component from point to point along the system between the relaying point and the fault point in a given direction along the system; and amplitude comparator means for producing an output indicative of the sense of the amplitude difference of said first and second voltages.

4,130,852

GROUNDED GRID STATIC DISCHARGE APPARATUS

Robert M. Peffer, Penfield; Albert H. Rehn, Rochester, and Zacharie Grose, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 29, 1977, Ser. No. 820,171

Int. Cl.^{2} H05F *3/04*

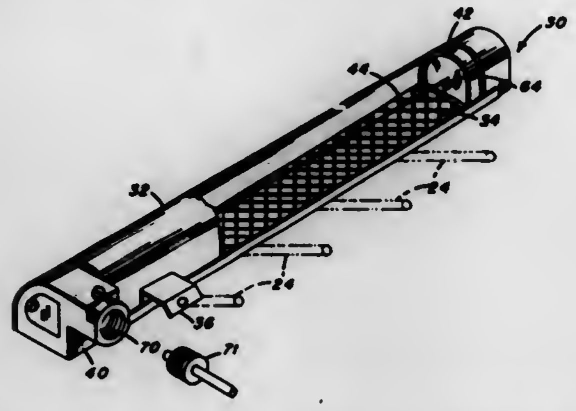
U.S. Cl. 361—213 **11 Claims**

1. Static discharge apparatus adapted for use with a voltage source for eliminating static charge on a web moving along a travel path, said apparatus comprising;

a corona wire spaced from and extending transverse to said travel path, said corona wire producing a charged ion cloud when coupled to a voltage source;

grounded grid means, positioned between said corona wire and said travel path, for attracting the ions in said charged ion cloud and defining openings through which said ions pass when attracted by the static charges on such web as the web moves along said travel path adjacent to said grounded grid means; and

means for accurately positioning said corona wire relative to said grounded grid means and electrically coupling such voltage source to said corona wire with a minimum of electrical interfaces, said positioning and coupling means comprising a contact member electrically coupled to and physically supporting one end of said corona wire, means



adapted to be engaged by said corona wire for spacing said corona wire a predetermined distance from said grounded grid means, tension means coupled to the end of said corona wire opposed to said one end for maintaining said corona wire in engagement with said spacing means, and means for establishing an electrically conductive path to said contact member for such voltage source which path is physically spaced from the coupling between said corona wire and said contact member.

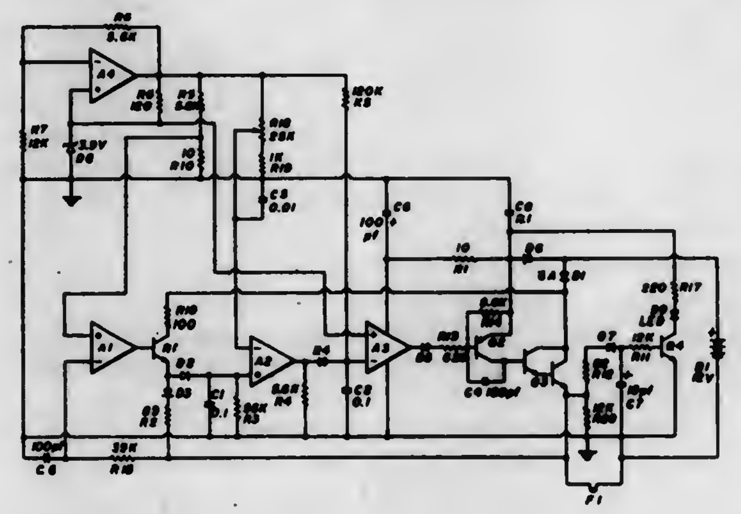
4,130,853
GLOW PLUG TEMPERATURE CIRCUIT

Roxton E. Baker, 56 South Rd., Ellington, Conn. 06029

Filed Feb. 25, 1977, Ser. No. 771,331

Int. Cl.² F23Q *7/00*

U.S. Cl. 361—264 **2 Claims**



1. In combination with a circuit for applying power to a glow-plug filament having a positive temperature coefficient of resistance, the power being applied for time periods dependent on a temperature signal appearing at an input terminal of the power-applying circuit, a glow-plug temperature circuit, comprising:

a. a resistor circuit in series with the filament, thereby forming a filament-current path; and

b. means for applying an output voltage across the path sufficient to maintain a predetermined voltage across the filament, the output voltage also being applied to the input terminal of the power-applying circuit, the output voltage thereby being the temperature signal, which increases as the filament resistance decreases and decreases as the filament resistance increases, thus exhibiting an inverse relationship to temperature.

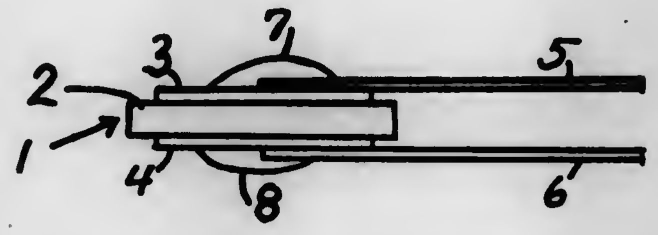
4,130,854
BORATE TREATED NICKEL PIGMENT FOR METALLIZING CERAMICS

Jerome J. Hertz, Erie, Pa., assignor to Erie Technological Products, Inc., Erie, Pa.

Filed Sep. 23, 1976, Ser. No. 725,958

Int. Cl.² H01G *4/12;* H01B *1/02*

U.S. Cl. 361—304 **12 Claims**



1. A metallization of finely divided non-noble metal(s) useful in conductor formation, comprising pigment sized particles of nickel which has been treated to remove its surface oxide coating and to replace the same with an oxidation resistant borate coating.

4,130,855
PASSIVE MICROCIRCUIT

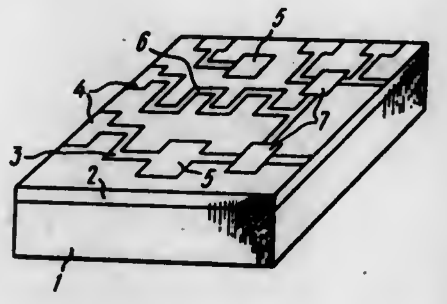
Gennady G. Smolko, korpus 501, kv. 19; Gennady F. Vasiliev, korpus 331, kv. 93, both of Moscow, and Nordari M. Chikovani, ulitsa Krylova, 10, Tbilisi, all of U.S.S.R.

Filed Mar. 5, 1976, Ser. No. 664,171

Claims priority, application U.S.S.R., Mar. 25, 1975, 2112851

Int. Cl.² H05K *7/20*

U.S. Cl. 361—387 **6 Claims**



1. A passive microcircuit comprising: a metal substrate; a dielectric layer formed upon said metal substrate; current-carrying tracks, pads, capacitor electrodes and resistors, all being components of said passive microcircuit and arranged on said dielectric layer, all components and the dielectric layer being at least partially formed from the same material of said metal substrate, to closely match the temperature coefficients of expansion of the components, layer and substrate.

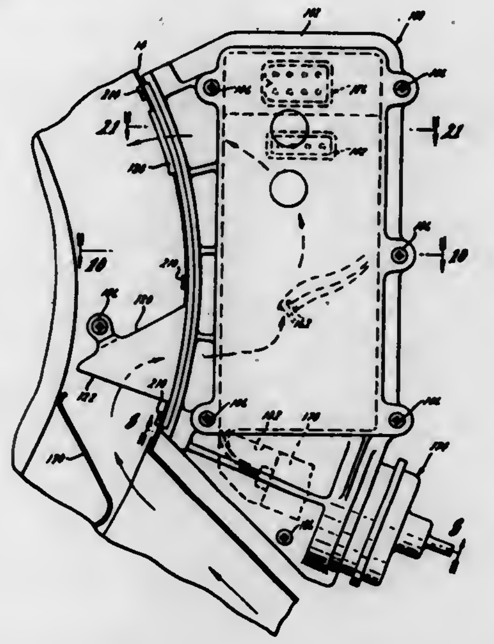
4,130,856
HOUSING FOR MOUNTING ELECTRONIC CIRCUIT BOARDS ON AN ENGINE AIR FILTER HOUSING

Frederick W. Crall, Farmington, and Lawrence W. Tomczak, Sterling Heights, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 659,297, Feb. 19, 1976, Pat. No. 4,050,093, which is a division of Ser. No. 587,193, Jun. 13, 1975, abandoned, which is a continuation-in-part of Ser. No. 570,540, Apr. 22, 1975, abandoned. This application May 23, 1977, Ser. No. 799,413

Int. Cl.² H05K *7/02*

U.S. Cl. 361—415 **12 Claims**



1. A circuit board housing in combination with a pair of electronic circuit board assemblies comprising:

first and second housing elements detachably secured together to form said housing;

each of said housing elements comprising a circuit-board-assembly receiving pocket interior of the housing;

each one of said electronic circuit board assemblies being disposed in a corresponding one of said pockets;

an electrical connector plug assembly on each electronic circuit board assembly;

an opening in one of said housing elements through which the electrical connector plug assembly on the circuit board assembly disposed therein extends;

and a second opening in said one housing element through which the electrical connector plug assembly on the circuit board assembly disposed in the other housing element extends.

4,130,857
MULTILAMP PHOTOFLASH UNIT

Boyd G. Brower, Williamsport, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Apr. 8, 1977, Ser. No. 785,987

Int. Cl.² G03B *15/02*

U.S. Cl. 362—10 **11 Claims**

1. A multilamp photoflash unit comprising, in combination:

a printed circuit board having circuitry on a surface thereof;

a plurality of flashlamps positioned over said surface and having lead-in wires connected to said circuitry, said circuitry being provided for sequentially igniting said flashlamps;

a plurality of electrically conductive reflectors respectively associated with said flashlamps and positioned between said lamps and said circuit board, at least a subplurality of said reflectors each having aperture means therein;

a respective subplurality of radiant-energy-activated disconnect switches attached to said circuit board in alignment respectively with the aperture means in said reflectors, each of said disconnect switches being electrically connected to said circuitry in series with a respective one of said flashlamps for interrupting the igniting circuit for said flashlamp after said flashlamp is ignited, and each of said disconnect switches comprising an electrically conductive strip of fusible material attached at both ends to said circuit board with the midportion of said strip being positioned so as to be in operative relationship with the radiant output of a respective ignited flashlamp via the aperture means in a respective reflector; and

a respective subplurality of radiant-energy-activated connect switches disposed on said circuit board in alignment respectively with the aperture means in said reflectors, each of said connect switches being electrically connected to said circuitry in series with a respective one of said flashlamps for establishing the igniting circuit for said flashlamp after ignition of the preceding flashlamp in the igniting sequence, and each of said connect switches comprising a mass of high resistance material convertible to a conductive state upon being activated by radiant energy;

wherein the improvement comprises said high resistance material being further disposed on and about each of said ends of the conductive strips of material comprising said disconnect switches, said high resistance material providing [illegible] said disconnect switch strip ends and [illegible] between the circuitry connected to said [illegible] said disconnect switch strip ends and [illegible] and/or proximate circuitry.

4,130,858
LAMP-MOVING DEVICE

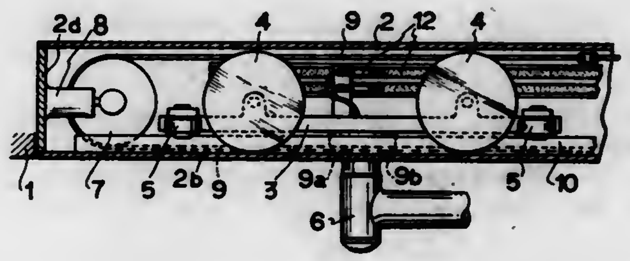
Yoshito Hayakawa, [illegible], Japan, assignor to Yamada Iryo Shomei Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1977, Ser. No. 787,257

Claims priority, application Japan, Apr. 30, 1976, 51/53278

Int. Cl.² F21S *1/02;* E01B *25/22;* F21S *1/04, 3/02*

U.S. Cl. 362—150 **8 Claims**



1. A lamp-moving device for moving a lamp mounted in a ceiling across the ceiling, said device comprising:

rail means embedded in said ceiling, flush therewith, and having a longitudinal opening therein flush with said ceiling;

lamp support means within and extending downward from said rail means through said opening for supporting and moving said lamp within said rail means; and

belt means surrounding and movable with said lamp support means within said rail means and positioned over said opening for sealing said opening.

4,130,859
POCKET LAMP

Alain Battarel, St. Aubin les Elbeuf, France, assignor to Compagnie Industrielle des Piles Electriques "Cipel" S.A., Levallois-Perret, France

Filed Nov. 23, 1976, Ser. No. 744,302

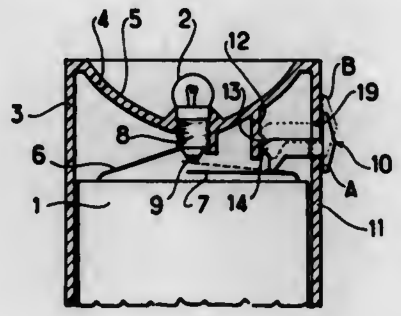
Claims priority, application France, Nov. 28, 1975, 75 36561

Int. Cl.² F21L *7/00*

U.S. Cl. 362—205 **9 Claims**

1. An electric pocket lamp including an elongated molded plastic battery housing having a surrounding wall at one end

thereof and an integrally molded concave plastic reflector supported by the wall and closing said one end of the housing, a light bulb centrally mounted in the reflector and having two terminals, an electric battery means positioned in the housing, the battery means having a resilient blade permanently attached to each of positive and negative poles thereof, the blades extending from the battery at the one end of the housing such that one resilient blade is biased into direct contact with one terminal of the light bulb, the wall of said housing having an elongated slot adjacent said one end, and a molded plastic slider means having a thumb-actuated knob in sliding contact with the exterior surface of said wall and a portion extending through said slot to the interior of the housing, the slider means being reciprocally movable in said slot and said interior portion of the slider means being operatively engageable with the other resilient blade for selectively opening and closing an electrical circuit between the other blade and the other terminal of the light bulb in response to reciprocal movement of the slider means in the slot, wherein the improvement comprises:



- a resilient plastic appendage molded integrally with the housing and extending from the interior surface thereof in the vicinity of the slot in said wall and cooperating with the slider means to determine two positive detent positions for the slider means corresponding to the opening and closing of said electrical circuit.

4,130,860
FLUORESCENT LAMP SUPPORT ASSEMBLAGE WITH BUILT-IN CONVERTER FOR THE LIGHTING OF VEHICLES

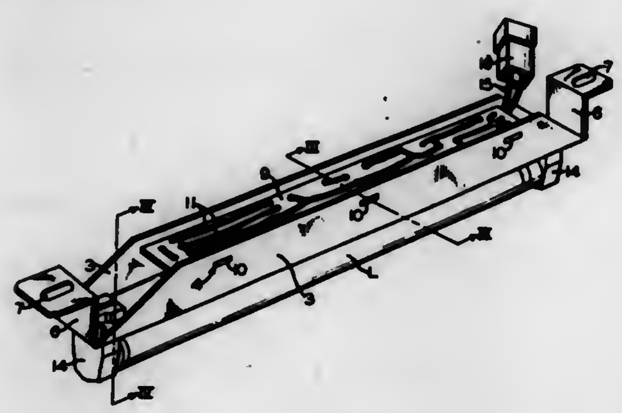
Giuseppe Careglio, and Giovanni Proietti, both of Turin, Italy, assignors to WABCO Westinghouse, Turin, Italy

Filed Apr. 14, 1977, Ser. No. 787,733

Claims priority, application Italy, May 4, 1976, 68086 A/76

Int. Cl.² F21S *3/00;* H01R *33/08*

U.S. Cl. 362—217 **4 Claims**



1. A fluorescent lamp support assemblage including a built-in converter for rendering a vehicle power supply suitable for lighting of fluorescent lamps, wherein the support assemblage comprises:

(a) a channel-shaped member formed of sheet metal and having integral end brackets adapted to receive a fastener to secure said channel-shaped member to a supporting framework of the vehicle;

(b) a printed circuit board on which is pre-mounted the electrical components forming the converter, said circuit board being fastened to the side walls of said channel-shaped member;

(c) a pair of fluorescent lamp holders electrically connected to said printed circuit board by flexible conductors, said lamp holders being fastened to the base of said channel-shaped member at opposite ends thereof for receiving a fluorescent lamp;

(d) snap insertion means for providing said fastening of said printed circuit board and said lamp holders to said channel-shaped member comprising:
  (i) a plurality of tabs along two opposite edges of said printed circuit board and extending laterally therefrom; and
  (ii) a plurality of slots in the side walls of said channel-shaped member corresponding in number, size and spacing to said tabs so as to receive said tabs in locking engagement therewith.

(e) a plug connector to which the vehicle power supply is connected, said plug connector being connected to said printed circuit board by flexible conductors.

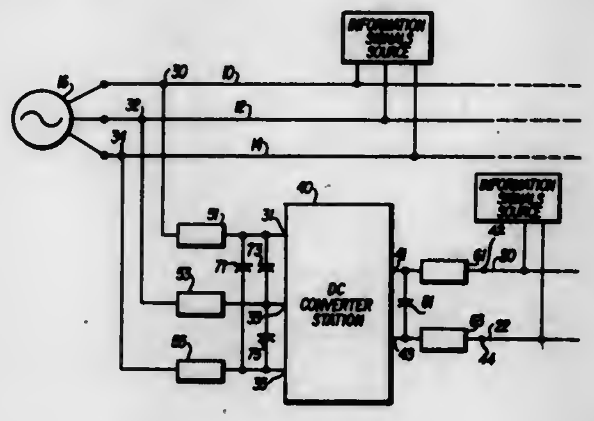
4,130,861
POWER LINE CARRIER NOISE ELIMINATION

James J. LaForest, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1976, Ser. No. 752,932

Int. Cl.² H02M *1/12*

U.S. Cl. 363—39 **8 Claims**



1. In a power line carrier system for transmitting information signals on power transmission lines and including wires joining a noise source to the lines, a method for eliminating noise signals placed on the lines by the source, said method comprising the steps of:

(a) applying the information signals to the lines in a line-to-line mode to minimize attenuation thereof during transmission; and

(b) introducing capacitive impedance between each wire and every other wire to closely couple the noise signals placed on the individual lines so that they are of substantially equal magnitude and in phase and are placed on the lines in a line-to-ground mode to maximize attenuation thereof during transmission.

4,130,862
DC POWER SUPPLY

Frederick R. Holt, Saratoga, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Feb. 1, 1978, Ser. No. 874,124

Int. Cl.² H02M *3/335*

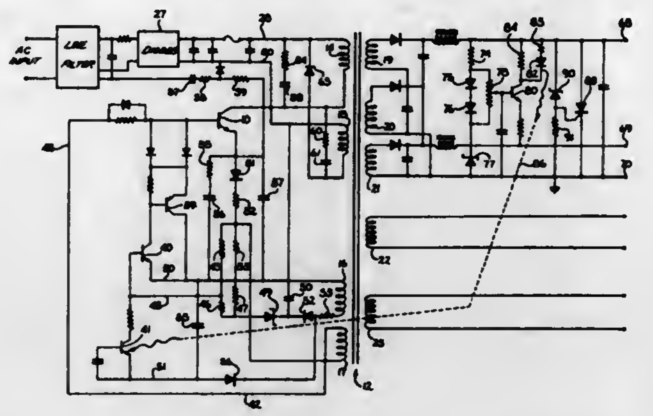
U.S. Cl. 363—49 **11 Claims**

1. A direct current power supply comprising:

a transformer having at least one primary winding and one secondary winding, one lead of said primary winding for coupling to a source of direct current;

a transistor having a collector, base, and emitter terminal, said collector terminal coupled to the other lead of said primary winding;

starting means for initiating oscillations such that power may be transferred through said transformer from said primary winding to said secondary winding, said starting means comprising a first resistor and first capacitor coupled to the emitter terminal of said transistor and charging means for charging said first capacitor, said starting circuit for controlling the flow of emitter current so as to initiate said oscillations without damaging said transistor;



rectification means coupled to said secondary winding for providing an output direct current potential;

whereby oscillations are initiated in said direct current power supply without damage to said supply during a fault condition.

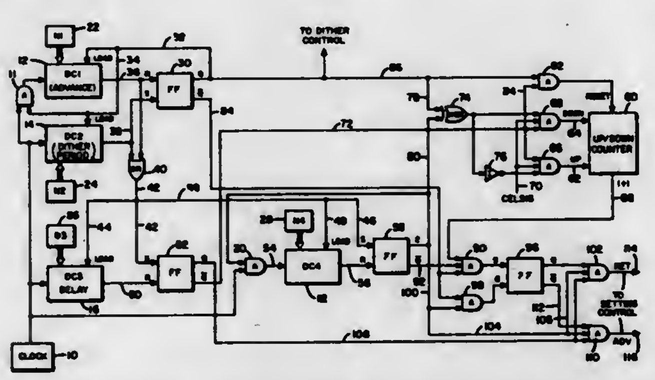
4,130,863
OPTIMIZING CONTROL SYSTEM

Paul H. Schweitzer, and Thomas W. Collins, both of State College, Pa., assignors to Optimizer Control Corp., Burnsville, Minn.

Filed Oct. 27, 1977, Ser. No. 845,804

Int. Cl.² G05B *13/02;* G06F *15/46*

U.S. Cl. 364—105 **9 Claims**



1. In an electronic control system for optimizing the performance of an energy consuming device of the type including means for perturbating a device control parameter with respect to a given setting, pulse producing means for generating pulses at a rate proportional to the instantaneous output of the device, correlator means for detecting the effect of said perturbating on said pulse rate and means responsive to said correlator means for producing control signals for adjusting said given setting in a direction to enhance the performance of the energy consuming device, the improvement comprising:

(a) a first decrementable digital counter connected to receive an initial value corresponding to a predetermined time segment of a device setting perturbating cycle;

(b) a second decrementable digital counter connected to receive an initial value corresponding to the complete device setting perturbating cycle time;

(c) a clock source of regularly occurring timing pulses connected to said first and second decrementable counters for decrementing said first and second decrementable counters at a fixed rate;

(d) an up/down digital counter; and

(e) logic circuit means coupling said up/down counter, to said pulse producing means and to said first and second decrementable counters for accumulating the algebraic difference in the number of pulses from said pulse producing means occurring during predetermined segments of said device setting perturbating cycle.

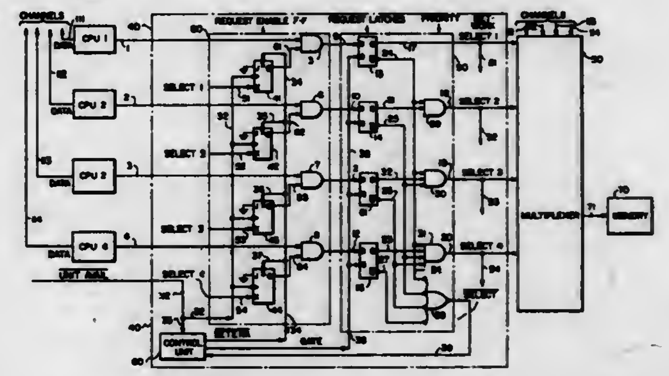
4,130,864
PRIORITY SELECTION CIRCUIT FOR MULTIPORTED CENTRAL FUNCTIONAL UNIT WITH AUTOMATIC PRIORITY REDUCTION ON EXCESSIVE PORT REQUEST

John C. Schlotterer, Casselberry, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 29, 1976, Ser. No. 736,798

Int. Cl.² G06F *3/04, 9/18*

U.S. Cl. 364—200 **5 Claims**



1. In a data processing system having a central functional unit; a plurality of data handling units; a like plurality of sources of request signals associated with the respective said data handling units for requesting data access with said central functional unit; a like plurality of communication channels between said central functional unit and the respective said data handling units; and a priority selector for outputting select signals corresponding to request signals in a predetermined priority order, each of said communication channels being operative to provide data access when controlled by a corresponding outputted select signal; the combination of:

- a like plurality of gating means operative in response to a request signal to provide a gated signal when enabled;
- a like plurality of means for enabling said gating means, respectively, in response to a common availability signal generated by said central functional unit after each completion of an arbitration process by said priority selector; and
- a like plurality of means having a set and a reset position being provided for disabling in the set position a corresponding said enabling means when a corresponding select signal has been outputted by said priority selector;

whereby following at least one first request signal served by said priority selector in the presence of gating means having no request signal, an availability signal outputted by said central functional unit causes operation of said priority selector in relation to new request signals before any renewed such first request signal.

4,130,865

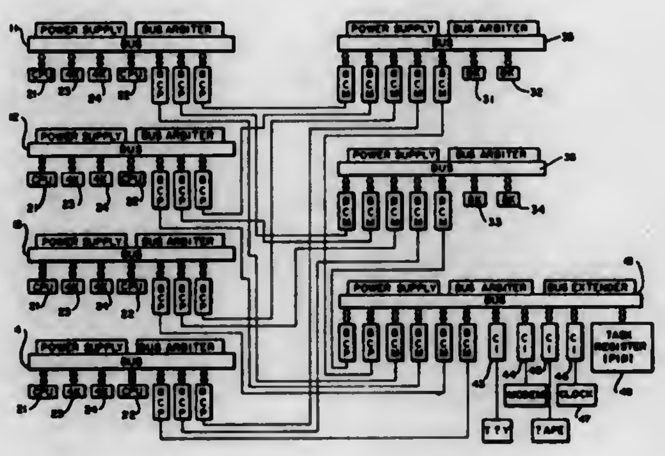
MULTIPROCESSOR COMPUTER APPARATUS EMPLOYING DISTRIBUTED COMMUNICATIONS PATHS AND A PASSIVE TASK REGISTER

Frank E. Heart, Lincoln; Severo M. Ornstein, Waban; William B. Barker, Maynard, and William R. Crowther, Arlington, all of Mass., assignors to Bolt Beranek and Newman Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 476,546, Jun. 5, 1974, abandoned. This application Oct. 6, 1975, Ser. No. 620,131

Int. Cl.^{2} G06F *9/18, 15/16*

U.S. Cl. 364—200 7 Claims



1. A multi-processor computer system comprising:
a plurality of processor units, each unit including at least one processor and having a plurality of coupler interfaces through which data and addresses may be communicated;
at least one random access system memory unit having a plurality of coupler interfaces through which data and addresses may be communicated and through which request signals may be applied to the memory unit;
at least one communications unit interfacing with a plurality of input/output devices and having a plurality of coupler interfaces through which data and addresses may be communicated;
between each processor unit and each of said system memory units, a respective coupler linking a processor interface to a respective memory interface;
between each processor unit and said communications unit, a respective coupler linking a processor interface to a respective communications system interface, each processor unit being freely associable with any of said input/output devices;
between each communications unit and each system memory unit, a respective coupler linking a communications interface to a respective memory interface, said couplers providing a distributed switching network permitting data communication between any pair of said processors, system memory, and communication units; and
at least one addressable, passive task register associated with one of said units for communication through said couplers for registering a variety of task requests, each task request having a corresponding task priority value which is registered with the request, input/output devices operating to directly register corresponding task requests and values, said register being readable by any one of said processors to obtain the highest priority value registered,
whereby a system program incorporating instruction sequences of preselectable length interspersed with instructions effecting reading of said task register will be run by said multi-processor computer system using all available processor units.

4,130,866

DATA PROCESSOR HAVING A CIRCUIT STRUCTURE SUITABLE FOR FABRICATION IN LSI FORM

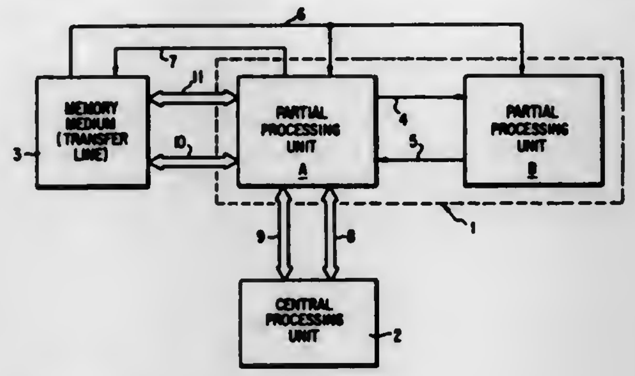
Masahiko Ono, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kanagawa, Japan

Filed Apr. 19, 1977, Ser. No. 788,935

Claims priority, application Japan, Apr. 19, 1976, 51-44257

Int. Cl.^{2} G06F *1/04*

U.S. Cl. 364—200 7 Claims


MEMORY MEDIUM (TRANSFER LINE)
PARTIAL PROCESSING UNIT A
PARTIAL PROCESSING UNIT B
CENTRAL PROCESSING UNIT
1
2
3
4
5
6
7
8
9
10
11

1. A data processor comprising:
(a) a first partial processing unit having an arithmetic-logic unit (ALU) for processing data, storage means connected to the arithmetic logic unit for storing instruction words to control the operation of the arithmetic-logic unit, a group of register means connected to the arithmetic logic unit for effecting temporary memorization of data, a control signal register connected to the storage means for storing a synchronization/non-synchronization control signal, and timing pulse generating means for generating a plurality of pulses to drive the first partial processing unit, the first partial processing unit being formed on one semiconductor chip,
(b) a second partial processing unit including clock pulse generating means for forming a clock pulse of controllable frequency, said second partial processing unit comprising,
an oscillator,
a divider circuit connected to the oscillator for dividing the oscillation frequency,
shift circuit means for shifting the output pulse of the divider circuit by a predetermined time period,
a clock pulse output line connected to the output of the shift circuit means,
a read-out data receiving circuit means for receiving read-out data; and
a trap circuit connected to the read-out data receiving circuit means and the clock pulse output line for trapping read-out data,
whereby when the synchronization/non-synchronization indication (SYN) signal is applied to the second partial processing unit, if the SYN signal is "0" state, the output clock pulse is produced by the divider circuit and the shift circuit means independently of the read-out data, and if the SYN signal is "1" state, the trap circuit traps the read-out data in "1" state of the clock pulse and after that keeps the pulse in a "1" state during said predetermined time;
(c) a clock signal line for sending out the clock pulse from the second partial processing unit to the timing pulse generating means in the first partial processing unit,
(d) a control line connecting the first partial processing unit with the second partial processing unit for sending out the synchronization/non-synchronization control signal from the control signal register of the first partial processing unit to the clock pulse generating means of the second partial processing unit to change the frequency of the clock pulse, the plurality of pulses in the first partial processing unit being produced by the timing pulse generating circuit in response to the clock pulse applied from the second partial processing unit as a pulse source.

4,130,867

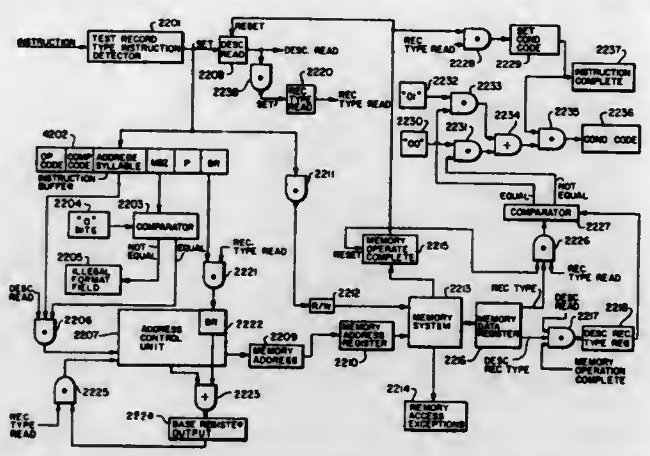
DATABASE INSTRUCTION APPARATUS FOR DETERMINING A DATABASE RECORD TYPE

Charles W. Bachman, Lexington, and Benjamin S. Franklin, Cambridge, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jun. 19, 1975, Ser. No. 588,523

Int. Cl.^{2} G06F *9/14, 9/20, 13/00*

U.S. Cl. 364—200 8 Claims



1. In an internally programmed data processing apparatus having a main memory comprised of a plurality of segments of addressable space each segment having a segment number, each of said segments delineated by upper and lower variable bounds, with predetermined ones of said segments storing a plurality of files of database records grouped in sets of database records, each set of database records having at least one owner record and at least one member record, each of said owner and member records in said database record set being associated with one each of a record descriptor for describing said associated record, said record descriptors being stored in predetermined others of said segments; said data processing apparatus also having an arithmetic and logic unit (ALU) for performing arithmetic and logic operations on any data or address of said segments, records or descriptors; instruction hardware responsive to a test-record-type instruction for determining that the database record addressed in main memory is of the type described by its associated record descriptor, said instruction hardware comprising:
(a) first means for fetching from main memory said database record addressed into said arithmetic and logic unit;
(b) second means for fetching from main memory and into said arithmetic and logic unit the associated descriptor of said database record addressed; and,
(c) comparator means in said second means for comparing the type of said database record fetched into said ALU with a type of database record described in said associated descriptor; whereby if a miscompare does not result the database record is of the type described by its associated record descriptor.

4,130,868

INDEPENDENTLY CONTROLLABLE MULTIPLE ADDRESS REGISTERS FOR A DATA PROCESSOR

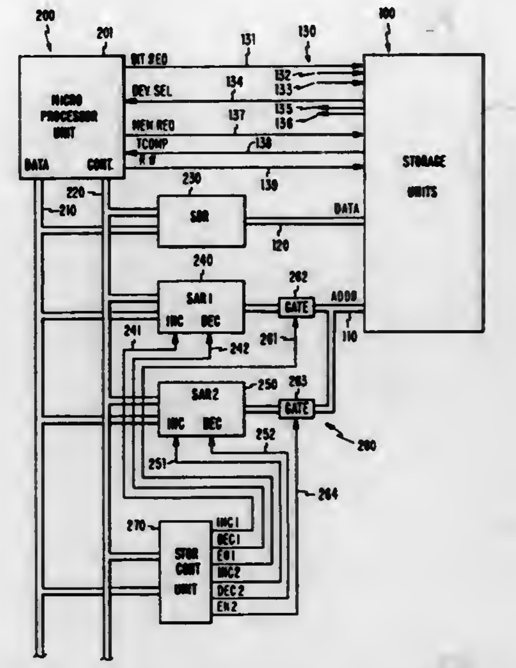
Dale A. Heuer; Charles W. McCallister, both of Stewartville, and Phillip C. Schloss, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 12, 1977, Ser. No. 786,921

Int. Cl.^{2} G06F *9/20*

U.S. Cl. 364—200 4 Claims

1. In a digital date processor having an addressable storage unit including an address bus and having a number of registers coupled to a common bus for transfer of data to and from said common bus, said processor being capable of producing command signals evoking the execution of different instructions, the combination comprising:
a storage control unit coupled to said common bus and responsive to one of said command signals for receiving a control word from said common bus, and for producing therefrom a plurality of control signals including first and second enable signals and mutually independent first and second address-modification signals;
first and second address registers coupled to said common bus and capable of being independently incremented and decremented by said first and second address-modification signals, respectively; and



gating means for selectively coupling said first and second address registers to said address bus of said addressable storage unit in response to said first and second enable signals, respectively.

4,130,869

MICROPROGRAM CONTROLLED SYSTEM

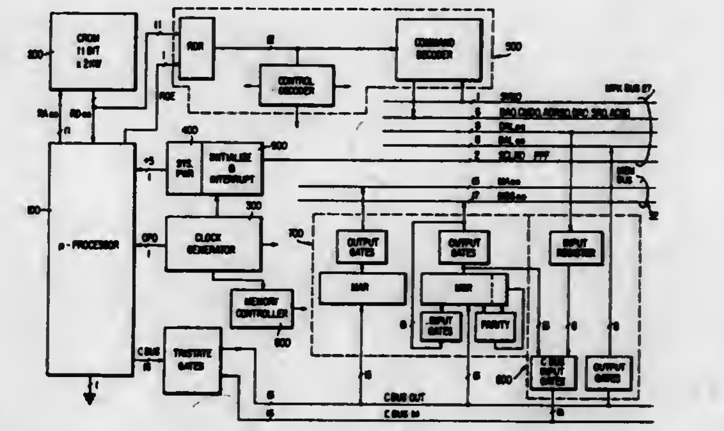
Tsuneo Kinoshita, Kokubunji, and Isamu Yamazaki, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kanagawa, Japan

Filed Mar. 21, 1977, Ser. No. 779,561

Claims priority, application Japan, Mar. 26, 1976, 51-33184

Int. Cl.^{2} G06F *9/16*

U.S. Cl. 364—200 28 Claims

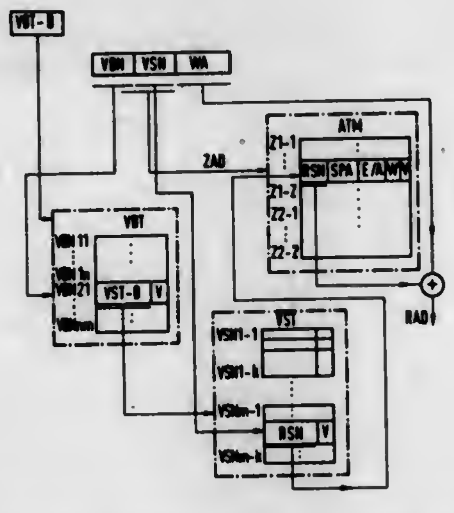


1. A microprogram-controlled system comprising:
(1) control storage means for storing microinstructions which includes an operation code field, an extension field and a register designation field in the format thereof, and
(2) central processing means including;
(a) microinstruction fetch control means for storing a next microinstruction address and data fetched from said control storage means;
(b) arithmetic and logic means for executing parallel add and subtract operations, logical operations and shift operations in response to said microinstructions,
(c) means for storing the output of said arithmetic and logic means,

(d) an instruction register for storing macroinstructions,
(e) general registers designated by said macroinstructions and indirectly designated by said microinstructions,
(f) working registers utilized by said microinstructions,
(g) a flag register for storing information on a carry, a borrow and a sign as a result of operations carried out in said central processing means,
(h) a counter register for counting the number of said shift operations,
(i) a control decoder for decoding said microinstructions and controlling said central processing means in order to execute said microinstructions, which includes means for selecting one of said registers as a designation register by combination of the predetermined contents of said extension field with those of said register designation field, and
(j) an internal common bus connecting the microinstruction fetch control means, the arithmetic and logic means, the output storing means, the registers and the control decoder for communication in said central processing means.

4,130,870
HIERARCHIALLY ARRANGED MEMORY SYSTEM FOR A DATA PROCESSING ARRANGEMENT HAVING VIRTUAL ADDRESSING

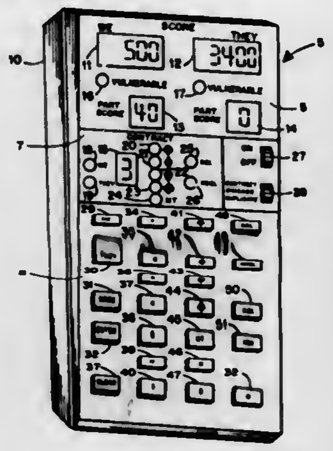
Peter Schneider, Poecking, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Sep. 12, 1977, Ser. No. 832,237
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1976, 2641722
Int. Cl.² G06F *13/00*
U.S. Cl. 364—200 **10 Claims**



1. A hierarchially arranged memory system for a data processing system, with virtual addressing and which comprises:
a multi-level working memory including a main memory and a low capacity buffer store with a short access time;
a peripherally assigned secondary memory as a backing memory;
said main memory having a storage capacity sufficient to store the actual storage areas of all processes which are simultaneously processed in a multi-program operation;
a secondary buffer connected between said buffer store and said main memory for storing the actual storage areas of an active process and its successor process along with storage-resident system functions in one processing period; and
a microprocessor connected to said secondary buffer and to said main memory, said microprocessor triggered by the operating system of the data processing system to control the transfer of program data between said main memory and said secondary buffer in process alternations.

4,130,871
BRIDGE GAME SCORING AND DISPLAY COMPUTER

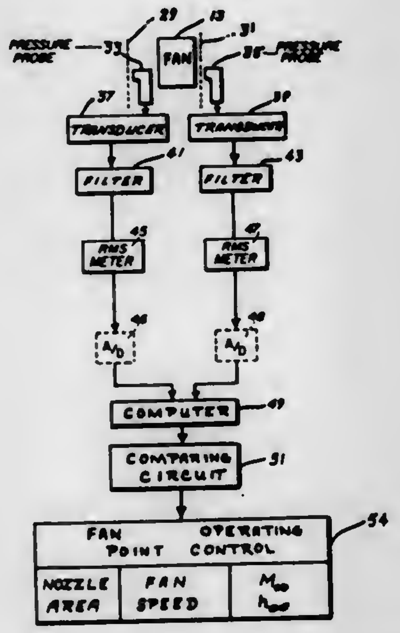
James R. Olsen, Shawsheen Rd., Bedford, Mass. 01730, and Charles R. Forth, S. Mission St., La Habra, Calif. 90631
Filed Oct. 17, 1977, Ser. No. 842,741
Int. Cl.² A63B *71/06*
U.S. Cl. 364—411 **17 Claims**



1. An electrical computer for computing the score of at least one of the parties engaged in the card game called Bridge, or the like, in which a hand of the game is dealt to the parties, bid upon by the parties, and played by the parties, each party taking tricks during the play, comprising,
(a) manually operated means for initiating the storage of electrical signals representative of the winning bid before the hand is played by the parties,
(b) manually operated means for initiating the production of electrical signals representative of the tricks taken during the play by the party winning the bid and
(c) means responsive to all of said signals for computing the change in the score of the party winning the hand.

4,130,872
METHOD AND SYSTEM OF CONTROLLING A JET ENGINE FOR AVOIDING ENGINE SURGE

Gary J. Harloff, Irving, Tex., assignor to the United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Oct. 10, 1975, Ser. No. 621,326
Int. Cl.² G01M *15/00*
U.S. Cl. 364—431 **7 Claims**

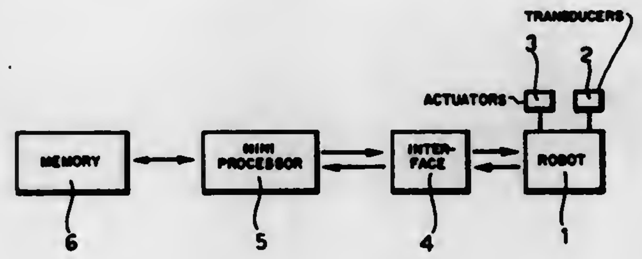


1. A system for automatically avoiding a surge of a jet engine having a fan with an entry plane and a discharge plane, comprising:

a. a first time variant total pressure probe positioned at the entry plane of the jet engine fan;
b. a second time variant total pressure probe positioned at the discharge plane of the jet engine fan;
c. first and second means for converting responses of the first and second pressure probes respectively into corresponding electrical signals;
d. first and second RMS meters fed respectively by the first and second converting means;
e. a computer fed by the first and second RMS meters for determining the ratio of the outputs of second RMS meter to the first RMS meter;
f. a threshold circuit fed by the computer wherein the ratio of the outputs of the first and second RMS meters is compared with a predetermined limit value; and
g. means for controlling the operating point of the fan.

4,130,873
AUTOMATIC MACHINE WITH ARTICULATED MECHANICAL ARM

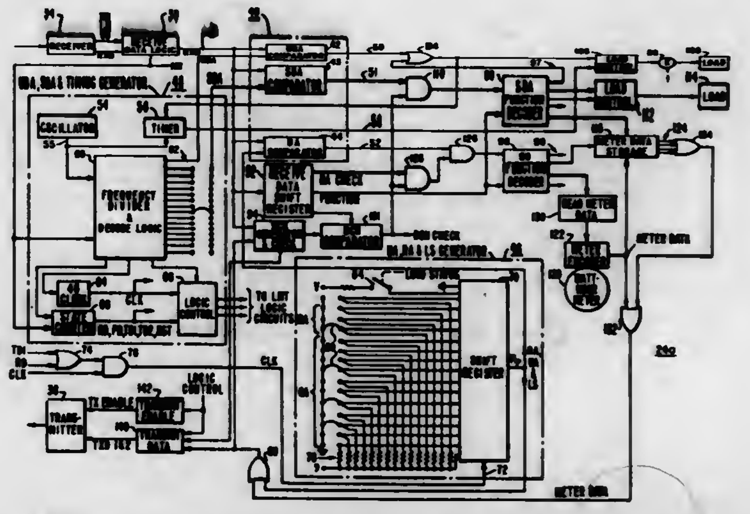
Piero Fioretta, and Claudio Richiardi, both of Turin, Italy, assignors to Societa di Elettronica per l'Automazione — SEPA Societa per Azioni, Turin, Italy
Filed Dec. 3, 1975, Ser. No. 637,436
Claims priority, application Italy, Dec. 20, 1974, 70716 A/74
Int. Cl.² G06F *15/46*
U.S. Cl. 364—513 **4 Claims**



1. In a control system for an automatic machine of the type having:
an articulated mechanical arm movable with several degrees of freedom whereby its free end can describe any selected spatial path,
position transducer means connected to said arm and sensitive to the position of the arm so as to be operable to produce output signals representing the position of said arm,
a first memory for storing data representing the output signals from said transducer means resulting from the movement of the arm, said data being sequential numerical data representing the spatial coordinates as a timed sequence of points constituting the path followed by the arm, and
actuator means controllable by signals from said first memory to reproduce the movement of said arm memorized therein, said data stored in said first memory being recorded therein in a first operating phase of said machine during which an operator moves said arm through a required movement and the output signals from said position transducers are stored in said first memory as sequential numerical data;
the improvement wherein there are further provided:
processing means for processing said data memorized in said first memory following the manual handling of the said arm, said processing means operating to generate modified sequential numerical data representing the spatial coordinates of the significant points as a function of time of a movement which approximates said movement of said arm through which it is moved by said operator in said first operating phase,
a second memory for memorizing said modified sequential numerical data, and
means deriving control signals from said modified sequential data stored in said second memory and for applying said control signals to said actuator means to cause said arm to move through said approximation movement.

4,130,874
LOAD MANAGEMENT TERMINAL HAVING PLURAL SELECTABLE ADDRESS FORMATS FOR A POWER LINE COMMUNICATION SYSTEM

Stephen M. Pai, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jun. 13, 1977, Ser. No. 806,252
Int. Cl.² H04Q *9/00*
U.S. Cl. 364—514 **19 Claims**



1. An addressable communication terminal for each of a plurality of remote locations linked to a central station by a communication system transmitting communication signals including binary coded data word messages having different binary address signals for selectively communicating with different ones of the remote locations, said addressable communication terminal comprising:
communication receiver means for receiving said communication signals including said binary coded data word messages including predetermined binary address signals designating a predetermined one of said remote locations;
internal address generator means including an output, a source of plural bit streams having different binary coded formats, and said address generator means further including connector means selectively connecting one of the bit streams to said output of said address generator means so that said output produces a coded signal defining an internal binary address signal corresponding to one of said predetermined binary address signals included in a received binary data word message; and
an address recognition means including one comparator means having first and second inputs, said first input receiving the binary address signals of said received binary data word messages and said second input receiving the output of said address generator means, and said one comparator means further including an output for producing an equality logic signal when said first and said second inputs receive matching received and internal address signals.

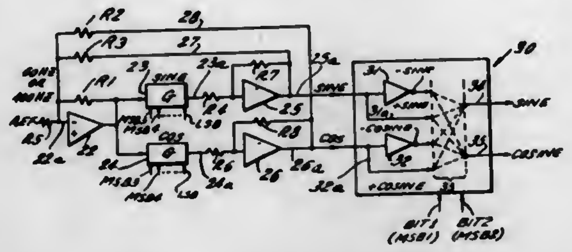
4,130,875
APPARATUS FOR REDUCING THE SCALE FACTOR VARIATION FOR DIGITAL RESOLVER TYPE CONVERTERS AND THE LIKE

Seymour Lanton, Plainview, N.Y., assignor to ILC Data Device Corporation, Bohemia, N.Y.
Filed Mar. 4, 1977, Ser. No. 774,696
Int. Cl.² G06J *1/00*; H03K *13/02*
U.S. Cl. 364—603 **18 Claims**

14. Means for generating signals representative of the sine

and cosine of an angle θ where θ may vary over a predetermined range comprising:

an input terminal for receiving a reference input signal;
sine and cosine multiplier circuits each having first inputs for receiving said reference signal;
said sine and cosine multipliers including angle information input means being adapted to generate output signals



equal to the product of the reference signal and sin θ and cos θ respectively wherein θ is applied to said angle information input means in binary form;
means for amplifying the output signals of said multipliers;
means for summing said amplified output signals and for positively feeding back said sum to the reference input terminal for significantly reducing the scale factor variation of the sine and cosine outputs.

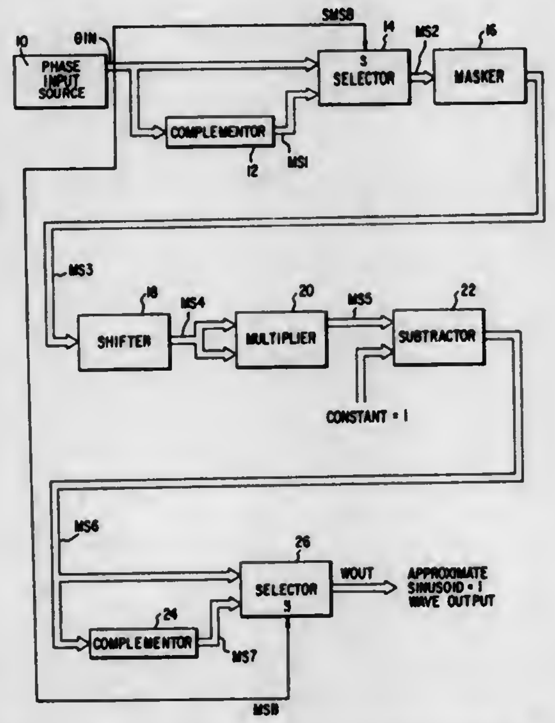
4,130,876
METHOD OF AND APPARATUS FOR COMPOSING APPROXIMATE SINUSOIDAL WAVEFORM

Yasuhiro Mitsuhashi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 27, 1977, Ser. No. 801,023

Int. Cl.² G06F *15/34*

U.S. Cl. 364—721 **4 Claims**



1. A method of composing an approximate sinusoidal waveform which comprises the steps of:

producing digital phase inputs specifying in digital words the amplitude for each phase which varies at a substancially constant rate;
detecting a quadrant to which each phase belongs by examining the sign of the amplitude of said phase inputs;
extracting an absolute value of the amplitude for each of said phase inputs;
squaring the exact extracted absolute value of the amplitude for each phase input; and
applying a coordinate conversion process to the squared values for each of the detected third and fourth quadrants so as to form a sinusoidal waveform approximated by square curves.

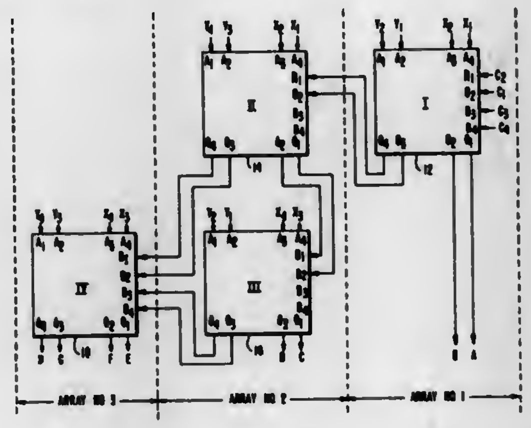
4,130,877
BINARY MULTIPLIER USING IDENTICAL MEMORIES OR IDENTICAL NETWORKS

Henry G. Riekers, Glen Burnie, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 24, 1977, Ser. No. 761,826

Int. Cl.² G06F *7/52*

U.S. Cl. 364—758 **1 Claim**



1. A digital multiplier for multiplying a first multibit digital number by a second multibit digital number to produce a multibit product, said multiplier comprising:

(a) a plurality of arrays of digital memories, denoted as 1 through M, each of said arrays comprising at least one digital memory, each of said memories being identically programmed wherein:
(1) said at least one memory comprising said first array having address inputs for receiving a plurality of the bits of said first and second digital numbers with said first array including outputs for providing a partial product signal and a carry input signal to the second array;
(2) each of said arrays having a position between 2 and M-1, inclusive, each having address inputs for receiving a plurality of the bits of said first and second digital numbers and carry signals from the preceding array with each of these arrays including outputs for providing a partial product and a carry signal to the subsequent array; and
(3) each memory comprising the array having the position M having address inputs for receiving a plurality of bits of said first and second digitial numbers, said array including outputs for providing a partial product signal such that;
(b) all of said partial product signals are combined to provide the product of said first and second digital numbers.

4,130,878
EXPANDABLE 4 × 8 ARRAY MULTIPLIER

Thomas J. Balph, and Richard H. Lane, both of Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

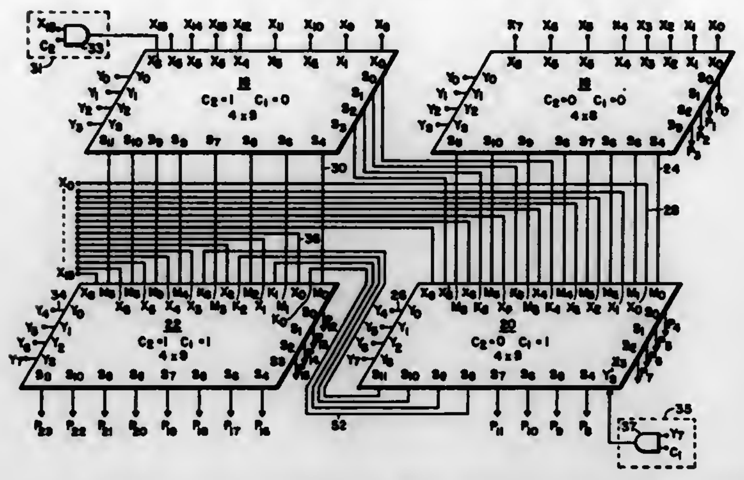
Filed Apr. 3, 1978, Ser. No. 892,792

Int. Cl.² G06F *7/52*

U.S. Cl. 364—758 **13 Claims**

1. A multiplier for generating the product of a first and a second binary data word comprising:

(a) first and second control terminals for receiving first and second control signals,
(b) gating means for receiving the first and second binary data words, said gating means being coupled to said first and second control terminals and being responsive to the first and second control signals for generating a selected set of cross product signals, the selected set being determined by the first and second control signals, and



(c) adder means coupled to said gating means for summing the selected set of cross product signals and providing the product of the first and second binary data words.

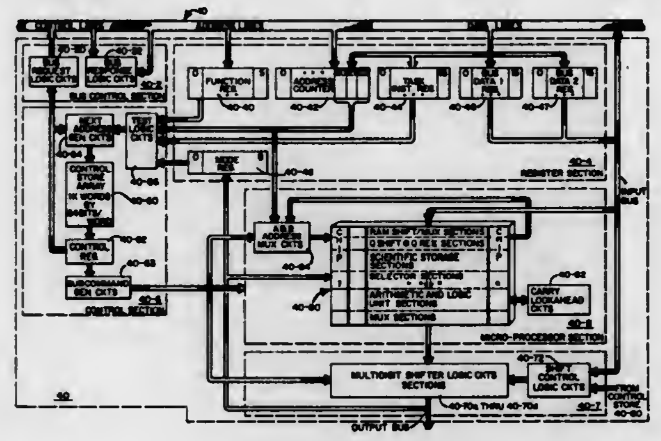
4,130,879
APPARATUS FOR PERFORMING FLOATING POINT ARITHMETIC OPERATIONS USING SUBMULTIPLE STORAGE

David E. Cushing, Chelmsford, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jul. 15, 1977, Ser. No. 815,891

Int. Cl.² G06F *7/52*

U.S. Cl. 364—748 **36 Claims**



1. An apparatus for multiplying a multiplicand by the selection of submultiples of said multiplicand in accordance with the bits of a multiplier, said apparatus comprising:

a number of multibit processor chips connected to operate in tandum, each chip having a number of terminals and including;
  an arithmetic logic unit section, a multibit addressable random access memory section connected to said arithmetic logic unit section, each said memory section having a plurality of multibit storage locations, a group of said locations storing a number of different predetermined submultiple digits of said multiplicand having values selected to have a predetermined relationship to the values of bits of said multiplier used in selecting said submultiples and another location for storing a partial product value, a multibit position shift register section for storing said multiplier coupled to said arithmetic and logic unit section, a most significant bit position and a least significant bit position of each said multibit position shift register section connected to first and second ones of said number of terminals;
first conductor means connecting said second terminal of different ones of said chips to the first terminal of an alternate succeeding chip so as to enable a multidigit shifting of the multiplier digit contents of said shift register sections during a cycle of operation; and,
submultiple selection circuit means having a number of input terminals connected to receive selection signals from a number of said second terminals of predetermined ones of said number of chips storing a group of successive multiplier digits and output terminals connected to each said addressable random access memory section, said selection signals conditioning each of said memory sections for read out of the digits of a next submultiple of said multiplicand upon the shifting of said multiplier digit contents of said shift register sections in a predetermined direction by one bit position for summing to said partial product value stored in said another location of said memory sections by said arithmetic and logic sections for producing an output partial product generated from simultaneously processing several bits of said multiplier during said cycle of operation.

4,130,880
DATA STORAGE SYSTEM FOR ADDRESSING DATA STORED IN ADJACENT WORD LOCATIONS

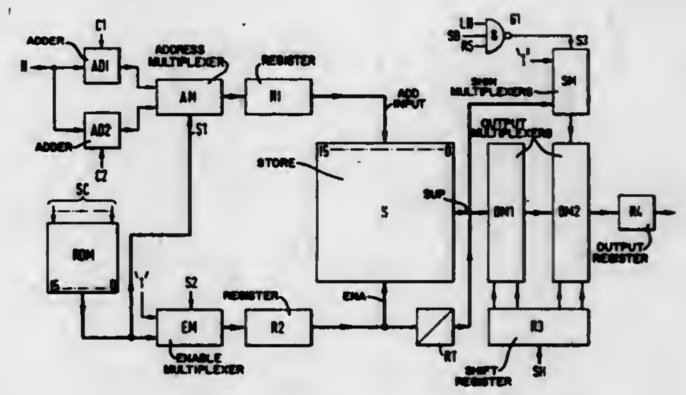
Geoffrey Nutter, Cheadle, England, assignor to Ferranti Limited, Hollinwood, England

Filed Dec. 17, 1976, Ser. No. 751,953

Claims priority, application United Kingdom, Dec. 23, 1975, 52679/75

Int. Cl.² G06F *13/00, 7/22*

U.S. Cl. 364—900 **10 Claims**



1. An information storage and retrieval system for storing operands comprising N bits, said system comprising:

(a) storage means having and output and having a plurality of multiple-bit word locations and arranged for storing multiple-bit operands each occupying part of at least of two or more adjacent word locations, each word location having defined boundaries and M bits, M being less than N;
(b) store addressing means coupled to said storage means for generating the addresses for each of N selected consecutive bits of an operand in two adjacent word locations and for applying these addresses simultaneously across word boundaries to said adjacent word locations;
(c) store enabling means coupled to said storage means for determining selectively which of the bits so addressed by said store addressing means is read out; and
(d) shift means coupled to said output of said storage means for shifting the N bits read out from said storage means to assemble the N addressed bits of the operand from the adjacent word locations in a desired sequence.

4,130,881

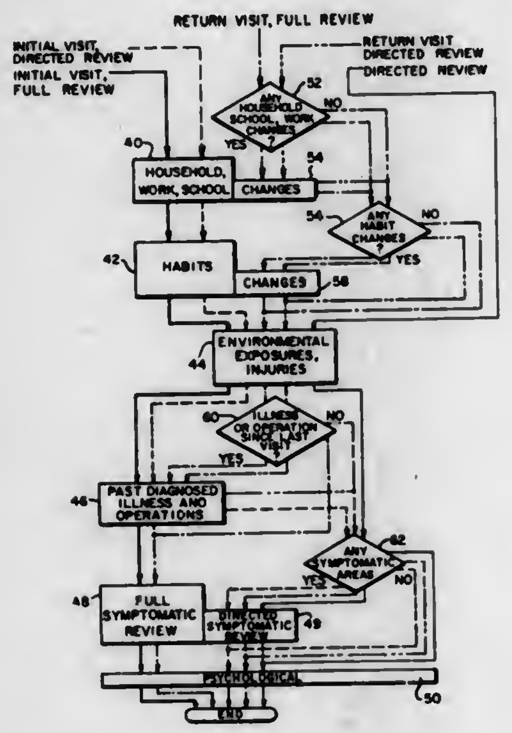
SYSTEM AND TECHNIQUE FOR AUTOMATED MEDICAL HISTORY TAKING

Herbert A. Haessler, Lincoln; Errol L. Elshtain, Lexington, and Taffy Holland, Lincoln, all of Mass., assignors to Searle Medidata, Inc., Skokie, Ill.

Continuation of Ser. No. 164,690, Jul. 21, 1971, abandoned. This application Jan. 28, 1974, Ser. No. 437,052

Int. Cl.² G06F *9/00*

U.S. Cl. 364—900 5 Claims


RETURN VISIT, FULL REVIEW
INITIAL VISIT, DIRECTED REVIEW
INITIAL VISIT, FULL REVIEW
RETURN VISIT DIRECTED REVIEW
HOUSEHOLD, WORK, SCHOOL
CHANGES
HABITS
CHANGES
ENVIRONMENTAL EXPOSURES, INJURIES
PAST DIAGNOSED ILLNESS AND OPERATIONS
FULL SYMPTOMATIC REVIEW
PSYCHOLOGICAL
YES
NO
40
42
44
46
48
50
52
54
56
58
60
62

1. In an automated medical history taking system a machine implemented method comprising the steps of:

presenting a patient selection of a desired questioning routine from a plurality of questioning routines;

receiving a patient response directing the presentation of a patient-selected one of said questioning routines;

presenting by stored program control from a processor through a data link a plurality of questions and associated answers comprising said patient selected one of said questioning routines on a patient answer responsive display for developing a medical history of a patient from answers to each of said questions selected by said patient;

receiving by a data link data representing the selected one or more answers to each of said questions;

selecting by stored program control responsive to received answers selected by said patient, predetermined ones of said plurality of questions for presentation to said patient to provide a selected mode of review;

storing data in a memory representative of received answers selected by said patient;

under stored program control automatically presenting for answer by said patient a question medically related to predetermined ones of said received answers in response thereto even if the medically related question is not one of said predetermined ones of said questions;

said stored step resulting in a memory stored set of answers which result in a history for said patient.

4,130,882

LANGUAGE TRANSLATING APPARATUS AND METHODS THEREFOR

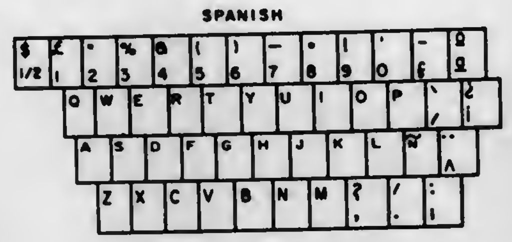
H. Wallace Swanstrom; Kenneth C. Campbell, both of Dallas, Tex., and Robin F. G. Linford, Welwyn Garden City, England, assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 6, 1976, Ser. No. 702,784

Claims priority, application United Kingdom, Jul. 29, 1975, 31701/75

Int. Cl.² G06F *15/00*

U.S. Cl. 364—900 5 Claims



1. In an automatic word processing system including a keyboard, a printer and processor means for carrying out word processing functions indicated at the keyboard, each of which is connected to a common data bus and a common instruction word bus carrying instructions from said computer, improved apparatus for translating character information comprising:

keyboard position information entered on said data bus at said keyboard, and

language translation means for translating said keyboard position information as a function of a selected one of a plurality of language formats into media codes acceptable to said processor means, said language translation means being connected to said common data bus and said common instruction word bus and further including:

a plurality of read-only memory storage means addressable for providing said media codes,

means operatively connected to said common data bus and said plurality of read-only memory storage means for addressing said read-only memory storage means, along said common data bus, enabling means operatively connected to said common data bus and said common instruction word bus, for reading various read only memories for operation as a function of computer instructions present on said common instruction word bus and said data bus, output gating means for gating information read from said read only memories to said common data bus, said output gating means being operatively connected to said common data bus and said common instruction word bus and controlled by instructions on said common instruction bus, printer data memory for supplying printer codes for operation of said printer in one of a plurality of language formats, said printer data memory being operatively connected to said common data bus for receiving data from said gating means and said common instruction word bus, and further means within said language translation means for addressing certain read only memories for translating certain specific media codes.

4,130,883

DATA COMMUNICATION SYSTEM HAVING BIDIRECTIONAL STATION INTERFACES

Dean W. Hazelton, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Oct. 14, 1975, Ser. No. 621,973

Int. Cl.² G06F *3/04, 5/04*

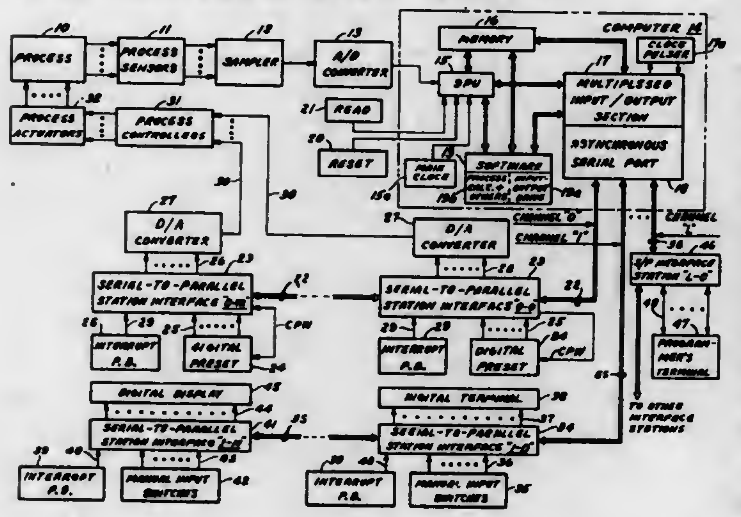
U.S. Cl. 364—900 20 Claims

1. A digital data communications system comprising:

(a) digital computer means having a serial access port, a data processing unit, a memory, and software-controlled means for producing and storing in said memory at least one bidirectional channel sequence of serial data signals representing data to be communicated, each channel sequence

representing one or more station bit frames each having serial data bits but excluding protocol bits, said software-controlled means also producing a plurality of bidirectional data flow control signals based on software control logic for controlling movement of the serial data signals in and out of the computer memory by way of the serial access port;

(b) at least one serial data transmission channel having separate lines for bidirectional communication of the serial data signals and the bidirectional data flow control signals between the computer means serial access port and one or more remote stations on each channel; and



(c) separate series-to-parallel station interface means connected at each said one or more remote stations on each data transmission channel, each interface means circuited for: .1 receiving and transmitting the data flow control signals from the computer means to each interface means on a given channel based on the computer software control logic, .2 receiving and transmitting the sequence of seriai data signals to and from the computer means and any remote station on a given channel in response to the data flow control signals, and .3 permitting parallel data communications of any one serial station bit frame of data signals between the interface means and one of two external parallel-data peripheral devices, or both, in response to the data flow control signals.

4,130,884

TEXT PROCESSING ARRANGEMENT

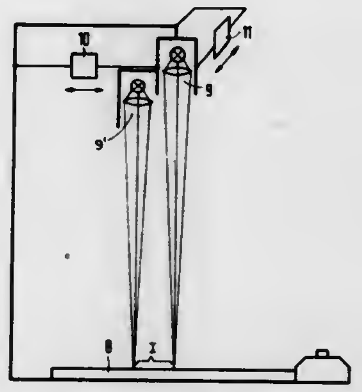
Eugen Hildinger, Soecking, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jul. 16, 1976, Ser. No. 705,829

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1975, 2537576

Int. Cl.² G06F *3/10, 13/00;* G02B *5/14;* B41J *29/42*

U.S. Cl. 364—900 8 Claims



1. A text processing arrangement employing a typewriter in conjunction with a storage device, in which information fed in over the typwriter keyboard can be stored and which stored information controls the printing mechanism of the typewriter in accordance therewith, the combination of a keyboard unit, a printing unit, two storage devices, each having an input, an output, and a capacity to contain the information content of a typewritten page, a corresponding selection unit for each storage device, an indicating panel structure constructed to receive and display a typewritten page, and having optical indicator means cooperable therewith, synchronizable character by character and line by line with the information flow from either storage device, to designate the location on such a page of the last supplied character, and switching means for selectively coupling said keyboard unit, printing unit, storage devices, corresponding selection units, and indicating panel, whereby, in a first switching combination information from said keyboard is simultaneously supplied to said printing unit, for printing thereby, and to one of said storage devices for storage therein, and in a second combination in the event of correction of stored textural information, information to remain unchanged is supplied from said first-mentioned storage device to said printing unit for printing thereby, and to the other of said storage devices for storage therein, and operatively connecting said optical indicating means to the storage device being read out, whereby said indicator means will follow the re-recording of such unchanged information on the initially recorded typewritten page, disposed on said indicating panel and further optical indicator means for designating a location which precedes the character designated by said first-mentioned indicator means by a predetermined number of character spaces, with the interval between the two characters so designated defining a zone within which a line may be broken, with interruption of a word if necessary.

4,130,885

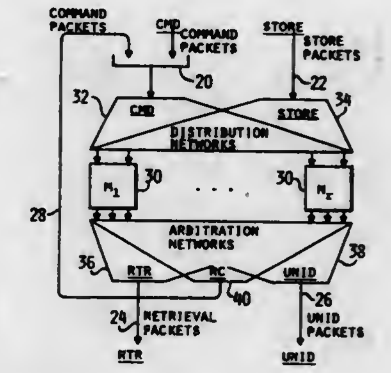
PACKET MEMORY SYSTEM FOR PROCESSING MANY INDEPENDENT MEMORY TRANSACTIONS CONCURRENTLY

Jack B. Dennis, Belmont, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 19, 1976, Ser. No. 715,723

Int. Cl.² G06F *3/00, 13/00;* G06K *17/00*

U.S. Cl. 364—900 9 Claims



1. A memory system for a digital data processor, said memory system comprising:

(a) input network means for merging signals representing components of command packets and store packets, said signals representing components of command packets and store packets consisting of signals representing transactions to be performed by said memory system;

(b) output network means for distributing signals representing components of retrieval packets, said signals representing components of retrieval packets consisting of signals representing the results of transactions specified in said signals representing components of command packets on said memory system;

(c) a plurality of sub-memory system means for holding a plurality of records representing certain of said components, said records designated by unique identifiers;

(d) distribution network means for transmitting signals representing components of said command packets and of said store packets from said input network means to members of said sub-memory system means in correspondence with the signals representing components of said command packets and said store packets, said signals representing components of said command packets and said store packets containing signals representing said unique identifiers associated with said records contained in said sub-memory system means;

(e) arbitration network means for transmitting signals representing components of said retrieval packets from said sub-memory system means to said output network means;

(f) said signals representing components of store packets specifying data items sent to said memory system by some external device to be stored in said sub-memory system means and associated with one of one of said unique identifiers;

(g) said signals representing components of retrieval packets specifying data items retrieved from said sub-memory system means and sent to some external device;

(h) said signals representing components of command packets specifying whether a store operation or retrieval operation is to be performed on said records in order to generate and control said signals representing components of said store packets and said signals representing components of said retrieval packets, said store operation representing the storage of a data item in said memory system and said retrieval operation representing the retrieval of a previously stored data item from said memory system; and

(i) each of said sub-memory system means consisting of storage means for storing data in response to signals received from said distribution network means and representing command packets specifying store operations and signals received from said distribution network means and representing store packets containing data items, retrieval means for retrieving data items from said sub-memory system means in response to signals received from said distribution network means and representing command packets specifying retrieval operations, said data items retrieved from said sub-memory system means transmitted as signals representing retrieval packets to said arbitration network means.

4,130,886

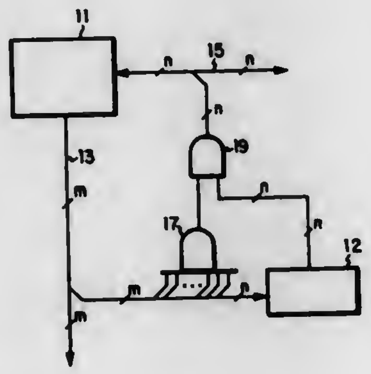
CIRCUIT FOR REARRANGING WORD BITS

Charles F. Smollin, New York, N.Y., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,692

Int. Cl.^{2} G06F *7/24, 7/28*

U.S. Cl. 364—900 2 Claims



1. In a data processing system for rearranging bits of a word according to a pattern, wherein the system includes: data bus means for conducting data signals of a word to an accumulator register; and address bus means for receiving address signals read from an addressable register;

the improvement comprising:

the address bus means being partitioned into a first group of lines for conducting, respectively, (a) a part of the address signals not greater in number than the number of data lines which comprise the data bus means and (b) a second group of lines for conducting the remaining signals of the address signals;

means for storing in the addressable register (a) the bits of the word whose bits are to be rearranged at certain addressable register positions for application to the first group of address means lines and (b) additional bits comprising a special code at other addressable register bit positions for application to the second group of address means lines;

decoding means coupled to the second group of address means lines responsive to the special code for supplying a control signal;

a plurality of gates enabled by the control signal, each gate having an input and an output, with each gate output being coupled to a respective line of said data bus means; and

coupling means for coupling the first group of address means lines in the rearrangement pattern to respective ones of the gate inputs.

4,130,887

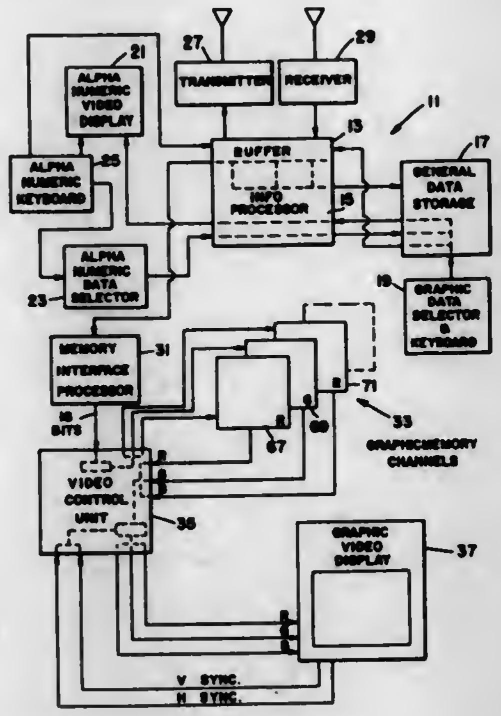
DIGITAL PLOTTING SYSTEM FOR DISPLAYING CHARACTER INFORMATION

Edward R. Reins, Monterey, and Charles D. B. Curry, Pacifica, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 14, 1977, Ser. No. 851,086

Int. Cl.^{2} G06F *3/14*

U.S. Cl. 364—900 10 Claims



1. A digital plotting system comprising:

(a) processor means for processing a binary coded signal representing predetermined graphic information representing a character within a rectangular coordinate system having first and second mutually orthogonal coordinate lines;

(b) said processor including first means for sensing the initial starting point of a character in said rectangular coordinate system of said predetermined graphic information;

(c) said processor including second means for receiving and storing a plurality of binary words defining a character;

(d) said processor including third means for examining from left to right the bits in the first word stored in the second means, and from right to left the bits in the second word and in a similar sequence the remaining words in said second means; and

(e) said first means responsive to said second and third means for defining said character in a rectangular coordinate system and the bits identified by a predetermined binary number defining said character.

4,130,888

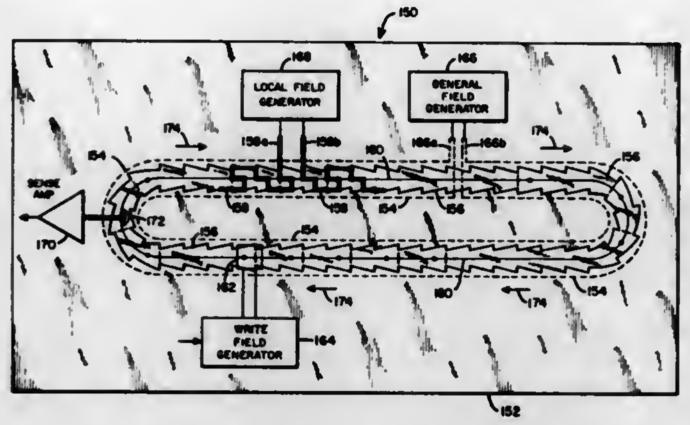
ISOTROPIC DATA TRACK FOR CROSS-TIE WALL MEMORY SYSTEM

Maynard C. Paul, Bloomington, and Ernest J. Torok, St. Paul, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 3, 1977, Ser. No. 756,224

Int. Cl.^{2} G11C *19/08*

U.S. Cl. 365—87 5 Claims



1. In a cross-tie wall memory system in which binary data are stored as inverted Néel wall sections, which inverted Neel wall sections are bounded by a cross-tie on one end and by a Bloch-line on the other end, of a cross-tie wall in a magnetic layer and in which said binary data are generated in and are serially propagated along said cross-tie wall by appropriate drive fields, the improvement in which said magnetic layer is a strip of isotropic material that is configured into a major loop configuration and in which said cross-tie wall is constrained to follow the substantial geometric centerline of said curved strip by its shape induced anisotropy.

4,130,889

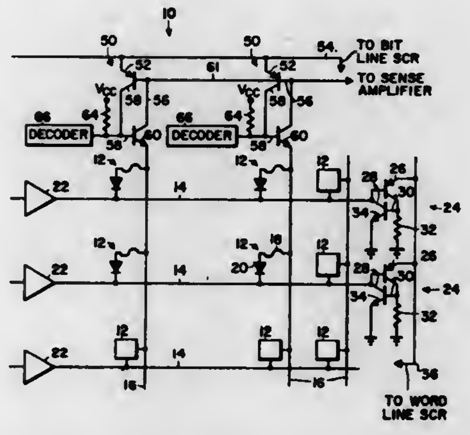
PROGRAMMABLE WRITE-ONCE, READ-ONLY SEMICONDUCTOR MEMORY ARRAY USING SCR CURRENT SINK AND CURRENT SOURCE DEVICES

Hua-Thye Chua, Cupertino, Calif., assignor to Monolithic Memories, Inc., Sunnyvale, Calif.

Filed May 2, 1977, Ser. No. 792,940

Int. Cl.^{2} G11C *17/06, 7/00*

U.S. Cl. 365—96 15 Claims



1. A programmable semiconductor memory array comprising, in combination, a plurality of memory cells interconnected to provide a memory array, and a group of Word lines and a group of Bit lines, each of said memory cells being connected to one of said group of Word lines and one of said group of Bit lines, each of said memory cells having a first electrical state prior to receiving a writing signal and a different second electrical state after receiving a writing signal, and silicon controlled rectifier means connected to each line of said group of Word lines and to each line of said group of Bit lines to provide the functions of drawing current from said group of Word lines and sourcing current to said group of bit lines and to the memory cells connected to said silicon controlled rectifier means, said silicon controlled rectifier means connected to each line of said group of word lines being located at the opposite end of the word line from a word driver.

4,130,890

INTEGRATED DDC MEMORY WITH BITWISE ERASE

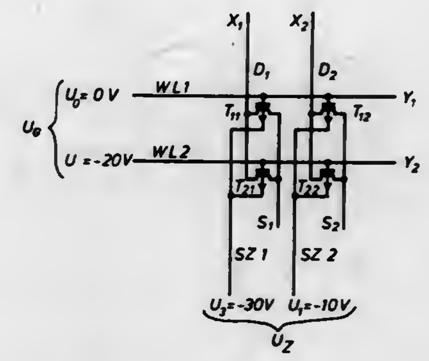
Fritz G. Adam, Freiburg i. Br, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jun. 8, 1977, Ser. No. 804,685

Claims priority, application Germany, Jul. 10, 1976, 2631165

Int. Cl.^{2} G11C *11/40*

U.S. Cl. 365—184 14 Claims



1. A monolithically integrated dual-dielectric cell (DDC) memory array, comprising:

a substrate body of a first conductivity type;

a plurality of m.n. DDC field-effect transistors arranged in m columns and n rows, each of said field-effect transistors having a substrate region of a second conductivity type formed in the substrate body, the substrate regions of transistors in a column being connected together and associated with column addresses X_1 to X_m, a drain region formed within each of said substrate regions, said drain regions of transistors in a column being connected together, a source region within each of said substrate regions, said source regions of transistors in a column being connected together as a bit line, and a gate electrode, said gate electrodes of transistors in a row being connected together as word lines and associated with row addresses Y_1 to Y_n;

a load transistor associated with each column for connecting the drain regions of the column to a supply voltage U_3;

decoding, logic and potential-selecting circuit means, disposed in at least one substrate well of the second conductivity type formed in the substrate body, responsive to binary code signals for assuming one of four operating modes corresponding to bitwise read (R), bitwise erase (E_b), bitwise write (W) and matrix-wise erase (E_m) and for providing an addressed word line with potentials of U_R, U_0, U_3 or U_0 respectively upon assuming the previously mentioned operating modes, for providing an addressed substrate region with potentials of U_0, U_3, U_0 or U_3 respectively upon assuming the previously mentioned operating modes, for providing all non-addressed word lines with potentials of U_0, U_2, U_a or U_0, respectively upon assuming the previously mentioned operating modes, and for providing all non-addressed substrate regions with potentials of U_b, U_1, U_c or U_3 respectively upon assuming the previously mentioned operating modes, wherein $U_3 - U_0$ approximately equals a gate voltage sufficient for shifting the field-effect threshold voltage of the DDC transistors and wherein

$U_1 - U_0$ approximately equals $(U_3 - U_0)/3$,

$U_2 - U_0$ approximately equals $(2 (U_3 - U_0)/3$,

$U_R - U_0$ is no greater than $U_1 - U_0$,

$U_a - U_0$ is no greater than $U_1 - U_0$.

$U_b - U_0$ is no greater than $U_1 - U_0$, and

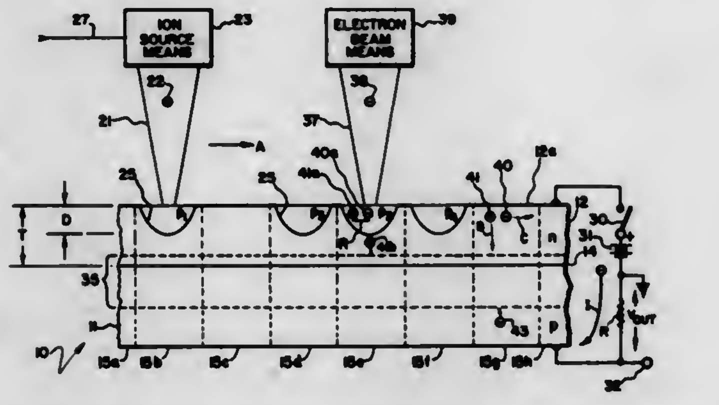
$U_c - U_0$ is no greater than $U_2 - U_0$.

4,130,891

METHODS OF GRAY SCALE RECORDING AND ARCHIVAL MEMORY TARGET PRODUCED THEREBY

Conilee G. Kirkpatrick, Schenectady, and Harold G. Parks, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 8, 1977, Ser. No. 822,429
Int. Cl.^{2} G11C *11/40*
U.S. Cl. 365—105 18 Claims



1. A method for substantially permanently storing multivalued gray scale information, comprising the steps of:

(a) providing a planar diode target comprised of a first polarity-type semiconductor substrate supporting a continuous remaining polarity-type layer fabricated directly thereon;

(b) focusing a beam of ions upon the major surface of the fabricated layer farthest from said substrate;

(c) implanting ions into said layer to form an auxiliary semiconductor region at selected sites of a two-dimensional array of possible data storage sites defined on the major surface of the fabricated layer furthest from said substrate; and

(d) varying a physical characteristic of each implanted region to one of a multiplicity of values in accordance with the associated value of gray scale information to be stored in substantially non-erasable manner in that auxiliary region.

4,130,892

RADIATION HARD MEMORY CELL AND ARRAY THEREOF

Thomas L. Gunckel, II, Santa Ana; Alex Rovell, Yorba Linda, both of Calif., and Robert L. Nielsen, Fairport, N.Y., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 3, 1977, Ser. No. 756,454
Int. Cl.^{2} G11C *11/40, 7/02*
U.S. Cl. 365—154 19 Claims

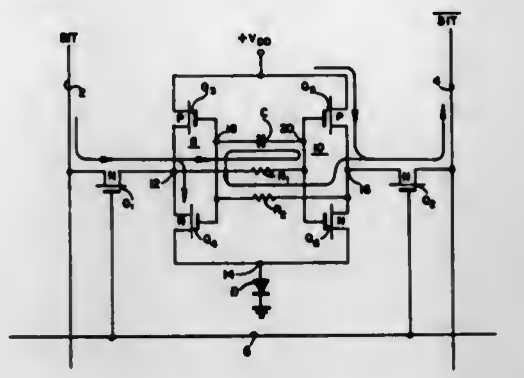
1. A radiation resistant memory cell comprising:

first and second cross-coupled inverter stages each of said inverter stages comprising a pair of transistor devices having respective conduction path electrodes and control electrodes,

the conduction path electrodes of each of said first inverter stage pair of transistor devices connected in electrical series with one another and the control electrodes of each of said first inverter stage pair of transistor devices connected together,

the conduction path electrodes of each of said second inverter stage pair of transistor devices connected in electrical series with one another and the control electrodes of each of said second inverter stage pair of transistor devices connected together, and

resistance means and capacitance means interconnected with one another to form a series connected charging current path from said first cross-coupled inverter stage to said second cross-coupled inverter stage to charge said capacitance means and to provide an indication of the logical state of said memory cell, said resistance means and said capacitance means controlling the charging time constant of said memory cell to thereby decrease the response of the memory cell to a radiation event.

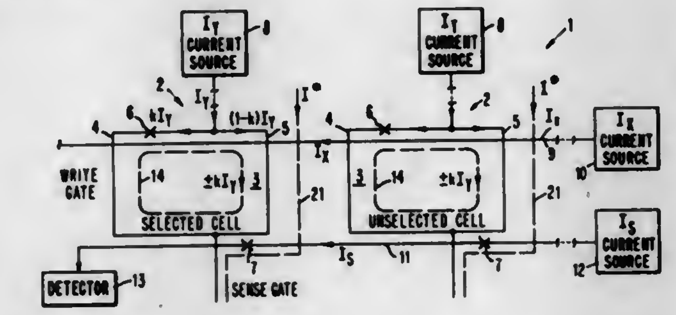


4,130,893

JOSEPHSON MEMORY CELLS HAVING IMPROVED NDRO SENSING

Walter H. Henkels, Putnam Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1977, Ser. No. 782,573
Int. Cl.^{2} G11C *11/44*
U.S. Cl. 365—162 20 Claims



1. A memory cell array for storing binary information each cell comprising:

a superconductive loop which stores binary information in the form of equal magnitude clockwise and counterclockwise circulating currents in said loop, said loop containing first and second branches said branches having different values of inductance,

a first switchable device which carries Josephson current having a given minimum value of current at which said first device resets disposed in said first branch,

means connected to said loop for applying a given cell current, and,

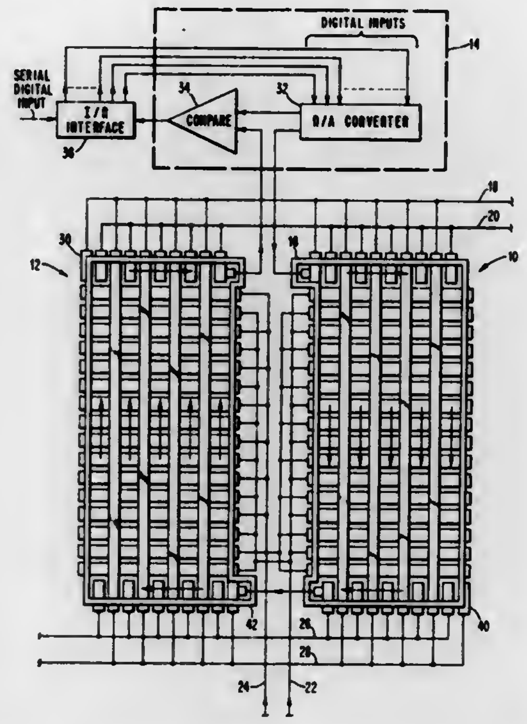
a second switchable device which carries Josephson current disposed in electromagnetically coupled relationship with said second branch.

4,130,894

LOOP ORGANIZED SERIAL-PARALLEL-SERIAL MEMORY STORAGE SYSTEM

Richard B. Merrill, Millwood, and Yen S. Yee, White Plains, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1977, Ser. No. 853,729
Int. Cl.^{2} G11C *27/00*
U.S. Cl. 365—183 7 Claims



1. A loop organized serial-parallel-serial memory structure comprising:

a first signal storage array including signal storage elements arranged in rows and columns wherein said rows are functionally arranged from a top row to a bottom row and said columns are functionally arranged from a left column to a right column,

a second signal storage array including signal storage elements arranged in rows and columns wherein said rows are functionally arranged from a top row to a bottom row and said columns are functionally arranged from a left column to a right column, said second signal storage array being functionally disposed to the left of said first signal storage array such that said left column of said first signal storage array is proximately opposed to said right column of said second signal storage array and are mutually separated by a central region intermediate said first and second signal storage arrays,

a signal input means located in said central region in between said first and second signal storage arrays and connected to a selected row of one of said first and second signal storage arrays for entering an input signal into said selected row of one of said first and second signal storage arrays,

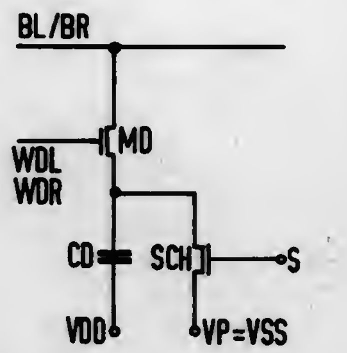
a signal output means located in said central region and connected to a selected row of the other of said first and second signal storage arrays in juxtaposition to said signal input means for removing an output signal from said selected row of the other of said first and second signal storage arrays, and transfer signal means connected to said first and second signal storage arrays for transferring said input signal entered into said one of said first and second storage arrays through said one of said first and second storage arrays; out of said one of said first and second arrays; and into said other of said first and second arrays; through said other of said first and second storage arrays; and out of said output means as an output signal.

4,130,895

STORAGE MODULE

Klaus Zibert, Hohenschäftlarn, and Paul W. Von Basse, Wolfratshausen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jun. 15, 1977, Ser. No. 806,586
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1976, 2633558
Int. Cl.^{2} G11C *11/40*
U.S. Cl. 365—202 3 Claims



1. A storage module comprising

a plurality of bit lines each divided into two bit line portions,

a plurality of word lines arranged intersecting said bit line portions,

a pair of compensation word lines each intersecting one bit line portion of each of said bit lines,

a plurality of storage cell, each of said storage cells including a cell selector transistor having a controlled conduction path and a control electrode connected to a word line, and a storage capacitor connected in series with said controlled path between a bit line portion and a supply potential,

a plurality of compensation cells, each of said compensation cells including a compensation cell selector transistor having a controlled path and a control electrode connected to a compensation word line, and a compensation capacitance connected in series with said controlled path between the respective bit line portion and the supply potential,

means connected to the junctions of each of said compensation cell selector transistors and its serially connected compensation capacitance and operable prior to reading to apply a fixed operating potential thereto and place said bit line portions at a predetermined potential which is between the potential defining a binary "1" and the potential defining a binary "0",

each of said compensation cell selector transistors including a capacitance which together with said compensation cell capacitance is equal to a capacitance increase experienced by the opposite bit line portion upon selection of a storage cell.

4,130,896

PERIPHERAL CIRCUIT IN A MEMORY SYSTEM

Masaaki Inadachi, Kokubunji, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 1, 1977, Ser. No. 773,418
Claims priority, application Japan, Mar. 5, 1976, 51-23322
Int. Cl.^{2} G11C *11/40*
U.S. Cl. 365—203 3 Claims

1. A peripheral circuit in a memory system comprising:

a plurality of word lines;

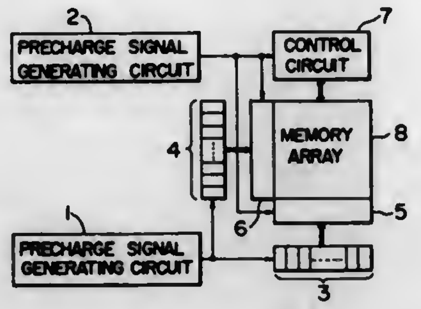
a plurality of digit lines;

memory means including a plurality of memory cells for outputting stored signals to a corresponding one of said digit lines in response to a predetermined signal on a corresponding one of said word lines;

a first circuit for outputting a first precharge signal except when an external clock signal is applied thereto;

a word address buffer circuit for outputting first internal address signals in response to first external address signals, said word address buffer circuit being disabled when said first precharge signal is applied thereto; and

a word driver circuit connected to receive the output of said


2
PRECHARGE SIGNAL GENERATING CIRCUIT
CONTROL CIRCUIT
7
MEMORY ARRAY
8
4
6
5
1
PRECHARGE SIGNAL GENERATING CIRCUIT
3

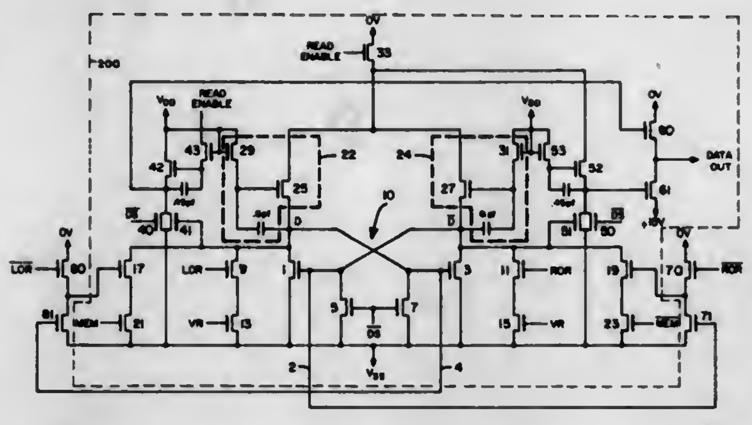
word address buffer circuit for selectively enabling one of said word lines by decoding said first internal address signals,

wherein said first precharge signal is applied exclusively to said word address buffer circuit.

4,130,897
MNOS FET MEMORY RETENTION CHARACTERIZATION TEST CIRCUIT WITH ENHANCED SENSITIVITY AND POWER CONSERVATION

Merton A. Horne, Eagan, and Bruce A. Brillhart, Minneapolis, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 3, 1977, Ser. No. 821,271
Int. Cl.² G11C *11/40, 7/00*
U.S. Cl. 365—205 **7 Claims**



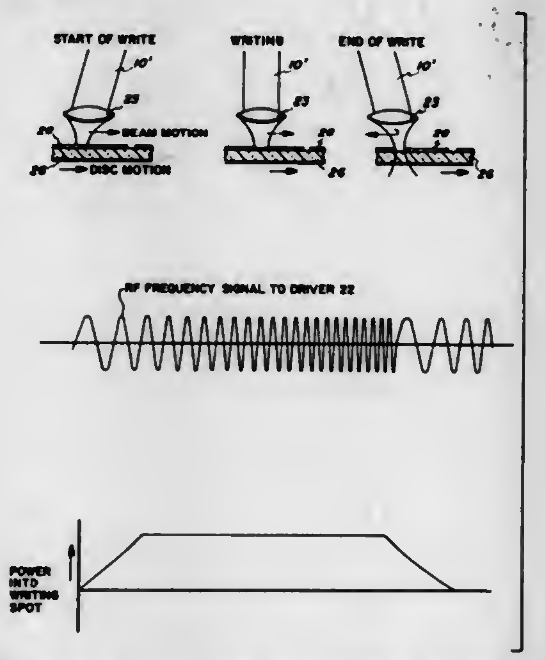
1. An improved sense latch circuit of the type coupled to an array of semiconductor memory cells and selectively operable in a read or a memory retention interrogation mode for reading binary data from said memory cells or for testing each of said memory cells to determine a plurality of analog threshold voltages peculiar to each of said memory cells with a minimum amount of disturb on the threshold voltages, said sense latch circuit comprising a bistable latch means having first and second output nodes and two stable electrical states established on said output nodes, each of said stable electrical states represented by two output potentials having a relative voltage separation therebetween for comparing two signals, at least one of said two signals functionally related to one of said plurality of threshold voltages, memory select means coupled to said memory cells and said bistable latch means for coupling said signals functionally related to said threshold voltages to said bistable latch means, reference voltage select means coupled to a reference voltage source and said bistable latch means for coupling a reference voltage to said bistable latch means and override select means coupled to said reference voltage select means and said memory select means for selectively coupling said reference voltage and said signals functionally related to said threshold voltages to said bistable latch means, wherein the improvement comprises:

transistor means coupled to said override select means and said memory select means and responsive to first and second voltages for increasing said relative voltage separation of said stable electrical states and isolating portions of said sense latch circuit as said bistable latch assumes its stable electrical states to reduce the power consumption of said sense latch circuit during its read or memory retention interrogation modes.

4,130,898
MOTION BLUR COMPENSATION FOR MOVING MEDIA OPTICAL DATA RECORDING SYSTEM

John C. Urbach, Portola Valley, and David Cheng, Palo Alto, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 29, 1977, Ser. No. 828,801
Int. Cl.² G11C *13/08, 7/00*
U.S. Cl. 365—215 **5 Claims**



1. In an optical memory system including means for producing a light beam of high intensity, a material capable of having the optical characteristics of discrete areas thereof modified by a high intensity light beam, means for rotating said material, and means for directing said high intensity light beam so that it is incident upon discrete areas of said material when said material is rotating, the improvement comprising:

means for deflecting said high intensity light beam such that when said material is rotating said light beam has a motion substantially equal to at least a component of motion of a discrete area of said material whereby motion blur is minimized.

4,130,899
SYSTEM FOR OPERATING VOLATILE MEMORY IN NORMAL AND STANDBY MODES

Rodney V. Bowman, and Martin H. Francis, both of Wichita, Kans., assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 25, 1977, Ser. No. 854,856
Int. Cl.² G11C *11/40*
U.S. Cl. 365—222 **7 Claims**

6. A memory system for operating in a normal mode and a standby mode, comprising:

a dynamic cell semiconductor memory array having control lines thereto;

TTL drivers having outputs connected to said control lines for providing control and refresh functions to said array during said normal mode;

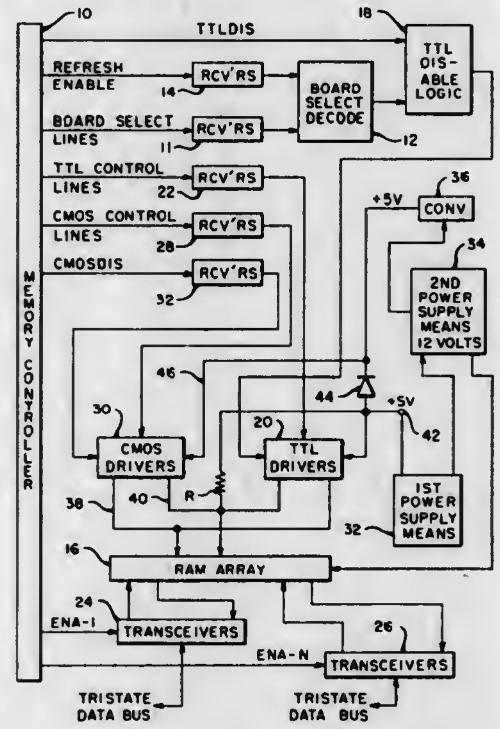
CMOS drivers having outputs connected to said control lines for providing refresh functions to said array during said standby mode;

memory controller means for controlling said TTL drivers and said CMOS drivers;

said memory controller means including means for enabling said TTL drivers and disabling said CMOS drivers when said system operates in said normal mode and for enabling said CMOS drivers and disabling said TTL drivers when said system operates in said standby mode;

first and second power supply means for supplying, respectively, first and second voltage levels to said TTL and CMOS drivers, respectively;

a diode connected between said first and second power supply means to maintain a voltage level at said second



power supply means which is slightly less than said first voltage level when said second power supply means fails to supply said second voltage to said CMOS drivers;

some of said outputs of said TTL drivers having sufficient voltage levels to enable said control and refresh functions to be performed, and

a pull-up resistor connected to said first voltage level for each of said outputs of said TTL drivers having insufficient voltage levels to provide a sufficient voltage level to enable said control and refresh functions, said pull-up resistor having a value which provides a voltage drop thereacross which is close in value to the voltage drop which appears across said diode.

4,130,900
MEMORY WITH COMMON READ/WRITE DATA LINE AND WRITE-IN LATCH CIRCUIT

Masafumi Watanabe, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kanagawa, Japan

Filed Apr. 25, 1977, Ser. No. 790,815
Claims priority, application Japan, Apr. 26, 1976, 51-47379
Int. Cl.² G11C *8/00, 7/06*
U.S. Cl. 365—230 **6 Claims**

1. A semiconductor memory device comprising:

(a) a memory array consisting of a plurality of memory cells arranged in XY matrix form,

(b) an X decoder for designating the X direction address of the memory cells,

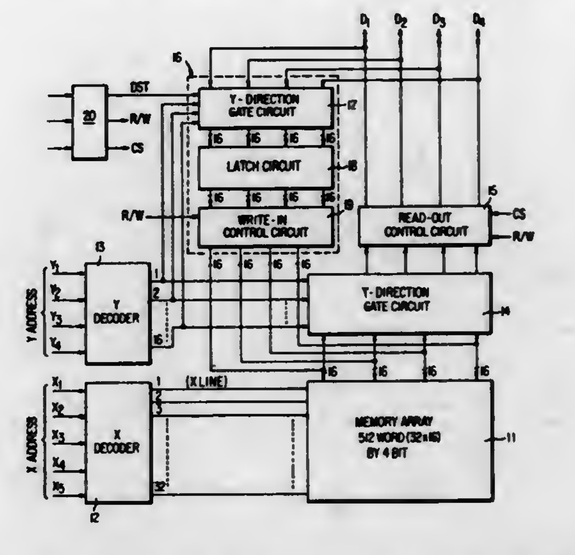
(c) a Y decoder for designating the Y direction address of the memory cells,

(d) a first Y direction gate circuit connected to the Y decoder and the memory array for reading out the data addressed by the X and Y decoders,

(e) a read-out control circuit connected to the first Y direction gate circuit,

(f) a plurality of data lines connected to the read-out control circuit for common data writing-in and data reading out,

(g) a write-in circuit having a second Y direction gate circuit connected to the data lines for reading data therein in a word unit in sequence and for selecting a plurality of memory cells in sequence in accordance with Y address

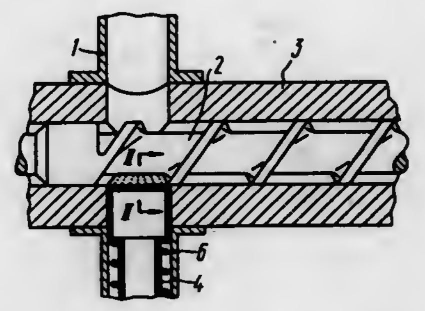


signals designating the memory cells, a latch circuit connected to the second Y direction gate circuit for temporarily holding data read in the gate circuit and a write-in control circuit connected to the latch circuit and the memory array for writing data held in the latch circuit into the respective memory cells selected by the second Y direction gate circuit.

4,130,901
PLASTICATION ARRANGEMENT IN A MACHINE FOR PROCESSING POLYMERIC MATERIALS

Sofia M. Borovikova, ulitsa Kravchenko, 4, korpus 1, kv. 21, Moscow; Evgeny V. Lurie, stantsia Udelnaya, ulitsa Solnechnaya, 9, Moskovskaya oblast, and Valery F. Mikhailov, Schelkovskoe shosse, 86, kv. 28, Moscow, all of U.S.S.R.

Filed Sep. 8, 1977, Ser. No. 831,410
Int. Cl.² B29B *1/10*
U.S. Cl. 366—163 **9 Claims**



1. A plastication arrangement for processing polymeric materials, comprising:

an elongated heated generally cylindrical casing;

a rotatable screw axially disposed within said casing for feeding plasticized materials along the longitudinal axis thereof;

a charging hopper for polymeric material having an outlet adjacent and in communication with a portion of said screw;

drain means for creating reduced pressure within said casing;

filter means within said casing adjacent said screw for preventing material within said casing from entering said drain means; and

means for cleaning said filter means when said screw is rotated.

DESIGNS

DECEMBER 19, 1978

250,556

CANDY UNIT

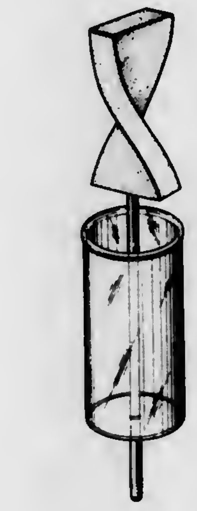
Arthur T. Shorin, New York, N.Y., and Leonard Brown, Piscataway, N.J., assignors to Topps Chewing Gum, Incorporated, Brooklyn, N.Y.

Filed Mar. 4, 1977, Ser. No. 774,639

Term of patent 14 years

Int. Cl. D1—*01*

U.S. Cl. D1—22



250,557

HAMBURGER PATTIE

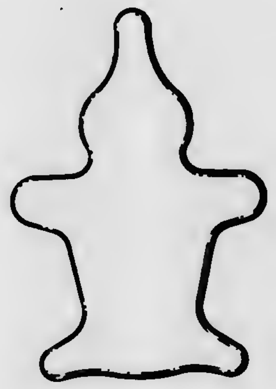
Melvin B. Leeb, 27681 Laurell La., North Olmsted, Ohio 44070

Filed Nov. 22, 1976, Ser. No. 743,961

Term of patent 14 years

Int. Cl. D1—*04*

U.S. Cl. D1—26



250,558

SHIRT

Peter W. S. Morgan, Keighley, England, assignor to Dunlop Limited, London, England

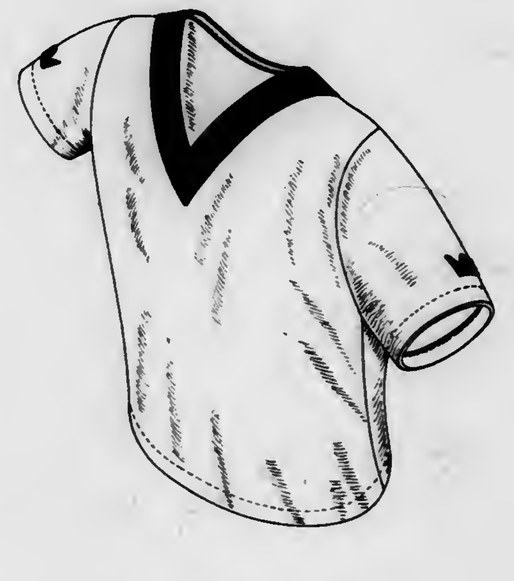
Filed Nov. 29, 1976, Ser. No. 745,524

Claims priority, application United Kingdom, Jun. 9, 1976, 976029/76

Term of patent 14 years

Int. Cl. D2—*02*

U.S. Cl. D2—215



250,559

CHAIR OR SIMILAR ARTICLE

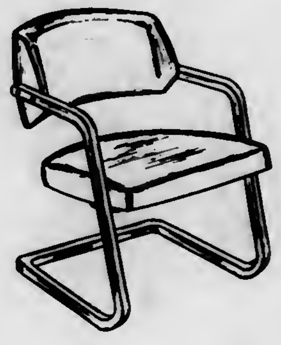
Warren D. Petersen, St. Charles, Ill., assignor to Burd, Inc., Howell Division

Filed Apr. 1, 1977, Ser. No. 783,783

Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—56

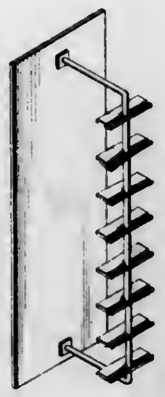


250,560
EYEGLASS RACK

Kenneth S. Gordon, 4320 Greer Rd., Woodland Hills, Calif. 91364

Filed Dec. 5, 1977, Ser. No. 857,364
Term of patent 14 years
Int. Cl. D20—*02;* D6—*04*

U.S. Cl. D6—85

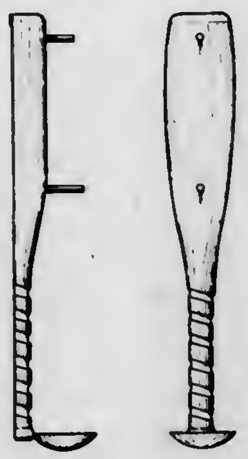


250,561
RACK

David Phillips, Chattanooga, Tenn., assignor to Carroll D. Groner, Chattanooga, Tenn.

Filed Jan. 12, 1977, Ser. No. 758,639
Term of patent 14 years
Int. Cl. D6—*04*

U.S. Cl. D6—130

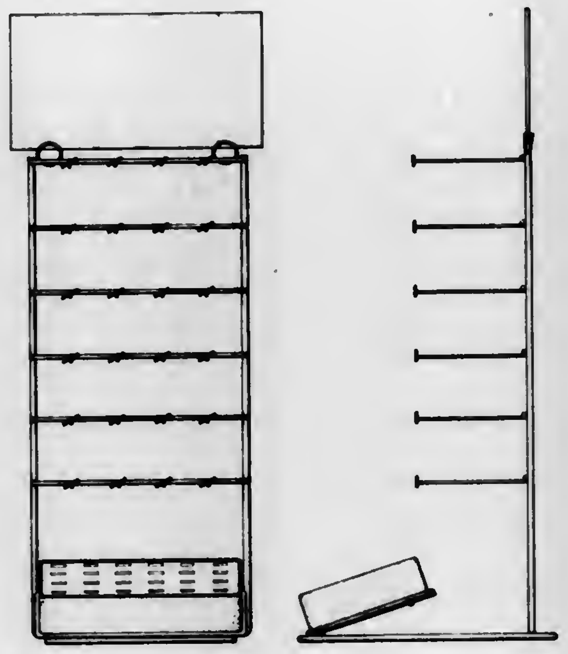


250,562
FINGER RING DISPLAY STAND

Thomas A. Newman, Cranston, R.I., assignor to McGrath-Hamin, Inc., Providence, R.I.

Filed Dec. 12, 1977, Ser. No. 859,719
Term of patent 14 years
Int. Cl. D20—*02*

U.S. Cl. D6—141

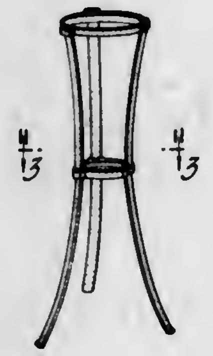


250,563
STAND FOR SUPPORTING AN ICE BUCKET, POT, VASE OR SIMILAR ARTICLE

Edwin S. Getner, 2549 Alveston Dr., Bloomfield Hills, Mich. 48013

Filed Oct. 18, 1976, Ser. No. 733,452
Term of patent 14 years
Int. Cl. D6—*06*

U.S. Cl. D6—176

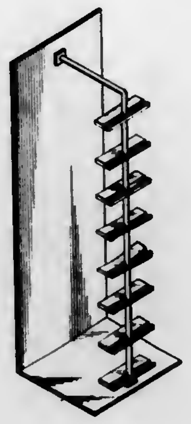


250,564
EYEGLASS RACK

Kenneth S. Gordon, 4320 Greer Rd., Woodland Hills, Calif. 91364

Filed Dec. 5, 1977, Ser. No. 857,365
Term of patent 14 years
Int. Cl. D6—*04;* D20—*02*

U.S. Cl. D6—188

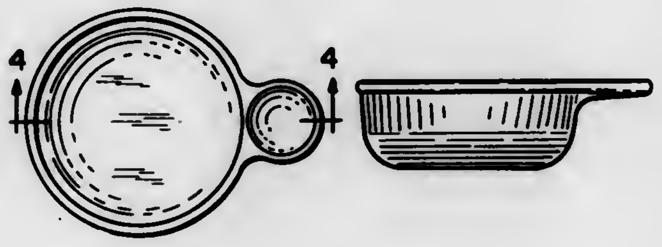


250,565
BOWL OR THE LIKE

Davin B. Stowell, Corning, N.Y., assignor to Corning Glass Works

Filed Feb. 28, 1977, Ser. No. 772,520
Term of patent 14 years
Int. Cl. D7—*01*

U.S. Cl. D7—20

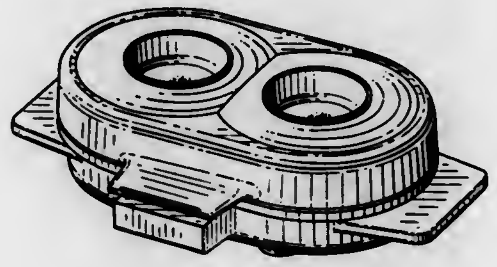


250,566
DOUGHNUT COOKER OR SIMILAR ARTICLE

Samuel L. McNair; Donald L. Avise, both of Kansas City, Mo., and Foster L. Talge, Lake Quivira, Kans., assignors to Dazey Products Company, Industrial Airport, Kans.

Filed Nov. 26, 1976, Ser. No. 745,987
Term of patent 14 years
Int. Cl. D7—*02*

U.S. Cl. D7—88

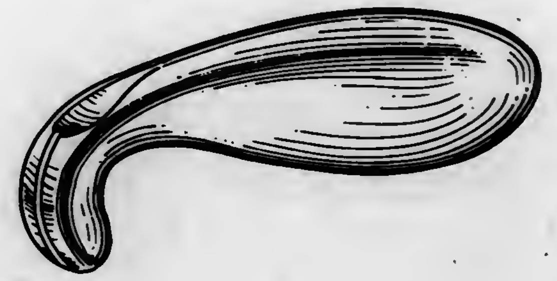


250,567
KNIFE HANDLE

Carl-Arne Breger, Malmö, Sweden, assignor to Shapes Establishment, Vaduz, Liechtenstein

Filed Jan. 31, 1977, Ser. No. 764,155
Claims priority, application Sweden, Jul. 30, 1976, 761519
Term of patent 14 years
Int. Cl. D7—*03*

U.S. Cl. D7—152

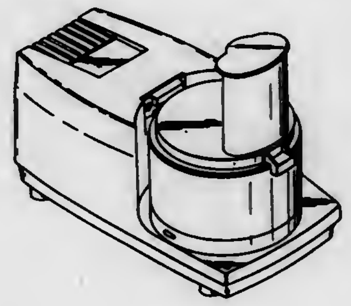


250,568
FOOD PROCESSOR

Irving R. Belinkoff, Queens Village, N.Y., assignor to Kidde Consumer Durables Corp., Bala Cynwyd, Pa.

Filed Mar. 10, 1977, Ser. No. 776,333
Term of patent 14 years
Int. Cl. D7—*04*

U.S. Cl. D7—153

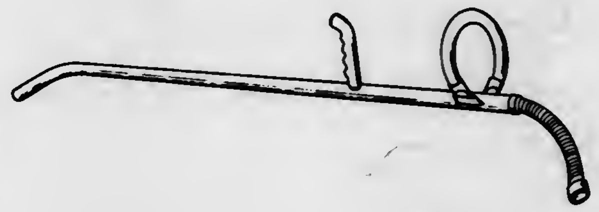


250,569
HANDLE SUPPORT FOR WEED CUTTING IMPLEMENTS

Raymond A. Smith, Rte. 8, Box 157, Lexington, N.C. 27292

Filed Jul. 8, 1977, Ser. No. 813,876
Term of patent 14 years
Int. Cl. D8—*01, 03*

U.S. Cl. D8—8



250,570
HAND-HELD HOT MELT DISPENSER

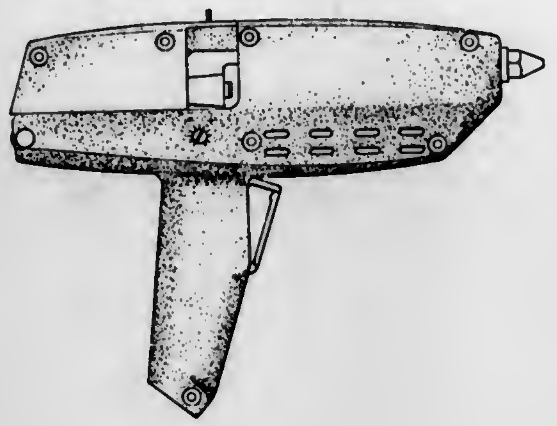
Richard M. Elliott, Beverly, Mass.; Steve A. Unger, Raymond, N.H.; Michael J. Mercadante, North Quincy, Mass.; David S. Urbanus, South Easton, Mass., and Gregory F. Fossella, Marshfield, Mass., assignors to USM Corporation

Filed Jan. 17, 1977, Ser. No. 760,139

Term of patent 14 years

Int. Cl. D8—*05*

U.S. Cl. D8—30



250,571
BOAT CLEAT

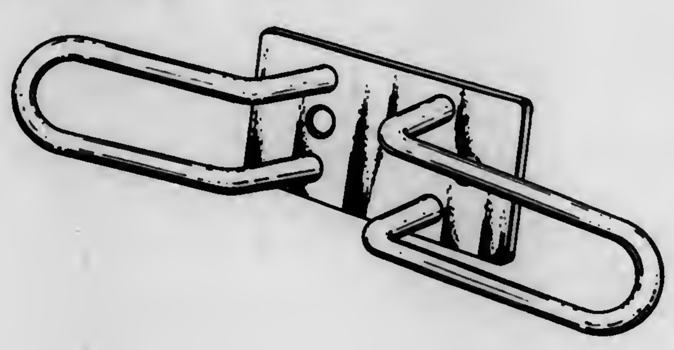
Peter L. Winslow, 934 Nita Ct., Chule Vista, Calif. 92011

Filed Feb. 2, 1977, Ser. No. 764,860

Term of patent 14 years

Int. Cl. D8—*08*

U.S. Cl. D8—382



250,572
BOTTLE OR THE LIKE

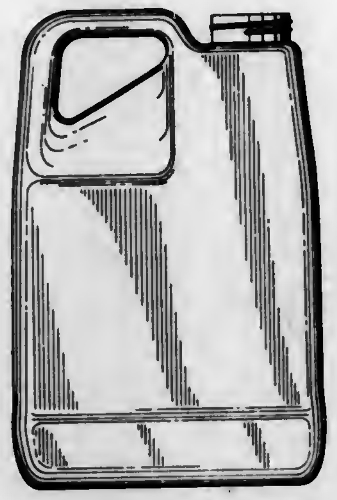
John R. Sneeden, Westerville, and George L. Schrader, Columbus, both of Ohio, assignors to Corco, Inc., Worthington, Ohio

Filed Jan. 10, 1977, Ser. No. 758,326

Term of patent 14 years

Int. Cl. D9—*01*

U.S. Cl. D9—52



250,573
BOTTLE

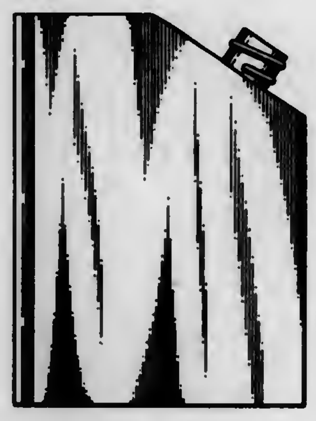
Bisked U. Evangelista, 1363 Skyhawk Cir., Virginia Beach, Va. 23454, and Eugenio D. Caburian, 4020 Foxwood Dr., Virginia Beach, Va. 23462

Continuation-in-part of Ser. No. 779,058, Mar. 18, 1977, Pat. No. 247,092, which is a division of Ser. No. 649,572, Jan. 15, 1976, Pat. No. 247,158. This application Jan. 24, 1978, Ser. No. 871,796

Term of patent 14 years

Int. Cl. D9—*01*

U.S. Cl. D9—66



250,574
BOTTLE

Allan John Boyle, 6 Cherry Tree La., Wheathamstead, England

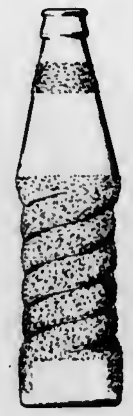
Filed Jun. 14, 1976, Ser. No. 695,785

Claims priority, application United Kingdom, Dec. 15, 1975, 973660

Term of patent 14 years

Int. Cl. D9—*01*

U.S. Cl. D9—108



250,575
SPOOL FOR WINDING WEBS OF MATERIAL

Östen H. Håkansson, Drivhusvagen 14, S/281 00 Hässleholm, Sweden

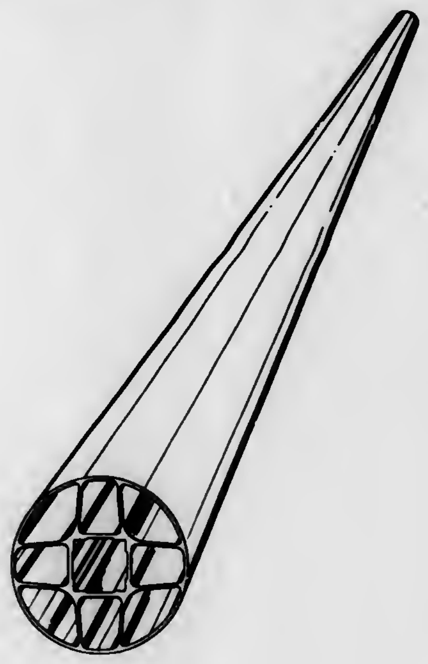
Filed Jul. 28, 1976, Ser. No. 709,526

Claims priority, application Sweden, Jan. 29, 1976, 76–173

Term of patent 14 years

Int. Cl. D9—*05*

U.S. Cl. D9—249



250,576
THERMOSTAT OVERIDE HOUSING

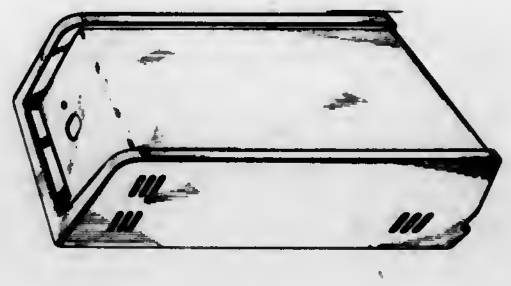
Gerald F. Hoffman, Excelsior, Minn., assignor to Fabri-Tek Incorporated, Minneapolis, Minn.

Filed Mar. 21, 1977, Ser. No. 779,812

Term of patent 14 years

Int. Cl. D10—*04*

U.S. Cl. D10—60



250,577
STARFINDER

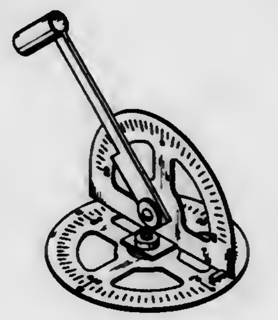
B. C. Thompson, and Marvin W. Lutes, both of Arlington, Tex., assignors to RoVi Plastics, Inc., Fort Worth, Tex.

Filed Nov. 18, 1976, Ser. No. 742,760

Term of patent 14 years

Int. Cl. D10—*04*

U.S. Cl. D10—65



250,578
CALIPER

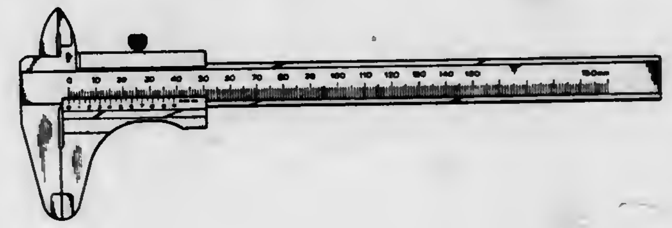
Kaoru Onuma, Utsunomiya, Japan, assignor to Mitutoyo Manufacturing Company, Ltd., Tokyo, Japan

Filed Nov. 17, 1976, Ser. No. 742,725

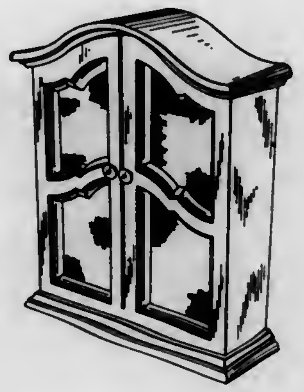
Term of patent 14 years

Int. Cl. D10—*04*

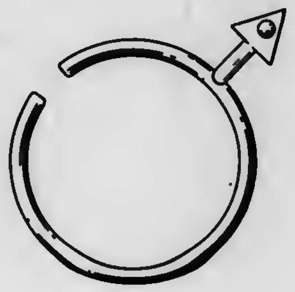
U.S. Cl. D10—73



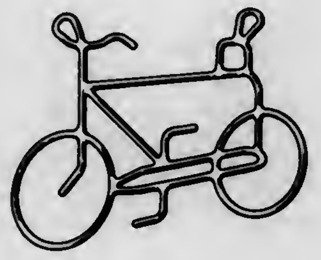
250,579
CHIME HOUSING
William B. Donnelly, Syracuse, N.Y., assignor to General Electric Company
Filed Dec. 28, 1976, Ser. No. 755,112
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—118



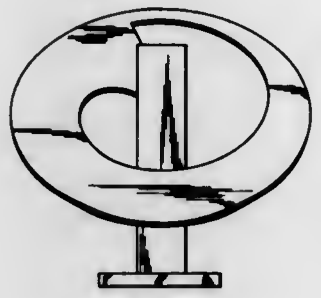
250,580
LAPEL PIN OR SIMILAR ARTICLE
Richard C. Hart, 445 NW. 35th St., Boca Raton, Fla. 33532
Filed Jun. 7, 1976, Ser. No. 693,279
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—48



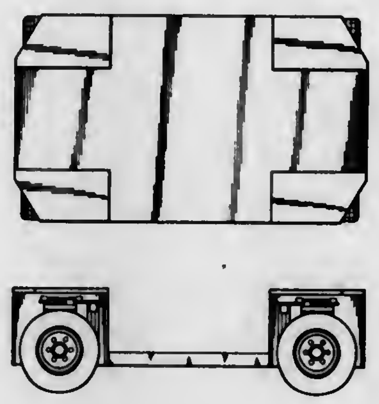
250,581
PENDANT
David Savage, 16 Stedman St., Brookline, Mass. 02146
Filed Apr. 15, 1977, Ser. No. 787,996
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—72



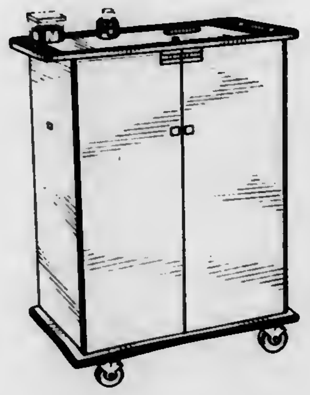
250,582
TROPHY
John H. Safer, Rockville, Md., assignor to Deane R. Beman, Washington, D.C.
Filed Aug. 24, 1977, Ser. No. 828,163
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—131

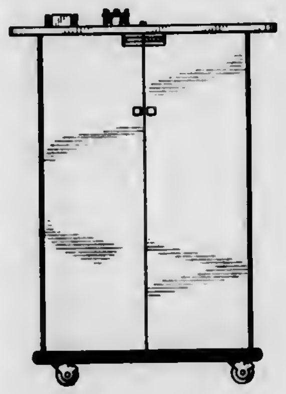


250,583
PERSONNEL AND MATERIAL CARRYING TRAILER
Earl L. Miner, Long Lane, and Harold G. Jones, Lebanon, both of Mo., assignors to Detroit Tool and Engineering Company, Lebanon, Mo.
Filed Dec. 20, 1976, Ser. No. 752,255
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—1

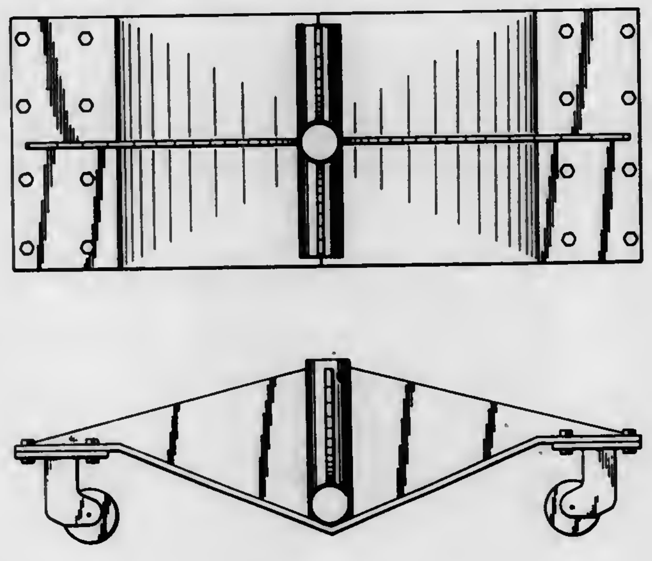


250,584
COMBINATION MEDICAL SUPPLY CART AND CABINET
Lloyd J. Oye, Rancho Palos Verdes, Calif., assignor to Trans-Aid Corporation, Carson, Calif.
Filed Sep. 7, 1976, Ser. No. 720,940
Term of patent 14 years
Int. Cl. D12—*02;* D24—*99*
U.S. Cl. D12—28

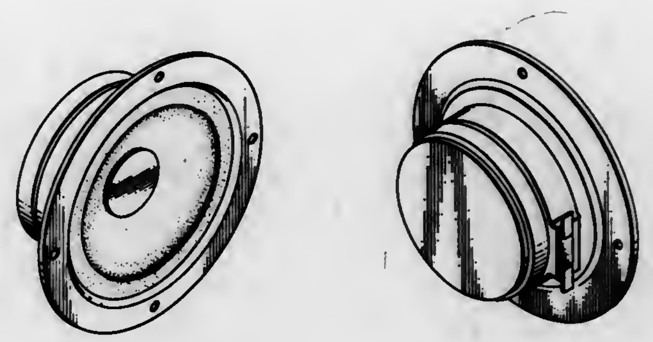




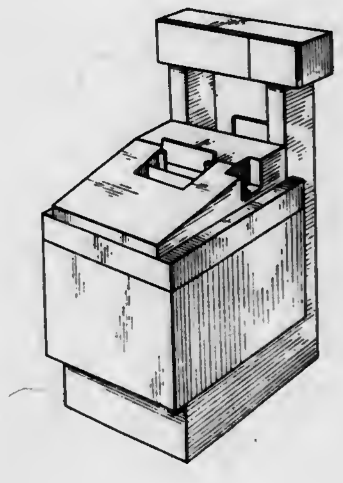
250,585
MOBILE SUPPORT PLATFORM FOR VEHICLES
William J. Meis, 6 Valley Dr., Crescent, Iowa 51526
Continuation-in-part of Ser. No. 741,251, Nov. 12, 1976, abandoned. This application Feb. 28, 1977, Ser. No. 772,717
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—31



250,586
LOUDSPEAKER
Dale A. Nussdorfer, and William L. Hayes, both of Anaheim, Calif., assignors to Altec Corporation, Anaheim, Calif.
Filed Apr. 15, 1976, Ser. No. 677,284
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—30



250,587
COMPUTATIONAL MODULE
Alexander Gelbman, Gaithersburg; Charles I. Soodak, Silver Spring, both of Md.; Stephen G. Hauser, Tarzana; James G. Bruni, Manhattan Beach, both of Calif., and Willard E. Fordham, Laurel, Md., assignors to Baxter Travenol Laboratories, Inc.
Filed Sep. 24, 1976, Ser. No. 726,379
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—42



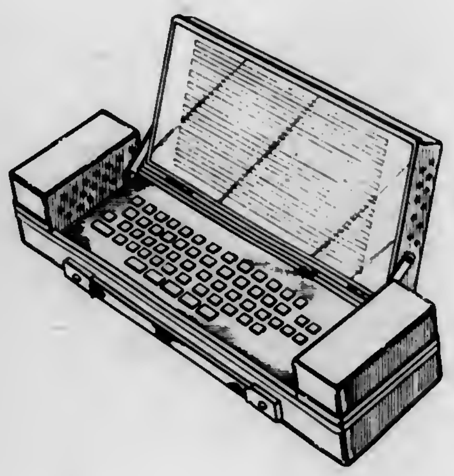
250,588

COMBINED DISPLAY AND KEYBOARD TERMINAL

William N. Mayer, White Bear Lake; Richard K. Kirchner, Bloomington, and Nicholas C. Andreadakis, White Bear Lake, all of Minn., assignors to Modern Controls Inc., Minneapolis, Minn.

Filed Nov. 22, 1976, Ser. No. 743,694
Term of patent 14 years
Int. Cl. D14—*02*

U.S. Cl. D14—43



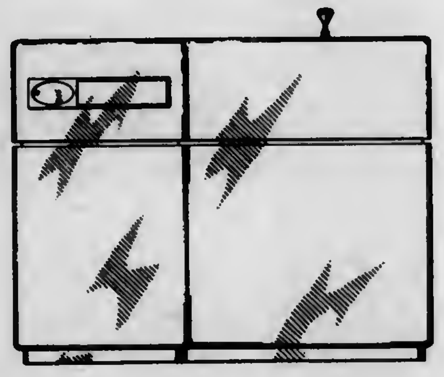
250,589

WALL MOUNTABLE RADIO TRANSCEIVER FOR USE WITH A CORDLESS TELEPHONE

Robert L. Greene, 187 W. Orangethorpe, Placentia, Calif. 92670

Filed Mar. 4, 1977, Ser. No. 774,247
Term of patent 14 years
Int. Cl. D14—*03*

U.S. Cl. D14—68



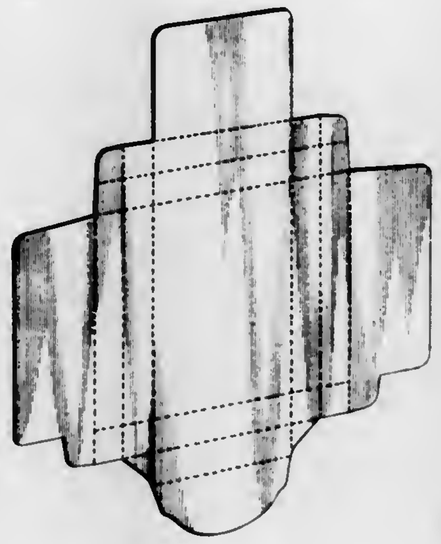
250,590

ENVELOPE BLANK

Robert Cohn, Millbrae, and Charles M. Young, Foster City, both of Calif., assignors to Champion International Corporation, Stamford, Conn.

Filed Apr. 25, 1977, Ser. No. 790,451
Term of patent 14 years
Int. Cl. D19—*01*

U.S. Cl. D19—3



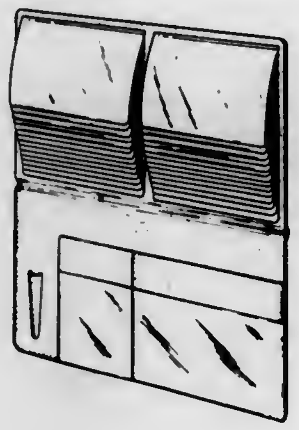
250,591

STATIONERY FOLDER

Keith R. Testro, 22 Kellett Grove, North Kew, Victoria 3102, and Rex C. Testro, 56 Campbell St., East Kew, Victoria 3102, both of Australia

Filed Nov. 12, 1976, Ser. No. 741,533
Term of patent 14 years
Int. Cl. D19—*04*

U.S. Cl. D19—26



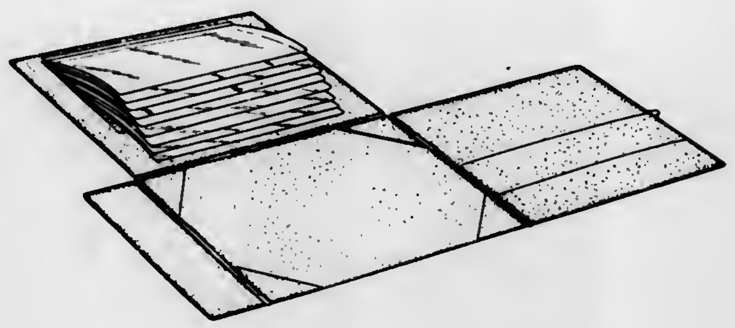
250,592

STATIONERY FOLDER

Keith R. Testro, 22 Kellett Grove, North Kew, Victoria 3102, and Rex C. Testro, 56 Campbell St., East Kew, Victoria 3102, both of Australia

Filed Nov. 12, 1976, Ser. No. 741,535
Term of patent 14 years
Int. Cl. D19—*04*

U.S. Cl. D19—26



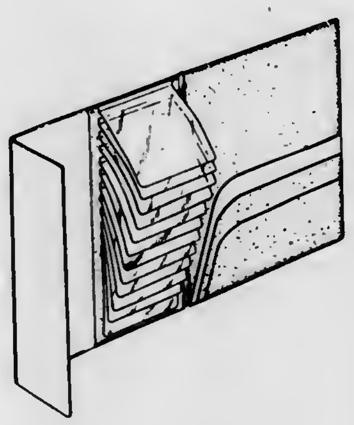
250,593

STATIONERY FOLDER

Keith R. Testro, 22 Kellett Grove, North Kew, Victoria 3102, and Rex C. Testro, 56 Campbell St., East Kew, Victoria 3102, both of Australia

Filed Nov. 12, 1976, Ser. No. 741,536
Term of patent 14 years
Int. Cl. D19—*04*

U.S. Cl. D19—26



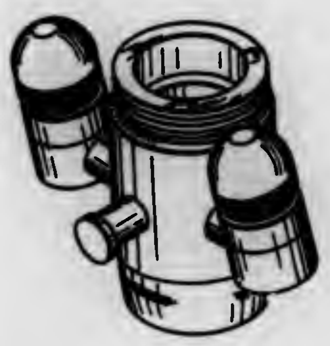
250,594

DUAL EYE WASH FOUNTAIN

David Gardner, 31211 Paseo Amapola, San Juan Capistrano, Calif. 92675

Filed Dec. 13, 1976, Ser. No. 750,081
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—34



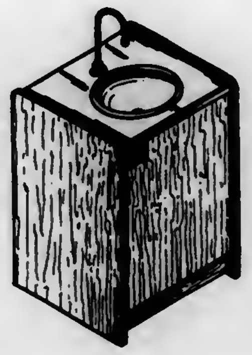
250,595

PORTABLE SINK

David L. Tebbe, and Eugene E. Klund, both of St. Clair, Mo., assignors to Lam Craft Industries, Inc., St. Clair, Mo.

Filed Nov. 15, 1976, Ser. No. 741,966
Term of patent 14 years
Int. Cl. D23—*02*

U.S. Cl. D23—59



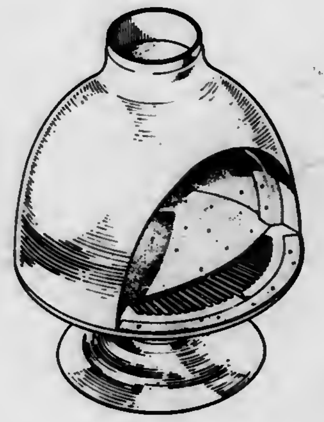
250,596

FREESTANDING FIREPLACE

Gerald L. Jonas, San Francisco, Calif., assignor to Fire Drum Corporation, San Francisco, Calif.

Filed Jun. 10, 1977, Ser. No. 805,625
Term of patent 14 years
Int. Cl. D23—*03*

U.S. Cl. D23—97



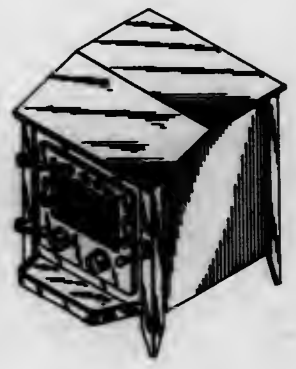
250,597

STOVE WITH GLASS WINDOW

Roy R. Whipple, P.O. Box 43, Hager City, Wis. 54014

Filed Aug. 18, 1977, Ser. No. 825,694
Term of patent 14 years
Int. Cl. D23—*03*

U.S. Cl. D23—97



250,598

STOVE

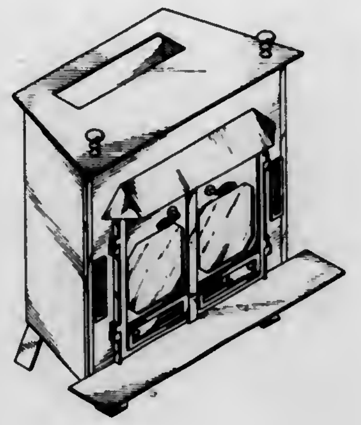
Carrol E. Buckner, Weaverville, N.C., assignor to Buck Stove Marketing Corporation, Asheville, N.C.

Filed Oct. 26, 1977, Ser. No. 845,708

Term of patent 14 years

Int. Cl. D23—*03*

U.S. Cl. D23—97



250,599

TRANSFER PIPETTE

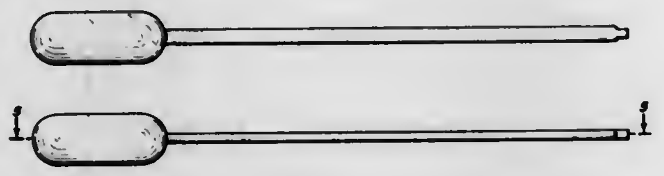
Elmer F. St. Amand, 12744 Kahlenberg La., North Hollywood, Calif. 91607

Filed Mar. 23, 1977, Ser. No. 780,300

Term of patent 14 years

Int. Cl. D24—*02*

U.S. Cl. D24—55



250,600

CANNULA

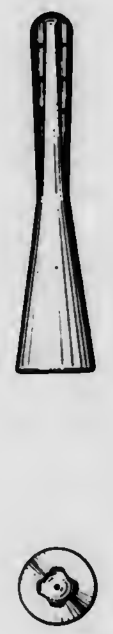
Ernest W. Pick, Cos Cob; Joseph M. Denaro, Stamford, and Henry R. Goerke, Norwalk, all of Conn., assignors to The Purdue Frederick Company, New York, N.Y.

Filed Sep. 8, 1977, Ser. No. 831,597

Term of patent 14 years

Int. Cl. D24—*04*

U.S. Cl. D24—61



250,601

DOUCHE APPLIANCE

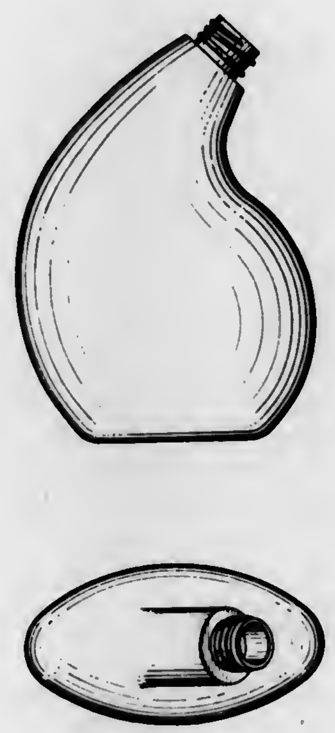
Ernest W. Pick, Cos Cob; Joseph M. Denaro, Stamford, and Henry R. Goerke, Norwalk, all of Conn., assignors to The Purdue Frederick Company, New York, N.Y.

Filed Sep. 8, 1977, Ser. No. 831,598

Term of patent 14 years

Int. Cl. D24—*04*

U.S. Cl. D24—61



250,602

PUBLIC TELEPHONE ENCLOSURE OR THE LIKE

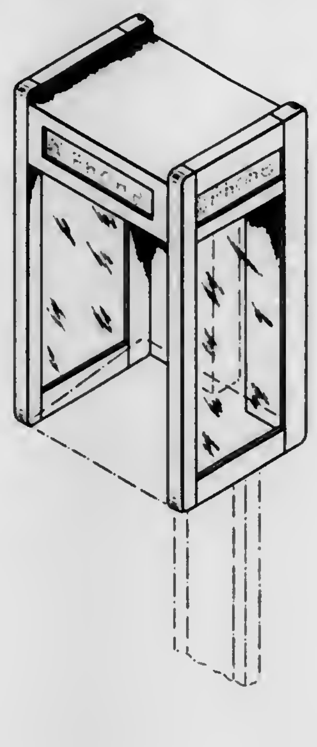
Louis A. Ambrosio, Brooklyn, N.Y.; Robert L. Benedetti, Clark, N.J., and Angelo Sinatra, Oyster Bay, N.Y., assignors to Western Electric Company, Incorporated

Filed Oct. 20, 1976, Ser. No. 733,980

Term of patent 14 years

Int. Cl. D25—*99*

U.S. Cl. D25—16



250,603

LOWER SASH WINDOW

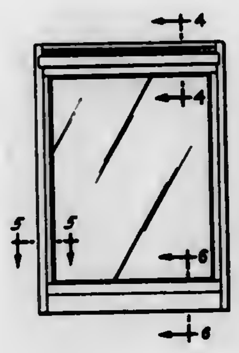
Edgar B. Roesch, Pennington, N.J., assignor to The Roesch Trust, Pennington, N.J., Lesley B. Roesch and Robert Patterson, trustees

Filed Jan. 10, 1977, Ser. No. 757,849

Term of patent 14 years

Int. Cl. D25—*02*

U.S. Cl. D25—52



250,604

UPPER SASH WINDOW

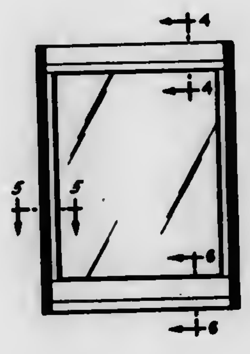
Edgar B. Roesch, Pennington, N.J., assignor to The Roesch Trust, Pennington, N.J., Lesley B. Roesch and Robert Patterson, trustees

Filed Jan. 10, 1977, Ser. No. 757,850

Term of patent 14 years

Int. Cl. D25—*02*

U.S. Cl. D25—52



250,605

BALL STRIKER OR THE LIKE

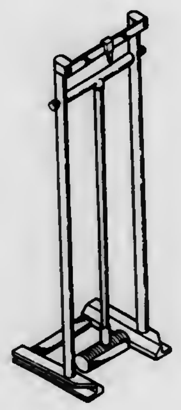
Robert C. Llamas, 4543 W. 147th, Lawndale, Calif. 90260

Filed Mar. 28, 1977, Ser. No. 781,658

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D34—5 R



250,606

GAME CONTROL CONSOLE

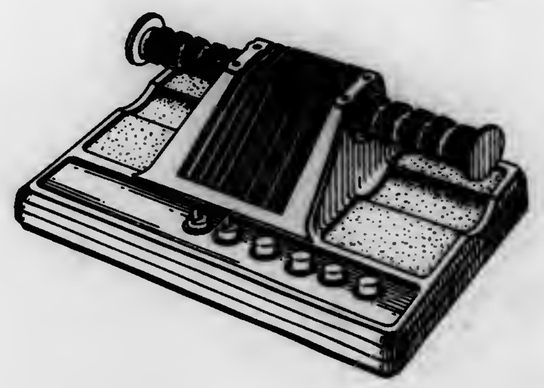
Randy K. Hall, Santa Clara, and Kevin P. McKinsey, Soquel, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Filed Apr. 25, 1977, Ser. No. 793,797

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D34—5 R



250,607

GAME CONTROL CONSOLE

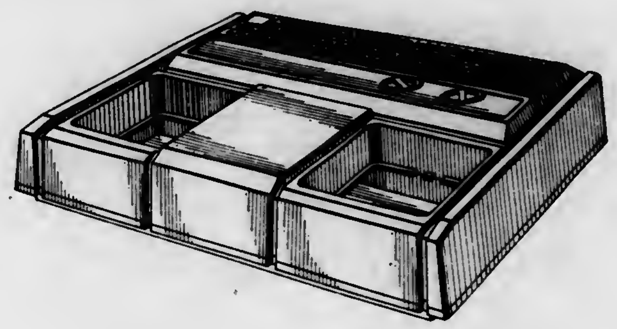
Kevin P. McKinsey, Scotts Valley, and John K. Hayashi, San Mateo, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Filed Jun. 24, 1977, Ser. No. 809,625

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D34—5 R



250,608

GAME CONTROL CONSOLE

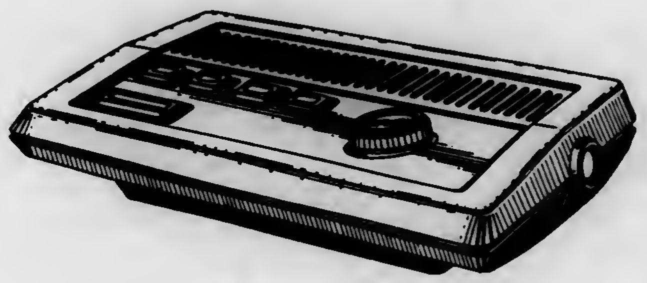
Jeffrey O. Nelson, Redwood City, and Hugh M. Lee, Dublin, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Filed Jun. 24, 1977, Ser. No. 809,627

Term of patent 14 years

Int. Cl. D21—*01*

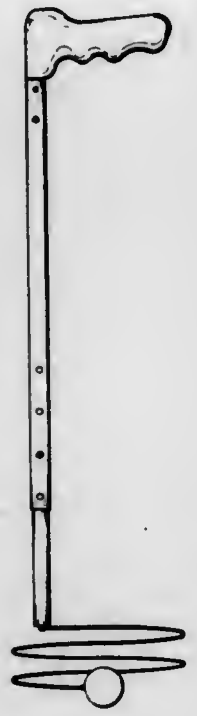
U.S. Cl. D34—5 R



250,609

ROPE SKIPPING AMUSEMENT DEVICE

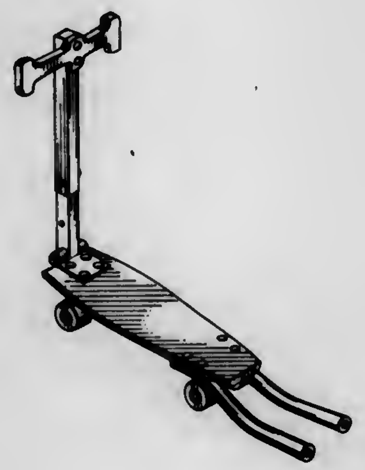
Robert T. Lang, and Geneva E. Lang, both of Rte. 4, Box 17, Marshall, Tex. 75670
Filed Aug. 12, 1977, Ser. No. 824,213
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 P



250,610

SKATE BOARD SCOOTER

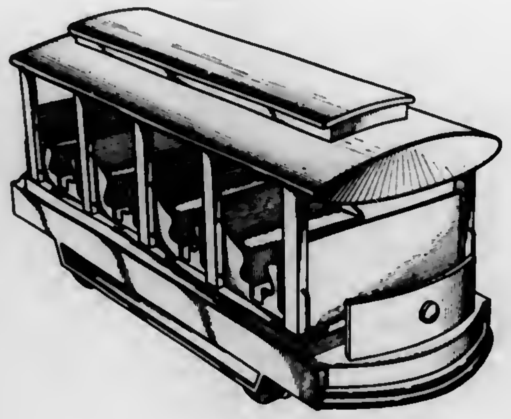
Freddie L. Wynn, 736A W. Buckeye, #358, Phoenix, Ariz. 85007
Filed Mar. 21, 1977, Ser. No. 779,540
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



250,611

TOY VEHICLE

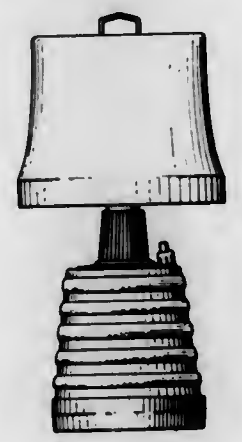
Gordon A. Barlow, Evanston, and Alex Imatt, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jul. 29, 1977, Ser. No. 820,357
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 MM



250,612

PORTABLE TABLE LAMP

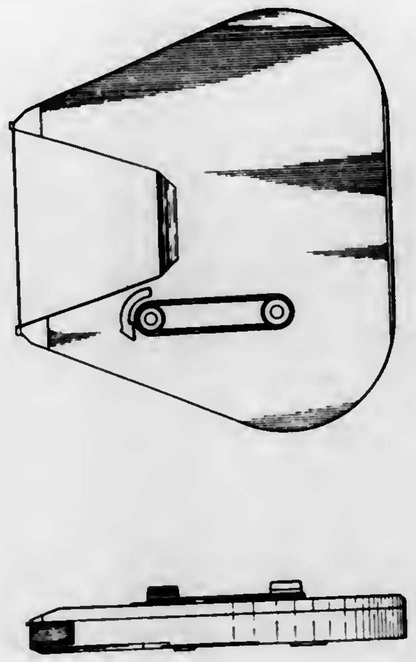
Tsui Fan, Hiller, S. & Company, Inc., 12 W. 21st St., New York, N,Y, 10010
Filed Dec. 3, 1976, Ser. No. 747,205
Term of patent 7 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 R



250,613

RIBBON CARTRIDGE WITH RIBBON

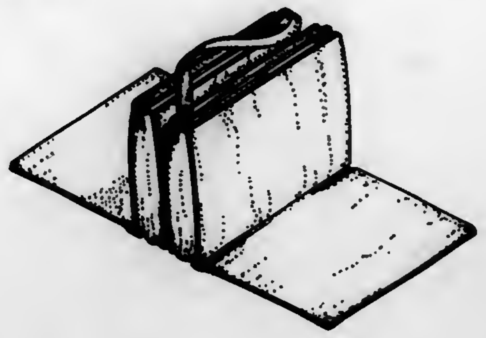
L. Neil Goodman, Garland, and Charles J. Kubasta, Plano, both of Tex., assignors to Xerox Corporation, Stamford, Conn.
Filed Mar. 14, 1977, Ser. No. 777,488
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—11 A



250,614

HANDBAG

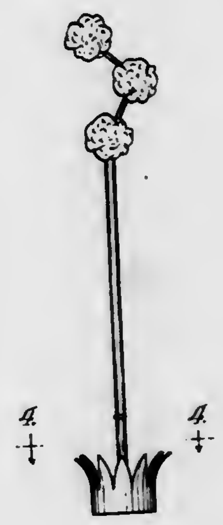
Anne R. Stewart, 7710 Skyhill Dr., Los Angeles, Calif. 90068
Filed Feb. 28, 1977, Ser. No. 772,345
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F



250,615

ADVERTISING MAST OR SIMILAR ARTICLE

Ralph M. DeWeese, 270 Seventh St., Wheeling, Ill. 60090
Filed Aug. 10, 1977, Ser. No. 823,543
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 D



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- Abbott Laboratories: *See—*
  - Arbir, Francis W., 4,130,434, Cl. 106-15.00R.
  - Becker, Frank C.; and Li, Jorge P., 4,130,433, Cl. 106-15.00R.
  - Pawlak, Kenneth E., 4,130,622, Cl. 264-255.000.
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- Abendroth, Paul: *See—*
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- ACF Industries, Inc.: *See—*
  - Fiedler, Timothy, 4,130,609, Cl. 261-23.00A.
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  - Rashkov, Ilia; Gole, Jean; Guerard, Daniel; Herold, Albert; Merle, Gerard; Panayotov, Ivan M.; Pascault, Jean-Pierre; Pham, Quang T.; Pillot, Christian; and Salle, Robert, 4,130,703, Cl. 526-173.000.
- Agfa-Gevaert, N.V.: *See—*
  - Gilliams, Yvan K.; De Winter, Walter F.; Van Paesschen, August J.; and Timmerman, Daniel M., 4,130,670, Cl. 427-16.000.
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- Aho, Kenneth A., to Minnesota Mining and Manufacturing Company. Multi-part liquid container. 4,130,198, Cl. 206-221.000.
- Airco, Inc.: *See—*
  - Wallace, Dean R., 4,130,617, Cl. 264-528.000.
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  - Inada, Masami; and Kitamura, Kazuhiko, 4,130,267, Cl. 251-61.200.
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- Akkerman, Neil H.; and Ross, Richard J., to Baker International Corporation. Valve and lubricator apparatus. 4,130,166, Cl. 166-324.000.
- Aksenova, Maria S.: *See—*
  - Boreskov, Georgy K.; Slinko, Mikhail G.; Gelbshtein, Anatoly I.; Vasilevich, Lidia A.; Chesnokov, Boris B.; Frolkina, Irina T.; Dyment, Oskar N.; Stepanov, Jury N.; Davydov, Valery A.; Talaeva, Irina G.; Utkina, Ninel S.; Stroganova, Vera V.; Aksenova, Maria S.; Filippova, Anna G., deceased; Prosvirova, Olga B., administrator; and Zakharova, Irina B., administrator, 4,130,570, Cl. 260-348.350.
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  - Hutton, Ronald E.; and Burley, Joseph W., 4,130,573, Cl. 260-429.700.
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  - Sjoholm, Claes B.; and Martensson, Karl J. G., 4,130,053, Cl. 99-466.000.
- Allaire, William P.; Mayer, William J.; and Zambetis, Thomas A., to McDonnell Douglas Corporation. Reliability monitoring system. 4,130,787, Cl. 318-565.000.
- Allan, James: *See—*
  - Lee, Frank; Allan, James; and Fearnley, Charles, 4,130,498, Cl. 252-99.000.
- Alley, F. William, to Page Belting Company. Picker stick. 4,130,141, Cl. 139-157.000.
- Allied Chemical Corporation: *See—*
  - Lazarus, Stanley D.; and Chakravarti, Kalidas, 4,130,541, Cl. 260-45.80A.
- Allis-Chalmers Corporation: *See—*
  - Neumann, Manfred E., 4,130,789, Cl. 323-43.50R.
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  - Henricksen, Clifford A., 4,130,023, Cl. 73-647.000.
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  - Creith, Lou C., 4,130,216, Cl. 220-224.000.
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- Amano, Kenichi; Suzuki, Yutaka; and Kishi, Yoshio, to Sony Corporation. Cassette tape recording and/or reproducing apparatus. 4,130,848, Cl. 360-132.000.
- Amax Inc.: *See—*
  - Hoover, Raul M., 4,130,626, Cl. 423-26.000.
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  - Mori, Masaharu; and Amazawa, Kiyoshi, 4,130,805, Cl. 325-473.000.
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  - Nivin, James E., 4,130,125, Cl. 135-6.000.
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  - Chang, Eugene Y. C.; and Kaizerman, Samuel, 4,130,542, Cl. 260-45.9KB.
  - Conrow, Ransom B.; and Bernstein, Seymour, 4,130,660, Cl. 424-319.000.
  - Cross, Barrington; and Dawe, David H., 4,130,645, Cl. 424-226.000.
  - Ross, Lawrence J., 4,130,581, Cl. 260-509.000.
  - Spicer, Larry D.; and Simkins, Karl L., Jr., 4,130,651, Cl. 424-270.000.
- American Guidance Service, Inc.: *See—*
  - Gale, John A., 4,129,960, Cl. 46-25.000.
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  - Evans, David F.; and Yindra, Leonard J., 4,130,069, Cl. 108-136.000.
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- AMP Incorporated: *See—*
  - Asick, John C.; Huffnagle, Clifton W.; Peppler, Michael S.; and Woratyla, John A., 4,130,332, Cl. 339-97.00P.
  - Chandler, Curtis S.; and Miller, Ralph L., 4,130,329, Cl. 339-75.00M.
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  - Neff, Nelson E.; and Thomas, Anthony F., 4,130,331, Cl. 339-97.00R.
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  - Gallo, Luigi C.; and Sheikh, Junaid, 4,130,842, Cl. 360-35.000.
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  - Mulcahy, Harry W., 4,130,066, Cl. 105-199.0CB.
- Anderka, Gerold, to Koh-I-Noor Rapidograph, Inc. Device for cleaning ink pen points. 4,130,444, Cl. 134-96.000.
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  - McLaughlin, Jack E., 4,130,118, Cl. 128-229.000.
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- Anderson, George J.; Desmond, Timothy F.; and Santer, J. Owen, to Monsanto Company. Coating compositions comprising alkoxymethylaminotriazines, polyols and polyether triols. 4,130,692, Cl. 428-524.000.
- Anderson, Nigel I. Tensioning of metal wires. 4,129,927, Cl. 24-136.00A.
- Anderson, Walter W., to General Motors Corporation. Process plug for ultrasonic soldering. 4,130,232, Cl. 228-57.000.
- Andersson, Einar W., to Sandvik Aktiebolag. Wedge arrangement. 4,130,270, Cl. 254-104.000.

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Aoyama, Syunichi, to Nissan Motor Company, Limited. Exhaust gas recirculation control system. 4,130,093, Cl. 123-119.00A.
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  Holt, Frederick R., 4,130,862, Cl. 363-49.000.
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Arai, Kojiro; and Sugai, Noriaki, to Japan Exlan Company Limited. Treatment of carbon fibers. 4,130,465, Cl. 204-27.000.
Arakelian, Rafi; and Driscoll, Michael M. Low supply voltage frequency multiplier with common base transistor amplifier. 4,130,765, Cl. 307-220.00R.
Aramaki, Azuma: *See—*
  Itoh, Iko; Takahashi, Tsukasa; Takamuku, Shinkichi; Aramaki, Azuma; and Serada, Manabu, 4,130,456, Cl. 159-165.000.
Arbir, Francis W., to Abbott Laboratories. Paint compositions. 4,130,434, Cl. 106-15.00R.
Arimoto, Shunji: *See—*
  Ohoka, Masataka; Yamada, Mitsuko; Shoji, Akio; and Arimoto, Shunji, 4,130,601, Cl. 260-835.000.
Armour Pharmaceutical Company: *See—*
  Enkoji, Takashi; and Skibbe, Martin O., 4,130,514, Cl. 260-8.000.
Arndt, Friedrich; Kruger, Hans-Rudolf; and Rusch, Reinhart, to Schering AG. 1,2,3-Thiadiazole-5-yl-urea derivatives, process for making the same and plant retardation and defoliation composition containing same. 4,130,414, Cl. 71-90.000.
Arndt, Richard L.; Meyerhofer, Wilfred L., Jr.; and Steinbauer, David M., to International Business Machines Corporation. Encoding mechanism for holed badge readers. 4,130,756, Cl. 235-474.000.
Arold, Hermann, to Bayer Aktiengesellschaft. Preparation of dithiophosphoric acid diester halides. 4,130,607, Cl. 260-973.000.
Arrowood, Gordon W.: *See—*
  Mitchell, Wylie W.; and Arrowood, Gordon W., 4,130,302, Cl. 285-113.000.
Ashford, Donald A., to International Telephone & Telegraph Corp. Frequency channel units for a FDM system. 4,130,733, Cl. 179-15.0FD.
Ashland Oil, Inc.: *See—*
  Purcell, Frederick C., 4,130,531, Cl. 260-31.4EP.
Asick, John C.; Huffnagle, Clifton W.; Peppler, Michael S.; and Woratyla, John A., to AMP Incorporated. Modular connector and crimp arrangement for magnetic wire. 4,130,332, Cl. 339-97.00P.
Askew, Crawford S. Braking device for a motor. 4,130,188, Cl. 188-170.000.
Atari, Inc.: *See—*
  Derickson, Richard B., 4,130,830, Cl. 358-22.000.
Atkins, Thomas J., to Du Pont de Nemours, E. I., and Company. Tricyclic trisaminomethanes. 4,130,715, Cl. 548-324.000.
Atlantic Richfield Company: *See—*
  Blieden, Harry R., 4,130,445, Cl. 136-89.0PC.
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Aubrey, Joseph H.: *See—*
  Braddyll, John R. G.; Aubrey, Joseph H.; Shaw, Ernest A.; and Palmer, Ian, 4,130,366, Cl. 366-288.000.
Audioanalyst, Inc.: *See—*
  Ostrander, Walter M.; Scholl, Malcolm M.; Minott, Edward R.; and Smith, Christopher D., 4,130,174, Cl. 181-146.000.
Aunspach, Dale, to Xomox Corporation. Rotary spring-return actuator with safety feature. 4,130,182, Cl. 185-45.000.
Automated Building Components, Inc.: *See—*
  Jureit, J. Calvin; Seipos, Andrew G.; and Langevin, William J., 4,129,933, Cl. 29-417.000.
Autotrol Corporation: *See—*
  Torpey, Wilbur N., 4,130,482, Cl. 210-17.000.
Avery International Corporation: *See—*
  Reed, Charles F., 4,130,042, Cl. 83-887.000.
Ayerst, McKenna & Harrison Limited: *See—*
  Bagli, Jehan F.; and Bogri, Tibor, 4,130,649, Cl. 424-266.000.
B. F. Goodrich Company, The: *See—*
  Edwards, David V.; Lesh, Harvey B., Jr.; and Phillips, Ronald W., II, 4,129,910, Cl. 9-42.000.
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  Akkerman, Neil H.; and Ross, Richard J., 4,130,166, Cl. 166-324.000.
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  Jacoby, Ian H.; and Bangha, Roland V., 4,130,368, Cl. 402-41.000.
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Barker, Richard G., to Union Camp Corporation. Method of pulping with polysulfide. 4,130,457, Cl. 162-82.000.
Barker, William B.: *See—*
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Barkhuff, Raymond A., Jr., to Monsanto Company. Method for reducing the dripping in flaming polystyrene compositions. 4,130,605, Cl. 260-876.00R.
Barlik, Richard P.: *See—*
  Perry, Francis V., Jr.; Barlik, Richard P.; Richardson, William P.; Hudson, Robert H.; and Gray, Leonard, 4,129,963, Cl. 46-155.000.
Barlow Mfg. Corp.: *See—*
  Sessions, Robert W.; Jeslis, Jerome; and Rodzen, Richard A., 4,130,119, Cl. 128-325.000.
Barlow, Robert M., to VanWagoner, John D., a part interest. Apparatus for collecting fluid seepage in a building structure. 4,129,967, Cl. 52-15.000.
Barnes, Hubert L.; and Shapiro, Edward, to Pittsburgh Environmental and Energy Systems, Inc. Process for removing SO_2 and NO_x from gases. 4,130,628, Cl. 423-235.000.
Barnett, Clarence E.: *See—*
  Barnett, Forest H.; and Barnett, Clarence E., 4,130,155, Cl. 152-217.000.
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Barry, Leonard D. Side rails container transfer system. 4,130,208, Cl. 214-43.000.
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  Holman, Ronald H. C., 4,130,170, Cl. 175-245.000.
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Baughman, Robert O.: *See—*
  Leber, Ralph E.; and Baughman, Robert O., 4,130,281, Cl. 273-100.000.
Bauman, Robert A., to Colgate-Palmolive Company. Anti-plaque agents. 4,130,637, Cl. 124-54.000.
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Bayer Aktiengesellschaft: *See—*
  Arold, Hermann, 4,130,607, Cl. 260-973.000.
  Scholz, Karl-Heinz; Hartmann, Willy; and Heine, Hans-Georg, 4,130,563, Cl. 260-307.00C.
Becker, Frank C.; and Li, Jorge P., to Abbott Laboratories. Industrial biocides. 4,130,433, Cl. 106-15.00R.
Becker, Manfred E., to Textron Inc. Seal means for a self-aligning bearing. 4,130,324, Cl. 308-36.100.
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Becton, Dickinson and Company: *See—*
  Hewitt, Raymond, 4,130,085, Cl. 118-315.000.
Beecher, Robert L., II; Hershey, Harold J.; and Zieles, Robert S., to Bell Telephone Laboratories, Incorporated. Cam actuated multiple contact spring switch. 4,130,744, Cl. 200-1.00A.

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  Overman, John W.; and Johnson, George V., 4,130,352, Cl. 353-79.000.
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  D'Altroy, Frederick A.; Hartman, Adrian R.; Jacobs, Richard M.; Pritchett, Robert L.; and Shackle, Peter W., 4,130,827, Cl. 357-38.000.
  Feit, Eugene D.; and Thompson, Larry F., 4,130,424, Cl. 96-35.100.
  Glass, Alastair M.; Lines, Malcolm E.; and Nassau, Kurt, 4,130,694, Cl. 429-193.000.
  Miller, Stewart E.; and Ogawa, Kinichiro, 4,130,343, Cl. 350-96.150.
  Plewes, John T.; and White, Philip R., 4,130,421, Cl. 75-154.000.
Bellis, Harold E., to Du Pont de Nemours, E. I., and Company. Melt oxychlorination process. 4,130,595, Cl. 260-654.00R.
Bellus, Daniel: *See—*
  Greuter, Hans; Martin, Pierre; Bellus, Daniel; Gsell, Laurenz; and Meyer, Willy, 4,130,656, Cl. 424-304.000.
Belsheim, Rodney W. Swing-away mailbox. 4,130,239, Cl. 232-39.000.
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  Wisniak, Jaime; and Benajahu, Hanoch, 4,130,495, Cl. 252-48.400.
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  Wisniak, Jaime; and Benajahu, Hanoch, 4,130,495, Cl. 252-48.400.
Bendix Corporation, The: *See—*
  Woodruff, Frank, 4,130,001, Cl. 64-19.000.
Benedict, Robert P.; and Wyler, John S., to Westinghouse Electric Corp. Flow rate measuring device. 4,130,017, Cl. 73-211.000.
Benjamin, Joel M., Jr.: *See—*
  Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., 4,130,731, Cl. 179-2.0EB.
Bennett, Moreland P.; and Bowers, William L., to General Electric Company. Machine for welding aluminum to aluminum. 4,130,750, Cl. 219-78.150.
Benoit, Lloyd F. Portable refacing machine. 4,130,034, Cl. 82-4.00C.
Benzoni, Andre J. E.: *See—*
  Oneto, Francis E. J.; Benzoni, Andre J. E.; Poret, Jacques L.; and Simon, Fernand B., 4,130,497, Cl. 252-89.00R.
Berg, Albert T., Jr.: *See—*
  Langlie, Howard; and Berg, Albert T., Jr., 4,130,147, Cl. 141-98.000.
Bergdahl, Knut E. Method and device for cleaning fluid filters. 4,130,404, Cl. 55-242.000.
Berges, David A., to Smithkline Corporation. 7-Acylamine-3-(sulfoalkyl substituted oxadiazolylthiomethyl) cephalosporins and pharmaceutical compositions containing them. 4,130,644, Cl. 424-246.000.
Berkovitz, Robert A.: *See—*
  Kates, James M.; and Berkovitz, Robert A., 4,130,726, Cl. 179-1.00D.
Berniere, Michel G., to Societe Anonyme de Telecommunications. Band pass electromechanical filters. 4,130,812, Cl. 333-71.000.
Bernstein, Seymour: *See—*
  Conrow, Ransom B.; and Bernstein, Seymour, 4,130,660, Cl. 424-319.000.
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  Sherman, Morton; and Berry, James A., 4,129,972, Cl. 52-303.000.
Bertling, Johannes-Gerhard, to Robert Bosch GmbH. Pressure control valve. 4,130,266, Cl. 251-50.000.
Best, Donald T., to Sperry Rand Corporation. Magnetic transducer. 4,130,846, Cl. 360-120.000.
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  Chrysanthou, Chrysanthos P., 4,130,395, Cl. 23-230.00B.
Bethlehem Steel Corporation: *See—*
  Hazelton, Dean W., 4,130,883, Cl. 364-900.000.
Bikbau, Marsel Y.: *See—*
  Nudelman, Boris I.; Sventsitsky, Alexandr S.; Bikbau, Marsel Y.; Prikhozhan, Ada M.; and Ibragimov, Isak M., 4,130,441, Cl. 106-89.000.
Bingler, Douglas J., to Milton Roy Company. Centrifugal pump assembly. 4,130,374, Cl. 415-131.000.
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  Van Ballegooijen, Hendrik; Binsbergen, Frederik L.; Raadsen, Jacob; and Vreugdenhil, Arie D., 4,130,606, Cl. 260-894.000.
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  Rosengren, Ake; Bjellqvist, Bengt; and Gasparic, Vesna, 4,130,470, Cl. 204-180.00G.
Black, Gerall A. Apparatus for removing rainbows from flowing water. 4,130,489, Cl. 210-242.0AS.
Blackwell, Robert H., Jr., to United Technologies Corporation. Helicopter blade and rotor. 4,130,377, Cl. 416-132.00R.
Blaisdell, Ronald G.; Hall, Harold H., Jr.; and Hough, Harold L., to GTE Sylvania Incorporated. Activation means for flashlamp article. 4,130,081, Cl. 116-5.000.
Blase, Manfred, to Didier Engineering GmbH. Track rail support. 4,130,244, Cl. 238-24.000.
Blazo, Stephen F.: *See—*
  Perkins, Peter E.; and Blazo, Stephen F., 4,130,775, Cl. 313-397.000.
Blieden, Harry R., to Atlantic Richfield Company. Light collector. 4,130,445, Cl. 136-89.0PC.
Block, Kenneth A.; and Lader, Leon J., to General Dynamics Corporation. Decoy means and method therefor. 4,130,059, Cl. 102-34.400.
Blume, Nicholas C., to Green Manufacturing Company. Hydraulic control system. 4,129,987, Cl. 60-445.000.
Bock, Erich. Fastening bar for securing printing plates on a printing machine. 4,130,058, Cl. 101-415.100.
Bockrath, Ronald E.; and Serres, Carl, to Standard Oil Company (Indiana). Solid state polymerization. 4,130,551, Cl. 528-481.000.
Bode, John J. Control system for irrigation pumps. 4,130,382, Cl. 417-12.000.
Bodig, Bernd: *See—*
  Jundt, Werner; Bodig, Bernd; Sohner, Gerhard; Ruf, Walter; Roth, Helmut; and Werner, Peter, 4,130,101, Cl. 123-148.00E.
Boehringer Ingelheim GmbH: *See—*
  Muller, Erich; Diederen, Willi; and Shanks, Robin G., 4,130,650, Cl. 424-263.000.
  Roos, Otto; and Essig, Dieter, 4,130,558, Cl. 260-239.100.
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  Doellner, O. Leonard, 4,130,345, Cl. 350-96.220.
Boerwinkle, Fred P.; and Szauer, Tadeusz, to Northern Instruments Corporation. Corrosion inhibiting compositions. 4,130,524, Cl. 260-29.6HN.
Boggs, Brian F.; Zilcosky, Hector J.; and Smith, William M., to Ensign Bickford Company. Gun fired projectile having reduced drag. 4,130,061, Cl. 102-66.000.
Boggum, Paul; and Schulte, Klaus, to Didier-Werke A.G. Tank block. 4,130,391, Cl. 432-264.000.
Bogri, Tibor: *See—*
  Bagli, Jehan F.; and Bogri, Tibor, 4,130,649, Cl. 424-266.000.
Bohlmann, Orville R. Automatic livestock waterer. 4,130,090, Cl. 119-73.000.
Bohm, Ludwig, to Hoechst Aktiengesellschaft. Method for the quantitative analysis of Al-C- and Al-H- bonds in hydrocarbons. 4,130,396, Cl. 23-230.00M.
Bohrer, George J., to H. K. Porter Company, Inc. Asbestos free friction element. 4,130,537, Cl. 260-38.000.
Bolen, Ralph A., to Sawyer, John, a part interest. Slot-head fastener and driver therefor. 4,130,152, Cl. 145-50.00D.
Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., to International Mobile Machines Incorporated. Portable telephone system. 4,130,731, Cl. 179-2.0EB.
Bolt Beranek and Newman Inc.: *See—*
  Heart, Frank E.; Ornstein, Severo M.; Barker, William B.; and Crowther, William R., 4,130,865, Cl. 364-200.000.
  Sher, Lawrence D., 4,130,832, Cl. 358-89.000.
Bombardieri, Caurino C., to Exxon Production Research Company. Method for recovering viscous hydrocarbons utilizing heated fluids. 4,130,163, Cl. 166-252.000.
Boos, Walter R.: *See—*
  von Schmeling, Bogislav; and Boos, Walter R., 4,130,664, Cl. 424-330.000.
Boreskov, Georgy K.; Slinko, Mikhail G.; Gelbshtein, Anatoly I.; Vasilevich, Lidia A.; Chesnokov, Boris B.; Frolkina, Irina T.; Dyment, Oskar N.; Stepanov, Jury N.; Davydov, Valery A.; Talaeva, Irina G.; Utkina, Ninel S.; Stroganova, Vera V.; Aksenova, Maria S.; Filippova, Anna G., deceased; by Prosvirova, Olga B., administrator; and by Zakharova, Irina B., administrator. Method of producing ethylene oxide. 4,130,570, Cl. 260-348.350.
Borg-Warner Corporation: *See—*
  Jeffrey, Joseph O., 4,130,026, Cl. 74-245.00S.
  Judd, Carl R.; and Snyder, Howard D., Jr., 4,130,191, Cl. 192-41.00A.
  Moinuddin, Mohammed, 4,130,383, Cl. 418-78.000.
  Paul, Howard C., 4,130,610, Cl. 261-36.00A.
  Valdiserri, Leo L.; and Bullock, Elyse M., 4,130,540, Cl. 260-45.80R.
Borgianni, Carlo: *See—*
  Marianeschi, Edmondo; Basevi, Sandro; Barisoni, Mario; Marini, Paolo; Borgianni, Carlo; and Ricci Bitti, Roberto, 4,130,447, Cl. 148-27.000.
Bornstein, Leopold F., to Georgia-Pacific Corporation. Lignin-based composition board binder comprising a copolymer of a lignosulfonate, melamine and an aldehyde. 4,130,515, Cl. 260-17.500.
Borovikova, Sofia M.; Lurie, Evgeny V.; and Mikhailov, Valery F. Plastication arrangement in a machine for processing polymeric materials. 4,130,901, Cl. 366-163.000.
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  Schotten, Henno, 4,129,993, Cl. 62-156.000.
Bottom, Virgil E., to Tyco Crystal Products, Inc. Method of adjusting the frequency of a crystal resonator and reducing ageing effects. 4,130,771, Cl. 310-312.000.
Bottum, Edward W. Solar heating system component and control therefor. 4,130,110, Cl. 126-271.000.
Bouchard, Andre C.; Hall, Harold H., Jr.; Patton, Robert J.; and Sentementes, Thomas J., to GTE Sylvania Incorporated. Flashlamp assembly for providing highly intense audible and visual signals. 4,130,082, Cl. 116-5.000.
Bouchard, Andre C.; and Hall, Harold H., Jr., to GTE Sylvania Incorporated. Activating mechanism for flashlamp article. 4,130,083, Cl. 116-114.500.
Boulanger, Claude; and Poinas, Christian, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Terminal equipment for a multiplex carrier current telephone system. 4,130,743, Cl. 179-170.200.
Bourgeois, Ronald D. Transfer system for conveyor systems. 4,130,193, Cl. 198-369.000.
Bousmar, Michel A. M. J.; and Christiaens, Michel J. P., to U.S. Philips

- Corporation. Data receiver with synchronizing sequence detection circuit. 4,130,724, Cl. 178-69.100.
- Bowers, William L.: *See*—
  - Bennett, Moreland P.; and Bowers, William L., 4,130,750, Cl. 219-78.150.
- Bowler, Lauren L.; and Lahiff, John E., to General Motors Corporation. Fuel control system with calibration learning capability for motor vehicle internal combustion engine. 4,130,095, Cl. 123-32.0EE.
- Bowman, Rodney V.; and Francis, Martin H., to NCR Corporation. System for operating volatile memory in normal and standby modes. 4,130,899, Cl. 365-222.000.
- Boyd, Timothy M., to Marcole, Inc. Subtractive developer for lithographic plates. 4,130,425, Cl. 96-48.00R.
- Braddyll, John R. G.; Aubrey, Joseph H.; Shaw, Ernest A.; and Palmer, Ian, to Vickers Shipbuilding Group Limited. Homogenization method. 4,130,366, Cl. 366-288.000.
- Bradley, Cecil Earl: *See*—
  - Fiegehen, Allan G.; Houghton, Robert P.; Bradley, Cecil Earl; and Richenburg, Paul F., 4,130,788, Cl. 318-574.000.
- Brand, Warren H., to Yarway Corporation. Attemperator. 4,130,611, Cl. 261-66.000.
- Brandenstein, Manfred: *See*—
  - Ernst, Horst M.; Brandenstein, Manfred; and Olschewski, Armin, 4,130,286, Cl. 277-12.000.
- Branston, David W., to Siemens Aktiengesellschaft. DC PDP with divided cathode. 4,130,778, Cl. 315-169.0TV.
- Braunsperger, Johann; Lang, Winfried; and Zainer, Thorgard, to Wacker-Chemitronic Gesellschaft fur Elecktronik-Grundstoffe mbH. Process for the manufacture of trichlorosilane and silicon tetrachloride. 4,130,632, Cl. 423-342.000.
- Bray, Walter J.: *See*—
  - Batley, William R., Jr.; and Bray, Walter J., 4,130,553, Cl. 260-112.00R.
- Breen, Barry C., to Melco. Two-link intercom system. 4,130,737, Cl. 179-18.0AD.
- Brescia, Riccardo: *See*—
  - Conta, Renato; Montanari, Lucio; and Brescia, Riccardo, 4,130,752, Cl. 219-216.000.
- Breuer, Friedrich; Duderstadt, Gunter; Dresler, Werner; Fichte, Rudolf; Kunert, Peter; and Nassauer, Gerd, to GfE Gesellschaft fur Elektrometallurgie mit beschrankter Haftung. Process for refining high-carbon ferro-alloys. 4,130,417, Cl. 75-60.000.
- Breznak, Robert A.; and Parker, James A., to Celanese Corporation. Splice for use during the thermal stabilization of a flat multifilament band of an acrylic fibrous material comprising at least two segments. 4,130,679, Cl. 428-58.000.
- Bricker, Norman C. Chain saw bar tightener. 4,129,943, Cl. 30-386.000.
- Bridger, Robert F.; and Schmitt, Kirk D., to Mobil Oil Corporation. Process of preparing monoaryl phosphonates and lubricant compositions containing same. 4,130,496, Cl. 252-49.800.
- Bridges, James R.; Riedesel, Roland G., Jr.; and Thompson, Larry W., to Texaco Inc. Dielectric well logging means and method utilizing the signals from a pair of receivers for providing clock pulses corresponding to earth formation dielectric constant. 4,130,793, Cl. 324-6.000.
- Bridwell, Phillip P. Energy generating system for a roadway or railway. 4,130,064, Cl. 104-154.000.
- Brillhart, Bruce A.: *See*—
  - Horne, Merton A.; and Brillhart, Bruce A., 4,130,897, Cl. 365-205.000.
- British Columbia Research Council: *See*—
  - Oehr, Klaus H., 4,130,467, Cl. 204-57.000.
- Brkic, Ferdo, to Adams Rite Manufacturing Co. Exit door locking mechanism having multiple bolts. 4,130,306, Cl. 292-5.000.
- Broacha, Firoze H.: *See*—
  - Sivachenko, Eugene W.; and Broacha, Firoze H., 4,129,917, Cl. 14-73.000.
- Brooks, Norman: *See*—
  - Cook, Alan J.; Brooks, Norman; and Kirkby, Anthony D., 4,130,150, Cl. 144-2.00R.
- Brosheara, Robert W. Device for measuring friction and distance. 4,130,008, Cl. 73-9.000.
- Brower, Boyd G., to GTE Sylvania Incorporated. Multilamp photoflash unit. 4,130,857, Cl. 362-10.000.
- Brown, Carl F., Jr. Gauge and method for determining the number of words per printed page. 4,129,947, Cl. 33-1.00B.
- Brown, John V.: *See*—
  - Ebbert, Robert J.; and Brown, John V., 4,130,006, Cl. 72-391.000.
- Brown, Lorin B. Combined nail file and writing implement clip attachment. 4,129,925, Cl. 24-11.0CC.
- Brown, Ralph E. Method and portable apparatus for treating asphalt paving material. 4,130,364, Cl. 366-4.000.
- Brown & Sharpe Manufacturing Company: *See*—
  - Callaghan, Robert P., Jr., 4,129,949, Cl. 33-169.00R.
- Bruchet, Michel, to UNELEC S.A. Interchangeable tripping device for a circuit-breaker. 4,130,814, Cl. 335-42.000.
- Brudnicki, Myron J., to Garrett Corporation, The. Pneumatic autoschedule cabin pressure controller. 4,130,051, Cl. 98-1.500.
- Brueck, Chris M. Solar energy concentrator. 4,130,109, Cl. 126-271.000.
- Bruns, Klaus: *See*—
  - Conrad, Jens; Bruns, Klaus; and Meins, Peter, 4,130,509, Cl. 252-522.000.
- Bryson, John D., to Will Ross, Inc. Liquid dispensing package. 4,130,245, Cl. 239-34.000.
- Buccicone, Velio S., to Bucciconi Engineering Co., Inc. Sheet piling machine with classifier and multiple piling arrangements. 4,130,206, Cl. 214-6.00D.
- Bucciconi Engineering Co., Inc.: *See*—
  - Buccicone, Velio S., 4,130,206, Cl. 214-6.00D.
- Buck, Robert T.: *See*—
  - Amos, Lynn G.; Banks, Howard F.; Buck, Robert T.; and Eppes, William R., 4,130,824, Cl. 346-33.00A.
- Budecker, Ludwig; and David, Anton, to ITT Industries, Inc. Accumulator changing valve. 4,130,127, Cl. 137-101.000.
- Bula, John; and Patrawala, Ashok C., to International Business Machines Corporation. Low power true/complement driver. 4,130,768, Cl. 307-270.000.
- Bullock, Elyse M.: *See*—
  - Valdiserri, Leo L.; and Bullock, Elyse M., 4,130,540, Cl. 260-45.80R.
- Bundy, Gordon L., to Upjohn Company, The. 9-Deoxy-9-methylene-PGF sulfonylamides. 4,130,584, Cl. 260-556.00A.
- Bundy, Gordon L., to Upjohn Company, The. 9-Deoxy-9-methylene-PGF-p-substituted phenyl esters. 4,130,720, Cl. 560-61.000.
- Bundy, Gordon L.; and Nelson, Norman A., to Upjohn Company, The. 11-Deoxy PGE_2 compounds. 4,130,721, Cl. 560-121.000.
- Bunker Ramo Corporation: *See*—
  - Spaulding, Tedford H., 4,130,327, Cl. 339-17.0CF.
- Burge, Edward V., to Hawn, Richard Dean, Jr. Drill string shock absorber. 4,130,000, Cl. 64-1.00V.
- Burley, Joseph W.: *See*—
  - Hutton, Ronald E.; and Burley, Joseph W., 4,130,573, Cl. 260-429.700.
- Burns, Donald L.: *See*—
  - Becker, Roger T.; Burns, Donald L.; and Calkins, Stephen P., 4,130,195, Cl. 198-739.000.
- Burroughs Corporation: *See*—
  - Steckowich, John, Jr., 4,130,262, Cl. 248-226.100.
- C. Hoegger & Cie. AG.: *See*—
  - Hoegger, Cornel, 4,129,923, Cl. 17-33.000.
- Calkins, Stephen P.: *See*—
  - Becker, Roger T.; Burns, Donald L.; and Calkins, Stephen P., 4,130,195, Cl. 198-739.000.
- Call, Tracey G.: *See*—
  - Wight, Hewitt G.; Call, Tracey G.; and Mortensen, Marvin L., 4,130,578, Cl. 260-455.00A.
- Callaghan, Robert P., Jr., to Brown & Sharpe Manufacturing Company. Height gage. 4,129,949, Cl. 33-169.00R.
- Calundann, Gordon W., to Celanese Corporation. Melt processable thermotropic wholly aromatic polyester comprising both para-oxybenzoyl and meta-oxybenzoyl moieties. 4,130,545, Cl. 260-40.00P.
- Cameron, Daniel F.; Hughes, Gary C.; and Janssen, Harry R., to Continental Oil Company. Process for making premium coke. 4,130,475, Cl. 208-54.000.
- Cameron Iron Works, Inc.: *See*—
  - Jones, Marvin R., 4,130,161, Cl. 166-337.000.
- Cameron, Vernon T. Cork cleaning formula. 4,130,499, Cl. 252-153.000.
- Campbell, Kenneth C.: *See*—
  - Swanstrom, H. Wallace; Campbell, Kenneth C.; and Linford, Robin F. G., 4,130,882, Cl. 364-900.000.
- Campbell, Maxwell S. Apparatus for manufacturing helical coils. 4,130,003, Cl. 72-133.000.
- Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
  - Courtenay, Terence H., 4,130,360, Cl. 356-4.000.
- Canadian Industries Limited: *See*—
  - Craig, Joseph F. M., 4,130,449, Cl. 149-62.000.
- Canard, Pierre; and Levy, Albert, to Rhone Poulenc Industries. Chemical composition. 4,130,691, Cl. 428-511.000.
- Canon Kabushiki Kaisha: *See*—
  - Karube, Yukuo, 4,130,769, Cl. 310-46.000.
  - Kawamura, Naoto; Matsumoto, Kazuya; and Kitamura, Takashi, 4,130,339, Cl. 350-6.800.
  - Ohtaki, Shohei; Nakamoto, Soichi; Iwashita, Tomonori; Watanabe, Yoshiaki; and Kozuki, Susumu, 4,130,355, Cl. 354-33.000.
- Canon Seiki Kabushiki Kaisha: *See*—
  - Karube, Yukuo, 4,130,769, Cl. 310-46.000.
- Carborundum Company, The: *See*—
  - Hamilton, Robert S., 4,130,631, Cl. 423-290.000.
- Careglio, Giuseppe; and Proietti, Giovanni, to WABCO Westinghouse. Fluorescent lamp support assemblage with built-in converter for the lighting of vehicles. 4,130,860, Cl. 362-217.000.
- Carl Zeiss Stiftung: *See*—
  - Lang, Rudolf; and Schwarz, Gerhard, 4,130,358, Cl. 354-289.000.
- Carlson, Floyd W.; and Mashman, Joseph, to Textron Inc. Helicopter collective lever. 4,130,259, Cl. 244-83.00F.
- Carlsson, Stig T.; Rasmusson, Bo M.; and Scuka, Viktor, to Telefonaktiebolaget L M Ericsson. Laying tool for laying of submarine cables into a sea-bottom. 4,129,992, Cl. 405-164.000.
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  - Bailey, John M.; and Scott, Ronald K., 4,130,013, Cl. 73-119.00A.
  - Dawson, Dennis E., 4,130,025, Cl. 74-53.000.
  - Finley, Lloyd D.; and Kusper, Leroy F., 4,130,049, Cl. 91-445.000.
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  - Breznak, Robert A.; and Parker, James A., 4,130,679, Cl. 428-58.000.
  - Calundann, Gordon W., 4,130,545, Cl. 260-40.00P.
  - Choe, Eui W., 4,130,702, Cl. 526-93.000.
  - Edelman, Robert, 4,130,604, Cl. 260-860.000.
  - Rybny, Charles B.; and Levine, Eli, 4,130,518, Cl. 260-22.0CB.
- Celotex Corporation, The: *See*—
  - Sherman, Morton; and Berry, James A., 4,129,972, Cl. 52-303.000.
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  - Marianeschi, Edmondo; Basevi, Sandro; Barisoni, Mario; Marini, Paolo; Borgianni, Carlo; and Ricci Bitti, Roberto, 4,130,447, Cl. 148-27.000.
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  - Lazarus, Stanley D.; and Chakravarti, Kalidas, 4,130,541, Cl. 260-45.80A.
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  - Sorenson, John F., 4,130,199, Cl. 206-320.000.
- Champlin, Charles L.; and Misura, John T., to Packaging Corporation of America. Carrier for receptacles and blank therefor. 4,130,202, Cl. 206-434.000.
- Chandler, Curtis S.; and Miller, Ralph L., to AMP Incorporated. Electrical connector assembly retention system. 4,130,329, Cl. 339-75.00M.
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  - George, Henry H., 4,130,303, Cl. 285-137.00R.
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  - Stern, Gerhard; and Wegleitner, Karlheinz, 4,130,697, Cl. 521-106.000.
- Chen, Mark C., to Du Pont de Nemours, E. I., and Company. Carboxylated neoprene latex containing alkali-pretreated zinc oxide or hydroxide. 4,130,528, Cl. 260-29.7WA.
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  - Wang, John L.; Pickus, Milton R.; and Chen, Meng-Hsiu, 4,130,422, Cl. 75-246.000.
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- Cherry, Harvey A. Method and apparatus for continuous frequency measurement. 4,130,799, Cl. 324-79.00D.
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  - Boreskov, Georgy K.; Slinko, Mikhail G.; Gelbshtein, Anatoly I.; Vasilevich, Lidia A.; Chesnokov, Boris B.; Frolkina, Irina T.; Dyment, Oskar N.; Stepanov, Jury N.; Davydov, Valery A.; Talaeva, Irina G.; Utkina, Ninel S.; Stroganova, Vera V.; Aksenova, Maria S.; Filippova, Anna G., deceased; Prosvirova, Olga B., administrator; and Zakharova, Irina B., administrator, 4,130,570, Cl. 260-348.350.
- Chevron Research Company: *See*—
  - Katsumoto, Kiyoshi; and Nimer, Edward L., 4,130,521, Cl. 528-326.000.
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  - Smolko, Gennady G.; Vasiliev, Gennady F.; and Chikovani, Nordari M., 4,130,855, Cl. 361-387.000.
- Chisholm, John. Process for making porous metal heat sink from clad aluminum wire. 4,130,233, Cl. 228-126.000.
- Chocholaty, Warren L.; Evans, Robert K.; and Perry, Francis J., to International Business Machines Corporation. Ink maintenance sensor. 4,130,126, Cl. 137-3.000.
- Choe, Eui W., to Celanese Corporation. Polyacryloylaminobenzoic acid, polymethacryloylaminobenzoic acid and method of preparation. 4,130,702, Cl. 526-93.000.
- Cholet, Jacques, to Institut Francais du Petrole. Floating device connected to a ship, for towing a submerged member with a lateral shift thereof with respect to the ship route. 4,130,078, Cl. 114-244.000.
- Cholod, Michael, to Rohm and Haas Company. Sodium ion removal from acetone cyanohydrin. 4,130,580, Cl. 260-465.600.
- Chomet, Marc, to Teleglobe Pay-TV System, Inc. Pay television system. 4,130,833, Cl. 358-122.000.
- Christiaens, Michel J. P.: *See*—
  - Bousmar, Michel A. M. J.; and Christiaens, Michel J. P., 4,130,724, Cl. 178-69.100.
- Chrysler Corporation: *See*—
  - Crall, Frederick W.; and Tomczak, Lawrence W., 4,130,856, Cl. 361-415.000.
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- Churchill, Arthur E., to Stanford, George A., a part interest. Adaptor and control system arrangement for converting multiple cylinder carburetor engines for split operation. 4,130,102, Cl. 123-198.00F.
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  - Lamb, Frank, 4,130,532, Cl. 260-31.600.
  - Lamb, Frank, 4,130,533, Cl. 260-31.600.
  - Lee, Frank; Allan, James; and Fearnley, Charles, 4,130,498, Cl. 252-99.000.
  - Wegmann, Jacques E., 4,130,539, Cl. 260-42.550.
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  - Andrews, Christopher M., 4,130,511, Cl. 528-92.000.
  - Cook, Barry, 4,130,710, Cl. 542-418.000.
  - Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Meyer, Willy, 4,130,655, Cl. 424-304.000.
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  - Haug, Theobald; Kiefer, Jurg; and Renner, Alfred, 4,130,564, Cl. 260-326.260.
  - Ilvespaa, Atso; and Fuhrer, Walter, 4,130,652, Cl. 424-274.000.
  - Petree, Harris E.; Myatt, Hal L.; and Jelenevsky, Alex M., 4,130,582, Cl. 562-448.000.
  - Wehner, Hermann W.; and Lorenz, Joachim, 4,130,432, Cl. 106-15.00R.
  - Zahir, Abdul-Cader; and Wyler, Siegfried, 4,130,600, Cl. 260-830.00P.
- Cimiluca, Arthur: *See*—
  - Petersen, Arthur W.; Cimiluca, Arthur; and Hirschberger, Leonard, 4,130,442, Cl. 134-4.000.
- Citizen Watch Company Limited: *See*—
  - Nomura, Yasushi; Nakajima, Fumio; Yamada, Kenji; and Machida, Takayasu, 4,129,981, Cl. 58-23.00D.
- Clarion Co., Ltd.: *See*—
  - Mori, Masaharu; and Amazawa, Kiyoshi, 4,130,805, Cl. 325-473.000.
- Clark, Allan E.: *See*—
  - Hill, William F.; and Clark, Allan E., 4,130,817, Cl. 340-58.000.
- Clauss, Hermann: *See*—
  - Bachle, Erich; and Clauss, Hermann, 4,130,826, Cl. 357-34.000.
- Clay, Burton R.; and Gore, Douglas A., to RCA Corporation. Hologram having expanded viewing area. 4,130,338, Cl. 350-3.820.
- Cleveland Hardware and Forging Company: *See*—
  - Kessie, Lawrence R., 4,130,310, Cl. 292-340.000.
- Cleveland, Joseph J.: *See*—
  - Dziedzic, Chester J.; and Cleveland, Joseph J., 4,130,160, Cl. 165-166.000.
- Clevett, Merton L.; and Clevett, Mildred L. Solar stove. 4,130,106, Cl. 126-270.000.
- Clevett, Mildred L.: *See*—
  - Clevett, Merton L.; and Clevett, Mildred L., 4,130,106, Cl. 126-270.000.
- Clifford, David F., to Ansell Jones & Company Ltd. Lifting devices. 4,130,313, Cl. 294-83.00R.
- Clifford, Michael L., to Imperial Chemical Industries Limited. Tubular extrudate. 4,130,616, Cl. 264-514.000.
- Coady, A. B.: *See*—
  - Cooley, T. E.; and Coady, A. B., 4,130,403, Cl. 55-16.000.
- Coal Industry (Patents) Limited: *See*—
  - Gapper, Terence J., 4,130,319, Cl. 299-1.000.
- Cockram, Frederick T.: *See*—
  - Zajac, Chester S.; Cockram, Frederick T.; and Thompson, Scott B., 4,130,289, Cl. 279-1.00A.
- Cogan, Fredrick T., to Northern Telecom Limited. Telephone handset with rotatably locking receiver. 4,130,740, Cl. 179-103.000.
- Cogswell, John A.; Klaszky, Fred E.; and Jacobs, Anthony S., to Wessel Company, Inc., The. Apparatus for stacking booklets from the top. 4,130,207, Cl. 214-6.00D.
- Cohen, Leon E.: *See*—
  - Lutz, Charles W.; and Cohen, Leon E., 4,130,501, Cl. 252-186.000.
- Colgate-Palmolive Company: *See*—
  - Bauman, Robert A., 4,130,637, Cl. 124-54.000.
  - Fox, Lester A., 4,130,393, Cl. 422-31.000.
  - Tomlinson, Kenneth, 4,130,636, Cl. 424-52.000.
- Collier, Owen N.; and Hackett, Stephen J., to Johnson, Matthey & Co., Limited. Metal powders. 4,130,506, Cl. 252-438.000.

Collins, Thomas W.: *See*—
- Schweitzer, Paul H.; and Collins, Thomas W., 4,130,863, Cl. 364-105.000.

Columbus McKinnon Corporation: *See*—
- Schreyer, Kenneth D., 4,130,269, Cl. 254-67.000.

Comer, Robert C., to Toro Company, The. Low speed rotary mower. 4,129,977, Cl. 56-13.400.

Comer, William T.: *See*—
- Matier, William L.; and Comer, William T., 4,130,663, Cl. 424-326.000.

Comfort Lines, Inc.: *See*—
- Rossi, Joseph V., 4,130,316, Cl. 297-46.000.

Communications Satellite Corporation: *See*—
- Snyder, John S., Jr., 4,130,818, Cl. 340-146.1AQ.

Compagnie Industrielle des Piles Electriques "Cipel" S.A.: *See*—
- Battarel, Alain, 4,130,859, Cl. 362-205.000.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
- Boulanger, Claude; and Poinas, Christian, 4,130,743, Cl. 179-170.200.
- Lemonde, Jean-Louis, 4,130,344, Cl. 350-96.210.

Confalone, Pasquale N.; Lollar, Elizabeth D.; Pizzolato, Giacomo; and Uskokovic, Milan R., to Hoffmann-La Roche Inc. 8-Methoxypsoralen derivatives. 4,130,568, Cl. 260-343.210.

Conibear, Frank R., to Woodstream Corporation. Omni-directional trigger mechanism for animal traps. 4,129,958, Cl. 43-92.000.

Conrad, Jens; Bruns, Klaus; and Meins, Peter, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Perfume compositions containing cis- and trans-trimethylcyclohexylethyl ethers. 4,130,509, Cl. 252-522.000.

Conrow, Ransom B.; and Bernstein, Seymour, to American Cyanamid Company. Method of inhibiting the complement system with trisubstituted naphthalene compounds. 4,130,660, Cl. 424-319.000.

Conroy, Peter J., to Motorola, Inc. Slot antenna. 4,130,822, Cl. 343-700.0MS.

Consolidated Foods Corporation: *See*—
- Evans, Robert A.; and Momberg, James W., 4,129,920, Cl. 15-337.000.

Conta, Renato; Montanari, Lucio; and Brescia, Riccardo, to Ing. C. Olivetti & C., S.p.A. Electrothermal print head. 4,130,752, Cl. 219-216.000.

Continental Group, Inc., The: *See*—
- Mallorca, Salvador C., 4,130,219, Cl. 220-270.000.
- Walter, John, 4,130,218, Cl. 220-268.000.

Continental Instrument Corporation: *See*—
- Mannion, Robert S., 4,130,242, Cl. 235-450.000.

Continental Oil Company: *See*—
- Cameron, Daniel F.; Hughes, Gary C.; and Janssen, Harry R., 4,130,475, Cl. 208-54.000.

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- Niemi, Ilmer I.; and Peterson, Kenneth S., 4,129,989, Cl. 405-70.000.

Cook, Alan J.; Brooks, Norman; and Kirkby, Anthony D., to Cook Bolinders Limited. Finger jointing machine. 4,130,150, Cl. 144-2.00R.

Cook, Barry, to Ciba-Geigy Corporation. Piperidine derivatives. 4,130,710, Cl. 542-418.000.

Cook Bolinders Limited: *See*—
- Cook, Alan J.; Brooks, Norman; and Kirkby, Anthony D., 4,130,150, Cl. 144-2.00R.

Cook, Robert D., to Crane Co. Single gain skid control valve and skid control system. 4,130,322, Cl. 303-93.000.

Cooke, Richard C., Jr.: *See*—
- Merrill, Duane F.; and Cooke, Richard C., Jr., 4,130,599, Cl. 260-825.000.

Cooksey, James M., to Vought Corporation. Apparatus and method for reducing flow disturbances in a flowing stream of compressible fluid. 4,130,173, Cl. 181-212.000.

Cookson Company, The: *See*—
- Wardlaw, Russell, 4,130,156, Cl. 160-9.000.

Cooley, T. E.; and Coady, A. B. Removal of H_2S and/or CO_2 from a light hydrocarbon stream by use of gas permeable membrane. 4,130,403, Cl. 55-16.000.

Cooper, Robert L., Sr. Sectioned breakable vehicular safety bumper. 4,130,312, Cl. 293-76.000.

Copenhaver, Henry A. Mulcher attachment for cultivator. 4,130,820, Cl. 172-707.000.

Coran, Aubert Y.; and Patel, Raman P., to Monsanto Company. Elastoplastic compositions of butyl rubber and polyolefin resin. 4,130,534, Cl. 260-33.6AQ.

Coran, Aubert Y.; Das, Balbhadra; and Patel, Raman P., to Monsanto Company. Thermoplastic vulcanizates of olefin rubber and polyolefin resin. 4,130,535, Cl. 260-33.6AQ.

Corcoran, Thomas M.: *See*—
- Goodrich, Albert S.; and Corcoran, Thomas M., 4,130,022, Cl. 73-633.000.

Corey, Joe F.; and Corey, Tony G. No spill beverage cup. 4,130,215, Cl. 220-90.400.

Corey, Tony G.: *See*—
- Corey, Joe F.; and Corey, Tony G., 4,130,215, Cl. 220-90.400.

Corning Glass Works: *See*—
- Amos, Lynn G.; Banks, Howard F.; Buck, Robert T.; and Eppes, William R., 4,130,824, Cl. 346-33.00A.
- Ference, Joseph; and Megles, John E., Jr., 4,130,680, Cl. 428-68.000.
- Mazeau, Jean P.; and Seward, Thomas P., III, 4,130,437, Cl. 106-54.000.

Cortex Research Corporation: *See*—
- Fosslien, Egil, 4,130,754, Cl. 235-92.0PC.

Cosco, Robert J.; Kokinos, Charles C., Jr.; and Geleski, Charles J., to GTE Sylvania Incorporated. Flash tube having improved end cap construction. 4,130,774, Cl. 313-318.000.

Costa, Eugene, Jr., to International Paper Company. Production of high strength hollow rayon fibers. 4,130,689, Cl. 428-398.000.

Cote, Anthony J., to E. H. Price Limited. Constant volume regulator with adjustable load means. 4,130,132, Cl. 137-512.150.

Couchot, Carl A.: *See*—
- Rajput, Yudh V.; and Couchot, Carl A., 4,130,323, Cl. 303-106.000.

Courtenay, Terence H., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Laser altimeter/-profilometer apparatus. 4,130,360, Cl. 356-4.000.

Cox, C. Eugene. Methods and means for identifying and testing circuit connections. 4,130,794, Cl. 324-51.000.

Craig, Joseph F. M., to Canadian Industries Limited. Thickened aqueous slurry explosive compositions. 4,130,449, Cl. 149-62.000.

Crall, Frederick W.; and Tomczak, Lawrence W., to Chrysler Corporation. Housing for mounting electronic circuit boards on an engine air filter housing. 4,130,856, Cl. 361-415.000.

Crane Co.: *See*—
- Cook, Robert D., 4,130,322, Cl. 303-93.000.

Creith, Lou C., to Altech Industries, Inc. Peripheral seal for floating roofs. 4,130,216, Cl. 220-224.000.

Cronin, John C.; and Schuetz, Willy, to Gould Inc. High speed fault diverter switch for gas-insulated systems. 4,130,850, Cl. 361-54.000.

Crosby Valve & Gage Company: *See*—
- Stewart, Robert D.; and Schretter, James A., 4,130,130, Cl. 137-475.000.

Cross, Barrington; and Dawe, David H., to American Cyanamid Company. Fungicidal phenylnitramines and new phenylnitramines. 4,130,645, Cl. 424-226.000.

Crossland, William A.; and Morrissy, Joseph H., to International Standard Electric Corporation. Method of forming large liquid crystal cells. 4,130,408, Cl. 65-43.000.

Crowther, William R.: *See*—
- Heart, Frank E.; Ornstein, Severo M.; Barker, William B.; and Crowther, William R., 4,130,865, Cl. 364-200.000.

Cudzik, Daniel F., to Reynolds Metals Company. Tab system. 4,130,074, Cl. 113-121.00R.

Cullison, David A.: *See*—
- Vogt, B. Richard; and Cullison, David A., 4,130,646, Cl. 424-250.000.

Cundy, Colin S.: *See*—
- Ballard, Denis G. H.; Cundy, Colin S.; and Rideal, Graham R., 4,130,687, Cl. 428-310.000.

Curry, Charles D. B.: *See*—
- Reins, Edward R.; and Curry, Charles D. B., 4,130,887, Cl. 364-900.000.

Cushing, David E., to Honeywell Information Systems Inc. Apparatus for performing floating point arithmetic operations using submultiple storage. 4,130,879, Cl. 364-748.000.

Dainippon Ink and Chemicals, Inc.: *See*—
- Ohoka, Masataka; Yamada, Mitsuko; Shoji, Akio; and Arimoto, Shunji, 4,130,601, Cl. 260-835.000.

Daley, Thomas G. Method of making a molded support for an object using a self-closing valve. 4,129,935, Cl. 29-460.000.

D'Altroy, Frederick A.; Hartman, Adrian R.; Jacobs, Richard M.; Pritchett, Robert L.; and Shackle, Peter W., to Bell Telephone Laboratories, Incorporated. Integrated circuit switching network using low substrate leakage current thyristor construction. 4,130,827, Cl. 357-38.000.

Dame, James M.: *See*—
- Giandomenico, Anthony; Dame, James M.; and Behimer, Harold, 4,130,032, Cl. 81-119.000.

D'Antonio, Nicholas F.; and Bates, Richard L., to Kinetronic Industries. Ski-binding. 4,130,296, Cl. 280-612.000.

Darlington, Douglas K.: *See*—
- Smart, William L.; Hoenig, Stuart A.; Savitz, Christian W.; and Darlington, Douglas K., 4,129,966, Cl. 51-170.00T.

Darrow, John O. G., to Westinghouse Air Brake Company. Fail-safe or logic circuit. 4,130,764, Cl. 307-218.000.

Dart Industries Inc.: *See*—
- Elias, Moenes L.; and Good, Millard F., 4,130,455, Cl. 156-666.000.

Das, Balbhadra: *See*—
- Coran, Aubert Y.; Das, Balbhadra; and Patel, Raman P., 4,130,535, Cl. 260-33.6AQ.

Data Motion Incorporated: *See*—
- Seitz, Alan F., 4,130,230, Cl. 226-75.000.

Datta, Rabinder S., to Syracuse Research Corporation. Process for coal gasification. 4,130,164, Cl. 166-259.000.

David, Anton: *See*—
- Budecker, Ludwig; and David, Anton, 4,130,127, Cl. 137-101.000.

Davis, Donald A. Hitch assembly for a farm tractor. 4,130,295, Cl. 280-412.000.

Davydov, Valery A.: *See*—
- Boreskov, Georgy K.; Slinko, Mikhail G.; Gelbahtein, Anatoly I.; Vasilevich, Lidia A.; Chesnokov, Boris B.; Frolkina, Irina T.; Dyment, Oskar N.; Stepanov, Jury N.; Davydov, Valery A.; Talaeva, Irina G.; Utkina, Ninel S.; Stroganova, Vera V.; Aksenova, Maria S.; Filippova, Anna G., deceased; Prosvirova, Olga B., administrator; and Zakharova, Irina B., administrator, 4,130,570, Cl. 260-348.350.

Dawe, David H.: *See*—
- Cross, Barrington; and Dawe, David H., 4,130,645, Cl. 424-226.000.

Dawson, Dennis E., to Caterpillar Tractor Co. Control linkage for converting alternating rotary motion into unidirectional motion. 4,130,025, Cl. 74-53.000.

Dayco Corporation: *See*—
- Haren, Doyle V., 4,130,139, Cl. 138-125.000.
- Tell, Mayo B., 4,130,142, Cl. 139-159.000.

de la Cruz, Virgil. Mercury switch arrangement for digital watch. 4,129,982, Cl. 58-23.00R.

Deavin, Lynda: *See*—
- Righelato, Renton C.; and Deavin, Lynda, 4,130,461, Cl. 195-31.00P.

Decker, Joseph A., Jr.; Amin, Bipinchandra; and Magruder, William R., to Igloo Corporation. Method for making an insulated container having a shock-resistant bottom. 4,130,615, Cl. 264-46.500.

Dedolph, Richard R., to Gravi-Mechanics Co. Field transplant systems and methods and components thereof. 4,130,072, Cl. 111-2.000.

de Gennes, Gerard, to Societe Anonyme Francaise du Ferodo. Ribbed brake shoe support plate for cylindrical ring type brake. 4,130,186, Cl. 188-76.000.

Deike, Robert F., to Foresight Industries. Downcrowding boom assembly. 4,130,168, Cl. 173-38.000.

De Jule, Michael C., to Zenith Radio Corporation. Scanning means and method for a plasma-sac-type gas-discharge image display panel. 4,130,777, Cl. 315-169.0TV.

Delpla, Claude: *See*—
- Garnier, Regis; and Delpla, Claude, 4,130,136, Cl. 137-625.410.

De Marco, Franco; and Panzeri, Constantino, to Societa Italiana Telecomunicazioni Siemens S.P.A. Telecommunication system with keyboard selection. 4,130,736, Cl. 179-16.0EC.

den Hollander, Willem, to RCA Corporation. Side pincushion correction circuit with low dissipation damping. 4,130,783, Cl. 315-371.000.

Denison, Early B., to Shell Oil Company. Downhole connector for use with drill string telemetering system. 4,130,169, Cl. 175-299.000.

Denizman, Nejat H. Shaving implement. 4,129,942, Cl. 30-41.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See*—
- Kadowaki, Takashi; Nishimura, Michio; Watanabe, Seiichi; and Abe, Koichi, 4,130,596, Cl. 260-655.000.

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- Anderson, George J.; Desmond, Timothy F.; and Santer, J. Owen, 4,130,692, Cl. 428-524.000.

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- Roberts, Wilbert J.; and Weissman, Gerald R., 4,130,674, Cl. 427-331.000.

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- Baldyga, Joseph W., 4,129,939, Cl. 29-625.000.

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- Struble, Glenn E., 4,130,237, Cl. 229-40.000.

Dibrov, Gennady D.: *See*—
- Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Silakov, Grigory I.; Khlopkov, Leonid P.; Nesterovsky, Sergei G.; Starun, Andrei I.; Mironov, Viktor D.; Dibrov, Gennady D.; and Panasenko, Anatoly A., 4,130,439, Cl. 106-67.000.

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- Blase, Manfred, 4,130,244, Cl. 238-24.000.

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- Boggum, Paul; and Schulte, Klaus, 4,130,391, Cl. 432-264.000.

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Diehl, Francis L.; and Edwards, James B., to Procter & Gamble Company, The. Bleaching process. 4,130,392, Cl. 8-101.000.

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Dietz, Richard E.: *See*—
- Nasser, Benny E., Jr.; and Dietz, Richard E., 4,130,505, Cl. 252-432.000.

Dillon, Roy E., to Macfield Texturing, Inc. Friction discs for false-twist head. 4,129,980, Cl. 57-339.000.

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- Lockerby, Charles E.; and Dimmick, W. Scott, 4,130,012, Cl. 73-73.000.

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- Hornblad, Richard P., 4,130,326, Cl. 312-292.000.

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- Eckert, Ronald P., 4,129,953, Cl. 40-156.000.

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- Hebard, Harry D., 4,130,304, Cl. 285-143.000.

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- Doorakian, George A.; and Duquette, Lawrence G., 4,130,543, Cl. 528-125.000.
- Garner, Joseph L., 4,130,688, Cl. 428-342.000.
- Martin, Alton E.; White, Warren D.; and Smolik, Samuel L., 4,130,588, Cl. 260-570.00D.
- Meyer, Wilfred C., 4,130,400, Cl. 44-51.000.
- Meyer, Wilfred C.; and Klimpel, Richard R., 4,130,401, Cl. 44-51.000.
- Podobnik, Donald M.; and Harris, Guy H., 4,130,477, Cl. 209-166.000.
- Ritzie, Robert H., 4,130,287, Cl. 277-12.000.
- Shier, George D., 4,130,711, Cl. 544-385.000.
- Walker, Lynn C., 4,130,016, Cl. 73-190.00R.

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- Miller, Robert S.; and Doyle, Francis J., 4,130,527, Cl. 260-29.60R.

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Draper, Homer L.: *See*—
- Gagle, Duane W.; and Draper, Homer L., 4,130,516, Cl. 260-28.5AS.

Dray, Sheldon: *See*—
- Molinaro, Giuseppe A.; and Dray, Sheldon, 4,130,634, Cl. 424-8.000.

Dresler, Werner: *See*—
- Breuer, Friedrich; Duderstadt, Gunter; Dresler, Werner; Fichte, Rudolf; Kunert, Peter; and Nassauer, Gerd, 4,130,417, Cl. 75-60.000.

Dresser Industries, Inc.: *See*—
- Stratienko, Andrew, 4,130,030, Cl. 74-625.000.

Driscoll, Michael M.: *See*—
- Arakelian, Rafi; and Driscoll, Michael M., 4,130,765, Cl. 307-220.00R.

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Duerr, Joseph W., to Ganz Brothers, Inc. Shrink wrap container package. 4,130,201, Cl. 206-432.000.

Dulin, Henry. Apparatus for cleaning roller applicators. 4,130,443, Cl. 134-33.000.

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- Nedelec, Lucien; Frechet, Daniel; and Dumont, Claude, 4,130,658, Cl. 424-308.000.

Dunham, Harry J.; and Hurd, Gordon P., to General Electric Company. Double-walled well casing structure. 4,130,301, Cl. 285-47.000.

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- Hendrix, Ronald W.; Klink, Jerome P.; and Dunn, John W., 4,130,248, Cl. 242-18.00G.

Dunn, Samuel G. Starting bar attachment for starting gates. 4,130,087, Cl. 119-15.50R.

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- Sandy, Frank; and Dunnrowicz, Clarence J., 4,130,813, Cl. 333-72.000.

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- Atkins, Thomas J., 4,130,715, Cl. 548-324.000.
- Bellis, Harold E., 4,130,595, Cl. 260-654.00R.
- Chen, Mark C., 4,130,528, Cl. 260-29.7WA.
- Frazer, August H.; Harris, John F., Jr.; and Martin, Elmore L., 4,130,579, Cl. 260-465.00H.

- Hall, Ira L., 4,130,435, Cl. 106-22.000.
- Huntsberger, James R., 4,130,677, Cl. 427-379.000.
- Plambeck, Louis, Jr., 4,130,706, Cl. 526-245.000.
- Vassiliou, Eustathios; and Welch, Edward J., 4,130,675, Cl. 427-333.000.

- Duquette, Lawrence G.: *See*—
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  - Ida, Nobel, 4,130,407, Cl. 65-30.00E.
- Dutkewych, Oleh B.; Gaputis, Charles A.; Gulla, Michael; and Levy, Leonard R. Etchant and process of etching with the same. 4,130,454, Cl. 156-659.000.
- Dyer, Gerald T.; and Ryan, Michael A., to Polaroid Corporation. Novel filtration process and apparatus. 4,130,485, Cl. 210-66.000.
- Dyment, Oskar N.: *See*—
  - Boreskov, Georgy K.; Slinko, Mikhail G.; Gelbahtein, Anatoly I.; Vasilevich, Lidia A.; Chesnokov, Boris B.; Frolkina, Irina T.; Dyment, Oskar N.; Stepanov, Jury N.; Davydov, Valery A.; Talaeva, Irina G.; Utkina, Ninel S.; Stroganova, Vera V.; Aksenova, Maria S.; Filippova, Anna G., deceased; Prosvirova, Olga B., administrator; and Zakharova, Irina B., administrator, 4,130,570, Cl. 260-348.350.
- Dynamit Nobel Aktiengesellschaft: *See*—
  - Vogt, Wilhelm; and Richtzenhain, Herman, 4,130,592, Cl. 568-604.000.
- Dynex/Rivett Inc.: *See*—
  - Heinrich, Allan E., 4,129,986, Cl. 60-327.000.
- Dyroff, David R.; and Suchanek, Walton F., Jr., to Monsanto Company. Calculus inhibition. 4,130,635, Cl. 424-48.000.
- Dziedzic, Chester J.; and Cleveland, Joseph J., to GTE Sylvania Incorporated. Composite ceramic cellular structure and heat recuperative apparatus incorporating same. 4,130,160, Cl. 165-166.000.
- E. H. Price Limited: *See*—
  - Cote, Anthony J., 4,130,132, Cl. 137-512.150.
- E. R. Squibb & Sons, Inc.: *See*—
  - Vogt, B. Richard; and Cullison, David A., 4,130,646, Cl. 424-250.000.
- Eager, George S., Jr.: *See*—
  - Bahder, George; Eager, George S., Jr.; and Silver, David A., 4,130,450, Cl. 156-48.000.
- Eastman Kodak Company: *See*—
  - Groner, Carl F., 4,130,359, Cl. 355-3.00P.
  - Peffer, Robert M.; Rehn, Albert H.; and Grose, Zacharie, 4,130,852, Cl. 361-213.000.
- Eaton, Homer L., to Eaton-Leonard Corporation. Method for bending tubes. 4,130,004, Cl. 72-151.000.
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  - Eaton, Homer L., 4,130,004, Cl. 72-151.000.
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  - Ebbert, Robert J.; and Brown, John V., 4,130,006, Cl. 72-391.000.
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- Eddens, Gerald R., to W. J. Industries, Incorporated. Tension monitor means. 4,130,014, Cl. 73-144.000.
- Eddleman, William L. Electrode structure for use in metal in exchange apparatus useful in purifying spent acids and the like. 4,130,473, Cl. 204-252.000.
- Edelman, Robert, to Celanese Corporation. Production of an improved polyoxymethylene molding composition which forms reduced mold deposits upon molding. 4,130,604, Cl. 260-860.000.
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  - Hauser, Karl V.; and Mencenberg, Fred, 4,130,436, Cl. 106-38.900.
- Edwards, David V.; Leah, Harvey B., Jr.; and Phillips, Ronald W., II, to B. F. Goodrich Company, The. Launching system for inflatable raft. 4,129,910, Cl. 9-42.000.
- Edwards, James B.: *See*—
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- Edwards, Roderick I.: *See*—
  - Evers, Ann P.; Edwards, Roderick I.; and Fieberg, Monika M., 4,130,625, Cl. 423-22.000.
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  - Zaboronok, Georgy F.; Efimov, Vladimir E.; and Kozlov, Alexandr T., 4,130,416, Cl. 75-10.00R.
- Eibofner, Eugen, to Kaltenbach & Voigt GmbH & Co. Clamping device for dental handpiece. 4,129,945, Cl. 32-26.000.
- Eichler, Horst. Side propellers for the propulsion of fast boats and aircraft. 4,130,378, Cl. 416-175.000.
- Eidenschink, Rudolf; Krause, Joachim; and Pohl, Ludwig, to Merck Patent Gesellschaft mit. Liquid crystalline cyclohexane derivatives. 4,130,502, Cl. 252-299.000.
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  - Kijima, Shizumasa; Shionoya, Hiroshi; Hamamura, Kimio; Arai, Haruyoshi; and Koyanagi, Nozomu, 4,130,648, Cl. 424-251.000.
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  - Held, Franklin W., 4,130,619, Cl. 264-162.000.
- Eli Lilly and Company: *See*—
  - Nagarajan, Ramakrishnan, 4,130,709, Cl. 536-17.000.
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  - Haessler, Herbert A.; Elshtain, Errol L.; and Holland, Taffy, 4,130,881, Cl. 364-900.000.
- Emmie, George W. Flexible picket fence. 4,130,272, Cl. 256-22.000.
- Energy Resources Company, Inc.: *See*—
  - Porter, James H., 4,130,071, Cl. 110-245.000.
- Engel, Werner. Apparatus for the extraction of die-cast parts from the molds of die-casting machines. 4,130,246, Cl. 239-186.000.
- Engelhart, John E.; and McNeil, Maynard W., to M&T Chemicals Inc. Compositions for regulating undesirable plant growth. 4,130,411, Cl. 71-86.000.
- Engelmann, Heinz: *See*—
  - Susdorf, Roman; Schuler, Ulrich; and Engelmann, Heinz, 4,130,065, Cl. 105-135.000.
- Engelmann, Rudolph H., to Seifried, Hildegarde; and Adams, John W. Optical character recognition device. 4,130,819, Cl. 340-146.3AC.
- Enkoji, Takashi; and Skibbe, Martin O., to Armour Pharmaceutical Company. Synthesis of peptides. 4,130,514, Cl. 260-8.000.
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  - Nakayama, Yasuharu; Watanabe, Tadashi; Nishida, Reiziro; and Enomoto, Satoru, 4,130,526, Cl. 260-29.6RB.
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- Ensign Bickford Company: *See*—
  - Boggs, Brian F.; Zilcosky, Hector J.; and Smith, William M., 4,130,061, Cl. 102-66.000.
- Envair, Inc.: *See*—
  - Norman, Richard O.; and Frassanito, John R., 4,130,224, Cl. 222-185.000.
- Envirotech Corporation: *See*—
  - Adams, George L.; Aker, David; and Silvermetz, David, 4,130,018, Cl. 73-290.00V.
  - Klavir, Samuel N., 4,130,463, Cl. 202-263.000.
- Eppes, William R.: *See*—
  - Amos, Lynn G.; Banks, Howard F.; Buck, Robert T.; and Eppes, William R., 4,130,824, Cl. 346-33.00A.
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  - Iepson, Harry E.; and Erickson, Richard A., 4,130,200, Cl. 206-333.000.
- Ericsson, Sven O. Log feeding and de-branching mechanism. 4,130,151, Cl. 144-309.0AC.
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  - Hertz, Jerome J., 4,130,854, Cl. 361-304.000.
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- Ernst, Horst M.; Brandenstein, Manfred; and Olschewski, Armin, to SKF Industrial Trading and Development Company B.V. Packing means for shaft bushings. 4,130,286, Cl. 277-12.000.
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  - Henkelmann, Kurt; Speier, Rolf; and Schafer, Wilhelm, 4,130,353, Cl. 353-85.000.
- Ersfeld, Dean A.: *See*—
  - Fanselow, Dan L.; and Ersfeld, Dean A., 4,130,760, Cl. 250-474.000.
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  - Gettman, Herman W., 4,129,934, Cl. 29-427.000.
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  - Eshnaur, W. Scott; and Eshnaur, Helen E., 4,130,092, Cl. 119-159.000.
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  - Roos, Otto; and Essig, Dieter, 4,130,558, Cl. 260-239.100.
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  - Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,130,639, Cl. 424-78.000.
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- Evans, Robert A.; and Momberg, James W., to Consolidated Foods Corporation. Hose coupling for upright vacuum cleaner. 4,129,920, Cl. 15-337.000.
- Evans, Robert K.: *See*—
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  - Hamel, Edmund, 4,129,979, Cl. 57-59.000.
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  - Bombardieri, Caurino C., 4,130,163, Cl. 166-252.000.
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  - Lepert, Andre, 4,130,701, Cl. 526-76.000.
  - Longo, John M.; and Steger, John J., 4,130,492, Cl. 252-18.000.
  - Lundberg, Robert D.; and Thame, Neville G., 4,130,517, Cl. 260-29.20N.
  - Roper, Robert; Newman, Neil F.; and Hous, Pierre, 4,130,519, Cl. 260-23.70H.
  - Saidla, Glen E. W., 4,130,614, Cl. 264-46.400.
  - Shaub, Harold; and Metro, Stephen J., 4,130,494, Cl. 252-32.500.
  - Vandling, John M., 4,130,840, Cl. 358-281.000.

- Falk, Gerhard, to Robert Bosch GmbH. Tape drive mechanism. 4,130,257, Cl. 242-193.000.
- Fanselow, Dan L.; and Ersfeld, Dean A., to Minnesota Mining and Manufacturing Company. Reusable radiation monitor. 4,130,760, Cl. 250-474.000.
- Farooq, Saleem: *See*—
  - Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Meyer, Willy, 4,130,655, Cl. 424-304.000.
- Farr, Lee E. Double window having improved weather sealed ventilation. 4,129,964, Cl. 49-67.000.
- Farrell, Mary S. Garment applying device. 4,130,226, Cl. 223-111.000.
- Fasano, Osvaldo, to Morenar S.A. Apparatus for automatically treating pieces of exposed photosensitive paper. 4,130,825, Cl. 354-322.000.
- Fast, Clarence R.; and King, George E., to Standard Oil Company (Indiana). Method for selectively plugging water zones. 4,130,165, Cl. 166-279.000.
- Fearnley, Charles: *See*—
  - Lee, Frank; Allan, James; and Fearnley, Charles, 4,130,498, Cl. 252-99.000.
- Federal Paper Board Co., Inc.: *See*—
  - Manizza, Guelfo A., 4,130,236, Cl. 229-31.00R.
- Federal Screw Works: *See*—
  - Ostrowski, Carl L., 4,130,730, Cl. 179-1.0SM.
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- Ference, Joseph; and Megles, John E., Jr., to Corning Glass Works. Strong, lightweight photosensitive laminate. 4,130,680, Cl. 428-68.000.
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  - Ferguson, James B.; Ferguson, Ernie B.; and Ferguson, Clarence E., 4,130,180, Cl. 182-187.000.
- Ferguson, Ernie B.: *See*—
  - Ferguson, James B.; Ferguson, Ernie B.; and Ferguson, Clarence E., 4,130,180, Cl. 182-187.000.
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- Ferguson, Russel O. Gas saver. 4,130,099, Cl. 123-141.000.
- Ferranti Limited: *See*—
  - Nutter, Geoffrey, 4,130,880, Cl. 364-900.000.
- Ferro, Nicholas J., to Ferro Novelty Company, Inc. Earring. 4,129,998, Cl. 63-12.000.
- Ferro Novelty Company, Inc.: *See*—
  - Ferro, Nicholas J., 4,129,998, Cl. 63-12.000.
- Fichte, Rudolf: *See*—
  - Breuer, Friedrich; Duderstadt, Gunter; Dresler, Werner; Fichte, Rudolf; Kunert, Peter; and Nassauer, Gerd, 4,130,417, Cl. 75-60.000.
- Fieberg, Monika M.: *See*—
  - Evers, Ann P.; Edwards, Roderick I.; and Fieberg, Monika M., 4,130,625, Cl. 423-22.000.
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- Fiegehen, Allan G.; Houghton, Robert P.; Bradley, Cecil Earl; and Richenburg, Paul F., to General Automation, Inc. Numerical control servo system. 4,130,788, Cl. 318-574.000.
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- Fields, Ellis K.: *See*—
  - Cerefice, Steven A.; Fields, Ellis K.; Marchant, Kerford A., Jr.; and Paschke, Edward E., 4,130,719, Cl. 528-305.000.
- Filippova, Anna G., deceased: *See*—
  - Boreskov, Georgy K.; Slinko, Mikhail G.; Gelbahtein, Anatoly I.; Vasilevich, Lidia A.; Chesnokov, Boris B.; Frolkina, Irina T.; Dyment, Oskar N.; Stepanov, Jury N.; Davydov, Valery A.; Talaeva, Irina G.; Utkina, Ninel S.; Stroganova, Vera V.; Aksenova, Maria S.; Filippova, Anna G., deceased; Prosvirova, Olga B., administrator; and Zakharova, Irina B., administrator, 4,130,570, Cl. 260-348.350.
- Filtronics Ltd.: *See*—
  - Jacoby, Ian H.; and Bangha, Roland V., 4,130,368, Cl. 402-41.000.
- Findley, Jack R. Combination trolling and casting reel. 4,130,251, Cl. 242-84.20C.
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  - Fieldhouse, John W., 4,130,547, Cl. 260-823.000.
- Firnhaber, Miles. Nickel-chromium alloys. 4,130,420, Cl. 75-134.00F.
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- Fischer, Craig A.: *See*—
  - Moore, Gregory R.; and Fischer, Craig A., 4,130,458, Cl. 162-159.000.
- Fischer, Eliezer Z.: *See*—
  - Chazan, Reuwen R, deceased; Chazan, Dan, heir; Chazan, David Y., heir; and Fischer, Eliezer Z., 4,130,640, Cl. 424-80.000.
- Fitch, Lawrence R.; and Swenson, Jerry L., to Fitch, Lawrence R. Printed circuit board scrubber and dryer. 4,129,919, Cl. 15-302.000.
- Flamm, Daniel L.: *See*—
  - United States of America, National Aeronautics and Space Administration; Flamm, Daniel L.; and Wydeven, Theodore J., Jr., 4,130,490, Cl. 250-531.000.
- Flanagan, Paul, to Flynn Burner Corporation. Non-contaminating fuel burner. 4,130,388, Cl. 431-116.000.
- Fleck, Franz, to ITT Industries, Inc. Pressure-regulating valve for vehicular braking systems. 4,130,321, Cl. 303-13.000.
- Flowstar Industries, Inc.: *See*—
  - Illes, Charles P., Jr., 4,130,225, Cl. 222-411.000.
- Flynn Burner Corporation: *See*—
  - Flanagan, Paul, 4,130,388, Cl. 431-116.000.
- FMC Corporation: *See*—
  - Chase, Lee M.; and Muray, Julius J., 4,130,481, Cl. 210-6.000.
  - Lill, Melvin H.; and Wiederrich, James L., 4,130,362, Cl. 356-152.000.
  - Lutz, Charles W.; and Cohen, Leon E., 4,130,501, Cl. 252-186.000.
  - Plummer, Ernest L., 4,130,657, Cl. 424-305.000.
  - Velenovsky, Joseph J.; and Alvarez, Manuel, 4,130,629, Cl. 423-240.000.
- Fodor, Lawrence M., to Phillips Petroleum Company. Phosphite in MgX_2 supported $TiX_3/AlCl_3$ catalyst system. 4,130,503, Cl. 252-429.00B.
- Ford, Eric H., to Lumenition Limited. Ignition systems for internal combustion engines. 4,130,096, Cl. 123-117.00R.
- Ford, Eric H. Ignition systems for internal combustion engines. 4,130,097, Cl. 123-117.00R.
- Ford, Michael A., to Perkin-Elmer Limited. Apparatus for compensating ordinate phase lag in a plotting apparatus. 4,130,784, Cl. 318-102.000.
- Ford Motor Company: *See*—
  - Gropp, Karl H., 4,130,094, Cl. 123-119.00A.
- Foresight Industries: *See*—
  - Deike, Robert F., 4,130,168, Cl. 173-38.000.
- Forth, Charles R.: *See*—
  - Olsen, James R.; and Forth, Charles R., 4,130,871, Cl. 364-411.000.
- Fosslien, Egil, to Cortex Research Corporation. Particle counting. 4,130,754, Cl. 235-92.0PC.
- Fotis, Peter: *See*—
  - Hoff, Glen R.; Melquist, John L.; and Fotis, Peter, 4,130,699, Cl. 526-67.000.
- Fox, Anthony. Aircraft with retractable auxiliary power unit. 4,130,258, Cl. 244-58.000.
- Fox, Lester A., to Colgate-Palmolive Company. Method for sterilizing with and recycling of ethylene oxide. 4,130,393, Cl. 422-31.000.
- Fox, Philip R., to Midwest Bindery Enterprises, Inc. Display device. 4,130,197, Cl. 206-45.260.
- Francis, Martin H.: *See*—
  - Bowman, Rodney V.; and Francis, Martin H., 4,130,899, Cl. 365-222.000.
- Franklin, Benjamin S.: *See*—
  - Bachman, Charles W.; and Franklin, Benjamin S., 4,130,867, Cl. 364-200.000.
- Franz, John E., to Monsanto Company. N-Organo-N-phosphonomethylglycine-N-oxides and phytotoxicant compositions containing same. 4,130,412, Cl. 71-86.000.
- Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See*—
  - Theurer, Josef, 4,130,062, Cl. 104-7.00R.
  - Theurer, Josef; and Praschl, Wilhelm, 4,130,063, Cl. 104-12.000.
- Frasher, Wallace G.; Netto, Daniel J.; and Marcus, Carol S., to University of Southern California. Apparatus for microscopically viewing a specimen while detecting radiation particles therefrom. 4,130,757, Cl. 250-336.000.
- Frassanito, John R.: *See*—
  - Norman, Richard O.; and Frassanito, John R., 4,130,224, Cl. 222-185.000.
- Frazer, August H.; Harris, John F., Jr.; and Martin, Elmore L., to Du Pont de Nemours, E. I., and Company. Bis(2-methyl-2-cyanopropyl) aromatics. 4,130,579, Cl. 260-465.00H.
- Frazer, Robert E., to United States of America, National Aeronautics and Space Administration. Coupling apparatus for ultrasonic medical diagnostic system. 4,130,112, Cl. 128-2.00V.
- Frechet, Daniel: *See*—
  - Nedelec, Lucien; Frechet, Daniel; and Dumont, Claude, 4,130,658, Cl. 424-308.000.
- Freehauf, Millard F. Indexed memory coordinator. 4,130,849, Cl. 360-137.000.
- Friedlander, Charles B.; and McMullen, John C., to PPG Industries, Inc. Siloxane urethane acrylate radiation curable compounds for use in coating compositions. 4,130,708, Cl. 528-28.000.
- Friesen, David. Harvester swath pickup. 4,129,978, Cl. 56-364.000.
- Fritz Studer AG.: *See*—
  - Luthi, Hans, 4,130,205, Cl. 214-1.0BB.
- Frolkina, Irina T.: *See*—
  - Boreskov, Georgy K.; Slinko, Mikhail G.; Gelbahtein, Anatoly I.; Vasilevich, Lidia A.; Chesnokov, Boris B.; Frolkina, Irina T.; Dyment, Oskar N.; Stepanov, Jury N.; Davydov, Valery A.; Talaeva, Irina G.; Utkina, Ninel S.; Stroganova, Vera V.; Aksenova, Maria S.; Filippova, Anna G., deceased; Prosvirova, Olga B., administrator; and Zakharova, Irina B., administrator, 4,130,570, Cl. 260-348.350.
- Fry, James L., to University of Toledo. Method for increasing the hydrogen:carbon ratio of an organic compound. 4,130,574, Cl. 260-465.00F.
- Fryer, Rodney I.: *See*—
  - Gilman, Norman; and Fryer, Rodney I., 4,130,716, Cl. 548-369.000.

Fuchs, Ernst E., to Mecafina S.A. Magnetic particle test system using movable test piece clamping means movable jointly or independently. 4,130,800, Cl. 324-216.000.
Fuhrer, Walter: *See*—
  Ilvespaa, Atso; and Fuhrer, Walter, 4,130,652, Cl. 424-274.000.
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  Kaneko, Shiro, 4,130,128, Cl. 137-269.000.
  Sugiyama, Masatoshi; and Kato, Eiichi, 4,130,430, Cl. 96-84.00A.
  Takeda, Keiji; and Tsuboi, Masayoshi, 4,130,426, Cl. 96-49.000.
Fuks, Abram. Traffic jam board game. 4,130,284, Cl. 273-248.000.
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  Nagesh, Voddarahalli K.; and Fulrath, Richard M., deceased, 4,130,671, Cl. 427-125.000.
Fulrath, Richard M., deceased: *See*—
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Gabriel, Richard J., to Matrix Toys, Inc. Construction set having clip fasteners. 4,129,975, Cl. 52-648.000.
Gagle, Duane W.; and Draper, Homer L., to Phillips Petroleum Company. High ductility asphalt. 4,130,516, Cl. 260-28.5AS.
Gagnon, Richard T., to Scitronix Corporation. Compressed speech system. 4,130,729, Cl. 179-1.0SA.
Gale, John A., to American Guidance Service, Inc. Interlocking blocks. 4,129,960, Cl. 46-25.000.
Gallo, Luigi C.; and Sheikh, Junaid, to Ampex Corporation. Circuit for generating a digital, deleted data, blinking cross signal which is stored in a deleted track and selectively displayed for detection. 4,130,842, Cl. 360-35.000.
Gans, Eugene H.: *See*—
  Dhabhar, Dadi J.; Heyd, Allen; and Gans, Eugene H., 4,130,638, Cl. 424-55.000.
Ganz Brothers, Inc.: *See*—
  Duerr, Joseph W., 4,130,201, Cl. 206-432.000.
Gapper, Terence J., to Coal Industry (Patents) Limited. Mining machines. 4,130,319, Cl. 299-1.000.
Gaputis, Charles A.: *See*—
  Dutkewych, Oleh B.; Gaputis, Charles A.; Gulla, Michael; and Levy, Leonard R., 4,130,454, Cl. 156-659.000.
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  Thomas, Charles H.; and Garland, Barbara R., 4,130,520, Cl. 260-29.20N.
Garner, Joseph L., to Dow Chemical Company, The. Electroconductive resins and intermediates and electroconductive coated paper. 4,130,688, Cl. 428-342.000.
Garnier, Regis; and Delpla, Claude, to Societe Generale de Fonderie. Mixing tap. 4,130,136, Cl. 137-625.410.
Garrett Corporation, The: *See*—
  Brudnicki, Myron J., 4,130,051, Cl. 98-1.500.
Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Silakov, Grigory I.; Khlopkov, Leonid P.; Nesterovsky, Sergei G.; Starun, Andrei I.; Mironov, Viktor D.; Dibrov, Gennady D.; and Panasenko, Anatoly A. Method of preparing batch for manufacture of clay brick. 4,130,439, Cl. 106-67.000.
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  Rosengren, Ake; Bjellqvist, Bengt; and Gasparic, Vesna, 4,130,470, Cl. 204-180.00G.
Gatilao, Lamberto S., to Liftomatic Material Handling, Inc. Multiple head drum lift unit. 4,130,212, Cl. 214-653.000.
Geitz, Gunter: *See*—
  Heyden, Gunter; and Geitz, Gunter, 4,130,039, Cl. 83-356.300.
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  Boreskov, Georgy K.; Slinko, Mikhail G.; Gelbahtein, Anatoly I.; Vasilevich, Lidia A.; Chesnokov, Boris B.; Frolkina, Irina T.; Dyment, Oskar N.; Stepanov, Jury N.; Davydov, Valery A.; Talaeva, Irina G.; Utkina, Ninel S.; Stroganova, Vera V.; Aksenova, Maria S.; Filippova, Anna G., deceased; Prosvirova, Olga B., administrator; and Zakharova, Irina B., administrator, 4,130,570, Cl. 260-348.350.
Gelenkwellenbau GmbH: *See*—
  Schultenkamper, Josef, 4,130,325, Cl. 308-163.000.
Geleski, Charles J.: *See*—
  Cosco, Robert J.; Kokinos, Charles C., Jr.; and Geleski, Charles J., 4,130,774, Cl. 313-318.000.
General Automation, Inc.: *See*—
  Fiegehen, Allan G.; Houghton, Robert P.; Bradley, Cecil Earl; and Richenburg, Paul F., 4,130,788, Cl. 318-574.000.
General Cable Corporation: *See*—
  Bahder, George; Eager, George S., Jr.; and Silver, David A., 4,130,450, Cl. 156-48.000.
General Dynamics Corporation: *See*—
  Block, Kenneth A.; and Lader, Leon J., 4,130,059, Cl. 102-34.400.
General Electric: *See*—
  Kochanowski, John E., 4,130,548, Cl. 528-197.000.
  Olander, Walter K., 4,130,544, Cl. 528-215.000.
General Electric Company: *See*—
  Bennett, Moreland P.; and Bowers, William L., 4,130,750, Cl. 219-78.150.
  Dunham, Harry J.; and Hurd, Gordon P., 4,130,301, Cl. 285-47.000.
  Giles, Walter B., 4,130,373, Cl. 415-1.000.
  Hardin, Louis W.; and Taylor, Lawrence D., 4,129,996, Cl. 62-262.000.
  Hehmann, Horst W. W., 4,130,175, Cl. 181-290.000.
  Kirkpatrick, Conilee G.; and Parks, Harold G., 4,130,891, Cl. 365-105.000.
  LaForest, James J., 4,130,861, Cl. 363-39.000.
  Mark, Victor; and Wilson, Phillip S., 4,130,530, Cl. 260-29.1SB.
  Merrill, Duane F.; and Cooke, Richard C., Jr., 4,130,599, Cl. 260-825.000.
General Electric Company Limited, The: *See*—
  Perez-Cavero, Leonardo, 4,130,851, Cl. 361-82.000.
General Motors Corporation: *See*—
  Anderson, Walter W., 4,130,232, Cl. 228-57.000.
  Bowler, Lauren L.; and Lahiff, John E., 4,130,095, Cl. 123-32.0EE.
  Walter, John O., 4,130,623, Cl. 264-293.000.
General Staple Company, Inc.: *See*—
  Zahn, Irwin, 4,129,941, Cl. 29-753.000.
George, Henry H., to Chemetron Corporation. Reinforced pipe cross fitting. 4,130,303, Cl. 285-137.00R.
Georgia-Pacific Corporation: *See*—
  Bornstein, Leopold F., 4,130,515, Cl. 260-17.500.
Gettman, Herman W., to ESCO Corporation. Method of installing and removing locking device for earth working tool. 4,129,934, Cl. 29-427.000.
Geyer & Co.: *See*—
  Schroer, Peter, 4,130,264, Cl. 249-180.000.
GfE Gesellschaft fur Elektrometallurgie mit beschrankter Haftung: *See*—
  Breuer, Friedrich; Duderstadt, Gunter; Dresler, Werner; Fichte, Rudolf; Kunert, Peter; and Nassauer, Gerd, 4,130,417, Cl. 75-60.000.
Giandomenico, Anthony; Dame, James M.; and Behimer, Harold, to United States of America, National Aeronautics and Space Administration. High-torque open-end wrench. 4,130,032, Cl. 81-119.000.
Giles, Walter B., to General Electric Company. Erosion suppression for liquid-cooled gas turbines. 4,130,373, Cl. 415-1.000.
Gilliams, Yvan K.; De Winter, Walter F.; Van Paesschen, August J.; and Timmerman, Daniel M., to Agfa-Gevaert, N.V. Process for fixing toner images. 4,130,670, Cl. 427-16.000.
Gilman, Norman; and Fryer, Rodney I., to Hoffmann-La Roche Inc. Pyrazolo benzodiazepines. 4,130,716, Cl. 548-369.000.
Giovagnoni, George. Remote alarm reset apparatus. 4,130,732, Cl. 179-5.00R.
Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., to Merrell Toraude et Compagnie. Method of treating hypertension. 4,130,653, Cl. 424-274.000.
Gist-Brocades N.V.: *See*—
  Marx, Arthur F.; and Vos, Cornelis, 4,130,665, Cl. 424-331.000.
Givaudan Corporation: *See*—
  Dubs, Paul; and Kuntzel, Heiner, 4,130,562, Cl. 260-302.00S.
Glass, Alastair M.; Lines, Malcolm E.; and Nassau, Kurt, to Bell Telephone Laboratories, Incorporated. Amorphous metal oxide material between electrodes of a cell. 4,130,694, Cl. 429-193.000.
Global Marine, Inc.: *See*—
  Person, Abraham; and Ozudogru, Yilmaz H., 4,130,077, Cl. 114-230.000.
Globe-Union Inc.: *See*—
  Levijoki, David H., 4,130,722, Cl. 174-68.500.
Goddard, Terrence P., to Teledyne McCormick Selph, an operating division of Teledyne Industries, Inc. Bis-triaminoguanidine decahydrodecaborate, process for preparation, and high energy propellant. 4,130,585, Cl. 260-564.00D.
Goldie, Harry, to United States of America, Navy. Frequency-agile fire control radar system. 4,130,821, Cl. 343-17.10R.
Goldner, Richard. Device adapted for self-determining, unpredictable variations in movement. 4,129,962, Cl. 46-120.000.
Gole, Jean: *See*—
  Rashkov, Ilia; Gole, Jean; Guerard, Daniel; Herold, Albert; Merle, Gerard; Panayotov, Ivan M.; Pascault, Jean-Pierre; Pham, Quang T.; Pillot, Christian; and Salle, Robert, 4,130,703, Cl. 526-173.000.
Good, Millard F.: *See*—
  Elias, Moenes L.; and Good, Millard F., 4,130,455, Cl. 156-666.000.
Goodrich, Albert S.; and Corcoran, Thomas M., to Picker Corporation. Ultrasonic sector scanning search unit. 4,130,022, Cl. 73-633.000.
Goodrich, Albert S.: *See*—
  Mueller, Peter G.; and Goodrich, Albert S., 4,130,021, Cl. 73-633.000.
Goodyear Tire & Rubber Company, The: *See*—
  Hampshire, William J., 4,130,154, Cl. 152-158.000.
  Harris, James T., 4,130,144, Cl. 141-9.000.
Gordon, Stanley H. Metal ornamentation and method of welding. 4,130,751, Cl. 219-98.000.
Gore, Douglas A.: *See*—
  Clay, Burton R.; and Gore, Douglas A., 4,130,338, Cl. 350-3.820.
Goto, Kazuo; Toyoda, Shinichi; and Sakai, Masahiko, to Hitachi Chemical Company, Ltd. Thermosetting resin composition. 4,130,546, Cl. 528-73.000.
Gottfried Bischoff Bau kompl. Gasreinigungs- und Wasserruckkuhlanlagen GmbH & Co. Kommanditgesellschaft: *See*—
  Wilop, Albert, 4,130,612, Cl. 261-91.000.
Gottlieb, Benjamin. Hearing aid reliner and apparatus for relining hearing aid ear molds. 4,130,741, Cl. 179-107.00E.
Gould Inc.: *See*—
  Cronin, John C.; and Schuetz, Willy, 4,130,850, Cl. 361-54.000.
  Dethlefsen, Rolf, 4,130,781, Cl. 315-331.000.
  Dethlefsen, Rolf, 4,130,782, Cl. 315-335.000.
  Iepson, Harry E.; and Erickson, Richard A., 4,130,200, Cl. 206-333.000.
  Reighter, David H., 4,130,536, Cl. 260-37.0EP.
Graf, Godi, to Maschinenfabrik Gietz AG. Process and apparatus for the production of cardboard plates and the like. 4,130,050, Cl. 93-1.00D.

Graham, Charles M., to Richards Manufacturing Co., Inc. Retractor. 4,130,113, Cl. 128-20.000.
Graham, Danny. Laser dummy load. 4,130,363, Cl. 356-225.000.
Grassi, Guido; Baumann, Hans-Peter; and Pummer, Helmut, to Sandoz Ltd. Oxyalkylated alkyl polyamines as defoaming agents. 4,130,589, Cl. 260-584.00B.
Grauel, Stephen L. Combined mounting for through-the-wall viewer and intercom. 4,130,728, Cl. 179-1.00H.
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  Dedolph, Richard R., 4,130,072, Cl. 111-2.000.
Gray, Leonard: *See*—
  Perry, Francis V., Jr.; Barlik, Richard P.; Richardson, William P.; Hudson, Robert H.; and Gray, Leonard, 4,129,963, Cl. 46-155.000.
Greenberger, Harry: *See*—
  Horwitt, Laurence G.; Mattis, Donald J.; and Greenberger, Harry, 4,130,815, Cl. 338-282.000.
Greene, Frederick C., to Shepherd Products U.S. Inc. Plastic grip ring. 4,129,921, Cl. 16-38.000.
Gregg, Richard, to Procter & Gamble Company, The. Method of making an improved tea volatiles concentrate. 4,130,669, Cl. 426-385.000.
Gregory, Eugene H.: *See*—
  Katz, Joel; and Gregory, Eugene H., 4,130,811, Cl. 332-18.000.
Gresen Manufacturing Company: *See*—
  Blume, Nicholas C., 4,129,987, Cl. 60-445.000.
Greuter, Hans; Martin, Pierre; Bellus, Daniel; Gsell, Laurenz; and Meyer, Willy, to Ciba-Geigy Corporation. Pesticidal 1-(phenyl)-cyclobutane-1-carboxylates. 4,130,656, Cl. 424-304.000.
Groner, Carl F., to Eastman Kodak Company. Electrophoretic migration imaging apparatus and method utilizing enlarged migration environment. 4,130,359, Cl. 355-3.00P.
Gropp, Karl H., to Ford Motor Company. Exhaust gas recirculation valve assembly. 4,130,094, Cl. 123-119.00A.
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  Peffer, Robert M.; Rehn, Albert H.; and Grose, Zacharie, 4,130,852, Cl. 361-213.000.
Grover, John H. H., to National Research Development Corporation. Safe take-off indicators. 4,130,015, Cl. 73-178.00T.
Grunbaum, Benjamin W.: *See*—
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Grundler, Bruno; Heinzer, Hans; and Muller, Werner, to SIG Schweizerische Industrie-Gesellschaft. Apparatus for forming, filling and closing bags. 4,129,976, Cl. 53-552.000.
Gsell, Laurenz: *See*—
  Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Meyer, Willy, 4,130,655, Cl. 424-304.000.
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GTE Sylvania Incorporated: *See*—
  Blaisdell, Ronald G.; Hall, Harold H., Jr.; and Hough, Harold L., 4,130,081, Cl. 116-5.000.
  Bouchard, Andre C.; Hall, Harold H., Jr.; Patton, Robert J.; and Sentementes, Thomas J., 4,130,082, Cl. 116-5.000.
  Bouchard, Andre C.; and Hall, Harold H., Jr., 4,130,083, Cl. 116-114.500.
  Brower, Boyd G., 4,130,857, Cl. 362-10.000.
  Cosco, Robert J.; Kokinos, Charles C., Jr.; and Geleski, Charles J., 4,130,774, Cl. 313-318.000.
  Dziedzic, Chester J.; and Cleveland, Joseph J., 4,130,160, Cl. 165-166.000.
  Kam, George H.; and Logan, Robert P., 4,130,829, Cl. 358-10.000.
Guerard, Daniel: *See*—
  Rashkov, Ilia; Gole, Jean; Guerard, Daniel; Herold, Albert; Merle, Gerard; Panayotov, Ivan M.; Pascault, Jean-Pierre; Pham, Quang T.; Pillot, Christian; and Salle, Robert, 4,130,703, Cl. 526-173.000.
Guerrini, Giampaolo; and Trompetto, Mario, to Ing. C. Olivetti & C., S.p.A. Cartridge for an endless inked ribbon for printing office machines. 4,130,367, Cl. 400-195.000.
Guildford, Leslie H., to U.S. Philips Corporation. Electrical waveform analysis. 4,130,835, Cl. 358-160.000.
Guilini Chemie G.m.b.H.: *See*—
  Schepers, Bernhard; Hellinghausen, Heinz; and Kramer, Alois, 4,130,402, Cl. 51-309.00A.
Gulf Oil Corporation: *See*—
  Hill, Donald R. J., 4,130,618, Cl. 264-123.000.
Gulla, Michael: *See*—
  Dutkewych, Oleh B.; Gaputis, Charles A.; Gulla, Michael; and Levy, Leonard R., 4,130,454, Cl. 156-659.000.
Gunckel, Thomas L., II; Rovell, Alex; and Nielsen, Robert L., to Rockwell International Corporation. Radiation hard memory cell and array thereof. 4,130,892, Cl. 365-154.000.
Gunther, Ronald G., to Yardney Electric Corporation. Conductive diluent for pressed nickel electrodes. 4,130,696, Cl. 429-223.000.
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  Ploger, Walter; and Gutzschebauch, Claus, 4,130,630, Cl. 423-265.000.
Gutzwiller, Robert L. Racquet stringing machine. 4,130,278, Cl. 273-73.00A.
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  Bohrer, George J., 4,130,537, Cl. 260-38.000.
Haapala, Jalo. Structural space element. 4,129,969, Cl. 52-79.900.
Habermeier, Jurgen, to Ciba-Geigy Corporation. Dicarboxylic acid derivatives containing heterocyclic radicals. 4,130,560, Cl. 544-302.000.
Hackett, Stephen J.: *See*—
  Collier, Owen N.; and Hackett, Stephen J., 4,130,506, Cl. 252-438.000.
Haessler, Herbert A.; Elshtain, Errol L.; and Holland, Taffy, to Searle Medidata, Inc. System and technique for automated medical history taking. 4,130,881, Cl. 364-900.000.
Hagenbucher, Hariolf. Method of making tubular coils with cooling and insulating channels. 4,129,938, Cl. 29-605.000.
Haimson, Jacob, to Haimson Research Corporation. Method and apparatus incorporating no moving parts, for producing and selectively directing x-rays to different points on an object. 4,130,759, Cl. 250-445.00T.
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Haines, Allan D., to National Machinery Company, The. High speed ball header. 4,130,005, Cl. 72-360.000.
Haldor Topsoe A/S: *See*—
  Jorn, Ernst, 4,130,575, Cl. 260-449.00M.
Hall, Harold H., Jr.: *See*—
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  Bouchard, Andre C.; and Hall, Harold H., Jr., 4,130,083, Cl. 116-114.500.
Hall, Ira L., to Du Pont de Nemours, E. I., and Company. Process for preparing a ball-point pen ink. 4,130,435, Cl. 106-22.000.
Hall, John B.: *See*—
  Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,130,587, Cl. 260-586.00G.
Hall, Ralph A.; and Radley, Peter E., to International Standard Electric Corporation. Feedforward amplifiers. 4,130,807, Cl. 330-124.00R.
Hallerback, Stig L., to Aktiebolaget SKF. Dismantling tool. 4,130,399, Cl. 29-225.000.
Haloff, Gary J., to United States of America, Air Force. Method and system of controlling a jet engine for avoiding engine surge. 4,130,872, Cl. 364-431.000.
Hamamura, Kimio: *See*—
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  - Perry, Francis V., Jr.; Barlik, Richard P.; Richardson, William P.; Hudson, Robert H.; and Gray, Leonard, 4,129,963, Cl. 46-155.000.
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- Hertz, Jerome J., to Erie Technological Products, Inc. Borate treated nickel pigment for metallizing ceramics. 4,130,854, Cl. 361-304.000.
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  - Tanaka, Goro; and Suzuki, Hiroshi, 4,130,510, Cl. 260-823.000.
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  - Cushing, David E., 4,130,879, Cl. 364-748.000.
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  - Blaisdell, Ronald G.; Hall, Harold H., Jr.; and Hough, Harold L., 4,130,081, Cl. 116-5.000.
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  - Decker, Joseph A., Jr.; Amin, Bipinchandra; and Magruder, William R., 4,130,615, Cl. 264-46.500.
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Guerrini, Giampaolo; and Trompetto, Mario, 4,130,367, Cl. 400-195.000.
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Chastant, Marc; and Riboud, Paul-Victor, 4,130,423, Cl. 75-257.000.
Institut Francais du Petrole: *See—*
Cholet, Jacques, 4,130,078, Cl. 114-244.000.
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Arndt, Richard L.; Meyerhofer, Wilfred L., Jr.; and Steinbauer, David M., 4,130,756, Cl. 235-474.000.
Bula, John; and Patrawala, Ashok C., 4,130,768, Cl. 307-270.000.
Chocholaty, Warren L.; Evans, Robert K.; and Perry, Francis J., 4,130,126, Cl. 137-3.000.
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Costa, Eugene, Jr., 4,130,689, Cl. 428-398.000.
International Standard Electric Corporation: *See—*
Andre, Wolfram; and Kornaker, Walter, 4,130,837, Cl. 358-248.000.
Crossland, William A.; and Morrissy, Joseph H., 4,130,408, Cl. 65-43.000.
Hall, Ralph A.; and Radley, Peter E., 4,130,807, Cl. 330-124.00R.
Kornaker, Walter, 4,130,836, Cl. 358-248.000.
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Ashford, Donald A., 4,130,733, Cl. 179-15.0FD.
Intraco, Inc.: *See—*
Jones, Robert D., 4,130,223, Cl. 222-55.000.
Inukai, Mitsuo: *See—*
Mori, Mamoru; and Inukai, Mitsuo, 4,130,252, Cl. 242-107.100.
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Kobayashi, Toshihiro; and Saika, Tadaaki, 4,130,390, Cl. 432-14.000.
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Adam, Fritz G., 4,130,890, Cl. 365-184.000.
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Fleck, Franz, 4,130,321, Cl. 303-13.000.
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Ohtaki, Shohei; Nakamoto, Soichi; Iwashita, Tomonori; Watanabe, Yoshiaki; and Kozuki, Susumu, 4,130,355, Cl. 354-33.000.
J. M. Ney Company, The: *See—*
Kulig, Frank M.; and Nealon, Frank H., 4,130,158, Cl. 164-289.000.
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Jacobson, John E. Combination smoker-cooker for food. 4,130,052, Cl. 99-339.000.
Jacoby, Ian H.; and Bangha, Roland V., to Filtronics Ltd. Plastic looseleaf binder ring assembly. 4,130,368, Cl. 402-41.000.
Jacques, James O., to Xerox Corporation. Apparatus for generating linear and continuous positional error and velocity signals for higher order servo systems. 4,130,786, Cl. 318-561.000.
Jahn, Gerhard. Automatic loading tray. 4,129,914, Cl. 11-2.000.
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Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,130,639, Cl. 424-78.000.
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Arai, Kojiro; and Sugai, Noriaki, 4,130,465, Cl. 204-27.000.
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Jarsen, Manfred H., to MCA Disco-Vision, Inc. Method for making video discs and video disc molds. 4,130,620, Cl. 264-225.000.
Jaunin, Roland, to Hoffmann-La Roche Inc. Process and intermediates for isoindole derivatives. 4,130,717, Cl. 560-35.000.
Jeavons, Philip S., to Wilmot-Breeden Limited. Motor vehicle door latches. 4,130,308, Cl. 292-216.000.
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Jeffrey, Joseph O., to Borg-Warner Corporation. Power transmission drive. 4,130,026, Cl. 74-245.00S.
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Petree, Harris E.; Myatt, Hal L.; and Jelenevsky, Alex M., 4,130,582, Cl. 562-448.000.
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Cerny, Ronald N.; Peters, Walter B.; Sadler, Thomas H.; Rodrigo, Peter; and Mollick, George M., 4,130,140, Cl. 138-149.000.
Johnson, George V.: *See—*
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Johnson & Johnson: *See—*
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Johnson, Matthey & Co., Limited: *See—*
Collier, Owen N.; and Hackett, Stephen J., 4,130,506, Cl. 252-438.000.
Jones, Marvin R., to Cameron Iron Works, Inc. Underwater Christmas tree. 4,130,161, Cl. 166-337.000.
Jones, Richard H., to Standard Oil Company, The. Alkylation process utilizing the hydrocarbon phase from a reactor for condensing a vaporous distillation effluent. 4,130,593, Cl. 260-683.480.
Jones, Robert D., to Intraco, Inc. Feed level monitor and control apparatus. 4,130,223, Cl. 222-55.000.
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Jureit, J. Calvin; Seipos, Andrew G.; and Langevin, William J., to Automated Building Components, Inc. Method and apparatus for joining wooden members using rolled nail strips packed without rolls. 4,129,933, Cl. 29-417.000.
Kaburagi, Katsuhiko; Yamamoto, Yasutaka; and Suzuki, Yutaka, to Sumitomo Metal Industries Limited. NOx depression type burners. 4,130,389, Cl. 431-183.000.
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Mori, Mamoru; and Inukai, Mitsuo, 4,130,252, Cl. 242-107.100.
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Densmore, Russell A., 4,130,185, Cl. 188-1.00B.
Kaiser, Heinz W. Wind powered turbine and airfoil construction. 4,130,380, Cl. 416-197.00A.
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Chang, Eugene Y. C.; and Kaizerman, Samuel, 4,130,542, Cl. 260-45.9KB.

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Becker, Roger T.; Burns, Donald L.; and Calkins, Stephen P., 4,130,195, Cl. 198-739.000.
Kalberger, Heinz: *See—*
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Kaltenbach & Voigt GmbH & Co.: *See—*
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Kalwall Corporation: *See—*
Keller, Richard R., 4,129,973, Cl. 52-308.000.
Kam, George H.; and Logan, Robert P., to GTE Sylvania Incorporated. Apparatus for adjusting operating conditions of a cathode ray tube. 4,130,829, Cl. 358-10.000.
Kamath, Vasanth R., to Pennwalt Corporation. Polymerization process using diperoxy ketals as finishing catalysts. 4,130,700, Cl. 526-73.000.
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Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,130,587, Cl. 260-586.00G.
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Kaneko, Shiro, to Fuji Photo Film Co., Ltd. Ball valve with orifice. 4,130,128, Cl. 137-269.000.
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Kanno, Kenichi; Suzuki, Masayuki; and Sato, Yuichi, to Tokyo Shibaura Electric Co., Ltd. Method of evaluating the corrosion rates of metals. 4,130,464, Cl. 204-1.00T.
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Nakayama, Yasuharu; Watanabe, Tadashi; Nishida, Reiziro; and Enomoto, Satoru, 4,130,526, Cl. 260-29.6RB.
Nakayama, Yasuharu; Watanabe, Tadashi; Nishida, Reiziro; and Enomoto, Satoru, 4,130,529, Cl. 260-29.7UA.
Kao Soap Co., Ltd.: *See—*
Otsuka, Shigeru; Mori, Zenichi; Tominaga, Tetsuhiko; Tamura, Junichi; Shimoda, Yoshio; Takeuchi, Takashi; Oku, Masakazu; and Mori, Kan, 4,130,668, Cl. 426-287.000.
Kaplan, Sam H.; Libman, Philomena C.; and Wainscott, William E., to Zenith Radio Corporation. Process for making color television screens by electrophoretic deposition. 4,130,472, Cl. 204-181.00N.
Karube, Yukuo, to Canon Kabushiki Kaisha; and Canon Seiki Kabushiki Kaisha. Brushless DC motor. 4,130,769, Cl. 310-46.000.
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Nakajima, Tadashi; Soda, Yasuji; Kashima, Kenichi; Kudoh, Haruyoshi; and Miyamoto, Akira, 4,130,571, Cl. 260-403.000.
Katagiri, Masayoshi; and Kizaki, Ziro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Return spring of a drum brake used in a vehicle. 4,130,189, Cl. 188-328.000.
Kates, James M.; and Berkovitz, Robert A., to Teledyne, Inc. Loudspeaker system equalization. 4,130,726, Cl. 179-1.00D.
Kates, James M., to Teledyne, Inc. Loudspeaker equalization. 4,130,727, Cl. 179-1.00D.
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Katsumoto, Kiyoshi; and Nimer, Edward L., to Chevron Research Company. Densification of polypyrrolidone. 4,130,521, Cl. 528-326.000.
Katz, Joel; and Gregory, Eugene H., to Hughes Aircraft Company. Modulation system. 4,130,811, Cl. 332-18.000.
Katz, Jonathon H., to Teradyne, Inc. Slip coupling. 4,130,002, Cl. 64-30.00D.
Kawaguchi, Yutaka: *See—*
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Kawamura, Naoto; Matsumoto, Kazuya; and Kitamura, Takashi, to Canon Kabushiki Kaisha. Scanning optical system including optical system for detecting an information beam. 4,130,339, Cl. 350-6.800.
Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Kajita, Shinichi; Mori, Kenji; and Kitajima, Junichi, 4,129,985, Cl. 60-39.370.
Keiper KG: *See—*
Kluting, Bernd; and Kutschat, Horst, 4,130,029, Cl. 74-625.000.
Keller, James L., to Union Oil Company of California. Automatic shut-off liquid dispensing nozzle. 4,130,148, Cl. 141-218.000.
Keller, Richard R., to Kalwall Corporation. Joining clamp assembly with overlapping seals for translucent wall panels and the like. 4,129,973, Cl. 52-308.000.
Kelley Company Inc.: *See—*
Rozga, Vincent E., 4,130,275, Cl. 271-251.000.
Kelly, Robert C., to Upjohn Company, The. 9-Deoxy-6,9-epoxymethano-prostaglandin derivatives. 4,130,569, Cl. 260-345.200.
Kendall Company, The: *See—*
Hollister, John H., 4,130,453, Cl. 156-187.000.
Kennedy, Brian G., to Unitek Corporation. Dental crown form. 4,129,946, Cl. 32-63.000.
Kennedy, David J. Hair curler operating device. 4,130,122, Cl. 132-34.00R.
Kennedy, Thomas N.: *See—*
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Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Kussel, Eckhard; Haubold, Heinz G.; Joswig, Franz; and Klatt, Karl H., 4,130,772, Cl. 313-32.000.
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Kessie, Lawrence R., to Cleveland Hardware and Forging Company. Anti-separation latching apparatus. 4,130,310, Cl. 292-340.000.
Kessler, Hartmut, to Siemens Aktiengesellschaft. Process for the manufacture of electrical stack or layer capacitors. 4,129,929, Cl. 29-25.420.
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Kooi, J. Peter E., 4,130,340, Cl. 350-79.000.
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Kiefer, Jurg: *See—*
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Kijima, Shizumasa; Shionoya, Hiroshi; Hamamura, Kimio; Arai, Haruyoshi; and Koyanagi, Nozomu, to Eisai Co., Ltd. 5-Fluorouracil derivatives and antitumor preparations containing the same. 4,130,648, Cl. 424-251.000.
Kijima, Shizumasa; Igarashi, Toshiji; Yamatsu, Isao; Hamamura, Kimio; Nakajima, Yoshikage; Minami, Norio; Yamagishi, Youji; and Inai, Yuithi, to Eisai Co., Ltd. Polyprenyl carboxylic acid compound and hypotensive agent containing it as active ingredient. 4,130,659, Cl. 424-312.000.
Kiko, Frederick J.: *See—*
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Kikugawa, Kiyomi; and Minoshima, Kyoko, to Terumo Corporation. Method of separating blood cells components. 4,130,642, Cl. 424-101.000.
Kilgus, Donald C., deceased; and by Kilgus, Marjorie M., executrix. Vehicle tie-down hook assembly for railway cars. 4,130,067, Cl. 105-368.00R.
Kilgus, Marjorie M., executrix: *See—*
Kilgus, Donald C., deceased; and Kilgus, Marjorie M., executrix, 4,130,067, Cl. 105-368.00R.
Killy, Earl J., to Olinkraft, Inc. One-piece carrier partition. 4,130,235, Cl. 229-15.000.
Kimura, Koya; Machi, Shinji; and Matunaga, Shigetugu, to Toshiba Kikai Kabushiki Kaisha. Automatic sewing machine. 4,130,073, Cl. 112-121.120.
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King, George E.: *See—*
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Kinney, David W., to Union Insulating Company. Electrical wiring box. 4,130,335, Cl. 339-122.00R.
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Kirkpatrick, Conilee G.; and Parks, Harold G., to General Electric Company. Methods of gray scale recording and archival memory target produced thereby. 4,130,891, Cl. 365-105.000.
Kishi, Yoshio: *See—*
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Kita, Atsushi: *See—*
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Kitsuda, Yoshihiro; and Kouyama, Takahisa, to Matsushita Electric Works, Ltd. Phenol-formaldehyde composition useful as a raw material for the preparation of phenolic resins. 4,130,550, Cl. 260-29.300.
Kiwala, Jacob: *See—*
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., 4,130,508, Cl. 252-522.000.
Kizaki, Ziro: *See—*
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Klaszky, Fred E.: *See—*
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Klatt, Karl H.: *See—*
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Klaus, Irving: *See—*
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Klavir, Samuel N., to Envirotech Corporation. Duct swivel joint. 4,130,463, Cl. 202-263.000.
Klimpel, Richard R.: *See—*
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Klinger, Lance T., to Xerox Corporation. Method and means for tracking magnetic tracks. 4,130,844, Cl. 360-77.000.
Klink, Jerome P.: *See—*
Hendrix, Ronald W.; Klink, Jerome P.; and Dunn, John W., 4,130,248, Cl. 242-18.00G.
Kloeckner Ionon GmbH: *See—*
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Kluting, Bernd; and Kutschat, Horst, to Keiper KG. Drive arrangement for moving a glass panel of a window of a vehicle. 4,130,029, Cl. 74-625.000.
Knight Engineering & Molding Company: *See—*
McKirnan, Robert A., 4,130,220, Cl. 220-284.000.
Knop, Karl, to RCA Corporation. Fine-line diffractive subtractive color filters. 4,130,347, Cl. 350-162.00R.
Knudson, M. Theresa. Animal walker. 4,130,091, Cl. 119-102.000.
Knulle, Helmut; and Pieschke, Harald, to Schmidt'sche Heissdampf-GmbH. Oval header heat exchanger and method of producing the same. 4,130,398, Cl. 29-157.400.
Knutson, Gerald R.; and Shidler, Karl A., to International Business Machines Corporation. Method of making grounded transducer for magnetic record disks. 4,129,937, Cl. 29-603.000.
Kobashi, Toshiyuki; Shiota, Hirotaka; and Umetani, Haruki, to Japan Exlan Company Limited. Stable aqueous emulsion of acrylonitrile polymer, its production and dyeability improving agent comprising such emulsion. 4,130,525, Cl. 260-29.6AN.
Kobayashi, Toshihiro; and Saika, Tadaaki, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Installation and method of burning cement raw. 4,130,390, Cl. 432-14.000.
Kochanowski, John E., to General Electric. Preparation of polyester carbonates from polyanhydride ester intermediates. 4,130,548, Cl. 528-197.000.
Kocher, Helmut: *See—*
Handte, Reinhard; Horlein, Gerhard; Kocher, Helmut; and Langeluddeke, Peter, 4,130,413, Cl. 71-90.000.
Kogure, Hideo, to Kansai Paint Co., Ltd. Metal surface treatment liquid and rust preventive paint. 4,130,431, Cl. 106-14.330.
Kogure, Takatoshi: *See—*
Ban, Itsuki; Inoue, Kyoichi; and Kogure, Takatoshi, 4,130,780, Cl. 315-241.00P.
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Anderka, Gerold, 4,130,444, Cl. 134-96.000.
Kohler Co.: *See—*
Kohler, Herbert V., Jr., 4,130,120, Cl. 128-373.000.
Kohler, Herbert V., Jr., to Kohler Co. Bathing chamber. 4,130,120, Cl. 128-373.000.
Koizumi, Toshimichi, to Olympus Optical Co., Ltd. Medium magnification objective for video disks. 4,130,350, Cl. 350-216.000.
Kojima, Kenji; and Saigusa, Tatsunori, to Hitachi Plant Engineering & Construction. Rotary valve for powdery and granular materials. 4,130,268, Cl. 251-298.000.
Kokinos, Charles C., Jr.: *See—*
Cosco, Robert J.; Kokinos, Charles C., Jr.; and Geleski, Charles J., 4,130,774, Cl. 313-318.000.
Komeno, Taichiro: *See—*
Hamashima, Yoshio; Tsuji, Teruji; Yoshioka, Mitsuru; Narisada, Masayuki; Komeno, Taichiro; Tanida, Hiroshi; and Nagata, Wataru, 4,130,557, Cl. 260-239.00A.
Kone, Elliott H., to Traffic Standard Incorporated. Light-reflective road marker of self-cleaning type. 4,130,370, Cl. 404-11.000.
Kooi, J. Peter E., to Keuffel & Esser Company. Two-speed telescope focusing mechanism. 4,130,340, Cl. 350-79.000.
Kornaker, Walter, to International Standard Electric Corporation. Arrangement for mounting and adjusting a deflection-coil holder for a color-picture tube. 4,130,836, Cl. 358-248.000.
Kornaker, Walter: *See—*
Andre, Wolfram; and Kornaker, Walter, 4,130,837, Cl. 358-248.000.
Korta, John, to Westinghouse Canada Ltd. Vane rotator assembly for a gas turbine engine. 4,130,375, Cl. 415-161.000.
Kouyama, Takahisa: *See—*
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Koyanagi, Nozomu: *See—*
Kijima, Shizumasa; Shionoya, Hiroshi; Hamamura, Kimio; Arai, Haruyoshi; and Koyanagi, Nozomu, 4,130,648, Cl. 424-251.000.
Kozlov, Alexandr T.: *See—*
Zaboronok, Georgy F.; Efimov, Vladimir E.; and Kozlov, Alexandr T., 4,130,416, Cl. 75-10.00R.
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Kraft, Joseph K., to Westinghouse Electric Corp. Transportation apparatus. 4,130,192, Cl. 198-327.000.
Kramer, Alois: *See—*
Schepers, Bernhard; Hellinghausen, Heinz; and Kramer, Alois, 4,130,402, Cl. 51-309.00A.
Kramer, Irvin R., to United States of America, Navy. Antifouling coating for aluminum structures. 4,130,466, Cl. 204-38.00A.
Krause, Joachim: *See—*
Eidenschink, Rudolf; Krause, Joachim; and Pohl, Ludwig, 4,130,502, Cl. 252-299.000.
Krauss-Maffei Aktiengesellschaft: *See—*
Schiele, Herbert, 4,130,479, Cl. 209-395.000.
Kretschmann, Robert J.: *See—*
Chambers, Charles W., Jr.; Kiko, Frederick J.; and Kretschmann, Robert J., 4,130,735, Cl. 179-16.00F.
Kristen, Klaus; and Scheidler, Herwig, to JENAer Glaswerk Schott & Gen. Glow wire ignition with on/off and hot warning means for gas heated stove. 4,130,104, Cl. 126-39.00J.
Kristiansen, Odd: *See—*
Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Meyer, Willy, 4,130,655, Cl. 424-304.000.
Kruger, Hans-Rudolf: *See—*
Arndt, Friedrich; Kruger, Hans-Rudolf; and Rusch, Reinhart, 4,130,414, Cl. 71-90.000.
Kryoflo, Inc.: *See—*
Whitaker, Ritchie W., 4,130,285, Cl. 277-12.000.
Ku, Paul H. Y. Instant-cooling ice-maker air conditioner. 4,129,994, Cl. 62-179.000.
Kubota, Tatsushi: *See—*
Yasumatsu, Jun; Masuda, Noriyuki; and Kubota, Tatsushi, 4,130,254, Cl. 242-107.100.
Kucenty, Jerzy. Compressor valve. 4,130,131, Cl. 137-512.100.
Kudoh, Haruyoshi: *See—*
Nakajima, Tadashi; Soda, Yasuji; Kashima, Kenichi; Kudoh, Haruyoshi; and Miyamoto, Akira, 4,130,571, Cl. 260-403.000.
Kulig, Frank M.; and Nealon, Frank H., to J. M. Ney Company, The. Centrifugal casting machine. 4,130,158, Cl. 164-289.000.
Kulma, Clarence O., to Microdata Corporation. Disc cabinet recirculating air flow system. 4,130,845, Cl. 360-97.000.
Kulsa, Peter; Hoff, Dale R.; and Mrozik, Helmut H., to Merck & Co., Inc. Substituted benzoylacrylanilides. 4,130,661, Cl. 424-324.000.
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Breuer, Friedrich; Duderstadt, Gunter; Dresler, Werner; Fichte, Rudolf; Kunert, Peter; and Nassauer, Gerd, 4,130,417, Cl. 75-60.000.
Kunkle, Robert J. Permanent refrigerant dehydrator. 4,129,997, Cl. 62-475.000.
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Duba, Paul; and Kuntzel, Heiner, 4,130,562, Cl. 260-302.00S.
Kusaka, Yukio: *See—*
Watanabe, Akira; Kusaka, Yukio; and Suzuki, Yoshihiro, 4,130,438, Cl. 106-56.000.
Kusper, Leroy F.: *See—*
Finley, Lloyd D.; and Kusper, Leroy F., 4,130,049, Cl. 91-445.000.
Kussel, Eckhard; Haubold, Heinz G.; Joswig, Franz; and Klatt, Karl H., to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Liquid-cooled rotary anode for an X-ray tube. 4,130,772, Cl. 313-32.000.
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Kluting, Bernd; and Kutschat, Horst, 4,130,029, Cl. 74-625.000.
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Lader, Leon J.: *See—*
Block, Kenneth A.; and Lader, Leon J., 4,130,059, Cl. 102-34.400.
LaForest, James J., to General Electric Company. Power line carrier noise elimination. 4,130,861, Cl. 363-39.000.
Lahiff, John E.: *See—*
Bowler, Lauren L.; and Lahiff, John E., 4,130,095, Cl. 123-32.0EE.
Lai, Winston. Sun-cut glass clamping device for automobiles. 4,130,317, Cl. 296-97.00R.
Lamb, Frank, to Ciba-Geigy AG. Polyester plasticizers. 4,130,532, Cl. 260-31.600.
Lamb, Frank, to Ciba-Geigy AG. Polyester plasticizers. 4,130,533, Cl. 260-31.600.
Lane, Richard H.: *See—*
Balph, Thomas J.; and Lane, Richard H., 4,130,878, Cl. 364-758.000.
Lane, William G. Fluid distribution system. 4,130,137, Cl. 137-884.000.
Lang, Rudolf; and Schwarz, Gerhard, to Carl Zeiss Stiftung. Photographic camera with interchangeable lens. 4,130,358, Cl. 354-289.000.
Lang, Winfried: *See—*
Braunsperger, Johann; Lang, Winfried; and Zainer, Thorgard, 4,130,632, Cl. 423-342.000.
Lange, Frederick F.: *See—*
Miller, Donald G.; and Lange, Frederick F., 4,130,157, Cl. 164-132.000.
Langeluddeke, Peter: *See—*
Handte, Reinhard; Horlein, Gerhard; Kocher, Helmut; and Langeluddeke, Peter, 4,130,413, Cl. 71-90.000.
Langevin, William J.: *See—*
Jureit, J. Calvin; Seipos, Andrew G.; and Langevin, William J., 4,129,933, Cl. 29-417.000.
Langley, Allie B. Spring mounted support for barstock. 4,130,035, Cl. 82-38.00A.
Langley, Marvin A. Assembly for cleaning and packing cured tobacco. 4,130,055, Cl. 100-91.000.
Langlie, Howard; and Berg, Albert T., Jr. Funnel with spout extension support. 4,130,147, Cl. 141-98.000.
Lanton, Seymour, to ILC Data Device Corporation. Apparatus for reducing the scale factor variation for digital resolver type converters and the like. 4,130,875, Cl. 364-603.000.

Larive, David G. Portable cargo decks. 4,130,075, Cl. 114-85.000.
Larkin, William A., to M&T Chemicals Inc. Process of applying tin oxide on glass using butyltin trichloride. 4,130,673, Cl. 427-255.000.
Lauko, John W. Sound absorbing device. 4,130,682, Cl. 428-116.000.
Law, Joseph P.; and Mack, Alfred R., to Singer Company, The. Arm top cover hinge for sewing machines. 4,129,922, Cl. 16-139.000.
Lazarus, Stanley D.; and Chakravarti, Kalidas, to Allied Chemical Corporation. Production of thermally stabilized polyester. 4,130,541, Cl. 260-45.80A.
Leber, Ralph E.; and Baughman, Robert O. Horseshoe pitching game apparatus. 4,130,281, Cl. 273-100.000.
Lednicer, Daniel, to Upjohn Company, The. Polycycloanilines. 4,130,561, Cl. 546-204.000.
Lee, Frank; Allan, James; and Fearnley, Charles, to Ciba-Geigy AG. Detergent compositions. 4,130,498, Cl. 252-99.000.
Lee, Harry T., to Lockheed Missiles & Space Company, Inc. Analog audio signal bandwidth compressor. 4,130,734, Cl. 179-15.55R.
Lee, Hai L.: *See—*
Baggiolini, Enrico G.; Lee, Hai L.; and Uskokovic, Milan R., 4,130,713, Cl. 548-303.000.
Lee, Robert. Adjustable sleeve for artists paint brushes. 4,129,918, Cl. 15-169.000.
Lee-You, James: *See—*
Sung, Pei; Klaus, Irving; and Lee-You, James, 4,129,944, Cl. 32-8.000.
Leighton, Betty: *See—*
Leighton, John D., 4,130,027, Cl. 74-512.000.
Leighton, John D., to Leighton, Betty, a part interest. Resilient lever assembly. 4,130,027, Cl. 74-512.000.
Leiser, Manfred; Wegehaupt, Karl-Heinrich; and Marsch, Wilhelm, to Wacker-Chemie GmbH. Adhesive compositions. 4,130,707, Cl. 528-15.000.
Lemonde, Jean-Louis, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Connector for optical fibres. 4,130,344, Cl. 350-96.210.
Lepert, Andre, to Exxon Research & Engineering Co. Petroleum resins containing vinyl norbornene or tetrahydroindene. 4,130,701, Cl. 526-76.000.
Lesh, Harvey B., Jr.: *See—*
Edwards, David V.; Lesh, Harvey B., Jr.; and Phillips, Ronald W., II, 4,129,910, Cl. 9-42.000.
Leute, Richard K.: *See—*
Rubenstein, Kenneth E.; and Leute, Richard K., 4,130,462, Cl. 195-103.50A.
Lever Brothers Company: *See—*
Oneto, Francis E. J.; Benzoni, Andre J. E.; Poret, Jacques L.; and Simon, Fernand B., 4,130,497, Cl. 252-89.00R.
Levijoki, David H., to Globe-Union Inc. Thick-film circuit module including a monolithic ceramic cross-over device. 4,130,722, Cl. 174-68.500.
Levin, Efim M.; Sysoev, Vladimir P.; Rudenko, Valery A.; and Pomazan, Oleg K. Impeller of axial-flow fan. 4,130,381, Cl. 416-196.00R.
Levine, Eli: *See—*
Rybny, Charles B.; and Levine, Eli, 4,130,518, Cl. 260-22.0CB.
Levy, Albert: *See—*
Canard, Pierre; and Levy, Albert, 4,130,691, Cl. 428-511.000.
Levy, Leonard R.: *See—*
Dutkewych, Oleh B.; Gaputis, Charles A.; Gulla, Michael; and Levy, Leonard R., 4,130,454, Cl. 156-659.000.
Lewallyn, Michael A. Carpet sample beveling apparatus and method. 4,130,048, Cl. 90-18.000.
Lewis, Mary E. Vent window lock assembly. 4,130,309, Cl. 292-258.000.
Li, Jorge P.: *See—*
Becker, Frank C.; and Li, Jorge P., 4,130,433, Cl. 106-15.00R.
Libman, Philomena C.: *See—*
Kaplan, Sam H.; Libman, Philomena C.; and Wainscott, William E., 4,130,472, Cl. 204-181.00N.
Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Bachle, Erich; and Clauss, Hermann, 4,130,826, Cl. 357-34.000.
Lien, Larry A.; and Zollinger, J. Lamar, to Minnesota Mining and Manufacturing Company. Abrasion resistant coatings cured in the presence of PF_5, SbF_5, or $HSbF_6$. 4,130,690, Cl. 428-412.000.
Lieu, Fred Y.: *See—*
Head, Nephi L.; Hempstead, Robert D.; Kennedy, Thomas N.; and Lieu, Fred Y., 4,130,847, Cl. 360-122.000.
Liftomatic Material Handling, Inc.: *See—*
Gatilao, Lamberto S., 4,130,212, Cl. 214-653.000.
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., to International Flavors & Fragrances Inc. Perfume compositions containing cyclohexadiene derivatives. 4,130,508, Cl. 252-522.000.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Substituted norbornane derivatives. 4,130,587, Cl. 260-586.00G.
Lill, Melvin H.; and Wiederrich, James L., to FMC Corporation. Apparatus for determining steering positions of the front wheels of a vehicle. 4,130,362, Cl. 356-152.000.
Linde AG: *See—*
Hummer, Roland; Thury, Wolfgang; Westerholt, Wilfried; Hollerling, Gundolf; and Strigl, Reinhard, 4,130,419, Cl. 75-130.00R.
Linder, Ernst; Wossner, Gunter; Maurer, Helmut; and Rieger, Franz, to Robert Bosch GmbH. Method and apparatus for reducing the toxic components in exhaust gas. 4,130,098, Cl. 123-119.00A.
Lindman, Borje L.; and Stromer, Carl-Axel, to Telefonaktiebolaget L M Ericsson. Switch actuator for one-piece telephone. 4,130,742, Cl. 179-167.000.
Lindquist, Everet F., to University of Iowa Research Foundation. Simulated fairway surface for golf apparatus. 4,130,283, Cl. 273-195.00A.
Lines, Malcolm E.: *See—*
Glass, Alastair M.; Lines, Malcolm E.; and Nassau, Kurt, 4,130,694, Cl. 429-193.000.
Linford, Robin F. G.: *See—*
Swanstrom, H. Wallace; Campbell, Kenneth C.; and Linford, Robin F. G., 4,130,882, Cl. 364-900.000.
Linstromberg, William J., to Whirlpool Corporation. Snap-action cam for timer switch. 4,130,746, Cl. 200-38.00R.
List, Klaus; and Abendroth, Paul, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Dampening system for printing presses, particularly offset printing presses. 4,130,057, Cl. 101-148.000.
Littell, Harry E., Jr.; and Shorr, Norman, to PPG Industries, Inc. Multilayered safety glass. 4,130,684, Cl. 428-212.000.
Loboda, Robert S., to UOP Inc. Separation and use of a gaseous stripping media in a hydrotreating process. 4,130,476, Cl. 208-212.000.
Lockerby, Charles E.; and Dimmick, W. Scott, to Design Loft Creations, Inc. Soil moisture indicator. 4,130,012, Cl. 73-73.000.
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Lee, Harry T., 4,130,734, Cl. 179-15.55R.
Locqueneux, Rene, to Silec-Semi-Conducteurs. Triac structure having improved triggering sensitivity with single groove extending from gate region. 4,130,828, Cl. 357-39.000.
Loewenthal, Horst, to S I G Schweizerische Industrie-Gesellschaft. Apparatus for sorting, counting and grouping items. 4,130,480, Cl. 209-551.000.
Logan, Robert P.: *See—*
Kam, George H.; and Logan, Robert P., 4,130,829, Cl. 358-10.000.
Lollar, Elizabeth D.: *See—*
Confalone, Pasquale N.; Lollar, Elizabeth D.; Pizzolato, Giacomo; and Uskokovic, Milan R., 4,130,568, Cl. 260-343.210.
Longo, John M.; and Steger, John J., to Exxon Research & Engineering Co. MXY_3 solid lubricants. 4,130,492, Cl. 252-18.000.
Lorain Products Corporation: *See—*
Chambers, Charles W., Jr.; Kiko, Frederick J.; and Kretschmann, Robert J., 4,130,735, Cl. 179-16.00F.
Lorenz, A. Michael. Apparatus for propelling a skate board with wind currents. 4,130,292, Cl. 280-11.37S.
Lorenz, Joachim: *See—*
Wehner, Hermann W.; and Lorenz, Joachim, 4,130,432, Cl. 106-15.00R.
Lotz, Lawrence C., to Whirlpool Corporation. Indicating control structure. 4,130,080, Cl. 116-2.000.
Lowell, Joseph. Game apparatus. 4,130,280, Cl. 273-87.200.
Luboshez, Sergius N. F. Radio-chromic combined absorbing reflecting and transmitting panel. 4,130,351, Cl. 350-263.000.
Lucas Electrical Company Limited, The: *See—*
Hill, William F.; and Clark, Allan E., 4,130,817, Cl. 340-58.000.
Luddy, Francis E.; Hampson, James W.; Herb, Samuel F.; and Rothbart, Herbert L., to United States of America, Agriculture. Physiochemically designed fat compositions from tallow. 4,130,572, Cl. 260-410.700.
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Ford, Eric H., 4,130,096, Cl. 123-117.00R.
Lundberg, Robert D.; and Thame, Neville G., to Exxon Research & Engineering Co. Multiphase block and graft copolymers comprising a hydrophilic continuous phase and hydrophobic domains. 4,130,517, Cl. 260-29.20N.
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Borovikova, Sofia M.; Lurie, Evgeny V.; and Mikhailov, Valery F., 4,130,901, Cl. 366-163.000.
Luthi, Hans, to Fritz Studer AG. Loading arm. 4,130,205, Cl. 214-1.0BB.
Lutz, Charles W.; and Cohen, Leon E., to FMC Corporation. Stable viscous hydrogen peroxide solutions containing a surfactant and a method of preparing the same. 4,130,501, Cl. 252-186.000.
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Engelhart, John E.; and McNeil, Maynard W., 4,130,411, Cl. 71-86.000.
Larkin, William A., 4,130,673, Cl. 427-255.000.
Mabrouk, Saied A.; and Morgan, Edward T., to Addressograph-Multigraph Corporation. Lithographic moisture system and method. 4,130,056, Cl. 101-141.000.
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Dillon, Roy E., 4,129,980, Cl. 57-339.000.
Machi, Shinji: *See—*
Kimura, Koya; Machi, Shinji; and Matunaga, Shigetugu, 4,130,073, Cl. 112-121.120.
Machida, Takayasu: *See—*
Nomura, Yasushi; Nakajima, Fumio; Yamada, Kenji; and Machida, Takayasu, 4,129,981, Cl. 58-23.00D.
Machmer, Wilhelm: *See—*
Politzer, Anton; and Machmer, Wilhelm, 4,130,047, Cl. 89-26.000.
Mack, Alfred R.: *See—*
Law, Joseph P.; and Mack, Alfred R., 4,129,922, Cl. 16-139.000.
Maclaren, Arthur H. Unimeter for detection and indication of electric charge variation. 4,130,798, Cl. 324-72.000.
MacMillan, Kenneth T. Tire curing press. 4,130,384, Cl. 425-25.000.

- Magruder, William R.: *See—*
  - Decker, Joseph A., Jr.; Amin, Bipinchandra; and Magruder, William R., 4,130,615, Cl. 264-46.500.
- Mainprize, David, to Wickman Machine Tool Sales Limited. Machine guard installations. 4,130,763, Cl. 307-116.000.
- Malinowski, John T.: *See—*
  - Hills, Richard E.; Neely, Frank R.; Neely, Derek K.; and Malinowski, John T., 4,130,217, Cl. 220-226.000.
- Mallorca, Salvador C., to Continental Group, Inc., The. Bead supported tab for non-detachable ends. 4,130,219, Cl. 220-270.000.
- Manizza, Guelfo A., to Federal Paper Board Co., Inc. Tray type container. 4,130,236, Cl. 229-31.00R.
- Mannion, Robert S., to Continental Instrument Corporation. Data storage and retrieval system employing balanced magnetic circuits. 4,130,242, Cl. 235-450.000.
- Marchant, Kerford A., Jr.: *See—*
  - Cerefice, Steven A.; Fields, Ellis K.; Marchant, Kerford A., Jr.; and Paschke, Edward E., 4,130,719, Cl. 528-305.000.
- Marcole, Inc.: *See—*
  - Boyd, Timothy M., 4,130,425, Cl. 96-48.00R.
- Marcraft Recreation Corp.: *See—*
  - Marks, Nathan, 4,130,277, Cl. 273-67.00R.
- Marcus, Carol S.: *See—*
  - Frasher, Wallace G.; Netto, Daniel J.; and Marcus, Carol S., 4,130,757, Cl. 250-336.000.
- Marianeschi, Edmondo; Basevi, Sandro; Barisoni, Mario; Marini, Paolo; Borgianni, Carlo; and Ricci Bitti, Roberto, to Centro Sperimentale Metallurgico S.p.A.; and Terni-Societa per l'Industria e l'Elettricita S.p.A. Annealing separator and steel sheet coated with same. 4,130,447, Cl. 148-27.000.
- Marini, Paolo: *See—*
  - Marianeschi, Edmondo; Basevi, Sandro; Barisoni, Mario; Marini, Paolo; Borgianni, Carlo; and Ricci Bitti, Roberto, 4,130,447, Cl. 148-27.000.
- Mark, Victor; and Wilson, Phillip S., to General Electric Company. Cyclic siloxane plasticized polycarbonate composition. 4,130,530, Cl. 260-29.1SB.
- Marks, Nathan, to Marcraft Recreation Corp. Composite paddle rim. 4,130,277, Cl. 273-67.00R.
- Marsch, Wilhelm: *See—*
  - Leiser, Manfred; Wegehaupt, Karl-Heinrich; and Marsch, Wilhelm, 4,130,707, Cl. 528-15.000.
- Martensson, Karl J. G.: *See—*
  - Sjoholm, Claes B.; and Martensson, Karl J. G., 4,130,053, Cl. 99-466.000.
- Martin, Alton E.; White, Warren D.; and Smolik, Samuel L., to Dow Chemical Company, The. Process for producing methylene dianiline. 4,130,588, Cl. 260-570.00D.
- Martin, Elmore L.: *See—*
  - Frazer, August H.; Harris, John F., Jr.; and Martin, Elmore L., 4,130,579, Cl. 260-465.00H.
- Martin, Pierre: *See—*
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- Marwil, Stanley J.; and Zuech, Ernest A., to Phillips Petroleum Company. Purification process. 4,130,484, Cl. 210-41.000.
- Marx, Arthur F.; and Vos, Cornelis, to Gist-Brocades N.V. A-norandrostane derivatives. 4,130,665, Cl. 424-331.000.
- Marzalek, Michael S., to Hewlett-Packard Company. Phase lock stabilized swept frequency signal source. 4,130,808, Cl. 331-14.000.
- Masanobu, Morikawa: *See—*
  - Tanaka, Chiaki; Yoko, Yatabe; and Masanobu, Morikawa, 4,130,603, Cl. 260-860.000.
- Maschinenfabrik Gietz AG.: *See—*
  - Graf, Godi, 4,130,050, Cl. 93-1.00D.
- Maschinenfabrik Rissen GmbH: *See—*
  - Schmidt, Werner, 4,130,234, Cl. 229-1.50B.
- Maschinenfabrik Schweiter AG: *See—*
  - Zehnder, Ulrich, 4,130,038, Cl. 83-175.000.
- Mashman, Joseph: *See—*
  - Carlson, Floyd W.; and Mashman, Joseph, 4,130,259, Cl. 244-83.00F.
- Masonite Corporation: *See—*
  - Moore, Gregory R.; and Fischer, Craig A., 4,130,458, Cl. 162-159.000.
- Massachusetts Institute of Technology: *See—*
  - Dennis, Jack B., 4,130,885, Cl. 364-900.000.
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  - Yasumatsu, Jun; Masuda, Noriyuki; and Kubota, Tatsushi, 4,130,254, Cl. 242-107.100.
- Matier, William L.; and Comer, William T., to Mead Johnson & Company. Styrylamidines. 4,130,663, Cl. 424-326.000.
- Matrix Toys, Inc.: *See—*
  - Gabriel, Richard J., 4,129,975, Cl. 52-648.000.
- Matsuda, Takashi, to Tokyo Shibaura Electric Co., Ltd. Electron beam exposure apparatus. 4,130,761, Cl. 250-492.00A.
- Matsumoto, Hiroyasu: *See—*
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- Matsumoto, Kazuya: *See—*
  - Kawamura, Naoto; Matsumoto, Kazuya; and Kitamura, Takashi, 4,130,339, Cl. 350-6.800.
- Matsushita Electric Industrial Co., Ltd.: *See—*
  - Ichiyanagi, Takashi; Akiyama, Takashige; and Otoda, Ichizo, 4,130,676, Cl. 427-358.000.
  - Tanaka, Junzo; Orita, Masatomo; and Urashima, Chikao, 4,130,749, Cl. 219-10.55B.
- Matsushita Electric Works, Ltd.: *See—*
  - Kitsuda, Yoshihiro; and Kouyama, Takahisa, 4,130,550, Cl. 260-29.300.
- Matt Tool Corporation: *See—*
  - Matthews, Loren A., 4,130,037, Cl. 83-56.000.
- Matthews, Loren A., to Matt Tool Corporation. Shear for cutting sheet material and method of use. 4,130,037, Cl. 83-56.000.
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  - Grover, John H. H., 4,130,015, Cl. 73-178.00T.
  - Streat, Michael, 4,130,512, Cl. 521-31.000.
- NCR Corporation: *See*—
  - Bowman, Rodney V.; and Francis, Martin H., 4,130,899, Cl. 365-222.000.
- Nealon, Frank H.: *See*—
  - Kulig, Frank M.; and Nealon, Frank H., 4,130,158, Cl. 164-289.000.
- Neary, Joseph F., to Troller Corporation. Diving plane for fishing. 4,129,956, Cl. 43-43.130.
- Nedelec, Lucien; Frechet, Daniel; and Dumont, Claude, to Roussel Uclaf. Novel phenethylamines. 4,130,658, Cl. 424-308.000.
- Neely, Derek K.: *See*—
  - Hills, Richard E.; Neely, Frank R.; Neely, Derek K.; and Malinowski, John T., 4,130,217, Cl. 220-226.000.
- Neely, Frank R.: *See*—
  - Hills, Richard E.; Neely, Frank R.; Neely, Derek K.; and Malinowski, John T., 4,130,217, Cl. 220-226.000.
- Neff, Nelson E.; and Thomas, Anthony F., to AMP Incorporated. Solderless connector for terminating a magnet wire or the like. 4,130,331, Cl. 339-97.00R.
- Negersmith, Kent M., to Technicon Instruments Corporation. Short sample detection. 4,130,394, Cl. 23-230.00R.
- Nelson, Michael E., to Rolls-Royce Limited. Gas turbine engine with anti-icing facility. 4,129,984, Cl. 60-39.09D.
- Nelson, Norman A.: *See*—
  - Bundy, Gordon L.; and Nelson, Norman A., 4,130,721, Cl. 560-121.000.
- Nelson, Paul M., to Wilson Industries, Inc. Flow-through mule shoe sub. 4,130,162, Cl. 166-243.000.
- Nesterovsky, Sergei G.: *See*—
  - Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Silakov, Grigory I.; Khlopkov, Leonid P.; Nesterovsky, Sergei G.; Starun, Andrei I.; Mironov, Viktor D.; Dibrov, Gennady D.; and Panasenko, Anatoly A., 4,130,439, Cl. 106-67.000.
- Netto, Daniel J.: *See*—
  - Frasher, Wallace G.; Netto, Daniel J.; and Marcus, Carol S., 4,130,757, Cl. 250-336.000.
- Neumann, Hans-Joachim: *See*—
  - Wagner, Helmut; and Neumann, Hans-Joachim, 4,130,491, Cl. 252-8.55D.

- Neumann, Manfred E., to Allis-Chalmers Corporation. Tap changing voltage regulator which eliminates preventive autotransformer. 4,130,789, Cl. 323-43.50R.
- Newman, Neil F.: *See*—
  - Roper, Robert; Newman, Neil F.; and Hous, Pierre, 4,130,519, Cl. 260-23.70H.
- Nielsen, Robert L.: *See*—
  - Gunckel, Thomas L., II; Rovell, Alex; and Nielsen, Robert L., 4,130,892, Cl. 365-154.000.
- Niemi, Ilmer I.; and Peterson, Kenneth S., to Conwed Corporation. Ballasted floating barrier boom. 4,129,989, Cl. 405-70.000.
- Niemirow, Jerzy. Swimming pool rescue net. 4,129,905, Cl. 4-172.130.
- Niimi, Koji, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument having filter-and-delay loop for tone production. 4,130,043, Cl. 84-1.030.
- Nimer, Edward L.: *See*—
  - Katsumoto, Kiyoshi; and Nimer, Edward L., 4,130,521, Cl. 528-326.000.
- Nippi Incorporated: *See*—
  - Ohtsuka, Kazumasa; Mitsui, Zen; and Wada, Hajime, 4,130,555, Cl. 260-117.000.
- Nippon Gakki Seizo Kabushiki Kaisha: *See*—
  - Mitsuhashi, Yasuhiro, 4,130,876, Cl. 364-721.000.
  - Niimi, Koji, 4,130,043, Cl. 84-1.030.
  - Yamada, Takashi; Kaneko, Yasutoshi; and Murakami, Kazuo, 4,130,044, Cl. 84-176.000.
- Nippon Paint Co., Ltd.: *See*—
  - Murakami, Ryoichi; and Zinnouti, Masahiro, 4,130,446, Cl. 148-6.15Z.
- Nippon Rubber Co., Ltd.: *See*—
  - Hayashi, Hideki, 4,130,007, Cl. 73-7.000.
- Nippon Shoji Kaisha, Ltd.: *See*—
  - Nakajima, Tadashi; Soda, Yasuji; Kashima, Kenichi; Kudoh, Haruyoshi; and Miyamoto, Akira, 4,130,571, Cl. 260-403.000.
- Nippon Soken, Inc.: *See*—
  - Hattori, Tadashi; and Yamaguchi, Hiroaki, 4,130,797, Cl. 324-65.00P.
- Nippondenso Co., Ltd.: *See*—
  - Akado, Hajime; Ueda, Hiroshi; Yamashita, Akira; and Tamura, Takemasa, 4,130,405, Cl. 55-503.000.
  - Ohta, Kazuhiro; and Ohshima, Mituzi, 4,130,159, Cl. 165-111.000.
  - Usami, Kiyoshi, 4,129,995, Cl. 62-217.000.
- Nishida, Reiziro: *See*—
  - Nakayama, Yasuharu; Watanabe, Tadashi; Nishida, Reiziro; and Enomoto, Satoru, 4,130,526, Cl. 260-29.6RB.
  - Nakayama, Yasuharu; Watanabe, Tadashi; Nishida, Reiziro; and Enomoto, Satoru, 4,130,529, Cl. 260-29.7UA.
- Nishimura, Michio: *See*—
  - Kadowaki, Takashi; Nishimura, Michio; Watanabe, Seiichi; and Abe, Koichi, 4,130,596, Cl. 260-655.000.
- Nisper, Kenneth J., to Questor Corporation. Piston ring. 4,130,288, Cl. 277-216.000.
- Nissan Motor Company, Limited: *See*—
  - Aoyama, Syunichi, 4,130,093, Cl. 123-119.00A.
- Nitschke, John S. Self-compensating thermocouple reading circuit. 4,130,019, Cl. 73-341.000.
- Nitto Boseki Co., Ltd.: *See*—
  - Wakasa, Isao; Kawaguchi, Yutaka; and Shono, Hiroaki, 4,130,406, Cl. 65-2.000.
- Nivin, James E., to American Commercial Barge Line Company. Light-weight, easy-erecting barge hatch cover. 4,130,125, Cl. 135-6.000.
- Nomura, Yasushi; Nakajima, Fumio; Yamada, Kenji; and Machida, Takayasu, to Citizen Watch Company Limited. Electronic timepiece. 4,129,981, Cl. 58-23.00D.
- Norman, Richard O.; and Frassanito, John R., to Envair, Inc. Viscous liquid dispenser. 4,130,224, Cl. 222-185.000.
- Northern Instruments Corporation: *See*—
  - Boerwinkle, Fred P.; and Szauer, Tadeusz, 4,130,524, Cl. 260-29.6HN.
- Northern Telecom Limited: *See*—
  - Cogan, Fredrick T., 4,130,740, Cl. 179-103.000.
- Nose, Shinji; and Tokuda, Shingo, to Osaka Soda Co., Ltd. Self-curable inorganic composition. 4,130,440, Cl. 106-74.000.
- Nossen, Edward J.; and Volertas, Vytas F., to RCA Corporation. Unidirectional phase shift keyed communication system. 4,130,802, Cl. 325-30.000.
- Nuclear Supreme: *See*—
  - Waltrip, Owen R., 4,130,483, Cl. 210-40.000.
- Nudelman, Boris I.; Sventsitsky, Alexandr S.; Bikbau, Marsel Y.; Prikhozhan, Ada M.; and Ibragimov, Isak M. Cement and process for producing same. 4,130,441, Cl. 106-89.000.
- Nutter, Geoffrey, to Ferranti Limited. Data storage system for addressing data stored in adjacent word locations. 4,130,880, Cl. 364-900.000.
- Oehr, Klaus H., to British Columbia Research Council. Process for plating lead dioxide. 4,130,467, Cl. 204-57.000.
- Oganian, Shushanik G.: *See*—
  - Tsinker, Maia G.; Ter-Zakharian, Julya Z.; Oganian, Shushanik G.; Ovakimian, Aram R.; Mndzhoian, Shushanik L.; Mndzhoian, Armenak L., deceased; and Mndzhoian, Alza A., administrator, 4,130,559, Cl. 260-239.100.
- Ogawa, Kinichiro: *See*—
  - Miller, Stewart E.; and Ogawa, Kinichiro, 4,130,343, Cl. 350-96.150.
- Ohaus Scale Corporation: *See*—
  - Walker, Richard K., 4,130,624, Cl. 310-328.000.
- Ohhinata, Ichiro: *See*—
  - Okuhara, Shinzi; and Ohhinata, Ichiro, 4,130,767, Cl. 307-252.00T.
- Ohoka, Masataka; Yamada, Mitsuko; Shoji, Akio; and Arimoto, Shunji, to Dainippon Ink and Chemicals, Inc. Resin composition for powder paint. 4,130,601, Cl. 260-835.000.
- Ohringer, Jack G. Normally closed sewage venting system. 4,129,906, Cl. 4-211.000.
- Ohshima, Mituzi: *See*—
  - Ohta, Kazuhiro; and Ohshima, Mituzi, 4,130,159, Cl. 165-111.000.
- Ohta, Kazuhiro; and Ohshima, Mituzi, to Nippondenso Co., Ltd. Heat exchanger. 4,130,159, Cl. 165-111.000.
- Ohtaki, Shohei; Nakamoto, Soichi; Iwashita, Tomonori; Watanabe, Yoshiaki; and Kozuki, Susumu, to Canon Kabushiki Kaisha. Photographic camera with an automatic exposure control adapter unit detachably mounted thereon. 4,130,355, Cl. 354-33.000.
- Ohtsuka, Kazumasa; Mitsui, Zen; and Wada, Hajime, to Nippi Incorporated. Peptide mixtures derived from collagenous material or gelatin. 4,130,555, Cl. 260-117.000.
- Ojalvo, Morris. Warp-restraining device and improvement to beams, girders, arch ribs, columns and struts. 4,129,974, Cl. 52-729.000.
- Okada, Hisao: *See*—
  - Mogi, Takao; and Okada, Hisao, 4,130,804, Cl. 325-464.000.
- Okada, Shigeichi; and Katoh, Takeshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Direct-injection spark-ignition engine. 4,130,100, Cl. 123-139.0BG.
- Okada, Toshihiko: *See*—
  - Terasawa, Tadao; and Okada, Toshihiko, 4,130,565, Cl. 260-327.0TH.
- Okoshi, Takanori. Holographic viewer system. 4,130,337, Cl. 350-3.760.
- Oku, Masakazu: *See*—
  - Otsuka, Shigeru; Mori, Zenichi; Tominaga, Tetsuhiko; Tamura, Junichi; Shimoda, Yoshio; Takeuchi, Takashi; Oku, Masakazu; and Mori, Kan, 4,130,668, Cl. 426-287.000.
- Okuhara, Shinzi; and Ohhinata, Ichiro, to Hitachi, Ltd. Semiconductor switch. 4,130,767, Cl. 307-252.00T.
- Olander, Walter K., to General Electric. Oxidative coupling of phenolic monomers by the programmed addition of complexed manganese catalysts. 4,130,544, Cl. 528-215.000.
- Olin Corporation: *See*—
  - Iacoviello, Alan, 4,130,231, Cl. 227-10.000.
- Olinkraft, Inc.: *See*—
  - Killy, Earl J., 4,130,235, Cl. 229-15.000.
- Olschewski, Armin: *See*—
  - Ernst, Horst M.; Brandenstein, Manfred; and Olschewski, Armin, 4,130,286, Cl. 277-12.000.
- Olsen, James R.; and Forth, Charles R. Bridge game scoring and display computer. 4,130,871, Cl. 364-411.000.
- Olson, Harris S., to Caterpillar Tractor Co. Wear strips for earthmoving buckets. 4,129,952, Cl. 37-118.00R.
- Olympus Optical Co., Ltd.: *See*—
  - Hayasaka, Toshimi; and Nakajima, Toshikazu, 4,130,024, Cl. 74-29.000.
  - Hyakumura, Kazushi, 4,130,349, Cl. 350-216.000.
  - Koizumi, Toshimichi, 4,130,350, Cl. 350-216.000.
- Oneto, Francis E. J.; Benzoni, Andre J. E.; Poret, Jacques L.; and Simon, Fernand B., to Lever Brothers Company. Detergent composition. 4,130,497, Cl. 252-89.00R.
- Ono, Masahiko, to Tokyo Shibaura Electric Co., Ltd. Data processor having a circuit structure suitable for fabrication in LSI form. 4,130,866, Cl. 364-200.000.
- Ono, Takayoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fluid reservoir. 4,130,222, Cl. 220-373.000.
- Onoki, Fumio; and Kamiya, Hajime, to Hoya Lens Co., Ltd. Method for coating anti-reflection film on surface of optical material. 4,130,672, Cl. 427-164.000.
- Oppel, Werner, to Kloeckner Ionon GmbH. Arrangement for the automatic heating and adjustment of a treatment temperature for the treatment of workpieces by means of glow discharge. 4,130,762, Cl. 250-531.000.
- Optimizer Control Corp.: *See*—
  - Schweitzer, Paul H.; and Collins, Thomas W., 4,130,863, Cl. 364-105.000.
- Orion Machinery & Engineering Corp.: *See*—
  - Steinhilber, Wilhelm A., 4,130,249, Cl. 242-25.00R.
- Orita, Masatomo: *See*—
  - Tanaka, Junzo; Orita, Masatomo; and Urashima, Chikao, 4,130,749, Cl. 219-10.55B.
- Ornstein, Severo M.: *See*—
  - Heart, Frank E.; Ornstein, Severo M.; Barker, William B.; and Crowther, William R., 4,130,865, Cl. 364-200.000.
- Oronzio de Nora Impianti Elettrochimici S.p.A.: *See*—
  - De Nora, Oronzio; and De Nora, Vittorio, 4,130,468, Cl. 204-98.000.
- Ortho Pharmaceutical Corporation: *See*—
  - Wachter, Michael P.; and Kanojia, Ramesh M., 4,130,556, Cl. 260-236.500.
- Orthoband Company, Inc.: *See*—
  - DeWoskin, Irvin S., 4,130,681, Cl. 428-102.000.
- Osaka Soda Co., Ltd.: *See*—
  - Nose, Shinji; and Tokuda, Shingo, 4,130,440, Cl. 106-74.000.
- Ostrander, Walter M.; Scholl, Malcolm M.; Minott, Edward R.; and Smith, Christopher D., to Audioanalyst, Inc. Loudspeaker. 4,130,174, Cl. 181-146.000.
- Ostrowski, Carl L., to Federal Screw Works. Voice synthesizer. 4,130,730, Cl. 179-1.0SM.
- Ota, Isamu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Kick-up

device for a secondary throttle valve in a diaphragm-type two barrel carburetor. 4,130,608, Cl. 261-23.00A.

- Otoda, Ichizo: *See—*
  - Ichiyanagi, Takashi; Akiyama, Takashige; and Otoda, Ichizo, 4,130,676, Cl. 427-358.000.
- Otsuka, Shigeru; Mori, Zenichi; Tominaga, Tetsuhiko; Tamura, Junichi; Shimoda, Yoshio; Takeuchi, Takashi; Oku, Masakazu; and Mori, Kan, to Kao Soap Co., Ltd.; and Toyo Seikan Kaisha, Ltd. Method for chemically peeling fruits and vegetables. 4,130,668, Cl. 426-287.000.
- Ovakimian, Aram R.: *See—*
  - Tsinker, Maia G.; Ter-Zakharian, Julya Z.; Oganian, Shushanik G.; Ovakimian, Aram R.; Mndzhoian, Shushanik L.; Mndzhoian, Armenak L., deceased; and Mndzhoian, Alza A., administrator, 4,130,559, Cl. 260-239.100.
- Overman, John W.; and Johnson, George V., to Bell & Howell Company. Portable microfiche reader with foldup lens and mirror assembly. 4,130,352, Cl. 353-79.000.
- Owens-Corning Fiberglas Corporation: *See—*
  - Hendrix, Ronald W.; Klink, Jerome P.; and Dunn, John W., 4,130,248, Cl. 242-18.00G.
- Owens-Illinois, Inc.: *See—*
  - Miller, John W. V.; and Trogdon, Ray L., 4,130,779, Cl. 315-169.0TV.
- Ozudogru, Yilmaz H.: *See—*
  - Person, Abraham; and Ozudogru, Yilmaz H., 4,130,077, Cl. 114-230.000.
- Packaging Corporation of America: *See—*
  - Champlin, Charles L.; and Misura, John T., 4,130,202, Cl. 206-434.000.
- Pactrol Controls Limited: *See—*
  - Wade, Kenneth R., 4,130,753, Cl. 219-492.000.
- Page Belting Company: *See—*
  - Alley, F. William, 4,130,141, Cl. 139-157.000.
- Pagnini, Edillio. Tape dispenser. 4,130,229, Cl. 225-33.000.
- Pai, Stephen M., to Westinghouse Electric Corp. Load management terminal having plural selectable address formats for a power line communication system. 4,130,874, Cl. 364-514.000.
- Pains - Wessex Limited: *See—*
  - Murray, Dudley C., 4,130,060, Cl. 102-39.000.
- Paleveda, William J.: *See—*
  - Holly, Frederick W.; Paleveda, William J.; Strachan, Robert G.; and Veber, Daniel F., 4,130,554, Cl. 260-112.50R.
- Pallos, Ferenc M., to Stauffer Chemical Company. Acylformanidine insecticidal and miticidal compounds. 4,130,662, Cl. 424-324.000.
- Palmer, Ian: *See—*
  - Braddyll, John R. G.; Aubrey, Joseph H.; Shaw, Ernest A.; and Palmer, Ian, 4,130,366, Cl. 366-288.000.
- Panasenko, Anatoly A.: *See—*
  - Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Silakov, Grigory I.; Khlopkov, Leonid P.; Nesterovsky, Sergei G.; Starun, Andrei I.; Mironov, Viktor D.; Dibrov, Gennady D.; and Panasenko, Anatoly A., 4,130,439, Cl. 106-67.000.
- Panayotov, Ivan M.: *See—*
  - Rashkov, Ilia; Gole, Jean; Guerard, Daniel; Herold, Albert; Merle, Gerard; Panayotov, Ivan M.; Pascault, Jean-Pierre; Pham, Quang T.; Pillot, Christian; and Salle, Robert, 4,130,703, Cl. 526-173.000.
- Pandolph, James E. Ladder climber's safety device. 4,130,177, Cl. 182-8.000.
- Pansini, Andrew L. Swimming pool cleaner. 4,129,904, Cl. 4-172.000.
- Panzeri, Constantino: *See—*
  - De Marco, Franco; and Panzeri, Constantino, 4,130,736, Cl. 179-16.0EC.
- Papst-Motoren KG: *See—*
  - Wrobel, Guenter, 4,130,770, Cl. 310-67.00R.
- Parker, James A.: *See—*
  - Breznak, Robert A.; and Parker, James A., 4,130,679, Cl. 428-58.000.
- Parker, Walter G.; Ravets, Jack M.; and Preble, Bruce S., to Westinghouse Electric Corp. Poison and diluent system for nuclear power plants. 4,130,459, Cl. 176-38.000.
- Parks, Harold G.: *See—*
  - Kirkpatrick, Conilee G.; and Parks, Harold G., 4,130,891, Cl. 365-105.000.
- Parodi, Arnold E. Spinning top and belt. 4,129,961, Cl. 46-64.000.
- Parr, Edward L. Push-in pipe connector. 4,130,305, Cl. 285-308.000.
- Partington, Albert J., to Westinghouse Electric Corp. Multiple side entry root for multiple blade group. 4,130,379, Cl. 416-193.00A.
- Pascault, Jean-Pierre: *See—*
  - Rashkov, Ilia; Gole, Jean; Guerard, Daniel; Herold, Albert; Merle, Gerard; Panayotov, Ivan M.; Pascault, Jean-Pierre; Pham, Quang T.; Pillot, Christian; and Salle, Robert, 4,130,703, Cl. 526-173.000.
- Paschke, Edward E.: *See—*
  - Cerefice, Steven A.; Fields, Ellis K.; Marchant, Kerford A., Jr.; and Paschke, Edward E., 4,130,719, Cl. 528-305.000.
- Patel, Mukesh P.; and Yin, Huo-Bing, to International Business Machines Corporation. Bucket brigade circuit. 4,130,766, Cl. 307-221.00D.
- Patel, Raman P.: *See—*
  - Coran, Aubert Y.; and Patel, Raman P., 4,130,534, Cl. 260-33.6AQ.
  - Coran, Aubert Y.; Das, Balbhadra; and Patel, Raman P., 4,130,535, Cl. 260-33.6AQ.
- Patil, Pandit G., to PPG Industries, Inc. Solar collector for heating a fluid. 4,130,108, Cl. 126-270.000.
- Patrawala, Ashok C.: *See—*
  - Bula, John; and Patrawala, Ashok C., 4,130,768, Cl. 307-270.000.
- Patten, Michael A., to International Business Machines Corporation. Circuitry for compression of silence in dictation speech recording. 4,130,739, Cl. 179-100.1VC.
- Patton, Robert J.: *See—*
  - Bouchard, Andre C.; Hall, Harold H., Jr.; Patton, Robert J.; and Sentementes, Thomas J., 4,130,082, Cl. 116-5.000.
- Paul, Howard C., to Borg-Warner Corporation. Charge forming apparatus with vane actuated fuel air ratio control. 4,130,610, Cl. 261-36.00A.
- Paul, Maynard C.; and Torok, Ernest J., to Sperry Rand Corporation. Isotropic data track for cross-tie wall memory system. 4,130,888, Cl. 365-87.000.
- Paulie, Roy W. Combination safety belt and safety line. 4,130,176, Cl. 182-4.000.
- Pawlak, Kenneth E., to Abbott Laboratories. Method of making self-supporting tubular filter. 4,130,622, Cl. 264-255.000.
- Peeler, Donald H., to Sybron Corporation. Fluid pressure measuring or testing system and bleed regulator valve therefor. 4,130,114, Cl. 128-2.05G.
- Peffer, Robert M.; Rehn, Albert H.; and Grose, Zacharie, to Eastman Kodak Company. Grounded grid static discharge apparatus. 4,130,852, Cl. 361-213.000.
- Pelz, David T. Golf putting system for play and practice. 4,130,282, Cl. 273-186.00A.
- Penet, Pierre M. M. Control assembly for a cyclically operating powered unit. 4,130,785, Cl. 318-318.000.
- Penn Engineering & Manufacturing Corp.: *See—*
  - Swanstrom, Kenneth A., 4,130,138, Cl. 138-109.000.
- Pennwalt Corporation: *See—*
  - Kamath, Vasanth R., 4,130,700, Cl. 526-73.000.
- Peppler, Michael S.: *See—*
  - Asick, John C.; Huffnagle, Clifton W.; Peppler, Michael S.; and Woratyla, John A., 4,130,332, Cl. 339-97.00P.
- Perez-Cavero, Leonardo, to General Electric Company Limited, The. Directional relays. 4,130,851, Cl. 361-82.000.
- Perkin-Elmer Limited: *See—*
  - Ford, Michael A., 4,130,784, Cl. 318-102.000.
- Perkins, Peter E.; and Blazo, Stephen F., to Tektronix, Inc. Charge image charge transfer cathode ray tube having a scan expansion electron lens system and collimation electrode means. 4,130,775, Cl. 313-397.000.
- Perrin, Ronald, to St. Regis Paper Company, The. Film dispensing container. 4,130,228, Cl. 225-19.000.
- Perry, Francis J.: *See—*
  - Chocholaty, Warren L.; Evans, Robert K.; and Perry, Francis J., 4,130,126, Cl. 137-3.000.
- Perry, Francis V., Jr.; Barlik, Richard P.; Richardson, William P.; Hudson, Robert H.; and Gray, Leonard, to Hasbro Development Corp. Toy article having changeable expression graphics. 4,129,963, Cl. 46-155.000.
- Person, Abraham; and Ozudogru, Yilmaz H., to Global Marine, Inc. Single-point mooring system. 4,130,077, Cl. 114-230.000.
- Peters, Walter B.: *See—*
  - Cerny, Ronald N.; Peters, Walter B.; Sadler, Thomas H.; Rodrigo, Peter; and Mollick, George M., 4,130,140, Cl. 138-149.000.
- Petersen, Arthur W.; Cimiluca, Arthur; and Hirschberger, Leonard, to Schwarzmann, Frederick G. Method for renewing grout. 4,130,442, Cl. 134-4.000.
- Peterson, Clyde V., to Minnesota Mining and Manufacturing Company. Torsion spring door for a videocassette. 4,130,221, Cl. 220-326.000.
- Peterson, Gregory P.: *See—*
  - Hamilton, Alan D.; Peterson, Gregory P.; and McGuire, Walter R., 4,130,451, Cl. 156-86.000.
- Peterson, Kenneth S.: *See—*
  - Niemi, Ilmer I.; and Peterson, Kenneth S., 4,129,989, Cl. 405-70.000.
- Peterson, Roland H.: *See—*
  - Hoy, Kenneth L.; and Peterson, Roland H., 4,130,523, Cl. 260-29.60R.
- Petree, Harris E.; Myatt, Hal L.; and Jelenevsky, Alex M., to Ciba-Geigy Corporation. Preparation of phenolic ethylenediaminepolycarboxylic acids. 4,130,582, Cl. 562-448.000.
- Petrosky, Charles. Air cushion shoe base. 4,129,951, Cl. 36-29.000.
- Pfaffle, Ernst, to Hans Sickinger Co. Arrangement for perforating and spiral binding of relatively thick groups of sheets. 4,129,913, Cl. 11-1.00A.
- Pfizer Inc.: *See—*
  - Sarges, Reinhard, 4,130,714, Cl. 548-309.000.
  - Taylor, Colin R., 4,130,647, Cl. 424-251.000.
- Pham, Quang T.: *See—*
  - Rashkov, Ilia; Gole, Jean; Guerard, Daniel; Herold, Albert; Merle, Gerard; Panayotov, Ivan M.; Pascault, Jean-Pierre; Pham, Quang T.; Pillot, Christian; and Salle, Robert, 4,130,703, Cl. 526-173.000.
- Phillips, David C.: *See—*
  - Smith, James D. B.; and Phillips, David C., 4,130,009, Cl. 73-17.00R.
- Phillips Petroleum Company: *See—*
  - Fodor, Lawrence M., 4,130,503, Cl. 252-429.00B.
  - Gagle, Duane W.; and Draper, Homer L., 4,130,516, Cl. 260-28.5AS.
  - Marwil, Stanley J.; and Zuech, Ernest A., 4,130,484, Cl. 210-41.000.
  - Nasser, Benny E., Jr.; and Dietz, Richard E., 4,130,505, Cl. 252-432.000.

- Phillips, Ronald W., II: *See—*
  - Edwards, David V.; Lesh, Harvey B., Jr.; and Phillips, Ronald W., II, 4,129,910, Cl. 9-42.000.
- Pickard, Kenneth L. Side boom pipe laying crane with pipe section alignment feature. 4,130,204, Cl. 214-1.0PA.
- Picker Corporation: *See—*
  - Goodrich, Albert S.; and Corcoran, Thomas M., 4,130,022, Cl. 73-633.000.
  - Mueller, Peter G.; and Goodrich, Albert S., 4,130,021, Cl. 73-633.000.
- Pickus, Milton R.: *See—*
  - Wang, John L.; Pickus, Milton R.; and Chen, Meng-Hsiu, 4,130,422, Cl. 75-246.000.
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  - Rashkov, Ilia; Gole, Jean; Guerard, Daniel; Herold, Albert; Merle, Gerard; Panayotov, Ivan M.; Pascault, Jean-Pierre; Pham, Quang T.; Pillot, Christian; and Salle, Robert, 4,130,703, Cl. 526-173.000.
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- Poe, L. Richard, to Hartwell Corporation. Adjustable keeper for pin latches. 4,130,260, Cl. 244-129.500.
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  - Dyer, Gerald T.; and Ryan, Michael A., 4,130,485, Cl. 210-66.000.
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- Politzer, Anton; and Machmer, Wilhelm. Sealing system for a wedge-type breech mechanism. 4,130,047, Cl. 89-26.000.
- Polley, Eugene J., to Zenith Radio Corporation. Super imposed fresnel lenses for channel indicators. 4,130,346, Cl. 350-114.000.
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  - van Essen, Uilke, 4,130,486, Cl. 210-78.000.
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- Porter, James H., to Energy Resources Company, Inc. Fluidized-bed combustor. 4,130,071, Cl. 110-245.000.
- PPG Industries, Inc.: *See—*
  - Friedlander, Charles B.; and McMullen, John C., 4,130,708, Cl. 528-28.000.
  - Littell, Harry E., Jr.; and Shorr, Norman, 4,130,684, Cl. 428-212.000.
  - Patil, Pandit G., 4,130,108, Cl. 126-270.000.
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- Preble, Bruce S.: *See—*
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  - Diehl, Francis L.; and Edwards, James B., 4,130,392, Cl. 8-101.000.
  - Gregg, Richard, 4,130,669, Cl. 426-385.000.
  - Smith, Donald E., 4,130,643, Cl. 424-238.000.
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  - Wetzel, Thomas A., 4,130,121, Cl. 132-7.000.
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- Prosvirova, Olga B., administrator: *See—*
  - Boreskov, Georgy K.; Slinko, Mikhail G.; Gelbshtein, Anatoly I.; Vasilevich, Lidia A.; Chesnokov, Boris B.; Frolkina, Irina T.; Dyment, Oskar N.; Stepanov, Jury N.; Davydov, Valery A.; Talaeva, Irina G.; Utkina, Ninel S.; Stroganova, Vera V.; Aksenova, Maria S.; Filippova, Anna G., deceased; Prosvirova, Olga B., administrator; and Zakharova, Irina B., administrator, 4,130,570, Cl. 260-348.350.
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  - Stark, Marvin; and Suvada, Steve L., 4,130,068, Cl. 105-420.000.
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  - Hetzer, Fritz, 4,130,745, Cl. 200-82.00E.
- Purviance, John R. Self-propelled airplane dolly. 4,130,210, Cl. 214-332.000.
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  - Nisper, Kenneth J., 4,130,288, Cl. 277-216.000.
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  - Smart, William L.; Hoenig, Stuart A.; Savitz, Christian W.; and Darlington, Douglas K., 4,129,966, Cl. 51-170.00T.
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  - Schindel, Hugo; and Mecks, Karl, 4,130,194, Cl. 198-397.000.
- Raufoss Ammunisjonsfabrikker A/S: *See—*
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- Ravets, Jack M.: *See—*
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  - Sandy, Frank; and Dunnrowicz, Clarence J., 4,130,813, Cl. 333-72.000.
  - Wallace, Ronald M., 4,130,810, Cl. 331-107.00R.
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  - Clay, Burton R.; and Gore, Douglas A., 4,130,338, Cl. 350-3.820.
  - den Hollander, Willem, 4,130,783, Cl. 315-371.000.
  - Knop, Karl, 4,130,347, Cl. 350-162.00R.
  - Nossen, Edward J.; and Volertas, Vytas F., 4,130,802, Cl. 325-30.000.
  - Smollin, Charles F., 4,130,886, Cl. 364-900.000.
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- Reed, Charles F., to Avery International Corporation. Adjustable anvil roll for die-cutting labels. 4,130,042, Cl. 83-887.000.

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- Rehn, Albert H.: *See—*
  - Peffer, Robert M.; Rehn, Albert H.; and Grose, Zacharie, 4,130,852, Cl. 361-213.000.
- Reighter, David H., to Gould Inc. High humidity resistant electrical grade polymer concrete. 4,130,536, Cl. 260-37.0EP.
- Reins, Edward R.; and Curry, Charles D. B., to United States of America, Navy. Digital plotting system for displaying character information. 4,130,887, Cl. 364-900.000.
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  - Haug, Theobald; Kiefer, Jurg; and Renner, Alfred, 4,130,564, Cl. 260-326.260.
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  - Reusser, Hans E., 4,129,971, Cl. 52-288.000.
- Resh, John S., to McGill Manufacturing Company, Inc. Miniature overtravel snap action switch with pivotal cam mounting for the switch blade. 4,130,747, Cl. 200-67.00D.
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- Reynolds, Clarke; and Quigley, Richard J. Safety crank assembly for railroad box car plug-type doors. 4,129,965, Cl. 49-220.000.
- Reynolds Metals Company: *See—*
  - Cudzik, Daniel F., 4,130,074, Cl. 113-121.00R.
- Rhone Poulenc Industries: *See—*
  - Canard, Pierre; and Levy, Albert, 4,130,691, Cl. 428-511.000.
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- Riboud, Paul-Victor: *See—*
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  - Marianeschi, Edmondo; Basevi, Sandro; Barisoni, Mario; Marini, Paolo; Borgianni, Carlo; and Ricci Bitti, Roberto, 4,130,447, Cl. 148-27.000.
- Rice, Donald R. Spare wheel and tire locking mount for pickup trucks. 4,130,227, Cl. 224-42.240.
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- Richardson-Merrell Inc.: *See—*
  - Dhabhar, Dadi J.; Heyd, Allen; and Gans, Eugene H., 4,130,638, Cl. 424-55.000.
- Richardson, William P.: *See—*
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- Richenburg, Paul F.: *See—*
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- Richiardi, Claudio: *See—*
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- Richtzenhain, Herman: *See—*
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- Riedesel, Roland G., Jr.: *See—*
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- Rieger, Franz: *See—*
  - Linder, Ernst; Wossner, Gunter; Maurer, Helmut; and Rieger, Franz, 4,130,098, Cl. 123-119.00A.
- Riehl, Angela. Bed storage article. 4,129,909, Cl. 5-317.00R.
- Riekers, Henry G., to Westinghouse Electric Corp. Binary multiplier using identical memories or identical networks. 4,130,877, Cl. 364-758.000.
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  - Moore, George G. I., 4,130,666, Cl. 424-331.000.
- Rineisky, Anatoly A.: *See—*
  - Iljunin, Vladimir G.; Murogov, Viktor M.; Troyanov, Mikhail F.; Rineisky, Anatoly A.; Ustinov, Gennady G.; and Shmelev, Anatoly N., 4,130,460, Cl. 176-68.000.
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- Ritzie, Robert H., to Dow Chemical Company, The. Mechanical seal assembly with flushing means. 4,130,287, Cl. 277-12.000.
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  - Mitchell, Wylie W.; and Arrowood, Gordon W., 4,130,302, Cl. 285-113.000.
- Robert Bosch GmbH: *See—*
  - Bertling, Johannes-Gerhard, 4,130,266, Cl. 251-50.000.
  - Dietz, Hermann; and Ziegler, Siegfried, 4,130,695, Cl. 429-215.000.
  - Falk, Gerhard, 4,130,257, Cl. 242-193.000.
  - Jundt, Werner; Bodig, Bernd; Sohner, Gerhard; Ruf, Walter; Roth, Helmut; and Werner, Peter, 4,130,101, Cl. 123-148.00E.
  - Linder, Ernst; Wossner, Gunter; Maurer, Helmut; and Rieger, Franz, 4,130,098, Cl. 123-119.00A.
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- Robinson, Walter L. Aquatic device. 4,129,912, Cl. 9-310.00D.
- Robitaille, George L. Combustion engine exhaust gas afterburner. 4,130,397, Cl. 422-168.000.
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- Rodbell, Arthur T.: *See—*
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- Rodbell, Paul N.: *See—*
  - Mitchell, Wylie W.; and Arrowood, Gordon W., 4,130,302, Cl. 285-113.000.
- Rodbell, Sidney P.: *See—*
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- Roericht, Hans, to Wilkhahn, Wilkening & Hahne. Chairs. 4,130,263, Cl. 248-371.000.
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  - Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Silakov, Grigory I.; Khlopkov, Leonid P.; Nesterovsky, Sergei G.; Starun, Andrei I.; Mironov, Viktor D.; Dibrov, Gennady D.; and Panasenko, Anatoly A., 4,130,439, Cl. 106-67.000.
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  - Slough, Carlton M.; and Romero, Earl M., 4,130,791, Cl. 324-3.000.
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- Rosen, George, to Sun Chemical Corporation. Process for the preparation of aryl dioxolanes. 4,130,567, Cl. 260-340.90R.
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- Ross, Lawrence J., to American Cyanamid Company. Preparing J acid by fusion using phenolic fluxing agent. 4,130,581, Cl. 260-509.000.
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  - Akkerman, Neil H.; and Ross, Richard J., 4,130,166, Cl. 166-324.000.
- Ross, Samuel C. Indoor golf. 4,130,279, Cl. 273-87.200.
- Rossi, Joseph V., to Comfort Lines, Inc. Step ladder/chair combination. 4,130,316, Cl. 297-46.000.
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- Rovell, Alex: *See—*
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- Rudenko, Valery A.: *See—*
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  - Russ, James J.; Russ, James S.; and Heagy, Richard T., 4,130,627, Cl. 423-127.000.
- Russell, Thomas H., III. Record tray with adjustable side rails. 4,130,203, Cl. 211-51.000.
- Ruti Machinery Works Ltd: *See—*
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- Rutledge, Thomas F., to ICI Americas Inc. Oxidative coupling of phenols and naphthols. 4,130,504, Cl. 252-430.000.
- Ryan, Michael A.: *See—*
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- Rybny, Charles B.; and Levine, Eli, to Celanese Corporation. Preparation of acrylated or methacrylated polymers utilizing a partially solubilized hydrocarbon fraction as the azeotroping medium. 4,130,518, Cl. 260-22.0CB.
- S I G Schweizerische Industrie-Gesellschaft: *See—*
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- Sabacky, Milton J., to Monsanto Company. Herbicidal use of substituted phenyl phosphinic acids. 4,130,410, Cl. 71-86.000.
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- Saethre, Magnus; and Spector, George. Shopping cart capable for use on stairs. 4,130,291, Cl. 280-5.220.
- Saidla, Glen E. W., to Exxon Research & Engineering Co. Method for making structural foams with facing sheets. 4,130,614, Cl. 264-46.400.
- Saigusa, Tatsunori: *See—*
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- Saika, Tadaaki: *See—*
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- St. John, Robert P., to Xerox Corporation. Speed control apparatus for scanning system. 4,130,838, Cl. 358-267.000.
- St. Regis Paper Company, The: *See—*
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- Sakai, Masahiko: *See—*
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- Sandvik Aktiebolag: *See—*
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  - Druxeis, Rudolf, 4,130,371, Cl. 407-114.000.
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  - Anderson, George J.; Desmond, Timothy F.; and Santer, J. Owen, 4,130,692, Cl. 428-524.000.
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  - Dunster, Ronald A.; and Savage, John A., 4,130,146, Cl. 141-96.000.
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  - Bolen, Ralph A., 4,130,152, Cl. 145-50.00D.
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- Scardenzan, Anthony. Wheel for roller skate or skateboard. 4,130,320, Cl. 301-5.700.
- Schaden, Karl. Method of producing a concrete lined tunnel or other underground excavation. 4,129,991, Cl. 405-150.000.
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  - Henkelmann, Kurt; Speier, Rolf; and Schafer, Wilhelm, 4,130,353, Cl. 353-85.000.
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  - Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., 4,130,653, Cl. 424-274.000.
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  - Kristen, Klaus; and Scheidler, Herwig, 4,130,104, Cl. 126-39.00J.
- Schenck-Auto-Service Geraete GmbH: *See—*
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  - Arndt, Friedrich; Kruger, Hans-Rudolf; and Rusch, Reinhart, 4,130,414, Cl. 71-90.000.
- Schiele, Herbert, to Krauss-Maffei Aktiengesellschaft. Replaceable liner for centrifuge sieve. 4,130,479, Cl. 209-395.000.
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- Schlotterer, John C., to Westinghouse Electric Corp. Priority selection circuit for multiported central functional unit with automatic priority reduction on excessive port request. 4,130,864, Cl. 364-200.000.
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  - Mender, Adolf; and Schmidt, Horst, 4,130,834, Cl. 358-127.000.
- Schmidt, Werner, to Maschinenfabrik Rissen GmbH. Combined throw-away container of cardboard and plastic material with a rigidly flanged aperture rim or lip. 4,130,234, Cl. 229-1.50B.
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  - Knulle, Helmut; and Pieschke, Harald, 4,130,398, Cl. 29-157.400.
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  - Bridger, Robert F.; and Schmitt, Kirk D., 4,130,496, Cl. 252-49.800.
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- Schochat, Nathaniel E. CB twenty meter. 4,130,755, Cl. 235-95.00R.
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- Schotten, Henno, to Bosch-Siemens Hausgerate GmbH. Refrigeration equipment, particularly household refrigeration or the like. 4,129,993, Cl. 62-156.000.
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  - Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,130,587, Cl. 260-586.00G.
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- Schreyer, Kenneth D., to Columbus McKinnon Corporation. Telescopic turnbuckle. 4,130,269, Cl. 254-67.000.
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- Schultenkamper, Josef, to Gelenkwellenbau GmbH. Thrust plate for the bearing pins of a trunnion in a universal joint. 4,130,325, Cl. 308-163.000.
- Schwab, Randall J., to Transco Northwest, Inc. Package elevator for a ship. 4,130,196, Cl. 198-796.000.
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  - Lang, Rudolf; and Schwarz, Gerhard, 4,130,358, Cl. 354-289.000.
- Schwarzmann, Frederick G.: *See—*
  - Petersen, Arthur W.; Cimiluca, Arthur; and Hirschberger, Leonard, 4,130,442, Cl. 134-4.000.
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  - Gagnon, Richard T., 4,130,729, Cl. 179-1.0SA.
- SCM Corporation: *See—*
  - McGinniss, Vincent D., 4,130,469, Cl. 204-159.160.
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- Scott, Ronald K.: *See—*
  - Bailey, John M.; and Scott, Ronald K., 4,130,013, Cl. 73-119.00A.

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  - Carlsson, Stig T.; Rasmusson, Bo M.; and Scuka, Viktor, 4,129,992, Cl. 405-164.000.
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  - Wessel, Kenneth, 4,130,328, Cl. 339-18.00C.
- Sealy, Inc.: *See—*
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- Sendlak, Lawrence P., to Hooker Chemicals & Plastics Corp. Liquid phase fluorination process. 4,130,594, Cl. 260-651.00F.
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- Shaunnessey, Jerome. Occupant restraint and protection system for an automotive vehicle. 4,130,298, Cl. 280-730.000.
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- Shawl, Edward T.; Sheng, Ming N.; and Zajacek, John G., to Atlantic Richfield Company. Removal of selenium from urethane solutions. 4,130,633, Cl. 423-509.000.
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  - Denison, Early B., 4,130,169, Cl. 175-299.000.
  - Van Ballegooijen, Hendrik; Binsbergen, Frederik L.; Raadsen, Jacob; and Vreugdenhil, Arie D., 4,130,606, Cl. 260-894.000.
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- Sher, Lawrence D., to Bolt Beranek and Newman Inc. Three-dimensional display. 4,130,832, Cl. 358-89.000.
- Sheridan, Joseph U. Composite abrasion resistant pipe elbow. 4,130,300, Cl. 285-16.000.
- Sherman, Morton; and Berry, James A., to Celotex Corporation, The. Top vented insulating structure. 4,129,972, Cl. 52-303.000.
- Sherwin, Raymond H. Paint roller cleaner. 4,130,124, Cl. 134-138.000.
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  - Hourai, Akimasa, 4,130,613, Cl. 261-109.000.
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  - Terasawa, Tadao; and Okada, Toshihiko, 4,130,565, Cl. 260-327.0TH.
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  - Iljunin, Vladimir G.; Murogov, Viktor M.; Troyanov, Mikhail F.; Rineisky, Anatoly A.; Ustinov, Gennady G.; and Shmelev, Anatoly N., 4,130,460, Cl. 176-68.000.
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  - Branston, David W., 4,130,778, Cl. 315-169.0TV.
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  - Grundler, Bruno; Heinzer, Hans; and Muller, Werner, 4,129,976, Cl. 53-552.000.
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  - Adams, George L.; Aker, David; and Silvermetz, David, 4,130,018, Cl. 73-290.00V.
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- Smith, William M.: *See—*
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- Smiths Industries Limited: *See—*
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  - Fioretta, Piero; and Richiardi, Claudio, 4,130,873, Cl. 364-513.000.
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  - Berniere, Michel G., 4,130,812, Cl. 333-71.000.
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  - Hautemont, Jean-Claude H., 4,130,386, Cl. 425-383.000.
- Societe Anonyme Francaise du Ferodo: *See—*
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  - Wakeling, Antony J., 4,130,723, Cl. 174-68.500.
- Solberg, Aasmund, to Angel Mork. Pawl-and-ratchet catch. 4,130,028, Cl. 74-577.00R.
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- Sony Corporation: *See—*
  - Amano, Kenichi; Suzuki, Yutaka; and Kishi, Yoshio, 4,130,848, Cl. 360-132.000.
  - Isono, Katsuo; and Sanada, Seiji, 4,130,831, Cl. 358-27.000.
  - Miyamoto, Toshio; and Hoshido, Mutsuo, 4,130,843, Cl. 360-62.000.
  - Mogi, Takao; and Okada, Hisao, 4,130,804, Cl. 325-464.000.
- Sorenson, John F., to Champion International Corporation. Die cut pad. 4,130,199, Cl. 206-320.000.
- South African Inventions Development Corporation: *See—*
  - Hasson, Victor H.; and von Bergmann, Hubertus M., 4,130,809, Cl. 331-94.5PE.
- Souza, Anthony J., to Woodstream Corporation. Universal trigger mechanism for rotating frame animal traps. 4,129,959, Cl. 43-92.000.
- Sparrow, David J.; and Van Autgaerden, Willy, to Imperial Chemical Industries Limited. Polyurethane foam containing internal mold-release agent. 4,130,698, Cl. 521-130.000.
- Spaulding, Tedford H., to Bunker Ramo Corporation. Electrical connector having a resilient cover. 4,130,327, Cl. 339-17.0CF.
- Speck-Pumpen Daniel Speck & Sohni: *See—*
  - Speck, Walter; and Speck, Willy, 4,130,488, Cl. 210-232.000.
- Speck, Walter; and Speck, Willy, to Speck-Pumpen Daniel Speck & Sohni. Device for cleaning and circulating a liquid. 4,130,488, Cl. 210-232.000.
- Speck, Willy: *See—*
  - Speck, Walter; and Speck, Willy, 4,130,488, Cl. 210-232.000.
- Spector, George: *See—*
  - Saethre, Magnus; and Spector, George, 4,130,291, Cl. 280-5.220.
- Speier, Rolf: *See—*
  - Henkelmann, Kurt; Speier, Rolf; and Schafer, Wilhelm, 4,130,353, Cl. 353-85.000.
- Spencer, Bette M.: *See—*
  - Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., 4,130,508, Cl. 252-522.000.
- Sperry Rand Corporation: *See—*
  - Best, Donald T., 4,130,846, Cl. 360-120.000.
  - Horne, Merton A.; and Brillhart, Bruce A., 4,130,897, Cl. 365-205.000.
  - McMahon, Donald H., 4,130,342, Cl. 350-96.140.
  - Paul, Maynard C.; and Torok, Ernest J., 4,130,888, Cl. 365-87.000.
- Spicer, Larry D.; and Simkins, Karl L., Jr., to American Cyanamid Company. Butamisole injectable formulations having improved margin of safety in dogs. 4,130,651, Cl. 424-270.000.
- Sprecker, Mark A.: *See—*
  - Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,130,587, Cl. 260-586.00G.
- Spyros, Theodoropulos: *See—*
  - Hedaya, Eddie; and Spyros, Theodoropulos, 4,130,576, Cl. 260-453.00P.
- Stamberg, Jiri: *See—*
  - Sevcik, Stanislav; Trekoval, Jiri; Holata, Jan; and Stamberg, Jiri, 4,130,705, Cl. 526-230.000.
- Stancati, Nicholas, to Thomas & Betts Corporation. Method and means for joining elongate members. 4,129,932, Cl. 29-407.000.
- Standard Oil Company, The: *See—*
  - Jones, Richard H., 4,130,593, Cl. 260-683.480.
- Standard Oil Company (Indiana): *See—*
  - Bockrath, Ronald E.; and Serres, Carl, 4,130,551, Cl. 528-481.000.
  - Cerefice, Steven A.; Fields, Ellis K.; Marchant, Kerford A., Jr.; and Paschke, Edward E., 4,130,719, Cl. 528-305.000.
  - Fast, Clarence R.; and King, George E., 4,130,165, Cl. 166-279.000.
  - Hamilton, Alan D.; Peterson, Gregory P.; and McGuire, Walter R., 4,130,451, Cl. 156-86.000.
  - Hoff, Glen R.; Melquist, John L.; and Fotis, Peter, 4,130,699, Cl. 526-67.000.
- Stanford, George A.: *See—*
  - Churchill, Arthur E., 4,130,102, Cl. 123-198.00F.
- Stange, Klaus K., to Xerox Corporation. Pneumatic registration apparatus. 4,130,274, Cl. 271-236.000.
- Stark, Marvin; and Suvada, Steve L., to Pullman Incorporated. Center filler for railway cars. 4,130,068, Cl. 105-420.000.
- Starun, Andrei I.: *See—*
  - Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Silakov, Grigory I.; Khlopkov, Leonid P.; Nesterovsky, Sergei G.; Starun, Andrei I.; Mironov, Viktor D.; Dibrov, Gennady D.; and Panasenko, Anatoly A., 4,130,439, Cl. 106-67.000.
- Stauffer Chemical Company: *See—*
  - Miller, Robert S.; and Doyle, Francis J., 4,130,527, Cl. 260-29.60R.
  - Muntz, Ronald L., 4,130,552, Cl. 528-285.000.
  - Pallos, Ferenc M., 4,130,662, Cl. 424-324.000.
  - Reale, Michael J.; and Jacobs, Barry, 4,130,513, Cl. 521-107.000.
  - Uhing, Eugene H.; and Toy, Arthur D. F., 4,130,583, Cl. 260-543.00P.
- Stauffer, Larry R.: *See—*
  - Donnelly, Charles W., Sr.; and Stauffer, Larry R., 4,130,040, Cl. 83-389.000.

Steckowich, John, Jr., to Burroughs Corporation. Adjustably interfitting panel clamp. 4,130,262, Cl. 248-226.100.

Steger, John J.: *See—*
Longo, John M.; and Steger, John J., 4,130,492, Cl. 252-18.000.

Steinbauer, David M.: *See—*
Arndt, Richard L.; Meyerhofer, Wilfred L., Jr.; and Steinbauer, David M., 4,130,756, Cl. 235-474.000.

Steiner, Edward L., to Xerox Corporation. Reproduction machine having duplex job recovery capabilities. 4,130,354, Cl. 355-26.000.

Steinhilber, Wilhelm A., to Orion Machinery & Engineering Corp. Wire spooler. 4,130,249, Cl. 242-25.00R.

Stepanov, Jury N.: *See—*
Boreskov, Georgy K.; Slinko, Mikhail G.; Gelbshtein, Anatoly I.; Vasilevich, Lidia A.; Chesnokov, Boris B.; Frolkina, Irina T.; Dyment, Oskar N.; Stepanov, Jury N.; Davydov, Valery A.; Talaeva, Irina G.; Utkina, Ninel S.; Stroganova, Vera V.; Aksenova, Maria S.; Filippova, Anna G., deceased; Prosvirova, Olga B., administrator; and Zakharova, Irina B., administrator, 4,130,570, Cl. 260-348.350.

Stern, Gerhard; and Wegleitner, Karlheinz, to Chemie Linz Aktiengesellschaft. Process for the production of foamed plastics with improved combustion characteristics. 4,130,697, Cl. 521-106.000.

Stevens, Raymond L. Machine readable optical printed symbol format. 4,130,243, Cl. 235-487.000.

Stewart, Robert D.; and Schretter, James A., to Crosby Valve & Gage Company. Valve with variable secondary orifice. 4,130,130, Cl. 137-475.000.

Stieff, Lorin R. Fiber optic seal apparatus. 4,130,341, Cl. 350-96.200.

Stork Brabant B.V.: *See—*
Hoelen, Hermanus Josephus Eduardus J. M., 4,130,084, Cl. 118-59.000.

Storm, Donald W. Picker and loader for soft goods. 4,130,314, Cl. 294-100.000.

Strachan, Robert G.: *See—*
Holly, Frederick W.; Paleveda, William J.; Strachan, Robert G.; and Veber, Daniel F., 4,130,554, Cl. 260-112.50R.

Stratienko, Andrew, to Dresser Industries, Inc. Manually shifted actuator. 4,130,030, Cl. 74-625.000.

Streat, Michael, to National Research Development Corporation. Ion exchange materials. 4,130,512, Cl. 521-31.000.

Strigl, Reinhard: *See—*
Hummer, Roland; Thury, Wolfgang; Westerholt, Wilfried; Hollerling, Gundolf; and Strigl, Reinhard, 4,130,419, Cl. 75-130.00R.

Stroganova, Vera V.: *See—*
Boreskov, Georgy K.; Slinko, Mikhail G.; Gelbshtein, Anatoly I.; Vasilevich, Lidia A.; Chesnokov, Boris B.; Frolkina, Irina T.; Dyment, Oskar N.; Stepanov, Jury N.; Davydov, Valery A.; Talaeva, Irina G.; Utkina, Ninel S.; Stroganova, Vera V.; Aksenova, Maria S.; Filippova, Anna G., deceased; Prosvirova, Olga B., administrator; and Zakharova, Irina B., administrator, 4,130,570, Cl. 260-348.350.

Stromer, Carl-Axel: *See—*
Lindman, Borje L.; and Stromer, Carl-Axel, 4,130,742, Cl. 179-167.000.

Struble, Glenn E., to Diamond International Corporation. Collapsible or foldable packaging sleeve container. 4,130,237, Cl. 229-40.000.

Suchanek, Walton F., Jr.: *See—*
Dyroff, David R.; and Suchanek, Walton F., Jr., 4,130,635, Cl. 424-48.000.

Sugai, Noriaki: *See—*
Arai, Kojiro; and Sugai, Noriaki, 4,130,465, Cl. 204-27.000.

Sugasawara, Seiji, to Sugatsune Industrial Co., Ltd. Method for manufacturing a door catch made of a synthetic resin. 4,130,621, Cl. 264-230.000.

Sugatsune Industrial Co., Ltd.: *See—*
Sugasawara, Seiji, 4,130,621, Cl. 264-230.000.

Sugiyama, Masatoshi; and Kato, Eiichi, to Fuji Photo Film Co., Ltd. Silver halide light-sensitive material containing dye. 4,130,430, Cl. 96-84.00A.

Sugiyama, Takayuki; and Takahashi, Kihei, to Yoshida Kogyo K. K. Slide fastener. 4,129,928, Cl. 24-205.11R.

Sullivan, John W. Metal detector with feedback tuning. 4,130,792, Cl. 324-3.000.

Sullivan, Timothy J., to Sullivan Valve & Engineering Company, The. Bypass valving fluid control arrangement. 4,130,133, Cl. 137-599.100.

Sullivan Valve & Engineering Company, The: *See—*
Sullivan, Timothy J., 4,130,133, Cl. 137-599.100.

Sumitomo Chemical Company, Limited: *See—*
Hibino, Toshihiko, 4,130,566, Cl. 260-332.20C.
Itoh, Iko; Takahashi, Tsukasa; Takamuku, Shinkichi; Aramaki, Azuma; and Serada, Manabu, 4,130,456, Cl. 159-165.000.

Sumitomo Metal Industries Limited: *See—*
Kaburagi, Katsuhiko; Yamamoto, Yasutaka; and Suzuki, Yutaka, 4,130,389, Cl. 431-183.000.

Sun Chemical Corporation: *See—*
Horwitt, Laurence G.; Mattis, Donald J.; and Greenberger, Harry, 4,130,815, Cl. 338-282.000.
Rosen, George, 4,130,567, Cl. 260-340.90R.

Sun Ventures, Inc.: *See—*
Thompson, Robert M., 4,130,602, Cl. 260-857.0TW.

Sung, Pei; Klaus, Irving; and Lee-You, James, to Johnson & Johnson. Dental constructions and dental alloys. 4,129,944, Cl. 32-8.000.

Susdorf, Roman; Schuler, Ulrich; and Engelmann, Heinz, to Siemens Aktiengesellschaft. Dual axle railway driving truck. 4,130,065, Cl. 105-135.000.

Sushan, Frank M. Door jamb guard. 4,130,311, Cl. 292-346.000.

Suvada, Steve L.: *See—*
Stark, Marvin; and Suvada, Steve L., 4,130,068, Cl. 105-420.000.

Suzuki, Hiroshi: *See—*
Tanaka, Goro; and Suzuki, Hiroshi, 4,130,510, Cl. 260-823.000.

Suzuki, Masayuki: *See—*
Kanno, Kenichi; Suzuki, Masayuki; and Sato, Yuichi, 4,130,464, Cl. 204-1.00T.

Suzuki, Yoshihiro: *See—*
Watanabe, Akira; Kusaka, Yukio; and Suzuki, Yoshihiro, 4,130,438, Cl. 106-56.000.

Suzuki, Yutaka: *See—*
Amano, Kenichi; Suzuki, Yutaka; and Kishi, Yoshio, 4,130,848, Cl. 360-132.000.
Kaburagi, Katsuhiko; Yamamoto, Yasutaka; and Suzuki, Yutaka, 4,130,389, Cl. 431-183.000.

Sventsitsky, Alexandr S.: *See—*
Nudelman, Boris I.; Sventsitsky, Alexandr S.; Bikbau, Marsel Y.; Prikhozhan, Ada M.; and Ibragimov, Isak M., 4,130,441, Cl. 106-89.000.

Swallow, Douglas M., to Sweco, Inc. Bowl shaped screening apparatus. 4,130,478, Cl. 209-254.000.

Swanstrom, H. Wallace; Campbell, Kenneth C.; and Linford, Robin F. G., to Xerox Corporation. Language translating apparatus and methods therefor. 4,130,882, Cl. 364-900.000.

Swanstrom, Kenneth A., to Penn Engineering & Manufacturing Corp. Molded stand-off. 4,130,138, Cl. 138-109.000.

Sweco, Inc.: *See—*
Swallow, Douglas M., 4,130,478, Cl. 209-254.000.

Swenson, Jerry L.: *See—*
Fitch, Lawrence R.; and Swenson, Jerry L., 4,129,919, Cl. 15-302.000.

Sybron Corporation: *See—*
Peeler, Donald H., 4,130,114, Cl. 128-2.05G.

Syntex (U.S.A.) Inc.: *See—*
Ackrell, Jack, 4,130,654, Cl. 424-275.000.

Syracuse Research Corporation: *See—*
Datta, Rabinder S., 4,130,164, Cl. 166-259.000.

Sysoev, Vladimir P.: *See—*
Levin, Efim M.; Sysoev, Vladimir P.; Rudenko, Valery A.; and Pomazan, Oleg K., 4,130,381, Cl. 416-196.00R.

Syva Company: *See—*
Rubenstein, Kenneth E.; and Leute, Richard K., 4,130,462, Cl. 195-103.50A.

Szauer, Tadeusz: *See—*
Boerwinkle, Fred P.; and Szauer, Tadeusz, 4,130,524, Cl. 260-29.6HN.

T. L. Robinson Co., Inc.: *See—*
Robinson, Thomas L., Sr., 4,130,776, Cl. 313-507.000.

Tachino, Kenzo: *See—*
Satoh, Tsuyoshi; and Tachino, Kenzo, 4,130,184, Cl. 187-29.00R.

Takahashi, Kihei: *See—*
Sugiyama, Takayuki; and Takahashi, Kihei, 4,129,928, Cl. 24-205.11R.

Takahashi, Mitsuhiro; Senoo, Tadao; Minekawa, Shigeo; and Hirai, Toshiharu, to Ube-Nitto Kasei Co., Ltd. Strapping band having core formed from a thermosetting resin and a covering formed from a thermoplastic resin. 4,130,686, Cl. 428-294.000.

Takahashi, Tsukasa: *See—*
Itoh, Iko; Takahashi, Tsukasa; Takamuku, Shinkichi; Aramaki, Azuma; and Serada, Manabu, 4,130,456, Cl. 159-165.000.

Takamuku, Shinkichi: *See—*
Itoh, Iko; Takahashi, Tsukasa; Takamuku, Shinkichi; Aramaki, Azuma; and Serada, Manabu, 4,130,456, Cl. 159-165.000.

Takeda, Keiji; and Tsuboi, Masayoshi, to Fuji Photo Film Co., Ltd. Heat developable light-sensitive diazotype materials and process of use. 4,130,426, Cl. 96-49.000.

Takeda, Norio: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Abe, Mitsuo; and Takeda, Norio, 4,130,586, Cl. 260-566.00R.

Takei, Sakae. Method for manufacturing monolithic semiconductor mask programmable ROM's. 4,129,936, Cl. 29-571.000.

Takeuchi, Takashi: *See—*
Otsuka, Shigeru; Mori, Zenichi; Tominaga, Tetsuhiko; Tamura, Junichi; Shimoda, Yoshio; Takeuchi, Takashi; Oku, Masakazu; and Mori, Kan, 4,130,668, Cl. 426-287.000.

Talaeva, Irina G.: *See—*
Boreskov, Georgy K.; Slinko, Mikhail G.; Gelbshtein, Anatoly I.; Vasilevich, Lidia A.; Chesnokov, Boris B.; Frolkina, Irina T.; Dyment, Oskar N.; Stepanov, Jury N.; Davydov, Valery A.; Talaeva, Irina G.; Utkina, Ninel S.; Stroganova, Vera V.; Aksenova, Maria S.; Filippova, Anna G., deceased; Prosvirova, Olga B., administrator; and Zakharova, Irina B., administrator, 4,130,570, Cl. 260-348.350.

Tamura, Junichi: *See—*
Otsuka, Shigeru; Mori, Zenichi; Tominaga, Tetsuhiko; Tamura, Junichi; Shimoda, Yoshio; Takeuchi, Takashi; Oku, Masakazu; and Mori, Kan, 4,130,668, Cl. 426-287.000.

Tamura, Takemasa: *See—*
Akado, Hajime; Ueda, Hiroshi; Yamashita, Akira; and Tamura, Takemasa, 4,130,405, Cl. 55-503.000.

Tanaka, Chiaki; Yoko, Yatabe; and Masanobu, Morikawa, to Toray Industries, Inc. Thermoplastic linear block copolyether-polyesters as hot melt adhesives for textiles. 4,130,603, Cl. 260-860.000.

Tanaka, Goro; and Suzuki, Hiroshi, to Hitachi Chemical Co., Ltd.; and Hitachi, Ltd. Curing of epoxy resin systems using halfester compounds containing aliphatic tertiary amino groups. 4,130,510, Cl. 260-823.000.

Tanaka, Junzo; Orita, Masatomo; and Urashima, Chikao, to Matsushita Electric Industrial Co., Ltd. Microwave oven. 4,130,749, Cl. 219-10.55B.

Tanida, Hiroshi: *See—*
Hamashima, Yoshio; Tsuji, Teruji; Yoshioka, Mitsuru; Narisada, Masayuki; Komeno, Taichiro; Tanida, Hiroshi; and Nagata, Wataru, 4,130,557, Cl. 260-239.00A.

Tannenberger, Helmut: *See—*
Van Den Berghe, Paul; and Tannenberger, Helmut, 4,130,693, Cl. 429-41.000.

Tarullo, John A. Cork wall covering. 4,130,685, Cl. 428-247.000.

Tashman, Philip. Top loading waste compactor. 4,130,054, Cl. 100-52.000.

Tate & Lyle Limited: *See—*
Righelato, Renton C.; and Deavin, Lynda, 4,130,461, Cl. 195-31.00P.

Tatematsu, Kazuhisa: *See—*
Sasaki, Shiro; Yasumatsu, Jun; and Tatematsu, Kazuhisa, 4,130,255, Cl. 242-107.100.

Taylor, Colin R., to Pfizer Inc. Methods for treating congestive heart failure and ischemic heart disease. 4,130,647, Cl. 424-251.000.

Taylor, Glenn N. Brace hinge. 4,130,115, Cl. 128-80.00C.

Taylor, Lawrence D.: *See—*
Hardin, Louis W.; and Taylor, Lawrence D., 4,129,996, Cl. 62-262.000.

Taylor, Richard H.: *See—*
Hatter, Edward E.; and Taylor, Richard H., 4,129,948, Cl. 33-27.00C.

Technicon Instruments Corporation: *See—*
Negersmith, Kent M., 4,130,394, Cl. 23-230.00R.

Tektronix, Inc.: *See—*
Anderson, Brent W., 4,130,334, Cl. 339-103.00M.
Perkins, Peter E.; and Blazo, Stephen F., 4,130,775, Cl. 313-397.000.

Teledyne, Inc.: *See—*
Kates, James M.; and Berkovitz, Robert A., 4,130,726, Cl. 179-1.00D.
Kates, James M., 4,130,727, Cl. 179-1.00D.

Teledyne McCormick Selph, an operating division of Teledyne Industries, Inc.: *See—*
Goddard, Terrence P., 4,130,585, Cl. 260-564.00D.

Telefonaktiebolaget L M Ericsson: *See—*
Carlsson, Stig T.; Rasmusson, Bo M.; and Scuka, Viktor, 4,129,992, Cl. 405-164.000.
Lindman, Borje L.; and Stromer, Carl-Axel, 4,130,742, Cl. 179-167.000.

Teleglobe Pay-TV System, Inc.: *See—*
Chomet, Marc, 4,130,833, Cl. 358-122.000.

Tell, Mayo B., to Dayco Corporation. Loop picker. 4,130,142, Cl. 139-159.000.

TenHouten, Edward W.: *See—*
Thirlby, Thomas E., 4,129,957, Cl. 43-42.490.

Tenna Corporation: *See—*
Nagel, Martin J., 4,130,725, Cl. 179-1.00A.

Teradyne, Inc.: *See—*
Katz, Jonathon H., 4,130,002, Cl. 64-30.00D.

Terasawa, Tadao; and Okada, Toshihiko, to Shionogi & Co., Ltd. Novel type of oxa- and thia-steroids. 4,130,565, Cl. 260-327.0TH.

Terni-Societa per l'Industria e l'Elettricita S.p.A.: *See—*
Marianeschi, Edmondo; Basevi, Sandro; Barisoni, Mario; Marini, Paolo; Borgianni, Carlo; and Ricci Bitti, Roberto, 4,130,447, Cl. 148-27.000.

Terumo Corporation: *See—*
Kikugawa, Kiyomi; and Minoshima, Kyoko, 4,130,642, Cl. 424-101.000.

Ter-Zakharian, Julya Z.: *See—*
Tsinker, Maia G.; Ter-Zakharian, Julya Z.; Oganian, Shushanik G.; Ovakimian, Aram R.; Mndzhoian, Shushanik L.; Mndzhoian, Armenak L., deceased; and Mndzhoian, Alza A., administrator, 4,130,559, Cl. 260-239.100.

Texaco Inc.: *See—*
Bridges, James R.; Riedesel, Roland G., Jr.; and Thompson, Larry W., 4,130,793, Cl. 324-6.000.
Slough, Carlton M.; and Romero, Earl M., 4,130,791, Cl. 324-3.000.

Texas Pipe Line Company, The: *See—*
Slough, Carlton M.; and Romero, Earl M., 4,130,791, Cl. 324-3.000.

Textron Inc.: *See—*
Becker, Manfred E., 4,130,324, Cl. 308-36.100.
Carlson, Floyd W.; and Mashman, Joseph, 4,130,259, Cl. 244-83.00F.

Thame, Neville G.: *See—*
Lundberg, Robert D.; and Thame, Neville G., 4,130,517, Cl. 260-29.20N.

Theben-Werk Zeitautomatik GmbH & Co. KG.: *See—*
Schwer, Lukas, 4,130,748, Cl. 200-38.00D.

Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Apparatus for obtaining a controlled degree of ballast compaction in the tamping and leveling of a track. 4,130,062, Cl. 104-7.00R.

Theurer, Josef; and Praschl, Wilhelm, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Tamping head. 4,130,063, Cl. 104-12.000.

Thirlby, Thomas E., to TenHouten, Edward W., a part interest. Fishing bait harness, fishing lure, and attachment means. 4,129,957, Cl. 43-42.490.

Thomas, Anthony F.: *See—*
Neff, Nelson E.; and Thomas, Anthony F., 4,130,331, Cl. 339-97.00R.

Thomas, Anthony V., to Precision Paper Tube Compay. Apparatus for cutting tubes. 4,130,036, Cl. 82-90.000.

Thomas & Betts Corporation: *See—*
Stancati, Nicholas, 4,129,932, Cl. 29-407.000.

Thomas, Charles H.; and Garland, Barbara R., to Westinghouse Electric Corp. Aqueous polyester coating composition, method of making, and coated conductor. 4,130,520, Cl. 260-29.20N.

Thomas, Paul E., Jr. Liquid dispenser for vehicle and the like. 4,130,145, Cl. 141-88.000.

Thompson, Kenneth L. Radio equipped protective helmet. 4,130,803, Cl. 325-361.000.

Thompson, Larry F.: *See—*
Feit, Eugene D.; and Thompson, Larry F., 4,130,424, Cl. 96-35.100.

Thompson, Larry W.: *See—*
Bridges, James R.; Riedesel, Roland G., Jr.; and Thompson, Larry W., 4,130,793, Cl. 324-6.000.

Thompson, Robert M., to Sun Ventures, Inc. Block copolymer of poly(dioxa-amide) and polyamide. 4,130,602, Cl. 260-857.0TW.

Thompson, Scott B.: *See—*
Zajac, Chester S.; Cockram, Frederick T.; and Thompson, Scott B., 4,130,289, Cl. 279-1.00A.

Thury, Wolfgang: *See—*
Hummer, Roland; Thury, Wolfgang; Westerholt, Wilfried; Hollerling, Gundolf; and Strigl, Reinhard, 4,130,419, Cl. 75-130.00R.

Timmerman, Daniel M.: *See—*
Gilliams, Yvan K.; De Winter, Walter F.; Van Paesschen, August J.; and Timmerman, Daniel M., 4,130,670, Cl. 427-16.000.

Tjornemark, Erik, to Islef & Hagen A/S. Control system for selective positioning of a displaceable device. 4,130,183, Cl. 187-9.00R.

TMC Corporation: *See—*
Horn, Hans, 4,130,297, Cl. 280-618.000.

Tokai Rika Denki Seisakusho: *See—*
Yasumatsu, Jun; Masuda, Noriyuki; and Kubota, Tatsushi, 4,130,254, Cl. 242-107.100.

Tokuda, Shingo: *See—*
Nose, Shinji; and Tokuda, Shingo, 4,130,440, Cl. 106-74.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Kanno, Kenichi; Suzuki, Masayuki; and Sato, Yuichi, 4,130,464, Cl. 204-1.00T.
Kinoshita, Tsuneo; and Yamazaki, Isamu, 4,130,869, Cl. 364-200.000.
Matsuda, Takashi, 4,130,761, Cl. 250-492.00A.
Minami, Masana, 4,130,348, Cl. 350-162.0SF.
Ono, Masahiko, 4,130,866, Cl. 364-200.000.
Watanabe, Masafumi, 4,130,900, Cl. 365-230.000.

Tomczak, Lawrence W.: *See—*
Crall, Frederick W.; and Tomczak, Lawrence W., 4,130,856, Cl. 361-415.000.

Tominaga, Tetsuhiko: *See—*
Otsuka, Shigeru; Mori, Zenichi; Tominaga, Tetsuhiko; Tamura, Junichi; Shimoda, Yoshio; Takeuchi, Takashi; Oku, Masakazu; and Mori, Kan, 4,130,668, Cl. 426-287.000.

Tomita, Tetsuo: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Abe, Mitsuo; and Takeda, Norio, 4,130,586, Cl. 260-566.00R.

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Toro Company, The: *See—*
Comer, Robert C., 4,129,977, Cl. 56-13.400.

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Townsend, David J. Brake actuating devices. 4,130,190, Cl. 192-5.000.

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Shimizu, Akihiko; and Kita, Atsushi, 4,130,704, Cl. 526-217.000.

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Goto, Kazuo; Toyoda, Shinichi; and Sakai, Masahiko, 4,130,546, Cl. 528-73.000.

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Katagiri, Masayoshi; and Kizaki, Ziro, 4,130,189, Cl. 188-328.000.
Mori, Mamoru; and Inukai, Mitsuo, 4,130,252, Cl. 242-107.100.
Ono, Takayoshi, 4,130,222, Cl. 220-373.000.
Ota, Isamu, 4,130,608, Cl. 261-23.00A.
Sasaki, Shiro; Yasumatsu, Jun; and Tatematsu, Kazuhisa, 4,130,255, Cl. 242-107.100.
Yasumatsu, Jun, 4,130,253, Cl. 242-107.100.
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- Traffic Standard Incorporated: *See—*
  - Kone, Elliott H., 4,130,370, Cl. 404-11.000.
- Transco Northwest, Inc.: *See—*
  - Schwab, Randall J., 4,130,196, Cl. 198-796.000.
- Trekoval, Jiri: *See—*
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  - Neary, Joseph F., 4,129,956, Cl. 43-43.130.
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  - Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,130,587, Cl. 260-586.00G.
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- Ts'o, Paul O. P.; and Carter, William A. Induction of interferon production by modified nucleic acid complexes. 4,130,641, Cl. 424-85.000.
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  - Bottom, Virgil E., 4,130,771, Cl. 310-312.000.
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  - Takahashi, Mitsuhiro; Senoo, Tadao; Minekawa, Shigeo; and Hirai, Toshiharu, 4,130,686, Cl. 428-294.000.
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  - Wiener, Hans; and Undin, Hans, 4,130,031, Cl. 81-9.50R.
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  - Bruchet, Michel, 4,130,814, Cl. 335-42.000.
- Union Camp Corporation: *See—*
  - Barker, Richard G., 4,130,457, Cl. 162-82.000.
- Union Carbide Corporation: *See—*
  - Hedaya, Eddie; and Spyros, Theodoropulos, 4,130,576, Cl. 260-453.00P.
  - Hoy, Kenneth L.; and Peterson, Roland H., 4,130,523, Cl. 260-29.60R.
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  - Kinney, David W., 4,130,335, Cl. 339-122.00R.
- Union Oil Company of California: *See—*
  - Keller, James L., 4,130,148, Cl. 141-218.000.
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- Uniroyal Ltd.: *See—*
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  - Evans, Mervyn; and Harris, John D., 4,130,250, Cl. 242-68.000.
- United States of America
  - Agriculture: *See—*
    - Luddy, Francis E.; Hampson, James W.; Herb, Samuel F.; and Rothbart, Herbert L., 4,130,572, Cl. 260-410.700.
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    - Haloff, Gary J., 4,130,872, Cl. 364-431.000.
    - Micheli, Paul L., 4,130,011, Cl. 73-35.000.
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    - Abell, William R., 4,129,915, Cl. 14-10.000.
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    - Melendres, Carlos A.; and Siegel, Stanley, 4,130,500, Cl. 252-182.100.
    - Nageah, Voddarahalli K.; and Fulrath, Richard M., deceased, 4,130,671, Cl. 427-125.000.
    - Rabl, Arnulf; and Winston, Roland, 4,130,107, Cl. 126-270.000.
    - Wang, John L.; Pickus, Milton R.; and Chen, Meng-Hsiu, 4,130,422, Cl. 75-246.000.
    - Wojcik, Thaddeus A., 4,130,369, Cl. 403-297.000.
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    - Giandomenico, Anthony; Dame, James M.; and Behimer, Harold, 4,130,032, Cl. 81-119.000.
    - Youngbluth, Otto, Jr., 4,130,795, Cl. 324-57.00R.
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    - Goldie, Harry, 4,130,821, Cl. 343-17.10R.
    - Hoople, Gary R., 4,130,823, Cl. 343-768.000.
    - Kramer, Irvin R., 4,130,466, Cl. 204-38.00A.
    - Reins, Edward R.; and Curry, Charles D. B., 4,130,887, Cl. 364-900.000.
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  - Bousmar, Michel A. M. J.; and Christiaens, Michel J. P., 4,130,724, Cl. 178-69.100.
  - Dragt, Jan C. W., 4,129,930, Cl. 29-149.50R.
  - Guildford, Leslie H., 4,130,835, Cl. 358-160.000.
  - Van Gerwen, Petrus J.; Van Doorn, Rudolf A.; Snijders, Wilfred A. M.; and Van Essen, Hendrik A., 4,130,806, Cl. 325-487.000.
  - van Heusden, Sybrandus; and Hoogeveen, Leonardus P. J., 4,130,758, Cl. 250-361.00C.
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  - Dozier, Hilliard, 4,130,336, Cl. 339-273.00R.
- United Technologies Corporation: *See—*
  - Blackwell, Robert H., Jr., 4,130,377, Cl. 416-132.00R.
- Unitek Corporation: *See—*
  - Kennedy, Brian G., 4,129,946, Cl. 32-63.000.
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- University of Iowa Research Foundation: *See—*
  - Lindquist, Everet F., 4,130,283, Cl. 273-195.00A.
- University of Southern California: *See—*
  - Frasher, Wallace G.; Netto, Daniel J.; and Marcus, Carol S., 4,130,757, Cl. 250-336.000.
- University of Toledo: *See—*
  - Fry, James L., 4,130,574, Cl. 260-465.00F.
- UOP Inc.: *See—*
  - Hayes, John C., 4,130,507, Cl. 252-439.000.
  - Loboda, Robert S., 4,130,476, Cl. 208-212.000.
- Upjohn Company, The: *See—*
  - Bundy, Gordon L., 4,130,584, Cl. 260-556.00A.
  - Bundy, Gordon L., 4,130,720, Cl. 560-61.000.
  - Bundy, Gordon L.; and Nelson, Norman A., 4,130,721, Cl. 560-121.000.
  - Kelly, Robert C., 4,130,569, Cl. 260-345.200.
  - Lednicer, Daniel, 4,130,561, Cl. 546-204.000.
  - Smith, Herman W., 4,130,591, Cl. 568-645.000.
  - Smith, Herman W., 4,130,718, Cl. 560-53.000.
  - Wight, Hewitt G.; Call, Tracey G.; and Mortensen, Marvin L., 4,130,578, Cl. 260-455.00A.
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  - Baggiolini, Enrico G.; Lee, Hsi L.; and Uskokovic, Milan R., 4,130,713, Cl. 548-303.000.
  - Confalone, Pasquale N.; Lollar, Elizabeth D.; Pizzolato, Giacomo; and Uskokovic, Milan R., 4,130,568, Cl. 260-343.210.
- Ustinov, Gennady G.: *See—*
  - Iljunin, Vladimir G.; Murogov, Viktor M.; Troyanov, Mikhail F.; Rineisky, Anatoly A.; Ustinov, Gennady G.; and Shmelev, Anatoly N., 4,130,460, Cl. 176-68.000.
- Utkina, Ninel S.: *See—*
  - Boreskov, Georgy K.; Slinko, Mikhail G.; Gelbshtein, Anatoly I.; Vasilevich, Lidia A.; Chesnokov, Boris B.; Frolkina, Irina T.; Dyment, Oskar N.; Stepanov, Jury N.; Davydov, Valery A.; Talaeva, Irina G.; Utkina, Ninel S.; Stroganova, Vera V.; Aksenova, Maria S.; Filippova, Anna G., deceased; Prosvirova, Olga B., administrator; and Zakharova, Irina B., administrator, 4,130,570, Cl. 260-348.350.
- Valantin, Alfred, to Charbonnages de France. Advancing support. 4,129,990, Cl. 405-299.000.
- Valdiserri, Leo L.; and Bullock, Elyse M., to Borg-Warner Corporation. Olefin polymers stable to copper. 4,130,540, Cl. 260-45.80R.

- Van Autgaerden, Willy: *See—*
  - Sparrow, David J.; and Van Autgaerden, Willy, 4,130,698, Cl. 521-130.000.
- Van Ballegooijen, Hendrik; Binsbergen, Frederik L.; Raadsen, Jacob; and Vreugdenhil, Arie D., to Shell Oil Company. Rubber compositions. 4,130,606, Cl. 260-894.000.
- van Bilderbeek, Ben H., to Vetco, Inc. Single point mooring apparatus. 4,130,076, Cl. 114-230.000.
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  - Van Gerwen, Petrus J.; Van Doorn, Rudolf A.; Snijders, Wilfred A. M.; and Van Essen, Hendrik A., 4,130,806, Cl. 325-487.000.
- Van Doorselaer, Marcel K., to Agfa-Gevaert, N.V. Combination of photosensitive elements suited for use in radiography. 4,130,428, Cl. 96-68.000.
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  - Van Gerwen, Petrus J.; Van Doorn, Rudolf A.; Snijders, Wilfred A. M.; and Van Essen, Hendrik A., 4,130,806, Cl. 325-487.000.
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  - Monbaliu, Marcel J.; and Van Poucke, Raphael K., 4,130,427, Cl. 96-56.500.
- VanWagoner, John D.: *See—*
  - Barlow, Robert M., 4,129,967, Cl. 52-15.000.
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  - Boreskov, Georgy K.; Slinko, Mikhail G.; Gelbshtein, Anatoly I.; Vasilevich, Lidia A.; Chesnokov, Boris B.; Frolkina, Irina T.; Dyment, Oskar N.; Stepanov, Jury N.; Davydov, Valery A.; Talaeva, Irina G.; Utkina, Ninel S.; Stroganova, Vera V.; Aksenova, Maria S.; Filippova, Anna G., deceased; Prosvirova, Olga B., administrator; and Zakharova, Irina B., administrator, 4,130,570, Cl. 260-348.350.
- Vasilevskis, Janis, to Hoffmann-La Roche Inc. Synthesis of biotin. 4,130,712, Cl. 548-303.000.
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  - Smolko, Gennady G.; Vasiliev, Gennady F.; and Chikovani, Nordari M., 4,130,855, Cl. 361-387.000.
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  - Vaughan, Paul R.; and Vaughan, Susan E., 4,129,907, Cl. 4-251.000.
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  - Holly, Frederick W.; Paleveda, William J.; Strachan, Robert G.; and Veber, Daniel F., 4,130,554, Cl. 260-112.50R.
- Velenovsky, Joseph J.; and Alvarez, Manuel, to FMC Corporation. Control of halomethyl ether emissions. 4,130,629, Cl. 423-240.000.
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  - van Bilderbeek, Ben H., 4,130,076, Cl. 114-230.000.
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  - Braddyll, John R. G.; Aubrey, Joseph H.; Shaw, Ernest A.; and Palmer, Ian, 4,130,366, Cl. 366-288.000.
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  - Mender, Adolf; and Schmidt, Horst, 4,130,834, Cl. 358-127.000.
- Villante, Francis J.: *See—*
  - Millham, Ernest H.; Scaccia, Ralph J.; and Villante, Francis J., 4,130,240, Cl. 235-303.100.
- Vinals, Joaquin: *See—*
  - Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,130,587, Cl. 260-586.00G.
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  - Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., 4,130,508, Cl. 252-522.000.
- Vitrofil Corporation: *See—*
  - Shutt, Thomas C., 4,130,538, Cl. 260-40.00R.
- Vock, Manfred H.: *See—*
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- Vogel, Charles B.; and Worrell, Gene T., to Shell Oil Company. Circumferential acoustical detector. 4,130,816, Cl. 340-15.5BH.
- Vogt, B. Richard; and Cullison, David A., to E. R. Squibb & Sons, Inc. 1,2,3,4-Tetrahydro-2-((4-(phenyl)-1-piperazinyl)methyl)-1-naphthalenols and derivatives and analogs thereof. 4,130,646, Cl. 424-250.000.
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- Volertas, Vytas F.: *See—*
  - Nossen, Edward J.; and Volertas, Vytas F., 4,130,802, Cl. 325-30.000.
- Von Basse, Paul W.: *See—*
  - Zibert, Klaus; and Von Basse, Paul W., 4,130,895, Cl. 365-202.000.
- von Bergmann, Hubertus M.: *See—*
  - Hasson, Victor H.; and von Bergmann, Hubertus M., 4,130,809, Cl. 331-94.5PE.
- von Schmeling, Bogislav; and Boos, Walter R., to Uniroyal, Inc.; and Uniroyal Ltd. (Bis(diphenylaminomethane) antimicrobial agents. 4,130,664, Cl. 424-330.000.
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  - Marx, Arthur F.; and Vos, Cornelis, 4,130,665, Cl. 424-331.000.
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  - Cooksey, James M., 4,130,173, Cl. 181-212.000.
- Vreugdenhil, Arie D.: *See—*
  - Van Ballegooijen, Hendrik; Binsbergen, Frederik L.; Raadsen, Jacob; and Vreugdenhil, Arie D., 4,130,606, Cl. 260-894.000.
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- W. J. Industries, Incorporated: *See—*
  - Eddens, Gerald R., 4,130,014, Cl. 73-144.000.
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  - Wszolek, Walter R., 4,130,213, Cl. 215-349.000.
- WABCO Westinghouse: *See—*
  - Careglio, Giuseppe; and Proietti, Giovanni, 4,130,860, Cl. 362-217.000.
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- Wacker-Chemie GmbH: *See—*
  - Leiser, Manfred; Wegehaupt, Karl-Heinrich; and Marsch, Wilhelm, 4,130,707, Cl. 528-15.000.
- Wacker-Chemitronic Gesellschaft fur Elecktronik-Grundstoffe mbH: *See—*
  - Braunsperger, Johann; Lang, Winfried; and Zainer, Thorgard, 4,130,632, Cl. 423-342.000.
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- Wade, Kenneth R., to Pactrol Controls Limited. Control systems. 4,130,753, Cl. 219-492.000.
- Wagner, Helmut; and Neumann, Hans-Joachim. Use of betaines in mineral oil recovery. 4,130,491, Cl. 252-8.55D.
- Wagner, Robert F., to Sealy, Inc. Foundation unit with cushioned cross rails. 4,129,908, Cl. 5-35.000.
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  - Kaplan, Sam H.; Libman, Philomena C.; and Wainscott, William E., 4,130,472, Cl. 204-181.00N.
- Wakasa, Isao; Kawaguchi, Yutaka; and Shono, Hiroaki, to Nitto Boseki Co., Ltd. Method of detecting breakage of glass fiber filament. 4,130,406, Cl. 65-2.000.
- Wakeling, Antony J., to Solartron Electronic Group Limited, The. Printed circuit with laterally displaced ground and signal conductor tracks. 4,130,723, Cl. 174-68.500.
- Walker, Brian: *See—*
  - Hunter, George S.; Hunter, Susanne P.; and Walker, Brian, 4,130,487, Cl. 210-85.000.
- Walker, Laurine L. Collapsible ski pole seat. 4,130,294, Cl. 280-11.37E.
- Walker, Lynn C., to Dow Chemical Company, The. Adiabatic calorimeter apparatus and method for measuring the energy change in a chemical reaction. 4,130,016, Cl. 73-190.00R.
- Walker, Richard K., to Ohaus Scale Corporation. Piezo-electric disc mounting methods and apparatus. 4,130,624, Cl. 310-328.000.
- Walker, William C. String instrument tuning system. 4,130,045, Cl. 84-297.00R.
- Wallace, Dean R., to Airco, Inc. Method of making endotracheal tube cuffs. 4,130,617, Cl. 264-528.000.
- Wallace, Ronald M., to Raytheon Company. Solid state power combiner. 4,130,810, Cl. 331-107.00R.
- Walsh, Arthur M.; and Ruckdeschel, Frederick R., to Xerox Corporation. Variable frequency half-tone imaging apparatus. 4,130,841, Cl. 358-298.000.
- Walter, John, to Continental Group, Inc., The. Easy opening end closure for a container. 4,130,218, Cl. 220-268.000.
- Walter, John O., to General Motors Corporation. Method of embossing. 4,130,623, Cl. 264-293.000.
- Waltrip, Owen R., to Nuclear Supreme. Sewage treating and conversion process. 4,130,483, Cl. 210-40.000.
- Walworth Company: *See—*
  - Whitaker, Ritchie W., 4,130,285, Cl. 277-12.000.
- Wang, John L.; Pickus, Milton R.; and Chen, Meng-Hsiu, to United

States of America, Energy. Copper-base alloy for liquid phase sintering of ferrous powders. 4,130,422, Cl. 75-246.000.

- Wardlaw, Russell, to Cookson Company, The. Time delay fire closure releasing device. 4,130,156, Cl. 160-9.000.
- Watanabe, Akira; Kusaka, Yukio; and Suzuki, Yoshihiro, to Kyushu Taikarenga Kabushiki Kaisha. Basic composite unburned brick. 4,130,438, Cl. 106-56.000.
- Watanabe, Masafumi, to Tokyo Shibaura Electric Co., Ltd. Memory with common read/write data line and write-in latch circuit. 4,130,900, Cl. 365-230.000.
- Watanabe, Seiichi: *See*—
  - Kadowaki, Takashi; Nishimura, Michio; Watanabe, Seiichi; and Abe, Koichi, 4,130,596, Cl. 260-655.000.
- Watanabe, Tadashi: *See*—
  - Nakayama, Yasuharu; Watanabe, Tadashi; Nishida, Reiziro; and Enomoto, Satoru, 4,130,526, Cl. 260-29.6RB.
  - Nakayama, Yasuharu; Watanabe, Tadashi; Nishida, Reiziro; and Enomoto, Satoru, 4,130,529, Cl. 260-29.7UA.
- Watanabe, Yoshiaki: *See*—
  - Ohtaki, Shohei; Nakamoto, Soichi; Iwashita, Tomonori; Watanabe, Yoshiaki; and Kozuki, Susumu, 4,130,355, Cl. 354-33.000.
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- Wegleitner, Karlheinz: *See*—
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- Wegmann, Jacques E., to Ciba-Geigy AG. Process for the production of readily dispersible preparations of dyes and polyvinylacetals. 4,130,539, Cl. 260-42.550.
- Wehner, Hermann W.; and Lorenz, Joachim, to Ciba-Geigy Corporation. Triorganotin cyanometallate compounds. 4,130,432, Cl. 106-15.00R.
- Weinhaus, Theodore; and Fischer, Allen, to Weinhaus, Theodore. Wheel gauge. 4,129,950, Cl. 33-178.00R.
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  - Cogswell, John A.; Klaszky, Fred E.; and Jacobs, Anthony S., 4,130,207, Cl. 214-6.00D.
- Wessel, Kenneth, to Sealectro Corporation. Multi level programming assembly. 4,130,328, Cl. 339-18.00C.
- Westerholt, Wilfried: *See*—
  - Hummer, Roland; Thury, Wolfgang; Westerholt, Wilfried; Hollerling, Gundolf; and Strigl, Reinhard, 4,130,419, Cl. 75-130.00R.
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  - Shum, Lanson Y., 4,130,796, Cl. 324-61.00R.
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- Wisniak, Jaime; and Benajahu, Hanoch, to Ben-Gurion University of the Negev Research and Development Authority. Liquid jojoba oil derivatives. 4,130,495, Cl. 252-48.400.
- Wojcik, Thaddeus A., to United States of America, Energy. Dowel pin. 4,130,369, Cl. 403-297.000.
- Wonn, James W., to Westinghouse Electric Corp. Bubble detector. 4,130,010, Cl. 73-19.000.
- Woodruff, Frank, to Bendix Corporation, The. Drive coupler and uncoupler. 4,130,001, Cl. 64-19.000.
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  - Souza, Anthony J., 4,129,959, Cl. 43-92.000.
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- Wygant, James C., to Monsanto Company. Low-odor dye solvents for pressure-sensitive copying systems. 4,130,299, Cl. 282-27.500.
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- Wyler, Siegfried: *See*—
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  - St. John, Robert P., 4,130,838, Cl. 358-267.000.
  - Stange, Klaus K., 4,130,274, Cl. 271-236.000.
  - Steiner, Edward L., 4,130,354, Cl. 355-26.000.
  - Swanstrom, H. Wallace; Campbell, Kenneth C.; and Linford, Robin F. G., 4,130,882, Cl. 364-900.000.
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  - Walsh, Arthur M.; and Ruckdeschel, Frederick R., 4,130,841, Cl. 358-298.000.
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- Yamamoto, Yasutaka: *See*—
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- Yamazaki, Yoshio, to Kabushiki Kaisha Suwa Seikosha. Liquid crystal digital display electronic wristwatch. 4,129,983, Cl. 58-50.00R.
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  - Gunther, Ronald G., 4,130,696, Cl. 429-223.000.
- Yarway Corporation: *See*—
  - Brand, Warren H., 4,130,611, Cl. 261-66.000.
- Yasumatsu, Jun, to Toyota Jidosha Kogyo Kabushiki Kaisha. Seat belt winding device. 4,130,253, Cl. 242-107.100.
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- Zaboronok, Georgy F.; Efimov, Vladimir E.; and Kozlov, Alexandr T. Method of preparing a furnace charge when smelting refractory metals and alloys. 4,130,416, Cl. 75-10.00R.
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- Zakharova, Irina B., administrator: *See*—
  - Boreskov, Georgy K.; Slinko, Mikhail G.; Gelbshtein, Anatoly I.; Vasilevich, Lidia A.; Chesnokov, Boris B.; Frolkina, Irina T.; Dyment, Oskar N.; Stepanov, Jury N.; Davydov, Valery A.; Talaeva, Irina G.; Utkina, Ninel S.; Stroganova, Vera V.; Aksenova, Maria S.; Filippova, Anna G., deceased; Prosvirova, Olga B., administrator; and Zakharova, Irina B., administrator, 4,130,570, Cl. 260-348.350.
- Zambetis, Thomas A.: *See*—
  - Allaire, William P.; Mayer, William J.; and Zambetis, Thomas A., 4,130,787, Cl. 318-565.000.
- Zamco Manufacturing Co.: *See*—
  - Zajac, Chester S.; Cockram, Frederick T.; and Thompson, Scott B., 4,130,289, Cl. 279-1.00A.
- Zehnder, Ulrich, to Maschinenfabrik Schweiter AG. Thread parting device for textile machines. 4,130,038, Cl. 83-175.000.
- Zenith Radio Corporation: *See*—
  - De Jule, Michael C., 4,130,777, Cl. 315-169.0TV.
  - Kaplan, Sam H.; Libman, Philomena C.; and Wainscott, William E., 4,130,472, Cl. 204-181.00N.
  - Polley, Eugene J., 4,130,346, Cl. 350-114.000.
- Zibert, Klaus; and Von Basse, Paul W., to Siemens Aktiengesellschaft. Storage module. 4,130,895, Cl. 365-202.000.
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- Zilcosky, Hector J.: *See*—
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- Zimmerman, Leonard P. Charcoal lighter basket. 4,130,103, Cl. 126-25.00B.
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CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 48,560	4,002,772	Mar. 30, 1976	Jan. 11, 1977	B 371,912	3,995,738	Mar. 2, 1976	Dec. 7, 1976
B 54,859	4,000,101	Feb. 17, 1976	Dec. 28, 1976	B 372,016	3,989,685	Mar. 9, 1976	Nov. 2, 1976
B 59,512	3,999,216	Mar. 16, 1976	Dec. 21, 1976	B 372,232	4,000,967	Mar. 16, 1976	Jan. 4, 1977
B 66,272	4,014,978	Feb. 24, 1976	Mar. 29, 1977	B 372,722	3,998,925	Mar. 9, 1976	Dec. 21, 1976
B 71,613	4,008,393	Mar. 16, 1976	Feb. 15, 1977	B 373,344	4,053,067	Feb. 3, 1976	Oct. 11, 1977
B 73,017	4,001,879	Mar. 9, 1976	Jan. 4, 1977	B 373,354	3,989,870	Jan. 27, 1976	Nov. 2, 1976
B 78,315	3,982,192	Feb. 10, 1976	Sep. 21, 1976	B 374,553	4,008,394	Mar. 30, 1976	Feb. 15, 1977
B 79,099	3,982,177	Jan. 13, 1976	Sep. 21, 1976	B 374,588	3,985,899	Jan. 27, 1976	Oct. 12, 1976
B 97,259	3,999,614	Mar. 9, 1976	Dec. 28, 1976	B 376,749	4,014,856	Mar. 30, 1976	Mar. 29, 1977
B 105,006	4,007,074	Mar. 23, 1976	Feb. 8, 1977	B 378,513	3,981,750	Jan. 27, 1976	Sep. 21, 1976
B 111,130	4,001,380	Mar. 16, 1976	Jan. 4, 1977	B 378,760	4,001,477	Mar. 9, 1976	Jan. 4, 1977
B 141,968	4,013,442	Mar. 30, 1976	Mar. 22, 1977	B 379,177	3,981,976	Jan. 27, 1976	Sep. 21, 1976
B 150,142	3,981,767	Jan. 27, 1976	Sep. 21, 1976	B 380,137	4,014,802	Mar. 23, 1976	Mar. 29, 1977
B 159,570	4,036,870	Mar. 23, 1976	July 19, 1977	B 381,006	4,009,447	Apr. 6, 1976	Feb. 22, 1977
B 160,045	3,983,446	Jan. 13, 1976	Sep. 28, 1976	B 381,709	3,984,587	Jan. 13, 1976	Oct. 5, 1976
B 160,099	3,987,221	Jan. 13, 1976	Oct. 19, 1976	B 381,985	3,990,775	Feb. 3, 1976	Nov. 9, 1976
B 163,463	3,981,659	Jan. 27, 1976	Sep. 21, 1976	B 382,120	4,013,639	Mar. 23, 1976	Mar. 22, 1977
B 167,470	4,001,101	Mar. 2, 1976	Jan. 4, 1977	B 383,697	4,008,211	Feb. 17, 1976	Feb. 15, 1977
B 181,208	4,001,391	Mar. 9, 1976	Jan. 4, 1977	B 384,225	3,998,523	Mar. 16, 1976	Dec. 21, 1976
B 200,759	3,986,872	Feb. 3, 1976	Oct. 19, 1976	B 384,330	3,985,613	Jan. 27, 1976	Oct. 12, 1976
B 208,916	3,987,106	Jan. 13, 1976	Oct. 19, 1976	B 384,654	3,992,681	Feb. 24, 1976	Nov. 16, 1976
B 214,925	3,997,648	Mar. 9, 1976	Dec. 14, 1976	B 385,024	3,994,911	Feb. 10, 1976	Nov. 30, 1976
B 231,416	4,000,054	Mar. 30, 1976	Dec. 28, 1976	B 385,483	3,993,684	Feb. 17, 1976	Nov. 23, 1976
B 236,266	4,013,624	Mar. 23, 1976	Mar. 22, 1977	B 385,631	3,982,924	Jan. 27, 1976	Sep. 28, 1976
B 236,342	4,001,182	Feb. 10, 1976	Jan. 4, 1977	B 386,257	3,981,915	Feb. 3, 1976	Sep. 21, 1976
B 248,240	3,983,556	Jan. 13, 1976	Sep. 28, 1976	B 386,673	3,993,717	Feb. 3, 1976	Nov. 23, 1976
B 257,143	4,000,111	Mar. 16, 1976	Dec. 28, 1976	B 386,828	3,992,440	Feb. 3, 1976	Nov. 16, 1976
B 270,274	3,982,223	Feb. 17, 1976	Sep. 21, 1976	B 387,337	D 243,157	Mar. 16, 1976	Jan. 25, 1977
B 270,351	3,997,893	Mar. 30, 1976	Dec. 14, 1976	B 388,675	4,012,459	Mar. 30, 1976	Mar. 15, 1977
B 271,743	4,001,195	Mar. 16, 1976	Jan. 4, 1977	B 389,155	4,000,970	Mar. 30, 1976	Jan. 4, 1977
B 276,026	3,992,405	Feb. 3, 1976	Nov. 16, 1976	B 389,304	3,986,829	Jan. 27, 1976	Oct. 19, 1976
B 279,415	4,000,697	Mar. 16, 1976	Jan. 4, 1977	B 390,031	3,985,799	Jan. 13, 1976	Oct. 12, 1976
B 279,969	3,986,073	Jan. 13, 1976	Oct. 12, 1976	B 390,408	3,992,426	Feb. 3, 1976	Nov. 16, 1976
B 281,162	4,009,481	Mar. 23, 1976	Feb. 22, 1977	B 390,979	4,003,850	Mar. 23, 1976	Jan. 18, 1977
B 283,941	3,995,313	Feb. 3, 1976	Nov. 30, 1976	B 391,473	3,988,370	Mar. 2, 1976	Oct. 26, 1976
B 288,757	4,001,072	Mar. 30, 1976	Jan. 4, 1977	B 391,797	3,988,046	Mar. 9, 1976	Oct. 26, 1976
B 301,143	3,991,107	Jan. 27, 1976	Nov. 9, 1976	B 391,828	4,014,933	Apr. 6, 1976	Mar. 29, 1977
B 302,160	3,985,774	Feb. 3, 1976	Oct. 12, 1976	B 391,844	3,999,165	Mar. 16, 1976	Dec. 21, 1976
B 306,668	3,985,713	Feb. 3, 1976	Oct. 12, 1976	B 392,798	3,996,249	Mar. 30, 1976	Dec. 7, 1976
B 307,698	3,993,763	Feb. 3, 1976	Nov. 23, 1976	B 394,248	3,989,764	Jan. 27, 1976	Nov. 2, 1976
B 308,659	3,981,947	Jan. 27, 1976	Sep. 21, 1976	B 394,350	3,982,200	Jan. 13, 1976	Sep. 21, 1976
B 311,450	3,988,976	Mar. 9, 1976	Nov. 2, 1976	B 394,742	4,009,285	Apr. 13, 1976	Feb. 22, 1977
B 311,779	4,013,481	Feb. 10, 1976	Mar. 22, 1977	B 395,554	3,998,156	Mar. 9, 1976	Dec. 21, 1976
B 313,280	4,003,591	Apr. 6, 1976	Jan. 18, 1977	B 395,975	4,001,085	Mar. 2, 1976	Jan. 4, 1977
B 326,211	3,988,272	Mar. 23, 1976	Oct. 26, 1976	B 396,164	3,989,590	Feb. 3, 1976	Nov. 2, 1976
B 328,065	4,014,752	Mar. 30, 1976	Mar. 29, 1977	B 396,377	D 243,148	Apr. 6, 1976	Jan. 25, 1977
B 328,077	4,014,860	Apr. 13, 1976	Mar. 29, 1977	B 397,674	3,998,438	Mar. 16, 1976	Dec. 21, 1976
B 328,116	4,000,774	Mar. 9, 1976	Jan. 4, 1977	B 398,084	3,996,239	Feb. 3, 1976	Dec. 7, 1976
B 330,719	4,001,121	Mar. 16, 1976	Jan. 4, 1977	B 398,220	3,990,834	Feb. 3, 1976	Nov. 9, 1976
B 330,736	3,996,299	Feb. 3, 1976	Dec. 7, 1976	B 398,488	3,987,991	Feb. 24, 1976	Oct. 26, 1976
B 332,442	4,001,231	Mar. 30, 1976	Jan. 4, 1977	B 399,098	3,997,665	Feb. 24, 1976	Dec. 14, 1976
B 333,110	3,989,867	Mar. 16, 1976	Nov. 2, 1976	B 399,632	4,001,046	Mar. 9, 1976	Jan. 4, 1977
B 333,247	4,001,201	Mar. 16, 1976	Jan. 4, 1977	B 399,908	3,983,323	Jan. 13, 1976	Sep. 28, 1976
B 333,838	4,006,263	Mar. 23, 1976	Feb. 1, 1977	B 400,871	3,988,893	Feb. 17, 1976	Nov. 2, 1976
B 335,783	4,013,744	Mar. 30, 1976	Mar. 22, 1977	B 401,042	D 242,197	Mar. 16, 1976	Nov. 9, 1976
B 336,754	3,989,805	Mar. 16, 1976	Nov. 2, 1976	B 401,221	4,014,791	Apr. 6, 1976	Mar. 29, 1977
B 337,023	4,013,188	Mar. 30, 1976	Mar. 22, 1977	B 402,162	3,994,902	Mar. 2, 1976	Nov. 30, 1976
B 337,823	4,002,746	Mar. 23, 1976	Jan. 11, 1977	B 402,328	3,995,545	Apr. 6, 1976	Dec. 7, 1976
B 339,194	3,982,215	Feb. 3, 1976	Sep. 21, 1976	B 402,553	3,983,219	Feb. 17, 1976	Sep. 28, 1976
B 339,446	4,001,067	Feb. 24, 1976	Jan. 4, 1977	B 402,657	4,013,665	Apr. 6, 1976	Mar. 22, 1977
B 340,170	4,000,444	Mar. 30, 1976	Dec. 28, 1976	B 402,929	3,991,251	Feb. 3, 1976	Nov. 9, 1976
B 344,669	4,013,655	Mar. 16, 1976	Mar. 22, 1977	B 403,076	4,014,917	Apr. 20, 1976	Mar. 29, 1977
B 347,661	3,999,218	Mar. 16, 1976	Dec. 21, 1976	B 403,243	3,996,232	Mar. 30, 1976	Dec. 7, 1976
B 348,433	3,984,405	Feb. 3, 1976	Oct. 5, 1976	B 403,326	4,001,212	Mar. 23, 1976	Jan. 4, 1977
B 349,370	3,989,684	Jan. 27, 1976	Nov. 2, 1976	B 403,477	3,995,315	Feb. 3, 1976	Nov. 30, 1976
B 351,455	4,001,309	Feb. 24, 1976	Jan. 4, 1977	B 403,507	3,982,095	Feb. 10, 1976	Sep. 21, 1976
B 354,222	4,012,305	Mar. 23, 1976	Mar. 15, 1977	B 403,766	3,994,834	Feb. 10, 1976	Nov. 30, 1976
B 354,959	3,995,996	Feb. 17, 1976	Dec. 7, 1976	B 403,883	4,001,481	Mar. 23, 1976	Jan. 4, 1977
B 356,187	3,981,222	Jan. 20, 1976	Sep. 21, 1976	B 405,726	3,981,241	Jan. 13, 1976	Sep. 21, 1976
B 356,470	4,014,789	Mar. 23, 1976	Mar. 29, 1977	B 405,899	4,097,710	Mar. 23, 1976	Mar. 21, 1978
B 357,526	4,001,319	Mar. 23, 1976	Jan. 4, 1977	B 406,546	D 242,966	Mar. 16, 1976	Jan. 11, 1977
B 358,260	3,989,661	Mar. 30, 1976	Nov. 2, 1976	B 407,205	4,000,966	Mar. 16, 1976	Jan. 4, 1977
B 358,427	3,989,896	Feb. 3, 1976	Nov. 2, 1976	B 407,737	3,992,546	Feb. 3, 1976	Nov. 16, 1976
B 359,768	4,013,684	Mar. 30, 1976	Mar. 22, 1977	B 407,812	4,010,006	Mar. 23, 1976	Mar. 1, 1977
B 359,901	3,981,729	Jan. 13, 1976	Sep. 21, 1976	B 408,123	4,014,887	Apr. 13, 1976	Mar. 29, 1977
B 361,954	4,014,753	Apr. 6, 1976	Mar. 29, 1977	B 409,848	3,983,270	Jan. 27, 1976	Sep. 28, 1976
B 363,565	4,004,821	Mar. 30, 1976	Jan. 25, 1977	B 410,074	4,001,303	Feb. 24, 1976	Jan. 4, 1977
B 364,797	3,996,131	Feb. 17, 1976	Dec. 7, 1976	B 410,694	3,995,530	Mar. 23, 1976	Dec. 7, 1976
B 367,092	4,014,920	Apr. 13, 1976	Mar. 29, 1977	B 411,471	3,982,933	Feb. 17, 1976	Sep. 28, 1976
B 367,305	3,998,640	Mar. 2, 1976	Dec. 21, 1976	B 411,624	4,001,205	Mar. 16, 1976	Jan. 4, 1977
B 367,621	3,989,589	Feb. 3, 1976	Nov. 2, 1976	B 411,765	3,993,428	Feb. 24, 1976	Nov. 23, 1976
B 369,221	3,985,834	Feb. 24, 1976	Oct. 12, 1976	B 412,023	4,130,788	Apr. 6, 1978	Dec. 19, 1978
B 369,373	4,013,683	Mar. 23, 1976	Mar. 22, 1977	B 412,068	3,981,244	Jan. 13, 1976	Sep. 21, 1976
B 369,379	4,013,754	Mar. 30, 1976	Mar. 22, 1977	B 412,124	4,007,000	Mar. 23, 1976	Feb. 8, 1977
B 370,309	3,989,640	Jan. 20, 1976	Nov. 2, 1976	B 413,379	4,001,325	Mar. 9, 1976	Jan. 4, 1977
B 371,095	4,005,074	Mar. 23, 1976	Jan. 25, 1977	B 414,028	3,993,738	Feb. 17, 1976	Nov. 23, 1976
B 371,635	4,010,290	Mar. 23, 1976	Mar. 1, 1977	B 414,266	3,993,614	Feb. 10, 1976	Nov. 23, 1976

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 414,481	3,982,979	Jan. 20, 1976	Sep. 28, 1976
B 414,971	D 242,208	Feb. 10, 1976	Nov. 9, 1976
B 415,021	3,994,173	Mar. 2, 1976	Nov. 30, 1976
B 415,122	3,997,503	Feb. 10, 1976	Dec. 14, 1976
B 415,590	4,009,317	Mar. 23, 1976	Feb. 22, 1977
B 416,257	4,001,335	Mar. 16, 1976	Jan. 4, 1977
B 416,589	3,990,363	Jan. 27, 1976	Nov. 9, 1976
B 417,014	3,981,851	Jan. 13, 1976	Sep. 21, 1976
B 417,164	4,001,360	Mar. 2, 1976	Jan. 4, 1977
B 417,349	3,985,076	Mar. 9, 1976	Oct. 12, 1976
B 417,498	4,013,471	Mar. 23, 1976	Mar. 22, 1977
B 418,489	3,989,592	Jan. 13, 1976	Nov. 2, 1976
B 419,173	3,999,728	Mar. 9, 1976	Dec. 28, 1976
B 419,582	3,989,681	Mar. 2, 1976	Nov. 2, 1976
B 420,176	4,001,017	Mar. 16, 1976	Jan. 4, 1977
B 420,321	3,990,645	Mar. 30, 1976	Nov. 9, 1976
B 420,472	3,993,934	Feb. 24, 1976	Nov. 23, 1976
B 421,373	4,001,326	Mar. 23, 1976	Jan. 4, 1977
B 421,608	4,013,806	Mar. 23, 1976	Mar. 22, 1977
B 421,975	3,994,693	Mar. 2, 1976	Nov. 30, 1976
B 422,063	3,994,835	Feb. 3, 1976	Nov. 30, 1976
B 422,156	4,010,401	Mar. 23, 1976	Mar. 1, 1977
B 423,365	3,996,186	Feb. 17, 1976	Dec. 7, 1976
B 423,404	3,990,958	Mar. 2, 1976	Nov. 9, 1976
B 423,441	3,997,137	Feb. 17, 1976	Dec. 14, 1976
B 423,867	3,990,844	Feb. 3, 1976	Nov. 9, 1976
B 423,883	3,986,871	Jan. 27, 1976	Oct. 19, 1976
B 424,354	D 242,416	Feb. 10, 1976	Nov. 23, 1976
B 424,410	4,021,196	Mar. 30, 1976	May 3, 1977
B 424,989	3,990,569	Feb. 3, 1976	Nov. 9, 1976
B 425,193	4,002,107	Mar. 23, 1976	Jan. 11, 1977
B 425,285	4,014,676	Apr. 13, 1976	Mar. 29, 1977
B 425,462	3,998,396	Mar. 9, 1976	Dec. 21, 1976
B 425,588	3,985,111	Jan. 13, 1976	Oct. 12, 1976
B 426,157	4,013,714	Mar. 23, 1976	Mar. 22, 1977
B 426,227	3,999,028	Mar. 2, 1976	Dec. 21, 1976
B 426,266	3,998,839	Mar. 2, 1976	Dec. 21, 1976
B 426,274	4,014,949	Jan. 20, 1976	Mar. 29, 1977
B 426,424	3,993,742	Feb. 3, 1976	Nov. 23, 1976
B 426,639	3,992,539	Feb. 3, 1976	Nov. 16, 1976
B 426,819	3,995,868	Feb. 17, 1976	Dec. 7, 1976
B 427,883	3,982,277	Jan. 20, 1976	Sep. 21, 1976
B 427,946	4,006,161	Mar. 23, 1976	Feb. 1, 1977
B 428,103	4,000,211	Feb. 10, 1976	Dec. 28, 1976
B 428,271	3,987,415	Mar. 23, 1976	Oct. 19, 1976
B 428,408	3,995,252	Mar. 2, 1976	Nov. 30, 1976
B 428,877	3,984,649	Jan. 27, 1976	Oct. 5, 1976
B 429,018	3,990,061	Feb. 10, 1976	Nov. 2, 1976
B 429,027	4,001,260	Mar. 23, 1976	Jan. 4, 1977
B 429,157	3,990,628	Jan. 27, 1976	Nov. 9, 1976
B 429,434	3,989,223	Feb. 17, 1976	Nov. 2, 1976
B 430,157	3,992,465	Feb. 17, 1976	Nov. 16, 1976
B 430,172	3,982,563	Jan. 13, 1976	Sep. 28, 1976
B 430,213	4,013,514	Mar. 30, 1976	Mar. 22, 1977
B 430,276	3,982,171	Jan. 20, 1976	Sep. 21, 1976
B 430,287	D 242,489	Feb. 10, 1976	Nov. 23, 1976
B 430,326	4,003,581	Mar. 23, 1976	Jan. 18, 1977
B 430,334	3,981,677	Jan. 27, 1976	Sep. 21, 1976
B 431,072	3,985,610	Jan. 20, 1976	Oct. 12, 1976
B 431,334	3,988,095	Mar. 16, 1976	Oct. 26, 1976
B 431,713	4,000,167	Feb. 10, 1976	Dec. 28, 1976
B 431,785	3,999,950	Feb. 24, 1976	Dec. 28, 1976
B 431,797	4,007,290	Mar. 30, 1976	Feb. 8, 1977
B 432,049	3,995,123	Mar. 23, 1976	Nov. 30, 1976
B 432,140	3,999,163	Mar. 23, 1976	Dec. 21, 1976
B 432,265	4,013,480	Mar. 23, 1976	Mar. 22, 1977
B 432,594	4,003,404	Mar. 30, 1976	Jan. 18, 1977
B 432,969	3,997,017	Mar. 2, 1976	Dec. 14, 1976
B 432,991	3,991,669	Mar. 2, 1976	Nov. 16, 1976
B 433,094	3,987,768	Jan. 27, 1976	Oct. 26, 1976
B 433,707	4,013,594	Mar. 23, 1976	Mar. 22, 1977
B 433,892	4,016,061	Apr. 6, 1976	Apr. 5, 1977
B 433,930	4,012,324	Mar. 23, 1976	Mar. 15, 1977
B 434,206	3,994,610	Feb. 3, 1976	Nov. 30, 1976
B 434,441	D 242,849	Mar. 16, 1976	Dec. 28, 1976
B 435,481	4,000,892	Mar. 9, 1976	Jan. 4, 1977
B 435,570	4,000,908	Mar. 16, 1976	Jan. 4, 1977
B 435,617	4,001,234	Mar. 16, 1976	Jan. 4, 1977
B 436,724	3,991,856	Feb. 24, 1976	Nov. 16, 1976
B 437,209	4,001,193	Feb. 3, 1976	Jan. 4, 1977
B 437,559	3,993,287	Feb. 3, 1976	Nov. 23, 1976
B 437,596	3,985,638	Jan. 27, 1976	Oct. 12, 1976
B 437,894	4,001,015	Mar. 2, 1976	Jan. 4, 1977
B 437,986	4,011,399	Apr. 20, 1976	Mar. 8, 1977
B 438,048	4,001,394	Mar. 23, 1976	Jan. 4, 1977
B 438,484	3,992,451	Feb. 17, 1976	Nov. 16, 1976
B 438,882	3,983,719	Feb. 24, 1976	Oct. 5, 1976
B 438,916	3,983,050	Jan. 13, 1976	Sep. 28, 1976
B 439,542	3,982,199	Jan. 27, 1976	Sep. 21, 1976
B 439,778	4,001,455	Feb. 3, 1976	Jan. 4, 1977
B 440,548	4,001,271	Mar. 16, 1976	Jan. 4, 1977
B 440,632	4,014,955	Apr. 13, 1976	Mar. 29, 1977
B 440,633	4,000,116	Feb. 10, 1976	Dec. 28, 1976
B 440,858	3,993,670	Feb. 3, 1976	Nov. 23, 1976
B 441,543	4,014,755	Mar. 23, 1976	Mar. 29, 1977
B 441,605	4,026,862	Feb. 3, 1976	May 31, 1977
B 441,723	3,988,249	Mar. 16, 1976	Oct. 26, 1976
B 441,789	4,001,449	Mar. 30, 1976	Jan. 4, 1977
B 442,163	D 242,192	Mar. 16, 1976	Nov. 9, 1976
B 442,295	4,000,477	Mar. 16, 1976	Dec. 28, 1976
B 442,431	4,011,260	Mar. 23, 1976	Mar. 8, 1977
B 442,810	3,997,533	Feb. 24, 1976	Dec. 14, 1976
B 442,866	3,982,351	Feb. 24, 1976	Sep. 28, 1976
B 442,953	4,002,657	Mar. 23, 1976	Jan. 11, 1977
B 442,970	3,989,890	Feb. 3, 1976	Nov. 2, 1976
B 443,163	3,981,242	Feb. 3, 1976	Sep. 21, 1976
B 443,446	D 242,494	Apr. 6, 1976	Nov. 23, 1976
B 443,563	3,996,204	Feb. 24, 1976	Dec. 7, 1976
B 443,647	3,990,737	Feb. 17, 1976	Nov. 9, 1976
B 443,712	3,982,233	Jan. 27, 1976	Sep. 21, 1976
B 444,078	4,014,854	Mar. 23, 1976	Mar. 29, 1977
B 444,294	4,013,634	Mar. 30, 1976	Mar. 22, 1977
B 444,437	3,995,171	Mar. 9, 1976	Nov. 30, 1976
B 445,166	4,001,252	Mar. 2, 1976	Jan. 4, 1977
B 445,459	3,988,889	Feb. 3, 1976	Nov. 2, 1976
B 445,493	3,994,903	Mar. 2, 1976	Nov. 30, 1976
B 445,690	3,999,584	Feb. 3, 1976	Dec. 28, 1976
B 446,107	4,001,276	Mar. 9, 1976	Jan. 4, 1977
B 446,956	4,014,765	Apr. 13, 1976	Mar. 29, 1977
B 447,000	3,984,419	Feb. 3, 1976	Oct. 5, 1976
B 447,440	3,991,724	Feb. 17, 1976	Nov. 16, 1976
B 449,837	4,128,582	Mar. 2, 1976	Dec. 5, 1978
B 449,892	3,997,919	Mar. 23, 1976	Dec. 14, 1976
B 449,988	4,014,794	Mar. 30, 1976	Mar. 29, 1977
B 449,989	4,061,572	Mar. 30, 1976	Dec. 6, 1977
B 450,196	3,997,701	Feb. 10, 1976	Dec. 14, 1976
B 450,413	4,007,463	Mar. 23, 1976	Feb. 8, 1977
B 450,521	3,982,838	Feb. 17, 1976	Sep. 28, 1976
B 450,701	3,991,084	Mar. 16, 1976	Nov. 9, 1976
B 450,708	3,989,724	Mar. 9, 1976	Nov. 2, 1976
B 450,870	3,998,951	Mar. 16, 1976	Dec. 21, 1976
B 450,967	3,983,055	Jan. 13, 1976	Sep. 28, 1976
B 451,248	3,997,758	Mar. 2, 1976	Dec. 14, 1976
B 451,308	3,991,037	Feb. 17, 1976	Nov. 9, 1976
B 451,396	4,000,450	Apr. 13, 1976	Dec. 28, 1976
B 451,438	Re. 29,066	Mar. 2, 1976	Dec. 7, 1976
B 451,534	3,986,033	Jan. 13, 1976	Oct. 12, 1976
B 452,034	4,002,367	Mar. 23, 1976	Jan. 11, 1977
B 452,138	4,004,278	Mar. 23, 1976	Jan. 18, 1977
B 452,293	4,014,726	Mar. 30, 1976	Mar. 29, 1977
B 452,501	4,001,111	Mar. 16, 1976	Jan. 4, 1977
B 452,672	3,981,602	Jan. 13, 1976	Sep. 21, 1976
B 452,879	4,001,089	Mar. 16, 1976	Jan. 4, 1977
B 452,883	3,981,735	Jan. 27, 1976	Sep. 21, 1976
B 452,915	4,013,933	Mar. 30, 1976	Mar. 22, 1977
B 452,938	3,994,719	Feb. 17, 1976	Nov. 30, 1976
B 452,944	4,009,773	Mar. 30, 1976	Mar. 1, 1977
B 453,031	3,998,678	Mar. 16, 1976	Dec. 21, 1976
B 453,067	4,005,394	Mar. 23, 1976	Jan. 25, 1977
B 453,238	3,997,063	Mar. 2, 1976	Dec. 14, 1976
B 453,432	4,000,514	Mar. 16, 1976	Dec. 28, 1976
B 453,533	3,997,744	Feb. 17, 1976	Dec. 14, 1976
B 453,616	3,987,376	Jan. 27, 1976	Oct. 19, 1976
B 453,759	3,989,790	Jan. 27, 1976	Nov. 2, 1976
B 453,960	4,014,701	Apr. 13, 1976	Mar. 29, 1977
B 454,283	3,995,153	Feb. 3, 1976	Nov. 30, 1976
B 454,833	4,008,733	Mar. 30, 1976	Feb. 22, 1977
B 455,425	3,990,060	Feb. 3, 1976	Nov. 2, 1976
B 455,481	3,991,092	Feb. 24, 1976	Nov. 9, 1976
B 455,486	4,001,353	Mar. 16, 1976	Jan. 4, 1977
B 455,686	4,001,156	Mar. 2, 1976	Jan. 4, 1977
B 455,759	3,984,242	Feb. 24, 1976	Oct. 5, 1976
B 455,806	3,998,919	Mar. 23, 1976	Dec. 21, 1976
B 456,069	3,998,991	Mar. 9, 1976	Dec. 21, 1976
B 456,148	3,984,269	Jan. 13, 1976	Oct. 5, 1976
B 456,153	3,997,992	Mar. 9, 1976	Dec. 21, 1976
B 456,384	4,014,859	Apr. 6, 1976	Mar. 29, 1977
B 456,579	3,993,715	Feb. 10, 1976	Nov. 23, 1976
B 456,869	4,001,277	Mar. 9, 1976	Jan. 4, 1977
B 456,900	3,996,262	Feb. 3, 1976	Dec. 7, 1976
B 456,905	4,013,431	Mar. 23, 1976	Mar. 22, 1977
B 457,547	3,996,397	Feb. 17, 1976	Dec. 7, 1976
B 457,850	3,993,586	Feb. 10, 1976	Nov. 23, 1976
B 457,862	3,987,195	Jan. 27, 1976	Oct. 19, 1976

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DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 457,886	3,988,498	Jan. 13, 1976	Oct. 26, 1976
B 457,931	4,001,229	Mar. 16, 1976	Jan. 4, 1977
B 458,500	3,997,805	Feb. 24, 1976	Dec. 14, 1976
B 458,617	3,984,422	Feb. 3, 1976	Oct. 5, 1976
B 458,964	3,996,615	Mar. 2, 1976	Dec. 7, 1976
B 459,190	4,010,786	Mar. 30, 1976	Mar. 8, 1977
B 459,381	4,000,017	Mar. 9, 1976	Dec. 28, 1976
B 459,408	4,018,890	Mar. 23, 1976	Apr. 19, 1977
B 459,597	3,996,711	Feb. 17, 1976	Dec. 14, 1976
B 459,811	3,982,173	Jan. 20, 1976	Sep. 21, 1976
B 459,821	4,005,954	Mar. 30, 1976	Feb. 1, 1977
B 460,388	3,989,448	Jan. 27, 1976	Nov. 2, 1976
B 460,441	3,981,828	Jan. 13, 1976	Sep. 21, 1976
B 460,846	3,985,817	Feb. 24, 1976	Oct. 12, 1976
B 461,184	3,992,482	Feb. 17, 1976	Nov. 16, 1976
B 461,250	4,000,768	Mar. 16, 1976	Jan. 4, 1977
B 461,257	4,078,715	Jan. 13, 1976	Mar. 14, 1978
B 461,336	3,982,231	Feb. 3, 1976	Sep. 21, 1976
B 461,352	3,981,681	Jan. 13, 1976	Sep. 21, 1976
B 461,685	4,013,661	Mar. 30, 1976	Mar. 22, 1977
B 461,752	4,016,541	Apr. 20, 1976	Apr. 5, 1977
B 461,874	3,982,276	Jan. 27, 1976	Sep. 21, 1976
B 462,030	4,009,342	Mar. 23, 1976	Feb. 22, 1977
B 462,386	3,988,188	Jan. 13, 1976	Oct. 26, 1976
B 462,424	3,989,602	Feb. 24, 1976	Nov. 2, 1976
B 462,828	3,998,395	Mar. 9, 1976	Dec. 21, 1976
B 462,893	3,984,253	Feb. 24, 1976	Oct. 5, 1976
B 463,322	3,989,982	Jan. 20, 1976	Nov. 2, 1976
B 463,388	3,992,605	Feb. 10, 1976	Nov. 16, 1976
B 463,473	4,002,068	Mar. 23, 1976	Jan. 11, 1977
B 463,591	4,015,051	Mar. 30, 1976	Mar. 29, 1977
B 463,671	3,985,385	Jan. 13, 1976	Oct. 12, 1976
B 464,027	3,999,390	Mar. 16, 1976	Dec. 28, 1976
B 464,290	3,990,307	Feb. 3, 1976	Nov. 9, 1976
B 464,491	4,015,612	Mar. 30, 1976	Apr. 5, 1977
B 464,587	3,991,091	Feb. 3, 1976	Nov. 9, 1976
B 464,593	3,997,659	Mar. 9, 1976	Dec. 14, 1976
B 465,145	3,981,148	Jan. 27, 1976	Sep. 21, 1976
B 465,202	3,989,757	Feb. 24, 1976	Nov. 2, 1976
B 465,393	3,987,390	Jan. 27, 1976	Oct. 19, 1976
B 465,688	3,989,770	Jan. 27, 1976	Nov. 2, 1976
B 465,955	3,997,502	Feb. 3, 1976	Dec. 14, 1976
B 466,304	4,007,095	Mar. 23, 1976	Feb. 8, 1977
B 466,318	3,999,115	Mar. 9, 1976	Dec. 21, 1976
B 466,390	3,983,349	Feb. 24, 1976	Sep. 28, 1976
B 466,419	4,011,087	Mar. 23, 1976	Mar. 8, 1977
B 466,444	3,986,039	Jan. 20, 1976	Oct. 12, 1976
B 466,906	3,993,037	Mar. 16, 1976	Nov. 23, 1976
B 466,929	3,991,195	Jan. 27, 1976	Nov. 9, 1976
B 467,250	3,997,428	Feb. 3, 1976	Dec. 14, 1976
B 467,328	3,997,599	Mar. 9, 1976	Dec. 14, 1976
B 467,412	3,981,265	Jan. 13, 1976	Sep. 21, 1976
B 467,486	3,991,725	Mar. 16, 1976	Nov. 16, 1976
B 467,971	3,983,453	Jan. 13, 1976	Sep. 28, 1976
B 468,052	3,988,335	Feb. 10, 1976	Oct. 26, 1976
B 468,100	3,995,107	Mar. 9, 1976	Nov. 30, 1976
B 468,330	4,001,475	Mar. 16, 1976	Jan. 4, 1977
B 468,350	3,981,922	Jan. 13, 1976	Sep. 21, 1976
B 468,421	4,014,739	Mar. 30, 1976	Mar. 29, 1977
B 468,603	4,003,839	Mar. 23, 1976	Jan. 18, 1977
B 469,036	4,005,926	Mar. 16, 1976	Feb. 1, 1977
B 469,228	4,052,954	Feb. 17, 1976	Oct. 11, 1977
B 469,468	4,000,220	Mar. 16, 1976	Dec. 28, 1976
B 469,947	3,984,153	Jan. 20, 1976	Oct. 5, 1976
B 470,170	3,986,410	Jan. 13, 1976	Oct. 19, 1976
B 470,305	4,014,043	Apr. 6, 1976	Mar. 22, 1977
B 470,348	3,981,929	Jan. 13, 1976	Sep. 21, 1976
B 470,576	3,997,507	Feb. 24, 1976	Dec. 14, 1976
B 470,601	3,985,655	Mar. 9, 1976	Oct. 12, 1976
B 470,798	3,987,480	Jan. 20, 1976	Oct. 19, 1976
B 470,853	4,002,101	Mar. 23, 1976	Jan. 11, 1977
B 470,899	3,996,441	Mar. 2, 1976	Dec. 7, 1976
B 470,900	4,001,213	Mar. 2, 1976	Jan. 4, 1977
B 470,945	4,014,848	Apr. 13, 1976	Mar. 29, 1977
B 471,116	4,001,318	Feb. 17, 1976	Jan. 4, 1977
B 471,221	3,981,974	Jan. 13, 1976	Sep. 21, 1976
B 471,405	3,993,576	Feb. 10, 1976	Nov. 23, 1976
B 471,494	3,993,660	Mar. 16, 1976	Nov. 23, 1976
B 471,579	3,985,689	Jan. 13, 1976	Oct. 12, 1976
B 471,617	3,994,871	Feb. 10, 1976	Nov. 30, 1976
B 471,681	4,012,844	Apr. 13, 1976	Mar. 22, 1977
B 471,706	4,076,275	Mar. 16, 1976	Feb. 28, 1978
B 471,735	3,989,408	Feb. 3, 1976	Nov. 2, 1976
B 471,836	4,000,150	Feb. 24, 1976	Dec. 28, 1976
B 472,241	3,992,453	Feb. 17, 1976	Nov. 16, 1976
B 472,256	3,985,789	Jan. 13, 1976	Oct. 12, 1976
B 472,284	3,982,078	Jan. 13, 1976	Sep. 21, 1976
B 472,591	4,013,029	Apr. 6, 1976	Mar. 22, 1977
B 472,760	4,001,330	Apr. 13, 1976	Jan. 4, 1977
B 473,039	3,985,747	Feb. 10, 1976	Oct. 12, 1976
B 473,040	3,985,738	Feb. 10, 1976	Oct. 12, 1976
B 473,813	3,989,071	Mar. 9, 1976	Nov. 2, 1976
B 473,972	3,984,043	Jan. 13, 1976	Oct. 5, 1976
B 474,573	3,988,375	Jan. 20, 1976	Oct. 26, 1976
B 474,747	3,997,704	Feb. 24, 1976	Dec. 14, 1976
B 475,236	3,989,990	Feb. 3, 1976	Nov. 2, 1976
B 475,385	4,001,071	Mar. 9, 1976	Jan. 4, 1977
B 475,681	3,983,332	Jan. 20, 1976	Sep. 28, 1976
B 475,801	4,056,759	Mar. 30, 1976	Nov. 1, 1977
B 476,267	4,005,068	Apr. 6, 1976	Jan. 25, 1977
B 476,372	3,985,771	Feb. 24, 1976	Oct. 12, 1976
B 476,542	4,013,549	Mar. 30, 1976	Mar. 22, 1977
B 476,568	3,999,456	Mar. 16, 1976	Dec. 28, 1976
B 476,577	3,982,070	Jan. 20, 1976	Sep. 21, 1976
B 476,681	3,986,181	Jan. 13, 1976	Oct. 12, 1976
B 476,776	3,998,715	Mar. 23, 1976	Dec. 21, 1976
B 476,967	3,995,206	Mar. 9, 1976	Nov. 30, 1976
B 477,252	3,985,759	Jan. 13, 1976	Oct. 12, 1976
B 477,481	3,991,076	Feb. 3, 1976	Nov. 9, 1976
B 477,584	D 242,855	Apr. 6, 1976	Dec. 28, 1976
B 477,597	3,993,912	Feb. 17, 1976	Nov. 23, 1976
B 477,892	4,010,355	Mar. 30, 1976	Mar. 1, 1977
B 478,234	4,010,421	Mar. 30, 1976	Mar. 1, 1977
B 478,739	3,992,253	Feb. 17, 1976	Nov. 16, 1976
B 478,759	4,055,681	Mar. 16, 1976	Oct. 25, 1977
B 479,175	3,985,700	Feb. 17, 1976	Oct. 12, 1976
B 479,242	3,983,074	Feb. 17, 1976	Sep. 28, 1976
B 479,502	3,999,030	Mar. 16, 1976	Dec. 21, 1976
B 479,681	D 242,672	Mar. 16, 1976	Dec. 14, 1976
B 479,969	4,001,132	Mar. 9, 1976	Jan. 4, 1977
B 480,114	4,001,327	Mar. 2, 1976	Jan. 4, 1977
B 480,251	4,008,700	Mar. 23, 1976	Feb. 22, 1977
B 480,287	4,006,029	Mar. 30, 1976	Feb. 1, 1977
B 480,292	3,994,011	Mar. 16, 1976	Nov. 23, 1976
B 480,350	3,994,164	Feb. 10, 1976	Nov. 30, 1976
B 480,384	3,999,737	Mar. 23, 1976	Dec. 28, 1976
B 480,452	3,994,923	Feb. 10, 1976	Nov. 30, 1976
B 480,473	3,995,608	Mar. 2, 1976	Dec. 7, 1976
B 480,604	3,985,251	Jan. 13, 1976	Oct. 12, 1976
B 480,625	3,996,227	Feb. 24, 1976	Dec. 7, 1976
B 480,662	3,988,382	Mar. 2, 1976	Oct. 26, 1976
B 480,740	3,996,431	Mar. 2, 1976	Dec. 7, 1976
B 480,749	3,999,207	Mar. 9, 1976	Dec. 21, 1976
B 480,987	4,001,459	Mar. 30, 1976	Jan. 4, 1977
B 481,048	3,998,542	Mar. 16, 1976	Dec. 21, 1976
B 481,190	4,013,468	Mar. 30, 1976	Mar. 22, 1977
B 481,600	3,981,235	Jan. 27, 1976	Sep. 21, 1976
B 481,737	3,982,057	Jan. 13, 1976	Sep. 21, 1976
B 481,778	4,001,385	Mar. 30, 1976	Jan. 4, 1977
B 481,930	3,992,717	Feb. 24, 1976	Nov. 16, 1976
B 481,989	4,008,337	Mar. 23, 1976	Feb. 15, 1977
B 482,058	4,001,398	Mar. 2, 1976	Jan. 4, 1977
B 482,660	3,995,026	Feb. 10, 1976	Nov. 30, 1976
B 482,709	3,985,733	Feb. 24, 1976	Oct. 12, 1976
B 482,907	3,984,811	Jan. 20, 1976	Oct. 5, 1976
B 483,247	4,001,889	Apr. 13, 1976	Jan. 4, 1977
B 483,256	3,981,723	Feb. 10, 1976	Sep. 21, 1976
B 483,268	3,995,215	Mar. 9, 1976	Nov. 30, 1976
B 483,606	3,986,990	Jan. 27, 1976	Oct. 19, 1976
B 483,615	3,988,637	Jan. 27, 1976	Oct. 26, 1976
B 483,746	4,014,923	Mar. 23, 1976	Mar. 29, 1977
B 483,762	3,993,608	Feb. 10, 1976	Nov. 23, 1976
B 483,865	3,985,693	Jan. 13, 1976	Oct. 12, 1976
B 484,029	3,983,558	Feb. 10, 1976	Sep. 28, 1976
B 484,067	3,992,374	Feb. 17, 1976	Nov. 16, 1976
B 484,068	3,994,937	Mar. 2, 1976	Nov. 30, 1976
B 484,121	3,997,770	Mar. 16, 1976	Dec. 14, 1976
B 484,269	4,000,159	Feb. 10, 1976	Dec. 28, 1976
B 484,332	3,986,540	Mar. 2, 1976	Oct. 19, 1976
B 484,365	3,983,578	Jan. 27, 1976	Sep. 28, 1976
B 484,419	4,001,292	Mar. 9, 1976	Jan. 4, 1977
B 484,437	4,013,740	Mar. 30, 1976	Mar. 22, 1977
B 484,482	3,994,017	Mar. 23, 1976	Nov. 23, 1976
B 484,769	3,999,498	Mar. 16, 1976	Dec. 28, 1976
B 485,051	3,992,418	Feb. 17, 1976	Nov. 16, 1976
B 485,060	3,983,067	Feb. 17, 1976	Sep. 28, 1976
B 485,169	3,989,791	Mar. 16, 1976	Nov. 2, 1976
B 485,188	4,001,170	Mar. 16, 1976	Jan. 4, 1977
B 485,401	3,985,859	Jan. 27, 1976	Oct. 12, 1976
B 485,575	3,996,565	Feb. 24, 1976	Dec. 7, 1976
B 485,926	4,006,357	Mar. 23, 1976	Feb. 1, 1977
B 485,972	4,017,472	Mar. 23, 1976	Apr. 12, 1977
B 486,280	3,983,130	Feb. 3, 1976	Sep. 28, 1976
B 486,614	3,995,835	Feb. 17, 1976	Dec. 7, 1976

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 486,678	4,001,273	Mar. 2, 1976	Jan. 4, 1977	B 496,487	3,982,261	Jan. 20, 1976	Sep. 21, 1976
B 486,828	3,989,651	Mar. 2, 1976	Nov. 2, 1976	B 496,500	3,985,962	Feb. 3, 1976	Oct. 12, 1976
B 487,062	D 241,256	Feb. 10, 1976	Nov. 9, 1976	B 496,502	3,987,444	Jan. 20, 1976	Oct. 19, 1976
B 487,078	4,012,895	Mar. 30, 1976	Mar. 22, 1977	B 496,792	3,999,959	Feb. 17, 1976	Dec. 28, 1976
B 487,133	3,989,826	Jan. 27, 1976	Nov. 2, 1976	B 496,964	3,999,219	Apr. 20, 1976	Dec. 21, 1976
B 487,260	3,990,610	Jan. 27, 1976	Nov. 9, 1976	B 496,999	3,983,804	Jan. 27, 1976	Oct. 5, 1976
B 487,411	3,983,579	Feb. 24, 1976	Sep. 28, 1976	B 497,021	3,985,039	Jan. 13, 1976	Oct. 12, 1976
B 487,423	3,998,810	Mar. 2, 1976	Dec. 21, 1976	B 497,194	3,988,267	Feb. 3, 1976	Oct. 26, 1976
B 487,427	3,995,788	Mar. 2, 1976	Dec. 7, 1976	B 497,292	3,994,052	Feb. 3, 1976	Nov. 30, 1976
B 487,467	4,014,847	Apr. 13, 1976	Mar. 29, 1977	B 497,293	4,011,412	Mar. 30, 1976	Mar. 8, 1977
B 487,529	4,022,750	Mar. 30, 1976	May 10, 1977	B 497,473	3,990,839	Feb. 3, 1976	Nov. 9, 1976
B 488,111	3,985,765	Jan. 13, 1976	Oct. 12, 1976	B 497,490	4,118,377	Mar. 23, 1976	Oct. 3, 1978
B 488,395	3,982,245	Jan. 27, 1976	Sep. 21, 1976	B 497,571	4,009,997	Mar. 23, 1976	Mar. 1, 1977
B 488,634	3,982,158	Jan. 20, 1976	Sep. 21, 1976	B 497,584	3,988,184	Feb. 24, 1976	Oct. 26, 1976
B 488,756	3,991,810	Mar. 16, 1976	Nov. 16, 1976	B 497,702	3,996,589	Mar. 2, 1976	Dec. 7, 1976
B 488,836	4,013,121	Mar. 30, 1976	Mar. 22, 1977	B 497,780	3,997,500	Feb. 24, 1976	Dec. 14, 1976
B 489,290	3,998,081	Feb. 17, 1976	Dec. 21, 1976	B 497,853	3,987,934	Feb. 17, 1976	Oct. 26, 1976
B 489,328	3,990,088	Jan. 20, 1976	Nov. 2, 1976	B 497,896	D 243,091	Apr. 6, 1976	Jan. 18, 1977
B 489,331	3,996,175	Feb. 17, 1976	Dec. 7, 1976	B 497,960	3,991,325	Jan. 20, 1976	Nov. 9, 1976
B 489,485	D 243,266	Apr. 13, 1976	Feb. 1, 1977	B 498,208	4,001,480	Apr. 13, 1976	Jan. 4, 1977
B 489,550	4,000,710	Mar. 16, 1976	Jan. 4, 1977	B 498,288	4,013,657	Mar. 23, 1976	Mar. 22, 1977
B 489,685	3,984,085	Feb. 24, 1976	Oct. 5, 1976	B 498,775	3,993,868	Mar. 2, 1976	Nov. 23, 1976
B 490,067	3,986,600	Jan. 27, 1976	Oct. 19, 1976	B 498,205	3,989,611	Feb. 10, 1976	Nov. 2, 1976
B 490,547	3,999,439	Feb. 24, 1976	Dec. 28, 1976	B 498,500	3,982,241	Jan. 20, 1976	Sep. 21, 1976
B 490,551	D 243,168	Apr. 6, 1976	Jan. 25, 1977	B 498,775	3,993,868	Mar. 2, 1976	Nov. 23, 1976
B 490,589	3,990,680	Feb. 3, 1976	Nov. 9, 1976	B 498,820	3,996,670	Mar. 9, 1976	Dec. 14, 1976
B 490,623	3,996,964	Mar. 2, 1976	Dec. 14, 1976	B 498,951	3,996,907	Mar. 2, 1976	Dec. 14, 1976
B 490,647	3,985,196	Feb. 24, 1976	Oct. 12, 1976	B 499,171	3,985,192	Jan. 27, 1976	Oct. 12, 1976
B 490,806	3,989,486	Feb. 3, 1976	Nov. 2, 1976	B 499,209	3,995,907	Feb. 24, 1976	Dec. 7, 1976
B 490,812	3,998,842	Mar. 30, 1976	Dec. 21, 1976	B 499,227	3,981,344	Jan. 27, 1976	Sep. 21, 1976
B 490,946	3,993,652	Feb. 17, 1976	Nov. 23, 1976	B 499,324	4,001,375	Mar. 16, 1976	Jan. 4, 1977
B 490,995	3,995,031	Feb. 3, 1976	Nov. 30, 1976	B 499,352	3,981,391	Jan. 27, 1976	Sep. 21, 1976
B 491,032	3,981,892	Feb. 10, 1976	Sep. 21, 1976	B 499,370	4,013,544	Mar. 30, 1976	Mar. 22, 1977
B 491,052	3,985,790	Mar. 2, 1976	Oct. 12, 1976	B 499,718	3,990,058	Jan. 27, 1976	Nov. 2, 1976
B 491,111	3,997,916	Feb. 17, 1976	Dec. 14, 1976	B 499,786	4,000,663	Mar. 16, 1976	Jan. 4, 1977
B 491,455	3,991,167	Feb. 3, 1976	Nov. 9, 1976	B 500,171	3,997,262	Mar. 30, 1976	Dec. 14, 1976
B 491,501	3,984,914	Jan. 13, 1976	Oct. 12, 1976	B 500,176	3,995,316	Feb. 3, 1976	Nov. 30, 1976
B 491,618	4,007,950	Mar. 16, 1976	Feb. 15, 1977	B 500,408	D 242,721	Mar. 16, 1976	Dec. 14, 1976
B 491,650	3,999,044	Mar. 9, 1976	Dec. 21, 1976	B 500,945	3,996,817	Feb. 24, 1976	Dec. 14, 1976
B 491,673	3,994,770	Feb. 17, 1976	Nov. 30, 1976	B 500,959	4,014,853	Apr. 13, 1976	Mar. 29, 1977
B 491,711	4,053,467	Mar. 23, 1976	Oct. 11, 1977	B 500,981	3,984,681	Jan. 27, 1976	Oct. 5, 1976
B 491,776	3,986,298	Mar. 16, 1976	Oct. 19, 1976	B 501,122	3,981,385	Feb. 17, 1976	Sep. 21, 1976
B 491,883	3,984,412	Feb. 3, 1976	Oct. 5, 1976	B 501,128	4,072,723	Feb. 24, 1976	Feb. 7, 1978
B 491,906	D 242,223	Feb. 10, 1976	Nov. 9, 1976	B 501,181	3,984,761	Feb. 10, 1976	Oct. 5, 1976
B 492,039	3,997,541	Feb. 24, 1976	Dec. 14, 1976	B 501,253	3,994,015	Feb. 3, 1976	Nov. 23, 1976
B 492,093	4,003,658	Mar. 23, 1976	Jan. 18, 1977	B 501,317	3,985,643	Jan. 13, 1976	Oct. 12, 1976
B 492,120	3,995,692	Feb. 24, 1976	Dec. 7, 1976	B 501,379	4,013,696	Mar. 30, 1976	Mar. 22, 1977
B 492,301	3,981,073	Jan. 13, 1976	Sep. 21, 1976	B 501,415	3,982,051	Jan. 13, 1976	Sep. 21, 1976
B 492,373	4,010,908	Mar. 30, 1976	Mar. 8, 1977	B 501,482	4,012,650	Jan. 13, 1976	Mar. 15, 1977
B 492,688	3,983,415	Jan. 20, 1976	Sep. 28, 1976	B 501,503	4,001,640	Mar. 2, 1976	Jan. 4, 1977
B 492,716	3,998,739	Mar. 2, 1976	Dec. 21, 1976	B 501,540	3,985,694	Jan. 13, 1976	Oct. 12, 1976
B 492,774	4,001,843	Mar. 9, 1976	Jan. 4, 1977	B 501,975	3,998,466	Mar. 2, 1976	Dec. 21, 1976
B 492,902	3,993,859	Feb. 24, 1976	Nov. 23, 1976	B 501,993	3,981,606	Jan. 13, 1976	Sep. 21, 1976
B 492,946	3,991,303	Jan. 27, 1976	Nov. 9, 1976	B 502,151	3,998,614	Mar. 23, 1976	Dec. 21, 1976
B 493,254	D 243,267	Apr. 13, 1976	Feb. 1, 1977	B 502,161	4,000,500	Mar. 2, 1976	Dec. 28, 1976
B 493,370	3,984,792	Mar. 16, 1976	Oct. 5, 1976	B 502,289	3,982,274	Jan. 13, 1976	Sep. 21, 1976
B 493,463	4,013,510	Mar. 23, 1976	Mar. 22, 1977	B 502,381	D 242,231	Mar. 16, 1976	Nov. 9, 1976
B 493,474	4,013,565	Mar. 23, 1976	Mar. 22, 1977	B 502,540	3,983,698	Jan. 13, 1976	Oct. 5, 1976
B 493,501	3,988,061	Feb. 3, 1976	Oct. 26, 1976	B 502,571	D 242,433	Apr. 6, 1976	Nov. 23, 1976
B 493,686	4,008,338	Mar. 23, 1976	Feb. 15, 1977	B 502,589	3,989,652	Jan. 27, 1976	Nov. 2, 1976
B 493,955	3,989,830	Mar. 9, 1976	Nov. 2, 1976	B 502,652	3,989,186	Feb. 24, 1976	Nov. 2, 1976
B 493,981	3,990,165	Mar. 9, 1976	Nov. 9, 1976	B 502,667	3,991,431	Feb. 24, 1976	Nov. 16, 1976
B 494,138	4,034,002	Mar. 23, 1976	July 5, 1977	B 502,773	4,125,406	Jan. 13, 1976	Nov. 14, 1978
B 494,167	4,129,977	Mar. 23, 1976	Dec. 19, 1978	B 502,973	3,982,161	Jan. 27, 1976	Sep. 21, 1976
B 494,234	3,983,808	Feb. 10, 1976	Oct. 5, 1976	B 502,993	3,992,489	Feb. 17, 1976	Nov. 16, 1976
B 494,339	4,001,255	Mar. 16, 1976	Jan. 4, 1977	B 503,029	3,986,879	Jan. 27, 1976	Oct. 19, 1976
B 494,383	3,991,289	Feb. 3, 1976	Nov. 9, 1976	B 503,345	4,001,235	Feb. 24, 1976	Jan. 4, 1977
B 494,439	4,057,521	Apr. 13, 1976	Nov. 8, 1977	B 503,371	4,009,401	Mar. 30, 1976	Feb. 22, 1977
B 494,440	4,056,502	Feb. 17, 1976	Nov. 1, 1977	B 503,436	3,988,819	Feb. 24, 1976	Nov. 2, 1976
B 494,450	4,079,029	Feb. 17, 1976	Mar. 14, 1978	B 503,456	4,007,702	Mar. 23, 1976	Feb. 15, 1977
B 494,669	3,991,104	Feb. 3, 1976	Nov. 9, 1976	B 503,521	3,999,646	Mar. 16, 1976	Dec. 28, 1976
B 494,691	3,987,457	Mar. 16, 1976	Oct. 19, 1976	B 503,579	3,989,680	Feb. 10, 1976	Nov. 2, 1976
B 494,806	3,989,210	Feb. 3, 1976	Nov. 2, 1976	B 503,618	3,997,782	Mar. 9, 1976	Dec. 14, 1976
B 494,944	3,992,469	Feb. 17, 1976	Nov. 16, 1976	B 503,742	3,989,756	Feb. 17, 1976	Nov. 2, 1976
B 495,124	4,060,968	Mar. 9, 1976	Dec. 6, 1977	B 503,776	4,016,000	Mar. 23, 1976	Apr. 5, 1977
B 495,185	3,999,166	Mar. 9, 1976	Dec. 21, 1976	B 503,780	3,990,055	Mar. 16, 1976	Nov. 2, 1976
B 495,331	4,000,456	Mar. 16, 1976	Dec. 28, 1976	B 503,817	3,988,307	Jan. 13, 1976	Oct. 26, 1976
B 495,402	3,983,988	Feb. 17, 1976	Oct. 5, 1976	B 504,056	3,993,923	Feb. 24, 1976	Nov. 23, 1976
B 495,408	4,000,222	Feb. 3, 1976	Dec. 28, 1976	B 504,061	3,987,534	Mar. 16, 1976	Oct. 26, 1976
B 495,489	3,984,571	Feb. 3, 1976	Oct. 5, 1976	B 504,156	3,999,048	Mar. 23, 1976	Dec. 21, 1976
B 495,550	3,993,666	Feb. 3, 1976	Nov. 23, 1976	B 504,169	3,981,219	Jan. 13, 1976	Sep. 21, 1976
B 495,554	3,993,665	Feb. 3, 1976	Nov. 23, 1976	B 504,404	3,996,499	Feb. 24, 1976	Dec. 7, 1976
B 495,759	3,989,998	Feb. 3, 1976	Nov. 2, 1976	B 504,405	4,007,401	Apr. 13, 1976	Feb. 8, 1977
B 495,781	4,013,699	Mar. 23, 1976	Mar. 22, 1977	B 504,439	3,999,398	Mar. 16, 1976	Dec. 28, 1976
B 495,903	3,995,997	Feb. 17, 1976	Dec. 7, 1976	B 504,503	3,999,210	Mar. 9, 1976	Dec. 21, 1976
B 496,430	3,991,140	Feb. 10, 1976	Nov. 9, 1976	B 504,582	4,005,138	Mar. 30, 1976	Jan. 25, 1977
B 496,431	3,985,894	Jan. 13, 1976	Oct. 12, 1976	B 504,778	3,986,650	Feb. 24, 1976	Oct. 19, 1976

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 504,877	3,997,564	Feb. 24, 1976	Dec. 14, 1976	B 513,789	3,981,599	Feb. 3, 1976	Sep. 21, 1976
B 504,899	3,991,273	Mar. 9, 1976	Nov. 9, 1976	B 513,791	4,008,608	Mar. 30, 1976	Feb. 22, 1977
B 505,126	3,981,745	Feb. 10, 1976	Sep. 21, 1976	B 514,259	4,013,649	Mar. 23, 1976	Mar. 22, 1977
B 505,221	4,013,627	Mar. 30, 1976	Mar. 22, 1977	B 514,687	3,986,522	Jan. 27, 1976	Oct. 19, 1976
B 505,582	4,001,659	Mar. 23, 1976	Jan. 4, 1977	B 514,839	4,033,816	Mar. 2, 1976	July 5, 1977
B 505,689	3,987,631	Mar. 2, 1976	Oct. 26, 1976	B 515,135	3,990,085	Feb. 17, 1976	Nov. 2, 1976
B 505,813	3,985,175	Jan. 13, 1976	Oct. 12, 1976	B 515,216	4,076,261	Feb. 17, 1976	Feb. 28, 1978
B 506,144	3,991,147	Feb. 10, 1976	Nov. 9, 1976	B 515,303	3,987,939	Jan. 20, 1976	Oct. 26, 1976
B 506,148	3,988,319	Feb. 3, 1976	Oct. 26, 1976	B 515,368	4,014,733	Apr. 6, 1976	Mar. 29, 1977
B 506,167	3,990,652	Feb. 10, 1976	Nov. 9, 1976	B 515,452	3,995,243	Feb. 10, 1976	Nov. 30, 1976
B 506,286	3,982,085	Jan. 20, 1976	Sep. 21, 1976	B 515,455	3,982,149	Jan. 27, 1976	Sep. 21, 1976
B 506,461	3,987,348	Jan. 20, 1976	Oct. 19, 1976	B 515,642	4,001,258	Feb. 24, 1976	Jan. 4, 1977
B 506,566	3,985,402	Jan. 20, 1976	Oct. 12, 1976	B 515,908	3,984,676	Jan. 20, 1976	Oct. 5, 1976
B 506,624	3,999,695	Mar. 9, 1976	Dec. 28, 1976	B 516,002	3,988,638	Jan. 13, 1976	Oct. 26, 1976
B 506,648	3,994,857	Feb. 3, 1976	Nov. 30, 1976	B 516,032	3,986,634	Jan. 27, 1976	Oct. 19, 1976
B 506,744	3,981,176	Jan. 13, 1976	Sep. 21, 1976	B 516,047	3,985,741	Feb. 10, 1976	Oct. 12, 1976
B 506,760	4,012,835	Apr. 13, 1976	Mar. 22, 1977	B 516,060	3,983,572	Feb. 17, 1976	Sep. 28, 1976
B 506,839	4,005,389	Mar. 23, 1976	Jan. 25, 1977	B 516,069	3,986,208	Mar. 16, 1976	Oct. 12, 1976
B 506,840	4,002,928	Mar. 23, 1976	Jan. 11, 1977	B 516,296	3,984,404	Feb. 3, 1976	Oct. 5, 1976
B 506,916	3,986,140	Feb. 3, 1976	Oct. 12, 1976	B 516,537	3,996,784	Feb. 17, 1976	Dec. 14, 1976
B 506,926	3,993,232	Feb. 17, 1976	Nov. 23, 1976	B 516,564	3,993,931	Feb. 17, 1976	Nov. 23, 1976
B 507,087	3,991,389	Feb. 17, 1976	Nov. 9, 1976	B 516,609	3,994,486	Feb. 24, 1976	Nov. 30, 1976
B 507,131	4,000,499	Mar. 2, 1976	Dec. 28, 1976	B 516,625	4,013,542	Mar. 30, 1976	Mar. 22, 1977
B 507,166	4,014,738	Apr. 13, 1976	Mar. 29, 1977	B 516,804	3,991,209	Mar. 23, 1976	Nov. 9, 1976
B 507,396	3,995,167	Feb. 10, 1976	Nov. 30, 1976	B 516,825	3,988,885	Feb. 3, 1976	Nov. 2, 1976
B 507,456	4,080,349	Mar. 9, 1976	Mar. 21, 1978	B 517,273	D 242,798	Mar. 16, 1976	Dec. 21, 1976
B 507,476	3,994,680	Feb. 10, 1976	Nov. 30, 1976	B 517,504	3,999,855	Mar. 9, 1976	Dec. 28, 1976
B 507,647	3,982,240	Jan. 27, 1976	Sep. 21, 1976	B 517,668	4,013,423	Apr. 6, 1976	Mar. 22, 1977
B 508,118	3,992,283	Feb. 17, 1976	Nov. 16, 1976	B 517,762	3,986,065	Mar. 16, 1976	Oct. 12, 1976
B 508,119	3,992,285	Feb. 17, 1976	Nov. 16, 1976	B 517,858	4,000,999	Feb. 17, 1976	Jan. 4, 1977
B 508,369	3,985,847	Jan. 13, 1976	Oct. 12, 1976	B 517,956	D 243,088	Apr. 6, 1976	Jan. 18, 1977
B 508,639	4,004,194	Mar. 23, 1976	Jan. 18, 1977	B 517,957	D 243,089	Apr. 6, 1976	Jan. 18, 1977
B 508,817	3,989,891	Feb. 3, 1976	Nov. 2, 1976	B 518,076	4,014,914	Mar. 30, 1976	Mar. 29, 1977
B 508,878	3,994,117	Feb. 3, 1976	Nov. 30, 1976	B 518,226	3,993,509	Feb. 10, 1976	Nov. 23, 1976
B 508,940	3,981,321	Feb. 17, 1976	Sep. 21, 1976	B 518,326	4,008,282	Mar. 23, 1976	Feb. 15, 1977
B 508,961	3,987,477	Feb. 3, 1976	Oct. 19, 1976	B 518,656	3,989,732	Feb. 17, 1976	Nov. 2, 1976
B 509,043	3,996,767	Feb. 24, 1976	Dec. 14, 1976	B 518,859	3,989,971	Feb. 3, 1976	Nov. 2, 1976
B 509,165	3,999,155	Mar. 2, 1976	Dec. 21, 1976	B 518,999	3,990,323	Feb. 3, 1976	Nov. 9, 1976
B 509,185	3,989,996	Feb. 3, 1976	Nov. 2, 1976	B 519,095	3,993,621	Feb. 24, 1976	Nov. 23, 1976
B 509,238	3,982,399	Feb. 24, 1976	Sep. 28, 1976	B 519,355	4,014,829	Apr. 13, 1976	Mar. 29, 1977
B 509,474	3,997,260	Feb. 17, 1976	Dec. 14, 1976	B 519,377	3,987,223	Jan. 27, 1976	Oct. 19, 1976
B 509,586	4,006,645	Feb. 3, 1976	Feb. 8, 1977	B 519,446	3,985,815	Feb. 24, 1976	Oct. 12, 1976
B 509,606	3,989,986	Feb. 3, 1976	Nov. 2, 1976	B 519,485	3,991,134	Feb. 10, 1976	Nov. 9, 1976
B 509,640	4,130,505	Feb. 17, 1976	Dec. 19, 1978	B 519,486	3,992,481	Feb. 17, 1976	Nov. 16, 1976
B 509,772	3,999,004	Mar. 16, 1976	Dec. 21, 1976	B 519,487	3,992,337	Feb. 17, 1976	Nov. 16, 1976
B 509,819	4,014,712	Apr. 13, 1976	Mar. 29, 1977	B 519,599	3,995,350	Feb. 17, 1976	Dec. 7, 1976
B 510,026	4,016,763	Apr. 13, 1976	Apr. 12, 1977	B 519,623	4,012,049	Apr. 6, 1976	Mar. 15, 1977
B 510,184	D 242,784	Apr. 6, 1976	Dec. 21, 1976	B 519,680	4,014,660	Mar. 30, 1976	Mar. 29, 1977
B 510,278	4,008,972	Mar. 30, 1976	Feb. 22, 1977	B 519,932	3,988,618	Feb. 3, 1976	Oct. 26, 1976
B 510,281	3,993,215	Mar. 9, 1976	Nov. 23, 1976	B 519,979	3,982,067	Feb. 3, 1976	Sep. 21, 1976
B 510,346	D 242,207	Feb. 10, 1976	Nov. 9, 1976	B 520,063	3,989,934	Mar. 2, 1976	Nov. 2, 1976
B 510,458	4,000,221	Feb. 10, 1976	Dec. 28, 1976	B 520,075	3,989,935	Feb. 24, 1976	Nov. 2, 1976
B 510,521	3,990,656	Mar. 2, 1976	Nov. 9, 1976	B 520,076	3,989,936	Mar. 2, 1976	Nov. 2, 1976
B 510,588	3,981,539	Jan. 27, 1976	Sep. 21, 1976	B 520,082	3,989,937	Mar. 23, 1976	Nov. 2, 1976
B 510,677	3,989,541	Feb. 24, 1976	Nov. 2, 1976	B 520,115	4,003,072	Mar. 23, 1976	Jan. 11, 1977
B 510,682	4,000,978	Mar. 30, 1976	Jan. 4; 1977	B 520,227	4,002,823	Mar. 30, 1976	Jan. 11, 1977
B 510,836	4,013,795	Mar. 23, 1976	Mar. 22, 1977	B 520,256	3,985,730	Jan. 13, 1976	Oct. 12, 1976
B 510,850	3,989,841	Feb. 3, 1976	Nov. 2, 1976	B 520,277	3,995,635	Feb. 17, 1976	Dec. 7, 1976
B 510,855	3,981,059	Jan. 27, 1976	Sep. 21, 1976	B 520,341	3,992,028	Mar. 16, 1976	Nov. 16, 1976
B 511,907	3,999,622	Mar. 30, 1976	Dec. 28, 1976	B 520,384	3,986,592	Jan. 27, 1976	Oct. 19, 1976
B 510,998	3,992,336	Feb. 10, 1976	Nov. 16, 1976	B 520,514	3,988,308	Mar. 9, 1976	Oct. 26, 1976
B 511,002	3,998,717	Mar. 2, 1976	Dec. 21, 1976	B 520,534	3,997,119	Feb. 17, 1976	Dec. 14, 1976
B 511,099	3,990,162	Feb. 3, 1976	Nov. 9, 1976	B 520,543	3,986,768	Jan. 27, 1976	Oct. 19, 1976
B 511,156	3,981,364	Jan. 27, 1976	Sep. 21, 1976	B 520,546	4,001,133	Mar. 2, 1976	Jan. 4, 1977
B 511,346	3,984,072	Jan. 27, 1976	Oct. 5, 1976	B 520,613	3,991,341	Mar. 16, 1976	Nov. 9, 1976
B 511,407	3,981,485	Feb. 10, 1976	Sep. 21, 1976	B 520,658	3,998,778	Mar. 9, 1976	Dec. 21, 1976
B 511,454	3,982,333	Feb. 24, 1976	Sep. 28, 1976	B 520,878	4,014,849	Apr. 6, 1976	Mar. 29, 1977
B 511,665	4,001,037	Mar. 2, 1976	Jan. 4, 1977	B 520,884	4,000,433	Mar. 16, 1976	Dec. 28, 1976
B 511,885	3,981,346	Jan. 27, 1976	Sep. 21, 1976	B 520,924	3,982,113	Jan. 27, 1976	Sep. 21, 1976
B 511,886	3,989,991	Feb. 3, 1976	Nov. 2, 1976	B 520,928	3,983,617	Jan. 13, 1976	Oct. 5, 1976
B 511,909	3,981,183	Feb. 17, 1976	Sep. 21, 1976	B 520,952	4,000,876	Mar. 16, 1976	Jan. 4, 1977
B 512,324	3,985,084	Feb. 17, 1976	Oct. 12, 1976	B 520,995	4,009,996	Mar. 23, 1976	Mar. 1, 1977
B 512,547	3,984,193	Jan. 13, 1976	Oct. 5, 1976	B 521,025	3,998,838	Mar. 23, 1976	Dec. 21, 1976
B 512,745	3,981,294	Jan. 13, 1976	Sep. 21, 1976	B 521,044	3,983,435	Feb. 24, 1976	Sep. 28, 1976
B 512,779	4,014,897	Apr. 13, 1976	Mar. 29, 1977	B 521,045	3,983,433	Feb. 24, 1976	Sep. 28, 1976
B 512,818	3,997,363	Apr. 6, 1976	Dec. 14, 1976	B 521,046	3,983,434	Feb. 24, 1976	Sep. 28, 1976
B 512,849	3,982,141	Feb. 3, 1976	Sep. 21, 1976	B 521,125	3,994,865	Feb. 10, 1976	Nov. 30, 1976
B 512,964	3,995,279	Feb. 10, 1976	Nov. 30, 1976	B 521,126	3,997,510	Feb. 10, 1976	Dec. 14, 1976
B 513,014	3,991,113	Feb. 10, 1976	Nov. 9, 1976	B 521,127	3,996,201	Feb. 17, 1976	Dec. 7, 1976
B 513,027	3,995,143	Feb. 17, 1976	Nov. 30, 1976	B 521,128	3,997,511	Feb. 10, 1976	Dec. 14, 1976
B 513,134	4,006,764	Mar. 23, 1976	Feb. 8, 1977	B 521,324	3,983,143	Jan. 27, 1976	Sep. 28, 1976
B 513,280	3,988,211	Jan. 20, 1976	Oct. 26, 1976	B 521,480	3,982,665	Jan. 13, 1976	Sep. 28, 1976
B 513,346	4,124,330	Mar. 9, 1976	Nov. 7, 1978	B 521,600	3,981,458	Jan. 27, 1976	Sep. 21, 1976
B 513,368	3,982,138	Feb. 3, 1976	Sep. 21, 1976	B 521,612	4,000,251	Mar. 9, 1976	Dec. 28, 1976
B 513,706	3,986,064	Jan. 13, 1976	Oct. 12, 1976	B 521,620	3,983,749	Jan. 27, 1976	Oct. 5, 1976
B 513,756	3,993,869	Feb. 3, 1976	Nov. 23, 1976	B 521,643	3,997,567	Mar. 2, 1976	Dec. 14, 1976
B 513,781	4,001,324	Feb. 24, 1976	Jan. 4, 1977	B 521,711	3,989,835	Feb. 10, 1976	Nov. 2, 1976

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 521,793	3,996,981	Feb. 24, 1976	Dec. 14, 1976	B 532,319	3,990,292	Feb. 3, 1976	Nov. 9, 1976
B 521,984	3,983,220	Feb. 17, 1976	Sep. 28, 1976	B 532,326	3,993,959	Mar. 23, 1976	Nov. 23, 1976
B 521,985	4,012,404	Mar. 23, 1976	Mar. 15, 1977	B 532,424	D 242,292	Feb. 10, 1976	Nov. 9, 1976
B 521,986	3,981,607	Feb. 3, 1976	Sep. 21, 1976	B 532,476	3,992,756	Feb. 3, 1976	Nov. 23, 1976
B 522,009	3,995,444	Feb. 17, 1976	Dec. 7, 1976	B 532,477	4,014,895	Apr. 13, 1976	Mar. 29, 1977
B 522,038	3,993,119	Feb. 3, 1976	Nov. 23, 1976	B 532,679	4,010,706	Apr. 6, 1976	Mar. 8, 1977
B 522,227	3,992,904	Mar. 30, 1976	Nov. 23, 1976	B 532,901	3,984,318	Jan. 13, 1976	Oct. 5, 1976
B 522,309	3,991,603	Feb. 3, 1976	Nov. 16, 1976	B 532,969	3,981,706	Jan. 13, 1976	Sep. 21, 1976
B 522,354	3,984,959	Jan. 20, 1976	Oct. 12, 1976	B 532,976	4,000,837	Mar. 23, 1976	Jan. 4, 1977
B 522,446	4,001,194	Mar. 30, 1976	Jan. 4, 1977	B 533,056	3,983,969	Jan. 13, 1976	Oct. 5, 1976
B 522,537	3,999,587	Mar. 30, 1976	Dec. 28, 1976	B 533,259	3,999,556	Feb. 24, 1976	Dec. 28, 1976
B 522,567	3,996,238	Feb. 17, 1976	Dec. 7, 1976	B 533,454	3,996,566	Mar. 2, 1976	Dec. 7, 1976
B 522,568	D 242,785	Apr. 6, 1976	Dec. 21, 1976	B 533,580	3,982,255	Feb. 3, 1976	Sep. 21, 1976
B 522,577	3,982,123	Jan. 27, 1976	Sep. 21, 1976	B 533,652	4,000,196	Mar. 23, 1976	Dec. 28, 1976
B 522,629	4,001,155	Mar. 16, 1976	Jan. 4, 1977	B 533,734	3,984,799	Jan. 27, 1976	Oct. 5, 1976
B 523,226	4,006,367	Mar. 23, 1976	Feb. 1, 1977	B 533,968	3,986,576	Jan. 27, 1976	Oct. 19, 1976
B 523,696	3,986,071	Jan. 13, 1976	Oct. 12, 1976	B 534,016	3,983,381	Feb. 3, 1976	Sep. 28, 1976
B 523,885	3,981,040	Feb. 17, 1976	Sep. 21, 1976	B 534,313	3,981,675	Jan. 27, 1976	Sep. 21, 1976
B 523,952	3,988,707	Mar. 23, 1976	Oct. 26, 1976	B 534,314	3,981,786	Feb. 10, 1976	Sep. 21, 1976
B 524,026	3,992,206	Feb. 10, 1976	Nov. 16, 1976	B 534,333	3,981,480	Feb. 17, 1976	Sep. 21, 1976
B 524,121	3,982,536	Feb. 3, 1976	Sep. 28, 1976	B 534,334	D 242,722	Mar. 16, 1976	Dec. 14, 1976
B 524,179	3,985,872	Jan. 13, 1976	Oct. 12, 1976	B 534,443	3,989,970	Jan. 27, 1976	Nov. 2, 1976
B 524,464	3,985,580	Feb. 10, 1976	Oct. 12, 1976	B 534,574	3,995,624	Feb. 24, 1976	Dec. 7, 1976
B 524,806	4,000,065	Mar. 2, 1976	Dec. 28, 1976	B 534,591	3,991,141	Feb. 17, 1976	Nov. 9, 1976
B 524,849	4,014,938	Mar. 23, 1976	Mar. 29, 1977	B 534,680	4,014,904	Apr. 20, 1976	Mar. 29, 1977
B 525,133	3,996,481	Mar. 23, 1976	Dec. 7, 1976	B 534,767	3,982,180	Feb. 3, 1976	Sep. 21, 1976
B 525,204	4,001,109	Mar. 16, 1976	Jan. 4, 1977	B 534,915	4,012,668	Mar. 23, 1976	Mar. 15, 1977
B 525,809	3,985,040	Feb. 24, 1976	Oct. 12, 1976	B 534,991	3,983,517	Jan. 27, 1976	Sep. 28, 1976
B 525,961	3,985,557	Jan. 13, 1976	Oct. 12, 1976	B 535,076	3,981,718	Jan. 20, 1976	Sep. 21, 1976
B 526,106	3,990,073	Jan. 27, 1976	Nov. 2, 1976	B 535,209	4,001,873	Mar. 16, 1976	Jan. 4, 1977
B 526,190	3,982,129	Feb. 17, 1976	Sep. 21, 1976	B 535,256	3,999,150	Mar. 23, 1976	Dec. 21, 1976
B 526,279	4,013,138	Apr. 13, 1976	Mar. 22, 1977	B 535,268	3,999,045	Mar. 30, 1976	Dec. 21, 1976
B 526,289	3,992,641	Feb. 24, 1976	Nov. 16, 1976	B 535,386	3,981,150	Jan. 13, 1976	Sep. 21, 1976
B 526,388	3,992,017	Feb. 3, 1976	Nov. 16, 1976	B 535,391	3,981,386	Jan. 27, 1976	Sep. 21, 1976
B 526,445	3,984,978	Jan. 20, 1976	Oct. 12, 1976	B 535,411	3,990,543	Feb. 24, 1976	Nov. 9, 1976
B 526,447	4,000,052	Feb. 24, 1976	Dec. 28, 1976	B 535,437	3,997,555	Feb. 24, 1976	Dec. 14, 1976
B 526,510	3,989,708	Jan. 20, 1976	Nov. 2, 1976	B 535,448	3,997,123	Mar. 16, 1976	Dec. 14, 1976
B 526,654	4,011,534	Mar. 23, 1976	Mar. 8, 1977	B 535,466	3,981,309	Jan. 27, 1976	Sep. 21, 1976
B 526,942	4,013,700	Mar. 30, 1976	Mar. 22, 1977	B 535,813	3,981,819	Jan. 27, 1976	Sep. 21, 1976
B 526,997	3,985,695	Jan. 13, 1976	Oct. 12, 1976	B 535,928	3,981,466	Jan. 13, 1976	Sep. 21, 1976
B 527,040	4,013,515	Mar. 23, 1976	Mar. 22, 1977	B 536,009	3,982,112	Jan. 27, 1976	Sep. 21, 1976
B 527,054	3,981,559	Feb. 17, 1976	Sep. 21, 1976	B 536,082	3,997,783	Mar. 16, 1976	Dec. 14, 1976
B 527,171	3,998,248	Mar. 9, 1976	Dec. 21, 1976	B 536,322	4,001,272	Mar. 23, 1976	Jan. 4, 1977
B 527,187	3,995,202	Feb. 17, 1976	Nov. 30, 1976	B 536,403	3,998,341	Mar. 23, 1976	Dec. 21, 1976
B 527,333	3,999,732	Mar. 23, 1976	Dec. 28, 1976	B 536,511	3,995,989	Mar. 9, 1976	Dec. 7, 1976
B 527,669	3,982,206	Jan. 13, 1976	Sep. 21, 1976	B 536,675	3,985,773	Jan. 20, 1976	Oct. 12, 1976
B 527,693	3,995,233	Feb. 3, 1976	Nov. 30, 1976	B 536,923	4,007,828	Mar. 30, 1976	Feb. 15, 1977
B 527,788	D 242,337	Feb. 10, 1976	Nov. 16, 1976	B 536,935	3,985,729	Jan. 13, 1976	Oct. 12, 1976
B 527,972	4,000,016	Mar. 9, 1976	Dec. 28, 1976	B 537,058	4,000,969	Mar. 23, 1976	Jan. 4, 1977
B 527,999	3,981,682	Feb. 3, 1976	Sep. 21, 1976	B 537,102	3,981,829	Jan. 13, 1976	Sep. 21, 1976
B 528,297	4,001,138	Mar. 16, 1976	Jan. 4, 1977	B 537,709	3,981,368	Jan. 13, 1976	Sep. 21, 1976
B 528,303	3,991,023	Feb. 10, 1976	Nov. 9, 1976	B 537,711	3,985,748	Jan. 13, 1976	Oct. 12, 1976
B 528,401	3,991,619	Feb. 3, 1976	Nov. 16, 1976	B 537,722	3,985,423	Feb. 3, 1976	Oct. 12, 1976
B 528,756	3,990,476	Feb. 3, 1976	Nov. 9, 1976	B 537,903	3,986,492	Jan. 20, 1976	Oct. 19, 1976
B 528,761	3,982,221	Feb. 10, 1976	Sep. 21, 1976	B 537,990	4,057,651	Jan. 13, 1976	Nov. 8, 1977
B 528,962	3,989,666	Feb. 24, 1976	Nov. 2, 1976	B 538,472	3,992,884	Feb. 3, 1976	Nov. 23, 1976
B 528,966	3,989,667	Feb. 24, 1976	Nov. 2, 1976	B 538,491	3,982,928	Feb. 17, 1976	Sep. 28, 1976
B 529,156	3,989,158	Jan. 13, 1976	Nov. 2, 1976	B 538,686	3,982,199	Jan. 13, 1976	Sep. 21, 1976
B 529,194	4,000,776	Mar. 23, 1976	Jan. 4, 1977	B 538,753	3,993,642	Feb. 10, 1976	Nov. 23, 1976
B 529,214	4,013,004	Apr. 20, 1976	Mar. 22, 1977	B 539,374	3,996,229	Mar. 9, 1976	Dec. 7, 1976
B 529,659	3,996,875	Feb. 24, 1976	Dec. 14, 1976	B 539,746	3,983,423	Feb. 17, 1976	Sep. 28, 1976
B 529,836	3,994,345	Feb. 3, 1976	Nov. 30, 1976	B 540,078	3,984,701	Jan. 13, 1976	Oct. 5, 1976
B 529,925	4,014,003	Mar. 30, 1976	Mar. 22, 1977	B 540,218	3,986,108	Feb. 10, 1976	Oct. 12, 1976
B 529,974	3,987,098	Feb. 17, 1976	Oct. 19, 1976	B 540,632	3,981,600	Jan. 13, 1976	Sep. 21, 1976
B 530,174	3,993,635	Feb. 24, 1976	Nov. 23, 1976	B 540,703	4,013,206	Apr. 13, 1976	Mar. 22, 1977
B 530,255	3,996,103	Mar. 2, 1976	Dec. 7, 1976	B 540,767	3,986,010	Mar. 16, 1976	Oct. 12, 1976
B 530,263	4,009,736	Mar. 30, 1976	Mar. 1, 1977	B 540,872	3,982,135	Jan. 20, 1976	Sep. 21, 1976
B 530,285	4,013,903	Apr. 6, 1976	Mar. 22, 1977	B 540,888	4,005,528	Mar. 30, 1976	Feb. 1, 1977
B 530,303	4,006,029	Mar. 23, 1976	Feb. 1, 1977	B 541,015	3,993,208	Jan. 27, 1976	Nov. 23, 1976
B 530,318	3,985,752	Jan. 13, 1976	Oct. 12, 1976	B 541,376	3,981,690	Feb. 17, 1976	Sep. 21, 1976
B 530,437	4,014,857	Apr. 13, 1976	Mar. 29, 1977	B 541,415	3,982,080	Feb. 3, 1976	Sep. 21, 1976
B 530,569	3,999,865	Mar. 16, 1976	Dec. 28, 1976	B 541,464	3,995,424	Feb. 17, 1976	Dec. 7, 1976
B 530,580	4,001,151	Mar. 2, 1976	Jan. 4, 1977	B 541,496	3,982,232	Jan. 27, 1976	Sep. 21, 1976
B 530,605	3,989,064	Feb. 3, 1976	Nov. 2, 1976	B 541,501	4,005,826	Apr. 13, 1976	Feb. 1, 1977
B 530,709	4,012,944	Apr. 6, 1976	Mar. 22, 1977	B 541,517	3,986,156	Jan. 13, 1976	Oct. 12, 1976
B 530,813	3,986,131	Feb. 17, 1976	Oct. 12, 1976	B 541,710	3,994,472	Feb. 24, 1976	Nov. 30, 1976
B 530,873	4,001,016	Feb. 17, 1976	Jan. 4, 1977	B 542,135	3,986,939	Feb. 10, 1976	Oct. 19, 1976
B 530,925	3,983,161	Feb. 24, 1976	Sep. 28, 1976	B 542,158	3,981,886	Jan. 13, 1976	Sep. 21, 1976
B 531,096	3,984,415	Feb. 10, 1976	Oct. 5, 1976	B 542,226	3,993,748	Feb. 24, 1976	Nov. 23, 1976
B 531,267	3,997,040	Feb. 24, 1976	Dec. 14, 1976	B 542,258	4,013,536	Mar. 23, 1976	Mar. 22, 1977
B 531,425	3,992,595	Feb. 3, 1976	Nov. 16, 1976	B 543,078	3,995,687	Feb. 17, 1976	Dec. 7, 1976
B 531,566	3,997,820	Mar. 16, 1976	Dec. 14, 1976	B 543,941	3,985,528	Jan. 13, 1976	Oct. 12, 1976
B 531,686	3,990,017	Mar. 23, 1976	Nov. 2, 1976	B 544,034	3,997,175	Feb. 17, 1976	Dec. 14, 1976
B 531,753	3,988,843	Mar. 2, 1976	Nov. 2, 1976	B 544,476	3,993,585	Feb. 24, 1976	Nov. 23, 1976
B 531,929	3,986,067	Jan. 20, 1976	Oct. 12, 1976	B 544,899	3,994,962	Feb. 17, 1976	Nov. 30, 1976
B 532,005	3,992,397	Feb. 24, 1976	Nov. 16, 1976	B 544,961	3,983,492	Jan. 13, 1976	Sep. 28, 1976
B 532,140	4,001,299	Mar. 2, 1976	Jan. 4, 1977	B 545,050	3,982,073	Jan. 20, 1976	Sep. 21, 1976

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DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 545,265	D 243,090	Apr. 13, 1976	Jan. 18, 1977	B 559,631	4,011,406	Mar. 23, 1976	Mar. 8, 1977
B 545,299	4,001,259	Feb. 24, 1976	Jan. 4, 1977	B 559,697	3,995,770	Mar. 16, 1976	Dec. 7, 1976
B 545,344	4,012,746	Mar. 30, 1976	Mar. 15, 1977	B 559,700	4,001,189	Mar. 23, 1976	Jan. 4, 1977
B 545,464	3,992,387	Feb. 10, 1976	Nov. 16, 1976	B 559,701	4,001,190	Mar. 23, 1976	Jan. 4, 1977
B 545,630	3,981,337	Jan. 27, 1976	Sep. 21, 1976	B 559,737	3,984,668	Jan. 20, 1976	Oct. 5, 1976
B 545,777	4,004,906	Jan. 27, 1976	Jan. 25, 1977	B 559,954	3,982,673	Feb. 3, 1976	Sep. 28, 1976
B 545,856	4,006,939	Mar. 30, 1976	Feb. 8, 1977	B 560,261	3,987,493	Mar. 16, 1976	Oct. 19, 1976
B 545,935	3,990,337	Jan. 27, 1976	Nov. 9, 1976	B 560,488	3,989,940	Mar. 16, 1976	Nov. 2, 1976
B 545,945	3,995,260	Jan. 27, 1976	Nov. 30, 1976	B 560,717	3,982,034	Feb. 10, 1976	Sep. 21, 1976
B 546,097	3,999,309	Mar. 23, 1976	Dec. 28, 1976	B 560,765	3,983,389	Feb. 3, 1976	Sep. 28, 1976
B 546,295	3,987,070	Jan. 20, 1976	Oct. 19, 1976	B 561,062	D 242,248	Feb. 10, 1976	Nov. 9, 1976
B 546,426	3,982,063	Jan. 27, 1976	Sep. 21, 1976	B 561,165	4,013,002	Mar. 30, 1976	Mar. 22, 1977
B 546,631	3,983,729	Feb. 3, 1976	Oct. 5, 1976	B 561,166	4,011,809	Mar. 30, 1976	Mar. 15, 1977
B 546,665	3,990,062	Jan. 20, 1976	Nov. 2, 1976	B 561,365	4,005,078	Apr. 13, 1976	Jan. 25, 1977
B 546,677	4,015,654	Apr. 6, 1976	Apr. 5, 1977	B 561,387	3,985,706	Feb. 10, 1976	Oct. 12, 1976
B 546,911	3,981,058	Jan. 13, 1976	Sep. 21, 1976	B 561,405	4,003,770	Mar. 30, 1976	Jan. 18, 1977
B 546,922	3,987,742	Mar. 16, 1976	Oct. 26, 1976	B 561,712	3,992,126	Feb. 17, 1976	Nov. 16, 1976
B 547,016	3,999,741	Mar. 23, 1976	Dec. 28, 1976	B 561,732	3,991,460	Feb. 3, 1976	Nov. 16, 1976
B 547,208	4,001,218	Feb. 24, 1976	Jan. 4, 1977	B 561,764	3,984,634	Jan. 27, 1976	Oct. 5, 1976
B 547,547	3,997,670	Feb. 24, 1976	Dec. 14, 1976	B 561,770	4,000,366	Mar. 16, 1976	Dec. 28, 1976
B 547,994	3,990,081	Jan. 20, 1976	Nov. 2, 1976	B 561,784	3,984,710	Jan. 27, 1976	Oct. 5, 1976
B 548,028	3,991,517	Feb. 3, 1976	Nov. 16, 1976	B 562,413	4,000,930	Mar. 16, 1976	Jan. 4, 1977
B 548,058	3,983,050	Feb. 17, 1976	Sep. 28, 1976	B 562,462	3,985,836	Jan. 13, 1976	Oct. 12, 1976
B 548,155	3,981,477	Jan. 13, 1976	Sep. 21, 1976	B 562,519	4,013,125	Mar. 30, 1976	Mar. 22, 1977
B 548,440	3,993,401	Feb. 3, 1976	Nov. 23, 1976	B 562,601	3,998,360	Mar. 16, 1976	Dec. 21, 1976
B 548,302	3,983,414	Feb. 17, 1976	Sep. 28, 1976	B 562,698	3,983,972	Jan. 13, 1976	Oct. 5, 1976
B 548,440	3,993,401	Feb. 3, 1976	Nov. 23, 1976	B 562,813	3,985,491	Feb. 3, 1976	Oct. 12, 1976
B 548,462	D 242,283	Feb. 10, 1976	Nov. 9, 1976	B 563,070	3,996,230	Mar. 9, 1976	Dec. 7, 1976
B 548,688	3,995,984	Mar. 9, 1976	Dec. 7, 1976	B 563,165	4,000,977	Mar. 9, 1976	Jan. 4, 1977
B 548,719	3,990,553	Feb. 17, 1976	Nov. 9, 1976	B 563,244	3,983,562	Jan. 27, 1976	Sep. 28, 1976
B 548,978	3,998,139	Mar. 9, 1976	Dec. 21, 1976	B 563,301	3,995,589	Feb. 17, 1976	Dec. 7, 1976
B 549,198	3,981,975	Jan. 13, 1976	Sep. 21, 1976	B 563,412	3,992,127	Feb. 24, 1976	Nov. 16, 1976
B 549,244	3,981,125	Jan. 27, 1976	Sep. 21, 1976	B 563,419	3,999,051	Mar. 23, 1976	Dec. 21, 1976
B 549,394	3,981,611	Jan. 27, 1976	Sep. 21, 1976	B 563,722	3,990,925	Jan. 13, 1976	Nov. 9, 1976
B 549,931	3,986,141	Jan. 20, 1976	Oct. 12, 1976	B 563,780	3,987,769	Feb. 3, 1976	Oct. 26, 1976
B 549,964	3,995,899	Feb. 24, 1976	Dec. 7, 1976	B 563,932	4,000,638	Mar. 23, 1976	Jan. 4, 1977
B 550,693	3,982,194	Jan. 20, 1976	Sep. 21, 1976	B 564,252	4,001,293	Mar. 2, 1976	Jan. 4, 1977
B 550,744	3,993,550	Feb. 17, 1976	Nov. 23, 1976	B 564,255	4,015,996	Mar. 30, 1976	Apr. 5, 1977
B 550,810	4,000,910	Mar. 23, 1976	Jan. 4, 1977	B 564,314	3,984,996	Jan. 20, 1976	Oct. 12, 1976
B 551,133	3,996,740	Mar. 2, 1976	Dec. 14, 1976	B 564,902	4,001,351	Mar. 23, 1976	Jan. 4, 1977
B 551,463	3,996,254	Feb. 17, 1976	Dec. 7, 1976	B 565,180	3,981,685	Jan. 27, 1976	Sep. 21, 1976
B 551,527	3,982,599	Jan. 13, 1976	Sep. 28, 1976	B 565,275	3,990,299	Apr. 6, 1976	Nov. 9, 1976
B 551,809	3,996,743	Feb. 24, 1976	Dec. 14, 1976	B 565,717	3,999,138	Apr. 13, 1976	Dec. 21, 1976
B 551,952	Re. 29,059	Mar. 2, 1976	Dec. 7, 1976	B 565,754	4,011,626	Mar. 30, 1976	Mar. 15, 1977
B 552,006	3,992,129	Feb. 3, 1976	Nov. 16, 1976	B 566,464	3,996,367	Feb. 3, 1976	Dec. 7, 1976
B 552,489	3,994,864	Feb. 10, 1976	Nov. 30, 1976	B 566,556	3,998,511	Mar. 23, 1976	Dec. 21, 1976
B 552,498	3,983,139	Jan. 13, 1976	Sep. 28, 1976	B 566,572	3,988,590	Mar. 16, 1976	Oct. 26, 1976
B 552,508	4,001,250	Mar. 16, 1976	Jan. 4, 1977	B 566,585	4,001,083	Mar. 2, 1976	Jan. 4, 1977
B 552,629	3,994,773	Mar. 23, 1976	Nov. 30, 1976	B 567,058	3,985,188	Jan. 13, 1976	Oct. 12, 1976
B 552,709	4,001,467	Mar. 23, 1976	Jan. 4, 1977	B 567,076	4,011,187	Mar. 23, 1976	Mar. 8, 1977
B 552,932	3,989,292	Feb. 3, 1976	Nov. 2, 1976	B 567,158	3,988,073	Mar. 23, 1976	Oct. 26, 1976
B 553,421	4,001,146	Mar. 23, 1976	Jan. 4, 1977	B 567,207	3,991,689	Apr. 13, 1976	Nov. 16, 1976
B 553,460	3,990,019	Feb. 3, 1976	Nov. 2, 1976	B 567,435	3,995,724	Feb. 3, 1976	Dec. 7, 1976
B 553,584	3,992,456	Feb. 17, 1976	Nov. 16, 1976	B 567,854	3,985,038	Feb. 3, 1976	Oct. 12, 1976
B 553,629	3,999,242	Feb. 24, 1976	Dec. 28, 1976	B 567,892	4,000,855	Mar. 16, 1976	Jan. 4, 1977
B 554,039	3,999,944	Feb. 24, 1976	Dec. 28, 1976	B 568,226	3,992,698	Feb. 24, 1976	Nov. 16, 1976
B 554,164	4,001,465	Mar. 9, 1976	Jan. 4, 1977	B 568,770	3,982,213	Feb. 10, 1976	Sep. 21, 1976
B 554,283	3,981,152	Jan. 27, 1976	Sep. 21, 1976	B 569,125	3,986,980	Feb. 24, 1976	Oct. 19, 1976
B 554,291	4,001,209	Mar. 9, 1976	Jan. 4, 1977	B 569,293	4,004,149	Mar. 30, 1976	Jan. 18, 1977
B 554,380	4,001,147	Mar. 9, 1976	Jan. 4, 1977	B 569,501	3,999,250	Mar. 9, 1976	Dec. 28, 1976
B 554,594	3,985,960	Jan. 20, 1976	Oct. 12, 1976	B 569,519	3,993,133	Feb. 3, 1976	Nov. 23, 1976
B 554,655	4,015,048	Feb. 24, 1976	Mar. 29, 1977	B 569,646	3,985,222	Jan. 13, 1976	Oct. 12, 1976
B 554,848	4,001,265	Feb. 24, 1976	Jan. 4, 1977	B 569,859	3,994,160	Mar. 9, 1976	Nov. 30, 1976
B 554,939	3,994,013	Feb. 10, 1976	Nov. 23, 1976	B 570,172	3,987,763	Feb. 3, 1976	Oct. 26, 1976
B 555,146	4,007,636	Apr. 20, 1976	Feb. 15, 1977	B 570,615	3,998,570	Mar. 23, 1976	Dec. 21, 1976
B 555,437	3,991,152	Feb. 3, 1976	Nov. 9, 1976	B 570,862	3,991,639	Feb. 24, 1976	Nov. 16, 1976
B 555,456	3,993,423	Mar. 30, 1976	Nov. 23, 1976	B 570,925	4,040,802	Mar. 23, 1976	Aug. 9, 1977
B 555,772	3,982,641	Jan. 13, 1976	Sep. 28, 1976	B 571,219	3,991,388	Feb. 24, 1976	Nov. 9, 1976
B 556,057	3,985,349	Jan. 13, 1976	Oct. 12, 1976	B 571,638	4,001,244	Mar. 9, 1976	Jan. 4, 1977
B 556,496	3,990,244	Mar. 16, 1976	Nov. 9, 1976	B 571,659	3,995,186	Apr. 13, 1976	Nov. 30, 1976
B 556,897	3,992,972	Feb. 3, 1976	Nov. 23, 1976	B 572,642	3,990,715	Feb. 10, 1976	Nov. 9, 1976
B 557,153	3,991,603	Feb. 3, 1976	Nov. 16, 1976	B 572,726	4,015,020	Feb. 24, 1976	Mar. 29, 1977
B 557,274	4,016,375	Mar. 23, 1976	Apr. 5, 1977	B 573,033	3,995,224	Mar. 23, 1976	Nov. 30, 1976
B 557,299	3,990,357	Feb. 3, 1976	Nov. 9, 1976	B 573,114	4,014,843	Apr. 6, 1976	Mar. 29, 1977
B 557,621	3,990,800	Feb. 3, 1976	Nov. 9, 1976	B 573,991	4,013,704	Mar. 30, 1976	Mar. 22, 1977
B 557,721	4,013,435	Mar. 23, 1976	Mar. 22, 1977	B 573,994	4,000,641	Mar. 23, 1976	Jan. 4, 1977
B 557,856	3,991,019	Feb. 10, 1976	Nov. 9, 1976	B 574,128	3,982,961	Feb. 17, 1976	Sep. 28, 1976
B 558,220	3,990,009	Jan. 27, 1976	Nov. 2, 1976	B 574,616	4,000,424	Mar. 2, 1976	Dec. 28, 1976
B 558,251	3,981,289	Jan. 13, 1976	Sep. 21, 1976	B 574,996	3,989,718	Feb. 17, 1976	Nov. 2, 1976
B 558,813	3,989,188	Feb. 3, 1976	Nov. 2, 1976	B 575,583	4,000,928	Mar. 16, 1976	Jan. 4, 1977
B 558,818	3,983,762	Jan. 13, 1976	Oct. 5, 1976	B 575,757	3,981,170	Jan. 27, 1976	Sep. 21, 1976
B 558,819	3,990,160	Feb. 3, 1976	Nov. 9, 1976	B 575,761	4,013,123	Apr. 13, 1976	Mar. 22, 1977
B 558,973	3,981,126	Feb. 10, 1976	Sep. 21, 1976	B 575,776	4,013,124	Apr. 20, 1976	Mar. 22, 1977
B 559,111	3,984,854	Feb. 24, 1976	Oct. 5, 1976	B 575,851	3,985,826	Feb. 10, 1976	Oct. 12, 1976
B 559,142	4,001,124	Mar. 2, 1976	Jan. 4, 1977	B 576,385	4,009,498	Mar. 30, 1976	Mar. 1, 1977
B 559,394	4,016,094	Apr. 20, 1976	Apr. 5, 1977	B 576,859	3,991,526	Feb. 24, 1976	Nov. 16, 1976
B 559,441	4,013,609	Mar. 23, 1976	Mar. 22, 1977	B 576,903	3,995,032	Feb. 3, 1976	Nov. 30, 1976

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 578,447	3,982,658	Jan. 20, 1976	Sep. 28, 1976	B 587,936	3,999,052	Mar. 23, 1976	Dec. 21, 1976
B 579,104	3,982,081	Jan. 27, 1976	Sep. 21, 1976	B 589,179	4,001,102	Mar. 23, 1976	Jan. 4, 1977
B 579,116	3,986,227	Feb. 3, 1976	Oct. 19, 1976	B 589,687	3,995,349	Mar. 23, 1976	Dec. 7, 1976
B 579,153	4,013,745	Mar. 30, 1976	Mar. 22, 1977	B 589,966	3,985,828	Feb. 17, 1976	Oct. 12, 1976
B 579,806	3,995,318	Feb. 3, 1976	Nov. 30, 1976	B 590,158	3,985,163	Feb. 10, 1976	Oct. 12, 1976
B 580,379	4,000,796	Apr. 6, 1976	Jan. 4, 1977	B 590,159	3,985,164	Feb. 3, 1976	Oct. 12, 1976
B 580,826	3,988,391	Feb. 17, 1976	Oct. 26, 1976	B 590,502	4,001,171	Mar. 23, 1976	Jan. 4, 1977
B 580,921	3,984,054	Jan. 13, 1976	Oct. 5, 1976	B 591,141	4,013,631	Mar. 23, 1976	Mar. 22, 1977
B 581,564	4,036,653	Mar. 23, 1976	July 19, 1977	B 592,143	3,984,713	Jan. 27, 1976	Oct. 5, 1976
B 581,843	4,000,562	Mar. 16, 1976	Jan. 4, 1977	B 592,146	4,001,084	Mar. 2, 1976	Jan. 4, 1977
B 583,051	3,990,714	Feb. 3, 1976	Nov. 9, 1976	B 592,658	4,001,164	Mar. 23, 1976	Jan. 4, 1977
B 583,089	3,982,174	Jan. 27, 1976	Sep. 21, 1976	B 593,781	4,015,953	Mar. 16, 1976	Apr. 5, 1977
B 583,712	3,995,064	Feb. 10, 1976	Nov. 30, 1976	B 594,871	3,999,245	Mar. 16, 1976	Dec. 28, 1976
B 584,520	3,981,149	Jan. 27, 1976	Sep. 21, 1976	B 596,692	3,992,349	Feb. 17, 1976	Nov. 16, 1976
B 584,997	4,000,030	Mar. 9, 1976	Dec. 28, 1976	B 597,410	4,000,925	Mar. 30, 1976	Jan. 4, 1977
B 585,247	3,989,914	Feb. 3, 1976	Nov. 2, 1976	B 632,416	4,076,698	Mar. 9, 1976	Feb. 28, 1978
B 585,731	3,993,603	Feb. 3, 1976	Nov. 23, 1976	B 657,438	3,985,701	Jan. 20, 1976	Oct. 12, 1976
B 586,215	3,985,302	Jan. 20, 1976	Oct. 12, 1976	B 747,785	3,981,899	Feb. 10, 1976	Sep. 21, 1976
B 586,380	3,983,885	Mar. 2, 1976	Oct. 5, 1976	B 750,679	4,007,049	Mar. 23, 1976	Feb. 8, 1977
B 586,387	3,981,311	Feb. 3, 1976	Sep. 21, 1976	B 843,038	3,981,785	Feb. 3, 1976	Sep. 21, 1976
B 586,663	3,992,080	Feb. 3, 1976	Nov. 16, 1976	B 845,044	4,001,338	Mar. 30, 1976	Jan. 4, 1977
B 587,118	Re. 29,067	Mar. 2, 1976	Dec. 7, 1976	B 848,336	3,993,752	Mar. 30, 1976	Nov. 23, 1976
B 587,786	3,991,204	Feb. 17, 1976	Nov. 9, 1976				

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF DECEMBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Addressograph-Multigraph Corporation: *See*—
  Szabo, Francis S., Re. 29,864, Cl. 355-41.000.
Bodig, Bernd: *See*—
  Roozenbeek, Herman; Bodig, Bernd; Meyer, Klaus; and Fritz, Adolf, Re. 29,862, Cl. 123-148.00E.
Cleveland, Joseph J.: *See*—
  Steigelman, James Q.; Cleveland, Joseph J.; Kleiner, Richard N.; and Rymas, Frank, Re. 29,865, Cl. 75-240.000.
Dagragnano, Victor L.: *See*—
  Schontzler, James G.; Gates, Wendall C.; and Dagragnano, Victor L., Re. 29,868, Cl. 364-510.000.
De Lew, Charles A.: *See*—
  Kozel, James A.; and De Lew, Charles A., Re. 29,863, Cl. 137-242.000.
Dietschy, Robert; and Hexel, Georges, to Edouard Dubied et Cie. Stitch presser for knitting machine. Re. 29,861, Cl. 66-64.000.
Edouard Dubied et Cie: *See*—
  Dietschy, Robert; and Hexel, Georges, Re. 29,861, Cl. 66-64.000.
Fritz, Adolf: *See*—
  Roozenbeek, Herman; Bodig, Bernd; Meyer, Klaus; and Fritz, Adolf, Re. 29,862, Cl. 123-148.00E.
Gates, Wendall C.: *See*—
  Schontzler, James G.; Gates, Wendall C.; and Dagragnano, Victor L., Re. 29,868, Cl. 364-510.000.
Gould, Incorporated: *See*—
  Stedman, Cecil K., Re. 29,867, Cl. 338-2.000.
GTE Sylvania Incorporated: *See*—
  Steigelman, James Q.; Cleveland, Joseph J.; Kleiner, Richard N.; and Rymas, Frank, Re. 29,865, Cl. 75-240.000.
Hexel, Georges: *See*—
  Dietschy, Robert; and Hexel, Georges, Re. 29,861, Cl. 66-64.000.
Kleiner, Richard N.: *See*—
  Steigelman, James Q.; Cleveland, Joseph J.; Kleiner, Richard N.; and Rymas, Frank, Re. 29,865, Cl. 75-240.000.
Kozel, James A.; and De Lew, Charles A., to Singer Company, The. Anti-contaminant diaphragm valve. Re. 29,863, Cl. 137-242.000.
Manning Environmental Corporation: *See*—
  Schontzler, James G.; Gates, Wendall C.; and Dagragnano, Victor L., Re. 29,868, Cl. 364-510.000.
Meyer, Klaus: *See*—
  Roozenbeek, Herman; Bodig, Bernd; Meyer, Klaus; and Fritz, Adolf, Re. 29,862, Cl. 123-148.00E.
Nippon Electric Company, Limited: *See*—
  Yonezu, Hiroo, Re. 29,866, Cl. 331-94.50H.
Robert Bosch GmbH: *See*—
  Roozenbeek, Herman; Bodig, Bernd; Meyer, Klaus; and Fritz, Adolf, Re. 29,862, Cl. 123-148.00E.
Roozenbeek, Herman; Bodig, Bernd; Meyer, Klaus; and Fritz, Adolf, to Robert Bosch GmbH. Ignition system dependent upon engine speed. Re. 29,862, Cl. 123-148.00E.
Rymas, Frank: *See*—
  Steigelman, James Q.; Cleveland, Joseph J.; Kleiner, Richard N.; and Rymas, Frank, Re. 29,865, Cl. 75-240.000.
Schontzler, James G.; Gates, Wendall C.; and Dagragnano, Victor L., to Manning Environmental Corporation. Fluid flow measuring system and method. Re. 29,868, Cl. 364-510.000.
Singer Company, The: *See*—
  Kozel, James A.; and De Lew, Charles A., Re. 29,863, Cl. 137-242.000.
Stedman, Cecil K., to Gould, Incorporated. Pressure sensitive diaphragms with stress null zone oriented bridge patterns. Re. 29,867, Cl. 338-2.000.
Steigelman, James Q.; Cleveland, Joseph J.; Kleiner, Richard N.; and Rymas, Frank, to GTE Sylvania Incorporated. Cast cemented refractory metal carbides having improved sintered density. Re. 29,865, Cl. 75-240.000.
Szabo, Francis S., to Addressograph-Multigraph Corporation. Method of and apparatus for multi-galley composition. Re. 29,864, Cl. 355-41.000.
Yonezu, Hiroo, to Nippon Electric Company, Limited. Double heterostructure stripe geometry semiconductor laser device. Re. 29,866, Cl. 331-94.50H.

LIST OF PLANT PATENTEES

Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara": *See*—
  Holtkamp, Reinhold, 4,348, Cl. 69.000.
  Holtkamp, Reinhold, 4,349, Cl. 69.000.
  Holtkamp, Reinhold, 4,350, Cl. 69.000.
  Holtkamp, Reinhold, 4,351, Cl. 69.000.
  Holtkamp, Reinhold, 4,352, Cl. 69.000.
  Holtkamp, Reinhold, 4,353, Cl. 69.000.
Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara". African violet plant. 4,348, 12-19-78, Cl. 69.000.
Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara". African violet plant. 4,349, 12-19-78, Cl. 69.000.
Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara". African violet plant. 4,350, 12-19-78, Cl. 69.000.
Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara". African violet plant. 4,351, 12-19-78, Cl. 69.000.
Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara". African violet plant. 4,352, 12-19-78, Cl. 69.000.
Holtkamp, Reinhold, to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara". African violet plant. 4,353, 12-19-78, Cl. 69.000.

LIST OF DESIGN PATENTEES

Altec Corporation: *See*—
  Nussdorfer, Dale A.; and Hayes, William L., 250,586, Cl. D14-30.000.
Ambrosio, Louis A.; Benedetti, Robert L.; and Sinatra, Angelo, to Western Electric Company, Incorporated. Public telephone enclosure or the like. 250,602, 12-19-78, Cl. D25-16.000.
Andreadakis, Nicholas C.: *See*—
  Mayer, William N.; Kirchner, Richard K.; and Andreadakis, Nicholas C., 250,588, Cl. D14-43.000.
Atari, Inc.: *See*—
  Hall, Randy K.; and McKinsey, Kevin P., 250,606, Cl. D34-5.00R.
  McKinsey, Kevin P.; and Hayashi, John K., 250,607, Cl. D34-5.00R.
  Nelson, Jeffrey O.; and Lee, Hugh M., 250,608, Cl. D34-5.00R.
Avise, Donald L.: *See*—
  McNair, Samuel L.; Avise, Donald L.; and Talge, Foster L., 250,566, Cl. D7-88.000.
Barlow, Gordon A.; and Imatt, Alex, to Marvin Glass & Associates. Toy vehicle. 250,611, 12-19-78, Cl. D34-15.0MM.
Baxter Travenol Laboratories, Inc.: *See*—
  Gelbman, Alexander; Soodak, Charles I.; Hauser, Stephen G.; Bruni, James G.; and Fordham, Willard E., 250,587, Cl. D14-42.000.
Belinkoff, Irving R., to Kidde Consumer Durables Corp. Food processor. 250,568, 12-19-78, Cl. D7-153.000.
Beman, Deane R.: *See*—
  Safer, John H., 250,582, Cl. D11-131.000.
Benedetti, Robert L.: *See*—
  Ambrosio, Louis A.; Benedetti, Robert L.; and Sinatra, Angelo, 250,602, Cl. D25-16.000.

- Boyle, Allan John. Bottle. 250,574, 12-19-78, Cl. D9-108.000.
- Breger, Carl-Arne, to Shapes Establishment. Knife handle. 250,567, 12-19-78, Cl. D7-152.000.
- Brown, Leonard: *See—*
  - Shorin, Arthur T.; and Brown, Leonard, 250,556, Cl. D1-22.000.
- Bruni, James G.: *See—*
  - Gelbman, Alexander; Soodak, Charles I.; Hauser, Stephen G.; Bruni, James G.; and Fordham, Willard E., 250,587, Cl. D14-42.000.
- Buck Stove Marketing Corporation: *See—*
  - Buckner, Carrol E., 250,598, Cl. D23-97.000.
- Buckner, Carrol E., to Buck Stove Marketing Corporation. Stove. 250,598, 12-19-78, Cl. D23-97.000.
- Burd, Inc., Howell Division: *See—*
  - Petersen, Warren D., 250,559, Cl. D6-56.000.
- Caburian, Eugenio D.: *See—*
  - Evangelista, Biaked U.; and Caburian, Eugenio D., 250,573, Cl. D9-66.000.
- Champion International Corporation: *See—*
  - Cohn, Robert; and Young, Charles M., 250,590, Cl. D19-3.000.
- Cohn, Robert; and Young, Charles M., to Champion International Corporation. Envelope blank. 250,590, 12-19-78, Cl. D19-3.000.
- Corco, Inc.: *See—*
  - Sneeden, John R.; and Schrader, George L., 250,572, Cl. D9-52.000.
- Corning Glass Works: *See—*
  - Stowell, Davin B., 250,565, Cl. D7-20.000.
- Dazey Products Company: *See—*
  - McNair, Samuel L.; Avise, Donald L.; and Talge, Foster L., 250,566, Cl. D7-88.000.
- Denaro, Joseph M.: *See—*
  - Pick, Ernest W.; Denaro, Joseph M.; and Goerke, Henry R., 250,600, Cl. D24-61.000.
  - Pick, Ernest W.; Denaro, Joseph M.; and Goerke, Henry R., 250,601, Cl. D24-61.000.
- Detroit Tool and Engineering Company: *See—*
  - Miner, Earl L.; and Jones, Harold G., 250,583, Cl. D12-1.000.
- DeWeese, Ralph M. Advertising mast or similar article. 250,615, 12-19-78, Cl. D96-12.00D.
- Donnelly, William B., to General Electric Company. Chime housing. 250,579, 12-19-78, Cl. D10-118.000.
- Dunlop Limited: *See—*
  - Morgan, Peter W. S., 250,558, Cl. D2-215.000.
- Elliott, Richard M.; Unger, Steve A.; Mercadante, Michael J.; Urbanus, David S.; and Fossella, Gregory F., to USM Corporation. Hand-held hot melt dispenser. 250,570, 12-19-78, Cl. D8-30.000.
- Evangelista, Biaked U.; and Caburian, Eugenio D. Bottle. 250,573, 12-19-78, Cl. D9-66.000.
- Fabri-Tek Incorporated: *See—*
  - Hoffman, Gerald F., 250,576, Cl. D10-60.000.
- Fan, Tsui. Portable table lamp. 250,612, 12-19-78, Cl. D48-20.00R.
- Fire Drum Corporation: *See—*
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- Fossella, Gregory F.: *See—*
  - Elliott, Richard M.; Unger, Steve A.; Mercadante, Michael J.; Urbanus, David S.; and Fossella, Gregory F., 250,570, Cl. D8-30.000.
- Gardner, David. Dual eye wash fountain. 250,594, 12-19-78, Cl. D23-34.000.
- Gelbman, Alexander; Soodak, Charles I.; Hauser, Stephen G.; Bruni, James G.; and Fordham, Willard E., to Baxter Travenol Laboratories, Inc. Computational module. 250,587, 12-19-78, Cl. D14-42.000.
- General Electric Company: *See—*
  - Donnelly, William B., 250,579, Cl. D10-118.000.
- Getner, Edwin S. Stand for supporting an ice bucket, pot, vase or similar article. 250,563, 12-19-78, Cl. D6-176.000.
- Goerke, Henry R.: *See—*
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  - Pick, Ernest W.; Denaro, Joseph M.; and Goerke, Henry R., 250,601, Cl. D24-61.000.
- Goodman, L. Neil; and Kubasta, Charles J., to Xerox Corporation. Ribbon cartridge with ribbon. 250,613, 12-19-78, Cl. D64-11.00A.
- Gordon, Kenneth S. Eyeglass rack. 250,560, 12-19-78, Cl. D6-85.000.
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- Greene, Robert L. Wall mountable radio transceiver for use with a cordless telephone. 250,589, 12-19-78, Cl. D14-68.000.
- Groner, Carroll D.: *See—*
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- Hall, Randy K.; and McKinsey, Kevin P., to Atari, Inc. Game control console. 250,606, 12-19-78, Cl. D34-5.00R.
- Hart, Richard C. Lapel pin or similar article. 250,580, 12-19-78, Cl. D11-48.000.
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- Hoffman, Gerald F., to Fabri-Tek Incorporated. Thermostat overide housing. 250,576, 12-19-78, Cl. D10-60.000.
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- Llamas, Robert C. Ball striker or the like. 250,605, 12-19-78, Cl. D34-5.00R.
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- Meis, William J. Mobile support platform for vehicles. 250,585, 12-19-78, Cl. D12-31.000.
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- Miner, Earl L.; and Jones, Harold G., to Detroit Tool and Engineering Company. Personnel and material carrying trailer. 250,583, 12-19-78, Cl. D12-1.000.
- Mitutoyo Manufacturing Company, Ltd.: *See—*
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- Oye, Lloyd J., to Trans-Aid Corporation. Combination medical supply cart and cabinet. 250,584, 12-19-78, Cl. D12-28.000.
- Petersen, Warren D., to Burd, Inc., Howell Division. Chair or similar article. 250,559, 12-19-78, Cl. D6-56.000.
- Phillips, David, to Groner, Carroll D. Rack. 250,561, 12-19-78, Cl. D6-130.000.
- Pick, Ernest W.; Denaro, Joseph M.; and Goerke, Henry R., to Purdue Frederick Company, The. Cannula. 250,600, 12-19-78, Cl. D24-61.000.
- Pick, Ernest W.; Denaro, Joseph M.; and Goerke, Henry R., to Purdue Frederick Company, The. Douche appliance. 250,601, 12-19-78, Cl. D24-61.000.
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- Roesch, Edgar B., to Roesch Trust, The, Lesley B. Roesch and Robert Patterson, trustees. Upper sash window. 250,604, 12-19-78, Cl. D25-52.000.

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- RoVi Plastics, Inc.: *See—*
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- Safer, John H., to Beman, Deane R. Trophy. 250,582, 12-19-78, Cl. D11-131.000.
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- Savage, David. Pendant. 250,581, 12-19-78, Cl. D11-72.000.
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- Shorin, Arthur T.; and Brown, Leonard, to Topps Chewing Gum, Incorporated. Candy unit. 250,556, 12-19-78, Cl. D1-22.000.
- Sinatra, Angelo: *See—*
  - Ambrosio, Louis A.; Benedetti, Robert L.; and Sinatra, Angelo, 250,602, Cl. D25-16.000.
- Smith, Raymond A. Handle support for weed cutting implements. 250,569, 12-19-78, Cl. D8-8.000.
- Sneeden, John R.; and Schrader, George L., to Corco, Inc. Bottle or the like. 250,572, 12-19-78, Cl. D9-52.000.
- Soodak, Charles I.: *See—*
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- Stewart, Anne R. Handbag. 250,614, 12-19-78, Cl. D87-3.00F.
- Stowell, Davin B., to Corning Glass Works. Bowl or the like. 250,565, 12-19-78, Cl. D7-20.000.
- Talge, Foster L.: *See—*
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- Tebbe, David L.; and Klund, Eugene E., to Lam Craft Industries, Inc. Portable sink. 250,595, 12-19-78, Cl. D23-59.000.
- Testro, Keith R.; and Testro, Rex C. Stationery folder. 250,591, 12-19-78, Cl. D19-26.000.
- Testro, Keith R.; and Testro, Rex C. Stationery folder. 250,592, 12-19-78, Cl. D19-26.000.
- Testro, Keith R.; and Testro, Rex C. Stationery folder. 250,593, 12-19-78, Cl. D19-26.000.
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  - Testro, Keith R.; and Testro, Rex C., 250,593, Cl. D19-26.000.
- Thompson, B. C.; and Lutes, Marvin W., to RoVi Plastics, Inc. Starfinder. 250,577, 12-19-78, Cl. D10-65.000.
- Topps Chewing Gum, Incorporated: *See—*
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- Trans-Aid Corporation: *See—*
  - Oye, Lloyd J., 250,584, Cl. D12-28.000.
- Unger, Steve A.: *See—*
  - Elliott, Richard M.; Unger, Steve A.; Mercadante, Michael J.; Urbanus, David S.; and Fossella, Gregory F., 250,570, Cl. D8-30.000.
- Urbanus, David S.: *See—*
  - Elliott, Richard M.; Unger, Steve A.; Mercadante, Michael J.; Urbanus, David S.; and Fossella, Gregory F., 250,570, Cl. D8-30.000.
- USM Corporation: *See—*
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- Western Electric Company, Incorporated: *See—*
  - Ambrosio, Louis A.; Benedetti, Robert L.; and Sinatra, Angelo, 250,602, Cl. D25-16.000.
- Whipple, Roy. Stove with glass window. 250,597, 12-19-78, Cl. D23-97.000.
- Winslow, Peter L. Boat cleat. 250,571, 12-19-78, Cl. D8-382.000.
- Wynn, Freddie L. Skate board scooter. 250,610, 12-19-78, Cl. D34-15.0AJ.
- Xerox Corporation: *See—*
  - Goodman, L. Neil; and Kubasta, Charles J., 250,613, Cl. D64-11.00A.
- Young, Charles M.: *See—*
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CLASSIFICATION OF PATENTS

ISSUED DECEMBER 19, 1978

NOTE.—First number, class; second number, subclass; third number, patent number

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PATENT AND TRADEMARK OFFICE NOTICES

Title 37—Patents, Trademarks, and Copyrights

CHAPTER I—PATENT AND TRADEMARK OFFICE, DEPARTMENT OF COMMERCE

PART 4—FORMS FOR TRADEMARK CASES

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: The Patent and Trademark Office adopts revisions to the suggested forms for use in trademark cases. These revisions are intended to improve suggested forms which had been found to be confusing or susceptible to misinterpretation and provide a new suggested form to eliminate the need for the user to combine two forms.

DATES: Effective date: January 1, 1979.

FOR FURTHER INFORMATION CONTACT:

Miss Katharine I. Hancock by telephone at (703) 557-5380, or by mail marked to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: In the FEDERAL REGISTER of May 3, 1977 (42 FR 22378) there was published a Patent and Trademark Office proposal to revise certain existing forms and provide one new form for trademark cases. Comments were received from six persons. Two persons suggested that the the word "swears," proposed at the beginning of verifications and affidavits, was not appropriate and that language relating to oath should be confined to the jurat. This suggestion has been adopted. It was suggested by two persons that double signatures be eliminated from the forms for opposition and petition to cancel, and this suggestion has been adopted. Also, after further consideration with the object of eliminating confusion, inconsistency and error from the forms, some additional changes to forms set out in the proposal, and to forms 4.7, 4.9, 4.11 and 4.23 which were not included in the proposal, are being adopted.

Changes which have not been published for comment do not represent any change in practice but are editorial in nature and do not impose a burden on anyone; further opportunity for comment is therefore deemed not necessary.

The ways in which the changes being adopted vary from the published proposal are summarized as follows:

The words "hereby swears" propposed at the beginning of verifications and affidavits are replaced by the word "states." This change appears in forms 4.1, 4.5, 4.6, 4.13, 4.14, 4.15, 4.16, 4.16 (Combined 8 & 15), 4.17 and 4.18.

In forms 4.1, 4.1a 4.7, 4.8, 4.9 and 4.10, where goods or services are set forth, the terms "(Common, usual or ordinary name of (goods or services))" and "(Insert illustrative examples of the goods or services)" are deleted and the term "the following (goods or services):" is inserted instead, although the format of form 4.8 makes it necessary to use the variation "Name the goods or services."

In forms 4.1 and 4.1a, the term "trade style" is deleted and "business trade name" put in its place in identifying an individual applicant in order to conform more closely to the language of the statute. The wording "including street, city and State" is deleted from the address lines. The same changes have been made, where appropriate, in forms 4.17 and 4.18.

In form 4.1a, last clause, the word "herein" is deleted as unclear; the word "further" and the last occurrence of the word "that" are deleted as unnecessary.

In form 4.5, "firm" is changed to "partnership" as a more definite term for the entity for which the form is designed; "member of firm" is changed to "partner;" and the wording "including street, city and State" in the address, as well as the wording and space for domicile, are deleted.

In form 4.6, the proposed change of the word "affidavit" to "application" in the verification is not adopted; instead, the word "affidavit" is changed to "instrument" because the paper being executed contains both an application and an affidavit (verification) and the term "instrument" will encompass both. The wording "including street, city and State" in the address is deleted.

In forms 4.8 and 4.10, footnote (5) is replaced by new footnote (16) in order to clarify instructions for setting forth the manner of use of the mark; as a result, present footnote numbers (16), (17) and (18) in companion forms 4.9 and 4.11 are changed to numbers (17), (18) and (19), respectively.

In form 4.8, last sentence, the words "declaration from form" are inserted before "4.1a" in order to make it clear that form 4.1a is a declaration form.

In form 4.9, in the heading, the words "(If known)" under Class No. are replaced by "(A, for Goods; B, for Services)" in view of the fact that those are the only classes for certification marks. The term "(or form 4.7)" is placed after "footnote (5)" to accommodate either goods or services. For the sake of clarity, footnote (17) which explains certification has been reworded slightly.

In form 4.10 the phrase "Use form 4.1" is changed to "Use body of form 4.1, 4.7 or 4.8" in order to be more clear and to accomodate services and collective mark situations; under "Notes," reference is made to form 4.8 in addition to form 4.1 for the same reason.

In form 4.13, the statement in the verification "that the applicant for renewal owns the above identified registration" is deleted as it constitutes repetition.

In forms 4.13 and 4.16, where goods are listed, the words "or services" and "or 'all the services' " are added, where appropriate, to accommodate services as well as goods.

In forms 4.13, 4.14, 4.15 and 4.16 (Combined 8 & 15), in the Note relating to designation of a domestic representative, for purposes of clarity the word "made" is changed to "submitted with this form" and the word "prior" is added before "unrevoked."

In forms 4.13, 4.17 and 4.18, in the caption under the line where the signer's name is to appear, the words "a juristic" are added after the phrase "to sign for," and in the body of forms 4.17 and 4.18, the word "juristic" is added after the phrase "to sign for the." The purpose of these changes is to make clear who is an authorized signer and to provide uniformity with other forms.

In form 4.14, footnote (3) is deleted. The footnote relates to services but this form is not applicable to services because registration of service marks was not available under the acts to which the form pertains. Footnote numbers (4) and (5) are changed to numbers (3) and (4), respectively. Immediately above the signature, the notation footnote (3) (inadvertently omitted) is inserted.

In forms 4.14 and 4.16, in the clause for listing goods or services, the word "recited" is replaced by "stated," to conform to the language of the statute.

Proposed new form 16(a) has been redesignated as form 16 (Combined 8 & 15), in order to coordinate properly with the numbering system used for the forms.

The following changes are made in new form 16 (Combined 8 & 15): after "footnote (5)" in the body of the form, "recited" is replaced by "stated" to conform to the language of the statute; under the space for listing goods, wording is added to accommodate services as well as goods; before "footnote (4)" in the body of the form the wording "or the date of publication under section 12(c) of the act" (inadvertently omitted) is inserted; and after the phrase "that such mark is still in use" the wording "in (3) ———————— (Type of commerce) commerce" (inadvertently omitted) is inserted.

Forms 4.17 (Opposition) and 4.18 (Petition to cancel) are made single signature forms by deletion of the provision for signature at the end of the body of the form, leaving a signature only at the end of the verification. This accords with forms for applications, which also require only a single signature at the end of the verification or declaration. In the verification of forms 4.17 and 4.18, the words "the foregoing" (two occurrences) are replaced by the word "this," and the words "and signed" which follow the words "has read" are deleted.

In the parenthetical sentence relating to grounds of damage, the word "he" is changed to "opposer" or "petitioner" in each form, respectively.

In form 4.21, first sentence, "he" is replaced by "said assignor."

In forms 4.21 and 4.22, third paragraph, the letter "s" is deleted from the word "rights." At the end of footnote (2) the wording "changing the word 'applicant' to 'assignee' " is added.

The words "he," "himself" and "his" have been replaced by "he/she," "himself/herself," "his/her" or "it/he/she," as appropriate, in forms 4.1, 4.1a, 4.5, 4.6, 4.13, 4.17, 4.18, 4.21 and 4.22, to give choice of gender.

In form 4.23 (Certificate of mailing), the first line at the bottom is labeled "Print or Type Name of Person Signing Certificate" and the second line is labeled "Signature of Person Signing Certificate," in order to make it clear that in addition to a person's signature, such person's name is to be set out legibly in typing or printing; under the third line, the words "of Signature" are added after "Date" to distinguish the date of signature clearly from the date of deposit which is to be set forth in the body of the form. In the heading of the form, the words "of mailing" are added after "Certificate" for the sake of clarity.

Accordingly, pursuant to the authority contained in section 41 of the act of July 5, 1946, as amended, 37 CFR Part 4 is amended as follows:

1. By revising § 4.1 to read as follows:

§ 4.1 Trademark application by an individual; Principal Register with oath.

Mark ______________________________
(Identify the mark)

Class No.______________________________
(If known)

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

(Name of applicant, and business trade name, if any)

(Business address)

(Residence address)

(Citizenship of applicant)

The above identified applicant has adopted and is using the trademark shown in the accompanying drawing (1) for the following goods:

————————————————,

and requests that said mark be registered in the United States Patent and Trademark Office on the Principal Register established by the Act of July 5, 1946.

The trademark was first used on the goods (2) on ————(Date); was first used in ———— (Type of commerce) commerce (3) on ————(Date); and is now in use in such commerce.

(4)

The mark is used by applying it to (5) ———————— and five specimens showing the mark as actually used are presented herewith.

(6)

State of ————————
County of ———————— } ss.

(Name of applicant)

states that he/she believes himself/herself to be the owner of the trademark sought to be registered; to the best of his/her knowledge and belief no other person, firm, corporation or association has the right to use said mark in commerce, either in the identical form or in such near resemblance thereto as to be likely, when applied to the goods of such other person, to cause confusion, or to cause mistake, or to deceive; and the facts set forth in this application are true.

(Signature of applicant)

JURAT:

Subscribed and sworn to before me, this —— day of ————, ——. *

Notary Public

*The person who signs the jurat must be authorized to administer oaths by the law of the jurisdiction where executed, and the seal or stamp of the notary, or other evidence of authority in the jurisdiction of execution, must be affixed.

Representation

(See form 4.2 and Note (7) below.)

NOTES

(1) If registration is sought for a word or numeral mark not depicted in any special form, the drawing may be the mark typed in capital letters on letter-size bond paper; otherwise, the drawing shall comply with section 2.52.

(2) If more than one item in a class is set forth and the dates given for that class apply to only one of the items listed, insert the name of the item to which the dates apply.

(3) Type of commerce should be specified as "interstate," "territorial," "foreign," or other type of commerce which may lawfully be regulated by Congress. Foreign applicants relying upon use must specify commerce which Congress may regulate, using wording such as commerce with the United States or commerce between the United States and a foreign country.

(4) If the mark is other than a coined, arbitrary or fanciful mark, and the mark is believed to have acquired a secondary meaning, insert whichever of the following paragraphs is applicable:

(a) The mark has become distinctive of applicant's goods as a result of substantially exclusive and continuous use in ———— (Type of commerce) commerce for the five years next preceding the date of filing of this application.

(b) The mark has become distinctive of applicant's goods as evidenced by the showing submitted separately.

(5) Insert the manner or method of using the mark with the goods, i.e., "the goods," "the containers for the goods," "displays associated with the goods," "tags or labels affixed to the goods," or other method which may be in use.

(6) The required fee of $35.00 for each class must be submitted.

(7) If the applicant is not domiciled in the United States, a domestic representative must be designated. See form 4.4.

2. By revising Section 4.1a to read as follows:

Section 4.1a Trademark application by an individual; Principal Register with declaration.

Mark ————————————————
(Identify the mark)

Class No. ————————————————
(If known)

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

(Name of applicant, and business trade name, if any)

(Business address)

(Residence address)

(Citizenship of applicant)

The above identified applicant has adopted and is using the trademark shown in the accompanying drawing (1) for the following goods:

————————————————,

and requests that said mark be registered in the United States Patent and Trademark Office on the Principal Register established by the Act of July 5, 1946.

The trademark was first used on the goods (2) on ———— (Date) was first used in ———— (Type of commerce) commerce (3) on ———— (Date) and is now in use in such commerce.

(4)

The mark is used by applying it to (5) ———————— and five specimens showing the mark as actually used are presented herewith.

(6)

————————————————,

(Name of applicant)

being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any registration resulting therefrom, declares: That he/she believes himself/herself to be the owner of the trademark sought to be registered; that to the best of his/her knowledge and belief no other person, firm, corporation or association has the right to use said mark in commerce, either in the identical form or in such near resemblance thereto as may be likely, when applied to the goods of such other person, to cause confusion, or to cause mistake, or to deceive; that the facts set forth in this application are true; and that all statements made of his/her own knowledge are true and all statements made on information and belief are believed to be true.

(Signature of applicant)

(Date)

Representation

(See form 4.2 and Note (7) under form 4.1.)

NOTES

For Notes referred to in this form but not set out here, see same numbered Notes under form 4.1.

3. By revising Section 4.2 to read as follows:

Section 4.2 Power of attorney at law (which may accompany application).*

Applicant hereby appoints (8) ————, ———— (Address) an attorney at law or attorneys at law, to prosecute this application to register, to transact all business in the Patent and Trademark Office in connection therewith, and to receive the certificate of registration.

Note.—(8) An individual attorney at law or individual attorneys at law must be named here. If the name of a law firm is given, it will be regarded merely as a designation of address for correspondence.

*An attorney at law is not required to file a power of attorney; an attorney at law may represent a trademark applicant on the basis of being an attorney at law without presenting a power of attorney.

4. By revising Section 4.5 to read as follows:

Section 4.5 Trademark application by a partnership; Principal Register.

Mark ————————————————
(Identify the mark)

Class No. ————————————————
(If known)

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

(Name of partnership)

(Names of partners)

(Business address of partnership)

(Citizenship of partners)

(Body of application is same as in form 4.1.)

State of ————————
County of ———————— } ss.

(Name of partner) states that he/she is a partner of applicant partnership; he/she believes said partnership to be the owner of the trademark sought to be registered; to the best of his/her knowledge and belief no other person, firm, corporation or association has the right to use said mark in commerce, either in the identical form or in such near resemblance thereto as to be likely, when applied to the goods of such other person, to cause confusion, or to cause mistake, or to deceive; and the facts set forth in this application are true.

(Signature of partner)

JURAT:

Subscribed and sworn to before me, this —— day of ————, ——. *

Notary Public

*The person who signs the jurat must be authorized to administer oaths by the law of the jurisdiction where executed, and the seal or stamp of the notary, or other evidence of authority in the jurisdiction of execution, must be affixed.

Representation

(See form 4.2 and Note (7) under form 4.1.)

5. By revising Section 4.6 to read as follows:

Section 4.6 Trademark application by a corporation; Principal Register.

Mark ————————————————
(Identify the mark)

Class No.————————————————
(If known)

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

(Corporate name and State or country of incorporation) (10)

(Business address)

(Body of application is same as in form 4.1.)

State of ————————
County of ———————— } ss.

(Name of officer of corporation) states that he/she is ———————— (Official title) of applicant corporation and is authorized to execute this instrument on behalf of said corporation; he/she believes said corporation to be the owner of the trademark sought to be registered; to the best of his/her knowledge and belief no other person, firm, corporation or association has the right to use said mark in commerce, either in the identical form or in such near resemblance thereto as to be likely, when applied to the goods of such other person, to cause confusion, or to cause mistake, or to deceive; and the facts set forth in this application are true.

————————————————
(Name of corporation)
By ————————————————
(Signature of officer of corporation, and official title of officer)

JURAT:
Subscribed and sworn to before me, this ——— day of ————, ——.
————————————————*
Notary Public

*The person who signs the jurat must be authorized to administer oaths by the law of the jurisdiction where executed, and the seal or stamp of the notary, or other evidence of authority in the jurisdiction of execution, must be affixed.

Representation

(See form 4.2 and Note (7) under form 4.1.)

Note.—(10) If applicant is an association or other collective group, the word "association" or other appropriate designation should be substituted for "corporation" when referring to applicant.

6. By revising Section 4.7 to read as follows:

Section 4.7 Service mark application; Principal Register.

Mark ————————————————
(Identify the mark)
Class No.————————————————
(If known)

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

(Insert appropriate identification of applicant in accordance with form 4.1, 4.5, or 4.6.)

The above identified applicant has adopted and is using the service mark shown in the accompanying drawing (11) for the following services: ————————, and requests that said mark be registered in the United States Patent and Trademark Office on the Principal Register established by the act of July 5, 1946.

The service mark was first used in connection with the services (2) on ———————— (Date); was first used in connection with the services rendered in (3) ———— (Type of commerce) commerce on ———————— (Date); and is now in use in such commerce. (4)

The mark is used by————————————————

————————————————
(State method of using the mark in connection with the services)
and five (12) ———————— showing the mark as actually used are presented herewith.

(Insert appropriate verification of declaration from form 4.1, 4.1a, 4.5 or 4.6, changing the word "trademark" to "service mark" and the word "goods" to "services.")

Representation

(See form 4.2 and Note (7) under form 4.1.)

NOTES

For Notes referred to in this from but not set out here, see same numbered Notes under form 4.1.

(11) See Note (1) under form 4.1, and if drawing is not practicable, insert description of the mark instead of reference to the drawing.

(12) Insert "specimens," or state the nature of the representation of the mark which is furnished.

7. By revising Section 4.8 to read as follows:

Section 4.8 Collective mark application (including collective membership mark); Principal Register.

Mark ————————————————
(Identify the mark)
Class No.————————————————
(If known)

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

(Insert identification of applicant in accordance with form 4.6.)

The above identified applicant has adopted and is exercising legitimate control over the use of the collective mark shown in the accompanying drawing (1) for (13) ———————— (Name the goods or services) to indicate (14) ————————, and requests that said mark be registered in the United States Patent and Trademark Office on the Principal Register established by the act of July 5, 1946.

The collective mark was first used on the (2) ———————— (Insert "goods" or "services") (15) by members of applicant on ———————— (Date); was first used by said members in (3) ———————— (Type of commerce) commerce on ———————— (Date); and is now in use in such commerce. (4)

The mark is used by applying it to (16) ———————— and five specimens of the mark as actually used are presented herewith.

(Insert verification from form 4.6 or declaration from form 4.1a, changing the wording as necessary to agree with applicant's legal entity.)

Representation

(See form 4.2 and Note (7) under form 4.1.)

NOTES

For notes referred to in this form but not set out here, see same numbered Notes under form 4.1.

(13) If the application is for a membership mark, omit the word "for" and the space for the name of the goods or services.

(14) If the application is for a membership mark, insert "membership in applicant organization," or similar appropriate statement. If not for a membership mark, omit the words "to indicate" and the following space.

(15) If the application is for a membership mark, the phrase "on the goods or services" should be omitted.

(16) For goods, see Note (5); for services, see form 4.7; for membership, insert the manner or method of using the mark to indicate membership, such as membership cards, wall plaques, or other method which may be in use.

8. By revising Section 4.9 to read as follows:

Section 4.9 Certification mark application; Principal Register.

Mark————————————————
(Identify the mark)
Class No.————————————————
(A, for Goods; B, for Services)

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

(Insert appropriate identification of applicant in accordance with form 4.1, 4.5 or 4.6.)

The above identified applicant has adopted and is exercising legitimate control over the use of the certification mark shown in the accompanying drawing (1) for the following goods or services:

————————————————,
and requests that said mark be registered in the United States Patent and Trademark Office on the Principal Register established by the act of July 5, 1946.

The certification mark, as used by persons authorized by applicant, certifies (17) ————————; said mark was first used under the authority of applicant on ———————— (Date); was first used in (3) ———————— (Type of commerce) commerce on ———————— (Date); and is now in use in such commerce. (4)

The mark is used by applying it to (5) (or see form 4.7) ————, and five specimens showing the mark as actually used are presented herewith.

Applicant is not engaged in the production or marketing of any goods or services to which the mark is applied.

(Insert appropriate verification or declaration from form 4.1, 4.1a, 4.5 or 4.6 and add after the word "association" the words "other than those authorized by applicant.")

Representation

(See form 4.2 and Note (7) under form 4.1.)

NOTES

For Notes referred to in this form but not set out here, see same numbered Notes under form 4.1.

(17) Insert an appropriate statement as to what the mark certifies, relating to regional origin, or to material, mode of manufacture, quality, accuracy or other characteristic of the goods or services, or that the work or labor on the goods or in rendering the services was performed by members of applicant.

9. By revising Section 4.10 to read as follows:

Section 4.10 Application based on concurrent use; Principal Register.

Mark————————————————
(Identify the mark)
Class No.————————————————
(If known)

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

(Insert appropriate identification of applicant in accordance with form 4.1, 4.5 or 4.6.)

Use body of form 4.1, 4.7 or 4.8, and add at the end of the first paragraph: "for the area comprising ———————— (List the States for which registration is sought)"; and add as final paragraph of application:

The following exception(s) to applicant's right to exclusive use are:

By ————, doing business at ————————, who is using the mark ———————— (Identify the mark and Reg. No. or Ser. No., if any) for the following goods (or services): ———————— in the States of ———————— by applying the mark to (16) ———— from ———————— (Earliest known date of such use) to the present.

(Insert appropriate verification of declaration from form 4.1, 4.1a, 4.5 or 4.6 and add after the word "association" the words "other than specified in the application.")

Representation

(See form 4.2 and Note (7) under form 4.1.)

NOTES

For Notes referred to in this form but not set out here, see same numbered Notes under forms 4.1 and 4.8.

10. By revising Section 4.11 to read as follows:

Section 4.11 Application to register on Supplemental Register.

Mark————————————————
(Identify the mark)
Class No.————————————————
(If known)

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

(Insert appropriate identification of applicant in accordance with form 4.1, 4.5 or 4.6.)

For the body of an application for a trademark registration (18), use form 4.1, 4.5 or 4.6, whichever is appropriate, changing the word "Principal" to "Supplemental," and adding a final paragraph to the application as follows:

"The mark sought to be registered has been in lawful use in ———— (Type of commerce) commerce in connection with the goods for the year preceding the date of filing of this application." (19)

(Insert appropriate verification or declaration from form 4.1, 4.1a, 4.5 or 4.6.)

Representation

(See form 4.2 and Note (7) under form 4.1.)

NOTES

(18) For the body of service mark, collective mark or certification mark applications on the Supplemental Register, use form 4.7, 4.8 or 4.9, whichever is applicable, with the change and addition indicated in this form.

(19) If the mark has not been in use for the year next preceding the filing date, and registration in the United States is required as a basis for obtaining foreign protection of the mark, substitute the following statement for the last sentence: The mark sought to be registered is now in use in ——— ——— (Type of commerce) commerce and domestic registration is required as a basis for foreign protection of the mark.

In this instance applicant will be required to make a showing that U.S. registration is required as a basis for foreign protection of the mark.

11. By revising Section 4.13 to read as follows:

Section 4.13 Application for renewal.

Mark ————————————————
(Identify the mark)
Reg. No. ————————————————
Class No.————————————————

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

(Insert appropriate identification of applicant for renewal in accordance with form 4.1, 4.5 or 4.6.)(1)

The above identified applicant for renewal requests that the above identified registration, granted to ———————— (Name of original registrant) on ———————— (Date of Issuance); which applicant for renewal now owns, as shown by records in the Patent and Trademark Office, be renewed in accordance with the provisions of section 9 of the act of July 5, 1946.

The mark shown in said registration is still in use in (2) ———— (Type of commerce) commerce on each of the following goods (3) recited in the registration: ———————— (List the goods or services or insert the words "all the goods" or "all the services"), the attached specimen (or facsimile) showing the mark as currently used. (4)

(5)

State of ———————— } ss.
County of ————————

————————————————

(Name of renewal applicant or of person authorized to sign for a juristic renewal applicant) states that to the best of his/her knowledge and belief the facts set forth in this application are true.

————————————————

(Signature of renewal applicant; if renewal applicant is a corporation or other juristic organization, give the official title of the person who signs for renewal applicant)

(JURAT) (Use jurat from form 4.1.)

Representation

(See form 4.2 and Note (6) below.)

Notes

(1) Applicant for renewal must be the present owner of the registration.

(2) Type of commerce should be specified as "interstate," "foreign," "territorial," or other type of commerce which may lawfully be regulated by Congress. Foreign registrants must specify commerce which Congress may regulate, using wording such as commerce with the United States or commerce between the United States and a foreign country.

(3) If a service mark registration, state "in connection with each of the following services * * *".

(4) If the mark is not in use in commerce at the time of filing the application for renewal, but there is no intention to abandon the mark, facts must be recited to show that the nonuse is due to special circumstances. A specimen (or facsimile) illustrating use, or facts as to nonuse, must be submitted for each class sought to be renewed.

(5) The required fee for renewal sought prior to expiration is $25.00 for each class; and for delayed renewal filed within three months after expiration, an additional $5.00 for each class. If renewal is sought for less than the total number of classes in the registration, the classes for which renewal is sought should be specified.

(6) If applicant for renewal is not domiciled in the United States, a domestic representative must be designated. See form 4.4. If a designation is not submitted with this form, a prior unrevoked designation will meet the requirement if such is already in the registration file.

12. By revising Section 4.14 to read as follows:

Section 4.14 Affidavit for publication under section 12(c).

Mark ————————————————
(Identify the mark)
Reg. No. ————————————————
Date of Issue ————————————————
To: ————————————————
(Name of original registrant)

State of ———————— } ss.
County of ————————

————————————————

(Name of registrant or of person authorized to sign for a juristic registrant) states that (1) ———————— (Name of registrant) owns the above identified registration, as shown by records in the Patent and Trademark Office; that said registration is now in force; that the mark shown therein is in use in (2) ———————— (Type of commerce) commerce on each of the following goods stated in the registration:

———————— (List the goods or insert the words "all the goods"), and that the benefits of the act of July 5, 1946, are hereby claimed for said registration.

(3)

————————————————

(Signature; if a corporation or other juristic organization, give the official title of the person who signs.)

(JURAT) (Use jurat from form 4.1.)

Representation

(See form 4.2 and Note (4) below.)

Notes

(1) The present owner of the registration must file the affidavit as registrant.

(2) Type of commerce should be specified as "interstate," "territorial," "foreign," or other type of commerce which may lawfully be regulated by Congress. Foreign registrants must specify commerce which Congress may regulate, using wording such as commerce with the United States or commerce between the United States and a foreign country.

(3) The required fee of $10.00 must be submitted.

(4) If registrant is not domiciled in the United States, a domestic representative must be designated. See form 4.4. If a designation is not submitted with this form, a prior unrevoked designation will meet the requirement if such is already in the registration file.

13. By revising Section 4.15 to read as follows:

Section 4.15 Affidavit required by section 8.

Mark ————————————————
(Identify the mark)
Reg. No. ————————————————
Class No. ————————————————

State of ———————— } ss.
County of ————————

————————————————

(Name of registrant or of person authorized to sign for a juristic registrant) states that (1) ———————— (Name of registrant) owns the above identified registration issued ———————— (Date) (2), as shown by records in the Patent and Trademark Office; and that the mark shown therein is still in use (3) as evidenced by (4) ————.

(5)

————————————————

(Signature; if a corporation or other juristic organization, give the official title of the person who signs.)

(JURAT) (Use jurat from form 4.1.)

Representation

(See form 4.2 and Note (6) below.)

Notes

The affidavit of which this form is an illustration must be filed within the sixth year after the date of registration under the act of 1946 or after the date of publication under section 12(c) of said act.

(1) The present owner of the registration must file the affidavit as registrant.

(2) If the registration issued under a prior act and has been published under section 12(c), add: "and published under section 12(c) on ———————— (Date)".

(3) If the mark is not in use at the time of filing the affidavit, but there is no intention to abandon the mark, facts must be recited to show that the nonuse is due to special circumstances.

(4) Insert "the specimen included showing the mark as currently used," or recite facts as to sales or advertising which will show that the mark is in current use. Specimen illustrating use, or facts as to use or nonuse, are required for each class for which action is sought.

(5) The required fee of $10.00 must be submitted for each class for which action is sought, and if action is sought for less than the total number of classes in the registration, the classes for which action is sought should be specified.

(6) If registrant is not domiciled in the United States, a domestic representative must be designated. See form 4.4. If a designation is not submitted with this form, a prior unrevoked designation will meet the requirement if such is already in the registration file.

14. By revising Section 4.16 to read as follows:

Section 4.16 Affidavit under section 15.

Mark ————————————————
(Identify the mark)
Reg. No. ————————————————
Class No. ————————————————

State of ———————— } ss.
County of ————————

————————————————

(Name of registrant or of person authorized to sign for a juristic registrant) states that (1) ———————— (Name of registrant) owns the above identified registration issued ———————— (Date) (2), as shown by records in the Patent and Trademark Office; that the mark shown therein has been in continuous use in (3) ———————— (Type of commerce) commerce for five consecutive years from (4) ———————— (Date) to the present, on each of the following goods (5) stated in the registration:

————————————————

(List the goods or services or insert the words "all the goods" or "all the services"); that such mark is still in use in (3) ———————— (Type of commerce) commerce; that there has been no final decision adverse to registrant's claim of ownership of such mark for such goods or services, or to registrant's right to register the same or to keep the same on the register, and that there is no proceeding involving said rights pending and not disposed of either in the Patent and Trademark Office or in the courts.

————————————————

(Signature; if a corporation or other juristic organization, give the official title of the person who signs.)

(JURAT) (Use jurat from form 4.1.)

Representation

(See form 4.2.)

Notes

(1) The present owner of the registration must file the affidavit as registrant.

(2) If the registration issued under a prior act and has been published under section 12(c), add: "and published under section 12(c) on ————————(Date)."

(3) Type of commerce must be specified as "interstate," "territorial," "foreign," or such other commerce as may lawfully be regulated by Congress. Foreign registrants must specify commerce which Congress may regulate, using wording such as commerce with the United States or commerce between the United States and a foreign country.

(4) The date should be the beginning of a five year period of continuous use, all of which five year period falls after the date of registration under the act of 1946 or after the date of publication under section 12(c). A date which would produce a period of continuous use which is longer than five years may be stated provided the period indicated includes five years of continuous use after registration under the act of 1946 or publication under section 12(c)

(5) If a service mark registration, state: "in connection with each of the following services."

15. By adding a new Section 4.16 (Combined 8 & 15) to read as follows:

Section 4.16 (Combined 8 & 15) Combined affidavit under Sections 8 and 15.

Mark ————————————————
(Identify the mark)
Reg. No. ————————————————
Class No. ————————————————

State of ———————— } ss.
County of ————————

————————————————

(Name of registrant or of person authorized to sign for a juristic registrant) states that (1) ———————— (Name of registrant) owns the above identified registration issued ———————— (Date) (2), as shown by records in the Patent and Trademark Office; that the mark shown therein has been in continuous use in (3) ———————— (Type of commerce) commerce for five consecutive years from the date of the registration or the date of publication under section 12(c) (4) to the present, on each of the following goods (5) stated in the registration:

————————————————

(List the goods or services or insert the words "all the goods" or "all the services"); that such mark is still in use in (3) ———————— (Type of commerce) commerce; that such mark is still in use as evidenced by (6) ———————— ; that there has been no final decision adverse to registrant's claim of ownership of such mark for such goods or services, or to registrant's right to register the same or to keep the same on the register, and that there is no proceeding involving said rights pending and not disposed of either in the Patent and Trademark Office or in the courts.

(7)

————————————————

(Signature; if a corporation or other juristic organization, give the official title of the person who signs.)

(JURAT) (Use jurat from form 4.1.)

Representation

(See form 4.2 and note (8) below.)

NOTES

This combined form should not be used with the section 8 portion of the affidavit is based on nonuse.

(1) The present owner of the registration must file the affidavit as registrant.

(2) If the registration issued under a prior act and has been published under section 12(c), add: "and published under section 12(c) on ———————— (Date)."

(3) Type of commerce must be specified as "interstate," "territorial," "foreign," or such other commerce as may lawfully be regulated by Congress. Foreign registrants must specify commerce which Congress may regulate, using wording such as commerce with the United States or commerce between the United States and a foreign country.

(4) This form is only appropriate when the five year period of continuous use which is required for section 15 is also the first five years after registration or after publication under section 12(c) which is required for section 8.

(5) If a service mark registration, state: "in connection with each of the following services."

(6) Insert "the specimen included showing the mark as currently used," or recite facts as to sales or advertising which will show that the mark is in current use.

(7) The required fee of $10.00 for section 8 must be submitted for each class for which action is sought, and if action is sought for less than the total number of classes in the registration, the classes for which action is sought should be specified.

(8) If registrant is not domiciled in the United States, a domestic representative must be designated for section 8. See form 4.4. If a designation is not submitted with this form, a prior unrevoked designation will meet the requirement if such is already in the registration file.

16. By revising Section 4.17 to read as follows: Section 4.17 Opposition in the United States Patent and Trademark Office.

In the matter of application Serial No. ————. Published in the Official Gazette on ———————— (Date)

————————————————

(Name of opposer)
v.

————————————————

(Name of applicant)

Opposition No. ———————— (To be inserted by Patent and Trademark Office) ———————— (Name of opposer), a(n)(1) ———————— (Legal entity of opposer), located and doing business at ———————— (Address), believes that it/he/she will be damaged by registration of the mark shown in the above identified application, and hereby opposes the same.

As grounds of opposition, it is alleged that:

(Numbered paragraphs should state the grounds and recite facts tending to show why opposer believes opposer will be damaged.)

(2)

State of ————————
County of ———————— } ss.

————————————————

(Name of opposer or of person authorized to sign for a juristic opposer) states that he/she is the opposer named in this opposition, or is the person authorized to sign for the juristic opposer named in this opposition; that he/she has read the opposition and knows the contents thereof; and that the allegations are true, except as to the matters stated therein to be upon information and belief, and as to those matters he/she believes them to be true.

————————————————

(Signature of opposer; if opposer is a corporation or other juristic organization, give the official title of the person who signs for opposer.)

(JURAT) (Use jurat from form 4.1)

Representation

(See form 4.2 and Note (7) under from 4.1 For opposers who are foreigners, is is customary to regard a power of attorney as the equivalent of a domestic representative.)

NOTES

(1) If an individual, state: "an individual," or "an individual trading as ————," if there is a business trade name. If a partnership, state: "a partnership composed of ———————— (Names of partners)." If a corporation, association, or other organization, state "a corporation (or specify other type of organization) organized and existing under the laws of ———— (State or country)."

(2) The required fee of $25.00 must be submitted for each class to be opposed, and if opposition is sought for less than the total number of classes, the classes to be opposed should be specified.

17. By revising Section 4.18 to read as follows:

Section 4.18 Petition to cancel a registration in the United States Patent and Trademark Office.

In the matter of Registration No. ————. Date of Issue ————————.

————————————————

(Name of petitioner)
v.

————————————————

(Name of registrant)

Cancellation No. ———————— (To be inserted by Patent and Trademark Office) ———————— (Name of petitioner), a(n)(1) ———————— (Legal entity of petitioner), located and doing business at ———————— (Address), believes that it/he/she is or will be damaged by the above identified registration, and hereby petitions to cancel the same.

As grounds therefor, it is alleged that:

(Numbered paragraphs should state the grounds and recite facts tending to show why petitioner believes that petitioner is or will be damaged.)

(2)

State of ————————
County of ———————— } ss.

————————————————

(Name of petitioner or of person authorized to sign for a juristic petitioner) states that he/she is the petitioner named in this petition to cancel, or is the person authorized to sign for the juristic petitioner named in this petition to cancel; that he/she has read the petition to cancel and knows the contents thereof; and that the allegations are true, except as to the matters stated therein to be upon information and belief, and as to those matters he/she believes them to be true.

————————————————

(Signature of petitioner to cancel; if petitioner is a corporation or other juristic organization, give the official title of the person who signs for petitioner.)

(JURAT) (Use jurat from form 4.1.)

Representation

(See form 4.2 and Note (7) under form 4.1. For petitioners who are foreigners, it is customary to regard a power of attorney as the equivalent of a domestic representative.)

NOTES

(1) If an individual, states: "an individual," or "an individual trading as ————." if there is a business trade name. If a partnership, state: "a partnership composed of ———————— (Names of partners)." If a corporation, association, or other organization, state "a corporation (or specify other type of organization) organized and existing under the laws of ———————— (State or country)."

(2) The required fee of $25.00 must be submitted for each class sought to be cancelled, and if cancellation is sought for less than the total number of classes, the classes sought to be cancelled should be specified.

18. By revising Section 4.21 to read as follows: Section 4.21 Assignment of application.

Whereas ———————— (Name of assignor), of ———————— (Address), has adopted and is using a mark for which said assignor has filed application in the United States Patent and Trademark Office for registration, Serial No. ————; and

Whereas ———————— (Name of assignee), of (1) ———————— (Address), is desirous of acquiring said mark;

Now, therefore, for good and valuable consideration, receipt of which is hereby acknowledged, said ———————— (Name of Assignor) does hereby assign unto the said ———————— (Name of assignee) all right, title and interest in and to the said mark, together with the good will of the business symbolized by the mark, and the above identified application for registration of said mark.

(2)

The Commissioner of Patents and Trademarks is requested to issue the certificate of registration to said assignee.

————————————————

(Signature of assignor; if assignor is a corporation or other juristic organization, give the official title of the person who signs for assignor.)

State of ————————
County of ———————— } ss.

On this ——— day of ————, ——, before me appeared ————————, the person who signed this instrument, who acknowledged that he/she signed it as a free act on his/her own behalf (or on behalf of the identified corporation or other juristic entity with authority to do so).

————————————————*
Notary Public

*(The wording of the acknowledgement may vary from this illustration but should be wording acceptable under the law of the jurisdiction where executed; the person who signs the acknowledgement must be authorized to do so by the law of the jurisdiction where executed, and the seal or stamp of the notary, or other evidence of authority in the jurisdiction of execution, must be affixed.)

NOTES

(1) If the postal address of the assignee is not given either in the instrument or in an accompanying paper, registration to the assignee may be delayed.

(2) If assignee is not domiciled in the United States, a domestic representative must be designated. See form 4.4, changing the word "applicant" to "assignee."

19. By revising Section 4.22 to read as follows:

Section 4.22 Assignment of registration.

Whereas ———————— (Name of assignor), of ———————— (Address), has adopted, used and is using a mark which is registered in the United States Patent and Trademark Office, Registration No. ————, dated ————————; and

Whereas ———————— (Name of assignor), of ———————— (Address), is desirous of acquiring said mark and the registration thereof;

Now, therefore, for good and valuable consideration, receipt of which is hereby acknowledged, said ———————— (Name of assignor) does hereby assign unto the said ———————— (Name of assignee) all right, title and interest in and to the said mark, together with the good will of the business symbolized by the mark, and the above identified registration thereof.

(2)

————————————————

(Signature of assignor; if assignor is a corporation or other juristic organization, give the official title of the person who signs for assignor.)

State of ————————
County of ———————— } ss.

On this ——— day of ————, ——, before me appeared ————————, the person who signed this instrument, who acknowledged that he/she signed it as a free act on his/her own behalf (or on behalf of the identified corporation or other juristic entity with authority to do so).

————————————————*
Notary Public

*(The wording of the acknowledgement may vary from this illustration but should be wording acceptable under the law of the jurisdiction where executed; the person who signs the acknowledgement must be authorized to do so by the law of the jurisdiction where executed, and the seal or stamp of the notary, or other evidence of authority in the jurisdiction of execution, must be affixed.)

NOTES

(1) If the postal address of the assignee is not given either in the instrument of in an accompanying paper, recording may be delayed pending receipt of such address.

(2) If assignee is not domiciled in the United States, a domestic representative must be designated. See form 4.4, changing the word "applicant" to "assignee."

20. By revising Section 4.23 to read as follows:

Section 4.23 A suggested format for the certificate of mailing under 37 CFR 1.8(a) to be included with the correspondence.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on ———————— (Date of Deposit).

————————————————

Print or Type Name of Person Signing Certificate

————————————————

Signature of Person Signing Certificate

————————————————

Date of Signature

The Patent and Trademark Office has determined that these rule changes have no potential major economic consequences requiring the preparation of a regulatory analysis under Executive Order 12044.

Dated: September 18, 1978.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

Approved: November 21, 1978.

JORDAN J. BARUCH,
Assistant Secretary for Science and Technology.

Dated: November 21, 1978.

[FR Doc. 78-33269 Filed 11-27-78; 8:45 am]
(43 FR 55395, Nov. 28, 1978)

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT): Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of October 3, 1978.

DONALD W. BANNER,
Nov. 7, 1978. *Commissioner of Patents and Trademarks.*

Looseleaf Trademark Rules of Practice

The November 7, 1978 Official Gazette notice entitled "Looseleaf Rules of Practice in Patent and Trademark Cases" is hereby amplified to include another source if only the trademark rules are desired. In addition to the Rules Service Company, whose address is listed in the previous O.G. Notice, the Trademark Rules of Practice in looseleaf form can be ordered from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, for $5.00 for domestic subscriptions and $6.25 for foreign mailing. The trademark rules are available only by subscription. Any revisions in the rules will be reflected in updates mailed automatically as part of the subscription.

PATRICIA M. DAVIS,
Nov. 28, 1978. *Acting Assistant Commissioner for Trademarks.*

Board of Appeals Decisions Rendered in the Month of November 1978

Affirmed	181
Affirmed in Part	23
Reversed	76
Total	280

Trademark Manual of Examining Procedure (Renewal and Revisions)

The subscription price for the Trademark Manual of Examining Procedure (TMEP) has been changed by the U.S. Government Printing Office. As of November 14, 1978, the price for a new subscription is $21.00 domestic ($26.25 for foreign mailing). New subscriptions include the basic manual text plus the first four revisions, and supplement service for future revisions until notice of change. New subscriptions may be ordered from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Renewal notices, effective with Revision 5, are now being sent to current subscribers by the Government Printing Office. The renewal fee for continuation of supplement service is $7.50 domestic ($9.50 for foreign mailing). The renewal fee is payable upon receipt of notice thereof to assure delivery of Revision 5 and revisions thereafter.

Rev. 4 of the Trademark Manual of Examining Procedure will be distributed to subscribers by the Government Printing Office about January 1, 1979. (Rev. 1 was issued in Jan. 1976; Rev. 2 in Jan. 1977; and Rev. 3 in Jan. 1978.)

Previous notices regarding the Trademark Manual of Examining Procedure appeared in the Official Gazettes of June 25, 1974 (923 O.G. TM 204) and June 1, 1976 (947 O.G. TM 2).

SAUL LEFKOWITZ,
Date: Dec. 1, 1978. *Acting Assistant Commissioner for Trademarks.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,925,719, Robbins and Linn, REFRIGERATING PACKAGE, filed Oct. 17, 1977, D.C. Conn. (New Haven), Doc. N–77–402, *Kay Laboratories, Inc.* v. *Hospital Marketing Services Co., Inc.* Mutual stipulation of dismissal and release filed by parties. Order dismissing action with prejudice entered Jan. 23, 1978.

2,936,704, T. Hense, HIGH SPEED PRINTING APPARATUS, filed Apr. 19, 1977, D.C., W.D. Va. (Roanoke), Doc. 77–0069, *Olympia Werke Aktiengesellschaft* v. *General Electric Company.*

2,945,666, Freeman and Vaudreuil, BALL VALVE, filed Feb. 10, 1976, D.C. Conn. (Hartford), Doc. H–76–79, *Jamesbury Corp.* v. *Litton Industrial Products, Inc.* Judgment entered for the defendant on Nov. 30, 1977.

2,978,213, B. H. Kass, VIBRATION ISOLATION ARRANGEMENTS, filed Aug. 26, 1975, D.C., N.D.N.Y. (Utica), Doc. 75–CV–425, *G. A. Braun, Inc.* v. *Machinery Mountings, Inc.* Order of dismissal, Jan. 18, 1978.

2,998,817, L. L. Armstrong, INFLATABLE MASSAGING AND COOLING MATTRESS, filed Apr. 6, 1977, D.C. Mass. (Boston), Doc. C.A. 77–981–C, *Arnold Agulnick and Malcolm R. Harris* v. *American Hospital Supply Corp. et al.*

3,006,186, T. L. Berry, FREE POINT INDICATOR FOR DETERMINING THE POINT AT WHICH STUCK PIPE IS FREE IN A WELL, filed Sept. 9, 1977, D.C., E.D. La. (New Orleans), Doc. 77–2763, *Dia-Log Company* v. *Cruther Resources Corporation et al.*

3,036,358, L. Scaglia, METHOD AND APPARATUS FOR REMOVING YARN RESIDUE FROM SPOOLS, filed May 26, 1978, D.C., W.D.N.C. (Charlotte), Doc. C–C–78–0155, *M. Scaglia, S.p.A.* v. *F. Gordon Cobb.* Same, filed Feb. 2, 1977, D.C., W.D.N.C. (Charlotte), Doc. C–C–77–29, *M. Scaglia, S.p.A.* v. *Air Knife, Inc.*

3,074,301, L. M. Carpenter, WIRE STRIPPER, filed July 12, 1977, D.C.N.J. (Newark), Doc. 77–1401, *Carpenter Manufacturing Co., Inc.* v. *William Leonhardt.* Order of dismissal, July 18, 1977.

3,086,528, Eichelman and Smiley, INTERMITTENT VACUUM REGULATOR, filed Dec. 6, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3528, *Chemetron Corporation* v. *Airco Inc.* Plaintiff's motion to dismiss with prejudice in accordance with Rule 41, Fed. R. Civ. P. granted, June 10, 1977.

3,171,728, W. Anderson, METHOD OF ELIMINATION OF SETTLE-BLOW IN MAKING BOTTLE; **3,171,729**, same, METHOD OF MAKING A PARISON; **3,171,732**, same, GLASS BOTTLE PARISON MACHINE, filed Aug. 4, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c3114, *Virginia Kremm* v. *Ball Corporation.*

3,171,729. (See 3,171,728.)

3,171,732. (See 3,171,728.)

3,172,892, Le Suer and Norman, REACTION PRODUCT OF HIGH MOLECULAR WEIGHT SUCCINIC ACIDS AND SUCCINIC ANHYDRIDES WITH AN ETHYLENE POLYAMINE; **3,272,743**, same, LUBRICANTS CONTAINING METAL-FREE DISPERSANTS AND METALLIC DISPERSANTS; **3,272,746**, same, LUBRICATING COMPOSITION CONTAINING AN ACYLATED NITROGEN COMPOUND, filed May 12, 1977, D.C., N.D. Calif. (San Francisco), Doc. C–77–1002–CFP, *Chevron Research Company* v. *The Lubrizol Corporation.*

3,220,960, Wichterle and Lim, CROSS-LINKED HYDROPHILIC POLYMERS AND ARTICLES MADE THEREFROM; **3,822,089**, O. Wichterle, ANHYDROUS SPARINGLY CROSS-LINKED HYDROPHILIC COPOLYMERS; **3,361,858**, O. Wichterle, REMOVAL AND SWELLING TO FORM A HYDROGEL CONTACT LENS; **Re. 27,401**, Wichterle and Prague, CROSS-LINKED HYDROPHILIC POLYMERS AND ARTICLES MADE THEREFROM, filed Jan. 17, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c172, *National Patent Development Corp. and Flexible Contact Lens* v. *Continuous Curve Contact Lenses, Inc., Soft Lenses, Inc. and House of Vision, Inc.* Same, filed Aug. 23, 1974 D.C. Colo. Doc. 74–M–761, *Czechoslovak Academy of Science* v. *Automated Optics, Inc.* This matter was dismissed upon the filing of a stipulation, Aug. 30, 1977.

3,227,886, Dunigan and Scwerdt, PHOTOELECTRIC ARTICLE CODING AND CLASSIFYING DEVICE, filed Nov. 7, 1977, United States Court of Claims, Washington, D.C., Doc. 539–77, *Mekontrol, Inc.* v. *The United States.*

3,239,070, A. D. Clauson, HAND ROD ASSEMBLY, filed Aug. 16, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c3273, *Capitol Hardware Manufacturing Company* v. *Garcy Corp.*

3,247,692, P. K. Davis, PIPE MAKING MACHINE AND METHOD, filed Feb. 21, 1978, D.C., N.D. Calif. (San Francisco), Doc. C78–383 SAW, *Pacific Roller Die Co., Inc.* v. *Boyken, Mohler and Wood.* It is therefore hereby ordered that the plaintiff's motion be and the same is hereby granted, Feb. 22, 1978.

3,264,877, P. E. Boxrud, SOIL SAMPLING DEVICE, filed Feb. 7, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c437, *Outboard Marine Corporation* v. *Roseman Tractor Equipment Co.*

3,267,556, H. D. Scharf, WIRE PROCESSING AND TERMINAL AFFIXING MACHINE, filed May 26, 1978, D.C., E.D. Wis. (Milwaukee), Doc. 78–331, *Herbert D. Scharf* v. *Artos Engineering Company, Inc.*

3,267,934, W. E. Thornton, ELECTROCARDIAC COMPUTER, filed Aug. 9, 1978, D.C., W.D. Wash. (Seattle), Doc. C78–466V, *Del Mar Avionics* v. *Quinton Instruments Company.*

3,272,743. (See 3,172,892.)

3,272,746. (See 3,172,892.)

3,334,067, D. R. Weyenberg, METHOD OF MAKING ONE COMPONENT ROOM TEMPERATURE CURING SILOXANE RUBBERS, filed Sept. 15, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c3440, *Dow Corning Corporation* v. *General Electric Company.*

3,361,858. (See 3,220,960.)

3,372,958, R. R. Black, AUTOMATIC FEEDER FOR PNEUMATIC CONVEYING LINES, filed Feb. 8, 1978, D.C., W.D. Wash. (Seattle), Doc. C78–95 V, *Cyclonaire Corporation* v. *Airkonvey, Inc.*

3,386,955. Nawakowsi and Wang and Schiller, SUBSTITUTED UREAS AS LOW TEMPERATURE EPOXY CURING AGENTS, filed Jan. 19, 1978, D.C. Del. (Wilmington), Doc. C.A. 78–22, *American Cyanamid Company* v. *Minnesota Mining and Manufacturing Company.*

3,398,984, F. S. Ajero, MOTOR VEHICLE WITH LATERALLY ADJUSTABLE CAB, filed June 2, 1977, United States Court of Claims, Washington, D.C., Doc. 309–77, *Kornylak Corporation* v. *The United States.*

3,416,763, A. M. Moreno, DEVICE FOR TENSIONING STRAPS, WIRES, OR LIKE FLEXIBLE ELEMENTS, filed Jan. 7, 1972, D.C., M.D. Fla. (Jacksonville), Doc. 72–10–C–J, *Albert M. Moreno* v. *W. C. Tyson, doing business as Northeast Florida Mobile Home Anchors.* Counterclaim is dismissed with prejudice, Feb. 9, 1978.

3,424,189, J. C. Woodford, SELF-DRAINING SILL COCK AND VACUUM BREAKER, filed Nov. 1, 1977, D.C., N.D. Ind. (South Bend), Doc. S77–0192, *Woodford Manufacturing Company* v. *Josam Manufacturing Co.*

3,425,968, T. L. Reiling, NON-CURLING GUMMED COATED PAPER, METHOD AND COMPOSITION FOR MAKING THE SAME, filed June 14, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c2133, *Thomas L. Reiling* v. *Beatrice Foods Company.* Status hearing held, by agreement, cause dismissed with prejudice, May 26, 1978.

3,440,525, C. P. Cardeiro, pH METER AND CONTROL SYSTEM, filed May 4, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c1749, *Uniloc Inc.* v. *Beckman Instruments, Inc.*

3,499,380, N. L. Gongwer, AUTOMATIC FOOD COOKING MACHINE, filed Aug. 2, 1978, D.C., N.D. Ind. (South Bend), Doc. S78–0166, *Nelson L. Gongwer* v. *Mark Stitt.*

3,822,089. (See 3,220,960.)

Re. 27,401. (See 3,220,960.)

National Inventors Day

The Patent and Trademark Office, along with the National Council of Patent Law Associations, will co-sponsor National Inventors Day in the Public Search Room on Saturday, February 10, from 1:00 p.m. to 5:00 p.m. and Sunday, February 11, 1979 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days and to attend the dedication of the National Inventors Hall of Fame and the induction of four inventors into the Hall of Fame at 1:00 p.m. on Sunday, February 11.

In order to accommodate the exhibits, it will be necessary to close the Public Search Room at 5:00 p.m. on Friday, February 9, 1979.

We would appreciate the cooperation of all users of the Search Room facilities by removing all personal properties and items for the early closing.

LUTRELLE F. PARKER,
For DONALD W. BANNER,
Dec. 7, 1978. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,524,255, Re. S.N. 938,263, Filed Aug. 30, 1978, Cl. 32/13, METHOD OF ATTACHING A TOOTH CROWN TO A TOOTH ROOT, Peter Frank Kurer, Owner of Record: *Inventor*, Attorney or Agent: Louis Orenbuch, Ex. Gp.: 333

3,730,483, Re. S.N. 941,333, Filed Sep. 8, 1978, Cl. 254/150 R, ASSEMBLY FOR PULLING A LINE, E. Strohm Newell, Owner of Record: *Inventor*, Attorney or Agent: Neil F. Markva, Ex. Gp.: 315

3,779,907, Re. S.N. 951,352, Filed Oct. 13, 1978, Cl. 210/22, LIQUID MEMBRANE PROCESS FOR THE SEPARATION OF AQUEOUS MIXTURES, Norman N. Li, et al., Owner of Record: *Exxon Research and Engineering Company, Linden, N.J.*, Attorney or Agent: Jerome E. Luecke, Ex. Gp.: 176

3,835,767, Re. S.N. 953,499, Filed Oct. 23, 1978, Cl. 100/53, REFUSE COMPACTOR, Robert A. Peterson, Owner of Record: *Inventor*, Attorney or Agent: Frederick E. Mueller, Ex. Gp.: 242

3,835,769, Re. S.N. 953,500, Filed Oct. 23, 1978, Cl. 100/227, REFUSE COMPACTOR, Robert A. Peterson, Owner of Record: *Inventor*, Attorney or Agent: Frederick E. Mueller, Ex. Gp.: 242

3,872,274, Re. S.N. 955,208, Filed Oct. 26, 1978, Cl. 200/157, OFF LOCKING IN-LINE TRIGGER SWITCH, Earl T. Piber, Owner of Record: *Cutler-Hammer, Inc., Milwaukee, Wis.*, Attorney or Agent: Hugh R. Rather, et al., Ex. Gp.: 241

3,893,869, Re. S.N. 950,168, Filed Oct. 10, 1978, Cl. 134/86, MEGASONIC CLEANING SYSTEM, Alfred Mayer, et al., Owner of Record: *RCA Corporation, New York, N.Y.*, Attorney or Agent: H. Christoffersen, Ex. Gp.: 242

3,964,519, Re. S.N. 952,695, Filed Oct. 19, 1978, Cl. 138/37, FLUID VELOCITY EQUALIZING APPARATUS, Kenneth W. De Baun, Owner of Record: *Air Monitor Corporation, Santa Rosa, Calif.*, Attorney or Agent: James F. Mitchell, Ex. Gp.: 243

3,976,364, Re. S.N. 935,958, Filed Aug. 23, 1978, Cl. 350/179, OPTICAL AIR LENS SYSTEM, Harley Burke Lindemann, et al., Owner of Record: *Inventor*, Attorney or Agent: Douglas B. Henderson, et al., Ex. Gp.: 257

3,979,689, Re. S.N. 954,614, Filed Oct. 25, 1978, Cl. 330/257, DIFFERENTIAL AMPLIFIER CIRCUIT, Otto Heinrich Schade, Jr., Owner of Record: *RCA Corporation, Princeton, N.J.*, Attorney or Agent: H. Christoffersen, et al., Ex. Gp.: 252

4,000,042, Re. S.N. 939,428, Filed Sep. 5, 1978, Cl. 195/103.5 R, DIAGNOSTIC REAGENT FOR THE DETERMINATION OF AMYLASE, Thomas H. Adams, Owner of Record: *E. I. du Pont de Nemours and Company, Wilmington, Del.*, Attorney or Agent: James L. Jersild, Ex. Gp.: 172

4,010,575, Re. S.N. 952,571, Filed Oct. 18, 1978, Cl. 51/229, DEVICE FOR GRINDING A CABACHON, Henry L. Henry, Owner of Record: *Geode Industries Inc., New London, Iowa*, Attorney or Agent: Haven E. Simmons, et al., Ex. Gp.: 323

4,015,633, Re. S.N. 951,968, Filed Oct. 16, 1978, Cl. 138/89, ASSEMBLY FOR SEALING AND PRESSURE EQUALIZATION OF A SUBMERSIBLE HOUSING, Ronald D. Mandell, Owner of Record: *Sta-Rite Industries, Inc., Delavan, Wis.*, Attorney or Agent: Richard D. Mason, et al., Ex. Gp.: 243

4,018,204, Re. S.N. 947,713, Filed Oct. 2, 1978, Cl. 123/198 F, FUEL SAVING APPARATUS FOR MULTIPLE CYLINDER INTERNAL COMBUSTION ENGINES, Earl W. Rand, Jr., Owner of Record: *Inventor*, Attorney or Agent: Claude A. Fishburn, et al., Ex. Gp.: 342

4,050,042, Re. S.N. 954,669, Filed Oct. 25, 1978, Cl. 335/212, STATIC CONVERGENCE DEVICES FOR COLOR TELEVISION PICTURE TUBES, Albert M. Anthony, Owner of Record: *Tracor, Inc., Austin, Tex.*, Attorney or Agent: Francois N. Palmatier, Ex. Gp.: 212

4,054,595, Re. S.N. 955,005, Filed Oct. 26, 1978, Cl. 560/121, 18 OR 19 HYDROXY PROSTAGLANDINS, Arthur Friedrich Marx, et al., Owner of Record: *Gist-Brocades N.V., Delft, Holland*, Attorney or Agent: Robert E. Burns, et al., Ex. Gp.: 126

4,079,529, Re. S.N. 953,283, Filed Oct. 20, 1978, Cl. 38/102.2, DEVICES FOR THE FOLD-FREE STRETCHING AND HOLDING OF LIQUID CRYSTAL FILMS, Friedrich Jennen, et al., Owner of Record: *Troponwerke Dinklage & Company, Koeln, Germany*, Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 353

4,091,785, Re. S.N. 955,084, Filed Oct. 26, 1978, Cl. 123/140 R, FUEL CONTROL CROSS SHAFT, Alvin W. Montgomery, Owner of Record: *Caterpillar Tractor Co., Peoria, Ill.*, Attorney or Agent: Ralph E. Walters, Ex. Gp.: 342

PATENT NOTICES

Certificates of Correction for the Week of Dec. 26, 1978

3,921,105
3,961,529
3,974,068
4,049,811
4,076,748
4,078,799
4,081,313
4,081,932
4,081,941
4,082,453
4,082,616
4,082,694
4,085,952
4,086,051
4,087,478
4,087,842
4,088,655
4,088,658
4,088,781
4,088,855
4,089,464
4,089,807
4,090,578
4,090,997
4,091,653
4,091,822
4,091,900
4,092,401
4,092,402
4,092,733
4,093,091
4,093,544
4,093,805
4,094,460
4,094,567
4,095,058
4,095,073
4,095,145
4,095,450
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Disclaimers

3,388,522.—*Frederick J. Lowes*, Midland, Mich. AIRCRAFT STIFFENING SECTION. Patent dated June 18, 1968. Disclaimer filed Oct. 12, 1978, by the assignee, *The Dow Chemical Company*.

Hereby enters this disclaimer to claims 2 and 3 of said patent.

3,561,934.—*Gary Steven*, Pittsburgh, Pa. SINTERED STEEL PARTICLES CONTAINING DISPERSED CARBIDE. Patent dated Feb. 9, 1970. Disclaimer filed May 4, 1978, by the assignee, *Crucible, Inc.*

Hereby enters this disclaimer to claims 1–3 and 6 of said patent.

3,673,875.—*John T. Kasselmann*, Southfield, Mich. HYDRAULIC RATE GYRO FOR AN ADAPTIVE STEERING SYSTEM. Patent dated July 4, 1972. Disclaimer filed Oct. 6, 1078, by the assignee, *The Bendix Corporation*.

Hereby enters this disclaimer to claims 1 through 6 of said patent.

3,961.182.—*William E. Spicer*, Stanford, Calif. PICK UP SCREENS FOR X-RAY IMAGE INTENSIFIER TUBES EMPLOYING EVAPORATED ACTIVATED SCINTILLATOR LAYER. Patent dated June 1, 1976. Disclaimer filed Aug. 28, 1978, by the assignee, *Varian Associates, Inc.*

The term of this patent subsequent to March 5, 1991 has been disclaimed.

3.961,953.—*Richard P. Millonzi* and *Richard W. Radler*, Marion, N.Y. METHOD OF FABRICATING COMPOSITE TRIGONAL SELENIUM PHOTORECEPTOR. Patent dated June 8, 1976. Disclaimer filed Sept. 14, 1978, by the assignee, *Xerox Corporation*.

Hereby enters this disclaimer to claims 3 and 4 of said patent.

4,051,228.—*Helmut Knorre*, Seligenstadt, *Joachim Fischer* and *Gerhard Pohl*, Hanau, Germany. PREVENTING CAKING AND OBTAINING FLOWABILITY OF ALKALI CHLORIDES AND SALT MIXTURES THEREOF. Patent dated Sept. 27, 1977. Disclaimer filed Nov. 15, 1978, by the assignee, *Deutsche Gold- und Silber-Scheideanstalt vormals Roessler*.

The term of this patent subsequent to September 14, 1993 has been disclaimed.

Patents Available for Licensing or Sale

3,863,243. SLEEP ALARM FOR DRIVERS. Max Skolnick, 19–30 Parson Blvd., Whitestone, N.Y. 11357.

3,973.864. TIDE MOTOR. Dewitt T. Atherton, 407 West E St., Encinitas, Calif. 92024.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y. 10036.

4,118,598. AMPLITUDE MODULATED IMPATT DIODE OSCILLATOR AND A LOW COST COMMUNICATION SYSTEM USING SAME.
4,118,649. TRANSDUCER ASSEMBLY FOR MEGASONIC CLEANING.
4,118,656. NORTH-SOUTH PINCUSHION DISTORTION CORRECTION CIRCUIT.
4,118,700. SINGLE WIRE TRANSMISSION OF MULTIPLE SWITCH OPERATIONS.
4,118,729. SET-UP ARRANGEMENT FOR A COLOR TELEVISION RECEIVER.
4,118,731. VIDEO AMPLIFIER WITH SUPPRESSED RADIO FREQUENCY RADIATION.
4,119,807. DIGITAL TIME DIVISION MULTIPLEX SWITCHING SYSTEM.
4,119,812. SIGNAL DEFECT DETECTION AND COMPENSATION WITH SIGNAL DEEMPHASIS.
4,119,864. TOUCH SWITCH CIRCUITS.
4,119,882. CATHODE FOR FLAT PANEL DISPLAY.
4,119,924. SWITCHABLE CURRENT AMPLIFIERS.
4,119,925. FREQUENCY SYNTHESIZER WITH FREQUENCY MODULATED OUTPUT.
4,119,945. ERROR DETECTION AND CORRECTION.
4,119,961. CCD BINARY-TO-GRAY CODE GENERATOR.
4,119,992. INTEGRATED CIRCUIT STRUCTURE AND METHOD FOR MAKING SAME.
4,120,001. SYSTEM FOR PASSING TWO COLOR TV SIGNALS THROUGH NON-LINEAR PATH.
4,120,044. DATA ENCODING KEYBOARD.
4,120,567. ELECTRO-OPTIC DEVICE.
4,121,130. CATHODE STRUCTURE AND METHOD OF OPERATING THE SAME.
4,121,137. SYSTEM FOR ACHIEVING IMAGE UNIFORMITY IN DISPLAY DEVICES.
4,121,211. METHOD AND APPARATUS FOR DETERMINING A SIGNAL OF UNIFORM PERIOD.
4,121,257. CATHODE-RAY TUBE WITH DOUBLE TENSION BAND.
4,121,881. DUPLICATING A HOLOGRAPHIC RECORD BY USING TWO REFERENCE BEAMS.
4,122,368. CATHODE-RAY TUBE WITH A CORRUGATED MASK HAVING A CORRUGATED SKIRT.
4,122,400. AMPLIFIER PROTECTION CIRCUIT.
4,122,410. LATERAL MODE CONTROL IN SEMICONDUCTOR LASERS.
4,122,415. AM TRANSMITTER WITH AN OFFSET VOLTAGE TO THE RF STAGE TO COMPENSATE FOR SWITCHING TIME OF THE MODULATORS.
4,122,416. SHIELDED. D.C. ISOLATED RF CONNECTOR ASSEMBLY.
4,122,453. ANTENNA FEED NETWORK.
4,122,483. SEMICONDUCTOR DEVICE HAVING REDUCED LEAKAGE CURRENT.
4,122,485. METHOD AND APPARATUS FOR SIMULATING MAGNETIC ENVIRONMENT OF TELEVISION RECEIVERS.
4,122,489. SIGNAL DEFECT COMPENSATOR.
4,123,302. METHOD FOR DEPOSITING EPITAXIAL SEMICONDUCTOR FROM THE LIQUID PHASE.

4,123,713. MEMORY TYPE TUNING SYSTEM WITH PROVISIONS TO FACILITATE SETUP.

4,123,776. SERVICE SWITCH ARRANGEMENT FOR A COLOR TELEVISION RECEIVER.

4,123,779. TURNTABLE ROTATIONAL SPEED AND PHASE CONTROL SYSTEM FOR A VIDEO DISC PLAY/RECORD APPARATUS.

National Technical Information Service

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The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

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Copies of the patent applications can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $4.00 ($8.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

Douglas J. Campion,
Patent Program Coordinator,
National Technical Information Service.

U.S. Department of Agriculture

Research Agreements and Patent Branch, General Services Division, Federal Building, Agricultural Research Service
Hyattsville, Md. 20782

Patent application 880,734. Automatic Astroposition Determination Apparatus. Filed Feb. 24, 1978.

Patent 4,053,712. Adaptive Digital Coder and Decoder. Filed Aug. 24, 1976. Patented Oct. 11, 1977. Not available NTIS.

Patent 4,055,079. Cylinder Firing Indicator. Filed Aug. 9, 1976. Patented Oct. 25, 1977. Not available NTIS.

Patent 4,056.852. Adjustable Helmet Suspension System. Filed Apr. 19, 1976. Patented Nov. 8, 1977. Not available NTIS.

Patent 4,058,438. Rapid Universal Sensing Cell. Filed Oct. 28, 1976. Patented Nov. 15, 1977. Not available NTIS.

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Patent 4,062,598. Wedge Block Lock for Vehicle Track End Connectors. Filed Aug. 9, 1976. Patented Dec. 13, 1977. Not available NTIS.

Patent 4,069,990. Ring-Wing Canard Spin-Up Control Mechanism. Filed Mar. 14, 1977. Patented Jan. 24, 1978. Not available NTIS.

Patent 4.070,692. Video Digitizing System for Single Valued Functions. Filed May 8, 1975. Patented Jan. 24, 1978. Not available NTIS.

Patent 4.079.955. Locking Device. Filed Aug. 0, 1976. Patented Mar. 21, 1978. Not available NTIS.

Patent 4.080.942. Metering Fuel by Compressibility. Filed June 23, 1976. Patented Mar. 28, 1978. Not available NTIS.

U.S. Department of the Air Force

AF/JACP, 1900 Half St. SW., Washington, D.C. 20324

Patent application 893,867. Gun Projectile Sensor. Filed Apr. 6, 1978.

Patent application 904,850. Turbofan Augmentor Flameholder. Filed May 11, 1978.

Patent application 904.964. Metallic Grating Spatial Filter for Directional Beam Forming Antenna. Filed May 11, 1978.

Patent application 904,965. Gating Apparatus for Static Crossed Field Photomultipliers. Filed May 11, 1978.

Patent application 905.063. Wing Pivot Assembly for Variable Sweep Wing Aircraft. Filed May 11, 1978.

Patent application 910.996. A Planar Thin Film Edge Contact Metal Oxide-Metal Device. Filed May 30, 1978.

Patent application 913.187. Low Contrast Measurement Apparatus. Filed June 6, 1978.

Patent application 915,708. Attitude Indicator Comparator Warning System. Filed June 15, 1978.

U.S. Department of Transportation

Patent Counsel, 400 7th St., Washington, D.C. 20240

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U.S. Department of the Navy

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 831,278. Range Division Multiplexing. Filed Sept. 2, 1977.

Patent application 861,156. Very Low Frequency Sonobuoy (VLF Sonobuoy) Assignment. Filed Dec. 16, 1977.

Patent application 890,891. Method for Optically Distorting Readout Reticles. Filed Mar. 28, 1978.

Patent application 894,283. Global Neutrino Communication System. Filed Apr. 7, 1978.

Patent application 902,128. Safe/Arm Firing Device. Filed May 2, 1978.

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Patent 4,075,622. Variable-to-Block-With-Prefix Source Coding Technique. Filed Jan. 31, 1975. Patented Feb. 21, 1978. Not available NTIS.

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Patent 4,081,214. Low Altitude Optical Altimeter. Filed July 6, 1976. Patented Mar. 28, 1978. Not available NTIS.

Patent 4,083,249. Hygrometer. Filed Jan. 17, 1977. Patented Apr. 11, 1978. Not available NTIS.

Patent 4,084,512. Pressure Relief Construction for Controlled Combustion of Ordnance Items. Filed Oct. 18, 1976. Patented Apr. 18, 1978. Not available NTIS.

Patent 4,084.781. Fabrication of Ablator Liners in Combustors. Filed Mar. 28, 1977. Patented Apr. 18, 1978. Not available NTIS.

Patent 4.086.491. Direct Measurement of the Electron Beam of a Scanning Electron Microscope. Filed Feb. 4, 1977. Patented Apr. 25, 1978. Not available NTIS.

National Aeronautics and Space Administration

Assistant General Counsel for Patent Matters, NASA
Code GP–2, Washington, D.C. 20546

Patent application 928.130. A Phase Insensitive Ultrasonic Transducer. Filed July 26, 1978.

Patent application 928,132. Microstrip Back-Fire Antenna. Filed July 26, 1978.

Patent 3.775.570. Magneto-Optic Detection System With Noise Cancellation. Filed Feb. 25, 1972. Patented Nov. 27, 1973. Not available NTIS.

U.S. Department of Agriculture

Research Agreements and Patent Branch, General Services Division, Federal Building, Agricultural Research Service
Hyatsville, Md. 20782

Patent 4.093,510. Xanthated Starch Amine Paper Additives. Filed Apr. 7, 1977. Patented June 6, 1978. Not available NTIS.

Patent 4,093.637. Alkyl 9,9(10,10)-Bis(Acyloxymethyl) Octadecanoates as Primary Plasticizers for Polyvinylchloride. Filed Jan. 31, 1977. Patented June 6, 1978. Not available NTIS.

U.S. Department of Transportation

Patent Counsel, 400 7th St. SW., Washington, D.C. 20590

Patent 3.224.713. Landing Gear System. Filed June 8, 1964. Patented Dec. 21, 1965. Not available NTIS.

U.S. Department of Health, Education, and Welfare

National Institutes of Health, Chief, Patent Branch
Westwood Building, Bethesda, Md. 20014

Patent application 886.106. 3-Deazaadenosine as an Inhibitor of Adenosylhomocysteine Hydrolase With Antiviral Activity. Filed Mar. 13, 1978.

Patent application 886,465. Portable Instrument for Measuring Neutron Energy Spectra and Neutron Dose in a Mixed N-Gamma Field. Filed Apr. 14, 1978.

Patent application 892,853. Capillary Cell Culture Device. Filed Apr. 3, 1978.

Patent application 895,082. Anti-Neoplastic Use of 1,4-Bis (Substituted Aminoalkyl Amino)-Anthraquinones. Filed Apr. 10, 1978.

Patent application 912.946. Method of Producing Delayed Release of Sodium Fluoride. Filed June 5, 1978.

Patent application 930.659. Optical Sensor of Plasma Constituents. Filed Aug. 2, 1978.

Patent 4.082.781. Synthesis of 2-Alkanoylamino-4-Nitrophenyl Phosphorylcholine-Hydroxide. Filed June 4, 1976. Patented Apr. 4, 1978. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 18, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	12-19-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-16-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	5-1-78
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-29-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-19-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-16-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-17-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-22-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-1-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	1-17-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-3-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-16-78
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-11-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-6-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—G. M. FORLENZA, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors: Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-2-77

Expiration of patents: The patents within the range of numbers indicated below expire during November 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,007,169 to 3,001,168, inclusive
Plant Patents	Numbers 2,101 to 2,107, inclusive

REISSUES

DECEMBER 26, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

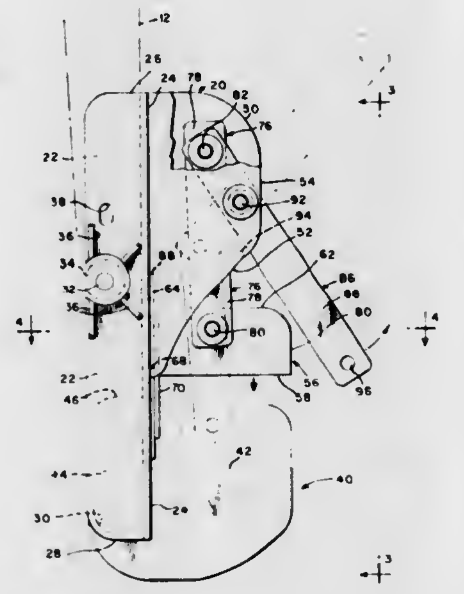
Re. 29,869
PINCER MECHANISM FOR PIPELINES

Edward Niederer, Jr., 19117 1st Northwest, Seattle, Wash. 98177, and James B. Ledford, 215 N. 56th Ave., Yakima, Wash. 98902

Original No. 3,905,219, dated Sep. 16, 1975, Ser. No. 511,190, Oct. 2, 1974. Application for reissue Sep. 15, 1977, Ser. No. 833,604

Int. Cl.^{2} B21D *7/06*

U.S. Cl. 72—450 17 Claims



1. A pipe pincer mechanism for rapid attachment to and detachment from a back hoe boom, comprising:

a. an elongated support frame with upper and lower ends having means for detachably securing said supporting frame to said back hoe boom,

b. a pair of spaced apart mounting plates secured to said support frame,

c. an elongated upper blade arm pivotally mounted between said mounting plates outwardly of said supporting frame, said upper arm having an inner end and also an outer end for attachment to a power means for pivoting said upper arm about its mounting pivot for a predetermined distance,

d. an elongated lower blade arm having an upper end pivotally attached to the inner end of said upper arm also having a lower end,

e. a movable blade assembly including a generally vertically disposed blade attached to the lower end of said lower arm, and

f. a generally vertically disposed fixed blade located generally at the lower end of said supporting frame and between which fixed blade and movable blade pipe may be crimped when said upper arm is pivoted upwardly to force said movable blade assembly downwardly.

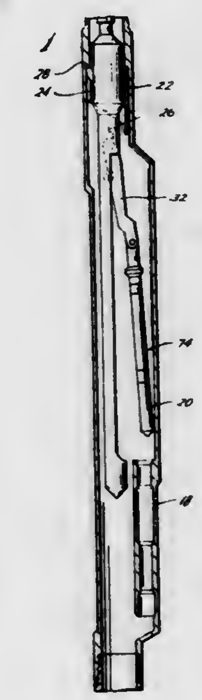
Re. 29,870
APPARATUS FOR INSTALLING AND REMOVING FLOW VALVES

Howard H. Moore, Jr., Weimar, Tex.; Harold F. McGowen, Jr., deceased, late of Houston, Tex., by Wanda E. L. McGowen, executrix, Longview, Tex., assignors to Sid W. Richardson Foundation and Perry R. Bass, Inc., both of Fort Worth, Tex.; a part interest to each

Original No. 3,827,490, dated Aug. 6, 1974, Ser. No. 95,408, Dec. 4, 1970. Continuation-in-part of Ser. No. 725,637, May 1, 1968, abandoned and a continuation-in-part of Ser No. 864,260 Sep. 18, 1969, abandoned. Application for reissue May 17, 1976, Ser. No. 687,158

Int. Cl.^{2} E21B *23/00*

U.S. Cl. 166—117.5 18 Claims



15. A tubing mandrel for use in a well tubing comprising,

a mandrel body having connecting means at each end for connection in a well tubing and having an open bore for alignment with the well tubing,

a valve pocket positioned in the body offset from the open bore,

a guide sleeve positioned in the open bore adjacent the pocket, said sleeve mounted in said open bore with the upper end of said guide sleeve recessed in the wall of the open bore whereby interfering contact between the upper end of the sleeve and objects moving downward through the open bore is prevented; said sleeve including a longitudinally directed orientation slot in said sleeve and angularly spaced from the axis of the pocket a predetermined amount,

a guide surface positioned below such slot and directed upwardly toward the bottom of the slot for orientating a valve handling apparatus relative to the pocket, and

a downwardly directed actuating shoulder in the body above the pocket for actuating a valve handling apparatus.

Re. 29,871

FATTY COMPOSITIONS FOR USE IN COSMETIC MAKEUP COMPOSITIONS AND SAID COSMETIC MAKEUP COMPOSITIONS

Christos Papantoniou, Commune de Villevaude, and Jean Boulogne, L'Hay-les-Roses, both of France, assignors to L'Oreal, Paris, France

Original No. 3,937,811, dated Feb. 10, 1976, Ser. No. 477,515, Jun. 7, 1974. Application for reissue Mar. 11, 1977, Ser. No. 776,935

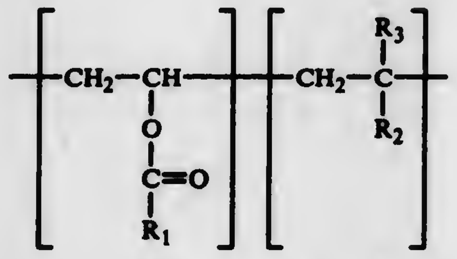
Claims priority, application Luxembourg, Jun. 8, 1973, 67772

Int. Cl.² A61K *7/025*

U.S. Cl. 424—64 **16 Claims**

1. A fatty composition for use in producing a cosmetic composition selected from the group consisting of a lip rouge and a mascara, comprising a mixture of:

- i. at least one cosmetic fatty body consisting essentially of about 6–100% by weight of at least one cosmetic wax and 0–94% of at least one cosmetic oil, and
- ii. a non-toxic, fat soluble copolymer having the formula:



$$\left[-CH_2-\underset{\substack{|\\O\\|\\C=O\\|\\R_1}}{CH}-\right]\left[-CH_2-\overset{\substack{R_3\\|}}{\underset{\substack{|\\R_2}}{C}}-\right]$$

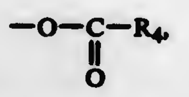
Ia Ib

wherein

R_1 represents a saturated hydrocarbon chain, linear or branched, having from 1 to 19 carbon atoms,

R_2 represents a member selected from the group consisting of

a.



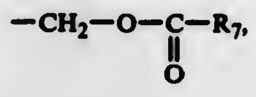
$$-O-\underset{\substack{\|\\O}}{C}-R_4,$$

wherein R_4 has the same meaning as R_1 but is different from R_1 in the same copolymer,

b. $-CH_2-R_5$, wherein R_5 represents a saturated hydrocarbon chain, linear or branched, having from 5 to 25 carbon atoms,

c. $-O-R_6$, wherein R_6 represents a saturated hydrocarbon chain, having from 2 to 18 carbon atoms, and

d.



$$-CH_2-O-\underset{\substack{\|\\O}}{C}-R_7,$$

wherein R_7 represents a saturated hydrocarbon chain, linear or branched, having from 1 to 19 carbon atoms, and R_3 represents hydrogen when R_2 represents radicals (a), (b) or (c) or R_3 represents *hydrogen or* methyl when R_2 represents radical (d), the said copolymer including at least 15% by weight of at least one monomer of unit Ia or unit Ib, wherein said saturated hydrocarbon chain, linear or branched, has at least 7 carbon atoms, said copolymer having a molecular weight between 2,000 and 500,000 and being present in an amount of about 2–35% by weight relative to the total weight of the fatty composition.

PLANT PATENTS

GRANTED DECEMBER 26, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,354

MINIATURE MOSS ROSE PLANT

Julia K. Sudol, Alhambra, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Dec. 27, 1977, Ser. No. 864,933

Int. Cl.² A01H *5/00*

U.S. Cl. Plt.—8 **1 Claim**

1. The hybrid miniature moss rose plant substantially as herein shown and described and having a growth habit appropriate to miniature roses, there being on its peduncles, buds, sepals and hips many single and branched moss-scented stipitate glands, the buds being ovoid to urn-shaped and the flowers, which are double, comprising 35 to 50 petals plus 2 to 10 petaloids, being off-white in color, the plant being characterized further in that it blooms nearly continuously during the growing season, has viable pollen and sets hips.

4,355

MINIATURE MOSS ROSE PLANT

Jack E. Christensen, San Dimas, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Dec. 27, 1977, Ser. No. 864,244

Int. Cl.² A01H *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A hybrid miniature moss rose plant substantially as herein illustrated and described, being particularly characterized by a combination of features, including the presence of many moss-scented stipitate glands on its stems, peduncles and sepals, the vigor of its growth habit and its ability to bloom almost continuously throughout the growing season, the very double petalage of its blooms, comprised of from 25 to 60 petals, plus 1 to 8 petaloids, and the generally pink coloration of its blooms.

4,356

MINIATURE MOSS ROSE PLANT

Jack E. Christensen, San Dimas, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Dec. 27, 1977, Ser. No. 864,245

Int. Cl.² A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new variety of bush rose of the hybrid miniature moss class, substantially as illustrated and described herein, being particularly characterized by a combination of features including the bearing of many moss-scented stipitate glands on its peduncles, buds, sepals and hips; by the coloration of its flowers, which are of a deep velvety red color, and open relatively slowly with a high pointed center; the petalage of its blooms, which have from about 40 to about 50 petals plus about 7 to 20 petaloids; and the tendency to bloom throughout the growing season.

4,357

ROSE PLANT

O. L. Weeks, 926 W. Philadelphia St., Ontario, Calif. 91761

Filed Sep. 29, 1977, Ser. No. 837,746

Int. Cl.² A01H *5/00*

U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the distinct and unusual color of its blooms primarily a medium pink orange, 36-3 blending with 36-2 and ending with a pale pink 36-1 when full blown, the long lastingness of the bloom color on the plant, heavily petaled, open flower form, distinct rose perfume, good tea habit with strong straight stems, the blooms being produced in abundance for cutting.

4,358

CHRYSANTHEMUM PLANT

Jack M. Meek, Barberton, and William E. Duffett, Akron, both of Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Mar. 25, 1977, Ser. No. 781,413

Int. Cl.² A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium;* Ramat, known by the cultivar name Coralama and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form, daisy capitulum type, greyed-red ray floret color, uniform nine week flowering response to photoperiodic shortday control, medium plant height, diameter across face of capitulum from 60 to 80 mm. at maturity, and semi-upright branching pattern.

4,359

APPLE TREE (COOP 12)

Edwin B. Williams, Lafayette; Jules Janick; Frank H. Emerson, both of West Lafayette, all of Ind.; Daniel F. Dayton, Urbana, Ill.; L. Fredric Hough, Bloomsbury, and Catherine Bailey, Englishtown, both of N.J., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Aug. 4, 1977, Ser. No. 821,643

Int. Cl.² A01H *5/03*

U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct apple tree substantially as shown and described particularly characterized by resistance to apple scab, good fresh fruit quality, smooth waxy skin, ability to maintain quality in storage, and maturity approximately eight (8) weeks before 'Delicious' and four and one-half (4½) weeks before 'Prima'.

PATENTS

GRANTED DEC. 26, 1978

ERRATA

For CLASS	See PATENT NO.
405–024	4,130,994
405–224	4,130,995
241–049	4,131,247
296–095 Q	4,131,269
242–074	4,131,305
301–006 A	4,131,321
301–037 PB	4,131,322
301–036 R	4,131,323
357–013	4,131,339
264–138	4,131,415
299–002	4,131,416
141–001	4,131,426
422–045	4,131,431
422–177	4,131,432
521–091	4,131,481
264–040.5	4,131,596
528–053	4,131,600
528–279	4,131,601
528–049	4,131,602
528–045	4,131,603
528–079	4,131,604
528–077	4,131,605
528–058	4,131,606
562–469	4,131,618
264–333	4,131,638
423–020	4,131,639
423–022	4,131,640
423–034	4,131,641
423–193	4,131,642
423–239	4,131,643
423–447.5	4,131,644
423–501	4,131,645
423–591	4,131,646
424–010	4,131,647
424–022	4,131,648
424–180	4,131,649
424–028	4,131,650
424–078	4,131,651
424–241	4,131,652
528–335	4,131,712

PATENTS

GRANTED DECEMBER 26, 1978

GENERAL AND MECHANICAL

4,130,902

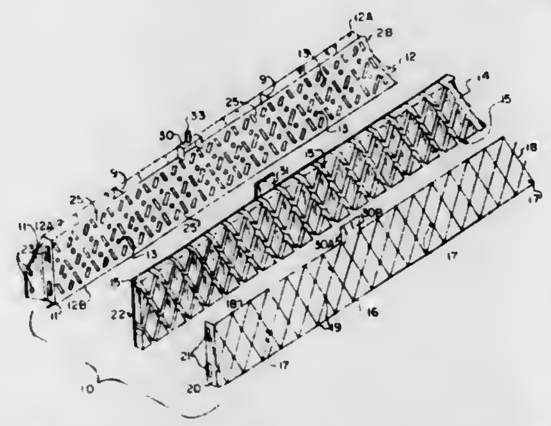
COOLING HATBAND

Joseph R. Mackenroth, III, 8117 McArthur Dr., Harahan, La. 70123, and Hugo B. Bode, 9555 King Crest Pkwy., Baton Rouge, La. 70810

Continuation-in-part of Ser. No. 701,858, Jul. 1, 1976, abandoned. This application Aug. 1, 1977, Ser. No. 820,755

Int. Cl.² A42B *1/18*

U.S. Cl. 2—7 **16 Claims**



11. Headwear with built-in cooling means comprising:

a. headwear means for covering the wearer's head, said headwear means being provided with a liquid dispensing reservoir therein;

b. liquid diffusing headband means within said headwear means for holding said headwear means on the wearer's head and for diffusing water received by said headband means from said reservoir to substantially all parts of said headband means, said headband means extending about the length of at least one half of the inner periphery of said hedwear means and being in substantially continuous contact with the head of the wearer;

c. duct means connecting said reservoir and said headband means for conveying liquid contained within said reservoir to said headband means; and

d. air contact means on said headband means comprising a plurality of regularly spaced matrix openings extending about the length of at least one half of the inner periphery of said headband means for allowing air to contact the liquid contained within said headband means there being provided a corresponding second cooperative matrix of openings in a supportive hatband means which second cooperative matrix of openings register with said openings in said headband means when said supportive hatband means and said headband means are assembled in a face-to-face arrangement.

4,130,903

PROTECTIVE DEVICE PARTICULARLY FOR WELDING AND CUTTING WORK

Henrikus J. van den Berg, and Gerardus C. A. M. Hurkmans, both c/o Techn. Bureau A.B.O.F. 1972 B.V., Joubertstr. 10-12, both of Nijmegen, Netherlands

Filed Nov. 10, 1976, Ser. No. 740,676

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1975, 2550559

Int. Cl.² A61F *9/06*

U.S. Cl. 2—8 **16 Claims**

1. Automatic protective equipment for performing work in areas of greatly varying light intensities, said equipment comprising:

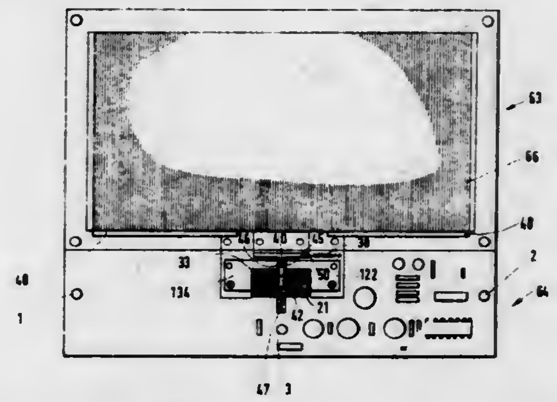
wall means;

a transparent window mounted at a fixed position within said wall means;

first planar filter means mounted so as to cover at least a portion of said transparent window, having uniform grid strips thereon reaching from one side of said first filter means to the opposite side, said grid strips being highly absorbent of all electromagnetic radiation incident thereon of selected frequencies, and said first filter means having elongated areas between said grid strips highly transparent to all incident visible light, said grid strips and said highly transparent areas respectively lying parallel and being of uniform width;

second planar filter means adjacent to said first filter means, covering said first filter means, and mounted for movement relative to said first filter means through a predetermined limited distance, said second filter means having uniform grid strips thereon parallel to the grid strips on said first filter means, said second filter means grid strips reaching from one side of said second filter means to the opposite side, said grid strips being highly absorbent of all electromagnetic radiation incident thereon of selected frequencies, said second filter means having elongated areas between said grid strips highly transparent to all orientations of incident visible light, the width of said second filter means grid strips being at least as great as the width of said first filter means transparent areas;

electrically energizable means attached to said wall means, having a first magnetic coil, a second magnetic coil, and an armature connected to said second filter means and magnetically flux-linked with said first and second magnetic coils for moving said second filer means in a first direction through said limited distance relative to said first filter means when said first magnetic coil is energized and for moving said second filter means in a second direction opposite said first direction through said limited distance when said second magnetic coil is energized;



spring means for urging said second filter means through said limited distance in said second direction when said first magnetic coil is de-energized and said second magnetic coil is energized, so that when said second filter means has moved said limited distance in said first direction when said first magnetic coil is energized, said grid strips and said highly transparent areas of said second filter means cover respectively said grid strips and said highly transparent areas of said first filter means, thereby forming a relatively highly transparent window area, and when said second filter means moves said limited distance in said second direction when said second magnetic coil is energized, said grid strips of said second filter means covver said highly transparent areas of said first filter means, thereby forming a highly absorbent covering for said transparent window; and

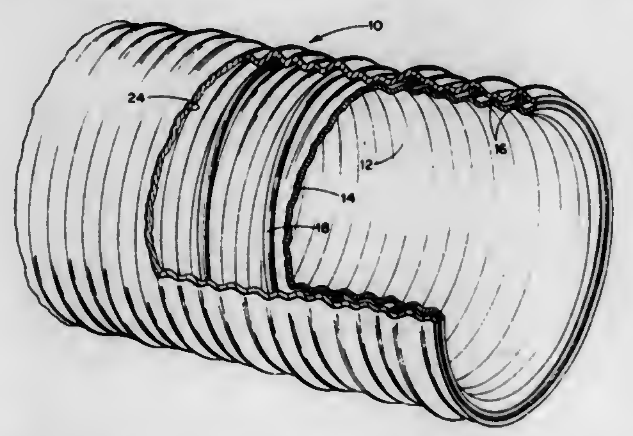
controlling means for energizing said energizable means in response to incident radiation comprising:

photoelectric means responsive to incident radiation, and

amplifier means, having an output connected to said energizable means and an input connected to said photoelectric means for energizing said first magnetic coil when high intensity electromagnetic radiation is incident on said photoelectric means and for energizing said second magnetic coil when low intensity electromagnetic radiation is incident on said photoelectric means, so that as said radiation changes between high and low intensity levels, said second filter means shifts in said first and second direction respectively through said limited distance, thereby prohibiting high intensity light from damaging the eyes of a user of said equipment by first heavily filtering said high intensity light with said highly absorbent grid strips on said first and second filter means.

4,130,904
PROSTHETIC BLOOD CONDUIT

Robert L. Whalen, Cambridge, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.
Filed Jun. 6, 1977, Ser. No. 803,904
Int. Cl.^{2} A61F *1/24*
U.S. Cl. 3—1.4 **7 Claims**



1. A blood conduit, comprising:

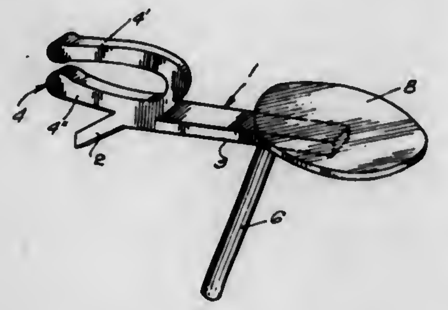
a flexible cylindrical inner tube having convoluted walls to provide flexibility without kinking, said inner tube being porous to promote the formation of a biologically stable interface;

a flexible cylindrical outer tube concentrically enclosing said inner tube and having convoluted walls to provide flexibility without kinking; and

a helical spring interposed between and frictionally engaging said outer and said inner tubes.

4,130,905
ARTIFICIAL MALLEUS COLUMELLA FOR THE HUMAN EAR

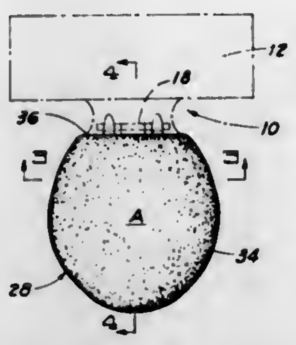
Eduardo C. C. Mercandino, Montevideo 606, Buenos Aires, Argentina
Filed Jun. 3, 1977, Ser. No. 803,335
Int. Cl.^{2} A61F *1/24*
U.S. Cl. 3—1.9 **4 Claims**



1. An artificial malleus columella for the human ear comprising an elongated member angled downwardly at a point along its length to provide first and second linear portions, said angle being an obtuse angle, a stem depending from the underside of the first linear portion to contact the stapes of the middle ear when the artificial malleus columella is in position and a clamp adapted to engage the bridge of the ear and being located on the external surface of the obtuse angle and extending over the second linear portion whereby the artificial malleus columella will be held in position below the level of said bridge.

4,130,906
WATER CLOSET LID COVER

Carl L. Robertson, 3104 Carlton Way, Oklahoma City, Okla. 73120
Filed Jun. 30, 1977, Ser. No. 811,555
Int. Cl.^{2} A47K *13/14*
U.S. Cl. 4—242 **6 Claims**



1. A cover for a water closet lid comprising:

an upper flexible fabric panel of generally oval configuration and having an outer arcuate peripheral edge and a straight back edge;

a lower flexible fabric panel of generally oval configuration and complimentary in configuration to the upper panel, said upper and lower flexible panels each having a widest portion as measured along a line extending parallel to said straight back edge thereof;

a first elastomeric band at the aligned ends of one of the ends of the straight back edges of said upper and lower panels joining a first portion of said outer arcuate peripheral edges of the upper and lower panels to each other;

a second elastomeric band at the aligned ends of the second of the ends of the straight back edges of said upper and lower panels joining a second portion of said outer arcuate peripheral edges of the upper and lower panels to each other, said first and second elastomeric bands each being elastically stretchable in a direction substantially normal to the straight edges of said upper and lower panels, and also in a direction substantially parallel to said straight back edges, and said first and second elastomeric bands each extending from the respective ends of said straight back edges to said widest portion of said upper and lower panels as measured along said line substantially parallel to said back edges; and

means joining the remaining portions of the outer arcuate peripheral edges of the upper and lower panel to each other where said panels are not joined by said first and second elastomeric bands to form a closed cover open only at the space between the straight back edges thereof.

4,130,907
SQUAT-TYPE WATER CLOSET

George J. Flegel, Michigan City; Roger L. Mielbeck, Laporte, and Patrick J. Pizarek, Michigan City, all of Ind., assignors to Josam Manufacturing Co., Michigan City, Ind.
Filed Aug. 23, 1977, Ser. No. 827,065
Int. Cl.^{2} E03D *1/00, 3/00, 5/00*
U.S. Cl. 4—300 **12 Claims**

1. A squat-type water closet for installation in and substantially level with a floor and providing at the floor surface an elongated opening, comprising: a bowl member having

a waste outlet or discharge opening from the bowl bottom and having a discharge connection formation for connecting to a soil line,

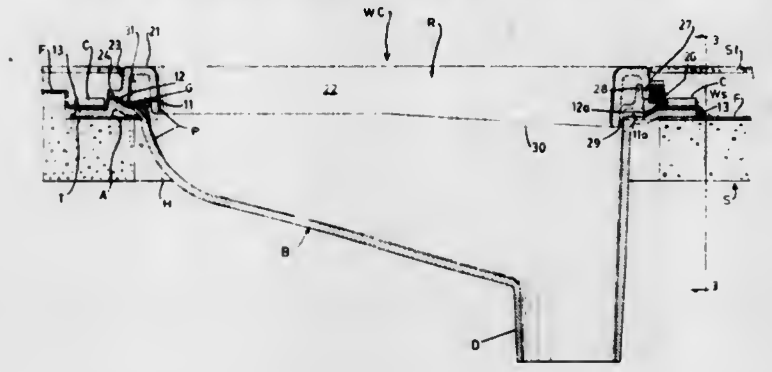
a bottom sloping downwardly inwardly and from front to back to the outlet,

outwardly extending horizontal flange means for bowl-supportive engagement with environmental structure, and

an integral flange having on its top region an upraised peripherally continuous seat formation, a flushing rim member having its outer periphery complementarily shaped and sloped to be matingly received within said seat formation continuous with a seal interposed between said rim member and seat formation to define the effective top opening of the water closet, and

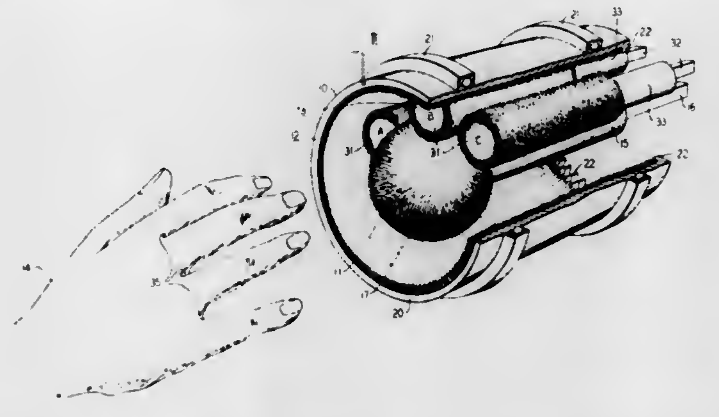
said flushing rim member being downwardly open and cooperating with the bowl member top region to form a flush water passageway and defining with the top margin of the bowl opening a slot substantially continuous about the bowl top periphery to discharge water in a substantially peripherally continuous sheet down the bowl inside surface for flushing the bowl interior, a flushing water supply connection integrally formed on one of said members providing an inlet to said flush water distribution passageway, said flushing water supply connection communicating with said flush water passage through an inlet-restricting orifice at one end of the closet whereby to increase the velocity of said flush water in said passage, one of said members supporting a V-shaped divider baffle with vertical apical edge aligned with the orifice axis for dividing incoming flushing water to flow bilaterally down the passageway along each side of the water closet, and

means for securing said flushing rim member sealed to the seat formation on the bowl.



4,130,908
HANDSCRUBBING DEVICE

John H. Alcamo, 5 Canfield St., Budd Lake, N.J. 07828
Filed Feb. 2, 1978, Ser. No. 874,659
Int. Cl.^{2} A47K *7/04*
U.S. Cl. 15—21 R **7 Claims**



1. In apparatus for mechanically scrubbing the hand and fingers of a user, the combination comprising:

first brush means for engaging inserted palm and selected finger portions of a user's hand and scrubbing the surfaces thereof when rotated;

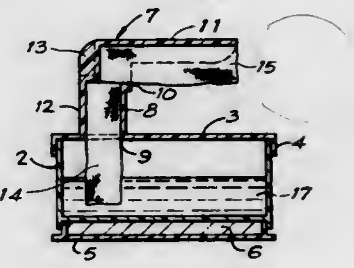
second brush means for engaging the inserted back and selected finger portions of a user's hand and scrubbing the surfaces thereof when rotated, said second brush means being annularly disposed with respect to said first brush means;

third brush means for internally accommodating selected inserted fingers of a user, externally engaging selected inserted palm and finger portions of a user and scrubbing said inserted fingers and palm and finger portions when rotated, said third brush means being disposed between said first and second brush means; and

means for rotating said first, second and third brush means so as to simultaneously scrub all of the exterior surfaces of a user's inserted hand and fingers.

4,130,909
MIRROR CLEANING DEVICE

Shelly M. Greene, 1831 Watson Rd., Abington, Pa. 19001
Filed Sep. 22, 1977, Ser. No. 835,654
Int. Cl.^{2} B05C *11/105;* B08B *3/04*
U.S. Cl. 15—104.92 **9 Claims**



1. A mirror cleaning device, comprising:

(a) a cup member adapted for containing cleaning liquid therein;

(b) a cup cover member insertable over said cup member in releasable securement thereto and having at least a first opening formed therethrough for passage of said cleaning liquid;

(c) liquid dispensing means partially immersed within said cleaning liquid and extending external said cup member through said first opening;

(d) liquid dispensing securement means mounted on said cup cover member and having a through passage aligned with said first opening in said cup cover member to provide a continuous flow passage of said cleaning liquid, said liquid dispensing securement means including a first vertically directed tubular member extending from said cup cover member and a second horizontally directed tubular member secured to said first tubular member, said second tubular member having an open contour outer wall throughout only a portion of said horizontally extended length for providing an enlarged mirror contact surface with said liquid dispensing means; and

said liquid dispensing means including a first liquid absorbent member insertable within the vertically directed portion of said through passage of said liquid dispensing securement means and extending into said cleaning liquid, and a second liquid absorbent member insertable within a second horizontally directed portion of said through passage of said liquid dispensing securement means, said second liquid absorbent member contacting said first liquid absorbent member to provide a continuous path for said cleaning liquid flow.

4,130,910
WRINGER TYPE MOP

Neil A. Raven, 1279 South, Rd., St. Marys, Australia
Filed Aug. 18, 1977, Ser. No. 825,559
Claims priority, application Australia, Feb. 15, 1977, 9082/77
Int. Cl.^{2} A47L *13/142*
U.S. Cl. 15—120 A **7 Claims**

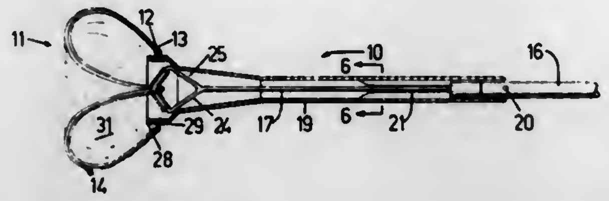
1. A mop having a fibrous yarn head,

a first yarn engaging means engaging the yarn and forming it into a head having a plurality of loop strands,

a second yarn engaging means secured to the loop strands intermediate their ends,

a handle secured to one of said yarn engaging means,

a grip sleeve secured to the other of said yarn engaging means, said grip sleeve receiving said handle and movable with respect thereto between an operative position wherein said yarn engaging means are relatively close to one another and a wringing position wherein said yarn engaging means are spaced relatively more distant from each other, and



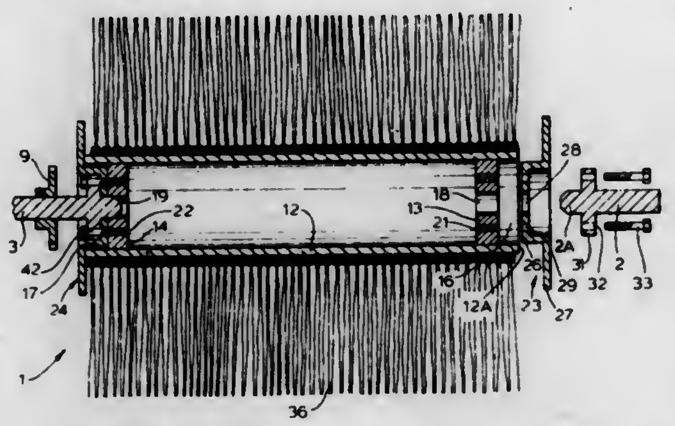
key and open ended keyway means on the handle and sleeve, the keyway means being of such length that it is engaged by the key between said operative and wringing positions to thereby prevent relative rotation of the handle and sleeve, but the key disengages from the keyway means at both said positions thereby permitting said relative rotation of handle and sleeve.

4,130,911

STREET BRUSH

Gaylord J. Clark, 4769 Paw Paw Lake Rd., Coloma, Mich. 49038

Filed May 20, 1977, Ser. No. 798,998
Int. Cl.^{2} A46B *13/02*
U.S. Cl. 15—179 **2 Claims**



1. Mounting means for a cylindrical rotatable brush, such as used in street sweeping or car washing machines, comprising in combination:

an elongated, cylindrical, tubular member for carrying brush bristles and having a central opening extending throughout the length thereof;

a pair of disks positioned within the central opening of said tubular member and rigidly fixed thereto, said disks being positioned adjacent the opposite ends of said tubular member and spaced inwardly a selected distance from the adjacent ends to define a recess at each end of said tubular member which opens axially outwardly thereof, each said disk constituting the bottom wall of one of said recesses;

each said disk having a central shaft opening formed therein and coaxially aligned with the longitudinal axis of said tubular member, each said disk also having a plurality of threaded openings therein, said threaded openings being radially spaced outwardly from said central shaft opening and arranged therearound;

an end plate at each end of said tubular member, each said end plate being hat-shaped and including a cup-shaped crown fitted within a respective one of said recesses, said hat-shaped end plate also including an annular rim which is fixed to the edge of said crown and projects radially outwardly therefrom;

said cup-shaped crown having a base portion which overlies and substantially bears against the respective disk, said base portion having a center opening extending therethrough and generally coincident with the central shaft opening of the respective disk, said base portion also having bolt holes extending therethrough and generally coincident with the threaded openings of the respective disk;

said rim comprising a substantially flat annular plate which projects radially outwardly substantially beyond the outer periphery of said tubular member, said rim being positioned closely adjacent and substantially in snug engagement with the free end of said tubular member as said rim projects radially outwardly therepast;

a stub shaft fixedly but releasably connected to each end of said tubular member and projecting outwardly thereof in substantially coaxial alignment with said longitudinal axis, said stub shaft including an elongated shaft portion having a substantially annular flange rigidly affixed thereto and projecting radially outwardly therefrom intermediate the ends thereof, one end of said shaft portion passing through the center opening of said base portion and the central shaft opening of said disk, and said flange overlying and fitting snugly against the outwardly facing surface of said base portion, said flange also having bolt openings extending therethrough and generally coincident with the bolt openings in said base portion; and

a plurality of screws passing through the aligned bolt openings of said flange and said base portion and said disk for fixedly joining said stub shaft, said end plate and said disk together;

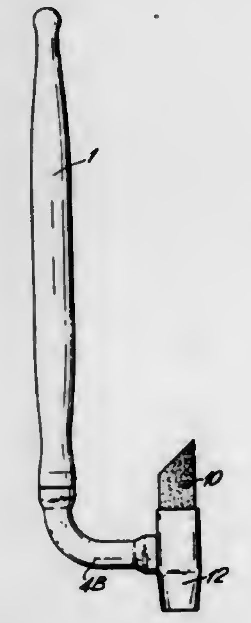
whereby each said stub shaft is rigidly held with respect to said tubular member and projects axially outwardly therefrom, said stub shaft being readily disassembled from tubular member by removal of said screws.

4,130,912

TAPE HEAD CLEANING DEVICE

Stewart A. Sheppard, Hailsham; Philip B. Arbib, Chalfont St. Peter, and Maurice R. Pert, Great Billington near Leighton Buzzard, all of England, assignors to Bib Hi-Fi Accessories Limited, Hertfordshire, England

Filed Nov. 2, 1976, Ser. No. 738,096
Claims priority, application United Kingdom, Nov. 27, 1975, 48897/75
Int. Cl.^{2} B25G *1/04;* G11B *5/41*
U.S. Cl. 15—210 R **13 Claims**



1. A device for cleaning magnetic heads of magnetic tape recording and/or playback machines, the device comprising

an elongate holder, and

a holding member which is constructed to receive and hold a replaceable tape head cleaner,

the holder comprising

a straight first elongate member, and

a second elongate member connected releasably end-to-end with the first elongate member and having its two ends inclined to each other,

a spigot of non-circular cross-section on the free end of the second elongate member, and

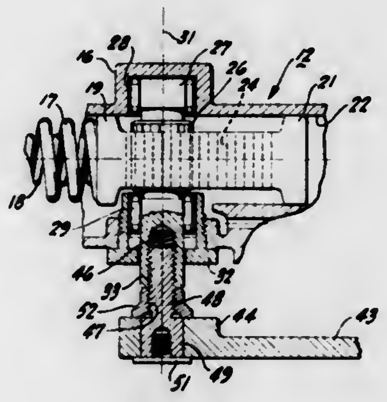
a plurality of corresponding sockets in the holding member, the spigot and the sockets being shaped to allow the spigot to be located non-rotatably as a push fit in any one of the sockets in any one of a plurality of orientations of the holding member relative to the second elongate member.

4,130,913

DOOR CLOSER

William G. Rodseth, Princeton, Ill., assignor to Schlage Lock Company, San Francisco, Calif.

Filed Aug. 18, 1977, Ser. No. 825,591
Int. Cl.^{2} E05F *3/00*
U.S. Cl. 16—49 **16 Claims**



1. A door closer for use with a door frame and a door panel comprising a housing, a shaft having a thread, means mounting said shaft to rotate about an axis in said housing, means constraining said shaft against axial movement relative to said housing, means interconnecting said door frame and said door panel through said housing and said shaft, said interconnecting means including a member engaging said thread and movable axially of said shaft, and means on said shaft and on said member for limiting axial movement of said member and said shaft.

4,130,914

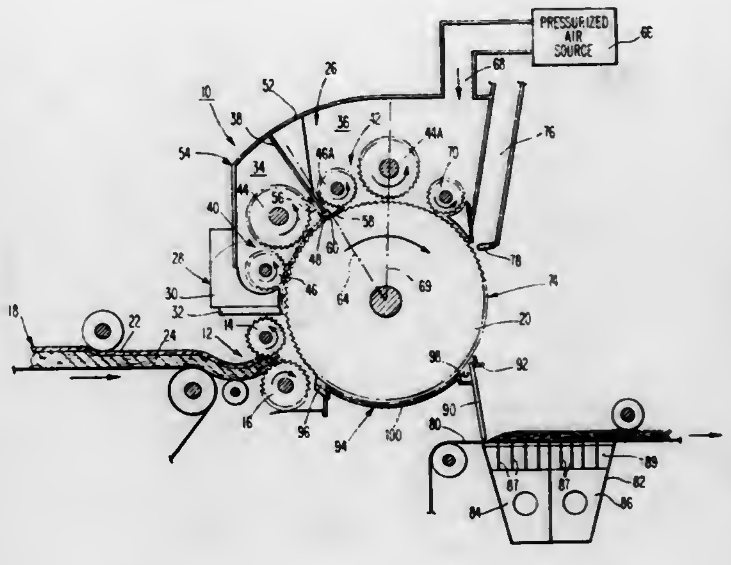
Patent Not Issued For This Number

4,130,915

CARDING OPERATION FOR FORMING A FIBROUS STRUCTURE

Joel P. Gotchel, Glen Mills, Pa., and Henry J. Norton, Wilmington, Del., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Sep. 19, 1977, Ser. No. 834,709
Int. Cl.^{2} D04H *1/00*
U.S. Cl. 19—304 **13 Claims**



1. A carding method for forming a nonwoven fibrous structure including short fibers under ¼ inch in length and longer reinforcing fibers blended together, said short fibers being the predominate fiber component, by weight, in the structure; the method including the steps of:

rotating a main carding drum having projections on its outer periphery at a surface speed of at least about 12,500 feet/-minute;

directing a fibrous feed into engagement with the rotating outer periphery of the main drum whereby rotation of the drum past the fibrous feed separates fibers from said feed, said fibrous feed including short fibers under ¼ inch in length and longer reinforcing fibers, said short fibers constituting the predominate fiber component, by weight, in said feed;

directing fibers separated from the fibrous feed into a working section including rotating satellite rolls positioned adjacent the main drum and having projections on their outer peripheries for cooperating with projections on the periphery of the main drum to individualize and blend together the fibers that are directed into the working section;

providing a housing over the working section that substantially isolates the working section from the environment around it so that pressure conditions within the working section can be independently controlled;

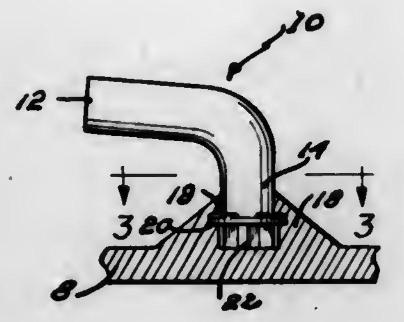
providing a source of pressurized air;

communicating said source of pressurized air with the interior of the housing for continuously maintaining a positive pressure in the working section at a level in excess of 2 inches of water to minimize undesirable air flow characteristics that adversely affect the individualizing and blending of the fibers in the working section;

conveying the individualized fibers through the pressurized working section to a release zone on the periphery of the main drum at which the individualized and blended fibers are released from the periphery of said main drum for subsequent conveyance to a foraminous forming surface upon which the fibrous structure is formed.

4,130,916
BELT HOOK AND METHOD OF MAKING SAME

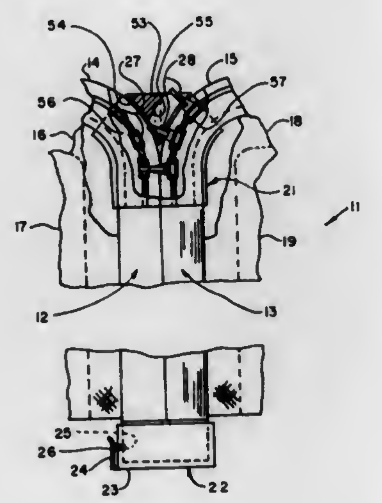
Terence P. King, 76 S. Main St., Middleboro, Mass. 02346
Filed Aug. 29, 1977, Ser. No. 828,474
Int. Cl.² A44B *11/22*
U.S. Cl. 24—186 **3 Claims**



1. A belt hook construction for use with a belt plate of the class having at its inner side a casting well in which the belt hook may be received and secured by casting metal in a belt retaining position, said belt hook construction comprising an elongated body portion having a casting end and a retainer portion, said casting end being formed with a knurled extremity and an annular flange abutting the knurled extremity and projecting outwardly therefrom, an opposite side of the annular flange being formed with spaced apart radially disposed ridges.

4,130,917
FLEXIBLE SLIDE FASTENER

Predrag Shopalovich, Ashland, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jan. 16, 1978, Ser. No. 869,548
Int. Cl.² A44B *19/32, 19/02*
U.S. Cl. 24—205.1 R **4 Claims**



1. A slide fastener comprising:

a first elongated guide member having a longitudinally extending closure edge formed of a resilient material and an opposite edge for attachment to an edge of a first flexible sheet;

a second elongated guide member having a longitudinally extending mating edge formed of a resilient material adapted for engagement with said closure edge and an opposite edge for attachment to an edge of a second flexible sheet to be attached to the first flexible sheet;

a slide member adapted to simultaneously engage and slide longitudinally along said first and second guide members and to force adjacent portions of said closure and mating edges into engagement in response thereto, said closure and mating edges comprising mutually engaging profiled surfaces adapted to provide a liquid seal between said first and second guide members;

a plurality of female coupling elements distributed along said closure edge; and

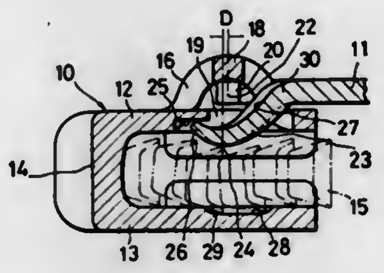
a plurality of male coupling elements distributed along said mating edge and adapted to enter and latch with said female coupling elements in response to engagement of said closure and mating edges;

said male coupling elements comprising resilient latching portions that are compressed by said female coupling elements during entry thereinto and expanded into latching engagement therewith in response to complete entry thereinto, said latching portions comprising spring members having spaced apart resilient legs adapted to be forced together in response to entry into said female coupling elements, said female coupling elements defining openings with smaller dimensions than the spacing between said resilient legs, said openings being defined by cavities formed in said closure edge;

said mating edge defining a plurality of longitudinally distributed cavities and said male coupling elements comprising base portions including securing means for releasably securing said base portions within said cavities in said mating edge, whereby said male coupling elements are easily replaced.

4,130,918
LOCK SLIDER FOR SLIDE FASTENERS

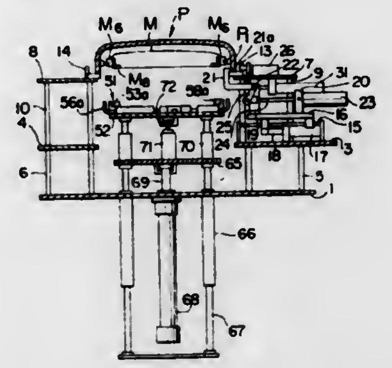
Susumu Ishii, Kurobe, and Tsunetaka Aoki, Kamiichi, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan
Filed Feb. 24, 1978, Ser. No. 881,114
Claims priority, application Japan, Mar. 3, 1977, 52-25439[U]
Int. Cl.² A44B *19/30*
U.S. Cl. 24—205.14 A **5 Claims**



1. A slider which can be locked against movement in a desired position on rows of interlocking fastener elements, comprising a body having top and bottom wings which are connected at their front ends so as to provide therebetween a Y-shaped guide channel for the fastener elements, there being an aperture in the top wing of the body, a pull tab connected at one end to the top wing of the body for pivotal motion relative to same about a predetermined axis, a locking pawl on said one end of the pull tab intruding into the guide channel in the body through the aperture in its top wing, the locking pawl having a predetermined point of contact with the fastener elements for pressing same against the bottom wing of the body when the pull tab is in a recumbent position on the body, the predetermined contact point of the locking pawl being disposed forwardly of the predetermined axis of the pivotal motion of the pull tab when the latter is in the recumbent position, and an abutment formed on the inside surface of the top wing of the body and disposed forwardly of the aperture therein so as to be abutted upon by a tip of the locking pawl when the pull tab is in the recumbent position, the predetermined contact point of the locking pawl being disposed rearwardly of its tip when the pull tab is in the recumbent position.

4,130,919
APPARATUS FOR REMOVING A SHADOW MASK ASSEMBLY FROM A PANEL AND INSERTING SAME INTO A DUMMY PANEL

Tadao Oyama, Mobara, Japan, assignor to Hitachi, Ltd., Japan
Filed Jul. 27, 1977, Ser. No. 819,619
Claims priority, application Japan, Aug. 11, 1976, 51-94898
Int. Cl.² H01J *9/00*
U.S. Cl. 29—25.19 **6 Claims**



1. Apparatus for removing from a panel a shadow mask assembly supported within said panel and for inserting said shadow mask assembly into a dummy panel, said shadow mask assembly having secured to its outer lateral surfaces resilient plates each having a free end and formed in the vicinity of the free end with a hole, and said panel and said dummy panel each having secured to its inner lateral surfaces pins projecting inwardly for engagement in the respective holes formed in the shadow mask assembly, such apparatus comprising, in combination:

means for supporting said panel at a lower end thereof with the panel opening facing downwardly in a manner to permit the panel to move substantially horizontally, said means including a space large enough to permit the shadow mask assembly to move downwardly therethrough after the shadow mask assembly is removed from the panel;

means operative to come into engagement with inner and outer surfaces of side walls of the panel to position the panel in a shadow mask assembly removing position and hold same in said position on said support means;

shadow mask assembly removing means operative to remove the shadow mask assembly from the panel including a mask support plate, means mounted on said mask supported plate for bending the resilient plates of the shadow mask assembly in a manner to release said plates from engagement with the pins of the panel, and a first driving means for moving said mask support plate in reciprocatory movement between a first position in which the shadow mask assembly is in the panel and is engaged by said removing means and a second position located beneath said first position wherein said mask assembly is removed from said panel;

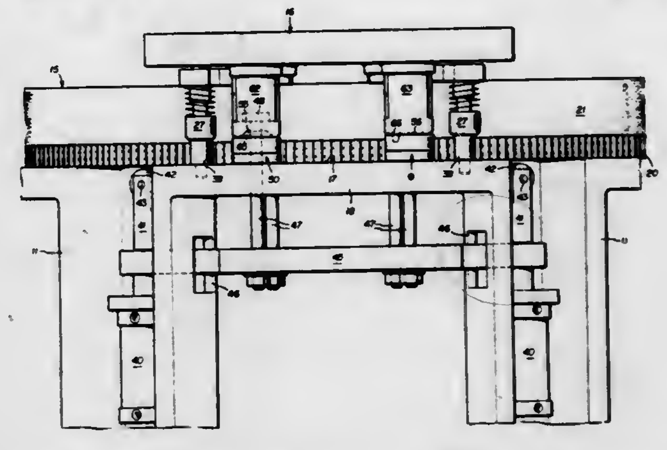
means for positioning said dummy panel on said means for supporting said panel;

four support members mounted on said mask support plate and each having a support surface for supporting the underside of one of four corners of the shadow mask assembly and a guide surface for guiding an outer lateral surface of one of the four corners of the shadow mask assembly in such a manner that the shadow mask assembly is positioned on said mask support plate; and

driving means for moving said mask support plate to a position in which the shadow mask assembly supported by said four support members is positioned within said dummy panel.

4,130,920
MACHINE TOOL

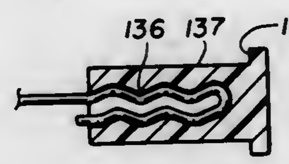
Andrew V. Siarto, West Bloomfield, Mich., assignor to Siorto Machine & Tool Co., Inc., West Bloomfield, Mich.
Continuation-in-part of Ser. No. 801,181, May 27, 1977. This application Oct. 20, 1977, Ser. No. 843,769
Int. Cl.² B23P *23/00*
U.S. Cl. 29—38 R **8 Claims**



1. In a rotary transfer machine tool having a gear supported for rotation over a fixed, angular, composite support table, a plurality of peripherally spaced pallets superimposed on said gear for rotation therewith, a plurality of work stations spaced at the pallet intervals, and drive means for rotatably driving the gear in step-wise fashion to roughly align each pallet with one of said work stations, the improvements of a plurality of peripherally spaced rotatable support elements underlying said gear, power means for raising and lowering said support elements to correspondingly raise and lower said gear relative to said table, and mating locating elements on said table and said pallets for interfitting snug engagement when said gear is lowered to accurately position each pallet.

4,130,921
METHOD OF MAKING ORTHODONTIC APPLIANCE HAVING REPLACEABLE TOOTH ENGAGING MEANS

Melvin Wallshein, 8645 Bay Pkwy., Brooklyn, N.Y. 11214
Division of Ser. No. 816,138, Jul. 15, 1977, Pat. No. 4,091,540, which is a continuation-in-part of Ser. No. 708,305, Jul. 26, 1976, Pat. No. 4,054,996. This application Nov. 16, 1977, Ser. No. 852,148
Int. Cl.² B21F *43/00;* **B23P** *13/00*
U.S. Cl. 29—160.6 **4 Claims**



1. A method of making an orthodontic appliance comprising:

forming an elongated member with a main portion and a bent back portion thereon, said main and bent back portions being spaced from each other;

forming undulations on a surface of at least one of said main and bent back portions;

filling said space between said main and bent back portions with a filler material which is later removable;

molding a member around said main and bent back portions with said filler material therebetween so that said molded member may have an inner surface substantially conforming to the outer surface configuration of said main and bent back portions; and then

removing said filler material from the space between said main and bent back portions to permit said main and bent back portions to be resiliently deformed toward each other.

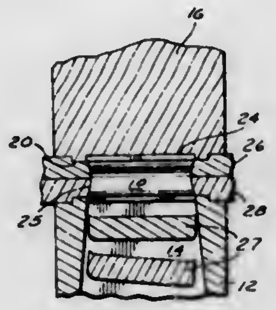
4,130,922
HEADLESS RIVETING SYSTEM

Albert C. Koett, Norwood, Ohio, assignor to AKH Inc., Twin Lakes, Wis.

Filed Nov. 7, 1977, Ser. No. 849,164

Int. Cl.^{2} B23P ***11/00***

U.S. Cl. 29—243.53 **5 Claims**



1. A headless riveting system of the class described comprising:

(a) a rivet of a length substantially equal to the sum of the thicknesses of the materials to be fastened together and having flat ends of substantially the same size and shape,

(b) a flat die having opening therethrough of the same size and shape as the rivet end and a ridge surrounding said opening at the edge thereof, and

(c) a punch having a flat end-area of substantially the same size and shape as the end of the rivet and ridge-like staking means projecting from the edge of said flat end-area at opposite sides thereof,

(d) the flat end-area of the punch being axially aligned with the opening of said die and spaced from said die a distance sufficient to receive between the punch and die the materials to be riveted together and the rivet positioned in axial alignment with the said die opening.

4,130,923
APPARATUS FOR LOCATING AND MOVING HEAVY UNITS

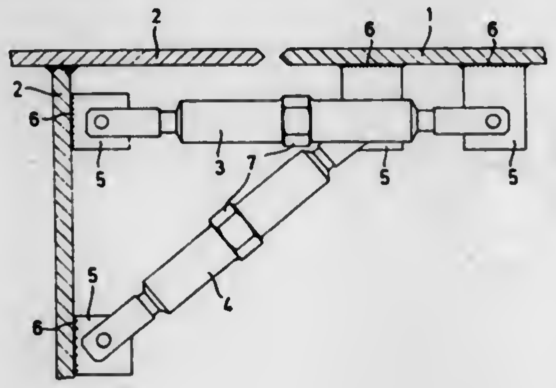
Esko Muukka, Pähkinätie 12 C, 01710 Vantaa 71, Finland

Filed Feb. 2, 1977, Ser. No. 764,877

Claims priority, application Finland, Feb. 2, 1976, 760247

Int. Cl.^{2} B25B ***27/14***

U.S. Cl. 29—281.5 **5 Claims**



1. Apparatus for positioning and moving heavy units comprising a socket member, a pair of spindles partly enclosed by and threadably engaged in opposite ends of the socket member, means cooperating with said spindles for synchronizing the rotation of the spindles with respect to each other, means on each of the spindles for connecting the spindles to the units to be positioned and a pair of axially spaced slide means arranged on each of said spindles for supporting transverse bending loads applied to the apparatus and an external thread on each spindle arranged between the pair of axially spaced slide means associated therewith.

4,130,924
REMOVAL AND/OR INSTALLATION OF TOP SECTION OF STEELMAKING VESSEL

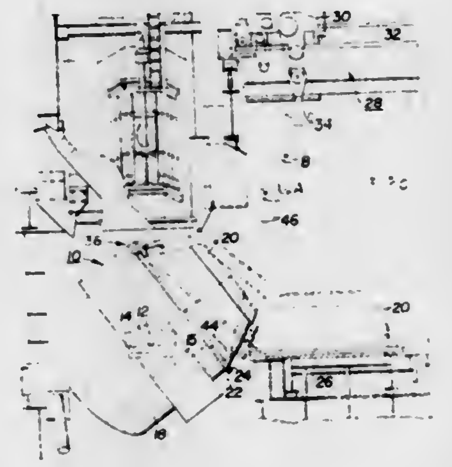
Kenneth D. Madill, Sault Ste. Marie, Canada, assignor to The Algoma Steel Corporation, Limited, Ontario, Canada

Filed Sep. 30, 1977, Ser. No. 838,222

Claims priority, application Canada, Jun. 27, 1977, 281398

Int. Cl.^{2} B23P ***7/00***

U.S. Cl. 29—401 F **3 Claims**



1. A method of removing and installing a top section of a steelmaking vessel, the vessel including a lower body section with said top section being detachably secured thereto, there being an operating platform including a vessel charging side alongside of said vessel, said vessel top section further being provided with lift bracket means on that side of the vessel nearest the charging side of the operating platform in the upright position of the vessel, and said body section being mounted for rotation about a horizontal axis, the method including

(a) providing a hinge connection between the top section and the body section of the vessel such that the hinge axis thus defined is parallel to the rotation axis of the vessel, said hinge being located to that side of the vessel which is remote from the charging side of the operating platform in the upright position of the vessel;

removing the vessel top section by:

(b) rotating the body section about the rotation axis from an upright position toward the charging side of the operating platform while simultaneously applying lifting forces to said vessel top section via the lift bracket means to support the same whereby the top section pivots relative to said body section about the hinge axis, and continuing the rotation of the body section while supporting the top section and controlling the orientation thereof so that the top section is carried out over the operating platform and progressively lowered onto same;

(c) separating the top section from the body section at the hinge connection and subsequently effecting repair or replacement of the top section;

and subsequently installing the repaired or a replacement vessel top section by:

(d) locating the top section on the operating platform;

(e) connecting the top section to the body section via the hinge connection, and

(f) rotating the body section from an inclined position toward an upright position while simultaneously applying lifting forces to the top section via the bracket means to support the top section and to control the orientation thereof such that the top section is carried away from the operating platform and gradually is pivoted relative to the body section about the hinge axis back into close juxtaposition with the body section.

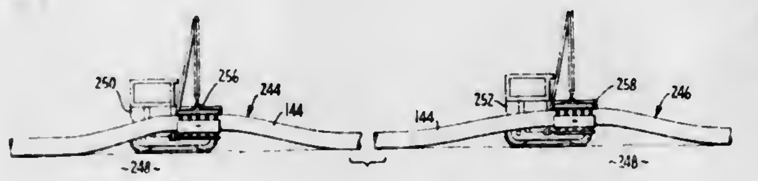
4,130,925
METHODS OF PIPELINE CONSTRUCTION IN ARCTIC AND SUBARCTIC REGIONS

Murray Gibson, 111 Silver Valley Pl., NW., Calgary, Alberta, Canada (T3B 4B5)

Filed Apr. 21, 1977, Ser. No. 789,744

Int. Cl.^{2} B23Q ***17/00***

U.S. Cl. 29—407 **22 Claims**



1. The method of pipeline construction in arctic and subarctic regions, comprising:

welding joints of pipe together to provide a plurality of unitary pipe sections;

consecutively moving each said pipe section a substantial part of the distance from its place of fabrication to its place of installation over an elongated snow pad with plural parts of said pipe section bearing upon said elongated snow pad; and

attaching, as by welding, each said pipe section to an adjacent of said sections to form said pipeline.

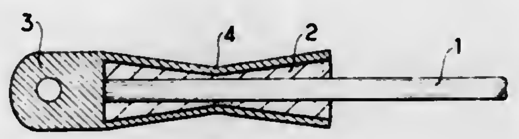
4,130,926
METHOD OF PRODUCING A ROD ANCHORING STRUCTURE

Michel Willem, Vichy, France, assignor to Ceraver S.A., Paris, France

Filed Feb. 17, 1977, Ser. No. 769,807

Int. Cl.^{2} B23P ***17/00***

U.S. Cl. 29—421 M **18 Claims**



1. A method of producing a rod anchoring structure comprising the steps:

molding onto the end of a rod a surrounding, double-ended wedge element having a neck from which flared ends of increasing cross-sectional area extend in both axial directions along the rod, and

concentrically mounting to said wedge element an anchoring fitting with said anchoring fitting radially compressing said wedge element over said neck and said flared ends in the absence of an axial load on the rod.

4,130,927
PROCESS AND AN APPARATUS FOR THE CONTINUOUS MECHANICAL FABRICATION OF STARTING SHEETS FOR THE ELECTROLYTIC REFINING OF METALS, ESPECIALLY COPPER

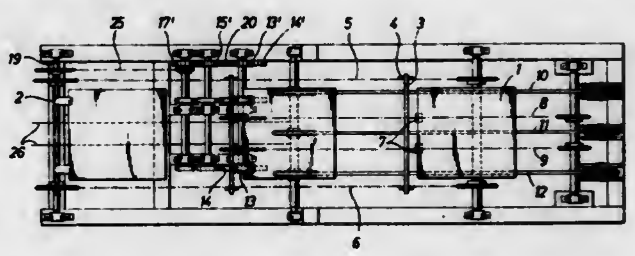
Ralph Bengtsson, and Gunnar Larsson, both of Karlstad, Sweden, assignors to C J Wennberg AB, Sweden

Filed Apr. 26, 1977, Ser. No. 790,871

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1976, 2618679; Oct. 2, 1976, 2644631

Int. Cl.^{2} B23P ***11/00***

U.S. Cl. 29—432.1 **31 Claims**



1. A process for a continuous mechanical fabrication of starting sheets for an electrolytic refining of metals, especially copper, from pre-dimensioned and pre-straightened electrodeposited sheets, the process comprising the steps of:

continuously moving the respective starting sheets forward along a predetermined path of movement at a substantially constant rate of advance,

imparting a movement component to components to be connected to the starting sheets and to tools for connecting the components to the starting sheets in a direction parallel to the predetermined path of movement of the starting sheets at a speed which substantially corresponds to the rate of advance of the starting sheets, and

connecting the respective starting sheets to a cathode bar by supporting eyes by intermittently operating the tools which are arranged at predetermined positions along the predetermined path of movement of the starting sheets.

9. An apparatus for a continuous mechanical fabrication of starting sheets for an electrolytic refining of metals from pre-dimensioned and pre-straightened electrodeposited sheets, the respective starting sheets being adapted to be connected by supporting eyes to a cathode bar, the apparatus including transporting means for transporting the respective starting sheets and cathode bars, means for continuously driving the transporting means at a constant speed, means for punching the respective starting sheets and supporting eyes, and means for mechanically establishing a firm rigid connection between the supporting eyes and the respective starting sheets, characterized in that the transporting means includes a first conveyor means for advancing the cathode bars including carrier means for carrying the cathode bars, and second conveyor means for advancing the respective starting sheets including stop means for engaging at least a portion of the respective starting sheets, means for operatively connecting said first and second conveyor means to said driving means such that said first and second conveyor means are driven at substantially the same speed thereby maintaining a constant interval between the cathode bar and the starting sheet during an advancing movement at least over a first portion of the transporting means, stationary means for picking up and holding sheet metal strips and for forming the sheet metal strips into the supporting eyes, said stationary means are arranged such that the sheet metal strips are bent around the cathode bar during the advancing movement of the starting sheets and cathode bars so that ends of the supporting eyes formed from the sheet metal strips rest on both sides of the starting sheet at an upper end thereof, and in that means are provided for mounting the punching means and the mechanical connection means so as to be displaceable to thereby connect the ends of the supporting eyes to the respective starting sheets.

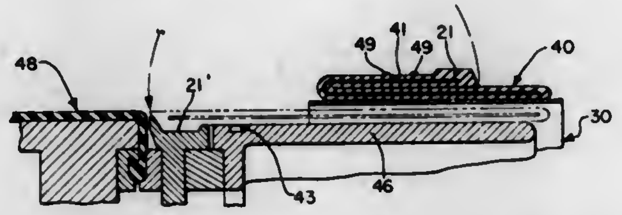
4,130,928
METHOD FOR MOUNTING A TIRE BLADDER

Richard C. von der Heyde, Warken, and William J. Head, Rollingen (Mersch), both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 30, 1976, Ser. No. 719,047

Int. Cl.^{2} B23P *9/00, 19/02*

U.S. Cl. 29—450 **5 Claims**



1. The method of mounting an inflatable ply turnup bladder on a tire building drum, the drum having a center part and bladder support means attached to and extending axially outward from the respective ends of the center part and mounted rotatably on a cantilevered shaft supported rotatably in a tire building machine housing, the drum having inflation means therein for conducting air to said turnup bladder, said method providing for mounting said bladder on one of said support means between said part and said housing while said drum is mounted on said shaft and without disassembly of any part of the drum, and comprising placing a collapsible form means in coaxial engagement with the radially inward surface of said bladder apart from said drum and in the deflated condition thereof, said form means being at least equal in axial length to the axial length of said bladder when the same is expanded, expanding the form means and the bladder therearound by an inflatable expanding means and fixing the so-expanded form means at a diameter sufficiently greater than the maximum diameter of said drum, then collapsing said expanding means and passing the form means freely coaxially thereover to locate said bladder in axial register with the one of said support means adjacent said housing then collapsing said form means while the bladder is in axial register with said one bladder support means and removing the collapsed form means from between the bladder and the bladder support means, whereby said ply turnup bladder is mounted on the drum without removal or disassembly thereof from said building machine housing.

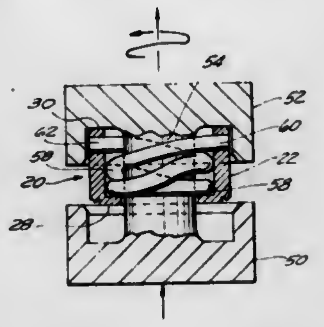
4,130,929
WOUND SPRING RECEPTACLE

Julius F. Dzus, Islip, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Nov. 17, 1977, Ser. No. 852,553

Int. Cl.^{2} B23P *19/04*

U.S. Cl. 29—456 **9 Claims**



1. Method of forming a spring receptacle for removable engagement with a stud having a spiral cam slot therein to form a fastener to couple two members together comprising; forming a hollow receptacle body open on at least one end and with means thereon for mounting the receptacle to one of the members to be coupled and an opening therein alignment with an opening in the one member, locating a pair of opposed holes in the body, passing an elongated wire of spring material through the holes and the wire being long enough to extend across the body and outwardly therefrom through the holes, and holding one of the body and wire and rotating the other of the body and wire a predetermined amount causing the wire to coil within the body to form an integral coil spring and cross bar fixed in the body so that when the receptacle is mounted on the one member and engaged with the stud mounted on the other member and extended through the opening in the one member and into the body, relative rotation between the stud and receptacle will cause the coil spring to deflect as the cross bar follows the cam slot in the stud to the fastened position coupling the two members together.

4,130,930
LOCATING LOCK CASES IN DOORS

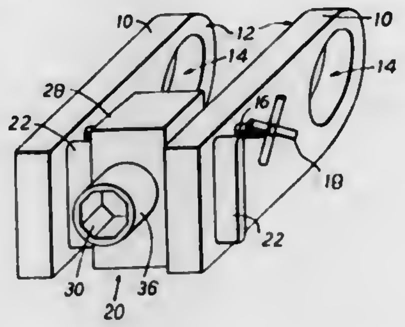
Desmond E. C. Webster, 1 Sweetmount Park, Dublin 14, Ireland

Filed Jul. 29, 1977, Ser. No. 820,103

Claims priority, application United Kingdom, Aug. 9, 1976, 33151/76

Int. Cl.^{2} E05C *1/08;* E06B *1/00*

U.S. Cl. 29—466 **11 Claims**



9. A method of installing a latch bolt case having a first non-circular alignment portion in a door having a cross-hole and a latch bolt casing passageway intersecting the cross-hole, employing a jig having a second non-circular alignment portion complimentary to the first alignment portion and a third generally alignement portion, the steps of positioning said jig with said third alignment portion in engagement with a major surface of the door and engaging said first alignment portion with the second alignment portion, driving said latch bolt case in an end-wise relation into said latch bolt passageway while maintaining the first and second alignment portions in engagement to prevent rotation of the latch bolt case as it is driven into the door.

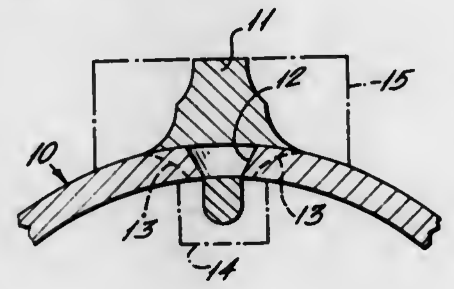
4,130,931
ELECTROSLAG BOSS AND PROCESS

James E. Norcross, Media, Pa., assignor to Arcos Corporation, Philadelphia, Pa.

Filed Feb. 11, 1976, Ser. No. 657,325

Int. Cl.^{2} B22D *11/126*

U.S. Cl. 29—527.5 **11 Claims**



1. In the process wherein a metallic boss is joined to a metal base by building up on the base a weld metal deposit formed from electroslag welding, the improvement comprising forming said metallic boss by providing a metal base having therein a hole completely peripherally enclosed by metal of the base defining said hole, wherein prior to building up said weld metal deposit, said hole is filled with metal by forming molten metal in said hole, said molten metal being formed in said hole from electroslag deposited metal and from the melting of portions of the base contiguous said hole with heat generated by said electroslag welding, and cooling said molten metal thereby metallurgically integrating said electroslag metal with metal of the base in the region of said hole, thereby forming said metallic boss which protrudes from said base.

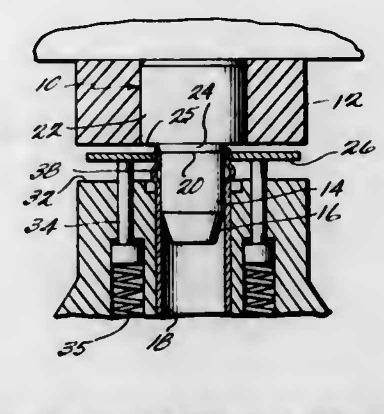
4,130,932
METHOD OF JOINING A TUBE TO A PLATE

Robert T. Epmeier, Evansville, Ind., assignor to Arkla Industries, Inc., Evansville, Ind.

Filed Nov. 11, 1975, Ser. No. 630,896

Int. Cl.^{2} B21D *39/08;* B23P *11/02*

U.S. Cl. 29—523 **3 Claims**



1. A method for joining a tube to a plate comprising: inserting the tube through a walled aperture in the plate so that an end portion of the tube extends beyond one side of the plate and so that the body of the tube extends beyond the other side of the plate; clamping a portion of the tube body in an outer die; axially aligning with the tube an inner die having a body the cross section of which is less than the cross section of the bore of the tube and having a shoulder the cross section of which is greater than the cross section of the bore of the tube; effecting relative movement between said inner and outer dies toward each other whereby the inner die body enters the tube and whereby the shoulder on the inner die engages the wall of the tube and transmits axial and radial force thereto so as to in sequence radially expand the wall of the tube into tight engagement with the wall of the aperture, move said end portion and body of the tube toward each other to buckle the tube wall adjacent said other side of the plate thereby forming a double-walled annular flange which engages said other side of the plate, and fold said end portion of the tube radially outwardly to form an annular flange engaging said one side of the plate.

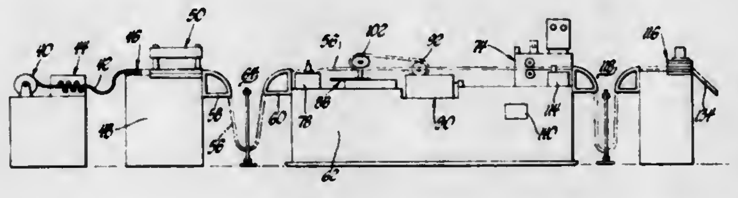
4,130,933
FORMING AND COATING APPARATUS

Carl J. Demrick, Birmingham, Mich., assignor to Arco Industries Corporation, Schoolcraft, Mich.

Filed Sep. 12, 1977, Ser. No. 832,700

Int. Cl.^{2} B23P *23/00;* B21B *15/00;* B21F *11/00*

U.S. Cl. 29—564 **25 Claims**



1. An apparatus for forming and coating parts comprising a first forming die, means for supplying metal stock to said die, said die being intermittently actuated to form a plurality of metal parts having depending portions, said formed parts being interconnected by integral tabs so as to form a continuous and flexible part strip, a part coating station downstream of said forming die, a mechanism for drivingly engaging and moving said part strip at a continuous rate of feed through said part coating station, the rate of movement of said part strip from said forming die being different than its rate of movement through said coating station, a first strip accumulator device disposed between said forming die and said coating station to control the operation of said forming die and to regulate the quantity of formed part strip supplied to said coating station, said coating station including a high energy heating device, guide means for conveying said part strip proximately over said heating device to heat the depending portions of said strip parts, means for applying a plastic coating to the heated depending portions of said part strip, a second die downstream of said coating station for severing said parts from said strip, means for intermittently feeding said plastic coated part strip to said second die, the rate of movement of said part strip through said coating station being different than its rate of movement through said second die, and a second strip accumulator disposed between said coating station and said second die to control the operation of said second die and to regulate the quantity of plastic coated part strip fed thereto.

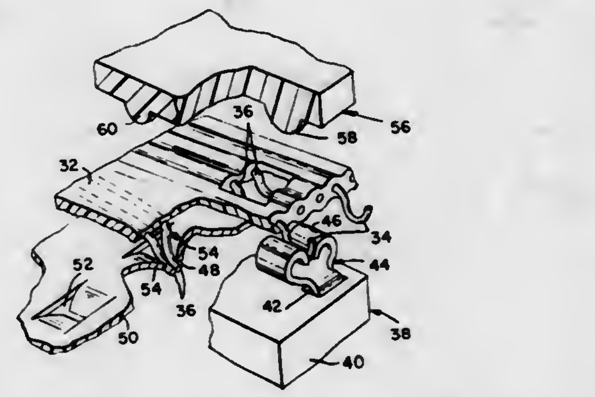
4,130,934
METHOD FOR TERMINATING HIGH DENSITY CABLE

John C. Asick, Harrisburg, and Clifton W. Huffnagle, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 6, 1977, Ser. No. 858,128

Int. Cl.^{2} H01B *7/08, 13/00;* H02G *1/14*

U.S. Cl. 29—628 **13 Claims**



1. A method for preparing multi-conductor flat cable for termination, said cable having a plurality of parallel spaced conductors encased in insulation, said method comprising the steps of:

cutting at least a longitudinal slit in the insulation adjacent each conductor to be terminated;

applying force to said conductor from one side of the cable causing said conductor to form a loop exposed from the other side of said cable; and

terminating each said conductor by inserting said exposed loop between resilient conductor engaging portions of an electrical terminal making good electrical and mechanical contact therebetween.

4,130,935
QUILTING BUTTON PART HOLDER

Arthur J. Randolph, Santa Rosa, Calif., assignor to Tuftamatic, Inc., Santa Rosa, Calif.

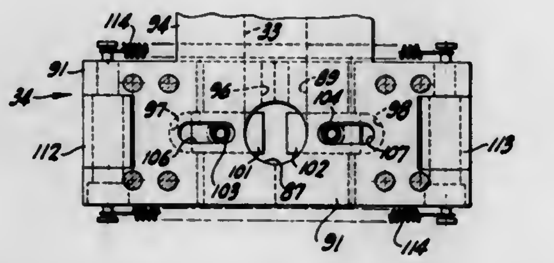
Continuation-in-part of Ser. No. 748,132, Dec. 6, 1976, Pat. No. 4,059,889. This application Oct. 12, 1977, Ser. No. 841,305

Int. Cl.^{2} B23Q *7/10*

U.S. Cl. 29—706 **4 Claims**

1. A button part holder for a quilting machine adapted to

drive a flanged male button part downwardly by drive means into a female button part comprising
a holder plate having a circular opening therethrough with a pair of slots extending through said plate and disposed in alignment on opposite lateral sides of said opening and a feed slot extending through said plate from a side thereof to said opening and disposed perpendicularly to said pair of slots,
a pair of retainers pivotally mounted one in each of said pair of slots and normally extending into said central plate opening with a space between adjacent edges therein, and



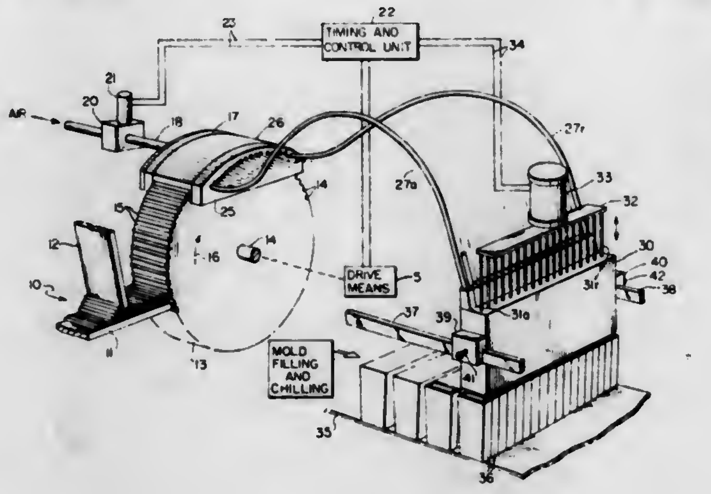
resilient means connected to said retainers and urging same into normal unpivoted position in alignment with an upper surface of said plate whereby said plate is adapted to receive a flanged button part moved onto the plate with a depending portion of the button part moved through said feed slot to support the button part by the flange thereof resting upon said retainers within said central plate opening and allowing said retainers to pivot downwardly in the slots wherein they are mounted as a button part is driven downwardly through the central opening in said plate and pivoting said retainers back into normal position upon retraction of said drive means.

4,130,936

STICK HANDLING AND INSERTING METHOD AND APPARATUS

Edward D. Cottrell, Cattaraugus, N.Y., assignor to Champion International Corporation, Stamford, Conn.

Filed Aug. 11, 1977, Ser. No. 823,621
Int. Cl.² B23Q *7/10*
U.S. Cl. 29—809 **22 Claims**



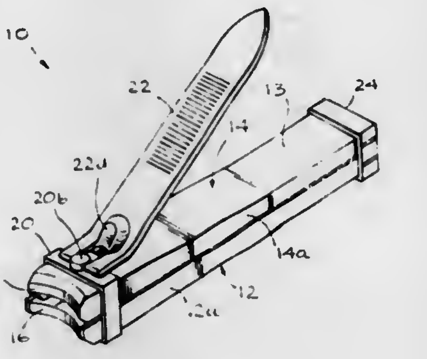
1. An apparatus for delivering and inserting handle sticks into a plurality of molds for use in combination with a machine having means for filling said molds and moving groups of the filled molds along a predetermined path, the apparatus comprising:
an insertion station located along and above said predetermined path;
a stick feeding station at a location separate and spaced apart from said insertion station;
means for conveying said sticks from said feeding station to said insertion station; and
means for mounting said insertion station for longitudinal adjustment relative to said predetermined path independently of said feeding station.

4,130,937

NAIL CLIPPER

Young M. Kim, 511 N. Bandini, San Pedro, Calif. 90731

Filed Feb. 10, 1978, Ser. No. 876,695
Int. Cl.² A45D *29/02*
U.S. Cl. 30—28 **4 Claims**



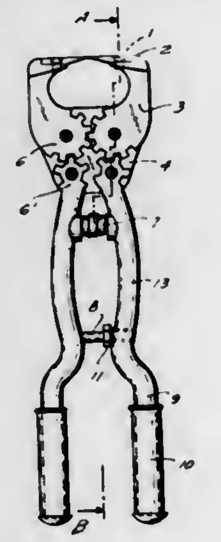
1. A nail clipper, comprising:
(a) two bilaterally flanged plates mounted within one another to form a receptacle;
(b) two cutting edges respectively, extending facing one another from one end of the plates;
(c) a band encompassing the two plates fastened to one of the plates;
(d) a lever mounted turnably on the band, each surface of the lever having a protuberance alternately constituting a fulcrum between lever and plate surface, respectively abutting the plate surface, causing the cutting edges to close;
(e) a closure covering the other end of the receptacle forming two plates.

4,130,938

CUTTER FOR ANIMAL HOOVES AND CLAWS

Georg Uhlmann, Bendorf, Germany, assignor to Rheintechnik Weiland & Kaspar K.G., Neunkirchen, Germany

Continuation-in-part of Ser. No. 513,514, Oct. 9, 1974, abandoned. This application Jul. 9, 1976, Ser. No. 703,935
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1973, 2350999
Int. Cl.² B26B *17/00;* A01L *11/00*
U.S. Cl. 30—192 **10 Claims**



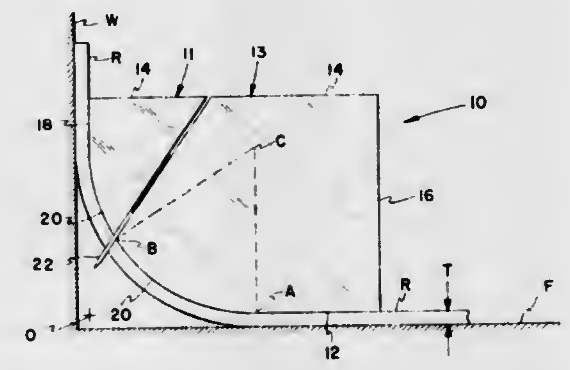
1. A cutter, particularly for animal hooves and claws, comprising a pair of jaw sections, each having a first end portion defining a first gear member; a cutting element mounted on each of said jaw sections and arranged to cooperate with one another so as to permit severing of articles placed between said jaw sections; a pair of handle sections for activating said jaw sections and each having a second end portion defining a second gear member; and mounting means mounting said jaw sections for pivotal movement relative to one another so that each of said first gear members is arranged for interengagement with the other first gear member, and each of said second gear members is arranged for interengagement only with a respective one of said first gear members while being free of interengagement with the respective other second gear member.

4,130,939

WALL EDGE TRIMMERS FOR RESILIENT FLOOR COVERINGS

Hugh Toal, Kearny, N.J., assignor to Congoleum Corporation, Kearny, N.J.

Filed Aug. 11, 1977, Ser. No. 823,819
Int. Cl.² B26B *29/00*
U.S. Cl. 30—293 **4 Claims**



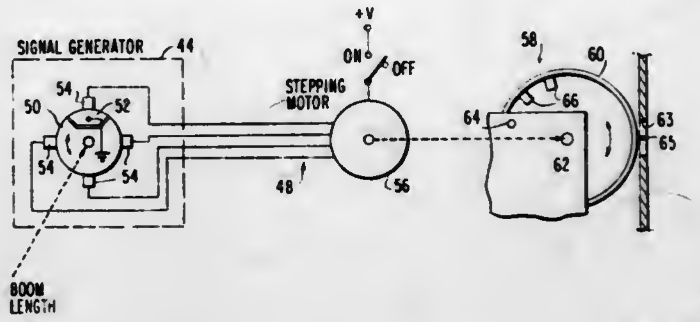
1. A wall edge trimmer for resilient floor coverings comprising: a flat, horizontally planar, relatively smooth base surface capable of sliding along the surface of a resilient floor covering laid out on a floor; a flat, vertically planar, relatively smooth front surface lying in a plane substantially at right angles to the plane containing said flat, horizontally planar, relatively smooth base surface and capable of sliding along the surface of a portion of said resilient floor covering which is curled upwardly and contacts the lowermost portion of a wall; said flat, horizontally planar, relatively smooth base surface and said flat, vertically planar, relatively smooth front surface possessing sufficient flat, planar surfaces whereby said wall edge trimmer is capable of steady, stable, non-rocking sliding motion along the surface of said resilient floor covering; an upper or top surface; a rear surface connecting said upper or top surface and said flat, horizontally planar, relatively smooth base surface; a relatively smooth arcuate surface in the form of a quarter cylinder connecting said flat, horizontally planar, relatively smooth base surface and said flat, vertically planar, relatively smooth front surface; a cutting tool intersecting said arcuate surface and extending from a point within said wall edge trimmer to a point beyond said arcuate surface; and means capable of adjusting said cutting tool into parallel planes laterally of itself to always maintain said cutting tool at a constant angular relationship of from about 33° to about 60° with respect to the plane of said flat, horizontally planar, relatively smooth base surface, said flat, horizontally planar, relatively smooth base surface contacting said arcuate surface at a straight-line distance from the plane containing said flat, vertically planar, relatively smooth front surface equal to the arcuate distance from the point of intersection of said flat, horizontally planar, relatively smooth base surface and said arcuate surface to the point of intersection of said arcuate surface and said cutting tool, as measured along said arcuate surface, said straight-line distance and said arcuate distance both being equal in length to the radius of said quarter cylinder.

4,130,940

BOOM LENGTH SENSING AND INDICATING SYSTEM WITH SELF-SYNCHRONIZATION

Dennis G. Densmore, Waverly, Iowa, assignor to Koehring Company, Brookfield, Wis.

Filed Dec. 16, 1977, Ser. No. 861,370
Int. Cl.² G01B *3/12*
U.S. Cl. 33—139 **9 Claims**



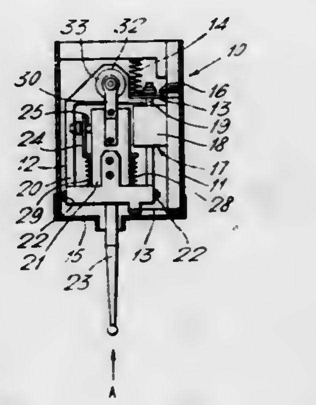
1. A boom length indicating system for a crane of the type having an operator's cab comprising:
means mounted on the boom of the crane for sensing changes in the extended length of the boom and for generating a signal representative of the sensed changes;
a boom length indicator mounted in the cab of the crane and movable to indicate the extended length of the boom;
means drivingly connected to the indicator for receiving the generated signal representative of the sensed changes and driving the indicator by an amount and in a direction related to the sensed changes; and,
means cooperating with the indicator to prevent movement of the indicator beyond predetermined upper and lower extremities of indicator movement regardless of sensed changes in the extended length of the boom.

4,130,941

DISPLACEMENT GAUGE

Clifford R. Amsbury, King's Newton, England, assignor to Rolls-Royce Limited, London, England

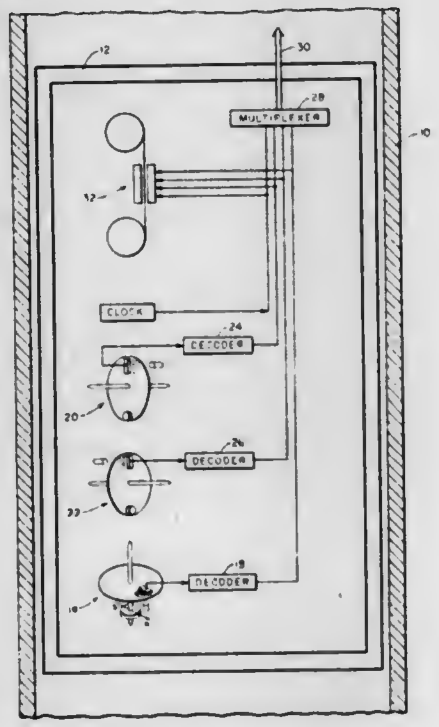
Continuation of Ser. No. 667,444, Mar. 16, 1976, abandoned. This application Aug. 18, 1977, Ser. No. 825,704
Claims priority, application United Kingdom, Mar. 20, 1975, 11542/75
Int. Cl.² G01B *07/02*
U.S. Cl. 33—174 L **6 Claims**



1. A displacement indicating gauge for attachment to a movable head of a machine adapted to perform measuring operations comprising:
a body;
a probe;
primary, secondary and tertiary members;
first means for mounting said primary member on said body;
second means for mounting said secondary member on said primary member;
third means for mounting said tertiary member on said sec-

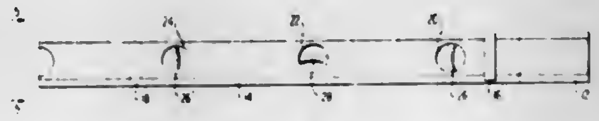
ondary member, said first, second and third mounting means permitting relative movement between said body and said primary member, said primary member and said secondary member, and said secondary member and said tertiary member in first, second, and third mutually substantially perpendicular directions, respectively;
means mounting said probe on said tertiary member with said probe extending beyond the bounds of said body;
three displacement sensing means respectively cooperating with said primary, secondary and tertiary members for providing an output representative of the position of said probe in said three directions relative to said body, including
radio transmitting means for transmitting a signal representative of the position of said probe in said three directions;
remote radio receiving means for receiving said signal; and
means for converting said received signal to a representation of the position of said probe in said three directions.

4,130,942
BOREHOLE SURVEYING APPARATUS
James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.
Filed May 26, 1977, Ser. No. 800,933
Int. Cl.^{2} G01C *9/04*
U.S. Cl. 33—312 **6 Claims**



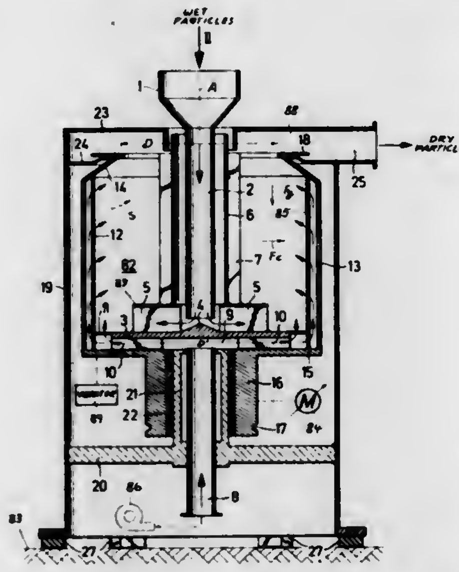
1. Borehole survey apparatus comprising:
a non-magnetic housing adapted for disposition in a borehole;
a digital magnetic compass disposed within said housing and operative to provide a digital output signal representative of the azimuth orientation of said housing;
wherein said digital magnetic compass includes:
a normally stationary disk optically coded with a plurality of concentric tracks each having a different number of alternately light responsive and non-responsive segments representing respective bits of a multi-bit code;
a compass magnet affixed to and rotatable with said disk;
means for mounting said disk and magnet for rotation about a normally vertical axis to permit alignment of the magnet with the earth's magnetic field to provide a relative angular position of said disk indicative of compass heading;
means for illuminating the coded tracks of said disk; and
photosensor means including a photosensor array having a plurality of photosensitive elements each in alignment with a respective coded track and operative to receive light from the coded tracks of said disk and to provide in response thereto a plurality of digital signals corresponding to a multi-bit code representing the relative angular position of said disk with respect to said photosensor means;
at least one digital inclinometer disposed in said housing and operative to provide a digital output signal representative of the inclination of said housing with respect to a predetermined vertical plane;
wherein said at least one digital inclinometer includes:
a normally stationary disk optically coded with a plurality of concentric tracks each having a different number of alternately light responsive and non-responsive segments representing respective bits of a multi-bit code;
means for mounting said disk for rotation about a normally horizontal axis;
a weight disposed at the lower portion of said inclinometer disk to define a normal position when said housing is vertically aligned;
means for illuminating the coded tracks of said inclinometer disk; and
second photosensor means including a photosensor array having a plurality of photosensitive elements each in alignment with a respective coded track and operative to receive light from the coded tracks of said inclinometer disk and to provide in response thereto a plurality of digital signals corresponding to a multi-bit code representing the relative angular position of said inclinometer disk with respect to said second photosensor means; and
means disposed in said housing and operative to convey the digital output signals from said digital magnetic compass and from said at least one digital inclinometer to the surface of a borehole.

4,130,943
EXTENSION LEVEL
Claude J. Talbot, Paincourtville, La. 70391
Filed Jul. 22, 1977, Ser. No. 818,239
Int. Cl.^{2} G01C *9/34*
U.S. Cl. 33—374 **10 Claims**



1. An extension level device extendable between a collapsed position and a fully extended position comprising:
an elongated base member having mutually spaced apertures therethrough including a centrally located aperture, the apertures disposed along the longitudinal axis thereof and a spirit level vial mounted in the centrally located aperture thereof;
first and second extension members slidably mounted on opposed longitudinal faces of said base member, the longitudinal axes of said extension members and said base lying in a common plane, each of said members having a plurality of mutually spaced apertures therethrough disposed along the longitudinal axis of each of said members and first and second spirit level vials, said first vial mounted in an aperture in said first member and said second vial mounted in an aperture in said second member;
adjacent apertures in said base and first and second members being spaced longitudinally an equal distance apart and both ends of said base member and one end of each of said first and second members defining half circles having centers lying on the longitudinal axis of said member spaced thereon said equal distance from adjacent apertures;
means carried by said device for permitting only longitudinal movement of said first and second members relative to said base;
locking means carried by said device for releasably coupling said first and second members and said base member against relative longitudinal movement.

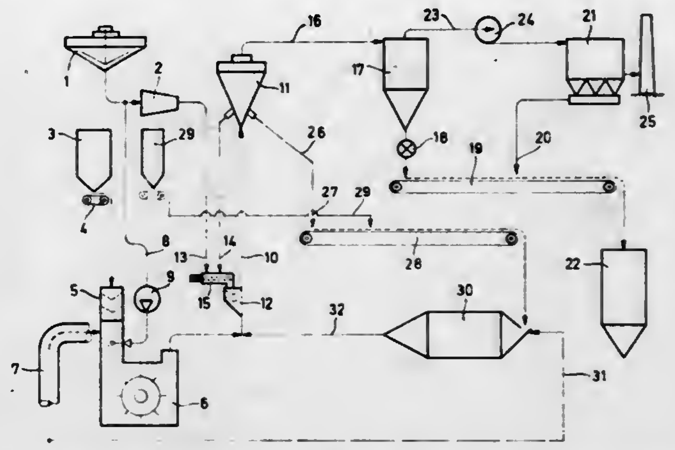
4,130,944
CENTRIFUGAL FLUIDIZED-BED DRYING METHOD AND APPARATUS
Günther Hultsch, and Harald Bock, both of Munich, Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany
Filed May 19, 1977, Ser. No. 798,486
Claims priority, application Fed. Rep. of Germany, May 20, 1976, 2622565
Int. Cl.^{2} F26B *5/08*
U.S. Cl. 34—8 **19 Claims**



1. A method of treating particles comprising the steps of:
(a) forming said particles into a body of particles centered on an axis;
(b) rotating said body of particles about said axis at a speed sufficient to urge said particles radially outwardly with a centrifugal force;
(c) passing a drying gas in a direction substantially opposite the centrifugal force inwardly through said body all around the latter and thereby contacting said particles and drying same; and
(d) maintaining the speed of the gas in said direction at a level sufficient to counter the centrifugal force and keep said particles in a suspended state.

6. An apparatus for drying wet particles, said apparatus comprising:
a vessel adapted to receive wet particles and having a circular cross section with an axis, a foraminous wall surrounding said axis and inlet means for admitting said particles to the vessel;
drive means for rotating said vessel and particles therein about said axis at an angular speed sufficient to urge said particles radially outwardly with a centrifugal force;
a housing spacedly surrounding said vessel and defining a space around said vessel;
drive means for rotating said housing; and
blower means for passing a drying gas through said space and at least partially radially inwardly through said foraminous wall and generally opposite to the centrifugal force at a speed sufficient to keep said particles in a suspended state along said wall.

4,130,945
METHOD FOR THE PRODUCTION OF FINE-GRAINED MIXTURE OF MINERAL SOLIDS
Kunibert Brachthäuser, Bensberg, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany
Filed Sep. 6, 1977, Ser. No. 830,996
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1976, 2640044
Int. Cl.^{2} F26B *3/08*
U.S. Cl. 34—10 **3 Claims**

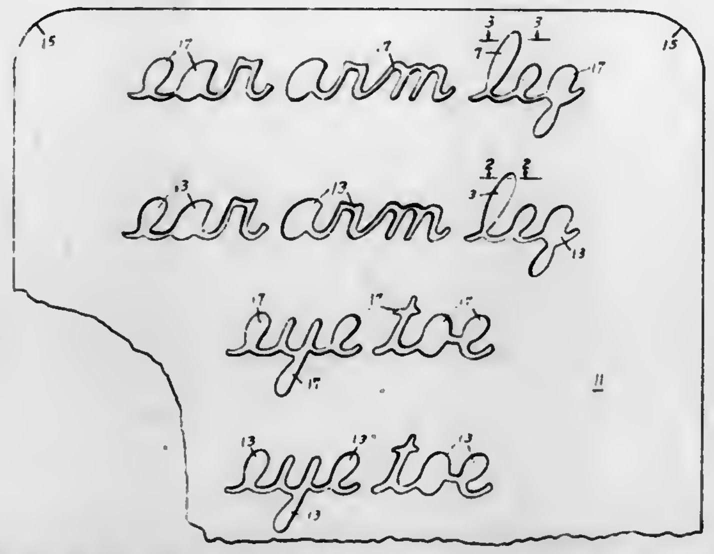


1. A method for the production of a mixture of fine-grained mineral solids from at least two components, each forming an essential part of the mixture, the first of said components being in the form of a slurry and the second of said components being a relatively coarse, moist mineral material, which comprises:
partially dehydrating said slurry,
mixing a portion of the partially dehydrated slurry with said second component in a mill while introducing hot drying gases into said mill,
passing the output of said mill into a sifter,
further dehydrating the remainder of said partially dehydrated slurry,
mixing the futher dehydrated remainder with particulate matter recovered from said sifter to produce a relatively moist mixture, and
combining said relatively moist mixture with the output of said mill en route to said sifter.

4,130,946
EDUCATIONAL DEVICE FOR MOTIVATING, AND FOR DEVELOPING SCRIBING AND READING SKILLS IN, THE HANDICAPPED
William J. Coady, 1732 W. Jackson St., Springfield, Ill. 62704
Continuation-in-part of Ser. No. 619,780, Oct. 6, 1975, abandoned, which is a continuation-in-part of Ser. No. 495,919, Aug. 8, 1974, abandoned. This application Jul. 11, 1977, Ser. No. 814,424
Int. Cl.^{2} G09B *11/04*
U.S. Cl. 35—37 **6 Claims**

1. An educational device, especially useful for physically and/or mentally handicapped persons, comprising: a semi-rigid lamina having at least one group of interconnected cut-out areas of conventional cursive symbol configurations, the margins of said areas being adapted to serve as guides for a manually held scribing implement, and said at least one group of areas having, through symbol combination, learning-stimulating verbal conceptual significance; at least one group of raised symbols, matching said cut-out areas and usable with said lamina, whereby visual sensing, and/or tactile sensing by a second hand, can be effected while a first hand is being guided by said scribing implement and the margins of said

cut-out areas, said at least one group of raised symbols being fixedly positioned directly above and parallel to said at least one group of cut-out areas for convenient sensing by either right- or left-handed persons.



4,130,947
SOLE FOR FOOTWEAR, ESPECIALLY SPORTS FOOTWEAR

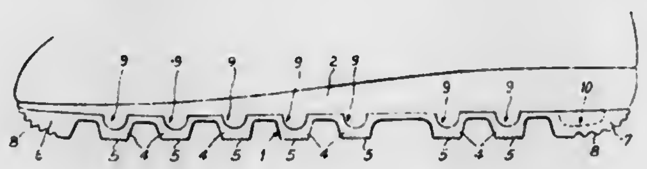
Francis Denu, La Walk, France, assignor to Adidas Fabrique de Chaussures de Sport, Landersheim, France

Filed Jul. 28, 1977, Ser. No. 819,677

Claims priority, application France, Jul. 29, 1976, 76 23173

Int. Cl.² A43B *13/12;* A43C *15/00*

U.S. Cl. 36—30 R **8 Claims**



1. A sole for footwear comprising a lower layer of abrasion-resistant material having a lower surface comprising a plurality of downwardly-projecting ribs to touch the ground, the ribs being substantially perpendicular to the longitudinal axis of the footwear, and an upper layer of impact-absorbing material attached to the lower layer, and in which the upper surface of the lower layer is provided with grooves corresponding to the ribs, the grooves extending to the sides of the sole and being occupied by corresponding downwardly-projecting portions of the upper layer.

4,130,948
SHOE INSERT

Hans-Dietrich Krug, Heidelberg, Germany, assignor to Firma Carl Freudenberg, Weinheim, Germany

Filed Aug. 25, 1977, Ser. No. 828,009

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1976, 7627371[U]

Int. Cl.² A43B *13/38;* B32B *3/26*

U.S. Cl. 36—44 **1 Claim**

1. A shoe having a multi-layered insert disposed in said shoe against the shoe sole, each of the layers of said insert formed of a closed-cell, cross linked polyolefin foam, said layers having different resiliency from on another, the layer of said insert disposed against the shoe sole having a specific gravity of 0.03 to 0.08 and the layer of said insert to be disposed against the foot of the user having specific gravity of 0.06 to 0.175, the specific gravity of the respective layers increasing progressively from the layer disposed against the shoe sole to the layer to be disposed against the user's foot, said shoe insert conforming to the shape of said shoe.

4,130,949
FASTENING MEANS FOR SPORTS SHOES

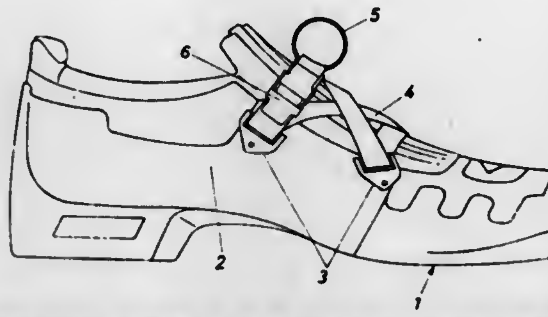
Sigurd Seidel, Graz, Austria, assignor to Skischuhfabrik Dynafit Gesellschaft, Graz, Austria

Filed Jan. 21, 1977, Ser. No. 760,993

Claims priority, application Austria, Jan. 22, 1976, 413/76

Int. Cl.² A43B *11/00;* A43C *1/00*

U.S. Cl. 36—50 **4 Claims**



1. Fastening means for a sports shoe, comprising a flexible lace, a plurality of buckles, a one-way clip, and mounting means for mounting each of said plurality of buckles to respective portions of an upper of a shoe at the points of reversal of the lace, said mounting means having axes generally perpendicular to the upper of the shoe and each of said plurality of buckles being pivotable about a respective one of said axes, each of said plurality of buckles being provided with a rotatably mounted roller having an axis generally parallel to the upper of the shoe for guiding the lace when said buckle is mounted on a sports shoe, said one-way clip having a frame member secured to one end of the lace and being provided with guide means for guiding the other end of the lace through said one-way clip so as to permit the same to move in a direction in which tension is applied to tighten the flexible lace, said guide means including releasable locking means for preventing an unintended return movement through said one-way clip of the guided end of the lace, said releasable locking means including a double-arm lever and a spring having one end bearing on said frame member and the other end bearing on one arm of the double-arm lever for biasing said one arm into locking engagement with said guided end of said lace.

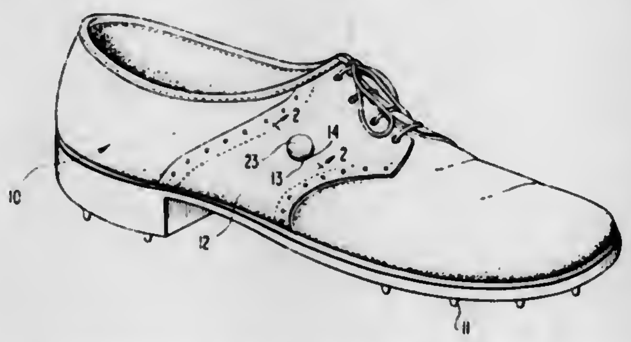
4,130,950
SHOE INCLUDING GOLF BALL POSITION MARKER

Lillian M. Bazzle, Williamsburg, and Marshall J. Staton, Hampton, both of Va., assignors to Lillian Mae Bazzle, Williamsburg, Va.

Continuation of Ser. No. 683,486, May 5, 1976, abandoned. This application May 3, 1977, Ser. No. 793,250

Int. Cl.² A63B *57/00*

U.S. Cl. 36—127 **5 Claims**



1. In combination a shoe, golf ball position marker, and magnet support incorporated in the shoe for releasably magnetically retaining the ball position marker in supported relation on the shoe, said shoe having a sole and an upper extending above the shoe sole providing a foot receiving cavity, the shoe upper including a first base layer, and a second outer layer which is in direct engagement with said first base layer to reinforce the base layer at the instep of the shoe, said golf ball

position marker being of magnetizable material capable of being attracted to and held by said magnet support, said magnet support being a magnet securely mounted in fixed relation in an opening in said second outer layer at a location overlying the outer side of the instep portion of the shoe for removably retaining the ball position marker by magnetic attraction forces and permitting said ball position marker to be removed from said shoe by sliding same sideways along said magnet to a position overlying said second outer layer whereby said marker may be easily grasped and removed in one single hand movement along the outer side of said shoe.

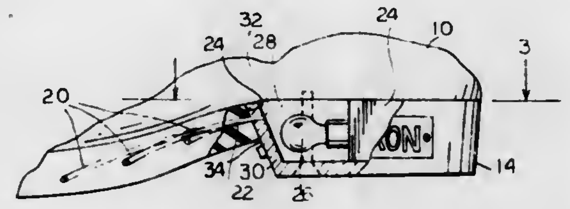
4,130,951
ILLUMINATED DANCING SHOES

Aaron Powell, P.O. Box 2331, Hollis, N.Y. 11423

Filed Sep. 9, 1977, Ser. No. 831,960

Int. Cl.² A43B *23/00*

U.S. Cl. 36—137 **9 Claims**



1. An illuminated shoe comprising, in combination

a heel having a cavity;

a source of light mounted in said cavity for furnishing light when energized;

energizing means connected to said source of light for furnishing electrical energy thereto;

a sole extending forwardly from said heel, said sole having an edge defining the outer perimeter thereof, said edge having at least one light emitting portion; and

at least one optical fiber embedded in said sole and having one end positioned to receive light from said source of light and a second end positioned near said light transmitting portion in said edge of said sole, whereby said light transmitting portion is illuminated when said source of light is energized.

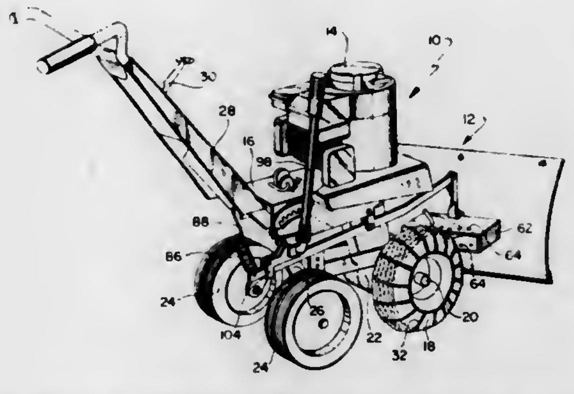
4,130,952
PLOW ATTACHMENT FOR ROTO-TILLER

Exsior Dion, 547 River Rd., Lincoln, R.I. 02865

Filed Sep. 23, 1977, Ser. No. 836,244

Int. Cl.² E01H *5/04;* A01B *65/06*

U.S. Cl. 37—41 **6 Claims**



1. A material pushing attachment for a roto-tiller having a frame, front mounted tines, rear guide wheels, and means for driving said front mounted tines including a gear housing downwardly extending from said frame between said front wheels, said attachment including a pair of front driving wheels adapted to replace said tines, a yoke in turn having a blade attached at the forward end thereof and including a pair of parallel rearwardly extending members positioned so as to straddle said gear housing and pivotally mounted at the rear ends thereof to opposed legs downwardly extending from said frame, a lift-lever having an intermediate section thereof connected to said frame for pivotal movement with respect thereto, the forward end of said lift lever extending above the forward end of said yoke and pivotally interconnected thereto, and combination adjustment and stop means for moving the rear end of said lift lever so as to raise and lower said blade, said adjustment and stop means mounted on said frame proximal the rear wheels and spring means for constantly urging said lever rear end upwardly against said stop mens so as to prevent upward travel of said blade when pushing material.

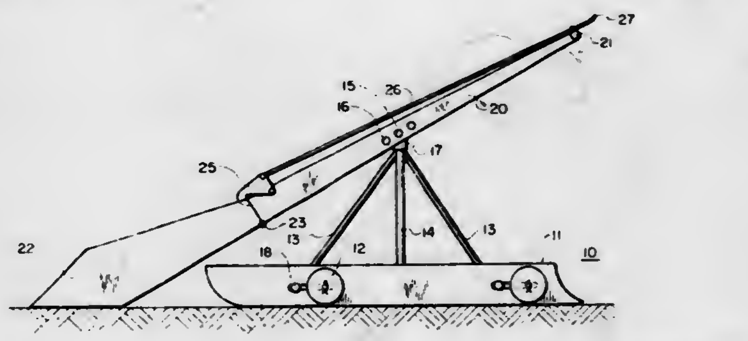
4,130,953
SNOW JACK

Anthony T. Bruno, 103 19th Ave., Belmar, N.J. 07719

Filed Dec. 19, 1977, Ser. No. 861,719

Int. Cl.² E01H *5/02*

U.S. Cl. 37—130 **4 Claims**



1. A manual device for removing snow comprising: a sled; a pedestal extending upwardly from the center portion of said sled; a lever arm; a handle at one end of said lever arm; a snow scoop at the other end of said lever arm; said snow scoop being coupled to the other end of said lever arm by a lower, horizontal hinge and an upper releasable catch; a release mechanism positioned adjacent to said handle; means for coupling said release mechanism to said releasable catch; means for coupling a first, horizontal pivoting mechanism to the center portion of said lever arm at the upper end of said pedestal; means for connecting a second, vertical pivoting means mecanism to said center portion of said lever arm at said upper end of said pedestal; and means for connecting said first horizontal pivoting mechanism and said second vertical pivoting mechanism to said pedestal to be supported thereby, whereby said snow scoop can be positioned in front of said sled, which can be moved forward until the scoop is full of snow, whereat the handle can be moved downwardly, to raise said scoop, and sidewardly to rotate said scoop to the side before actuating said release mechanism to drop said scoop load of snow.

4,130,954
IRON SELF-CLEAN VALVE ASSEMBLY

Wendell C. Walker, Alta Loma, Calif., assignor to General Electric Company, Bridgeport, Conn.

Filed Oct. 11, 1977, Ser. No. 840,918

Int. Cl.² D06F *75/06*

U.S. Cl. 38—77.83 **5 Claims**

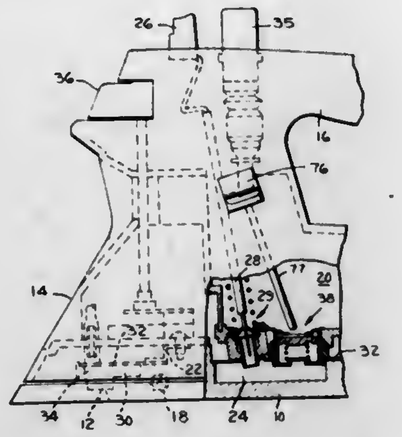
1. In a steam iron having a water tank, steam generating soleplate, a guided water valve movable between an on/off positon to direct water to the soleplate for steam generation, and a dumper valve in the tank bottom operable to suddenly empty the tank onto the soleplate to purge and clean the iron, the improvement in said dumper valve comprising,

a unitary assembly including, a flat smoothly continuous tubular member fixedly disposed with its upper end connected to the bottom of said tank and extending with its lower end towards the soleplate,

a second concentric smoothly continuous tubular member telescopically disposed in frictional fixed engagement with said first member to lock the two together,

radial inwardly directed flange means at one end of each of

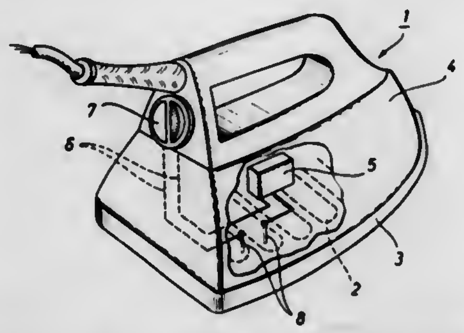
said tubular members and at opposite ends from each other,
said flanges defining reduced openings at the tubular upper and lower ends,
a vertically movable valve disc spanning the upper opening below its flange and peripherally spaced from said second tubular member, and



spring means disposed against the lower flange and against said valve disc biasing said disc closed,
whereby the dumper valve structure is an entire assembled subunit fixedly locked in the tank bottom with said disc movable to permit only straight flow through said tubular members to suddenly empty the iron.

4,130,955
PRESSING OR SMOOTHING IRON COMPRISING A SAFETY TURN-OFF MEANS LOCATED IN A HEATING CURRENT CIRCUIT

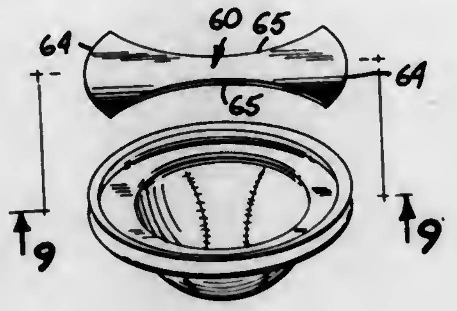
Erich R. Baumgartner, Tiroler Platz 4, and Peter Doehler, Kaulbachstrasse 59, both of Munich, Fed. Rep. of Germany
Filed Jun. 16, 1977, Ser. No. 807,272
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1976, 2627158
Int. Cl.^{2} D06F *75/02, 75/26;* **H05B** *1/02*
U.S. Cl. 38—82 **14 Claims**



1. A pressing iron containing a safety turn-off means located in a heating-current circuit thereof and comprising:
an acceleration sensor for producing a signal in response to a predetermined acceleration of said pressing iron, said acceleration sensor including a movable means located in a channel, for freely moving to a lowermost portion of said channel under the influence of gravity, a channel forming means for forming said channel to have a lowermost portion thereof when said pressing iron is in a pressing attitude, but being shaped so that, upon acceleration of said pressing iron said movable means is moved out of said lowermost portion;
a detecting means for detecting predetermined motion of said movable means out of said lowermost portion and producing a signal in response thereto; and,
an actuating means operative in response to a predetermined level of said signal for actuating said safety turn-off means.

4,130,956
BUTTON AND APPARATUS FOR FABRICATION THEREOF

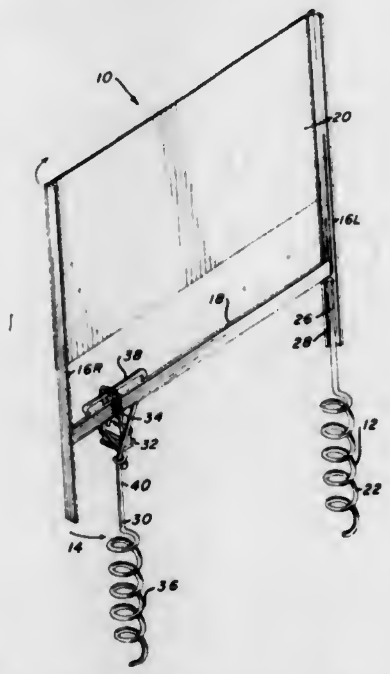
Albert W. Eddy, and Roger W. Lyngklip, both of Winona, Minn., assignors to Technigraph Corporation, Winona, Minn., by said Roger W. Lyngklip
Division of Ser. No. 528,787, Dec. 2, 1974, Pat. No. 3,997,052. This application Jun. 22, 1976, Ser. No. 698,749
Int. Cl.^{2} A44C *3/00*
U.S. Cl. 40—1.5 **4 Claims**



1. A button for ornamental or expressive purposes and suitable for fastening to an unbroken fabric surface, comprising:
(a) an outer shell having a front wall with an image forming surface thereon and a generally transversely extending sidewall portion defining an inwardly facing peripheral groove, one side of said groove being spaced from said front wall, said groove having a diameter defined by a distance across said shell at the bottom of said inwardly facing groove;
(b) an elongated resilient removable inner cross member having a longitudinal dimension greater than said diameter and opposed contact edges shaped to substantially conform to said groove;
(c) said cross member being connected to opposing sides of said shell with said contact edges engaging the surface of said groove, whereby said cross member may initially assume an outwardly bowed position when a layer of fabric is placed between said cross member and said shell, and be forced to an inwardly bowed fastening position through an over-center action.

4,130,957
THEFT-PROOF SIGN

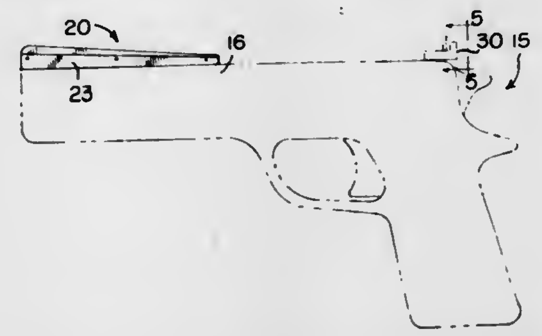
Marshall D. Hampton, 2125 S. Ammons, Lakewood, Colo. 80227
Filed Aug. 5, 1977, Ser. No. 822,132
Int. Cl.^{2} G09F *15/00*
U.S. Cl. 40—607 **5 Claims**



1. The theft-proof sign which comprises: a metal frame having a single corkscrew-shaped post for screwing same into the ground, laterally-extending means secured to said frame for rotation therewith extending beyond said post on at least one side thereof, a corkscrew-shaped stake adapted to be screwed into the ground in spaced relation alongside said post, and anchoring means detachably interconnecting said stake and frame effective to prevent sufficient rotation of either said stake or post to effect removal thereof from the ground.

4,130,958
GUN SIGHT

Jack E. Gutridge, 533 214th St., Dyer, Ind. 46311
Filed Apr. 27, 1977, Ser. No. 791,172
Int. Cl.^{2} F41G *1/02*
U.S. Cl. 42—1 S **5 Claims**

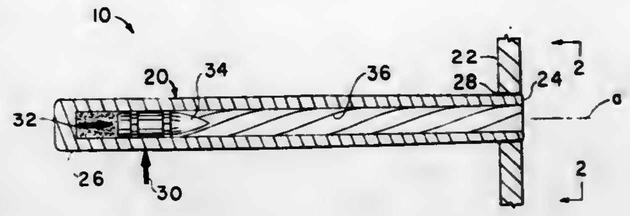


1. A sighting device for use on a gun permitting quick and accurate alignment and immediate firing of said gun at a target in a single continuous motion from a point well below eye level to a firing position at eye level, said gun having a barrel with a muzzle end, said sighting device comprising:
a rear sight mounted on the end of said gun opposite said muzzle end, said rear sight having an aperture forming a first sighting point;
an elongated front sight mounted on said barrel adjacent said muzzle end and extending a substantial distance toward said first sighting point, said front sight having a sighting tip of a first color disposed adjacent said muzzle end and forming a second sighting point of maximum height, said first and second sighting points being alignable to form a sighting plane along said barrel;
said front sight tapering uniformly from a maximum height at said sighting tip to a point of minimum height forming an elongated unobstructed tapered surface, said elongated tapered surface having a central surface strip of a second color adjacent outer surface strips of said first color, said central surface strip extending from said sighting tip to said point of minimum height, said first and second colors sharply contrasting to permit a user to quickly peripherally locate and continuously view said central strip and said sighting tip as said gun is raised from a position well below eye level to a firing position at eye level, thereby enabling the user to accurately align and fire said gun at said target without hesitation immediately as said gun reaches eye level.

4,130,959
FIRING TORQUE ERROR CONTROL SYSTEM FOR RIFLED ORDINANCE

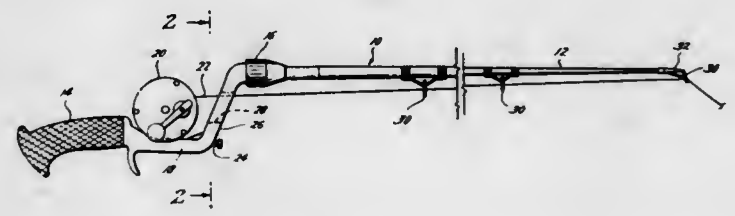
John S. Pedgonay, P.O. Box 127, Aberdeen, Md. 21001
Filed Jun. 15, 1978, Ser. No. 915,737
Int. Cl.^{2} F41C *21/00*
U.S. Cl. 42—75 B **4 Claims**

1. In a rifled barrel system for firing a projectile and having means for constraining the muzzle thereof and a characteristic torsional rigidity between muzzle and breech about the longitudinal axis thereof, the improvement comprising: the means for constraining said muzzle proportioned for constraining the muzzle against torsional movement about the longitudinal axis with a rigidity greater than said characteristic torsional rigidity of the rifled barrel, and means permitting said torsional movement of the rifled barrel otherwise than at said means for constraining, upon firing.



4,130,960
FISHING ROD AND HANDLE

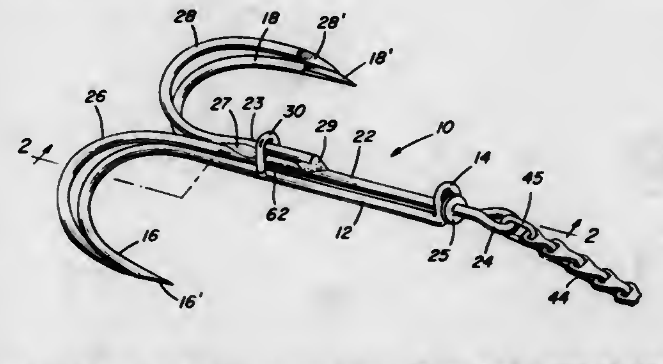
Carl E. Fontenot, Lake Charles, La., assignor to Bass Handler Products Co., Inc., Lake Charles, La.
Continuation-in-part of Ser. No. 635,578, Nov. 28, 1975, abandoned. This application Apr. 4, 1977, Ser. No. 783,992
Int. Cl.^{2} A01K *87/00, 87/04*
U.S. Cl. 43—18 R **6 Claims**



1. A fishing rod comprising,
a rod,
downwardly extending eyes secured to the rod and spaced below and along its length and adjacent its tip,
a handle having a lower portion and an integrally formed forward portion extending upwardly and forwardly from the lower portion,
means for securing a reel of fishing line to the lower portion, and
means for securing the rod to the upper end of the forward portion,
the forward portion including a pair of spaced legs providing an inverted, generally triangularly shaped opening with a rounded bottom and its altitude lengthwise extending therethrough below the rod in alignment with the eyes sufficient to allow the fishing line to extend therethrough without the fishing line rubbing sides of the opening in all fishing positions of the fishing line and rod.

4,130,961
FOLDING GRAPPLE FOR TRAPS

Herman I. Snow, 111 Davis Ave. North, Litchfield, Minn. 55355
Filed Feb. 11, 1977, Ser. No. 767,943
Int. Cl.^{2} A01M *23/00*
U.S. Cl. 43—96 **3 Claims**

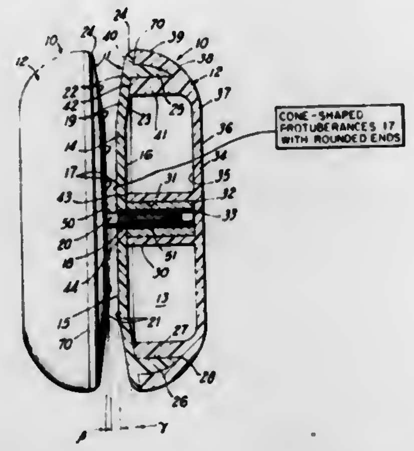


1. A folding grapple comprising, first and second anchor members each having an elongate shank and a pair of out-

wardly and oppositely extending hooks rigidly affixed on one end thereof, one of said anchor members having a pair of upstanding aligned eyes spaced along the length thereof, the shank of the other anchor member engaging through said eyes for lengthwise longitudinal sliding movement, 90° cam surface means extending along part of the length of the other anchor member shank and engaging through one of said eyes, the last-mentioned eye constituting a cam follower slidably engaging said cam surface means, whereby upon lengthwise relately movement of the other anchor member shank through said eyes, said other anchor member is rotated 90° between one condition in which the hooks on both anchor members are disposed in parallel planes and another condition in which the hooks lie in planes at right angles to one another.

4,130,962
SUPERIOR PERFORMANCE YO-YO

Thomas H. Ennis, Chamblee, Ga., assignor to Jack Russell Company, Inc., Key Biscayne, Fla.
Continuation of Ser. No. 522,333, Nov. 11, 1974, abandoned. This application Jul. 19, 1976, Ser. No. 706,753
Int. Cl.² A63H *27/12*
U.S. Cl. 46—61 **12 Claims**

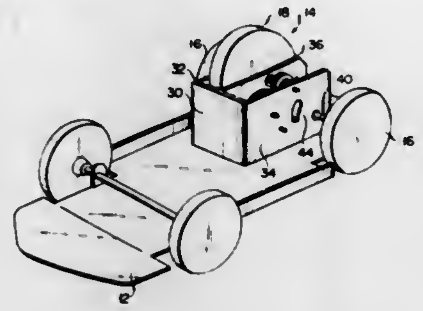


1. A Yo-Yo comprising an axle and a pair of opposed complementary body segments spaced apart by said axle, each of said segments including a circular inner shell, a circular outer shell and means non-rotatably joining them together to define a hollow interior, said shells being integrally molded of plastic, said means comprising intermeshing concentric rings at the peripheries of said shells, one shell of each of said segments having a first side wall and, as its portion of said concentric rings, two spaced rings protruding from said first side wall, the other shell of said each of said segments having a second side wall spaced from said first side wall and, as its portion of said concentric rings, a ring protruding from said second side wall and snuggly received and sandwiched between said two spaced rings, said concentric rings of said segments respectively forming the radially outer peripheries of said segments and forming a thickness, radially of such segments, in excess of the thickness of each side wall.

9. In a Yo-Yo having a pair of opposed complementary body segments spaced apart by an axle with each body segment including a pair of integrally molded plastic circular shells, the improvement comprising one of each pair of said circular shells having a pair of concentric rings adjacent the radially outer periphery thereof and the other of said shells having a ring fitted snugly between the pair of rings for non-rotatably joining together the shells of each segment and for weighting the segment periphery.

4,130,963
RUNNING TOY WITH A FLYWHEEL

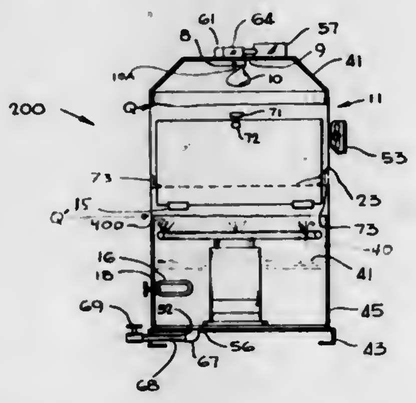
Yutaka Ohashi, Mibu, Japan, assignor to Tonka Corporation, Hopkins, Minn.
Filed Jun. 10, 1977, Ser. No. 805,511
Claims priority, application Japan, Jul. 13, 1976, 51-93510[U]; Feb. 28, 1977, 52-24264[U]
Int. Cl.² A63H *29/20*
U.S. Cl. 46—209 **10 Claims**



1. A running toy with a flywheel comprising a body, a base attached to said body, and a toy driving unit mounted on said base; said toy driving unit having a frame, at least one driving wheel, a flywheel, and a gear mechanism attached to said frame to couple said driving wheel and said flywheel, said gear mechanism forming a first transmission path with a first gear ratio to energize said flywheel so as to rotate said driving wheel at a first speed as compared to the flywheel when said driving wheel is driving said flywheel, and a second transmission path with a second gear ratio to rotate said driving wheel through said flywheel at a second speed as compared to the rotating speed of said flywheel when the driving wheel is driven by the flywheel, thereby rotatably driving said wheel at a speed different from that at time of energizing said flywheel.

4,130,964
APPARATUS AND METHOD FOR GROWING LEGUME SPROUTS

Edward A. Caballero, 1216 Spruce Ave., Chico, Calif. 95926
Continuation-in-part of Ser. No. 636,818, Dec. 1, 1975, abandoned. This application Apr. 15, 1977, Ser. No. 787,991
Int. Cl.² A01G *31/02*
U.S. Cl. 47—16 **12 Claims**



1. The method of growing legume sprouts which comprises:

a. providing a bed of seeds within a confined area of a growth chamber;

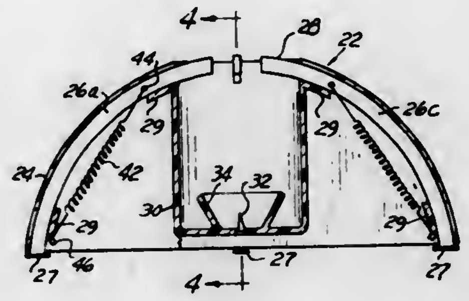
b. periodically introducing into said chamber a fine mist or fog of water above the seed bed, for a predetermined amount of time;

c. providing UV light in said growth chamber from the commencement of the germination cycle until the sprouts that germinate from seed are ready for harvest,

further including feeding the sprouts and seeds chelated minerals at least after each mist introduction has ceased wherein the feeding comprises impinging a solution of chelated minerals primarily upon the stems and leaves of the sprouts.

4,130,965
CHRISTMAS TREE HOLDER

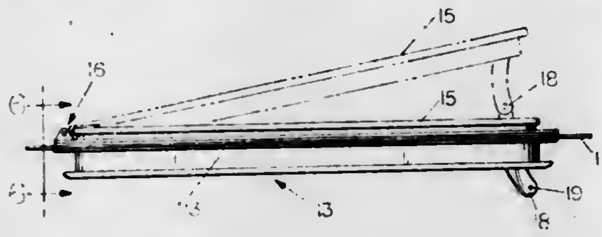
Roy D. Patton, 221 Heritage Pl., Morresville, N.C. 28115, and Frank P. Rietveld, 1314 Vickie Ln., Matthews, N.C. 28105
Filed Sep. 2, 1977, Ser. No. 830,098
Int. Cl.² A47G *33/12*
U.S. Cl. 47—40.5 **10 Claims**



1. A holder for a Christmas tree or the like comprising a base of generally hemispherical configuration; an opening formed centrally in the upper surface of said base; a plurality of arcuate channels at least three in number symmetrically disposed around the periphery of the base; a like arcuate configuration gripping leg slidably mounted in each of said channels, protruding from the bottom of the base and freely movable therethrough toward and away from the opening, a central reservoir with its upper end in communication with said opening for receiving the trunk of the tree and for applying a downward force to the base to provide a sliding movement of the several legs through their respective channels into gripping relationship with said tree trunk.

4,130,966
VENTILATOR HATCH ASSEMBLY

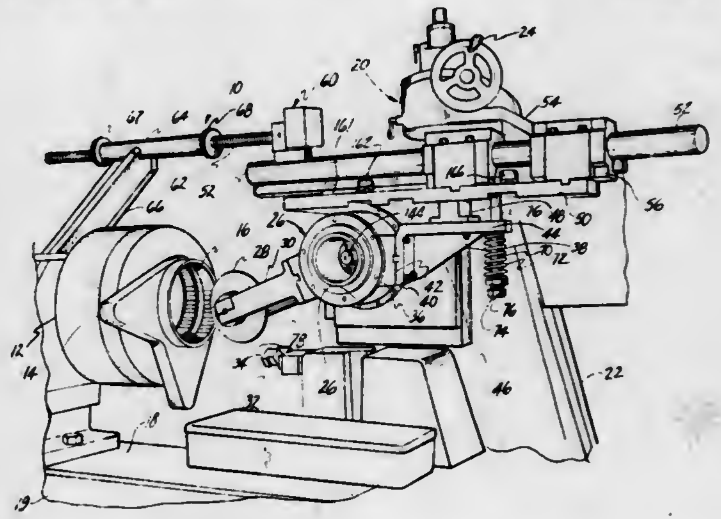
Anthony Kujawa, Jr., and Frank J. Kujawa, both of Toledo, Ohio, assignors to Production Research, Inc., Toledo, Ohio
Filed Jan. 27, 1977, Ser. No. 762,863
Int. Cl.² B50G *7/08*
U.S. Cl. 49—141 **20 Claims**



1. A ventilator hatch assembly for a hatch opening, comprising a frame member including a vertically disposed annular wall portion having a lower wall section and an upper wall section defining a central opening communicating with said hatch opening, said lower wall section being shaped to fit snugly within said hatch opening and said upper wall section providing a peripheral upstanding seat, a hatch member for said central opening, hinge means interconnecting adjacent edge portions of said hatch member and said frame member and accommodating hinged movements of said hatch member between alternative open and closed positions relative to said central opening, said open position of said hatch member being an inclined position overlying said hatch opening and intermediate said closed position and a fully opening position disposed in non-overlying relationship with said hatch opening, said hatch member defining an annular main frame possessing a generally T-shaped cross-sectional configuration defined by a laterally disposed annular upper rim and a depending wall section, said depending wall section being adapted to nest within said frame member and said annular upper rim being adapted to seat against said peripheral upstanding seat when said hatch member is in said closed position, said hinge means being disposed beneath the underside of said hatch opening and comprising a hinge pin carried by said depending wall section of said hatch member, said hinge pin having an axially elongated cylindrical shank portion projecting perpendicularly from said depending wall section towards said frame member, an elongated transverse pivot slot provided in said frame member and receiving said shank portion of said hinge pin therein, said pivot slot having a longitudinal axis disposed in normal relationship with said hatch opening to provide pivotal relative movements of the shank portion of said hinge pin within said pivot slot for accommodating hinged movements of said hatch member between said alternative open and closed positions, said pivot slot having a rim terminus providing a bearing surface firmly bearing against the shank portion of said hinge pin with sufficient force to urge the annular upper rim of said hatch member to firmly clamp against the peripherral upstanding seat of said frame member in tight sealing engagement, manually operable flip-action level means interconnecting said annular main frame of said hatch member and said frame member, said level means being responsive to manual manipulation to flip quickly between an alternative retracted position and an extended position corresponding to said closed and inclined open positions of said hatch member, said flip-action level means including fast response manual detachment means accommodating fast manual detachment of the interconnection thereof between said annular main frame of said hatch member and said frame member, whereby siad hatch member may be quickly positioned in a fully open non-overlying position relative to said hatch opening and thereby facilitate ingress and egress through said hatch opening.

4,130,967
PRECISION GEAR CROWN GRINDING MACHINE

Ray D. Easton, Madison Heights; Phil F. Jakobi, Grosse Pointe Woods, and Andrew L. Zabik, St. Clair Shores, all of Mich., assignors to BJR Machine & Gear, Madison Heights, Mich.
Filed Jun. 14, 1977, Ser. No. 806,357
Int. Cl.² B24B *53/06, 17/00*
U.S. Cl. 51—5 D **21 Claims**



1. A gear crowning machine comprising:

a machine base;

a work holder means adapted to mount a gear therein, said work holder means including an indexing head intermittently rotating said gear mounted therein through an angular displacement corresponding to the gear tooth pitch;

a wheel head frame mounted on said machine base for relative displacement towards and away from said work holder means;

a pivotal fixture and means mounting said pivotal fixture on said wheel head frame for pivoting rotation about an axis orthogonal to said longitudinal axis of said work holder means, said pivotal fixture including a first arm extending from said pivoting rotation axis and towards said work holder means;

a grinding wheel rotatably mounted on the free end of said first arm;

means for rotating said grinding wheel;

said pivotal fixture further including a second arm extending from said axis of pivotal rotation and cam actuation means drivingly engaging said second arm, said relative displacement of said work holder means and said wheel head frame causing constrained movement of said pivotal fixture to rotate about said means mounting said pivotal fixture on said wheel head frame;

whereby said grinding wheel periphery may be moved through an arcuate path during said relative displacement of said wheel head by said rotation of said pivotal fixture.

4,130,968

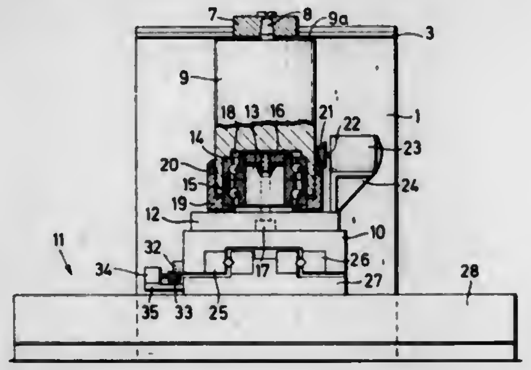
MECHANISM FOR CONTROLLING MOVEMENTS OF A TOOL

Alois Vogelsang, Karl Anton Srasse 3, Dusseldorf, Germany (D-4000)

Filed Mar. 14, 1977, Ser. No. 777,046

Int. Cl.^{2} B24B *17/00*

U.S. Cl. 51—100 R **8 Claims**



1. A mechanism for controlling movement of a tool mounted in a tool holder of a machine tool, the mechanism comprising a fixed template, a template follower which is pressed onto the the template and is housed at a distance from the tool holder, and means for electrically conveying to the tool holder separate information about the movement of the follower along each of a plurality of coordinates;

said follower being mounted on a cross-slide rest having two slides which are movable in a single plane perpendicularly to each other and said follower further being situated on another slide which is movable in a plane which is perpendicular to the first mentioned plane;

said tool holder being provided with a cross-slide rest having a plurality of slides which correspond to the slides of the cross-rest in which the follower is mounted, said tool holder slide being provided with a drive to enable the tool holder to perform movements, each of said tool holder slides being controllably coupled to a corresponding slide of the follower; and

said controllable coupling being effected by a toothed rack, a pinion engaging the said rack, and an electrical distance measuring device operably connected to the pinion, associated with each slide, the electrical distance measuring devices of associated slides being connected to each other and to the drive of the associated slide of the tool holder.

4,130,969

HANGING PRESTRESSED ROOF STRUCTURE

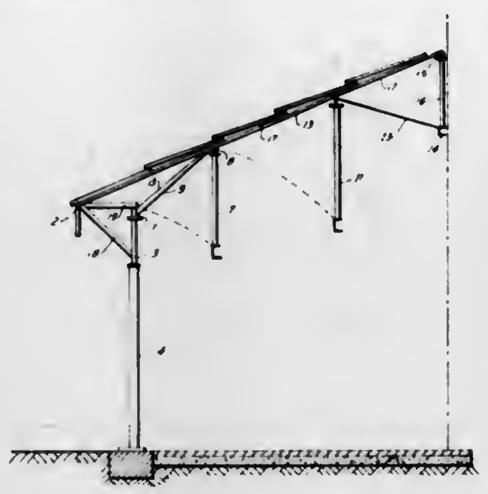
Ivan B. Ivanov, Pazardjik, Bulgaria, assignor to DSO "Montaji" — Promishleno Montajno Upravlenie, Plovdiv, Bulgaria

Filed Dec. 10, 1976, Ser. No. 749,334

Claims priority, application Romania, Dec. 11, 1975, 31755

Int. Cl.^{2} E04D *1/32*

U.S. Cl. 52—80 **4 Claims**



1. A hanging prestressed roof structure comprising a support ring spaced above the ground, a plurality of first cables forming a first cable net and spanning said ring along chords thereof said first cables having points of intersection spaced around the center of said ring, first posts secured at their bottoms to said first cables, a plurality of second cables spanning said ring along chords thereof forming a second cable net, said second cables being secured to the tops of said first posts, a plurality of second posts secured at their bottoms to said second cables, and an upright peak support connected at its top directly to said ring by further cables while being supported at its bottom from additional cables secured to the tops of at least some of said posts.

4,130,970

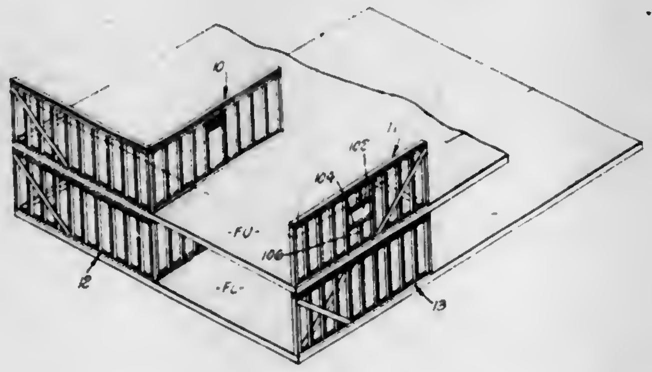
LOW COST HOUSING WALL STRUCTURE

Daniel K. Cable, Lakewood, Calif., assignor to Angeles Metal Trim Co., Los Angeles, Calif.

Continuation of Ser. No. 145,209, May 20, 1971, abandoned. This application May 29, 1973, Ser. No. 364,293

Int. Cl.^{2} E04H *1/04*

U.S. Cl. 52—236.3 **4 Claims**



1. In a multiple story housing structure having an upper story and a lower story, the combination in which said lower story has a load-bearing wall structure comprising a series of load-bearing studs secured vertically between a cap member

and a floor track member, said studs being composed of steel of about 20 gauge thickness; and

said top story has a load-bearing top wall structure comprising:

an elongated normally horizontal top cap member adapted to overlie the top of a series of metal studs, said top cap member forming the top of the top wall structure;

an upwardly facing metal top floor track member adapted to receive the lower ends of a series of metal studs, said top floor track member forming the bottom of said top wall structure;

a series of upstanding load-bearing top studs secured vertically between said top cap member and said top floor track member, said top studs being composed of steel of about 26 gauge thickness; and

a pair of wooden top plates secured one above the other to the top of said top cap member, the lower top plate being coextensive with the top cap member and the upper top plate being shorter than the top cap member; and

a pair of metal straps secured diagonally on opposite sides of the top wall section across a plurality of said top studs; and

a stud secured vertically at one end of said top wall section between said top cap member and said top floor track member to provide a corner stud for said top wall section.

4,130,971

SET OF STRUCTURAL ELEMENTS FOR PRODUCING CUPBOARD WALLS AND OTHER WALL UNITS

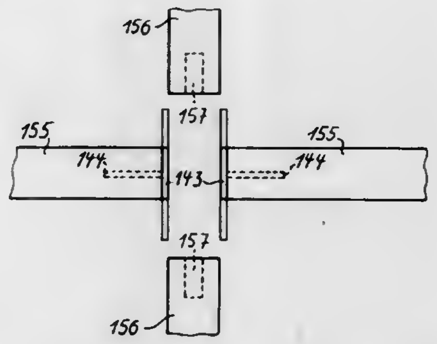
Willi Herrig, Konrad-Adenauer-Str. 16, 5450 Neuwied, Fed. Rep. of Germany

Filed Aug. 4, 1976, Ser. No. 711,484

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1975, 7524787[U]; Dec. 2, 1975, 2554113

Int. Cl.^{2} A47B *57/00;* F16B *5/07;* E04H *1/00*

U.S. Cl. 52—236.7 **3 Claims**



2. A kit comprising structural component elements including panels having edges of equal length, first elements each having a groove in one edge, said groove extending less than the length of said edge so that it does not extend through adjoining edges, second elements each having a strip fixed along one edge, said strip being wider than the thickness of the element between its ends with the wider portion shorter than the length of said edge and equal to the length of the grooves in said first elements, said grooves being twice as wide as the thickness of said strips, so that a first element with a groove along one edge may receive the wider portions of two strips on two second elements to connect said elements, with said groove and wide portions of said strips being confined within the adjoining edges of the first element.

4,130,972

PANEL FOR SOUNDPROOF AND FIREPROOF INNER WALLS

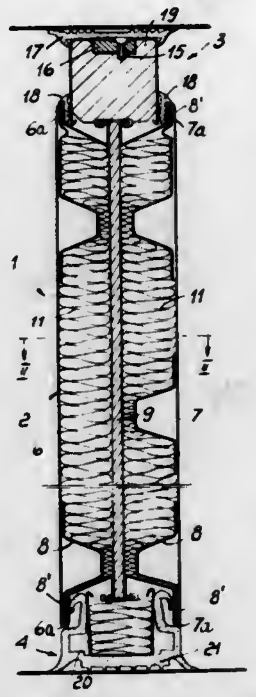
Giovanni Varlonga, Piazza della Repubblica, 7, Milano, Italy

Filed Jun. 13, 1977, Ser. No. 806,223

Claims priority, application Italy, Jun. 25, 1976, 24756 A/76

Int. Cl.^{2} E04B *2/58, 1/62*

U.S. Cl. 52—241 **7 Claims**



1. A panel for soundproof and fireproof inner walls, of a type comprising two parallel reinforcing metal plates mechanically interconnected to form an interspace therebetween and a filler of insulating material, constituted essentially of rock-wool like material in said interspace characterized in that it comprises at least one continuous diaphragm extending parallel to said reinforcing metal plates arranged in an intermediate position and dividing said filler into parallel layers, said diaphragm comprising a plate of solid refractory material and having projecting edges projecting from said filler and having a rim, said reinforcing metal plates having folded edges constituting section member like portions thereof, said projecting edges being in engagement with said folded edges of said metal plates, said folded edges having each a first portion thereof extending transverse to said diaphragm and said metal plates and a second portion extending from said first portion and arranged parallel and in abutting relationship to said projecting edge of said diaphragm and a flange portion extending from said second portion transverse to said projecting edge of said diaphragm and arranged substantially flush with said rim, an insulator member covering said flange portion and a clamp member connecting said flange portions on both sides of said projecting edge of said diaphragm through said insulator member thereby to avoid thermal contact between said folded edges on one side of said diaphragm and said folded edges on the other side of said diaphragm member.

4,130,973

BUILDING BLOCK

Stig O. S. Gustavsson, Linkoping, Sweden, assignor to Curt Holger Ingeström, Alvangen, Sweden

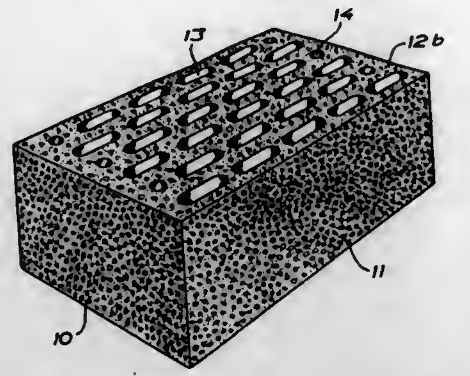
Filed Sep. 7, 1977, Ser. No. 831,184

Int. Cl.^{2} E04C *1/40, 1/06*

U.S. Cl. 52—309.17 **4 Claims**

1. An improved heat-insulated building block comprising:

a parallelepipedic body of cement-stabilized elastic granulate, said granulate being of a predetermined grade range for forming interstices, and wherein blind holes are formed extending into said body perpendicular from a surface thereof which is intended to be the lower side of the building block when in operative position, said holes being arranged in several rows each of which comprises a plurality of spaced holes; and



heat-insulating foam plastic material injected into said holes for filling said holes and for penetration into said formed interstices.

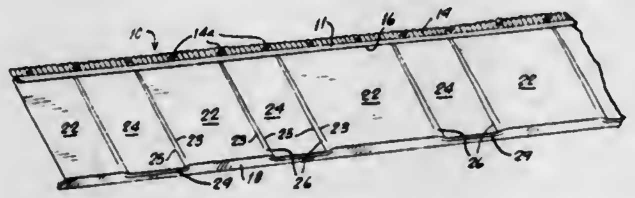
4,130,974
SIDING PANELS AND THE METHOD OF PRODUCTION

Alexander A. Chalmers, Warren; J. Lynn Galley, Newton Falls, and Carl A. Wollam, Cortland, all of Ohio, assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Feb. 16, 1977, Ser. No. 769,342

Int. Cl.^{2} E04D *3/30*

U.S. Cl. 52—531 **15 Claims**



8. A horizontally elongated ductile sheet siding panel having a major surface configuration simulating a row of wooden shingles, said panel including

(a) a longitudinal upper margin attachable to a wall in substantially flush relation thereto;

(b) a longitudinal lower margin bent inwardly to constitute a flange for supporting the lower part of the panel in outwardly spaced relation to a wall when said upper margin is attached to the wall; and

(c) a continuous web extending between the upper and lower margins over the full horizontal length of the panel and sloping downwardly and outwardly from said upper margin to said lower margin, said web having an outwardly facing major surface;

wherein the improvement comprises:

(d) said web comprising a plurality of raised shingle-simulating portions and a plurality of depressed shingle-simulating portions disposed in alternating relation along the length of the web, said raised and depressed portions having extended surfaces respectively lying in spaced parallel planes, each of said raised and depressed portions extending upwardly from the lower margin of the panel across substantially the full width of the panel, adjacent ones of said raised and depressed portions each being of sufficient width to simulate adjacent wooden shingles; and

(e) said web further comprising narrow, vertically oriented web portions extending obliquely between adjacent raised and depressed portions, each of said obliquely extending portions having a surface with a slope, relative to the surface planes of the raised and depressed portions, that increases progressively in an upward direction, and each of said obliquely extending portions tapering upwardly as viewed in projection in a plane parallel to the surface planes of the raised and depressed portions for producing an appearance of downward divergence of the surface planes of the adjacent raised and depressed portions respectively lying on opposite sides thereof.

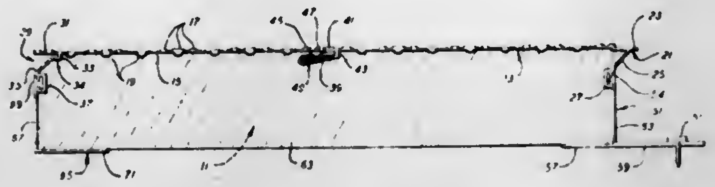
4,130,975
INSULATION PANEL

Jay R. Kelley, 2045 Etowah St., Tarrant, Ala. 35217

Filed May 16, 1977, Ser. No. 797,236

Int. Cl.^{2} E04C *1/10, 1/30*

U.S. Cl. 52—588 **13 Claims**



1. An insulation panel comprising:

(a) a first elongated extruded aluminum plate of a first width;

(b) a second extruded aluminum plate of equal length and second width;

(c) a channel formed at one longitudinal end of one of said plates, said channel being formed by a member extending from said panel and having a short portion extending inwardly essentially perpendicular to said panel at a distance from said one longitudinal end thereof, a portion extending from said perpendicular portion essentially parallel to the plane of said panel beyond said one longitudinal end thereof, the end of said portion bent in a radius to form a partially closed channel; and

(d) a matching projection at one longitudinal end of the other of said plates, said projection including a portion projecting inwardly essentially perpendicular to said other plate disposed at the longitudinal end of said plate and a second portion extending in both directions from said perpendicular portion essentially parallel to said plate so that when assembled said matching projection fills said channel and permits said channel to be pressed tightly about said projection, such that said plates are in abutting relationship over their length to thereby form a panel.

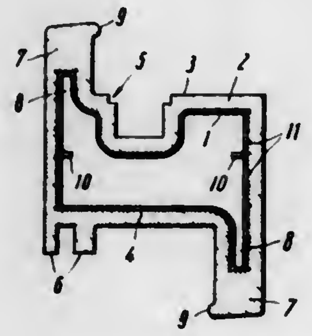
4,130,976
FRAME FOR DOORS, WINDOWS AND THE LIKE

Helmut Kesseler; Gerd L. Anstadt, both of Pirmasens, and Hermann Kiefer, Petersberg, all of Fed. Rep. of Germany, assignors to Gerbrüder Kömmerling Kunststoffwerke G.m.b.H., Pirmasens, Fed. Rep. of Germany

Filed Mar. 7, 1977, Ser. No. 774,690

Int. Cl.^{2} E04C *2/22*

U.S. Cl. 52—656 **18 Claims**



1. A frame element comprising in combination:

a hollow metal profile;

a synthetic resin coat on the outer surface of said hollow metal profile and having both a densified outer skin facing outwardly away from said hollow metal profile and a foamed portion having an expanded and cellular texture under said outer skin; and

means for bonding said hollow metal profile to said synthetic resin coat and for transmitting shearing load between the same.

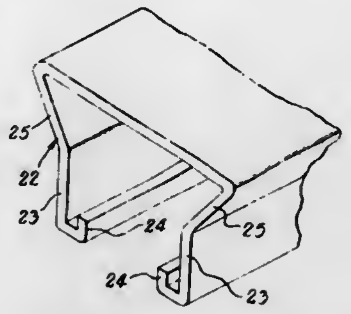
4,130,977
CONCRETE INSERT

William E. Taylor, Jr., Ridgewood, and Artin P. Moughalian, Highland Park, both of N.J., assignors to Versabar Corporation, Paterson, N.J.

Filed Jan. 10, 1977, Ser. No. 757,787

Int. Cl.^{2} E04B *1/38*

U.S. Cl. 52—710 **3 Claims**



1. A concrete insert, free from hooks, for anchoring and supporting anchor nuts for retaining various brackets and fittings such as used in a metal framing system with the insert embedded in concrete for its full depth and for either part or all of its entire length, said insert comprising:

an elongated metal channel member of uniform thickness having a flat back wall and side edges, the back wall extending for substantially the entire length of the insert, the uniform thickness of the channel member providing uniformity of load stress along the entire length of said channel member;

a pair of side walls integrally connected to the side edges of the back wall and projecting forwardly an equal distance to the front face of the channel member and terminating in flanges projecting towards each other formed parallel to and spaced from the back wall, said flanges being formed with lips projecting inwardly towards said back wall for supporting a loaded anchor nut without exerting a spreading stress on the channel side walls; and

said channel side walls being formed with two longitudinally extending half sections with the outer half sections being parallel to each other so that when the channel member is embedded in concrete with loaded anchor nuts supported therein no wedging stress is exerted on the concrete adjacent the open face of the channel, and with the inner half sections of the side walls flaring outwardly in the form of a wedge so as to anchor the channel member when embedded in concrete and so that any stress exerted on the concrete will be spaced inwardly from the front face of the channel member when the channel member is thus embedded with loaded anchor nuts supported therein.

4,130,978
METHOD OF ASSEMBLING DISPOSABLE PIPETTE TIPS FOR SHIPMENT TO USERS THEREOF

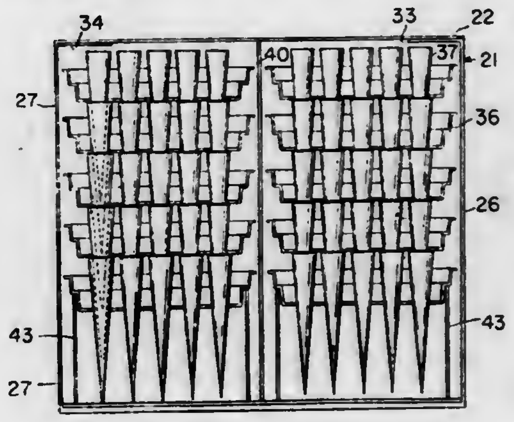
Jules B. Cohen, Bayside, N.Y., assignor to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.

Continuation of Ser. No. 631,185, Nov. 12, 1975, abandoned, which is a division of Ser. No. 154,143, Jun. 17, 1971, Pat. No. 3,937,322. This application Feb. 25, 1977, Ser. No. 772,312

Int. Cl.^{2} B65B *5/10*

U.S. Cl. 53—444 **1 Claim**

1. The method of assembling disposable pipette tips in a multi-layered package from which a user can mount a tip on a pipette without manual handling of the tip, which method comprises the steps of providing a plurality of tips of the type having a generally conical shape with abutment means on the exterior surface of the tip, providing a first tray having a plurality of apertures therein each of which has a diameter slightly greater than the diameter of a tip at a point immediately below the tip abutment means, placing a plurality of pipette tips on said first tray so that each pipette tip is supported on the tray only by the tip abutment means and projects loosely through an aperture of the tray, providing support means having a height greater than the length of that portion of a disposable tip projecting through said first tray to support the periphery of said first tray so that a user of said tips can insert a pipette into a tip and apply a downward force on the pipette so as to wedge the tip onto the pipette without wedging the tip into the aperture through which it projects whereby the tip is secured to the pipette and by lifting the pipette can be removed from the tray, providing a second tray similar to said first tray with a plurality of pipette tips each supported thereon only by the tip abutment means so that a portion of each tip projects loosely through an aperture of said second tray, placing said second tray of pipette tips atop said first tray of pipette tips such that said second tray is supported by the pipette tips supported by said first tray and the pipette tips supported by said second tray project loosely into the pipette tips supported by said first tray whereby the pipette tips supported on said second tray can be removed from said second tray by inserting a pipette into the tip and applying a downward force on the pipette so as to wedge the tip onto the pipette without wedging the tip into the aperture through which it projects or into the tip into which it loosely projects, and providing means to retain said tips in their trays during shipment.



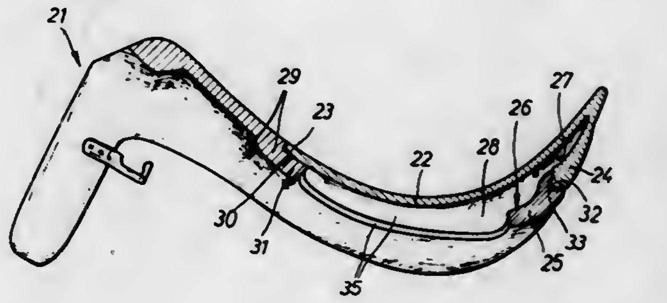
4,130,979
SADDLE TREE FOR RIDING SADDLES

Lorenz Bischeltsrieder, Fürstenfeldbruck, Germany, assignor to Stübben GmbH, Riding Equipment, Stans, Switzerland

Continuation-in-part of Ser. No. 555,194, Mar. 4, 1975, Pat. No. 4,004,402. This application Jan. 21, 1977, Ser. No. 761,010

Int. Cl.^{2} B68C *1/00*

U.S. Cl. 54—44 **8 Claims**



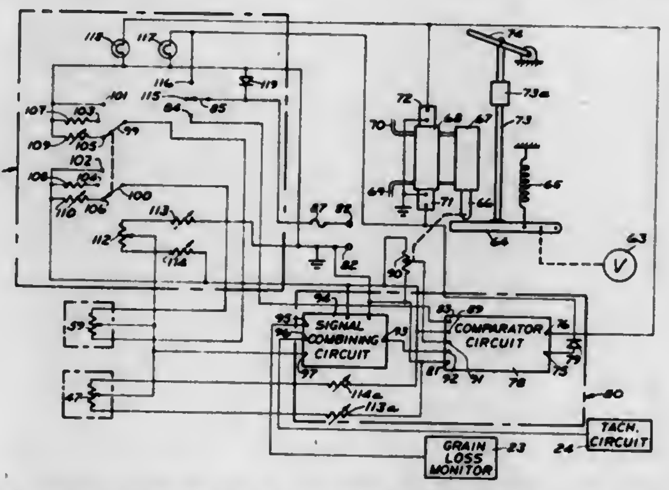
1. A saddle tree which comprises a rigid, front saddle tree member having a neck with points depending therefrom, a waist extending rearwardly from said neck, and mounting means adapted to receive cantles of different lengths and widths so that saddle trees of different sizes can be made using identical front saddle tree members, said mounting means comprising a recess in the upper surface of said front saddle tree member for locating a cantle relative to said front saddle tree member; a separate cantle member seated in said recess, said cantle member having a lower surface portion configured

to match said recess and thereby position said cantle member relative to said front saddle member; and means fixing said cantle member to said front saddle tree member, said cantle member being of thin-wall configuration and fabricated of a resilient material and, further, being fixed only at the front and rear portions thereof to said rigid, front saddle tree member and otherwise being spaced from said front saddle tree member so that it can elastically yield in a downward direction into the space between it and said rigid, front saddle tree member.

4,130,980
COMBINE AUTOMATIC TRAVEL CONTROL SYSTEM

Randolph G. Fardal, Westmont, and Calvin P. Rickerd, La Grange Park, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 6, 1977, Ser. No. 757,406
Int. Cl.² A01D *41/02*
U.S. Cl. 56—10.2 **22 Claims**

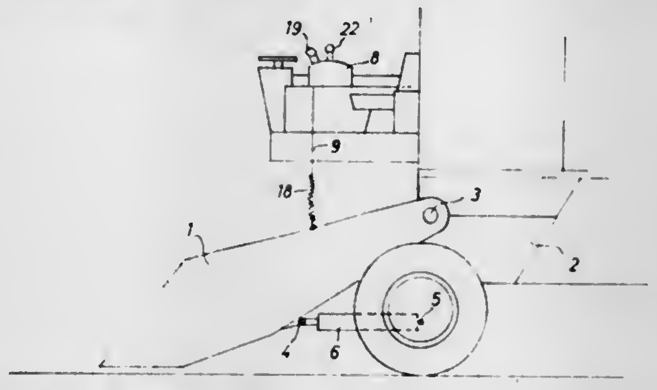


1. A control system for a combine including an engine, drive wheels, a transmission for driving said drive wheels from said engine, said transmission having a variable drive ratio, crop cutting, conveying and separator means, and means for driving said crop cutting, conveying and separator means from said engine, said control system comprising: a movable control element for controlling said variable drive ratio of said transmission to control the speed of travel of the combine, electrically controllable actuator means for said control element, a comparator circuit including amplifier means for controlling said actuator means, said comparator circuit having first and second inputs and being operative through said actuator means, control element and transmission to cause the forward speed of travel of the combine to be reduced when a signal applied to said first input is changed in one direction relative to a signal applied to said second input and to cause the forward speed of travel of the combine to be increased when a signal applied to said first input is changed in an opposite direction relative to a signal applied to said second input, first and second transducer means for developing first and second signals respectively varying as first and second proportional functions of first and second variables, adjustable electrical component means for adjusting one of said first and second proportional functions relative to the other of said first and second proportional functions, one of said variables being the power applied from said engine to said cutting, conveying and separator means and the other of said variables being said variable drive ratio of said transmission, and means for applying said first and second signals from said first and second transducer means to said first and second inputs of said comparator circuit with said first and second signals being applied in directions as to be brought into balanced relationship when the position of said control element and the corresponding speed of travel of the combine correspond to the power applied from said engine to said cutting, conveying and separator means in accordance with a certain function determined by the relation between said first and second proportional functions, said comparator circuit being operative through said actuator means, control element and transmission to cause operation of the combine at a uniform forward speed when said first and second signals are in said balanced relationship and being operative through said actuator means to change the position of said control element in response to a substantial change in the power applied from said engine to said cutting, conveying and separator means.

4,130,981
CONTROL SYSTEM AND METHOD FOR COMBINE HARVESTERS

Gustav Schumacher, II, and Gunter Schumacher, both of 5231 Eichelhardt, Westerwald, Fed. Rep. of Germany

Filed Jun. 22, 1976, Ser. No. 698,762
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1975, 2529160
Int. Cl.² A01D *67/00*
U.S. Cl. 56—208 **18 Claims**



1. In a harvester, such as a combine harvester, a chassis, a cutter mechanism carried by said chassis to be raised and lowered with respect thereto so as to have its elevation with respect to the ground regulated, and hydraulic means connected between said chassis and cutter mechanism for raising and lowering the latter, a control system for controlling the raising and lowering of the cutter mechanism, said control system comprising a pair of series-connected spring means and a cable operatively connected thereto, said spring means and cable connecting said cutter mechanism to said chassis, and manually operable lever means operatively connected with at least one of said spring means for controlling the force thereof, raise valve means and lower valve means operatively connected with said hydraulic means for controlling the latter to raise or lower the cutter mechanism, and switch means connected between said pair of spring means and operatively connected with said raise or lower valve means for actuating one or the other thereof for bringing about raising or lowering of the cutter mechanism, said switch means also having a neutral position where neither of said valve means is actuated, said lever means being operatively connected with said chassis for movement with respect thereto and both of said spring means being operatively connected through said cable with said lever means to be adjusted

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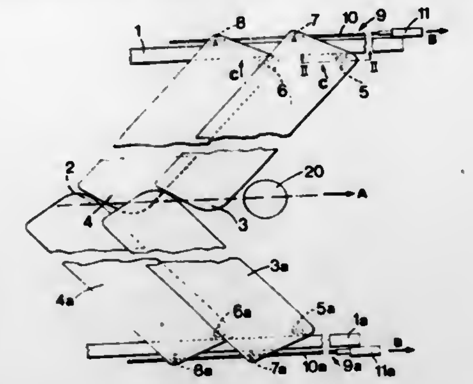
4,130,982
FRUIT HARVESTING MACHINE

Roger Clary, Loudun, France, assignor to Howard Machinery Limited, Bury St. Edmunds, England

Filed May 16, 1977, Ser. No. 796,988
Claims priority, application France, May 19, 1976, 76 15106
Int. Cl.² A01D *46/00*
U.S. Cl. 56—330 **5 Claims**

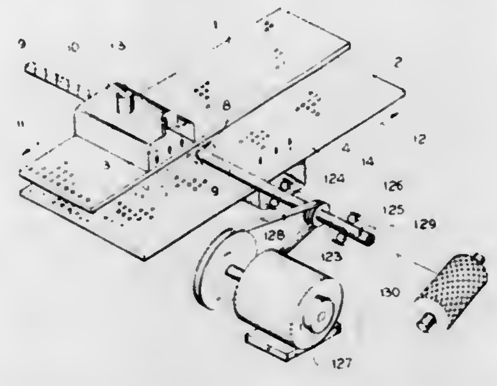
1. A fruit harvesting machine comprising a mobile frame including longitudinal frame members located symmetrically and to either side of the central longtiudinal axis of the frame, two groups of base plate members each group extending from one of the frame members towards said axis and each plate member being pivotally attached at one end to a frame member so that the free end is movable away from said axis, and resilient pivot means for each plate member biasing the free ends of the plate members towards said axis, the resilient pivot means being in the form of an external sleeve fixed to the associated frame member, an internal sleeve attached to said one end of each plate member, and a resilient sleeve between the internal and external sleeves and pre-stressed to urge the internal sleeve to rotate relative to the external sleeve, the plate members forming a receiving surface for fruit dislodged by the machine, and the arrangement enabling the plate members to be displaced to allow the passage of fruit bearing plants or bushes between the frame members during forward movement of the machine.



4,130,983
YARN SPINNING APPARATUS AND PROCESS

Peter Dammann; Heinz Schippers; Herbert Turk, all of Remscheid, and Herbert Schiminski, Huckeswagen, all of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid-Lennep, Germany

Filed Mar. 28, 1977, Ser. No. 782,310
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1976, 2613263
Int. Cl.² D01H *1/12;* D02G *3/36, 3/38*
U.S. Cl. 57—5 **54 Claims**



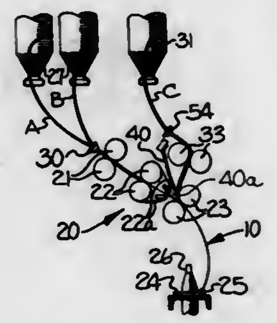
1. A process for spinning fibers to form a yarn which comprises rotating a body of discrete fibers in a yarn forming zone in a space between two adjacent air permeable surfaces moving in substantially opposite directions across the yarn forming zone, while passing respective currents of air through different segments of said space separated by and on opposite sides of the yarn being formed in said yarn forming zone, the respective currents of air flowing through said space in substantially opposite directions with the vectors of movement of said moving surfaces and the vectors of movement of said currents of air respectively on said opposite sides of the yarn being formed and being the same as the direction of rotation of the yarn which is being formed and also collectively encircling said yarn which is being formed.

13. Apparatus for production of yarns from discrete fibers which comprises two, spaced, air permeable surfaces moving in opposite directions on opposite sides of a yarn producing zone situated in a narrow space between said surfaces, first and second air suction means each respectively embodying an air entry opening extending longitudinally adjacent said yarn producing zone on the respective sides of said moving surfaces which are remote from said zone for drawing respective currents of air through said moving surfaces, each of said air entry openings being positioned relative to said yarn producing zone to draw substantially all of its current of air through its respective moving surface in the area thereof immediately preceding the yarn producing zone, as viewed in the direction of movement of its respective moving surface, and feed means for feeding discrete fibers between said surfaces in the vicinity of said yarn forming zone.

4,130,984
METHOD AND APPARATUS FOR MAKING NOVELTY YARN

John W. Lambert, Jr., Spartanburg, S.C., assignor to Tuscarora Cotton Mill, Mount Pleasant, N.C.

Continuation-in-part of Ser. No. 629,019, Nov. 5, 1975, Pat. No. 4,041,690. This application Jul. 5, 1977, Ser. No. 812,784
The portion of the term of this patent subsequent to Aug. 16, 1994, has been disclaimed.
Int. Cl.² D02G *3/34, 3/36*
U.S. Cl. 57—12 **22 Claims**



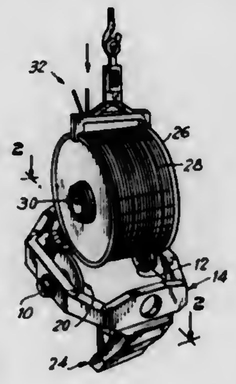
1. A method of making a novelty yarn, having relatively short varying length and varying size auxiliary strands randomly distributed therealong, on a spinning frame having a series of spaced pairs of rotatable drafting elements defining a drafting zone and wherein the pairs of drafting elements include a pair of delivery rolls, said method comprising advancing at least one strand of staple fibers into and through the drafting zone while continuously forming therefrom a ground strand of drafted staple fibers emerging from the delivery rolls, feeding an auxiliary strand of staple fibers through the nip of a pair of auxiliary feed rolls and to the nip of the delivery rolls, while rotating the auxiliary feed rolls at a slower effective speed than the effective speed of the delivery rolls so as to effect a random parting of the auxiliary strand and thereby form relatively short varying length auxiliary strands randomly distributed along the ground strand, while also shielding the auxiliary strand from contacting the rotatable drafting elements immediately behind the delivery rolls during the travel of the auxiliary strand to the delivery rolls to thereby prevent the auxiliary strand from being misdirected rearwardly away from the delivery rolls, and twisting the ground strand and the randomly distributed auxiliary strands as they emerge from the delivery rolls to arrange the auxiliary strands spirally around the ground strand and form a novelty yarn therefrom.

11. In a spinning frame for making novelty yarn and having means defining a drafting zone for drafting therethrough at least one strand of staple fibers to form a ground strand therefrom, said means comprising a series of spaced pairs of rotatable drafting elements including a pair of driven cooperating delivery rolls, and twisting means cooperating with said drafting elements for imparting twist to the ground strand as it emerges from said delivery rolls; the combination therewith of a pair of auxiliary feed rolls adjacent said delivery rolls and being adapted to feed an auxiliary strand of staple fibers to the nip of the delivery rolls, means for driving said auxiliary feed rolls at a slower effective speed than the effective speed of said delivery rolls such as to effect a random pulling apart of the auxiliary strand in its travel between the auxiliary feed rolls and the delivery rolls and to thereby form relatively short varying length auxiliary strands for being distributed along the ground strand and spirally twisted around the ground strand by said twisting means for making the novelty yarn therefrom,

and shielding means adjacent said drafting zone and being so positioned as to shield the auxiliary strand from contacting the rotating drafting elements immediately behind the delivery rolls during the travel of the auxiliary strand to the delivery rolls to prevent the auxiliary strand from being misdirected rearwardly away from the delivery rolls.

4,130,985
REEL CARRYING SYSTEM FAIL-SAFE LOCKING DEVICE

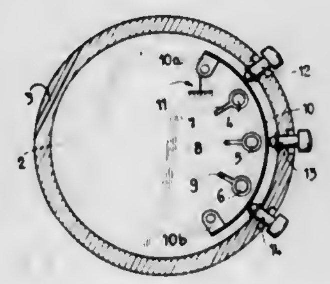
Joseph A. Varga, Toronto, Canada, assignor to Ceeco Machinery Manufacturing Limited, Concord, Canada
Continuation-in-part of Ser. No. 774,587, Mar. 7, 1977, Pat. No. 4,079,580. This application Feb. 16, 1978, Ser. No. 878,339
Int. Cl.² D07B ***7/06, 3/02***
U.S. Cl. 57—127.5 **53 Claims**



1. A fail-safe locking device for reel-carrying systems, comprising an actuatable member mounted on a support member for slidable movement relative thereto along an axis; reel engaging means mounted on said actuatable member for sharing the axial movements thereof between reel engaging and disengaging positions; biasing means for urging said actuatable member to one of said positions; locking means cooperating with the support member and movable between locking and releasing positions for permitting movement of said actuatable member from said one to another of said positions only in the releasing position of said locking means; and fluid pressure means for moving said locking means to said releasing position only upon application of fluid medium under pressure with attendant movement of said actuatable member to said other of said positions, said locking means being arranged to directly cooperate and block the movement of said actuatable member to the other of said positions in the locking position of said locking means to thereby provide fail-safe operation during reel engagement independently of the fluid medium pressure provided by said fluid pressure means.

4,130,986
ELECTRONIC WATCH, ESPECIALLY ELECTRO-OPTIC DISPLAY WATCH

Gilbert Ramet, Cheseaux-Noreaz, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland
Filed Jun. 22, 1977, Ser. No. 808,918
Claims priority, application Switzerland, Jul. 8, 1976, 8760/76
Int. Cl.² G04C ***3/00***
U.S. Cl. 58—23 R **3 Claims**

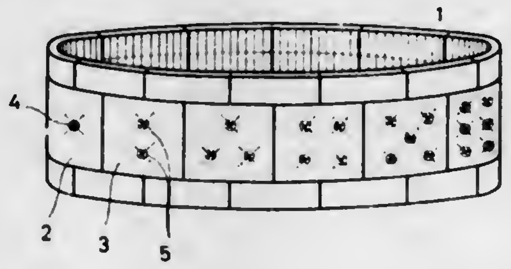


1. An electronic watch of the type having an electro-optic display and several control functions, each function adapted to be activated upon coupling a corresponding control circuit to ground, said watch comprising:

a case including a frame for a movement and at least one wall, a resilient contact blade and means for mechanically securing said blade substantially at each end thereof to said frame and coupled electrically to ground, to provide an unrestrained generally arcuately shaped intermediate portion, at least two control push-buttons mounted on said wall adjacent to and abutted with a first side of said intermediate blade portion, at least two contact studs mounted spaced from a second opposite side of said intermediate blade portion and each connected electrically to respective control circuits, said control push-buttons adapted to be manually moved to elastically deform part of said intermediate blade portion to move said part into contact with at least one of said studs to activate said corresponding control circuit while a second part of said intermediate blade portion is elastically deformed away from said studs.

4,130,987
TIMEPIECE

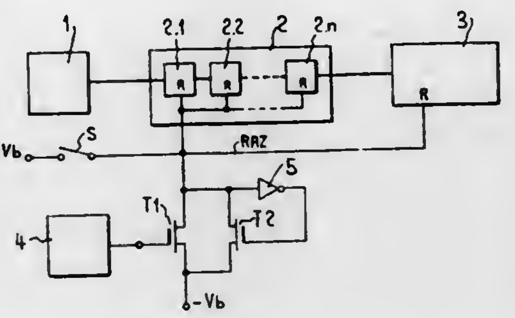
Willi Schickedanz, Langener Strasse 70, 605 Offenbach am Main, Fed. Rep. of Germany
Filed May 26, 1976, Ser. No. 689,645
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1975, 2525694
Int. Cl.² G04B ***19/34***
U.S. Cl. 58—50 R **28 Claims**



1. A timepiece comprising means for generating time standards, including an oscillator for producing a high frequency time standard signal; means for converting said time standards into different time unit pulses, including a pulse shaping device and circuit means for dividing said high frequency time standard signal into different time unit pulses; and time displaying means connected to said converting means and being capable of changing their light emitting states in correspondence to said time unit pulses; a plurality of shift registers connected to the time displaying means, said circuit means being connected to one out of said plurality of shift registers, whereby during the supply of one of said time displaying means those time displaying means which had been supplied before are switched off, and further including an AND-gate connected between a shift element of one of said plurality of shift registers and the corresponding time displaying means, the first input of said AND-gate being connected to the output of said shift element and the second input of said AND-gate being connected to the output of the following shift element via an inverting gate.

4,130,988
ELECTRONIC CIRCUIT FOR ELECTRONIC WATCH

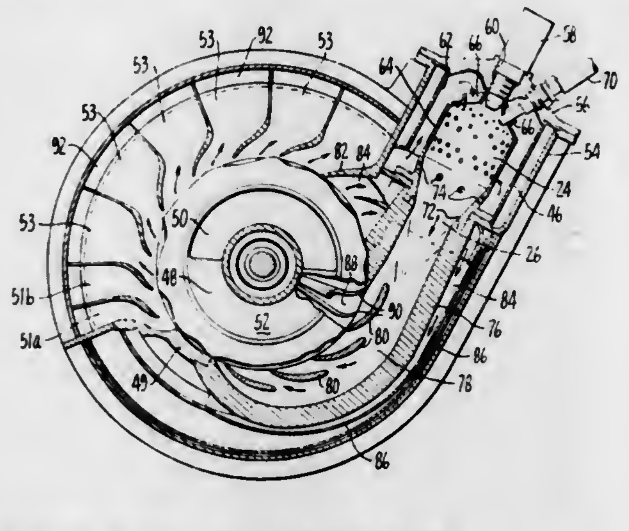
Igor Scherrer, Colombier; Jean-Claude Berney, Lausanne, and Jean-Claude Robert-Grandpierre, Colombier, all of Switzerland, assignors to Ebauches S.A., Neuchatel, Switzerland
Filed May 17, 1977, Ser. No. 797,681
Claims priority, application Switzerland, May 25, 1976, 6559/76; Mar. 22, 1977, 3561/77
Int. Cl.² G04C ***17/00***
U.S. Cl. 58—85.5 **6 Claims**



1. In an electronic watch having a power supply means, a quartz oscillator, frequency divider means comprising flip-flops, and display means for displaying time information, at least some of the said flip-flops being connected to a common line and arranged in such a way that a signal applied to said common line places said flip-flops in a predetermined state, the improvement comprising a circuit for permitting stopping of said watch in a state of minimum consumption including a switch means, one of the terminals of which is connected to a first terminal of the supply and the other terminal to the common line, and first and second MOS transistors having their sources connected to the second supply terminal and their drains to the common line, the gate of the first of these transistors being connected to means for enabling it to be conducting at least periodically, and the gate of the second of these transistors being connected to the common line via an inverter.

4,130,989
AUTOMOTIVE TURBINE ENGINE

Richard E. Wirth, 1574 Melba Ct., Mountain View, Calif. 94040, and Manfred N. Wirth, 1021 Heatherstone Way, Sunnyvale, Calif. 94087
Continuation of Ser. No. 415,331, Nov. 13, 1973, abandoned, which is a division of Ser. No. 90,192, Nov. 19, 1970, Pat. No. 3,771,312. This application Aug. 31, 1977, Ser. No. 829,258
Int. Cl.² F02C ***7/00, 7/08***
U.S. Cl. 60—39.52 **1 Claim**

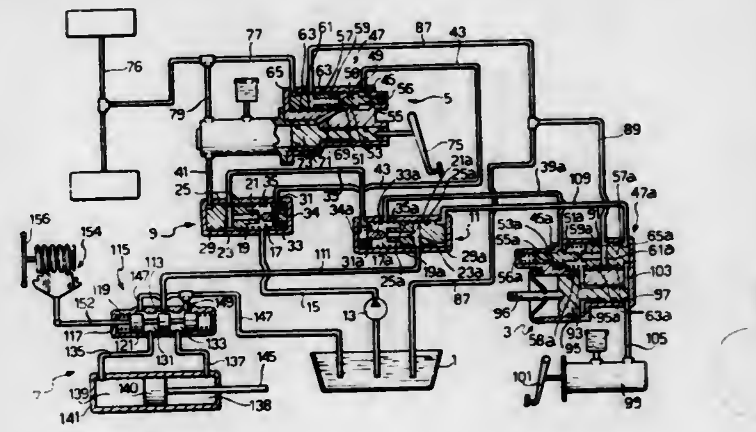


1. In a gas turbine, the combination of

(a) a mixing wheel comprising a radial flow centrifugal impeller;
(b) a combustion chamber adjacent the periphery of said mixing wheel.
(c) said mixing wheel having an annular inlet on one face thereof to receive compressed air,
(d) means including a first fixed opening controlling said annular inlet to admit compressed air to the mixing wheel for only a first arcuate portion of the wheel's rotational travel.
(e) means including a second fixed opening for communicating the exhaust of said combustion chamber with the periphery of said mixing wheel for only a second arcuate portion of the wheel's rotational travel so as to conduct the gases from the combustion chamber to said mixing wheel,
(f) means closing off said annular inlet and the periphery of said mixing wheel for only a third arcuate portion of the wheel's rotational travel wherein said compressed air and combustion gases are mixed in the mixing wheel under constant volume, and
(g) mixture exit means occupying only a forth arcuate portion of the wheel's rotational travel.

4,130,990
HYDRAULIC SYSTEM FOR FEEDING A PLURALITY OF INDEPENDENT HYDRAULIC SERVO-OPERATED DEVICES

Giuseppe Amedei; Enrico Rivetti, both of Turin, and Antonino Bertone, Sant'Antonino, all of Italy, assignors to FIAT Societa per Azioni, Turin, Italy
Filed Jul. 15, 1977, Ser. No. 816,070
Claims priority, application Italy, Jul. 20, 1976, 68810 A/76
Int. Cl.² F16D ***31/00***
U.S. Cl. 60—422 **2 Claims**

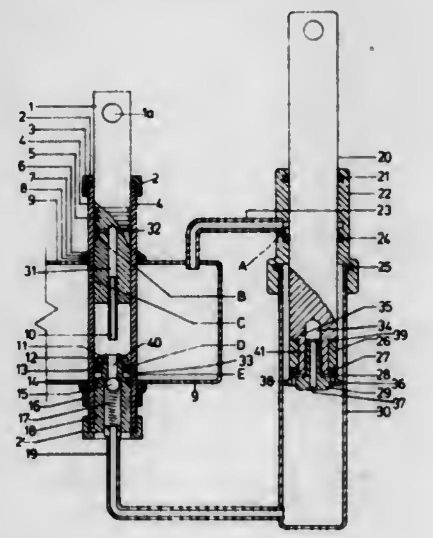


1. In a hydraulic system for feeding a plurality of independent hydraulic servo-operated devices, of the type comprising:

a volumetric pump,
a reservoir of hydraulic fluid,
first and second distributor devices, one associated with a servo-operated brake actuator and the other associated with a servo-operated clutch actuator, and each having a control chamber separated by a valve shutter from a pressure distribution chamber,
a third distributor device associated with a servo-operated steering actuator and having an outlet connected to said reservoir, which outlet is open when said steering servo is not operating,
the improvement comprising:
first and second modulating valves for directing hydraulic fluid from said volumetric pump to said first, second and third distributor devices, each of said first and second modulating valves comprising:
a cylinder,
a piston within said cylinder separating it into first and second chambers,
means defining a transverse passageway in said piston,
means defining an axial passageway in said piston communicating at one end with said first chamber of the modulating valve and at the other end with said transverse passageway in said piston,

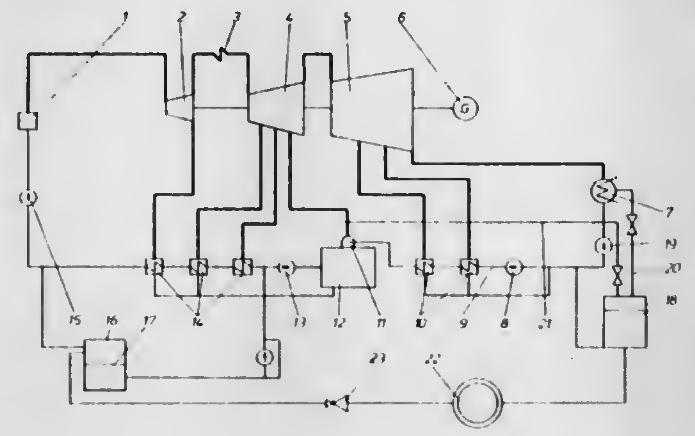
means defining an opening in the cylinder wall, said transverse passageway in said piston communicating, in all positions of said piston with said opening,
two sealing rings on said piston sealing said transverse passageway in said piston from said first and second chambers of said cylinder, and
a valve shutter element resiliently mounted in said first chamber of said modulating valve and cooperating with the mouth of said axial passageway of said piston whereby to restrict the flow of fluid through said axial passage when said piston is displaced towards said valve element without completely closing said axial passage,
first conduit means connecting said first chamber of said first modulating valve to said volumetric pump,
second conduit means connecting said first chamber of said first modulating valve to said control chamber of said first distributor device,
third conduit means connecting said first chamber of said second modulating valve to said control chamber of said second distributor device,
fourth conduit means communicating with said transverse passage in said piston of said first modulating valve being connected to said first chamber of said second modulating valve,
fifth conduit means communicating with said transverse passageway in said piston of said second modulating valve being connected to said third distributor device,
sixth conduit means connecting said second chamber of said first modulating valve to the servo actuator associated with said first distributor, and
seventh conduit means connecting said second chamber of said second modulating valve to the servo actuator associated with said second distributor.

4,130,991
HYDRAULIC PUMPS
Howard S. Wright, 436 Devon St. W., New Plymouth, New Zealand
Filed Jun. 23, 1977, Ser. No. 809,164
Claims priority, application New Zealand, Jun. 23, 1976, 181253
Int. Cl.² F15B *15/18*
U.S. Cl. 60—477 **20 Claims**



1. A hydraulic pump comprising:
a plunger slidingly located within a housing;
a reservoir;
first valve means located between said reservoir and housing and adapted to allow fluid to be drawn from the reservoir into the housing during movement of the plunger in one direction;
second valve means adapted to allow fluid to flow from the housing during the greater part of movement of the plunger in its other direction;
control means to open or retain open said second valve means when the plunger is near the completion of movement in said other direction and thus allow fluid to reverse flow through said second valve and into said housing;
a port in said housing which is in communication with said reservoir;
conduit means to direct said reverse flow to said port; and
regulating means to gradually increase the rate of said reverse flow through said port as the plunger is moved toward commpletion of its movement in said other direction.

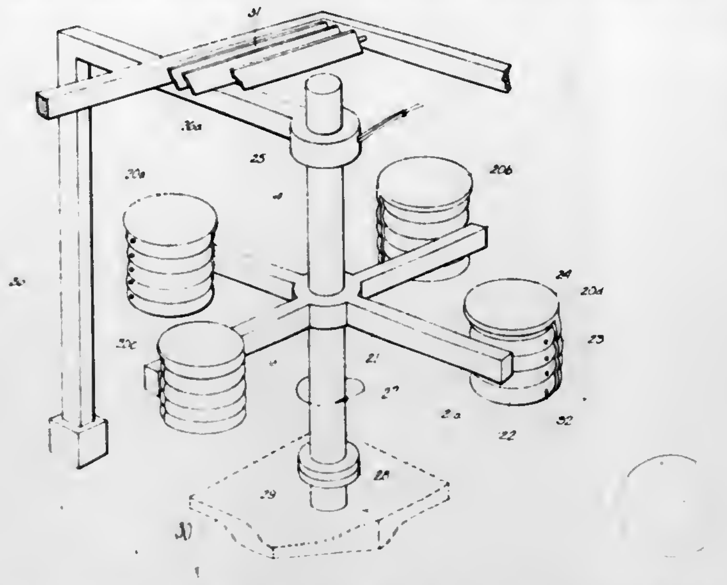
4,130,992
ARRANGEMENT FOR THE STORAGE OF ENERGY IN POWER PLANTS
Eberhard Bitterlich, Kettwig; Franz Thelen, and Henning Weber, both of Mulheim, all of Fed. Rep. of Germany, assignors to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany
Filed Feb. 7, 1977, Ser. No. 766,606
Claims priority, application Fed. Rep. of Germany, May 6, 1976, 2620023
Int. Cl.² F01K *3/12*
U.S. Cl. 60—652 **12 Claims**



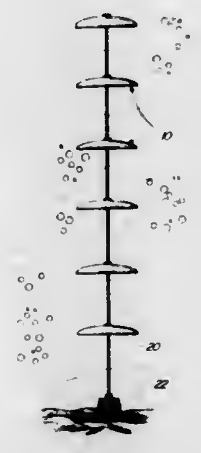
1. A method for the storage of energy in power plants comprising the steps of: heating an excess of water during low-load operation in water preheaters; storing the heated water as hot water in a hot storage vessel; feeding the heated water from said storage vessel during peak-load operation into a feed water line and bypassing said feed water preheaters; alternately taking from and storing in a lower portion of said storage vessel cold water and said hot water; degassing thermally said cold water before storing in said storage vessel, said degassing step being applied with bleeder steam at a pressure substantially above atmospheric.

4,130,993
METHOD AND APPARATUS FOR CONVERTING THERMAL ENERGY TO ROTATIONAL ENERGY
Julio N. Erazo, Cincinnati, Ohio, assignor to Ectrice, Ltd., Chicago, Ill.
Filed Apr. 11, 1977, Ser. No. 786,231
Int. Cl.² F03G *7/06*
U.S. Cl. 60—721 **21 Claims**

1. A thermal engine for converting thermal energy to rotational energy comprising:
a. means for containing a fluid comprising at least one fluid tight hollow ring-like conduit having a substantially constant cross-section defining a single closed continuous flow path for said fluid;
b. means for subjecting said fluid to a centrifugal force field, said subjecting means comprising support means having a central shaft for rotating said conduit about said shaft in a plane substantially parallel to said flow path, said support means mounting said conduit so as to prevent relative movement therebetween; and
c. means for impressing a thermal gradient across said fluid, whereby a density gradient is produced in said fluid which is acted upon by said centrifugal force field to produce a moment about said rotational axis by which rotational energy is transmitted to said shaft.



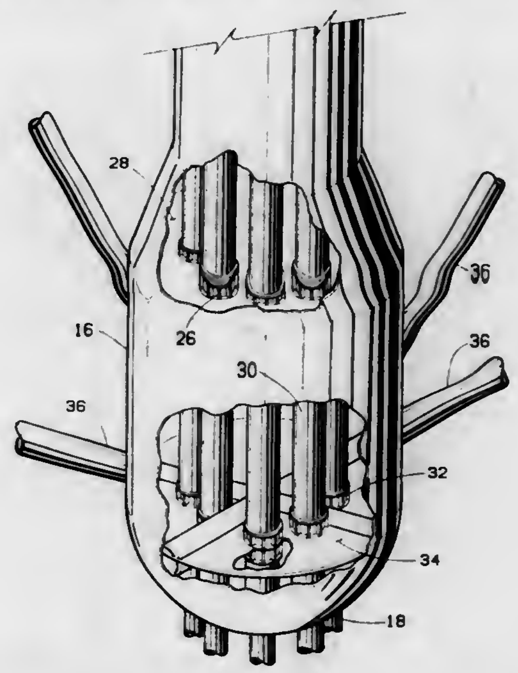
4,130,994
ARTIFICIAL REEF TO PREVENT SHORELINE EROSION
John H. Van Moss, Jr., 3 Mavor La., Highland Park, Ill. 60035
Filed May 27, 1977, Ser. No. 801,049
Int. Cl.² E02B *3/00*
U.S. Cl. 405—24 **5 Claims**



1. A grid for controlling shoreline erosion by controlling the water movement throughout the full water column each part making up the grid comprising a series of buoyant curved disks, each disk having an arcuate body with the free margins bent downwardly in a taper, and said disk provided with an axial hollow hub, a flexible line on which said disks are spacedly secured, an anchor, one end of said line tethered to said anchor while the uppermost disk on the line is positioned at the water surface, whereby the uppermost disks tend to break up surface currents while the lowermost disks are responsive to the bottom currents.

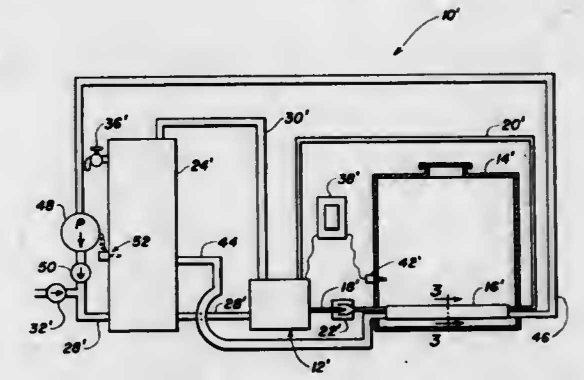
4,130,995
VMP RISER HORIZONTAL BEARING
Bodwell D. Osborne, Atherton, Calif., assignor to Standard Oil Company (Indiana), Chicago, Ill.
Filed Nov. 3, 1977, Ser. No. 848,047
Int. Cl.² B63B *35/44*
U.S. Cl. 405—224 **3 Claims**

1. A structure for use with a buoyant structure which comprises:
a shell;
an upper plate in said shell;
a lower plate in said shell, each plate having a plurality of vertical holes therethrough;
riser pipes extending through said holes through each said plate;
bearing means supported in each said vertical hole between each said riser pipe and said plate, said bearing means including
a male spherical bearing surrounding said riser pipe, the center of the sphere defined by the outer surface of said spherical bearing being on the center line of said riser;



a cylindrical bearing surface formed and supported by each said plate in said opening at the level of each said plate; and
a floating bearing positioned between said cylindrical bearing and said spherical bearing, the inner surface of said floating bearing complementing the outer surface of said spherical bearing and the outer surface of said floating bearing complementing said cylindrical surface.

4,130,996
REFRIGERATION SYSTEM AND EVAPORATOR UNIT THEREFOR
Gratz M. Sult, Box 164, Poplar St., Intercourse, Pa. 17534
Filed Jun. 6, 1977, Ser. No. 803,430
Int. Cl.² F25B *39/04, 41/00*
U.S. Cl. 62—113 **8 Claims**



1. An improved refrigeration system for cooling milk in a dairy operation comprising:
(a) a bulk-milk cooler tank for storage of the milk;
(b) an evaporator unit disposed within said milk storage tank and in contact with said milk stored therein;
(c) a water-cooled condenser unit including a refrigerant compressor and condenser coils operably interconnected with said evaporator unit for cooling the milk within said storage tank;

(d) means for supplying water to said condenser unit and circulating said water over and around said condensation coils during operation of said refrigeration system to cool and thereby condense the refrigerant carried by said coils; and

(e) means for cooling the hot water generated by said water-cooled condenser unit during operation of said refrigeration system, said cooling means being interconnected between said water supply means and said evaporator unit, said cooling means includes water conduit coils in heat transfer relationship with said evaporator unit such that during operation of said refrigeration system, the refrigerant within said evaporator unit absorbs the heat of said hot water within said water coils as well as the heat of warm milk stored within said bulk tank, thereby cooling said water for reuse in said refrigeration system.

4,130,997
REFRIGERATOR

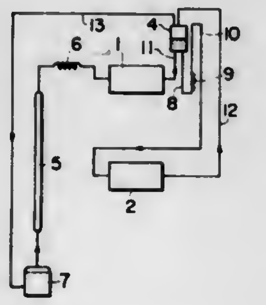
Toshitsugu Hara, Tokyo; Yoritsune Abe; Katsuji Ootuka, both of Tochigi; Yasushige Kashiwabara, Musashino; Hiroichi Oshiyama, Nagareyama; Michio Yanadori, Hachioji; Eisaku Kato, Tochigi, and Kichizaemon Okazaki, Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 8, 1976, Ser. No. 748,504

Claims priority, application Japan, Dec. 10, 1975, 50/146437

Int. Cl.^{2} F25B ***39/02, 43/00***

U.S. Cl. 62—504 **11 Claims**



1. A refrigerator comprising:

refrigerating cycle means including first cooling means and a liquid tank for charging a working fluid from said first cooling means;

at least one closed loop means branched from said refrigerating cycle means and including an inverted U-type tube in which working fluid flows from the inlet to the outlet by means of a vapor bubble pumping action, a first connecting tube for supplying the working fluid from said liquid tank to the inlet of said inverted U-type tube, a heating means disposed around the inlet of said inverted U-type tube, a second cooling means to which the working fluid is supplied from the outlet of said inverted U-type tube, and a second connecting tube for directly returning the working fluid from said second cooling means to said liquid tank.

4,130,998
ADJUSTABLY TURNABLE SHAFT-GUARD

Kenneth D. Einsel, and Roland W. Johnson, both of Hastings, Nebr., assignors to Hastings Equity Grain Bin Mfg. Co., Hastings, Nebr.

Filed Nov. 26, 1976, Ser. No. 745,089

Int. Cl.^{2} F16L ***1/06***

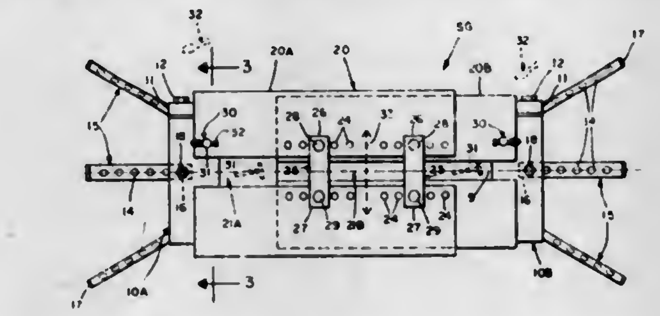
U.S. Cl. 64—3 **7 Claims**

1. An adjustably radially turnable shaft-guard in combination with a de-powered but rotatably powerable elongate shaft-assembly extending lengthily along a longitudinal central-axis from a stationary first-housing to a stationary second-housing, said shaft-assembly being provided with a plurality of co-rotatable lubricatable zerks, said radially turnable shaft-guard extending along a longitudinal-axis which is superimposed upon said central-axis and is held non-turning whenever the shaft-assembly is in rotatably powered running condition, said shaft-guard permitting zerk lubrication when the shaft-assembly is de-powered and comprising:

A. a first-yoke and a second-yoke, said first-yoke being non-rotatably mounted to the first-housing and said second-yoke being non-rotatably mounted to the second-housing, the first-yoke and the second-yoke respectively surrounding the central-axis as collars of sufficiently short length to non-obscure the lubricatable zerks;

B. a first-tube turnably associated with the first-yoke and having a longitudinally extending window-like first-slot that is radially alignable with a first-zerk of the shaft-assembly, said first-tube being of substantially C-shaped cross-section by virtue of a longitudinally co-extensive first-slot;

C. a second-tube turnably associated with the second-yoke and being of substantially C-shaped cross-section by virtue of a longitudinally co-extensive second-slot that is radially alignable with a second-zerk of the shaft-assembly, said second-tube being telescopically associated with the first-tube along the longitudinal-axis to allow the shaft-guard to be made substantially co-extensive with the rotatable shaft-assembly length from first-housing to second-housing;



D. removably securable intertubes co-arresting means to maintain the selected telescoped collective length of first-tube and second-tube and to also maintain said tubes in co-turnable relationship, said co-arresting means comprising;

  i. longitudinal alignment of first-slot and second-slot,

  ii. a plurality of longitudinally spaced registrable holes for the first-tube and the second-tube along both edges of first-slot and second-slot thereof,

  iii. at least one bridger spanning the said two longitudinally aligned tube slots, and

  iv. removable fasteners passing through registering holes of both said tubes and said bridger member; and

E. removably securable turning control means extending from at least one of the co-arrested tubes to at least one of the stationary yokes to permit the tubes to remain stationarily non-turnable whenever the shaft-assembly is in rotatably powered running condition, and which also permits the aligned first-slot and second-slot to be adjustably radially alignable with the shaft-assembly lubricatable zerks at its de-powered stopped condition.

4,130,999
YARN BINDER APPARATUS

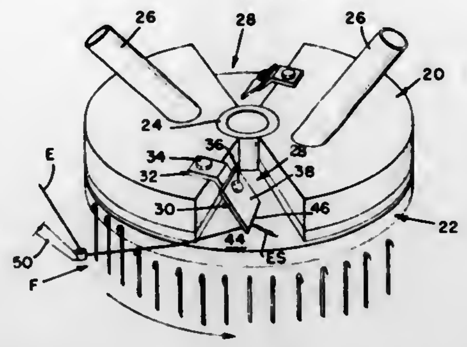
Roger L. Whittaker, Mocksville, N.C., and Clyde Hewitt, Hartsville, S.C., assignors to Hanes Corporation, Winston-Salem, N.C.

Filed Jun. 3, 1977, Ser. No. 803,021

Int. Cl.^{2} D04B ***15/50***

U.S. Cl. 66—145 R **8 Claims**

1. Apparatus in a knitting machine for holding a tensioned elastomeric yarn adjacent a severed end portion comprising; support means including a flat surface, an elongated binder element of spring steel construction having one end fixedly mounted upon said support means and having a displaceable free end portion defining a blade-like edge for normally engaging said flat surface, said binder element being angularly positioned relative to said flat surface such that said free end portion of said binder element is displaceable in a first direction by the elastomeric yarn as the yarn moves in a first path between said binder element and said flat surface, and is displaceable to a second position for wedging and biting into the elastomeric yarn to grip the yarn between said binder element free and said flat surface due to the retractive forces in the tensioned elastomeric yarn upon severing of the yarn.



4,131,000
PATTERN PRINTING APPARATUS

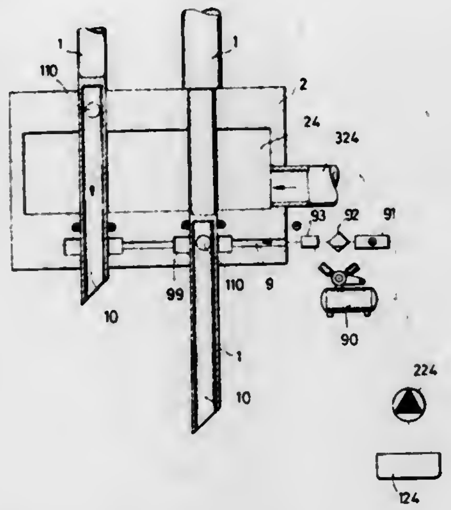
Mathias Mitter, Falkenstrabe 57, 4815 Schloss Holte, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 735,198, Oct. 26, 1976. This application Sep. 6, 1977, Ser. No. 830,443

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1976, 2640131

Int. Cl.^{2} D06B ***1/08, 11/00***

U.S. Cl. 68—200 **11 Claims**



1. In a pattern printing apparatus, a combination comprising a plurality of reciprocatory printing elements each having a printing-medium space and a leading end provided with an outlet from said space; means for reciprocating each of said elements between an advanced printing position in which said outlet is located at a workpiece to be printed, and a retracted position; means for charging printing medium into the respective space during movement of said elements between said positions; and means for forcibly expelling the printing medium from the respective space when said elements are in said printing position.

4,131,001
METHOD TO PREVENT UNAUTHORIZED USE OF CASSETTE TAPE RECORDERS AND A DEVICE ACCORDING TO THE METHOD

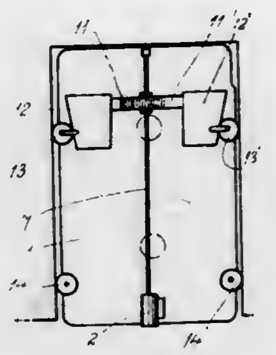
Raymond J. Gotto, Vallhornsvägen 2, Trängsund, Sweden (S-142 00)

Filed Nov. 16, 1976, Ser. No. 742,349

Claims priority, application Sweden, Nov. 17, 1975, 7512869

Int. Cl.^{2} E05B ***73/00***

U.S. Cl. 70—14 **19 Claims**



1. A device for preventing unauthorized use of a cassette tape recorder comprising a hollow body having a substantially flat rectangular outer casing corresponding in size and shape to a standard tape recorder cassette and locking means associated with said body for locking said body in a cassette opening of a tape recorder by engagement of a part of said locking means with a part of said tape recorder within said cassette opening, said locking means including means defining a lock opening in said casing, a rotary lock cylinder having a keyhole accessible from the exterior of said casing, a movable locking member within said casing having projected and retracted positions with respect to said lock opening and transmission means within said casing connected between said lock cylinder and said locking member for converting rotation of said cylinder into projecting and retracting movements of said locking member with respect to said opening.

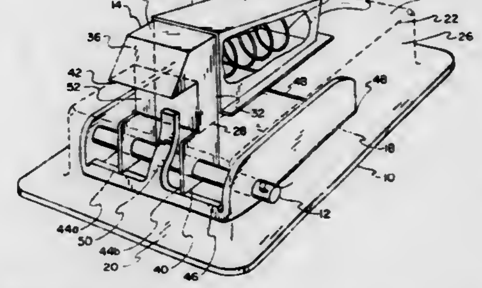
4,131,002
DOOR LATCH

Angelo Gianelo, 1383 S. 1900 East, Salt Lake City, Utah 84108

Filed Aug. 29, 1977, Ser. No. 828,283

Int. Cl.^{2} E05C ***3/08***

U.S. Cl. 70—84 **7 Claims**



1. A door latch comprising:

a mounting member which is rectalinear in shape and formed with a flange about its perimeter, said mounting member having mounting means and a recess formed in its front, said recess being rectalinear in shape and having a bottom and sides with an aperture formed in said bottom;

a shaft secured to said mounting member in said recess proximate said aperture;

a latch member having a bottom, top, front, back and two spaced apart legs extending along its bottom toward its front is mounted to said shaft through said legs proximate said bottom to extend from said recess through said aperture with a striking surface inward of said bottom which angles from said top frontwardly toward said bottom to form a latching lip, said aperture being sized so that said latch member is rotatable between a latched position and an unlatched position;

biasing means secured to said mounting member to bias said latch member toward the latched position; and

a rectalinearly shaped paddle which has a first edge opposite a second edge and which is positioned within said recess and mounted to said shaft along said first edge, said paddle having a pawl extending inwardly from said first edge along the front of said latch member between said legs to coact with said latch member so that upon movement of said second edge outwardly from said recess said pawl contacts said latch and rotates it from said latched position to said unlatched position upon operation of said paddle.

4,131,003

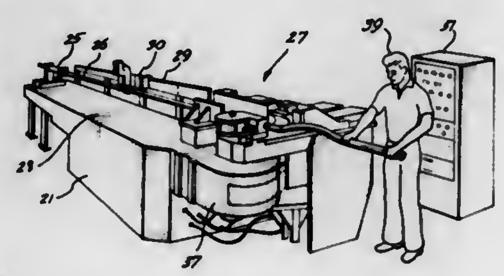
SEMIAUTOMATIC CONTROL SYSTEM FOR TUBE BENDING MACHINE

Gene B. Foster, Seattle, and Charles M. Baker, Kirkland, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jun. 7, 1977, Ser. No. 804,352

Int. Cl.^{2} B21D *7/12*

U.S. Cl. 72—7 **31 Claims**



1. A semiautomatic, manually operated, tube bending machine comprising:

(A) a tube bending mechanism including:
  (1) supporting means for supporting a tube such that said tube can be manually positioned prior to bending;
  (2) bending means for bending a tube in accordance with a bend control signal;
  (3) locking means for locking a tube supported by said supporting means in a fixed position prior to bending; and,
  (4) position sensing means for sensing the position of a tube supported by said supporting means and producing position information related thereto; and,

(B) a control subsystem connected to said tube bending mechanism for determining when said tube has been manually moved to the correct position for bending by said bending means, warning an operator when said correct position is being approached, actuating said locking means when said correct position is reached and operating said bending means in accordance with manual operator control, said control subsystem including:
  (1) data receiving means for receiving at least one set of bend data that defines bend position and bend angle;
  (2) data storage and comparing means for storing said at least one set of bend data, comparing stored bend position data with the position information produced by said position sensing means and actuating said locking means when said stored bend position data compares with said position information;
  (3) manually operable bend actuate means for producing a bend actuate signal when manually operated;
  (4) bend control means connected to said manually operable bend actuate means for producing a bend control signal when said manually operable bend actuate means is manually actuated, said bend control signal being applied to said bending means so as to cause said bending means to bend said tube; and,
  (5) warning means connected to said data storage and comparing means for producing a warning when a tube, as it is manually moved, causes said position information produced by said position sensing means to denote that said tube is approaching the positions defined by said stored bend position data.

4,131,004

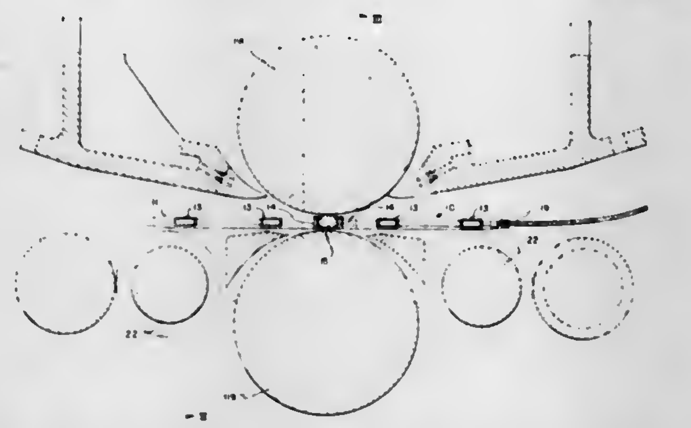
ROLLING MILL GAUGE AND FLATNESS CALIBRATION SYSTEM

Werner W. Elbe, McCandless Township, Allegheny County, Pa., assignor to Blaw-Knox Foundry & Mill Machinery, Inc., Pittsburgh, Pa.

Filed Sep. 14, 1977, Ser. No. 833,262

Int. Cl.^{2} B21B *37/00*

U.S. Cl. 72—8 **8 Claims**



1. Apparatus for calibrating the gap between work rolls of a rolling mill stand comprising transducer means for converting the width of gap into a signal, frame means for mounting said transducer means, said frame means being dimensioned for passage as a unit through the gap between work rolls and extending lengthwise of those rolls so as to bring said transducer means against the work rolls at their line of contact in load transmitting relation therebetween and for removal therefrom, and means for conducting the signals from said transducer means out of the gap.

4,131,005

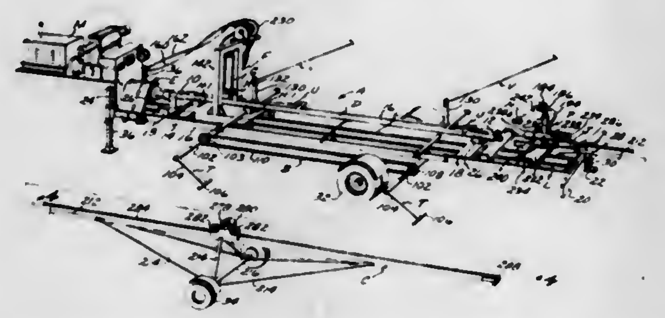
TUBULAR MEMBER STRAIGHTENING, DESCALING AND HYDRAULIC TESTING APPARATUS

Whetstine B. Pridy, 861 Stevely, Long Beach, Calif. 90815

Filed May 20, 1977, Ser. No. 798,819

Int. Cl.^{2} B21D *7/04, 43/00*

U.S. Cl. 72—40 **13 Claims**



1. An apparatus that includes an elongate bed having a forward and a rearward end on which an elongate metallic tubular member having a forward threaded end and a rearward threaded end may be removably supported in a longitudinally extending position to be straightened, have products of corrosion removed from the exterior surface thereof, and hydraulically tested to a desired pressure prior to being moved from said position, said apparatus including:

a. first means for removably supporting said tubular member in said longitudinal position on said bed;
b. a driving assembly for removably engaging said forward end of said tubular member when the latter is disposed in said longitudinal position to rotate said tubular member;
c. a power operated carriage longitudinally movable on said bed;
d. second power operated means on said carriage for pressure and frictionally engaging sequential sections of said tubular member as said tubular member rotates on said bed to straighten said tubular member by transversely deforming said sections and remove products of corrosion from the exterior surface by frictional contact therewith;
e. third means for discharging a stream of low pressure water through a passage in said driving assembly into said forward end of said tubular member, with said stream of water discharging from the rearward end of said tubular member and maintaining said tubular member at a sufficiently low temperature during said straightening and product of corrosion removing operation that the physical characteristics of the metal defining said tubular member are not impaired;
f. fourth means for preventing said water discharging from said forward end of said tubular member;
g. fifth means for removably sealing said rearward end of said tubular member when the latter is stationary and said tubular member at least partially filled with said low pressure water after being so sealed;
h. sixth power operated means for discharging high pressure water into said tubular member to completely fill the same and subject the interior of said tubular member to a predetermined pressure;
i. seventh means in communication with the interior of said tubular member to indicate when said predetermined pressure has been reached; and
j. first power means for selectively actuating said driving assembly, power operated carriage, second power operated means and sixth power operated means.

4,131,006

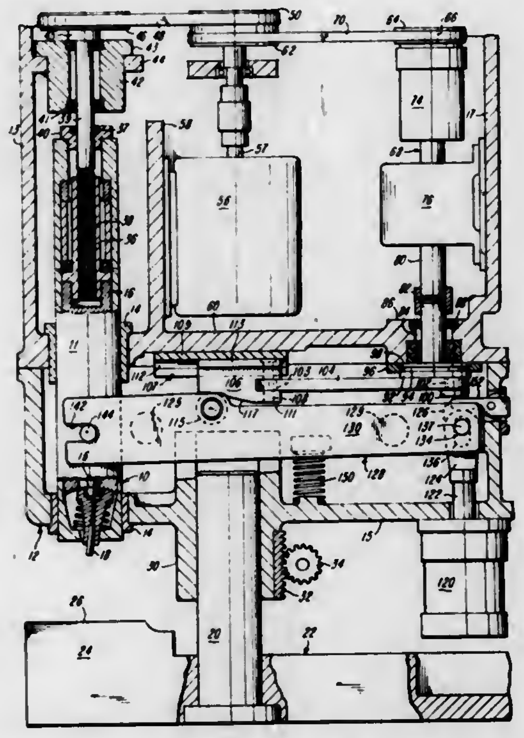
FIXED MECHANICAL FEED FOR A RIVETING DEVICE

Harry E. Kohl, Kettering, Ohio, and Gordon Cotton, Chelsea, Mich., assignors to The International Tool Company, Dayton, Ohio

Filed Feb. 27, 1978, Ser. No. 881,670

Int. Cl.^{2} B21D *15/12, 15/26*

U.S. Cl. 72—67 **21 Claims**



1. Riveting apparatus comprising a generally vertically oriented spindle assembly including a drive shaft and a housing for said shaft mounting for movement to and from a work surface, said shaft being rotatable in and independently of said housing and the leading end thereof being adapted to mount a riveting tool which in the movement of said housing towards the work surface is applied to fix a rivet, a lever-like unit one end of which is operatively connected to said housing and the opposite end of which is pivotally connected to a control member to establish the position of the pivot thereof, and means operatively related to said lever-like unit to produce a movement of said lever-like unit about said pivot to cyclically and uniformly advance and retract said housing and said shaft with reference to said work surface.

4,131,007

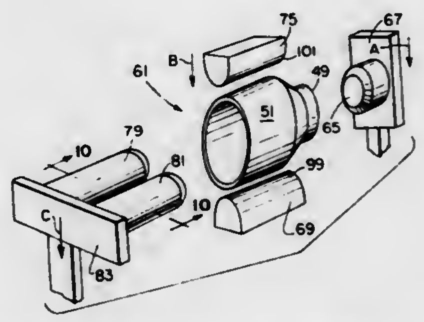
COUPLING DEVICE FOR CONNECTING A PLURALITY OF PORTS TO ONE PIPE-METHOD OF MAKING SAME

James R. Laundy, Racine, Wis., assignor to Tenneco, Inc., Racine, Wis.

Division of Ser. No. 683,560, May 5, 1976, Pat. No. 4,082,325. This application Oct. 13, 1977, Ser. No. 841,837

Int. Cl.^{2} B21D *22/00*

U.S. Cl. 72—348 **6 Claims**



1. The method of making a body for use in a coupling device to connect two ports to one port comprising the steps of forming a circular sheet metal disk, drawing the disk into a cup with first and second ends and having a longitudinal axis that is open at one end and has a substantially hemispherical shape at the other end and is of a substantially uniform diameter cylindrical shape between said hemispherical shape and said open end, piercing the hemispherical end of the cup to form an opening therein and convert the cup into a shell that is open at both ends, placing the opening in the hemispherical end of the shell on a movable support and inserting a pair of mandrels carried by a movable support into the other end of the shell, said mandrels having an overall width substantially equal to said uniform diameter shape, and applying compressive pressure by a ram and die means to opposite sides of the uniform diameter shape substantially along a midplane of the shell and substantially midway between the mandrels to shape the shell metal around the mandrels while moving said movable supports and said ram and die means such that the movable supports move at substantially one half the rate of movement of the ram and die means whereby said uniform diameter shape is changed to a substantially FIG. 8 cross sectional shape along the lengths of the mandrels and the remainder of the shell except for said opening in the hemispherical end is changed to a substantially oval cross sectional shape.

4,131,008

DEVICE FOR MEASURING THE BENDING ANGLES IN PLATE-BENDING MACHINES

Renzo Malatto, Milan, Italy, assignor to Selecontrol S.A.S., Lecco (Como), Italy

Filed Jan. 30, 1978, Ser. No. 873,529

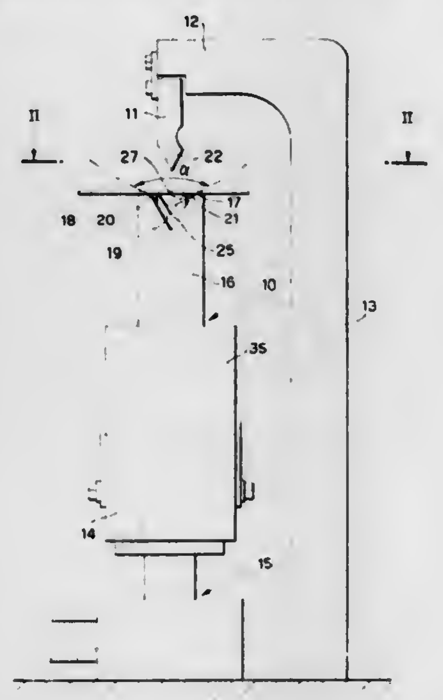
Claims priority, application Italy, Feb. 1, 1977, 7202 A/77

Int. Cl.^{2} B21D *7/06*

U.S. Cl. 72—389 **6 Claims**

1. A device for measuring the angles of bend in sheet metal bending presses of the kind comprising a die with a resting plate through which a longitudinal groove is formed the edges of which are radiussed with a determined radius of curvature to the resting plane, a punch having the shape of a "counter-V" and means adapted to effect movements of said die and said

punch toward and away of one another in a direction perpendicular to the die resting plane so as to have the counter-V shaped point of the punch remaining on the central plane of symmetry of the die groove, characterized in that it comprises a detecting member equipped with a head, said detecting member being arranged in a linearly displaceable manner in a guideway formed through the die and which is extended from a point of the die groove on the plane of symmetry of the groove perpendicularly to the resting plane, the head of the detecting member having, as formed on its front surface, a notch aligned with the die groove and radiussed to the front surface of the detector head by edges having the same radius of curvature as the edges of the V-shaped die groove, resilient means active between the die and the detecting member for displacing the latter in its own guideway in the sense of having it exiting the V-shaped die groove, stopping means for keeping the detecting member in an inactive position, and means, cooperating with the detecting member, which are adapted to convert the linear displacement thereof into a command or signal of indication of the angle of bend of the metal sheet undergoing bending.



4,131,009
APPARATUS FOR CONTINUOUSLY FIXING A PLURALITY OF TUBULAR FASTENERS ONE BY ONE TO A PLURALITY OF APERTURES PROVIDED IN A SUPPORT PANEL

Kunio Hara, Kawasaki, and Kohsaku Yoshida, Funabashi, both of Japan, assignors to Nichi-Ei Bussan Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1976, Ser. No. 738,463

Claims priority, application Japan, Nov. 14, 1975, 50-136154

Int. Cl.² B21D *9/05;* B21B *15/00;* B23C *1/00;* B23P *17/00*

U.S. Cl. 72—391 **4 Claims**

1. An apparatus for continuously feeding and fixing a plurality of so-called pull-lock type, tubular fasteners, each of said tubular fasteners comprising a shaft portion with an upper head and a lower flange and an upper flanged collar portion tightly surrounding the lower portion of said shaft, one by one to a plurality of apertures in a panel or a plurality of aligned apertures in two or more superimposed panels, comprising:

a casing with a handle on a sidewall thereof, said casing defining an one-end closed main cylinder,

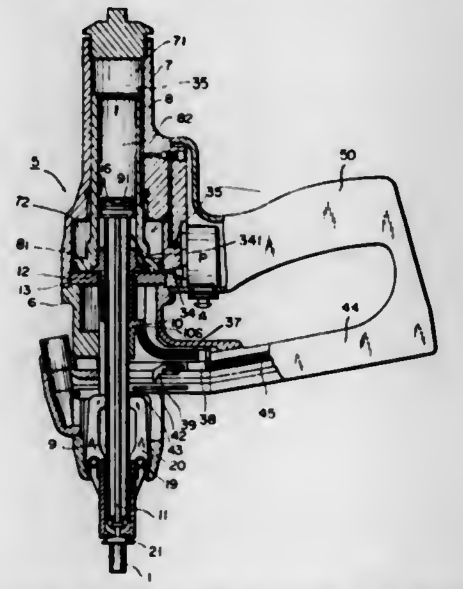
outer piston means having a throughbore concentrically and slidably telescopd within the throughbore of said main cylinder,

slide cam means depending from and rigidly connected to said outer piston means and having timed controlling cam means and fastener holding means at the forward end for fixing the loaded fastener onto the aperture of the panel,

a piston-type main shaft having a throughbore and a fastener loading groove at its forward end and concentrically and slidably telescoped within the throughbore of said outer piston means so as to pull up the shaft portion of the loaded fastener against the securely held collar portion thereof,

a fastener pressing plunger concentrically depending within the throughbore of said main shaft for securing said plunger within the fastener loading groove,

fastener feeding means provided on one side of the casing for receiving the fastener assembly and for feeding the fasteners one by one and one after another to the fastener loading groove at the forward end of the main shaft,



means carried by said casing at the forward end thereof for severing the upper shaft portion of the fastener above its collar portion,

shaft expelling means provided in the casing on the side opposite to said fastener feeding means and adapted to expel the severed upper shaft portion of the fastener from the fastener loading groove simultaneously with feeding the succeeding fastener into the thus vacated groove, and

pressured fluid feeding means associated with timed valve mechanism for driving the above-mentioned respective means in a timed and coacting relation.

4,131,010
HYDRAULIC TEST SET

William G. Eyres, Salt Lake City, Utah, assignor to E-Systems, Inc., Dallas, Tex.

Filed Nov. 9, 1977, Ser. No. 849,770

Int. Cl.² G01M *19/00*

U.S. Cl. 73—11 **10 Claims**

1. Apparatus for in-place testing of a hydraulic shock suppressor having a piston that divides the interior chamber of the shock suppressor into cavities and having a hydraulic fluid reservoir for housing hydraulic fluid which comprises:

means for storing hydraulic fluid,

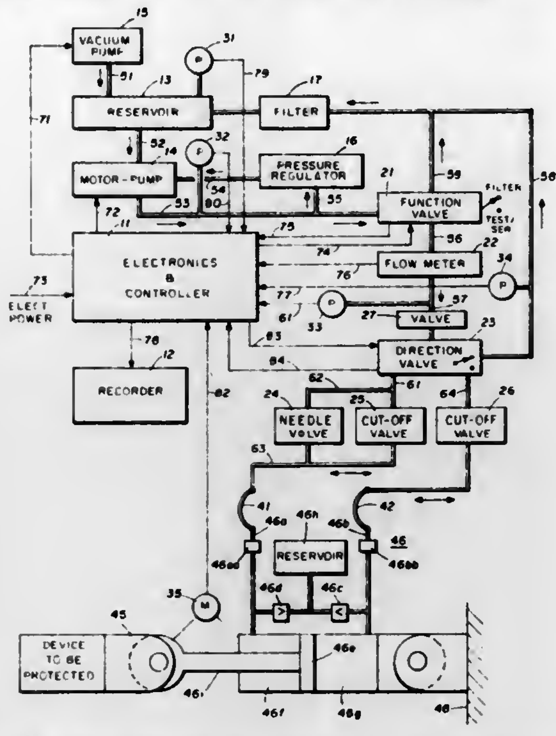
pump means interconnected to said means for storing hydraulic fluid for pumping hydraulic fluid into the cavities of the shock suppressor from said means for storing hydraulic fluid,

valve means interconnected between said means for storing hydraulic fluid and said pump means for pumping the hydraulic fluid into the cavities of the shock suppressor or alternatively directing the hydraulic fluid into said means for storing hydraulic fluid,

means interconnected to said valve means for controlling the direction of flow of the hydraulic fluid into the cavities of the shock suppressor,

means interconnected between said pump means and said valve means for controlling the rate of flow of the hydraulic fluid flowing into the cavities of the shock suppressor,

means for measuring the rate of flow of the hydraulic fluid flowing to the cavities of the shock suppressor, and



means for measuring the movement of the piston within the shock suppressor in response to the fluid flowing into the cavities of the shock suppressor.

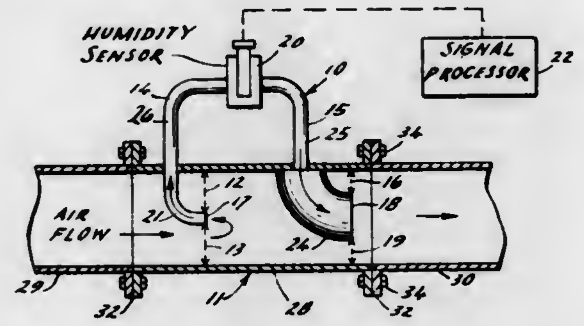
4,131,011
METHOD AND DEVICE FOR DETERMINING THE END POINT FOR DRYING

Wilfred C. Ling, Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 28, 1977, Ser. No. 772,719

Int. Cl.² G01N *19/10*

U.S. Cl. 73—29 **7 Claims**



1. A device for diverting and sensing moisture in a sample portion from a main conduit stream of fluid flowing from an upstream to a downstream direction comprising:

a first conduit member;

a second conduit member, both said conduit members adapted for fluid-tight communication with said channel and each having an orifice at one end and in open communication with said main conduit, said orifice of said second conduit member being of a larger dimension than said orifice of said first conduit member, said orifices being spaced from each other in said stream with said first orifice being positioned upstream of said second orifice; and

moisture sensing means adapted for fluid communication with the ends of said conduit members opposite said orifices, said orifices of said first and second conduits adapted to be placed in said stream of fluid with both said orifices facing in a downstream direction with respect to said flow;

said first and second conduit members and said sensing means defining an open fluid flow path with said conduit stream to thereby effect the flow of fluid from said stream of fluid into said orifice of said first conduit member and in a direction opposite said fluid flow, through said first conduit member, said moisture sensing means, said second conduit member, out of said orifice of said second conduit member and into said stream of fluid.

4,131,012
DEVICE FOR DETECTING IMPACTS ON A TARGET

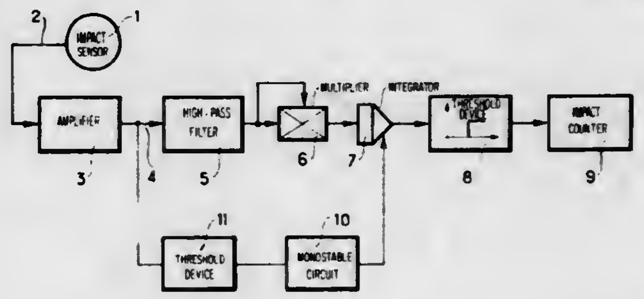
Bernard Courtiol, Grenoble, France, assignor to CGEE Alsthom, Levallois-Perret, France

Filed Feb. 10, 1978, Ser. No. 876,802

Claims priority, application France, Feb. 22, 1977, 77 05156

Int. Cl.² G01L *5/14*

U.S. Cl. 73—167 **6 Claims**



1. A device for detecting a quantity of energy striking a solid body, the device comprising at least one sensor transforming the mechanical vibrations to which the body is subjected into an electrical signal and, in series, an amplifier receiving said signal, a high-pass filter, a multiplier, an integrator, a threshold detector and a monostable pulse shaping circuit, and said device further comprises a threshold device for detecting the peaks of said electrical signal a monostable flip flop connected to said threshold device and triggered thereby and connected to said integrator, such that the monostable flip flop logic output signal effects operation of said integrator.

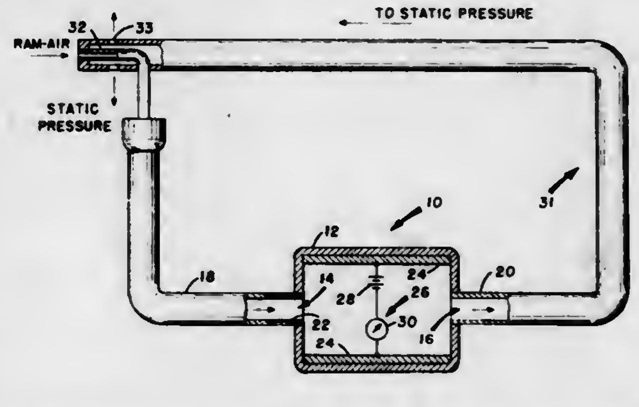
4,131,013
IONIC AIR SPEED INDICATOR

Maynard L. Hill, Silver Spring, and Theodore R. Whyte, Fulton, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Jul. 25, 1977, Ser. No. 818,765

Int. Cl.² G01P *5/08*

U.S. Cl. 73—181 **7 Claims**



1. An apparatus for measuring the speed of a moving body, comprising:

a source of positive and negative ions,

two parallel conducting plates,

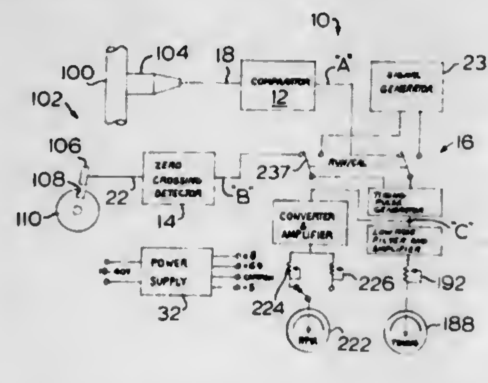
means, connected to the conducting plates, for generating a constant voltage and an electric field between the plates, means, connected to the source, for directing a fluid first into the source to ionize the fluid, and for directing the ionized fluid between the conducting plates, causing charge separation in the field and an attendant electric current between the plates, wherein the fluid directing means comprises:

a ram-air input, connected outside the moving body, for inletting a flow of air while the body is in motion, and
first tubular means for connecting the ram-air input and the source of ions, and
means, connected between the conducting plates, for sensing variations in the electric field between the conducting plates,
wherein the speed of the moving body is a function of the rate of flow of the fluid and the rate of flow of the fluid is measured by the current between the plates.

4,131,014
DYNAMIC TIMING INDICATING APPARATUS

Ronald K. Scott, Buda, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 7, 1977, Ser. No. 804,408
Int. Cl.² G01M *15/00*
U.S. Cl. 73—119 A **20 Claims**



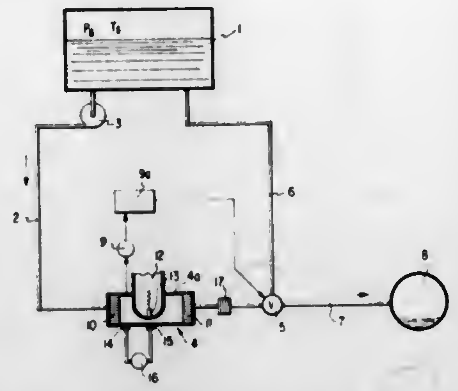
13. Dynamic timing indicating apparatus, comprising:
comparing means for receiving a first input signal and delivering a preselected output signal "A" in response to said first input signal;
zero-crossing detecting means for receiving a second input signal having positive, negative, and zero-crossover portions occurring in timed relation to said first signal and delivering a preselected output signal "B" in response to said zero-crossover portion of said second input signal;
means for automatically indicating the timed relation between said first and second input signals in response to and as a function of the outputs of said comparing means and zero-crossing detecting means; and
means for generating preselected signals substantially similar in timed relation to said output signals "A" and "B".

4,131,015
DEVICE FOR MEASURING MASS FLOW

Jogindar M. Chawla, Durmersheim; Peter von Böckh, Karlsruhe, and Manfred Dörnemann, Dusseldorf, all of Fed. Rep. of Germany, assignors to Agefko Kohlensäure-Industrie GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Aug. 25, 1977, Ser. No. 828,255
Int. Cl.² G01F *1/28*
U.S. Cl. 73—199 **9 Claims**

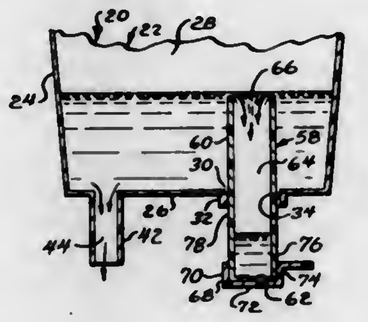
1. A device for measuring the mass flow of a liquid gas comprising in combination;
(a) a tube having a flow inlet and a flow outlet and defining a flow passage for the liquid gas;
(b) a throttle piston projecting transversely into the flow passage and having a spherical terminus defining, with an oppositely lying inner wall portion of said tube, a throttled part of said flow passage;
(c) head difference measuring means for generating a first signal as a function of the difference of the pressure head at said throttled part and upstream thereof;
(d) a temperature-dependent semiconductor exposed to the temperature of the liquid gas flowing through said tube; and
(e) adapter means connected to said semiconductor for adapting the resistance/temperature curve of said semiconductor to the density/temperature curve of the liquid gas for generating a second signal which is a measure of the temperature-dependent density variations of the liquid gas; said adapter means comprising a first potentiometer connected in parallel with said semiconductor and a second potentiometer connected in series with said semiconductor.



4,131,016
PEAK FLOW MEASURING DEVICE

Terry N. Layton, Wheeling, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Nov. 9, 1977, Ser. No. 849,747
Int. Cl.² G01F *1/20*
U.S. Cl. 73—215 **8 Claims**

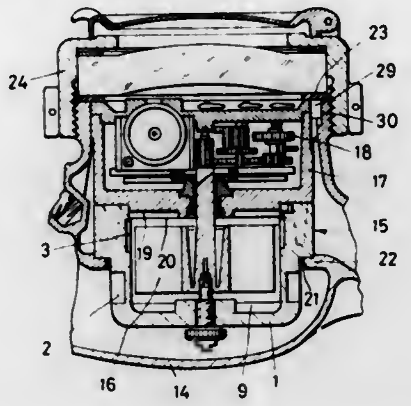


1. A device for measuring a urine discharge, comprising:
a hollow receptacle having sidewalls at least partially defining a chamber, a lower wall having an aperture communicating between the chamber and atmosphere, an inlet port adjacent an upper end of the receptacle and communicating with the chamber to receive the discharge for passage into the chamber, and an outlet port adjacent a lower end of the receptacle and communicating with the chamber for passage of the discharge at a predetermined rate out of the chamber;
a collection container having a closed bottom, an elongated generally tubular section defining a collection cavity in the container, and an opening adjacent an upper end of the container communicating with said cavity, said container being removably received in the receptacle aperture with the container opening spaced a predetermined distance above the lower receptacle wall in said chamber, and with the receptacle sealingly engaging against a surface of the container in the region of said aperture, such that the discharge passes from the receptacle chamber through the container opening into said cavity at a predetermined height of the liquid in said chamber to provide a discrete indication of the discharge peak flow rate and a specimen of the discharge in said cavity for analysis upon removal of the container from the receptacle.

4,131,017
VANE TYPE METER

Walter Back, Mannheim, Fed. Rep. of Germany, assignor to Bopp & Reuther GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Oct. 17, 1977, Ser. No. 842,923
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1976, 2647297
Int. Cl.² G01F *1/06*
U.S. Cl. 73—229 **13 Claims**



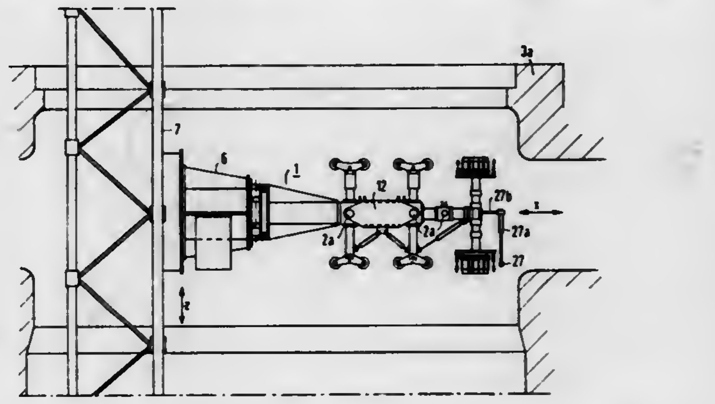
1. In a vane type meter, a combination comprising a cup-shaped impeller housing having a bottom wall and a peripheral wall projecting upwardly from said bottom wall; an even number of inlet channels extending uniformly spaced from each other through said peripheral wall substantial tangential to the inner surface of the latter; a plurality of outlet channels equal in number to that of the inlet channels and extending uniformly spaced from each other through said peripheral wall above said inlet channels also substantially tangential to the inner surface of said peripheral wall, said channels having rectangular cross-section defined laterally by planar faces inclined with respect to each other so that the open cross-section of each channel tapers towards the inner surface of said peripheral wall; a cup-shaped counter housing mounted on said cup-shaped impeller housing and having a bottom wall closing the upper open end of said cup-shaped impeller housing; and a pluraliy of radially extending ribs on each of said bottom walls, the number of ribs on each of said bottom walls being equal to the number of said inlet channels, the ribs on said bottom wall of said impeller housing projecting upwardly therefrom and the ribs on said bottom wall of said counter housing projecting downwardly therefrom into the interior of the impeller housing.

4,131,018
ELBOW OR BENT TUBE MANIPULATOR, ESPECIALLY FOR ULTRASONIC TESTING IN NUCLEAR REACTOR INSTALLATION

Otto Müller, Spardorf; Georg Gugel, Kalchreuth, and Hans Kastl, Neustadt, Waldnaab, all of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed Sep. 7, 1977, Ser. No. 831,111
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1976, 2640055
Int. Cl.² G01N *29/04*
U.S. Cl. 73—432 R **18 Claims**

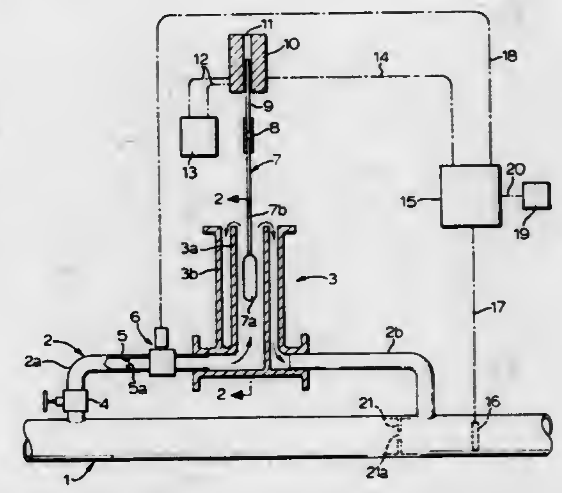
1. Manipulator assembly for testing the material of a pipe elbow from the inside thereof, the pipe elbow being secured to a pipe union extending from a pressure vessel openable for receiving therein a vertically extending manipulator mast having an arm carrying a manipulator, the manipulator being movable by the arm in vertical direction, rotatably about the axis of the mast and in direction of the longitudinal axis of the arm and transversely thereto, the manipulator comprising a multimember vehicle drivable in direction of the pipe-union and pipe-elbow axis, the members of said vehicle being articulatingly connected to one another and having extensible and retractable support legs for supporting the respective vehicular members centered relative to the inner periphery of the pipe elbow, said support legs having roller members at the end thereof for transporting the vehicular members in axial direction of the pipe union and the pipe elbow, the vehicular member located at the head of said multimember vehicle being a test system carrier and being drivable with said vehicle in axial direction of the pipe union and the pipe elbow, said test system carrier having a test system fastened to at least one test arm and mounted so as to be rotatable along predetermined test tracks in circumferential direction of the pipe elbow, drivable radially inwardly and outwardly with said test arm and centerable on the respective center of the pipe elbow, said vehiculer members and said test system carrier being mutually engaged by articulating couplings and longitudinally adjustable drive members so that, in an extended readiness position thereof wherein the manipulator is disposed in front of the pipe union, said vehicular members and said test system carrier are oriented in axial direction of the pipe union, are centered on the pipe-union center and are rigidly coupled to one another, whereas in a travelling position thereof wherein at least said test system of the manipulator is located within the pipe elbow, said vehicular members and said test system carrier are loosely coupled to one another so that they adapt themselves to the curvature of the pipe elbow as they travel in axial direction thereof.



4,131,019
METHOD AND APPARATUS FOR MEASURING SPECIFIC GRAVITY OF LIQUIDS IN PROCESS STREAMS

Clifford J. Krauss, Trail, Canada, assignor to Cominco Ltd., Vancouver, Canada

Continuation-in-part of Ser. No. 652,912, Jan. 28, 1976, abandoned. This application Mar. 17, 1977, Ser. No. 778,917
Claims priority, application Canada, Apr. 10, 1975, 224552
Int. Cl.² G01N *9/18*
U.S. Cl. 73—453 **2 Claims**



1. An apparatus for measuring the specific gravity of a liquid from a process stream which comprises, in combination, a

process liquid line, a constant level overflow device, means interconnecting the process liquid line and overflow device for intermittently supplying a volume of process liquid to fill said overflow device and for displacing process liquid from said overflow device, a variable immersion hydrometer positioned in said constant level overflow device, a linear voltage displacement transducer consisting of a differential transformer with built-in carrier oscillator and phase-sensitive demodulator having a core loosely embraced therein, said immersion hydrometer consisting of a submergible weighted bulbous portion and a stem extending upwardly therefrom, and flexible coupling means for connecting the core to the stem, whereby said hydrometer and core are vertically displaced dependent on the specific gravity of the process liquid, and a source of constant voltage electrically connected to said linear voltage displacement transducer whereby an output voltage signal is emitted by said linear voltage displacement transducer proportional to the position of the core therein, said output voltage signal varying directly with the specific gravity of the liquid measured.

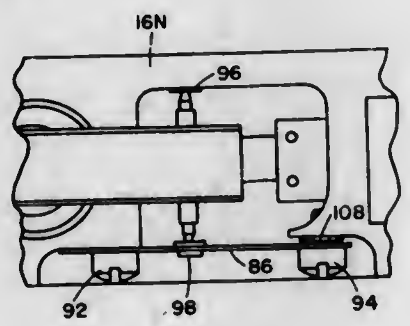
4,131,020
ACCELEROMETER

Hans W. Hugli, and John M. Kubler, both of Bellevue, Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Jul. 6, 1976, Ser. No. 702,382

Int. Cl.^{2} G01P *15/08*

U.S. Cl. 73—517 B **33 Claims**



1. An accelerometer comprising:

a housing;

a pair of spaced parallel capacitive plates secured within said housing;

a pendulum including a beam member and a paddle attached to one end of said beam member wherein said paddle is located in a generally spaced parallel position between said plates;

an axle secured transversely to the longitudinal axis of said pendulum;

a support frame secured within said housing; and

an axle support structure secured to said support frame for rotatably supporting said axle wherein said axle support structure includes a first and a second bearing for receiving and rotatably supporting each end of said axle, a first flexure member secured at each end to said support frame for supporting said first bearing and means for supporting said second bearing wherein said axle support structure additionally includes means for adjusting pressure of said bearings on said axle.

4,131,021
HIGH RESOLUTION PULSE-ECHO ULTRASONIC-IMAGING DISPLAY SYSTEM

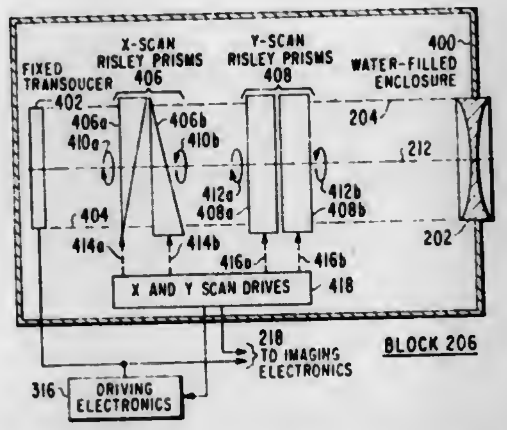
Reuben S. Mezrich, Rocky Hill, and Edwin T. Koenig, Spring Lake Heights, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 7, 1977, Ser. No. 766,564

Claims priority, application United Kingdom, Mar. 4, 1976, 08660/76; Jul. 16, 1976, 29766/76

Int. Cl.^{2} G01N *29/00*

U.S. Cl. 73—606 **9 Claims**



1. Apparatus for use in an ultrasonic pulse-echo system capable of displaying an image of certain internal structure of a visually opaque object being scanned with ultrasonic wave energy, said apparatus comprising:

an acoustic focusing device occupying a given aperture which aperture remains substantially fixed in position with respect to said object while said object is being scanned, and

ultrasonic beam forming means including transducer means generating successive pulses of ultrasonic wave energy and beam scanning means for illuminating said certain internal structure through said focusing device with a scanning focused beam of said pulsed ultrasonic wave energy, said transducer means being situated remotely from both said focusing device and from said internal structure for receiving and detecting a signal portion of said focused beam reflected from said certain internal structure and returned through said focusing device to said transducer means after a time delay proportional to the distance between said remotely situated transducer means and said certain internal structure.

4,131,022
PULSE-ECHO ULTRASONIC-IMAGING DISPLAY SYSTEM

Reuben S. Mezrich, Rocky Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 7, 1977, Ser. No. 766,527

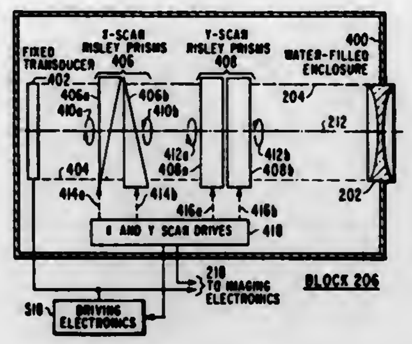
Claims priority, application United Kingdom, Mar. 4, 1976, 08661/76; Jul. 16, 1976, 29763/76; Jul. 16, 1976, 29764/76; Jul. 16, 1976, 29765/76

Int. Cl.^{2} G01N *29/00*

U.S. Cl. 73—606 **11 Claims**

1. In apparatus for use in an ultrasonic pulse-echo system capable of displaying an image of certain internal structure of a visually opaque object being scanned with ultrasonic wave energy, said apparatus including an acoustic focusing device occupying a given aperture which aperture remains substantially fixed in position with respect to said object while said object is being scanned, and ultrasonic beam forming means including transducer means generating successive pulses of ultrasonic wave energy and beam scanning means for illuminating said certain internal structure through said focusing device with a scanning focused beam of said pulsed ultrasonic wave energy, said transducer means being situated remotely from both said focusing device and from said internal structure for receiving and detecting a signal portion of said focused beam reflected from said certain internal structure and returned through said focusing device to said transducer means after a time delay proportional to the distance between said remotely situated transducer means and internal structure; the improvement:

wherein said ultrasonic wave energy has a given wavelength λ and



wherein the respective sizes of given parameters of said focusing device are related to said given wavelength λ to provide a given focused spot size for said scanning focused beam and to provide a depth of field for said scanning focused beam which is at least several times said given focused spot size.

4,131,023
PULSE-ECHO ULTRASONIC-IMAGING DISPLAY SYSTEM

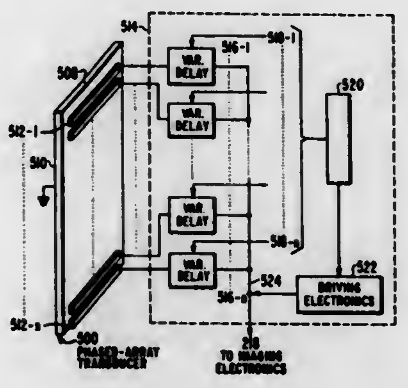
Reuben S. Mezrich, and Charles H. Anderson, both of Rocky Hill, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 7, 1977, Ser. No. 766,565

Claims priority, application United Kingdom, Mar. 4, 1976, 08661/76; Mar. 4, 1976, 08663/76

Int. Cl.^{2} G01N *29/00*

U.S. Cl. 73—606 **5 Claims**



1. In apparatus for use in an ultrasonic pulse-echo system capable of displaying an image of certain internal structure of a visually opaque object being scanned with ultrasonic wave energy, said apparatus including an acoustic focusing device occupying a given aperture which aperture remains substantially fixed in position with respect to said object while said object is being scanned, and ultrasonic beam forming means including transducer means generating successive pulses of ultrasonic wave energy and beam scanning means for illuminating said certain internal structure through said focusing device with a scanning focused beam of said pulsed ultrasonic wave energy, said transducer means being situated remotely from both said focusing device and from said internal structure for receiving and detecting a signal portion of said focused beam relfected from said certain internal structure and returned through said focusing device to said transducer means after a time delay proportional to the distance between said remotely situated transducer means and internal structure; the improvement:

wherein said system displays said image of said certain internal structure in at least one frame, a frame comprising a first plurality of groups of image samples, each of said groups containing a second plurality of individual image sampls, and

wherein said beam scanning means comprises means for scanning an entire individual group of image samples in a first time period no greater than said time delay,

whereby respective signal portions of said focused beam corresponding to all said second plurality of individual image samples of any of said groups can be received and detected within the duration of a second time period equal to the sum of said first time period and said time delay and a frame can be displayed in a third time period equal to said first plurality of said second time periods.

4,131,024
PULSE-ECHO ULTRASONIC-IMAGING DISPLAY SYSTEM

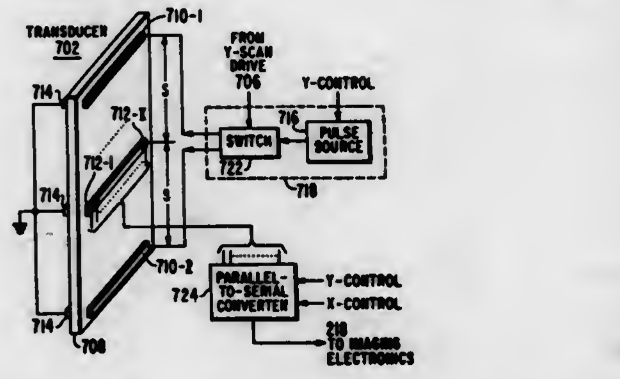
Reuben S. Mezrich, Rocky Hill, and David H. R. Vilkomerson, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 7, 1977, Ser. No. 766,528

Claims priority, application United Kingdom, Mar. 4, 1976, 08663/76

Int. Cl.^{2} G01N *29/00*

U.S. Cl. 73—606 **3 Claims**



1. In apparatus for use in an ultrasonic pulse-echo system capable of displaying an image of certain internal structure of a visually opaque object being scanned with ultrasonic wave energy, said apparatus including an acoustic focusing device occupying a given aperture which remains substantially fixed in position with respect to said object while said object is being scanned, and ultrasonic beam forming means including transducer means generating successive pulses of ultrasonic wave energy and beam scanning means for illuminating said certain internal structure through said focusing device with a scanning focused beam of said pulsed ultrasonic wave energy, said transducer means being situated remotely from both said focusing device and from said internal structure for receiving and detecting a signal portion of said focused beam reflected from said certain internal structure and returned through said focusing device to said transducer means after a time delay proportional to the distance between said remotely situated transducer means and internal structure; the improvement:

wherein said transducer means is situated in a given region in which said object is imaged by said focusing device, and said transducer means includes first and second parallel wave energy generating electrodes extending linearly in a first direction and spaced from each other by a certain distance, and a linear array of image-spot detecting electrodes extending in said first direction and situated halfway between said first and second electrodes, whereby all said detecting electrodes are the same given distance from said first electrode as they are from said second electrode, and

wherein said ultrasonic beam focusing means includes a pair of Risley prisms counter-rotating at a predetermined rate for linearly scanning said focused beam in second direction orthogonal to said first direction, said predetermined rate being related to said given distance such that during a certain half-cycle of rotation of said Risley prisms said detection electrodes each receive a signal portion of said focused beam generated by said first electrode and during the remaining half-cycle of rotation of said Risley prisms said detecting electrodes each receive a signal portion of said focused beam generated by said second electrode.

4,131,025
PULSE-ECHO ULTRASONIC-IMAGING DISPLAY SYSTEM

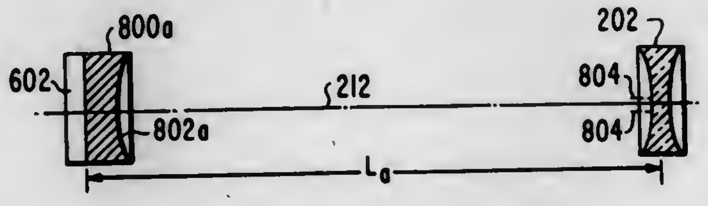
Reuben S. Mezrich, Rocky Hill, and Jeremiah Y. Avins, Kendall Park, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 7, 1977, Ser. No. 766,526

Claims priority, application United Kingdom, Jul. 26, 1976, 31114/76

Int. Cl.² G01N *29/00*

U.S. Cl. 73—606 **6 Claims**



1. In apparatus for use in an ultrasonic pulse-echo system capable of displaying an image of certain internal structure of a visually opaque object being scanned with ultrasonic wave energy, said apparatus including an acoustic focusing device occupying a given aperture which aperture remains substantially fixed in position with respect to said object while said object is being scanned, and ultrasonic beam forming means including transducer means generating successive pulses of ultrasonic wave energy and beam scanning means for illuminating said certain internal structure through said focusing device with a scanning focused beam of said pulsed ultrasonic wave energy, said transducer means being situated remotely from both said focusing device and from said internal structure for receiving and detecting a signal portion of said focused beam reflected from said certain internal structure and returned through said focusing device to said transducer means after a time delay proportional to the distance between said remotely situated transducer means and internal structure; the improvement:

- wherein said transducer means includes a substantially flat transducer plate situated with respect to said focusing device in an image plane of said object,
- wherein said focusing device includes at least one large aperture acoustic lens exhibiting abberation which by itself would cause said flat transducer plate to be imaged in a given curved image field, and
- wherein said beam forming means further includes a corrector plate situated between said transducer plate and said acoustic lens in substantially direct contact with said transducer plate, said corrector plate being made of a material exhibiting that predetermined normalized index of refraction with respect to its surroundings for said ultrasonic waves which is less than unity and having that predetermined varying thickness over its cross-section which makes said corrector plate substantially compensate for said abberation,
- whereby the presence of said corrector plate results in said flat transducer plate to be imaged in a flat image field.

4,131,026
ULTRASONIC TESTING OF SEAMS

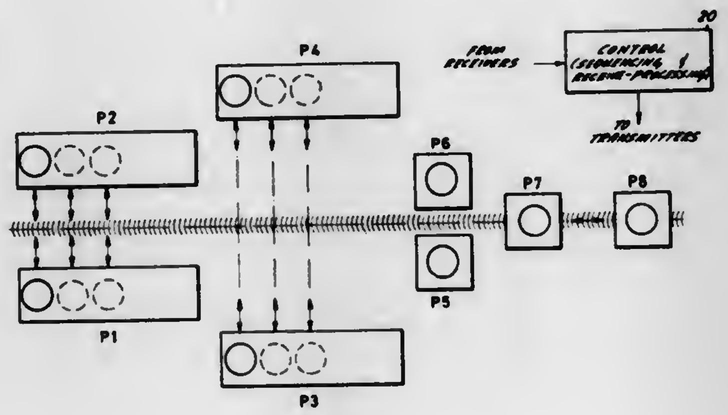
Karl Ries; Dieter Kaiser, both of Mülheim, and Klaus-Uwe Jannsen, Lintorf, all of Fed. Rep. of Germany, assignors to Mannesmannrohren-Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 18, 1975, Ser. No. 641,910

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1974, 2460713

Int. Cl.² G01N *29/04*

U.S. Cl. 73—625 **7 Claims**



1. Method of testing the welding seam of pipes, comprising:

- providing coupler fluid for contacting the pipe through which ultrasonic energy can be applied to and received from the pipe;
- (i) directing plural beams of ultrasonic energy from lateral directions without longitudinal component towards the welding seam, each beam being at right angles in relation to the longitudinal extension of the seam entering the pipe at different but fixed lateral distances from the seam, and detecting the interaction of the beams energy with different portions of the seam to obtain signal representations of the interactions including representation of any longitudinal defect in the said portion of seams, the energy being coupled to and from the pipe outside of the seam proper;
- (ii) directing ultrasonic energy towards the edges of the seam detecting interaction of the energy with a portion of the edges to obtain signal representation of such interaction including representation of any defect in such portions;
- (iii) directing ultrasonic energy towards the seam from a longitudinal direction without transverse component and independently from step (1) and detecting from another longitudinal direction the interaction of the energy with a portion of the seam to obtain a signal representation of the interaction including representation of any transversely extending defect in the latter portion of the seam;
- repeating the steps (i), (ii), (iii) sequentially on progressing portions of the seam in longitudinal direction to sequentially test the entire seam; and
- processing the said signal representation as obtained pursuant to the steps (i), (ii), (iii) as repeated to obtain representation of the respective signal contour and of the transition times in each instance for identifying defects on the basis of correlated responses of sequential steps (i) and (iii).

4,131,027
APPARATUS FOR ULTRASONIC INSPECTION OF THE WELDING SEAM OF LARGE PIPES

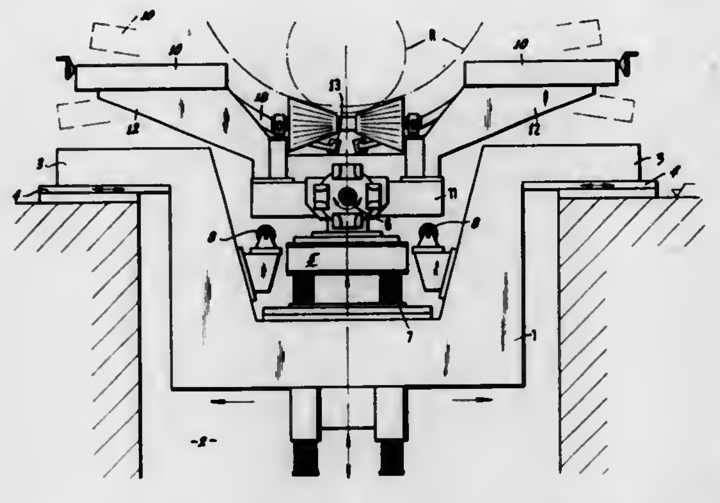
Wolfgang Terschüren; Karl Ries, both of Mülheim, and Dieter Lather, Rheurdt, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Feb. 10, 1977, Ser. No. 767,353

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1976, 2607011

Int. Cl.² G01N *29/04*

U.S. Cl. 73—638 **7 Claims**



1. Apparatus for inspecting the welding seam and its edge zones of large pipes for purposes of detecting flaws, comprising:

- a first table having a plurality of parallelly oriented slide beds, defining directions of sliding transversely to a longitudinal direction along which a pipe to be inspected is moved;
- a plurality of slides respectively slidably mounted in the beds;
- a plurality of swing arms respectively mounted in the slides for pivoting on axes parallel to said longitudinal direction and extending down from the slides and generally along the lower surface of the pipe, the respective ends of the swing arms are positioned under the pipe for movement in radial direction towards the pipe's surface;
- a first plurality of ultrasonic transducers, each said transducer being disposed in a container for coupler fluid, each container having a particular surface for engagement with a pipe thereby to orient the respective transducer in the container relative to the pipe's surface;
- means for mounting each of said containers in gimbals and respectively to the ends of the arms to obtain an adjustable disposition of the transducers in the container in relation to the pipe, and for engagement of the respective container with the pipe, whereby the containers engage the pipe in pairs and in symmetric relation to the seam to be inspected;
- means for resiliently bias the swing arms in a pivotal direction so that the containers engage the pipe's surface;
- means for mutually orienting the table and the seam, so that each transducer in the containers has a particular reproduceable position in relation to the seam as defined by a position adjustment of the respective slide in its bed in the table;
- a second plurality of ultrasonic transducers disposed in a container for coupler fluid;
- means for mounting said latter container in gimbals;
- means for positioning said latter means for mounting so that the transducer of the second plurality are aligned with said table and under the seam and the latter container engages the pipe at the seam;
- a pair of transducers disposed in a third container;
- means for mounting the third container in gimbals; and
- means for positioning the means for mounting the third container so that the transducers therein assume testing position in relation to the edge zone of the seam and the third container engages the seam.

4,131,028
MOTION CONVERSION MECHANISM

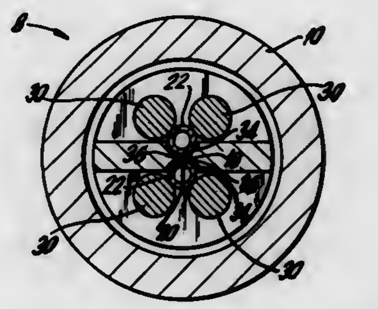
Stanley H. Gilman, White Plains, and Daniel M. Marcus, New River, both of N.Y., assignors to Gilman Manufacturing Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 551,613, Feb. 21, 1975, Pat. No. 3,990,317. This application Jul. 22, 1976, Ser. No. 707,760

The portion of the term of this patent subsequent to Nov. 9, 1993, has been disclaimed.

Int. Cl.² F16H *21/16*

U.S. Cl. 74—25 **9 Claims**



1. A mechanism for conversion between rotary and linear motion comprising a rotatable roller carriage defining a channel for axial passage of a shaft; a plurality of rotatable drive rollers orbitally movable with the rotation of said roller carriage, and positioned along said channel to form an acute angle therewith in driving engagement with the shaft; a plurality of retaining rollers rotatably held by said roller carriage parallel to, and in contact with, said drive rollers to retain said drive rollers in a shaft engaging position; and drive means for driving said drive rollers in a rotary fashion to linearly advance the shaft.

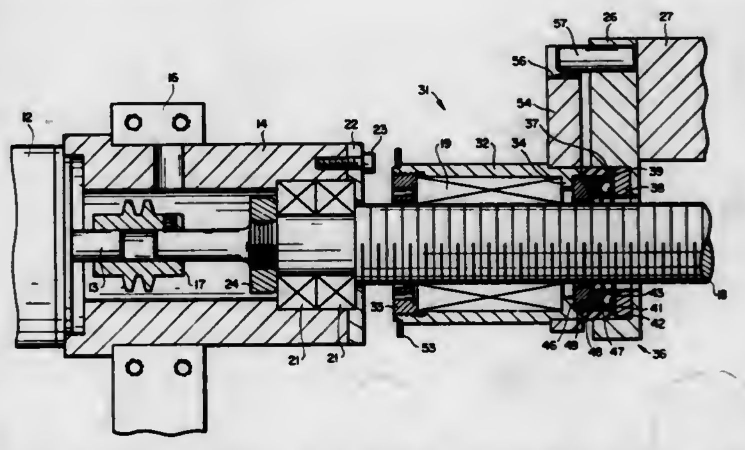
4,131,029
GIMBALLED COUPLING FOR LEAD SCREW AND NUT ASSEMBLY

Steven K. Harbaugh, Anaheim, and Frank R. Mitchell, South Pasadena, both of Calif., assignors to Eocom Corporation, Irvine, Calif.

Filed Jun. 10, 1977, Ser. No. 805,434

Int. Cl.² F16H *27/02*

U.S. Cl. 74—89.15 **6 Claims**



1. In the combination of a gimballed coupling and a lead screw and nut assembly, the lead screw and nut assembly comprising a lead screw and a nut threadedly mounted on the lead screw, said lead screw being adapted to be driven for imparting motion to the nut axially of the lead screw, the gimballed coupling comprising a housing captivating said nut, a transfer plate, a thrust bearing assembly carried by the transfer plate, first and second bearing members disposed between

the nut and the thrust bearing assembly, said first bearing member engaging said housing, said second bearing member engaging said thrust bearing assembly, said first and second bearing members having cooperative generally spherical surfaces, means carried by the transfer plate and the housing for yieldably urging the housing towards the transfer plate so that the first and second bearing members have their cooperative spherical surfaces in engagement with each other and means for preventing rotation of said housing with respect to said transfer plate.

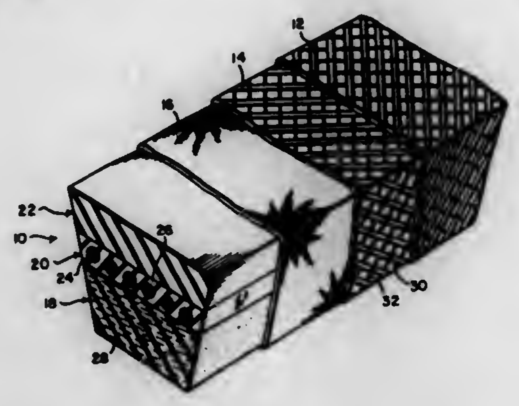
4,131,030
COVERING FOR POWER TRANSMISSION BELT

Jack D. White, Jr., Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Nov. 2, 1977, Ser. No. 847,964

Int. Cl.² F16G *5/08, 5/12*

U.S. Cl. 74—232 **6 Claims**



1. An endless power transmission belt having a trapezoidal cross-section comprising a belt body, two cord fabric cover layers, and a layer of woven fabric located between said belt body and said cord fabric cover layers; said cord fabric comprising strength cords extending at an angle to the longitudinal axis of the belt, and weak tie strands holding said strength cords in parallel position, the strength cords of one cord fabric cover layer extending at substantially opposite angles to the strength cords of the other cord fabric cover layer.

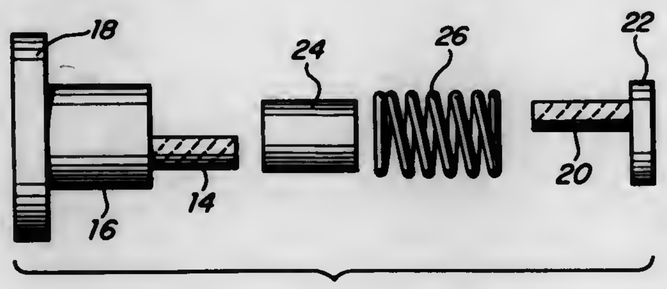
4,131,031
ANTI-BACKLASH NUT ASSEMBLY

Kenneth W. Erikson, Merrimack, and Keith W. Erikson, Nashua, both of N.H., assignors to Kerk Motion Products, Inc., Nashua, N.H.

Filed Jul. 19, 1977, Ser. No. 816,984

Int. Cl.² F16H *55/18, 1/18, 55/22;* **B21D** *53/28*

U.S. Cl. 74—441 **8 Claims**



1. An anti-backlash nut assembly designed to undergo translational movement along a screw having an external thread thereon in response to relative rotational movement between the nut assembly and screw, comprising, in combination:

a. a first portion of an axially-split nut having an internal thread complementary to the external thread of said screw;
b. a second portion of said axially-split nut, said second portion also having an internal thread complementary to the external thread of said screw;
c. means for retaining said first portion and said second portion of the axially-split nut in an aligned position around said screw whereby their internal threads engage the external threads of said screw; and,
d. means for biasing said first portion and said second portion of the axially-split nut in opposite longitudinal directions.

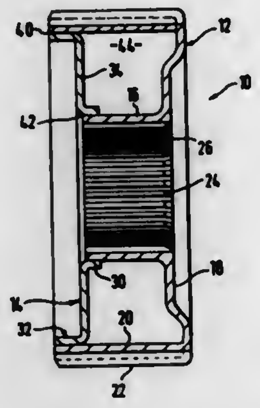
4,131,032
ROTARY DRIVE MEMBER

George W. Warland, Surbiton, and Norman F. Crisp, Bookham, both of England, assignors to Borg-Warner Limited, Letchworth, England

Filed Jun. 2, 1977, Ser. No. 802,841

Int. Cl.² F16H *55/12, 55/30;* **B21D** *53/28*

U.S. Cl. 74—449 **13 Claims**



1. A rotary drive member comprising a cup-shaped sheet metal member having an outer axially extending flange, a series of teeth formed in said outer flange for driving relationship of said member with an associated drive member, a first radial portion extending inwardly from one axial end of said outer axially extending flange and a second sheet metal radial portion extending inwardly from the other axial end of said outer axially extending flange and an inner flange portion forming a hub of said drive member, and connected to said first and second radial portion, wherein a lightweight, high-strength box-shaped annular sheet metal rotary member is provided.

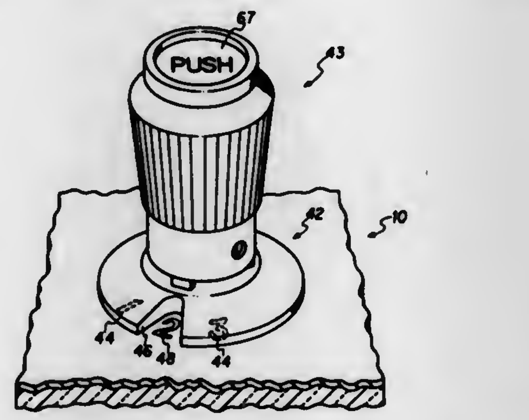
4,131,033
PUSH-PULL AND ROTATING KNOB

Norman Z. Wright, Marion, and Davey L. Printy, Cedar Rapids, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 18, 1977, Ser. No. 769,979

Int. Cl.² G05G *1/10*

U.S. Cl. 74—553 **8 Claims**



1. A knob adapted for mounting upon a shaft of a control device presenting push-pull and rotary selectable functions upon an associated panel of the type having indicia through which light may pass from a light source behind said panel for enabling night viewing, located at rotationally selectable positions, comprising:

a skirt slideably positionable on said shaft adjacent said panel to cover said indicia, said skirt having a window portion for disclosing selected indicia;
said skirt being located over said indicia to restrict them from view over an angle away from an axis along said shaft;
a plurality of arms attached to said skirt parallel to said shaft;
and an overlying knob attachable to said shaft, including therein longitudinal channel walls for axially slideably receiving said arms to facilitate the push-pull function selection and for engaging said arms when said overlying knob is rotated to rotate said skirt, said angle over which said indicia can be viewed being unaffected by by push-pull and rotation operations of said overlying knob.

4,131,034
ELECTROMOTIVELY DRIVEN DRIVE EQUIPMENT, ESPECIALLY FOR KITCHEN APPLIANCES OR THE LIKE

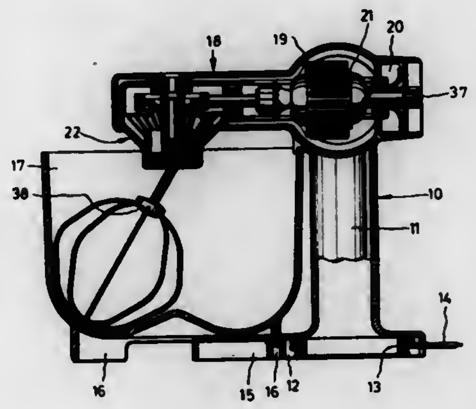
Mayer Rolf, Giengen, Germany, assignor to Bosch-Siemens Hausgerate GmbH, Stuttgart, Germany

Filed Nov. 16, 1976, Ser. No. 742,255

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1975, 2551842

Int. Cl.² F16H *1/30;* **B01F** *7/00*

U.S. Cl. 74—799 **9 Claims**



1. Electromotively driven drive unit with a planetary gearing having bevel-gear toothing and including a revolving planet gear having an inclined axis intersecting with the axis of a central gear of the planetary gearing, and a gear box for the planetary gearing having a plurality of journal shafts to which tools and devices drivable with varying rotary speeds are connectible, the improvement therein comprising an internally toothed outer ring gear disposed concentrically to the central gear of the planetary gearing, the planet gear being in meshing engagement both with the teeth of the central gear and the teeth of said ring gear, the plane gear with a pin formed thereon being seated in a bearing member rotatably disposed on the axis of the central gear, the planet gear moving together with said bearing member during a whirling movement thereof about the central gear, whereby said bearing member rotates at a slower rotary speed than said central gear.

4,131,035
HYDROMECHANICAL TRANSMISSION

Kiyohumi Mizuno, Nagoya; Hiroaki Maeda, Toyota; Shigeo Takahashi, Chiryu, and Tsukasa Watanabe, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Apr. 21, 1977, Ser. No. 789,739

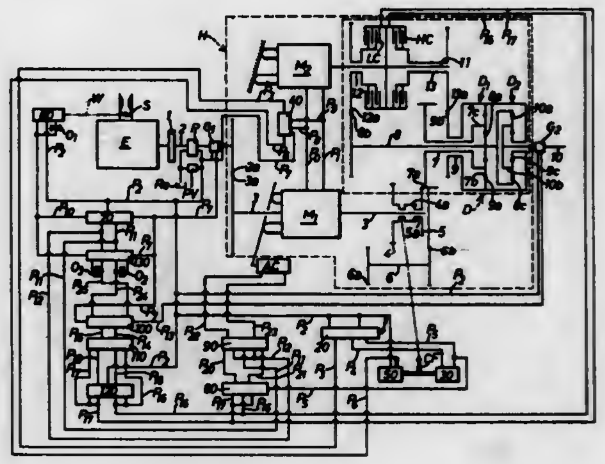
Claims priority, application Japan, Apr. 23, 1976, 51-46752

Int. Cl.² B60K *41/04*

U.S. Cl. 74—866 **7 Claims**

1. A hydromechanical transmission comprising:

an input shaft;
an output shaft;
a hydraulically controlled differential gear unit for selectively providing low and high speed drive power trains between said input and output shafts;
a first positive displacement pump-motor drivingly connected to said input or output shaft;
a second positive displacement pump-motor hydraulically connected with said first pump-motor;
a fluid actuator for controlling the displacement ratio of said first or second pump-motor;
a response valve for controlling line pressure applied to said actuator from a fluid pressure source in accordance with a difference in value between a first signal responsive to a throttle opening angle and a second signal responsive to the rotation speed of said input shaft;
low and high range clutch means operated by the line pressure from said fluid pressure source for switching-over said low speed drive power train to and from said high speed drive power train in response to variation of an actual speed ratio of said output shaft against said input shaft;
speed ratio detecting means for generating a signal therefrom when the actual speed ratio becomes a predetermined value;
clutch control means for selectively operating said low and high range clutch means in response to the signal from said speed ratio detecting means; and
means for conducting the operation of said clutch control means such that said low and high range clutch means are selectively operated only when said difference in value between said first and second signals becomes a predetermined value.



4,131,036
METHOD AND APPARATUS FOR TRANSMISSION CONTROL SYSTEM

John S. Ivey, Bloomfield Hills, Mich., and Alan L. Miller, Mount Prospect, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 10, 1977, Ser. No. 805,363

Int. Cl.² B60K *41/18*

U.S. Cl. 74—866 **14 Claims**

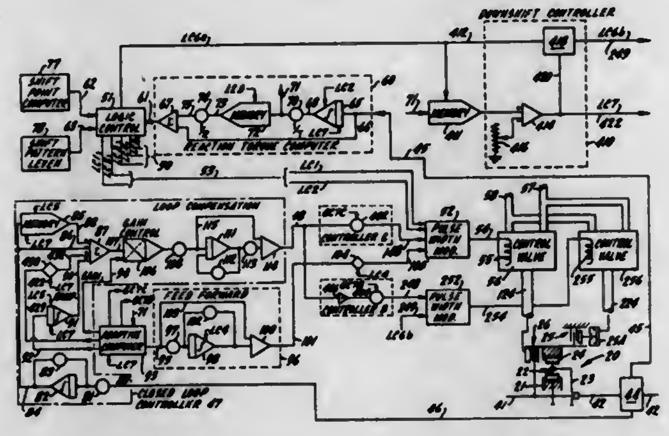
1. An electronic control system for regulating change of gear ratio in an automatic transmission which has input and output mechanical driving connections, a first and second controllable friction elements connected for actuation by a change in fluid pressure applied thereto comprising:

a transducer, positioned to sense the torque at the transmission output driving connection and to provide an electrical signal which varies as a function of the output torque;
a first control valve, coupled to a supply fluid line for regulating the fluid pressure at the first friction element;
a second control valve, coupled to the fluid supply line for regulating the fluid pressure at the second friction element;
first and second pulse width modulation circuits, respectively coupled to the first and second control valves, for

providing control signals to regulate operation of the valves;

a closed loop controller, coupled between the transducer and the pulse width modulation circuits, including means to provide an output shaft torque downshift ramp in response to a downshift signal and to receive the output torque signal as a feedback signal and provide an error signal with respect to said ramp for regulating operation of the first and second pulse width modulation circuits as a function of the error signal;

said error signal being plus or minus and means in the circuit between said closed loop controller and said second pulse width modulation circuit to invert said signal whereby said first and second pulse width modulation circuits react oppositely to said error signal so that said friction elements are controlled in a way to have the output shaft torque follow said downshift ramp.



12. The method of regulating gear ratio change by control of two engageable devices in a gear set coupled between an automotive engine and an output drive, comprising the steps of:

sensing the output torque provided by the gear set;

providing a feedback signal which varies as a function of the output torque;

establishing a reference torque ramp signal;

continually comparing the feedback signal with the torque ramp signal to develop an error signal throughout the gear ratio change;

providing actuation means responsive to the error signal to control the engageable devices; and

having said actuation means and said engageable devices arranged such that one of said devices is actuated toward engagement and the other toward disengagement in response to said error signal whereby said output shaft torque will follow said torque ramp during said shift.

4,131,037
ADJUSTABLE INTERLOCK HAND LEVER

Roger F. Olsen, Cuyahoga Falls, and George Cantley, Akron, both of Ohio, assignors to Incom International Inc., Pittsburgh, Pa.

Filed Jul. 29, 1977, Ser. No. 820,490

Int. Cl.^{2} B60K *41/04;* G05G *5/10, 11/00, 1/00*

U.S. Cl. 74—876 **27 Claims**

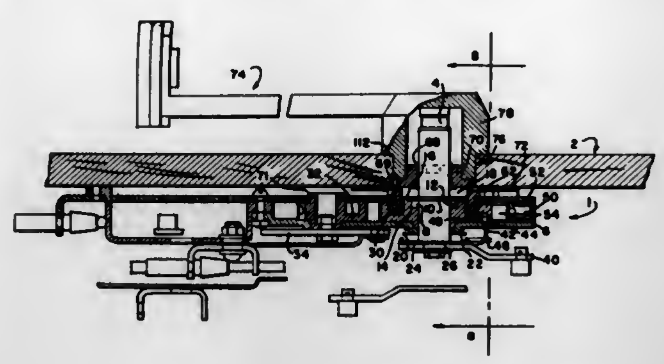
12. Adjustable interlock apparatus for a control unit having a shaft rotatably supported in and axially translatable with respect to a housing comprising,

a collar disposed about the shaft and having a notch in an axially outward surface,

engaging means connected to the shaft and having an axially inward surface abutting the axially outward surface of the collar for preventing axial translation of the shaft toward the housing when the shaft is rotated from a selected interlock position,

the engaging means further configured to engage the notch when the shaft is rotated to the selected interlock position thereby permitting axial translation of the shaft toward the housing,

and retaining means connected to the housing and collar for securing the collar in a rotational orientation selected to permit engagement of the notch and engaging means when the shaft is rotated to the interlock position.



4,131,038
GUIDE DEVICE FOR SHARPENING SAWS

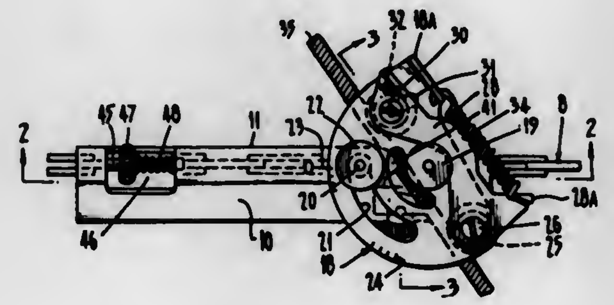
Cornelis J. Beerens, 16 Anchorage St., Merville Village, Paranaque, Rizal, Philippines

Filed Jul. 8, 1977, Ser. No. 813,848

Claims priority, application Australia, Jul. 8, 1976, 6582/76

Int. Cl.^{2} B23D *63/10*

U.S. Cl. 76—25 A **8 Claims**



1. A file guide device for use in sharpening the teeth of a saw having a saw plane comprising a support member adapted to be attached to a saw in a predetermined relation to the teeth of the saw, a pair of parallel rollers each having a peripheral surface and being mounted for rotation in a roller rotation plane on a respective axis, said rollers being carried by the support member, the peripheral surface of each roller defining a seat for a file to be used to sharpen the saw teeth, said roller rotation plane and the axes of the rollers being arranged so that, upon the support member being attached to the saw, the axis of a file seated in the seats of the rollers has an inclination to the saw plane substantially equal to the angle of the cutting edge of a saw tooth, at least one of said rollers being mounted on an independent member, said independent member being supported for limited movement relative to the support member to effect movement of the file axis toward or away from the cutting edge of said saw tooth when the support member is attached to the saw, and means operable for urging the independent member to move in a direction to move the file axis toward said cutting edge.

4,131,039
TIGHTENING FORCE LIMITING DEVICE

Michel J. Garconnet, 22 rue du Docteur Vitet, Saint Nicolas d'Aliermont, France

Filed Feb. 2, 1977, Ser. No. 764,948

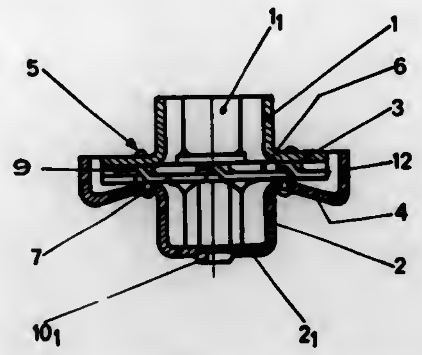
Claims priority, application France, Feb. 3, 1976, 76 02985

Int. Cl.^{2} B25B *23/14*

U.S. Cl. 81—52.4 R **6 Claims**

1. A device for limiting tightening force comprising a pair of end fitting bodies, one of said end fitting bodies being adapted to connect to a tightening member and the other of said end

fitting bodies being adapted to connect to a member to be tightened, a first disc having a plurality of slots, said first disc being fixedly connected to one of said end fitting bodies, a second disc of resilient material being fixedly secured to the other of said end fitting bodies, a plurality of inclined tongues extending from said second disc, said two discs being arranged coaxial to one another and each of the tongues of said second disc being received within one of the slots of said first disc for transmitting the tightening force between said end fitting bodies, said tongues being adapted to move out of said slots when the rotational force in one rotational direction exceeds a given value, and an assembly pin connected to one of said bodies, said pin extending through a central hole in said discs.



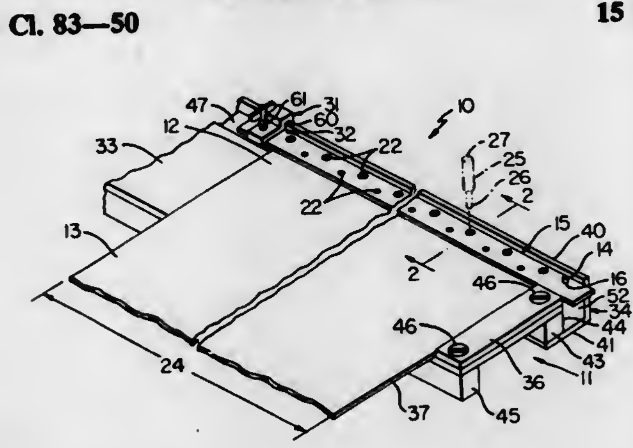
4,131,040
PRINTING BLANKET HOLE FORMING APPARATUS AND METHOD

Jacob A. Bollmer, Dayton, Ohio, assignor to Dayco Corporation, Dayton, Ohio

Filed Nov. 14, 1977, Ser. No. 851,091

Int. Cl.^{2} B26F *1/32*

U.S. Cl. 83—50 **15 Claims**



13. A method of forming holes in a printing blanket comprising the steps of, supporting an end portion of a blanket on a support, fixing a locating pin to one end of said support, providing a template having at least one template locating hole therein and a set of openings therein associated with said one hole, positioning said template by disposing said locating hole thereof around said pin with an end portion of a blanket supported on said support, clamping said template against said blanket and support at a location remote from said locating hole, and forming holes in said blanket as determined by said openings employing an associated hole forming device by extending said device first through the openings in said template and then through said blanket to form corresponding holes in said blanket.

4,131,041
COLLECTOR FORMING AN ACCUMULATING STACK FROM SUCCESSIVELY RECEIVED SEVERED SECTIONS OF PHOTOGRAPHIC STRIP

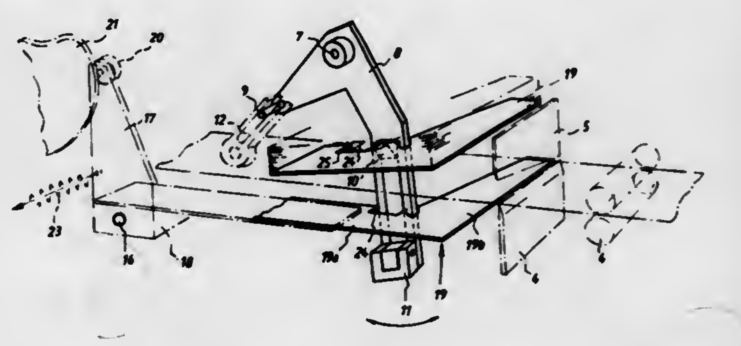
Heinz Lüdemann, Münich; Harald Fengler, Taufkirchen, and Ferdinand Schaner, Münich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Sep. 6, 1977, Ser. No. 830,446

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1976, 2640478

Int. Cl.^{2} B65H *31/24*

U.S. Cl. 83—94 **17 Claims**



1. In an apparatus for processing a long photographic strip, in combination, means for transporting the long photographic strip along a predetermined path; cutting means located along the path and operative for severing the successive leading end sections of the strip from the remainder of the strip to successively form severed strip sections; and collecting means operative for receiving the successively formed severed strip sections in succession and forming an accumulating stack of such sections, including holding means operative for holding the successively received strip sections in position in the accumulating stack individually, the holding means comprising a succession of individually activatable holding units, and means for activating successive ones of the succession of holding units in synchronism with the receipt of successive severed strip sections by the collecting means, the succession of individually activatable holding units comprising a stack of holding plates, the means for activating the successive ones of the holding units comprising means for laying successive ones of the holding plates upon respective successively received ones of the strip sections received by the collecting means and causing each holding plate laid upon a received strip section to exert a holding force upon the respective strip section.

4,131,042
APPARATUS FOR CUTTING AND REMOVING DRY FILM PHOTORESIST FROM PRINTED WIRE BOARDS

Dennis E. Rich, Riverton, Utah, and Conrad J. Steigerwald, Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Dec. 27, 1977, Ser. No. 864,562

Int. Cl.^{2} B26F *1/02;* B21D *45/02*

U.S. Cl. 83—100 **10 Claims**

1. Apparatus for cutting and removing from a laminated board having a base, with an opening through the base, segments of the outer laminations overlaying said opening, comprising:

a base plate having an upper planar surface;

a lower cutter having a cutting edge, said cutting edge substantially defining a lower cutter plane;

means for mounting the lower cutter on the base plate so that the lower cutter plane projects above the planar surface of the base plate a predetermined distance;

a lower plunger having a top surface mounted for movement within said lower cutter, said lower plunger having an extended position and a retracted position;

a cutter head mounted on the base plate at a substantially fixed distance above the upper surface of the base plate;

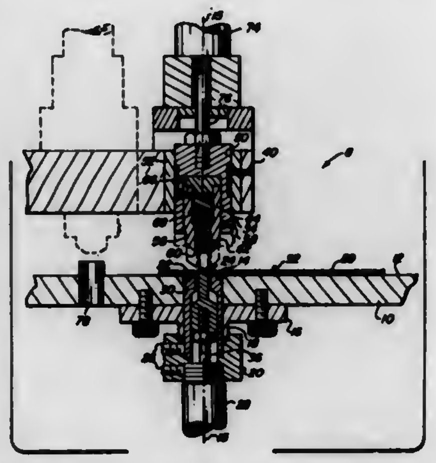
an upper cutter having a cutting edge, said cutting edge of the upper cutter defining an upper cutter plane;

means for mounting said upper cutter on said cutter head for linear reciprocal movement between a retracted positon and an extended position in which the upper cutter plane is spaced a predetermined distance from the lower cutter plane;

an upper plunger having a lower surface mounted for linear movement in said upper cutter;

bias means for biasing said upper plunger toward said base;

cutter actuator means for moving the upper cutter from its retracted to its extended position;



plunger actuator means for causing said lower plunger to move from its retracted to its extended position, the top surface of said lower plunger being capable of contacting the lower surface of the upper plunger when the upper cutter and the lower plunger are in their extended positions; and

conduit means formed in said upper cutter, said conduit means adapted to be connected to a source of vacuum to cause material severed by said cutters to adhere to the upper plunger.

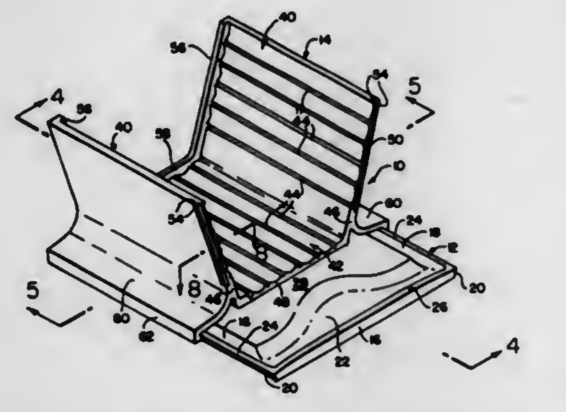
4,131,043
FOOD-SLICING DEVICE

Benjamin W. Colman, 8616 Nadine Ave., Huntington Woods, Mich. 48070, and Montgomery Ferar, Huntington Woods, Mich., assignors to Benjamin W. Colman, Huntington Woods, Mich.

Filed Nov. 10, 1976, Ser. No. 740,732

Int. Cl.^{2} B26D *4/42*

U.S. Cl. 83—167 17 Claims



1. In a slicing device, the improvement comprising in combination a cradle having upstanding outwardly diverging walls disposed at an acute angle to each other and spaced apart from each other by an intermediate substantially horizontal web section therebetween of substantial width connected to said walls and adapted to receive and support thereon a product to be sliced,

said walls and web section being commensurate with and of a length sufficient to support said product thereon, and an anvil tray having a generally planar area adapted to receive and support the slices cut from said product, associatedly conjoined to said cradle, extending forwardly thereof in a plane below the product-supporting plane of said intermediate web section, and adapted to receive the cutting edge of a blade slicing the portion of said product extending beyond the forward edges of said cradle walls and web section.

4,131,044
CUT-OFF MECHANISM FOR PAPER TOWEL DISPENSER

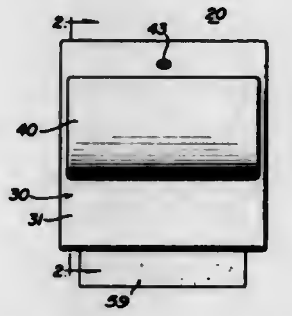
Antonio M. Cassia, La Milan, Italy, assignor to Steiner American Corporation, Salt Lake City, Utah

Filed Sep. 19, 1977, Ser. No. 834,404

Claims priority, application Italy, May 2, 1977, 49217 A/77

Int. Cl.^{2} B26D *5/26*

U.S. Cl. 83—205 19 Claims



1. Cutting apparatus for use in a dispenser for dispensing a web of paper towel from a supply roll thereof and having a feed roller rotatable during dispensing of the web, said cutting apparatus comprising a cutting member mountable on the dispenser for movement between a normal rest position and a cutting position for cutting the associated web between a dispensed portion and the supply roll thereof, drive means adapted to be coupled to the feed roller and to said cutting member for effecting movement thereof between the rest and cutting positions thereof, and latch means mountable on the dispenser for cooperation with said drive means normally to retain said cutting member in the rest position thereof during dispensing of the associated web, said latch means and said drive means being responsive to rotation of the feed roller through a predetermined angle during dispensing of the associated web for actuating said drive means to effect movement of said cutting member from the rest position to the cutting position thereof and then back to the rest position thereof.

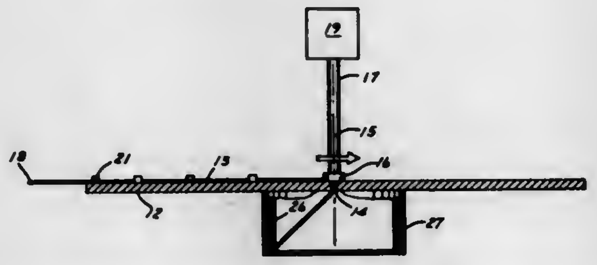
4,131,045
METHOD AND APPARATUS FOR ACCELERATING A FILAMENT AND THE LIKE

Dennis R. Peterson, P.O. Box 1090, Los Alamos, N. Mex. 87544

Filed Apr. 20, 1977, Ser. No. 789,352

Int. Cl.^{2} B26D *1/12, 1/48*

U.S. Cl. 83—403 18 Claims



1. In a filament accelerating apparatus the combination comprising:

impelling means for applying an impelling force to a length of filament having a tip portion a torque arm distance from an axis of rotation to rotate said length of filament about said axis of rotation to develop a selected tip speed in said tip portion; and

means providing for the controlled advancement of said length of filament along its longitudinal axis toward said tip portion during the application of said impelling force,

said length of filament being the end section of a supply of filament movable toward said tip portion under the influence of centrifugal forces on the length of filament resulting from the application of said impelling forces and including supporting means including surfaces disposed at a location departing from a radial line of the torque arm movable with said impelling means against which said length of filament moves during advancement for reducing the tension in said length of filament caused by the centrifugal forces on said length of filament for increased filament tip speed.

4,131,046
APPARATUS FOR SEVERING A WEB

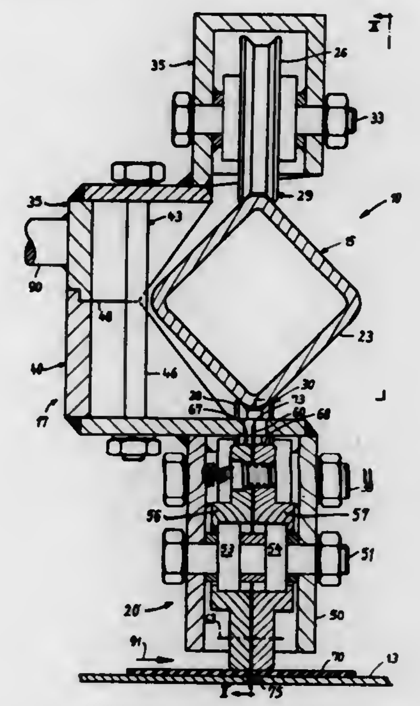
Willi Strohmeyer, Grimsehlstrasse 37, D 3352 Einbeck, Fed. Rep. of Germany

Filed Oct. 27, 1977, Ser. No. 847,915

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1976, 2650355

Int. Cl.^{2} B23D *19/00;* B26D *1/18*

U.S. Cl. 83—471.2 10 Claims



1. An apparatus for cutting a web workpiece, said apparatus comprising:

a support having an upper flat support surface formed with an elongated slot extending in a cutting direction;

an elongated guide generally parallel to and above said support surface;

a carriage longitudinally displaceable along said guide;

bearing means is said carriage defining therein an axis substantially perpendicular to said direction and non-displaceable in said carriage;

a wheel rotatable in said carriage about said axis and having an outer periphery centered on said axis and engageable through a web workpiece lying on said surface with said surface;

mounting means supporting at least said carriage, said bearing means and said wheel on said support surface with said periphery, whereby said carriage, said bearing means and said wheel bear with their joint weight on said surface or on a web workpiece lying thereon through said periphery; and

a cutter disc fixed to and jointly rotatable with said wheel and lying in a plane parallel to said direction and substantially perpendicular to said axis, said disc having a cutting edge centered on said axis and extending radially beyond said periphery into said slot.

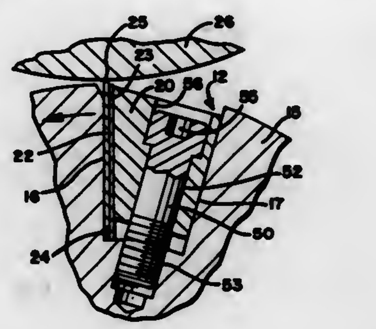
4,131,047
ROTARY KNIFE MOUNTING

Louis Schriber, and John F. Blaha, both of Dayton, Ohio, assignors to Harris Corporation, Cleveland, Ohio

Filed Mar. 28, 1977, Ser. No. 781,838

Int. Cl.^{2} B26D *1/40, 4/72*

U.S. Cl. 83—698 5 Claims



1. In a rotary cutter including a cutter cylinder having a web engaging surface portion and a longitudinal slot adapted to receive a knife,

a knife located in said slot and having a cutting edge extending out of said slot beyond said surface portion, said knife having a width less than the depth of said slot whereby the edge of said knife opposite said cutting edge is spaced from the bottom of said slot,

a wedge bar within said slot adapted to exert a force holding said knife against a side of said slot,

preloading means acting on said wedge bar to retain said knife in said slot with a force sufficient to hold said knife against manual movement but which may be overcome during seating of said knife against an anvil,

release means acting to move said bar outwardly of said slot against the force of said preloading means for insertion or removal of said knife, and

clamping means acting on said bar additive to said preloading means to clamp the knife to said cylinder after the knife is seated.

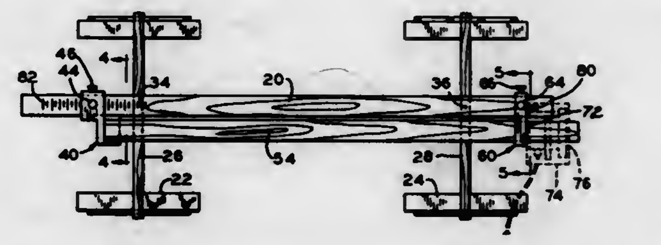
4,131,048
WORKPIECE AND WORK TOOL CUTTING JIG

Roger D. Dickes, 15415 Lima Rd., Huntertown, Ind. 46748

Filed Jul. 27, 1977, Ser. No. 819,299

Int. Cl.^{2} B27B *11/04*

U.S. Cl. 83—745 1 Claim



1. Jig apparatus comprising an elongate reference beam; a reference stop longitudinally adjustably mounted on said beam and having a laterally extending member for receiving and providing a reference surface for longitudinally positioning one end of a workpiece;

first means for releasably holding said stop on said beam;

a reference guide longitudinally adjustably mounted on said beam and having a laterally extending surface overlying the workpiece for guiding a work tool in reference to the workpiece;

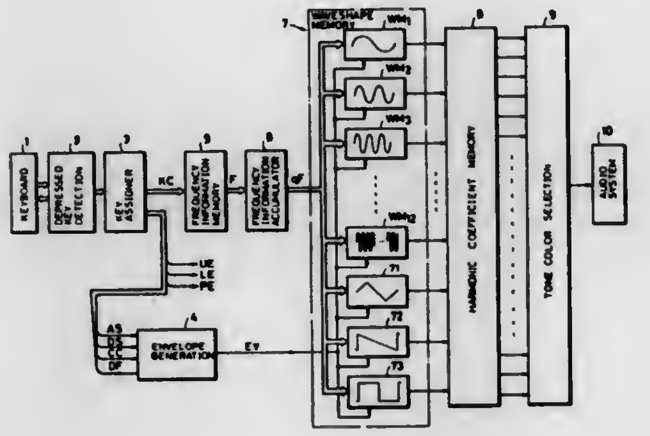
second means for releasably holding said stop on said beam;

said stop has an opening for slidably receiving said beam and through which said beam extends;

said stop reference surface being vertical and engageable by the one end of the workpiece for longitudinal positioning of the workpiece;
said stop having a laterally extending horizontal surface underlying said workpiece for vertically supporting said workpiece;
said stop having a vertical longitudinally aligned surface for laterally positioning a side of said workpiece.

4,131,049
ELECTRONIC MUSICAL INSTRUMENT HAVING MEMORIES CONTAINING WAVESHAPES OF DIFFERENT TYPE

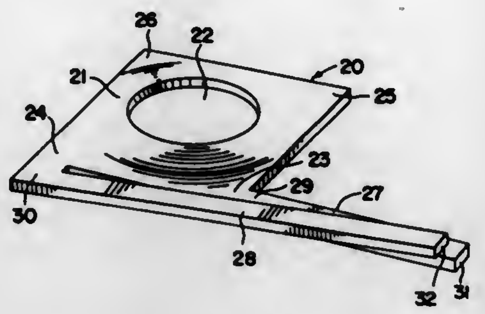
Takatoshi Okumura, and Shimaji Okamoto, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Filed Oct. 5, 1976, Ser. No. 729,690
Claims priority, application Japan, Oct. 6, 1975, 50-120519
Int. Cl.^{2} G10H *1/00*
U.S. Cl. 84—1.01 **3 Claims**



1. An electronic musical instrument for generating a musical tone, comprising:
addressing means for providing a memory address signal proportional to the phase separation between consecutive sample points of the musical tone being generated;
a plurality of sinusoidal waveshape memories respectively storing individual sinusoidal waveshapes each corresponding to a specific number of harmonic components and being read by said memory address signal from said addressing means;
at least one complex waveshape memory each storing a complex waveshape containing abundant harmonic components and each being read by said memory address signal from said addressing means; and
a circuit for suitably mixing the respective waveshapes read from said sinusoidal waveshape memories and said at least one complex waveshape memory for producing said musical tone, said circuit including scaling networks for individually scaling the outputs of each of said sinusoidal and complex waveshape memories so as to produce a desired tone color.

4,131,050
VISUAL LOAD INDICATOR

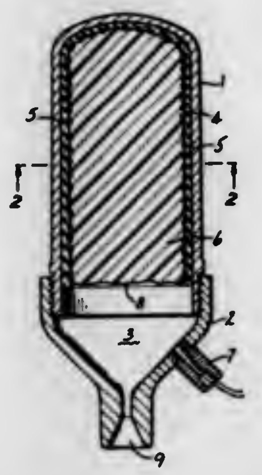
Peter C. Holmes, Gates Mills, Ohio, assignor to The Solon Manufacturing Company, Chardon, Ohio
Filed Jul. 5, 1977, Ser. No. 812,691
Int. Cl.^{2} F16B *31/02*
U.S. Cl. 85—62 **15 Claims**



1. A load indicator which comprises:
a single compressible spring washer portion capable of deflection when compressed;
a first lever attached to the washer portion and axially deflected as the washer portion is compressed; and
a second lever attached to the washer portion and axially deflected as the washer portion is compressed; the first and second levers being attached to different parts of the washer portion and being deflected toward each other when the washer portion is deflected under compression.

4,131,051
PROCESS FOR PREPARING A ROCKET MOTOR

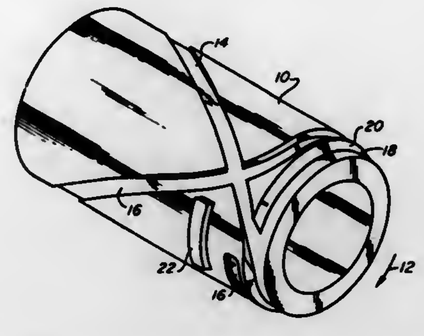
Otto G. Schaffling, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.
Division of Ser. No. 143,275, Oct. 2, 1961, Pat. No. 3,965,676. This application May 21, 1964, Ser. No. 373,126
Int. Cl.^{2} F42B *33/10*
U.S. Cl. 86—1 R **9 Claims**



1. In the process for preparing a rocket motor, the improvement which comprises applying a layer of an uncured organic material capable of being cured to a rubbery material, to the interior combustion chamber wall of a rocket vessel, partially embedding powder grains in the exposed surface of said uncured material before solidification, thereafter curing and solidifying said uncured material, whereby a rubberbase liner is formed having one surface firmly adherng to said wall and said powder grains firmly adhering to the exposed surfaces of said liner with a portion of each powder grain protruding from said liner, filling the lined portion of the chamber with a thermoplastic propellant charge, and solidifying said propellant charge, whereby a firmly adhering bond is formed between the solidified propellant charge, the powder grains and the solidified liner.

4,131,052
DRUM CAM WITH ANTI HANG-FIRE FEATURE

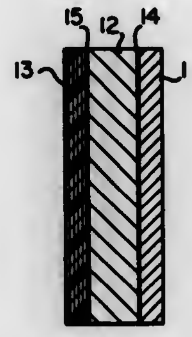
Fred J. Skahill, Davenport, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jul. 5, 1977, Ser. No. 812,878
Int. Cl.^{2} F41D *7/02*
U.S. Cl. 89—11 **6 Claims**



1. A drum cam with anti hang-fire feature, in combination with the operating group of an externally powered automatic weapon, said cam comprising:
a drum having a first diagonal groove for moving said operating group forward to in-battery position when a cam follower on said group is positioned in said first groove and said drum is rotating,
said drum having a second diagonal groove for moving said operating group rearward to recoil position when a cam follower on said group is positioned in said second groove and said drum is rotating, and
means responsive to the recoil of said operating group after firing of a cartridge for moving said cam follower into said second groove.

4,131,053
ARMOR PLATE

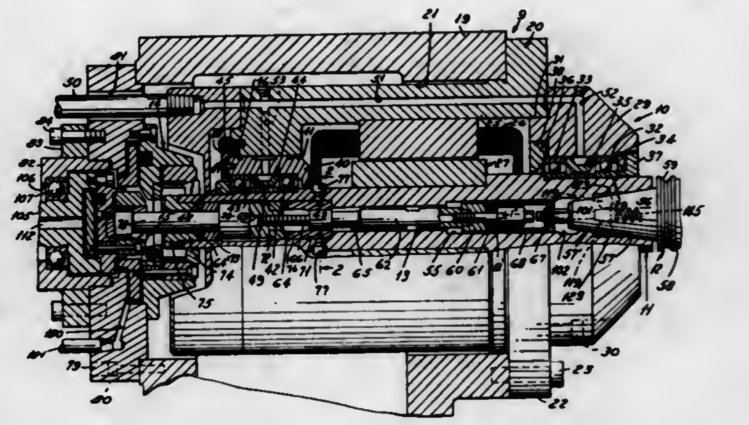
Wilfred J. Ferguson, Hillcrest Heights, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 30, 1965, Ser. No. 484,789
Int. Cl.^{2} F41H *5/04*
U.S. Cl. 89—36 A **4 Claims**



1. An armor capable of fragmenting projectiles and protecting against fragments which comprises:
first, second and third layers of different armor material secured together by a bonding material,
said first layer is formed of a hard face, low density material,
said second layer is formed of a material having a low density and high young's modulus with a greater ductility than said hard face first layer with a thickness greater than said first and said third layer, and
said third layer is formed of a resin reinforced with high strength fibers.

4,131,054
HIGH SPEED SPINDLE AND DRAW BAR ASSEMBLY

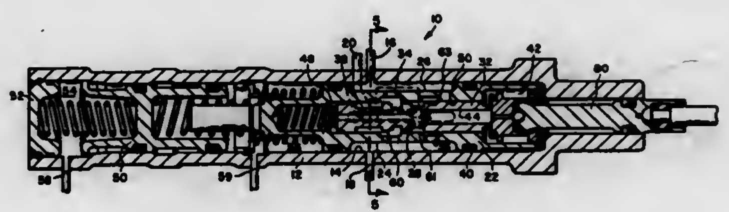
Charles R. Johnson, Howell; John K. Forlow, Wixom; Paul G. Black, Whitmore Lake, all of Mich.; William A. Mitchell, and John S. Clark, both of Springfield, Vt., assignors to Ex-Cell-O Corporation, Troy, Mich.
Continuation-in-part of Ser. No. 739,417, Nov. 8, 1976, abandoned. This application Feb. 9, 1977, Ser. No. 767,013
Int. Cl.^{2} B23C *5/26*
U.S. Cl. 90—11 D **19 Claims**



1. In a machine tool having a rotary hollow spindle shaft with a draw bar assembly including a tool holder gripping means mounted in said spindle shaft for axial movement with respect thereto, between an operative position for retaining a tool holder or the like in said spindle shaft, and an inoperative position to permit a tool holder or the like to be removed from or inserted into the spindle shaft, the combination comprising:
(a) actuator means for moving said draw bar assembly between said operative and inoperative positions;
(b) spindle shaft holding means for holding the spindle shaft stationary when the draw bar assembly is moved between said operative and inoperative positions;
(c) a drive motor;
(d) means for selectively connecting and disconnecting said drive motor and said draw bar assembly; and
(d) indicator means operatively connected to said drive motor for indicating an inoperative tool holder gripping means and a no-tool holder condition.

4,131,055
NOISE REDUCING CONTROL VALVE FOR A HYDRAULIC BRAKE BOOSTER

Louis R. Erwin, Livonia, Mich., assignor to The Bendix Corporation, Southfield, Mich.
Filed Feb. 3, 1977, Ser. No. 765,322
Int. Cl.^{2} F15B *9/10;* F16K *47/00;* F16L *55/02*
U.S. Cl. 91—378 **10 Claims**

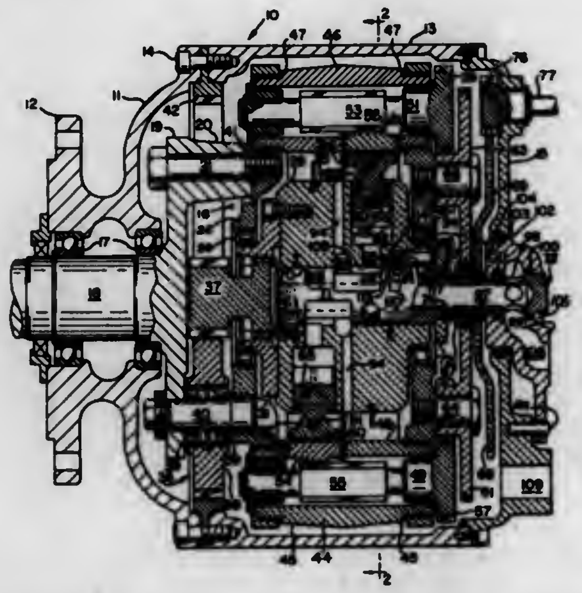


1. A control valve for a hydraulic booster comprising:
a housing having a bore therein and inlet and outlet ports communicating with the bore;
a piston slidably mounted in said bore, said piston having a bore therein communicating with the inlet port and the outlet port through openings on the piston, said piston forming a pressure chamber with the housing bore and cooperating with means for actuating a brake application upon movement of said piston within the housing bore;
a valve member slidably mounted within said piston bore, said valve member being movable within said piston bore

upon a brake application to restrict the communication between said inlet and outlet ports and to open the communication between said inlet port and the pressure chamber to move said piston within said housing bore;
said valve member including a land cooperating with said piston bore to restrict the communication between said inlet and outlet ports, said land including a first diameter portion, a second diameter portion and a recess between the first and second diameter portions, said first diameter portion having a larger diameter than said second diameter portion, said second diameter portion and said recess cooperating with said piston bore to restrict the communication between said inlet and said outlet ports.

4,131,056
PILOT CONTROLLED VARIABLE DISPLACEMENT FLUID MOTOR

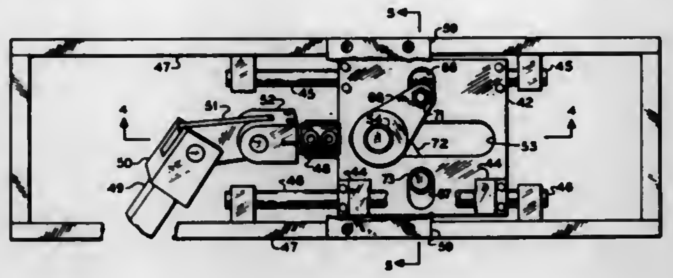
Harvey W. Rockwell, Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.
Filed Dec. 15, 1977, Ser. No. 860,989
Int. Cl.² F01B *1/06*
U.S. Cl. 91—492 **12 Claims**



1. A combination fluid motor and drive unit comprising, in combination, an exterior housing member, a power output member having a portion extending through a part of said housing and journalled for rotation relative to said housing, said drive member including means for supporting at least one output driven gear, at least one output driven gear received on a portion of said power output member and mounted for rotation relative thereto, an output drive gear having portions engaging said driven gear, means positioning said drive gear within said housing and supporting said drive gear for rotation relative to said housing, a cylinder block disposed within said housing and being supported for rotation with respect to said housing, a drive connection between said cylinder block and said drive gear, means engaging said driven gear to cause rotation of said power output member upon rotation of said driven gear, valve means associated with said cylinder block for directing fluid under pressure into said cylinders, a plurality of piston and slipper assemblies each having a portion received within one of the cylinders in said block, at least one torque reaction receiving ring surrounding said piston and cylinder units, said torque reaction receiving ring including an inwardly directed cylindrical raceway for said slipper assemblies, said ring being movable among a plurality of positions including positions of both offset and concentric disposition with respect to said cylinder block to change the torque and directional operating characteristics of said cylinder block, and control means for positioning said ring in a desired one of said plurality of positions.

4,131,057
APPARATUS FOR FORMING A CONVOLUTED CONTAINER SIDEWALL

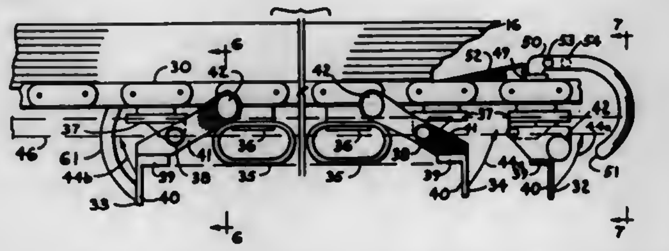
Silvio T. Farfaglia, Fulton, N.Y., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Sep. 29, 1976, Ser. No. 727,910
Int. Cl.² B31B *1/32*
U.S. Cl. 93—81 R **14 Claims**



1. Apparatus for wrapping a blank about a mandrel, with the mandrel being in a blank wrapping position, to form a convoluted tubular sidewall, which comprises a mandrel; a clamping means associated with said mandrel to hold an intermediate portion of a blank therebetween; first and second folding wing means; each of said first and second folding wing means having a frame, a wiping blade and means for resiliently mounting the wiping blade in the frame for movement of the blade along a line radial to the longitudinal axis of said mandrel when said mandrel is in the blank wrapping position; said first and second folding wing means being positioned for the wiping blades to contact the outer surface of the thus held blank on opposite sides of said clamping means; means for rotating each of said first and second folding wing means about the longitudinal axis of said mandrel in the blank wrapping position in an at least substantially constant distance from the longitudinal axis of said mandrel to wrap the blank about said mandrel with one side margin of said blank overlapping the opposite side margin of said blank; and means for sealing the thus overlapped side margins to thereby form a convoluted tubular sidewall; one of said wiping blades having a generally L-shaped configuration with one leg of the L-shaped wiping blade forming the surface which contacts said blank, said one leg extending forwardly in the direction of movement of said L-shaped wiping blade during the wrapping of said blank about said mandrel to lead the forward edge of the other of said wiper blades to cause the side margin of said blank contacted by said L-shaped wiping blade to fold inwardly under the opposite side margin of said blank contacted by the other of said wiper blades.

4,131,058
END TAB FOLDING MECHANISM FOR CARTONS

Robert H. Graham, Spokane, Wash., assignor to R. A. Pearson Company, Spokane, Wash.
Filed Oct. 6, 1977, Ser. No. 839,884
Int. Cl.² B31B *1/26*
U.S. Cl. 93—49 R **11 Claims**

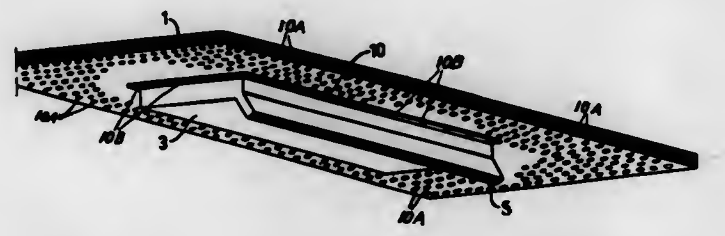


1. A mechanism for completing the folding of a carton having:
a) oppositely facing front and back end walls spaced longitudinally from one another;
b) a third wall having opposite longitudinal ends overlapping the separation between corresponding transverse edges of the first and second end walls; and

c) first and second foldable tabs formed integrally across the third wall at the respective longitudinal ends thereof, said tabs overlying and projecting outward beyond the respective front and back end walls for foldable engagement with the respective exterior surfaces thereof;
said mechanism comprising:
a framework;
guide means on said framework for supporting a carton for movement in a path parallel to the longitudinal dimension of said third wall;
carton engaging means on said framework for imparting movement to a carton along said path;
conveyor means movably mounted on said framework and located adjacent said guide means and having a working flight extending between opposite infeed and discharge ends thereof; said working flight being arranged parallel to said path;
means on said framework for powering said carton engaging means and conveyor means for continuous synchronous movement of a carton along said path while traversing the flight of said conveyor means;
said conveyor means comprising:
a) first transversely oriented tab folding means on the conveyor working flight;
b) operating means on said framework located between the infeed and discharge ends of the working flight for engagement with said tab folding means for causing it to fold and maintain said first tab against the exterior surface of said front end wall as the carton is moved continuously along the working flight of said conveyor means by said carton engaging means; and
c) second transversely oriented tab folding means on the conveyor working flight and for folding and maintaining said second tab against the exterior surface of said back end wall as the carton is moved continuously along the working flight of said conveyor means by said carton engaging means.

4,131,059
APPARATUS FOR FORMING AND CONTROLLING CURRENTS OF AIR

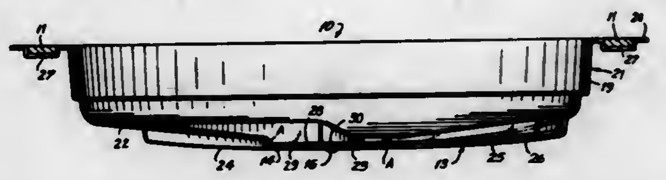
Lennart Gustavsson, Vaxjo, Sweden, assignor to AB Svenska Flaktfabriken, Nacka, Sweden
Filed Mar. 2, 1977, Ser. No. 773,758
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1976, 2609030
Int. Cl.² F24F *9/00*
U.S. Cl. 98—36 **11 Claims**



1. Apparatus for forming and controlling currents of air in a region, comprising:
perforate partition means adjacent said region;
air-moving means on the opposite side of said partition means from said region for pressurizing air on said opposite side to force currents of air through said perforate partition means into said region; and
box-like air guiding means adjacent said region and covering a perforate portion of said partition means, for receiving said air currents and concentrating their flow in a particular part of said region, said air guiding means being open on one side to said perforate portion of said partition means to receive said air currents and sealed about its periphery to said partition means, said air guiding means comprising one or more restricted openings to said region and being open substantially only to said perforate portion of said partition means and at said restricted openings, thereby to form from said received air currents at least one curtain a higher-velocity air directed into said region.

4,131,060
SELF-CLOSING EXHAUST FAN COVER

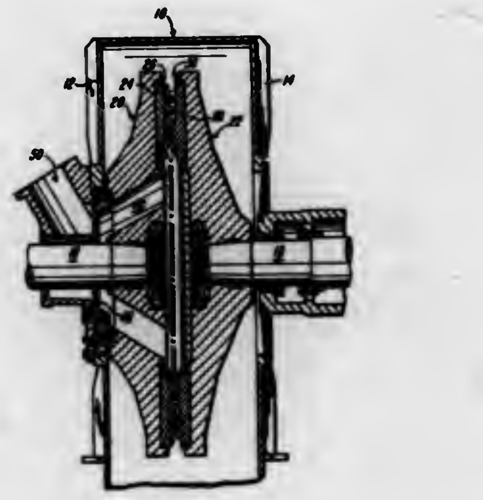
Merwin A. Caine, Jackson, N.J., assignor to The Crest Company, Jackson, N.J.
Filed May 6, 1977, Ser. No. 794,599
Int. Cl.² F04D *25/14*
U.S. Cl. 98—116 **10 Claims**



1. An exhaust fan cover assembly comprising a frame of sufficient size to cover a fan assembly, said frame having a periphery substantially defining a plane and a substantially dome-shaped region projecting from the plane defined by said periphery, said dome-shaped region having at least one, opening in a region thereof spaced from the apex of said dome-shaped region, and a resilient valve element secured to the inner surface of the dome-shaped region of said frame at a position proximate to said opening and on the side of said opening nearest to the apex of said dome-shaped region, said valve element being shaped to close completely said opening by tension against the inner surface of the dome-shaped portion of said frame at the periphery of said opening, each point on the periphery of said opening defining an angle less than 180° with the position at which said valve element is secured to tension said valve element against said frame.

4,131,061
SYSTEM AND APPARATUS FOR MILLING CORN STARCH AND LIKE RAW MATERIALS

Lawrence Skeen, Springfield, Ohio, assignor to The Bauer Bros. Co., Springfield, Ohio
Filed Jun. 1, 1976, Ser. No. 691,240
Int. Cl.² B02B *1/06*
U.S. Cl. 99—521 **13 Claims**

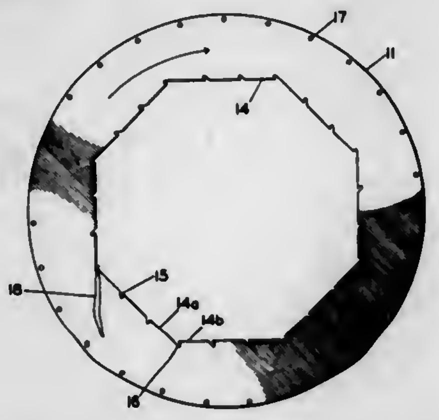


1. A refiner plate having an operating face comprising a base surface from which projects a plurality of teeth, a portion of said teeth being arranged in a spaced side by side relation to form rows thereof, each of which rows have a generally arcuate configuration, said rows being arranged in a spaced relation between an inner and an outermost edge of said base surface, another portion of said teeth comprising projections which lie between adjacent of said rows and extend substantially coextensive therewith as a single relatively unbroken projection

from said base surface, each of said relatively unbroken projections including surface portions facing the inner edge of said base surface to cause material moving over and adjacent said base surface which impact thereon to deflect outwardly from said surface and at angles providing that they tend to approach the outermost edge of said base surface, said rows of teeth being arranged to dispose in a radially spaced relation and said projections which lie between adjacent of said rows and extend substantially coextensive therewith being arranged in radially spaced relation and interspersed among said rows of teeth to prohibit movement of materials the constituents of which are to be separated directly across said base surface in paths defined by the spaces between said first mentioned portion of said teeth in said rows, the level of projection of said first mentioned portion of said teeth comprising said rows being greater than that of said another portion of said teeth.

4,131,062
DECLUSTERER DEVICE

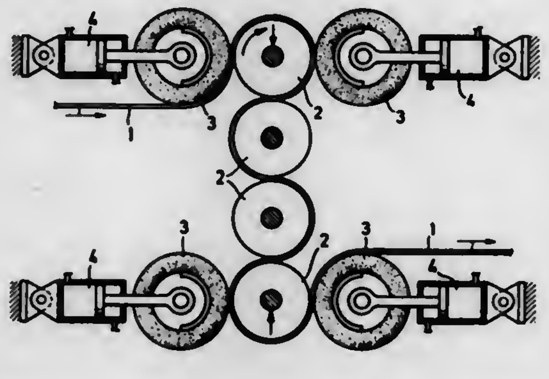
Ramakrishnarao K. Kumandan, Columbus, Wis., assignor to Hughes Company, Inc., Columbus, Wis.
Filed Sep. 9, 1977, Ser. No. 831,762
Int. Cl.^{2} A23N *15/02;* A47J *21/00*
U.S. Cl. 99—638 **17 Claims**



1. A device for engaging and removing clusters of pod vegetables joined together by stem sections from a mass of such vegetables comprising:
- (a) a substantially flat body having a thickness less than the length of the stem sections connecting the pod vegetables to form clusters,
- (b) first and second substantially straight primary edges of the body having a projected point of intersection and defining an external angle of less than 180°, the first primary edge extending beyond the projected point of intersection of the primary edges in a continuous manner without change of direction,
- (c) the second primary edge having a point of termination spaced from the projected point of intersection to define a gap between the primary edges sufficiently large to admit the stems of the pod vegetables to be engaged, the first primary edge further extending in a straight line beyond the point from which a line normal to the first primary edge would extend through the point of termination of the second primary edge, and
- (d) a retaining edge extending from the point of termination at an internal angle of less than 180° to the second primary edge and intersecting the extended first primary edge in trailing relation to define a notch in the body between the extended first primary edge and the retaining edge, whereby as the body is drawn through a mass of pod vegetables with the first and second primary edges substantially upwardly facing the lower margin of the notch will be defined by the extended first primary edge to provide a completely open and unimpeded entry path such that the stems of pod clusters adjacent to the first primary edge may freely enter the notch along the substantially straight first primary edge without change of direction with respect to the first primary edge and be engaged by the retaining edge for removal from the mass.

4,131,063
CALENDER

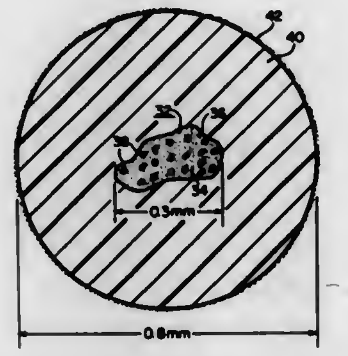
Jukka Joutsjoki, Järvenpää, Finland, assignor to Oy Wartsila AB, Helsinki, Finland
Filed Oct. 13, 1977, Ser. No. 841,942
Claims priority, application Finland, Oct. 19, 1976, 762971
Int. Cl.^{2} B30B *3/04*
U.S. Cl. 100—162 R **4 Claims**



1. A calender being defined by a plurality of superimposed hard rolls and a number of soft rolls arranged to laterally load at least two of said hard rolls, said soft rolls being arranged in pairs formed by two soft rolls opposite each other at both sides of the same hard roll, those of said rolls which are located between a pair of soft rolls being arranged so that the distance between their axes is greater than the sum of their respective radii.

4,131,064
TAGGING PARTICLES WHICH ARE EASILY DETECTED BY LUMINESCENT RESPONSE, OR MAGNETIC PICKUP, OR BOTH

Frederick M. Ryan, Loyalhanna Township, Westmoreland County, and Paul C. Handke, Plum Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jul. 15, 1977, Ser. No. 816,221
Int. Cl.^{2} F42B *1/00*
U.S. Cl. 102—1 R **13 Claims**

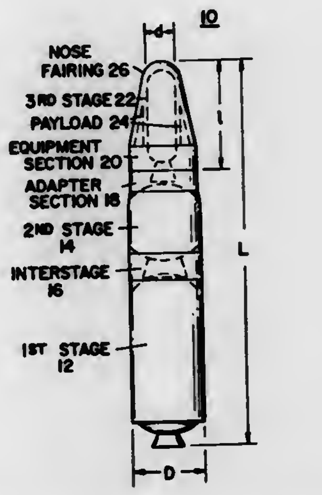


1. Small individual particles for tagging of objects desired to be identified, said particles each comprising:
- (a) luminescent material means which will provide readily detectable luminescent response upon exposure to excitation radiations of predetermined wavelength shorter than the luminescent response of said luminescent material means;
- (b) other material means which will provide predetermined indicia of information once such other material means is located;
- (c) small particles of magnetic material means which is reflective both for said excitation radiations for said luminescent material means and for said readily detectable luminescent response of said luminescent material means; and
- (d) bonding means bonding together in small particle form said luminescent material means, said other material means and said reflective magnetic material means, and said bonding means transmissive both for said excitation radiations for said luminescent material means and for said readily detectable luminescent response of said luminescent material means; whereby said particles are recoverable by visual detection or by magnetic pickup or by both visual detection and magnetic pickup with substantially no absorption of radiations due to the inclusion of said magnetic material means in said particles.

6. In combination, an explosive device and associated tagging means which is readily recoverable either before or after said explosive device is detonated and which, after recovery, provides information about said explosive device, said tagging means comprising small individual conglomerates intimately associated with said explosive device and each comprising:
- (a) finely divided inorganic luminescent material means which will provide readily detectable luminescent response upon excitation by ultraviolet radiations;
- (b) finely divided other material means which will provide predetermined indicia of information about said explosive device once such other material means is located;
- (c) small particles of magnetic material means which is reflective both for visible radiations and ultraviolet radiations; and
- (d) binder material means binding together in small conglomerate form said inorganic luminescent material means, said other material means and said reflective magnetic material means, and said binder material means transmissive for ultraviolet radiations and also for the luminescent response of said ultraviolet-excited luminescent material means; whereby said conglomerates are recoverable by visual detection or by magnetic pickup or by both visual detection and magnetic pickup with substantially no absorption of radiations due to the inclusion of said magnetic material means in said conglomerates.

4,131,065
MISSILE SYSTEM

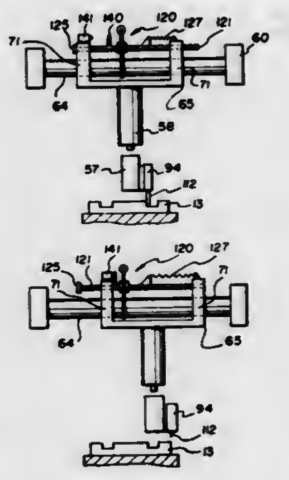
Charles R. Dietz, Sunnyvale, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 6, 1977, Ser. No. 804,036
Int. Cl.^{2} F42B *15/10*
U.S. Cl. 102—49.4 **2 Claims**



1. An improved missile system of the type having a plurality of booster stages mounted in tandem and a payload stage with a plurality of separable payloads, said booster and payload stages being confined within a missile skin of a geometrically constrained configuration, wherein the improvement comprises:
- a booster rocket motor of near optimum length to diameter ratio axially mounted within said payload stage in tandem with said booster stages, said separable payloads being mounted on said payload stage in an annular area between said booster rocket motor and said missile skin, to provide greater range for said missile system within said geometrically constrained configuration.

4,131,066
REFERENCE MECHANISM FOR SPIKE DRIVER

Raymond R. Lund, West Columbia, S.C., assignor to Canron, Inc., New York, N.Y.
Filed Mar. 21, 1977, Ser. No. 779,635
Int. Cl.^{2} E01B *29/2*
U.S. Cl. 104—17 R **9 Claims**



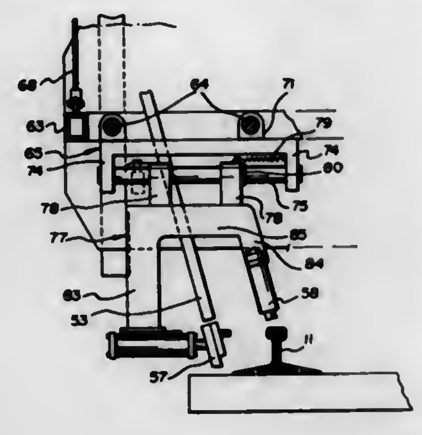
1. A machine for applying fastening members to rail tie plates to secure rails to ties, the machine comprising a frame, a sensor on said frame for sensing a fastening member location on the tie plate, and a drive head on said frame for applying a fastening member at the fastening member location, at least one guide rod on which the frame is mounted for movement parallel to the rails, means connected to said frame for moving the frame parallel to the rails in a direction in which the sensor leads the drive head, a reference mechanism on the frame and including clamping means connected to said sensor and operable on sensing by the sensor of the fastening member location to move from an unclamped condition to a clamped condition in which the reference mechanism is clamped to the guide rod, and switch means connected to said means for moving the frame and comprising a first component carried by the reference mechanism and a second interacting component carried by the frame, the switch means being operable on interaction of the first and second components to de-energize the means for moving the frame, the spacing between the first and second components in the unclamped condition of the reference mechanism being related to the spacing between the sensor and the drive head for causing the frame to continue its travel until the drive head is positioned above the fastening member location at which point the frame stops due to re-energization of the means for moving the frame.

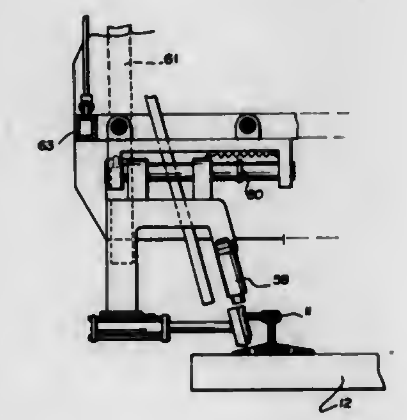
4,131,067
SPIKE DRIVER

George R. Newman, Lexington, and Raymond R. Lund, West Columbia, both of S.C., assignors to Canron Railgroup, West Columbia, S.C.
Filed Mar. 21, 1977, Ser. No. 779,633
Int. Cl.^{2} E01B *29/26*
U.S. Cl. 104—17 R **20 Claims**

1. A device for applying fastening members to rail tie plates to secure rails to ties, the device comprising a first mounting member carrying predetermined stroke means and driving means for driving a fastening member, fastening member holding means secured to the predetermined stroke means, said predetermined stroke means being operable for moving the holding means laterally towards a rail from a fully retracted position to a full stroke position, the lateral distance between the holding means in the retracted position and the driving head being equal to the stroke of the predetermined stroke

means, stop means rigidly connected with the holding means and engagable with the rail on operation of the predetermined stroke means to position the holding means a predetermined distance from the rail, a second mounting member fixed against movement laterally relative to the rail, the first mounting member being mounted on the second mounting member for movement laterally relative to the rail, and resilient means interconnecting the first and second mounting members and biasing the first mounting member towards the rail to an inner biased position, whereby the mounting member moves laterally away from the rail to an outer position against the biasing action of the resilient means on engagement by the stop means with the rail to take up excess travel of the predetermined stroke means and position the driving head over the holding means.





4,131,068

CATCH ARRANGEMENT FOR TOWING CIRCULATING CONVEYOR WITH SIDE CIRCUIT

Erich Kuwertz, Trippstadt, Germany, assignor to psb-Pfalzstahlbau GmbH, Pirmasens, Germany

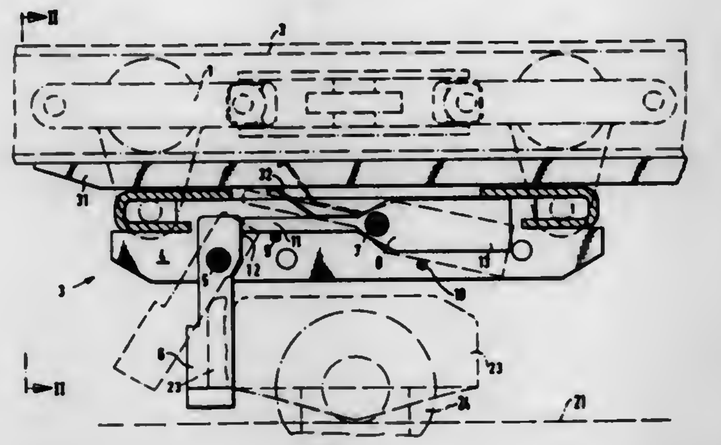
Filed May 9, 1977, Ser. No. 795,120

Claims priority, application Fed. Rep. of Germany, May 14, 1976, 2621411

Int. Cl.² B61J *3/04*

U.S. Cl. 104—172 S **2 Claims**

1. Catch mechanism for a tow conveyor of the type having a main track, a plurality of carriages for objects to be treated running on the main track, a tow chain and track for the same positioned above and paralleling said main track for moving carriers along said main track in the feed direction and switching means between the main track and the spur track to switch carriers from the main track to the spur track, a portion of said spur track close to said main track being downwardly inclined so that carriers started thereon continue to move along the spur track by gravity, and means to release carriers from the chain means in the area of a switch, the improved means to move a released carrier from the switching region of the main track comprising housing means connected to and suspended from the tow chain, said housing means comprising a first gudgeon in said housing extending transversely with respect to the feed direction in the rear of said housing with respect to the feed direction, a pivotable finger catch means mounted on said gudgeon so as to freely pivot thereabout and to normally extend vertically with its lower end in the path of a carrier, a second gudgeon mounted in the forward portion of said housing extending transversely with respect to the feed direction, double-arm lever means pivotally mounted on said second gudgeon, a first arm of said lever extending in the direction toward said finger catch means and the second arm thereof being weighted and extending in the direction away from said finger catch means whereby said first arm of said lever is normally pivoted upwardly by the force of the second weighted lever arm, actuating means on said first arm of said lever, a contact means in the path of the chain guide means in the region of the switch to cooperate with said actuating means to push said first arm of the lever down to lock the finger of the catch means in its vertical locked position, said finger means in its vertical position cooperating with fixed means on the carrier to move the carrier out of the switching area a sufficient distance for the carrier to continue moving by gravity on said inclined portion of the spur track.



4,131,069

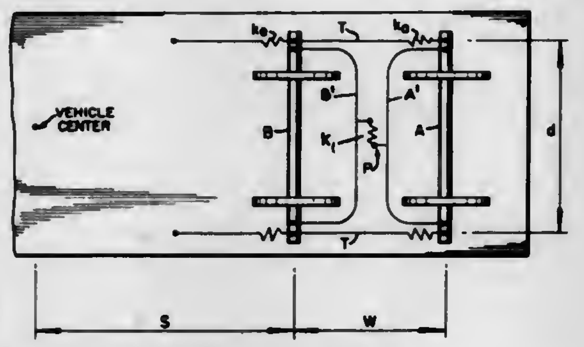
ARTICULATED RAILWAY CAR TRUCKS

Harold A. List, Bethlehem, Pa., assignor to Railway Engineering Associates, Inc., Bethlehem, Pa.

Continuation-in-part of Ser. No. 438,334, Jan. 31, 1974, abandoned, which is a continuation-in-part of Ser. No. 222,999, Feb. 2, 1972, Pat. No. 3,789,770, which is a continuation of Ser. No. 882,359, Dec. 15, 1969, abandoned, which is a continuation of Ser. No. 680,257, Nov. 2, 1967, abandoned. This application Aug. 28, 1975, Ser. No. 608,596

Int. Cl.² B61F *3/08, 5/14, 5/24, 5/52*

U.S. Cl. 105—168 **22 Claims**



1. A vehicle running-gear comprising:
at least two load-carrying axles, movable to different relative angularities in a horizontal plane, each of said axles having a pair of spaced-apart wheels mounted thereon and adapted to transmit weight from the axle to the running surface on which the wheels roll; a pair of frame structures, one for each of said two axles, each frame structure having means for mounting its associated axle, and having in relation to its associated axle a substantially fixed angularity in a horizontal plane, and each frame structure extending from its associated axle to a common region substantially midway between said two axles; means in said region pivotally connecting one frame structure directly to the other thereof for transmitting steering forces between the axles, said means having predetermined stiffness against lateral motion in the direction of axle extension; framing including a pair of truck side frames each spanning a pair of adjacent axle ends and providing support thereof, said framing transmitting vehicle weight to the frame structures and thence to the axles independently of said means for pivotally connecting said frame structures; elastic means disposed to react between the ends of at least one axle and said side frames to provide restraint of the steering motions of the axles with respect to each other; and other elastic means for restraining motions of the axles with respect to the vehicle.

4,131,070

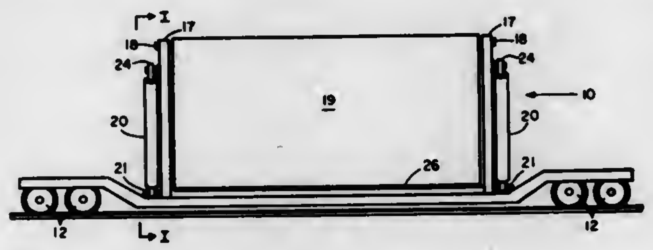
COKE QUENCHING CAR

Albert G. Jonnet, Oakdale, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jun. 30, 1977, Ser. No. 811,685

Int. Cl.² B60D *9/02*

U.S. Cl. 105—273 **6 Claims**



1. A coke quenching car comprising:
(a) a horizontal frame assembly of oblong shape;
(b) a plurality of wheels mounted to said frame and positioned to suspend said frame;
(c) a superstructure rigidly fixed to said frame;
(d) an oblong hopper, pivotally mounted to the upper extremity of said superstructure at pivot points adjacent to the top coke side corner of said hopper, the bottom of said hopper containing a port aperture extending the length of and approximately half of the width of said hopper;
(e) means to pivotally elevate said hopper about said pivot point;
(f) a gate pivotally mounted to the bottom of said hopper, positioned to cover said port aperture in said hopper at one end of the pivotation arc of said gate;
(g) a plurality of hydraulic gate cylinders, the base of each being pivotally mounted to an end edge of said gate, positioned to allow said gate to pivot away from said hopper, thus uncovering said port aperture; and
(h) a plurality of rods, one each of which is extensibly mounted within each said gate cylinder so as to extend and retract within said gate cylinder in the conventional manner, the exposed end of each being pivotally mounted to one end of said hopper at a point whereon extension of said rod from said gate cylinder produces a pivotation of said gate away from said bottom of said hopper.

4,131,071

CARGO TRANSPORTATION DEVICE

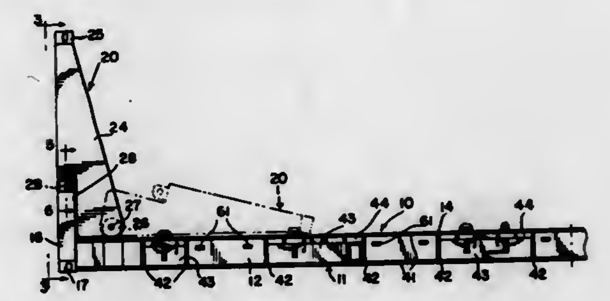
John J. Glassmeyer, Covington, Ky., assignor to Pullman Incorporated, Chicago, Ill.

Continuation of Ser. No. 590,902, Jun. 27, 1975, abandoned. This application Dec. 27, 1976, Ser. No. 756,023

Int. Cl.² B65D *19/12*

U.S. Cl. 108—53.1 **3 Claims**

1. A generally rectangular stackable cargo transportation device having a frame and a cargo platform thereupon,
upright support members at longitudinally opposite ends of the platform and extending thereabove,
an end bulkhead movable between a vertical raised position and a generally horizontal position associated and cooperative with each end support member to form a vertically extending cargo retaining end wall in the raised position and being stowable in the horizontal position,
each of said bulkheads including a transverse end wall portion and transversely spaced vertical posts having portions in alignment therewith and other portions widthwise of the end wall extending inwardly therefrom,
each of said other portions comprising a post having generally triangular vertical side plates and said plates having horizontal lower edge portions opposing the platform and being recessed and having portions above the recessed area in the plane of the end wall adapted to overlie and longitudinally abut the associated upright support member when the bulkhead is moved to the raised position to arrest outward rotation of the bulkhead therebeyond,
hinge means spaced longitudinally inward from each upright support member pivotally coupling the posts associated therewith at said plates to the cargo platform immediately above the top of the platform,



releasable interengaging latch means on said posts and the upper ends of the upright support members spaced above said platform and positioned in alignment with the related end wall and operative to directly oppose loads upon said end walls,
said latch means including a vertical recess in its associated upright support member,
a first transverse bore extending through said support member communicating with the recess,
slide bolt means movable in said first bore through the recess,
a keeper lug on each post receivable in the associated recess to assure vertical alignment of the bulkhead above the respective upright support and to arrest relative lateral movement therebetween, and
said lug including a second transverse bore registering with said first bore and releasably engagable by said slide bolt means in locking relation.

4,131,072

APPARATUS FOR INDIVIDUAL CONTROLLED DISTRIBUTION OF POWDERED SOLID FUEL TO PLURAL BURNING UNITS

Hans Lingl, Jr., and Don E. Denison, both of Paris, Tenn., assignors to Lingl Corporation, Paris, Tenn.

Filed May 26, 1977, Ser. No. 800,855

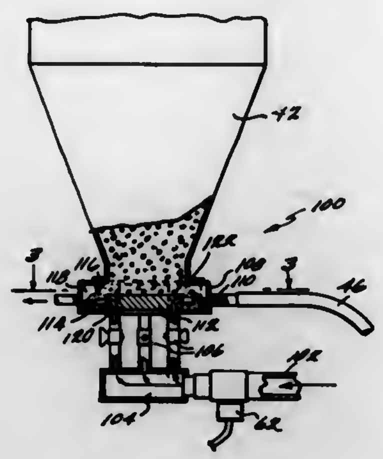
Int. Cl.² F23K *3/02*

U.S. Cl. 110—106 **16 Claims**

7. Apparatus for individually and independently controlling distribution of powdered solid fuel to each of a plurality of individual burners, said apparatus comprising:
distributor means having a plurality of fuel outlet ports spaced apart therewithin, each of said fuel outlet ports being adapted for connection with a respectively corresponding one of said burners;
said distributor means also having a plurality of air outlet ports disposed within said apparatus, each of said air outlet ports being aligned with and spaced from a respectively corresponding one of said fuel outlet ports;
fuel supply means including stop plate means disposed in association with said fuel outlet ports and with said air outlet ports for feeding said powdered solid fuel onto said

stop plate means from which it simultaneously gravity feeds into the spaces between said outlet ports; and

individually controlled air supply lines connected to supply



individually controllable quantities of pressurized air to each of said air outlet ports and to thereby individually control the quantities of said powdered solid fuel passing into said fuel outlet ports.

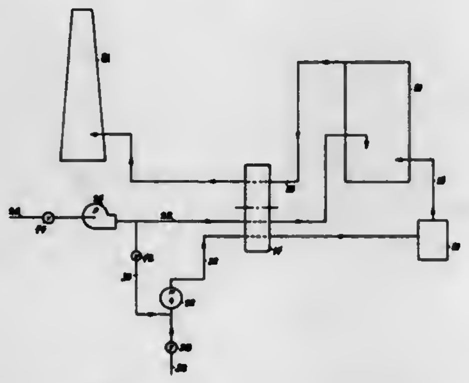
4,131,073
BOILER FAN ARRANGEMENT

Samuel S. Blackburn, Jr., Avon, and George P. Hammer, Simsbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 31, 1977, Ser. No. 847,338

Int. Cl.² F23L *15/00;* **F23K** *1/04*

U.S. Cl. 110—106 5 Claims



1. A system for the supply of air to a boiler-furnace requiring both primary and secondary air, a source of ambient air, an air preheater that receives air from said source and exhausts it to the boiler-furnace, a forced draft fan with suction and discharge sides thereof adapted to move the secondary air for combustion from the source to the air preheater, an axial flow fan for primary air with suction and discharge sides having the discharge side thereof connected to the air preheater, a first duct connecting the suction side of said axial flow fan to the discharge side of the forced draft fan, a second duct connecting the suction side of the axial flow fan to the source of air, and valve means controlling air flow through each of said duct means.

4,131,074
METHOD OF AND APPARATUS FOR THE SEWING OF A MULTIPLICITY OF STITCH GROUPS IN A WORKPIECE

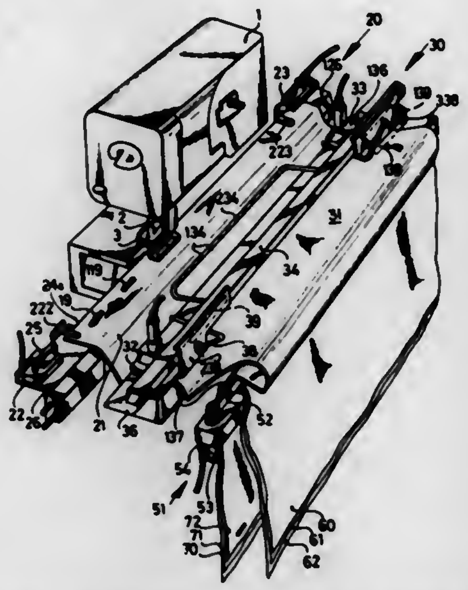
Gerhard Riss, Bielefeld, Germany, assignor to Dürkoppwerke GmbH, Bielefeld, Germany

Filed Oct. 31, 1977, Ser. No. 847,050

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1976, 2650334

Int. Cl.² D05B *3/00, 33/00, 81/00*

U.S. Cl. 112—121.14 13 Claims



1. In a method for sewing a succession of stitch-groups in a workpiece in which a fabric workpiece is clamped and a relative displacement of a stitch-group sewing machine and a workpiece is carried out in a stepwise manner to form the successive stitch-groups in spaced-apart relationship in said workpiece the improvement wherein the workpieces held in the clamp are replaced successively and after the formation of a succession of stitch-groups in one workpiece by relative displacement in one direction, stitch-groups are formed in the successive workpiece by relative displacement in the opposite direction.

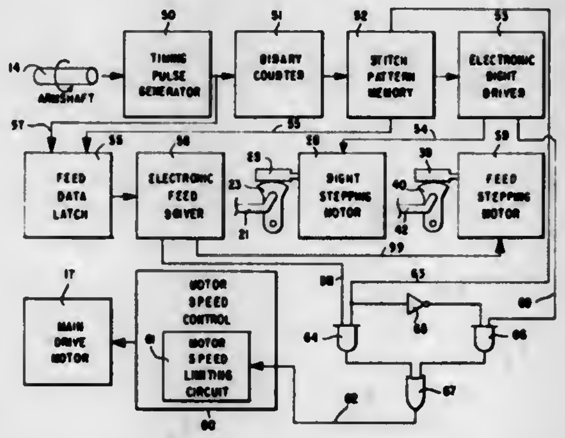
4,131,075
SPEED LIMITER FOR PATTERN STITCH SEWING MACHINE

John W. Wurst, Dover, N.J., assignor to The Singer Company, New York, N.Y.

Filed Oct. 31, 1977, Ser. No. 846,969

Int. Cl.² D05B *3/02, 69/36*

U.S. Cl. 112—158 E 6 Claims



1. In a sewing machine having a stitch forming instrumentality variable in position over a predetermined range of positions between successive stitches to produce a pattern of stitches, driving means operatively connected for imparting movement to said stitch forming instrumentality over said predetermined range of positions in response to stitch pattern signals applied thereto, a drive motor coupled to move said stitch forming instrumentality so as to form stitches, means for supplying power to said drive motor, and means for interrupting the supply of power to said drive motor during operation of said driving means.

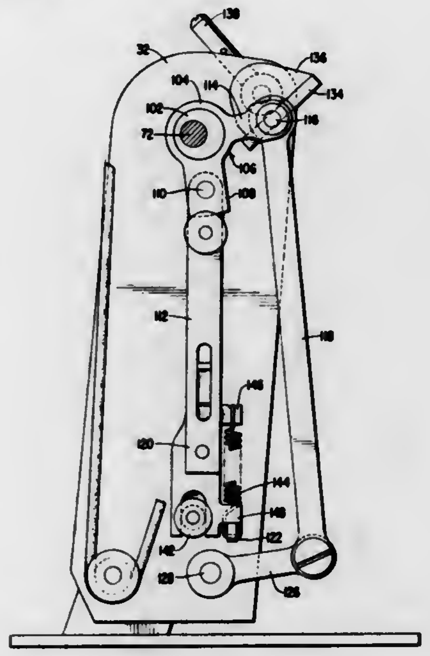
4,131,076
SEWING MACHINE WORK FEEDING MECHANISM

Ralph E. Johnson, Convent Station, N.J., assignor to The Singer Company, New York, N.Y.

Filed Nov. 14, 1977, Ser. No. 851,073

Int. Cl.² D05B *15/02*

U.S. Cl. 112—210 4 Claims



1. In cyclically operated work feed controlling mechanism for a sewing machine the combination comprising a feed dog shiftable through slots in a throat plate on said sewing machine, feed advancing mechanism for imparting alternate work feed and return strokes to said feed dog, feed lifting mechanism for imparting relative vertical movement to said feed dog and said throat plate to expose said feed dog above said throat plate during the feed strokes thereof, a stitch length regulator for selecting stitch length by selectively setting the magnitude of feed stroke imparted to said feed dog by said feed advancing mechanism, and mechanism operatively interconnecting the stitch length regulator, feed advancing mechanism and feed lifting mechanism for altering the timing of the operation of both the feed advancing mechanism and feed lifting mechanism when the stitch regulator is moved to change stitch length whereby the feed dog is caused to project above the throat plate substantially throughout the length of feeding strokes regardless of selected stitch length.

4,131,077
METHOD OF ATTACHING A SLIDE FASTENER TO AN ARTICLE

Ronald J. Boser, Huntington Station, N.Y., assignor to B & W Manufacturing Co., Inc., New York, N.Y.

Continuation of Ser. No. 392,404, Aug. 28, 1973, abandoned, which is a division of Ser. No. 222,863, Feb. 2, 1972, Pat. No. 3,777,314. This application Jan. 27, 1975, Ser. No. 544,522

Int. Cl.² D05B *3/12*

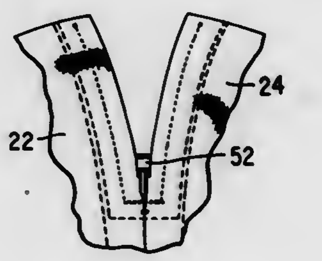
U.S. Cl. 112—265 3 Claims

1. A method of installing a continuous slide fastener chain to a garment, the slide fastener chain having a leading end, and a trailing portion extending from the leading end, the slide fastener chain being of the type including first and second elongated tapes; the garment having a border, a seam termination point and opposed sides including the seam termination point, the opposed sides defining an opening extending from the seam termination point to the border of the garment, first and second sets of interengaged coupling elements attached to the first and second tapes, said slide fastener chain throughout its length being without a slider connected to the first and second sets of coupling elements, said method comprising the steps of

placing the garment in superposition with the leading end of the continuous slide fastener chain such that the opening of the garment is longitudinally aligned over the interengaged coupling elements at the leading end of the slide fastener chain;

sewing first and second parallel spaced lines of stitches to the first and second tapes at the leading end of the slide fastener chain and to the opposite sides of the garment thereby initially attaching the superposed garment to the leading end of the slide fastener chain, the first and second lines of stitches extending in a direction from adjacent the border to adjacent the seam termination point;

transversely cutting the first and second sewn tapes from the first and second tapes of the trailing portion of the slide fastener chain at a point longitudinally spaced from the opening and disposed adjacent the sewn termination point;



continuing the sewing of the first line of stitches in another direction from the first line of stitches to the second line of stitches and transversely of the first and second tapes across the first and second sets of coupling elements; the continuing of the sewing of the first line of stitches forming a third line of stitches to further attach the first and second tapes of the leading end of the slide fastener chain to opposite sides of the garment, reinforcing the seam termination point and forming a bottom stop for the leading end of the slide fastener chain; and

securing a slider to the interengaged coupling elements at the leading end of the slide fastener chain attached to the opposite sides of the garment.

4,131,078
COLLAPSIBLE CRANE BACKHITCH AND OVERLOAD SIGNAL SYSTEM

James G. Morrow, Sr., Manitowoc, Wis., assignor to The Manitowoc Company, Inc., Manitowoc, Wis.

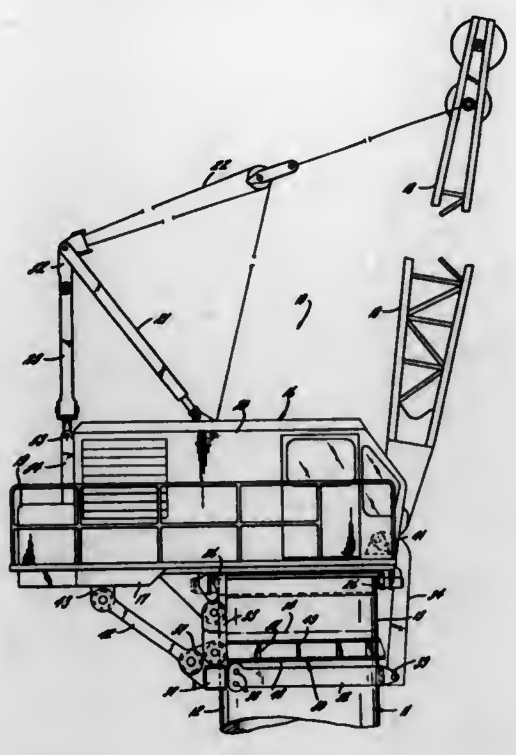
Filed Apr. 29, 1977, Ser. No. 792,100

Int. Cl.² G08B *07/04*

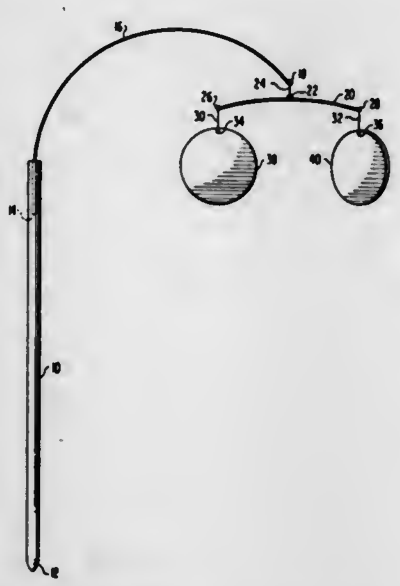
U.S. Cl. 116—4 8 Claims

1. An energy absorbing backhitch for a lift crane having a load handling boom supported by rigging connected to the backhitch mounted adjacent the rear end of the crane comprising, in combination, means including a lift pin for connecting said backhitch to said crane and means including an air source for detecting deflection of said lift pin when said crane is loaded, said detecting means including an air valve connected to said source and said lift pin including a flapper arm for throttling said valve upon deflection of said lift pin, said backhitch including upper and lower connecting sections one of which carries a pair of squeeze rollers, and a hollow deformable element having a flattened end projecting between said

rollers and connected to said other section, said hollow element being permanently collapsed and flattened between said rollers when a predetermined tension load is applied to said backhitch tending to pull said upper and lower sections apart.

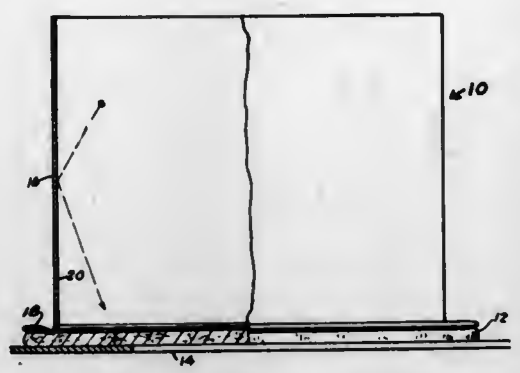


4,131,079
WIND ROTATED REFLECTIVE SCARECROW
John F. Rousseau, Jr., 34 Fernway Rd., and Charles E. Babin, 120 Jerusalem Rd., both of Cohasset, Mass. 02025
Filed Oct. 5, 1977, Ser. No. 839,751
Int. Cl.² G09F *11/02*
U.S. Cl. 116—22 A **10 Claims**



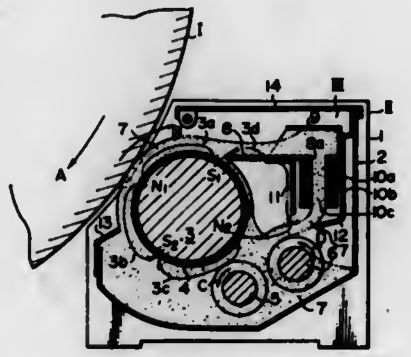
1. A scarecrow, comprising
A. an elongated post for vertical mounting in a field;
B. an elongated resilient wire having one end thereof extending axially from, and rotatably mounted on, one end of said post;
C. at least one highly reflective disc rotatably suspended from the other end of said wire;
D. the wire portion intermediate said ends forming an arc opening downwardly in response to its own weight and the weight of said disc to provide an oscillatory motion in response to slight forces on said other end,
E. said wire and said disc both rotatably responsive to wind forces on said disc to thereby direct light reflected from said disc about a substantial area surrounding said post.

4,131,080
UTENSIL FOR MAKING PIZZAS
Leroy A. Hughes, 1018 Green Hills Dr., Ann Arbor, Mich. 48105
Filed Jul. 7, 1977, Ser. No. 813,515
Int. Cl.² B05C *19/00, 21/00*
U.S. Cl. 118—13 **7 Claims**



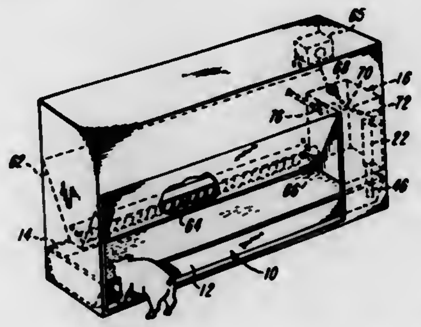
1. A shield for use in making pizzas comprising, a cylindrical shield having a vertically extending side wall and an outwardly extending flange at the lower edge thereof, the lateral dimension encompassed by said side wall being many times the lateral dimension of said flange, the lower end portion of the side wall at the inner periphery thereof being inclined outwardly and downwardly, the bottom face of said flange intersecting the lower edge of said outwardly inclined wall portion in a rounded edge spaced slightly laterally outwardly from the inner periphery of the portion of the side wall above said outwardly inclined portion, the bottom face of said flange being inclined upwardly and outwardly from said rounded edge, the included angle between the bottom face of said flange and said outwardly inclined wall portion being at least about 70° and the bottom face of the flange being inclined to the horizontal at a lesser angle than said outwardly inclined wall portion, whereby, when the shield is placed upon a flattened blank of pizza dough of slightly larger size than the lateral dimensions of the shield, the outer periphery of the flange is spaced above the dough and enables portions of the dough extending outwardly beyond the outer periphery of the flange to be tucked thereunder to conform the pizza dough blank to the lateral dimensions of the shield and the outwardly inclined portion of the side wall cooperates with said rounded edge and said upwardly inclined flange to form in the pizza dough a V-shaped groove having a rounded bottom which is spaced uniformly slightly inwardly from the outer periphery of the dough blank.

4,131,081
TONER CONCENTRATION DETECTING APPARATUS
Isamu Terashima, Hitachi, Japan, assignor to Hitachi, Ltd., Japan
Filed Apr. 1, 1977, Ser. No. 783,554
Claims priority, application Japan, Apr. 14, 1976, 51-41352
Int. Cl.² G03G *15/09*
U.S. Cl. 118—646 **13 Claims**



1. An apparatus for detecting a toner concentration of developing powder comprising a mixture of magnetic carrier and toner comprising:
a transport means for transporting the developing powder stored in a chamber while magnetically attracting the developing powder;
a hollow body;
a guide means for diverting a portion of said developing powder from said transport means and directing the diverted developing powder to said hollow body;
means for producing a magnetic path sufficiently closely positioned to the downstream side of said hollow body for magnetizing the developing powder downstream of said hollow body to stabilize the flow of the developing powder passing through said hollow body; and
a response means for responding to a permeability of the developing powder passing through said hollow body.

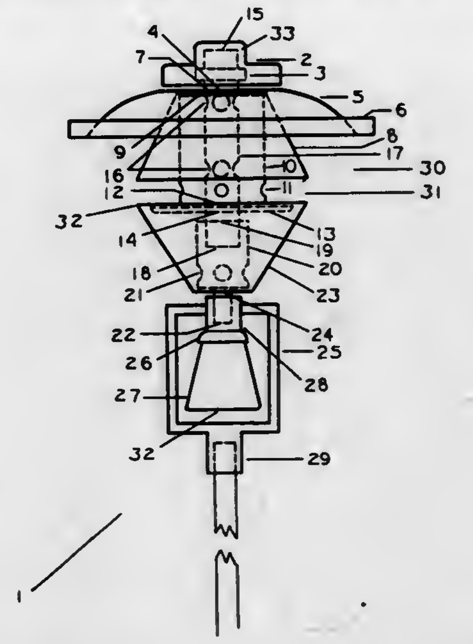
4,131,082
ANIMAL FEEDING EQUIPMENT
Herbert M. Sollars, 609 S. Main St., Washington Court House, Ohio 43160
Filed Jan. 31, 1977, Ser. No. 763,860
Int. Cl.² A01K *05/00, 05/02*
U.S. Cl. 119—51.5 **12 Claims**



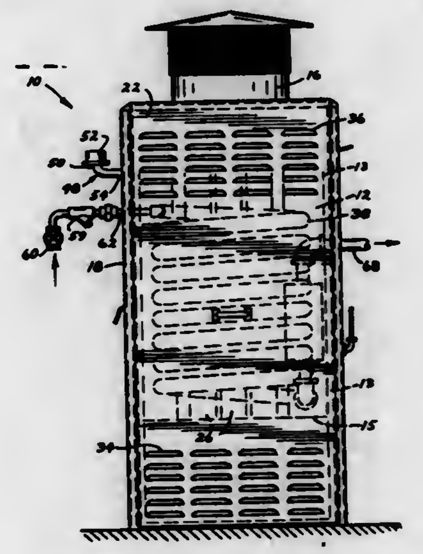
10. Feed apparatus particularly suited for animal usage, comprising a tank supported in spaced elevated relation to a tray-like receptacle, the tank serving for storage of liquid and having an opening for discharge of its contents to the underlying receptacle, a hollow body disposed within the tank for movement to and from a closing relation to its discharge opening, said body having means defining an opening therefrom which in the function thereof aligns with said tank discharge opening, the entrance of liquid to said body by way of the opening therein causing the movement of said body to a closing relation to said tank discharge opening to prevent the dischrage of liquid from said tank, a discharge tube one end of which is fixed to rim said tank discharge opening to position the other end thereof in a spaced adjacent relation to the bottom of said receptacle, said other end of said discharge tube being positioned to be continuously immersed in liquid in said receptacle, and means in connection with said dischrge tube, the construction and arrangement of which provides for air to move upwardly of said discharge tube and into said body to induce a lifting thereof from a closing relation to said tank discharge opening when the liquid in said receptacle drops to a predetermined level above the lowermost end of said discharge tube.

4,131,083
BIRD UNIT
John J. Sokol, and Florence L. Sokol, both of 15 Robin Hood Dr., DeLand, Fla. 32720
Filed Mar. 10, 1977, Ser. No. 776,379
Int. Cl.² A01K *39/04*
U.S. Cl. 119—51.5 **1 Claim**

1. A bird unit comprising:
a. a dome having an upwardly projecting peripheral edge forming a channel reservoir to hold a supply of drinking water for birds,
b. a removable restraint funnel attachable beneath said dome and flaring outwardly and downwardly to restrict access to feed small birds,
c. a seed reservoir with dispensing openings and a hopper therebeneath, said reservoir being located within said dome and restraint funnel,
d. a fill tube having an open top which extends above said dome and access holes within said seed reservoir and terminating below said hopper in a reducing slip coupling,
e. a guide funnel flaring downwardly and inwardly and attached at its bottom to said reducing slip coupling, said guide funnel having an open top with the top rim extending outwardly beyond the outer extent of the hopper to thereby direct waste seed downwardly and inwardly to said reducing slip coupling,
f. a catch jar removably attached to said reducing slip coupling,
g. an oblong square brace connected to a pole and suspending said catch jar therewithin, and
h. a removable cap supported on said fill tube.



4,131,084
UPRIGHT DIRECT FIRED WATER BATH PROPANE VAPORIZER
Robert C. Hanson, Excelsior, and Leon C. Hanson, Bloomington, both of Minn., assignors to Energy Systems, Incorporated, Eden Prairie, Minn.
Filed Apr. 7, 1977, Ser. No. 785,409
Int. Cl.² F22B *1/02;* F22D *5/08, 5/26*
U.S. Cl. 122—33 **10 Claims**

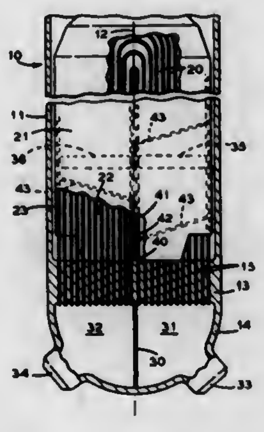


1. Vaporizer apparatus for converting liquefied gas into vapor phase, said apparatus including:
A. a fire box;

B. a liquid heat exchange chamber vertically above the fire box, said liquid heat exchange chamber including:
  (1) a main substantially vertically shell wall,
  (2) a bottom wall,
  (3) a top wall, and
  (4) means to introduce a liquid heat exchange medium into said chamber;
C. a stack extending upwardly from said liquid heat exchange chamber;
D. a plurality of vertical flues in sealing relation to said bottom heat exchange chamber wall and to said top wall and open from said fire box through said liquid heat exchange chamber and through said top heat exchange chamber wall into said stack;
E. a liquefied gas supply pipe adapted to supply liquefied gas under pressure;
F. a gaseous delivery pipe adapted to deliver vaporized gas to a location for use;
G. a heat transfer pipe including a helically wound portion positioned in said liquid heat exchange chamber to lie in surrounding relation to said vertical flues, said liquefied gas supply pipe extending through a wall of the liquid heat exchange chamber to a top end of said helix and a bottom end of said helix extending through a wall of the liquid heat exchange chamber to said gaseous delivery pipe;
H. means to introduce heat energy into said fire box; and
I. means to block flow of liquefied gas out of said gaseous delivery pipe responsive to the presence of liquid in said gaseous delivery pipe.

4,131,085
VAPOR GENERATING UNIT BLOWDOWN ARRANGEMENT

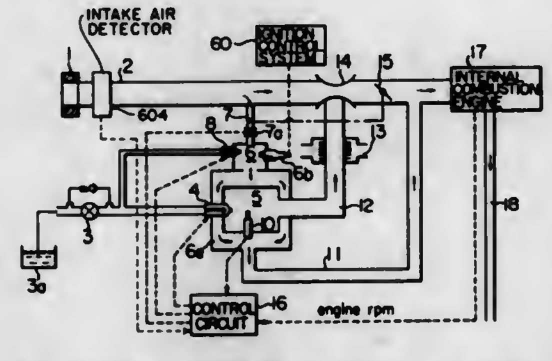
Bertrand N. McDonald, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed May 4, 1977, Ser. No. 793,682
Int. Cl.² F22B *37/54*
U.S. Cl. 122—382 **4 Claims**



1. In combination with a vapor generating unit of the type having a vertically elongated pressure vessel of circular cross section housing a fluid heated U-tube bundle that has hot leg and cold leg portions attached to a tubesheet, a generally cylindrical shroud radially spaced between the pressure vessel vertical wall and the U-tube bundle to form an interior vapor chamber and an annular shaped downcomer bounded by the shroud and the wall of the pressure vessel and means for radially passing a vaporizable secondary fluid into the vapor chamber from the downcomer, an improved means of de-entraining and removing sediment entrained in the secondary fluid comprising a vertical plate disposed between the hot leg and the cold leg, means for proportionately regulating secondary fluid flow into the hot and cold legs and blowdown means in the vapor chamber communicating with the exterior of the pressure vessel.

4,131,086
FUEL REFORMING APPARATUS FOR USE WITH INTERNAL COMBUSTION ENGINE

Masaaki Noguchi, Nagoya; Tsuchio Bunda, Okazaki, and Taro Tanaka, Chiryu, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed Jul. 17, 1975, Ser. No. 596,743
Claims priority, application Japan, Jul. 20, 1974, 49-83693; Jul. 22, 1974, 49-84345; Dec. 26, 1974, 50-2053
Int. Cl.² F02B *43/08;* F02M *31/04*
U.S. Cl. 123—3 **8 Claims**

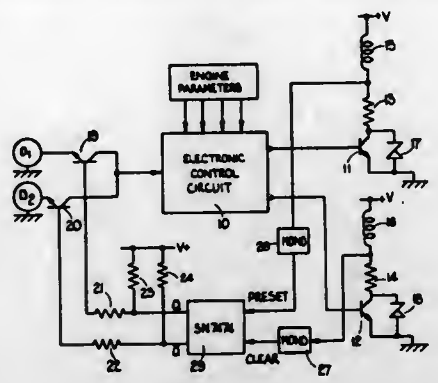


1. In an internal combustion engine including an engine combustion chamber, an intake pipe for supplying at least air to said engine combustion chamber, and a throttle valve pivotally disposed in said intake pipe for controlling the amount of air passing therethrough,
  a fuel reforming apparatus for supplying a reformed gas including hydrogen and carbon monoxide to said engine combustion chamber of said internal combustion engine comprising:
  (i) a burning chamber for substantially burning a charge of air and a hydrocarbon fuel therein, to thereby produce heat and combustion gas;
  (ii) means coupled to said burning chamber for charging in said burning chamber said charge of air and a fuel and controlling the amount of said charge of air and a fuel in response to the amount of air passing through said intake pipe;
  (iii) a catalytic reactor having therein a catalyst for reforming hydrocarbon fuel into a reformed gas including hydrogen and carbon monoxide, said catalytic reactor being communicated with said burning chamber so that said combustion gas from said burning chamber is introduced into said catalytic reactor;
  (iv) means for supplying at least a hydrocarbon fuel to said catalytic reactor to reform said hydrocarbon fuel into the reformed gas with the aid of said heat, combustion gas and catalyst, through an endothermic reaction in said catalytic reactor; and
  (v) means communicating said catalytic reactor with said engine combustion chamber of said internal combustion engine for introducing said reformed gas thereto.

4,131,087
FUEL INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

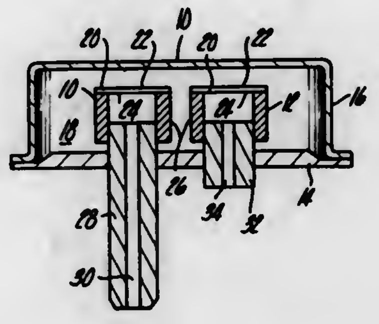
Malcolm Williams, Solihull, England, assignor to The Lucas Electrical Company Limited, Birmingham, England
Filed Nov. 10, 1975, Ser. No. 630,703
Claims priority, application United Kingdom, Nov. 22, 1974, 50805/74
Int. Cl.² F02M *51/00*
U.S. Cl. 123—32 EA **6 Claims**

1. In an internal combustion engine having split air intake and exhaust systems, a fuel injection system therefor comprising at least two electrically operated injectors associated with the intake systems respectively, a control unit for alternately operating the injectors, said control unit including means for producing electrical output pulses of length dependent on an engine parameter, a pair of transducers for measuring said parameter, said transducers being associated with the two intake systems respectively, and a time sharing multiplex circuit arrangement connecting said transducers to the control unit and operating in synchronism with the operation of the injectors so that the electrical outputs of the transducers are applied alternately to the control means.



4,131,088
MULTIPLE FUNCTION PRESSURE SENSOR

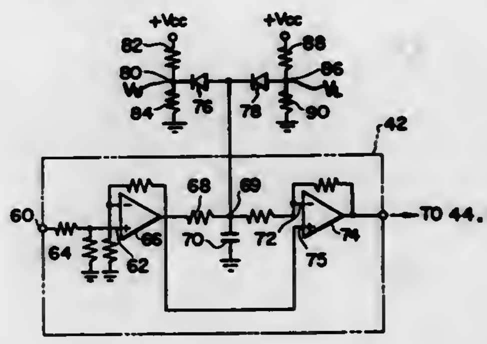
Junuthula N. Reddy, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.
Filed Nov. 8, 1976, Ser. No. 739,400
Int. Cl.² F02B *3/00;* G01L *9/04*
U.S. Cl. 123—32 EJ **7 Claims**



1. In combination with an electronic fuel control system for an internal combustion engine having an air intake manifold, wherein said electronic fuel control system requires a first input signals indicative of the absolute value of the air pressure in the engine's air intake manifold, a second input signal indicative of the absolute value of the atmospheric pressure, and a third input signal indicative of the difference between the pressure in the engine's intake manifold and atmospheric pressure, a multi-function pressure sensor comprising
  first pressure sensor generating a first pressure signal, said first pressure sensor including a first pressure sensitive member and means for applying a first pressure to one side of said first pressure sensitive member;
  second pressure sensor generating a second pressure signal, said second pressure means including a second pressure sensitive member and means for applying a second pressure to one side of said second pressure sensitive member;
  a housing having an internal chamber, said housing supporting said first and second sensor means having the opposite sides of said first and second pressure sensitive members exposed to said internal chamber, said internal chamber communicating a third pressure to the opposite sides of said first and second pressure sensitive members; and
  circuit means combining the signal generated by said first pressure sensor with the signal generated by said second pressure sensor for generating a signal which is a function of said first and said second pressure signals, said circuit means outputting a signal indicative of the absolute pressure in the engine's air intake manifold, a signal indicative of atmospheric pressure and a signal indicative of the pressure difference between atmospheric pressure and the pressure in the engine's air intake manifold.

4,131,089
ELECTRONIC CLOSED LOOP AIR-FUEL RATIO CONTROL SYSTEM

Takeshi Fujishiro, Yokohama; Shigeo Aono, Seki; Akio Hosaka, Yokohama; Masaharu Asano, Yokosuka; Nobuzi Manaka, Yokosuka, and Mituhiko Ezoe, Yokosuka, all of Japan, assignors to Nissan Motor Company, Ltd., Japan
Filed Feb. 9, 1977, Ser. No. 767,134
Claims priority, application Japan, Feb. 9, 1976, 51-12242
Int. Cl.² F02B *3/08;* F02M *7/12;* F01N *3/08*
U.S. Cl. 123—32 EE **9 Claims**



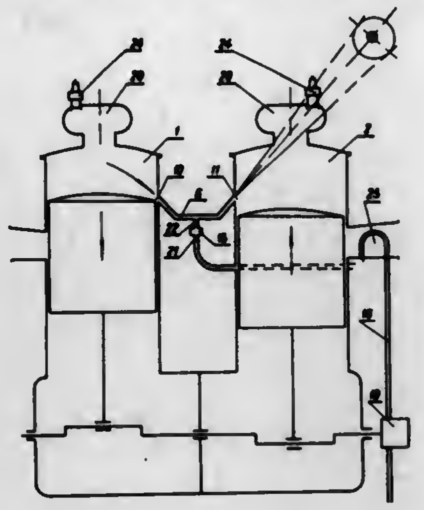
1. A closed loop mixture control system for an internal combustion engine including means for supplying air and fuel thereto in a variable ratio and an exhaust composition sensor for generating a first signal representative of the concentration of an exhaust composition of the emissions from said engine, said first signal varying within a range between high and low voltage levels depending upon whether the sensed concentration is above or below a predetermined value, comprising:
  mean-value detecting means for generating a second signal representative of a mean voltage value of said first signal so that said second signal varies within a range narrower than the range of said high and low voltage levels so long as said first signal is continuously varying;
  differential amplifier means for generating a third signal representative of the difference in magnitude between said first signal and said second signal to represent the deviation of the air-fuel ratio of the emissions from a desired air-fuel ratio for adjusting said air-fuel suppying means with the represented deviation; and
  limiting means for limiting the magnitude of said second signal at one of upper and lower predetermined threshold levels.

4,131,090
TWO-STROKE, MULTICYLINDER, SPARK IGNITION, PUMPLESS INJECTION INTERNAL COMBUSTION ENGINE

Stanislaw Jarnuszkiewicz, 29/8 Swierczewskiego Str., Krakow, Poland
Division of Ser. No. 521,896, Nov. 7, 1974, Pat. No. 4,020,801. This application Jun. 21, 1976, Ser. No. 698,781
Claims priority, application Poland, Nov. 9, 1973, 166446
Int. Cl.² F02B *13/10, 19/00*
U.S. Cl. 123—32 SP **4 Claims**

1. A two stroke pumpless fuel injection internal combustion engine comprising:
  a first and second cylinder each having a piston therein and each defining a working space in which said pistons move up and down,
  a precombustion chamber connected to the working space of said first cylinder,
  a connecting duct connecting the respective working space of said first and second cylinders,
  an injection port in said first cylinder at one end of said connecting duct and an ejection port in said second cylinder at the other end of said connecting duct,
  said connecting duct being positioned in such a way that its axis of symmetry is directed towards said precombustion chamber,

- a spark plug whose sparking end is in said precombustion chamber and is within the area defined by the injection stream of the fuel being directed into said precombustion chamber, and
- fuel supply means for supplying fuel to said connecting duct inbetween said injection and ejection ports,



- said fuel supply means comprising a valveless metering chamber with a capacity greater than the maximum charge of fuel needed for one working cycle, said metering chamber being connected to said connecting duct and to a fuel feeding duct for preventing uncontrolled receiving of fuel from the fuel feeding duct.

4,131,091
VARIABLE GAIN CLOSED-LOOP CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINES

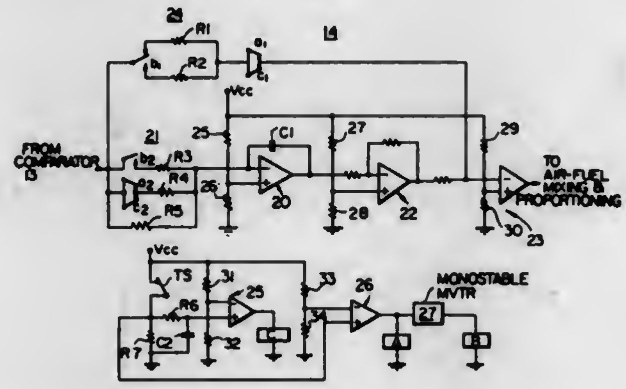
Masaharu Asano, and Nobuzi Manaka, both of Yokosuka, Japan, assignors to Nissan Motor Company, Ltd., Japan

Filed Oct. 22, 1976, Ser. No. 734,752

Claims priority, application Japan, Oct. 27, 1975, 50/128348; Dec. 25, 1975, 50/154100

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 EH **13 Claims**



1. A mixture control apparatus for an internal combustion engine having means for sensing an exhaust composition of the emissions from the engine, air-fuel mixing and proportioning device for said engine, and a comparator for generating an output when the sensed composition reaches a predetermined value, the apparatus comprising:

- means for sensing acceleration and deceleration of the engine; and
- an intergral controller operable to provide integration of the output from the comparator at a higher rate of integration for a first predetermined time period after the sensing of the engine acceleration than during the time prior to the sensing of the engine acceleration and at a lower rate of integration for a second predetermined time period after the sensing of the engine deceleration than during the time prior to the sensing of the engine deceleration, the output from the integral controller being applied to the air-fuel mixing and proportioning device; and
- wherein said integral controller comprises:
- a monostable device having active and inactive states and operable to respond to the sensed engine acceleration to assume its active state for a first predetermined interval;
- a variable RC time constant circuit for integrating the output from said comparator and operable to change its time constant to a lower value in response to the active state of said monostable device; and
- means for retaining the time constant value of said RC time constant circuit for a second predetermined interval in response to the sensed engine deceleration;
- said variable RC time constant circuit being operable to change its time constant to a higher value in response to the elapse of said second predetermined interval.

4,131,092
FLAME GUIDE CHANNEL FOR INTERNAL COMBUSTION ENGINE

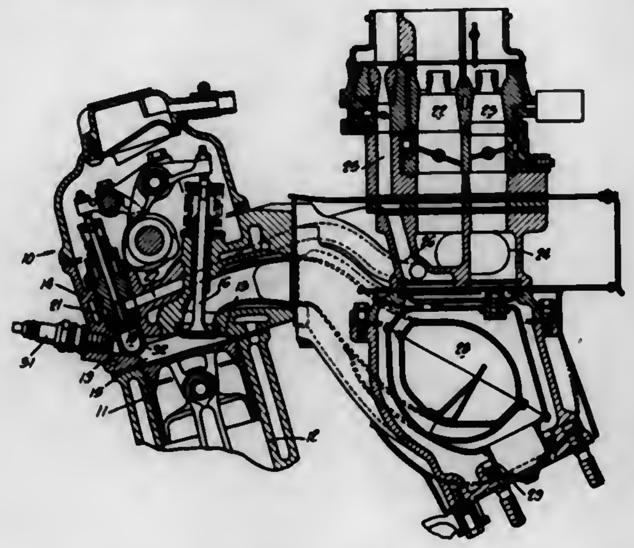
Yasuhito Sato, Kamifukuoka; Minoru Tanaka, Choufu, and Akihisa Nakamura, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 7, 1977, Ser. No. 757,688

Claims priority, application Japan, Jan. 17, 1976, 51-3773

Int. Cl.² F02F *1/42*

U.S. Cl. 123—32 ST **4 Claims**



1. In an internal combustion piston engine, the combination of: a wall in the underside of a stationary head of the engine cooperating with a movable piston to form a main combustion chamber, means forming an auxiliary combustion chamber at one side of said main combustion chamber, a torch passage connecting said chambers, an intake valve and an exhaust valve opening into said main ocmbustion chamber and positioned remotely and substantially equidistantly from said torch passage, a flame guide channel formed in the walls in the underside of the head laterally diverging from said torch passage toward said valves, the depth of the flame guide channel decreasing as its width increases, means for supplying a lean mixture to the main combustion chamber through said intake valve, means including an auxiliary intake valve for supplying a rich mixture to said auxiliary chamber, means for igniting a mixture in said auxiliary chamber to cause a flame to project through said torch passage and through said flame guide channel across said main combustion chamber, said flame guide channel promoting a flame spread across the top of the main combustion chamber.

4,131,093
INTERNAL COMBUSTION ENGINES

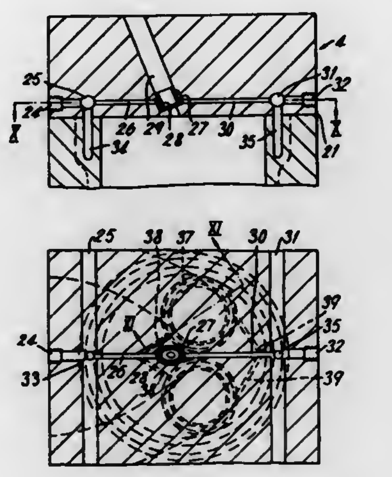
Wilfred P. Mansfield, Chandlers Ford, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 478,885, Jun. 12, 1974, abandoned. This application Nov. 17, 1975, Ser. No. 632,662

Claims priority, application United Kingdom, Jun. 21, 1973, 29500/73

Int. Cl.² F01P *1/06, 9/04*

U.S. Cl. 123—41.85 **5 Claims**



1. An internal combustion engine comprising:

- a cylinder block,
- a plurality of cylinders disposed within said block, each including a cylinder head member and having parts liable in use to overheat, namely means for injecting fuel, a valve seat member, a valve guide member and a small section of the length of the cylinder wall adjacent the head member, less deep axially than the combustion zone;

said block and head member having a small bore annular duct formed about at least one of said parts and said block and head member having passages connecting said annular ducts in a path between a cooling fluid source and a cooling fluid outlet, said passages comprising only the minimum fluid passages necessary to conduct sufficient fluid directly to and from said annular ducts so as to cool said overheating parts, the remainder of said block and head member including no ducts exclusively for cooling creating substantial cooling effect and situated in use in the path of fluid flow between a source and an outlet for cooling fluid.

4,131,094
VARIABLE DISPLACEMENT INTERNAL COMBUSTION ENGINE HAVING AUTOMATIC PISTON STROKE CONTROL

George W. Crise, P.O. Drawer A, Danville, Ohio 43014

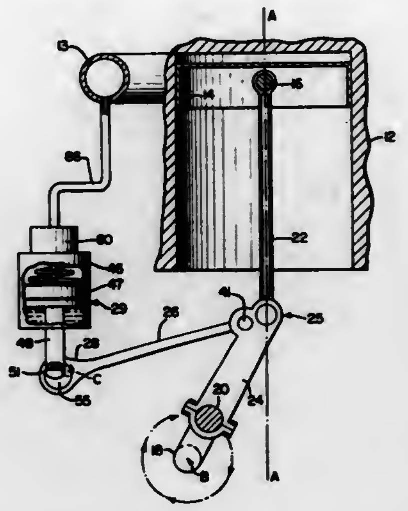
Filed Feb. 7, 1977, Ser. No. 766,207

Int. Cl.² F02B *75/04*

U.S. Cl. 123—48 B **2 Claims**

1. In an internal combustion engine which includes a combustion cylinder, fuel induction means for conducting fuel to said cylinder, a piston movable in opposite directions along the axis of said cylinder, and a crankshaft stationarily journalled for rotation about a single axis disposed in right angular relation to the axis of said cylinder; that improvement which comprises:

- (a) an articulated connecting rod consisting of two hingedly connected, angularly related levers extending between and pivotally connected, respectively, with the piston and crankshaft of said engine;
- (b) an elongated guide rod pivotally connected at one end thereof to the crankshaft-connected lever of said connecting rod adjacent the hinge connection between said levers and having an opposite end extending generally laterally outwardly from said levers; said guide rod being movable longitudinally to vary the stroke of the piston within the cylinder of said engine; said guide rod and said articulated connecting rod being arranged to rotate said crankshaft through an arc substantially greater than 180° upon a full stroke of said piston in one direction and through an arc substantially less than 180° upon a full stroke of said piston in the opposite direction; and



- (c) control means connected with the opposite end of said guide rod and operable to move said guide rod longitudinally in response to variations of pressure within the fuel induction means of said engine.

4,131,095
INTERNAL COMBUSTION ENGINE OPERATED ON A REFORMED GAS

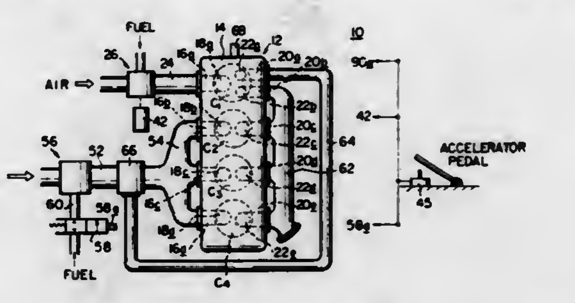
Keido Ouchi, Ayase, Japan, assignor to Nissan Motor Company, Ltd., Japan

Filed Mar. 17, 1977, Ser. No. 778,425

Claims priority, application Japan, Mar. 19, 1976, 51-30579

Int. Cl.² F02M *25/06*

U.S. Cl. 123—59 EC **10 Claims**



1. An internal combustion engine system having an engine proper forming therein at least first and second combustion chambers, and an exhaust manifold fluidly communicable with the second combustion chamber, said system comprising:

- first intake means for feeding first and second combustion mediums into said first combustion chamber when first and second conditions of said engine take place, respectively;
- second intake means for feeding a third combustion medium into said second combustion chamber when said second condition takes place;
- reformed gas transmitting means for transmitting a product produced in said first combustion chamber into said second combustion chamber when said first condition takes place;
- exhaust means for feeding a product produced in said first combustion chamber into said exhaust manifold when said second condition takes place; and
- control means for causing said first and second conditions when lower and higher engine power outputs are required, respectively.

4,131,096

VALVE TIMING MECHANISMS

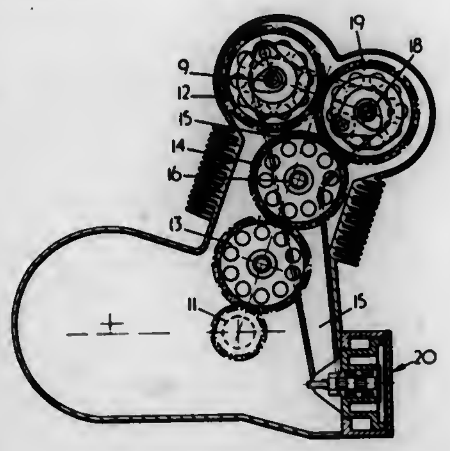
Stephen W. Mitchell, 93 Lowercroft Rd., Starling, Bury, Lancashire, England

Filed Mar. 21, 1977, Ser. No. 779,877

Claims priority, application United Kingdom, Apr. 2, 1976, 13370/76

Int. Cl.² F01L *1/34*

U.S. Cl. 123—90.15 **17 Claims**



2. An internal combustion engine comprising at least one cylinder, at least one inlet and at least one exhaust valve for the or each cylinder, camshafts, said camshafts having at least one cam element fixedly mounted thereon for opening the inlet and outlet valves of the or each cylinder, a crankshaft, and means for driving the camshafts from the crankshaft, the driving means comprising a movable member rotatable by the crankshaft and connected to at least one camshaft by an eccentric linkage, and the rotatable member being movable in translation relative to said at least one camshaft in dependence upon an operating condition of the engine, movement of the movable member causing the eccentric linkage to vary the angular position of the camshaft about its axis of rotation relative to the angular position of the crankshaft about its axis of rotation and also to vary the rate of angular movement of the camshaft relative to the angular velocity of the crankshaft, thereby varying the valve timing.

4,131,097

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Daisaku Sawada; Kenji Goto; Takashi Shigemaut; Yuji Takeda, all of Susono; Tadashi Hattori, Okazaki; Hiroaki Yamaguchi, Nakata, and Minoru Nishida, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jan. 27, 1977, Ser. No. 763,153

Claims priority, application Japan, Feb. 5, 1976, 51-11714; Jun. 11, 1976, 51-68945

Int. Cl.² F02P *5/04*

U.S. Cl. 123—117 R **6 Claims**

1. An ignition system for controlling the timing of ignition of an internal combustion engine comprising:

position detecting means for detecting a predetermined rotational angular position of said engine to produce an angular position signal;

pressure detecting means for detecting the pressure present within the cylinder of said engine to produce a pressure signal;

maximum pressure detecting means for detecting the maximum value of the pressure represented by said pressure signal;

reference pressure detecting means for detecting the reference value of the pressure represented by said pressure signal at a timing represented by said angular position signal;

discriminating means for discriminating means for discriminating whether the ratio of said maximum value relative to said reference value is larger than a predetermined value; and

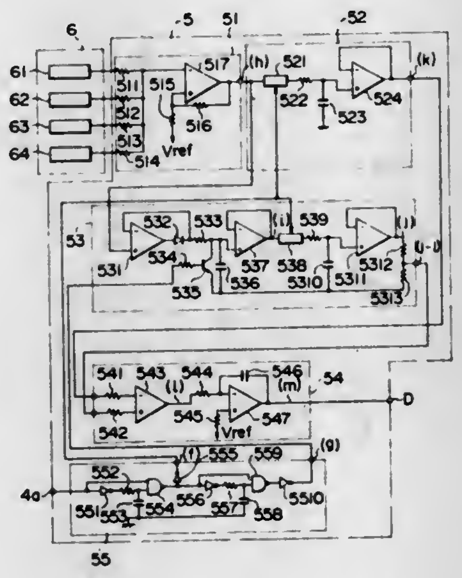
timing control means for controlling the timing of ignition in response to the discrimination result of said discriminating means.

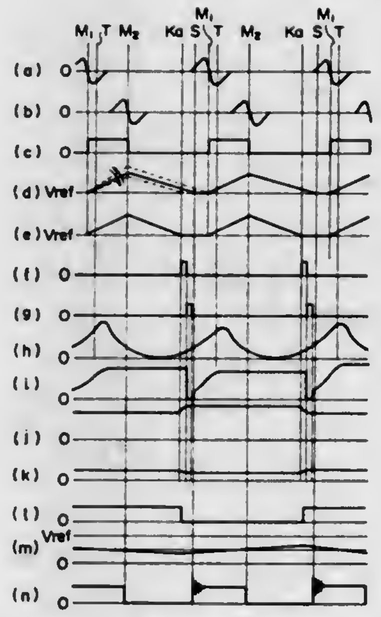
4. An ignition system for controlling the timing of ignition of an internal combustion engine having a cylinder, said ignition system comprising:

position detecting means for generating an angular position signal indicative of the rotational angular position of said engine;

pressure detecting means for generating a pressure signal indicative of the pressure present within the cylinder of said engine;

maximum pressure detecting means, responsive to said pressure signal, for generating a Pmax signal indicative of the maximum value of the pressure within the cylinder during a cycle of operation;





reference pressure detecting means, responsive to said angular position signal and said pressure signal, for generating a P1 reference signal indicative of the pressure within the cylinder with said engine in a predetermined reference angular position;

discriminating means, responsive to said Pmax signal and said P1 signal, for generating a control signal indicative of the ratio of said maximum value of pressure relative to said pressure with the engine in said reference angular position; and

timing control means for controlling the timing of ignition in said engine in response to said control signal discriminating means.

4,131,098

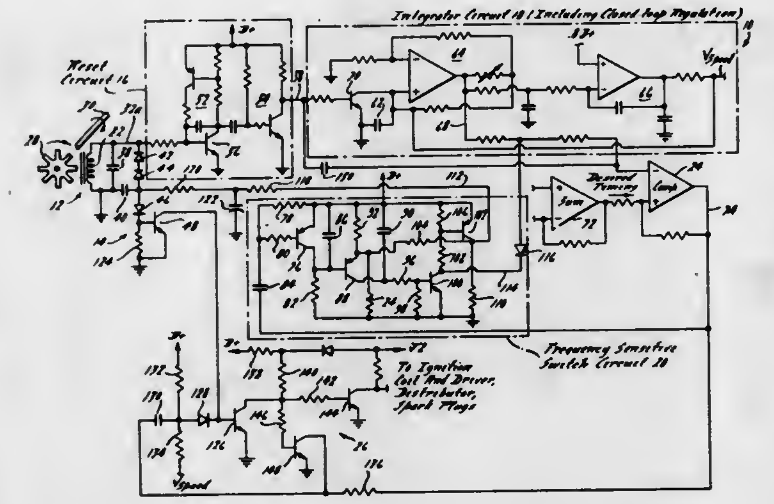
ENGINE TIMING CONTROL CIRCUIT HAVING A SINGLE PICK-UP FOR BOTH STARTING AND RUNNING

Earl E. Daniels, Taylor, and Frederick W. Crall, Farmington Hills, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 20, 1976, Ser. No. 752,492

Int. Cl.² F02P *5/04*

U.S. Cl. 123—117 R **23 Claims**


Integrator Circuit 18 (Including Closed Loop Regulation)
Reset Circuit 16
Desired Timing
Sum
Comp
Vspeed
Frequency Sensitive Switch Circuit 20
To Ignition Coil And Driver, Distributor, Spark Plugs

1. In an internal combustion engine, an electronic engine timing control circuit comprising:

transducer means operatively coupled with the engine for producing pulses which exhibit a zero voltage crossing at predetermined engine crank angles;

an output circuit which is triggered to produce an engine control signal;

an integrator circuit providing an output signal;

reset circuit means coupling said transducer means and said integrator circuit for resetting the latter from said pulses;

means providing a desired timing signal derived from at least one parameter useful in determining the timing of said engine control signal;

comparator circuit means for comparing the integrator output signal with the desired timing signal and producing an output trigger signal when a predetermined relationship between the two is attained;

means coupling said comparator circuit means to said output circuit so that an output trigger signal from said comparator circuit means can cause said output circuit to be triggered;

a zero crossing detector coupling said transducer means and said output circuit so that zero crossing of said pulses can cause said output circuit to be triggered;

and means for selectively controlling triggering of said output circuit from said zero crossing detector and said comparator circuit means comprising frequency sensitive switch means for sensing the frequency of a signal representative of engine speed and providing one switch condition when the sensed engine speed is less than a given speed and another switch condition when the sensed engine speed exceeds said given speed, means coupling said frequency sensitive switch means and said zero crossing detector for causing zero crossings of said pulses to trigger said output circuit when said frequency sensitive switch means is in its one switch condition, means coupling said frequency sensitive switch means and said comparator circuit means for causing said comparator circuit means to trigger said output circuit when said frequency sensitive switch means is in its another switch condition;

wherein said transducer means comprises an inductance coil; and

wherein said zero crossing detector comprises first and second diode means, said two diode means having a common junction, said first diode means being connected across said inductance coil, said second diode means including the base-emitter junction of a transistor, said transistor being switched from one conductivity condition to another conductivity condition by the zero crossing of said pulses when said frequency sensitive switch means is in its one switch condition.

4,131,099

IDLING AND WARM-UP FUEL CONTROL DEVICE

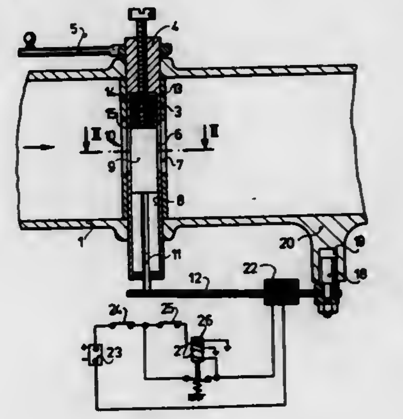
Wolf Wessel, Oberriexingen, and Hermann Grieshaber, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

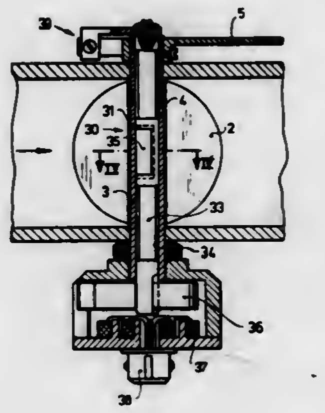
Filed Nov. 4, 1976, Ser. No. 738,980

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1976, 2602698

Int. Cl.² F02B *33/00*

U.S. Cl. 123—119 F **9 Claims**





1. A by-pass valve for controlling the mixture quantity delivered to a mixture compressing, externally ignited internal combustion engine during idle running and warm running of the engine, the engine having a suction tube connected thereto which defines a mixture quantity flow path, and a throttle valve mounted to the suction tube transversely of the mixture quantity flow path, the by-pass valve comprising:

a mounting shaft for the throttle valve, mounted to the suction tube for rotation relative to the suction tube, said mounting shaft having an aperture which extends transversely through the mounting shaft forming a part of the mixture quantity flow path, said aperture being located approximately at the medial region of the mounting shaft within the suction tube;

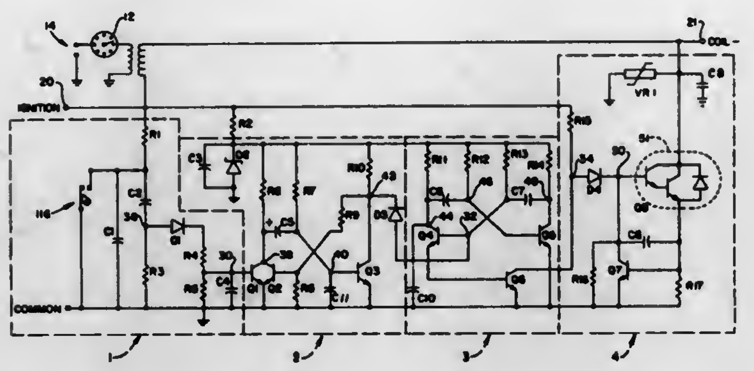
a movable valve component; and

control means connected to the movable valve component for arbitrarily controlling the movement of the movable valve component relative to the mounting shaft, to thereby arbitrarily vary the portion of the mounting shaft aperture forming part of the mixture quantity flow path.

4,131,100

MULTIPLE SPARK DISCHARGE CIRCUITRY

James W. Merrick, El Paso, Tex., assignor to Autotronic Controls, Corp., El Paso, Tex.
Filed Apr. 26, 1977, Ser. No. 791,098
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 E **19 Claims**



1. In an internal combustion engine having a source of DC current, a spark gap connected to ignite a combustible mixture contained within a combustion chamber thereof in timed relationship respective to the power stroke thereof, and means generating a timing signal in timed relationship to the power stroke of the piston, the combination with said internal combustion engine of a multi-spark discharge system comprising means forming an input signal conditioner by which the timing signal is treated to produce a corresponding input signal; a firing duration control circuit by which the duration of time within which the multi-spark discharge occurs is determined; circuit means connecting said input signal to said duration control circuit so that said input signal initiates operation of said duration control circuit; a repetition rate control for determining the number of sparks occurring with the time duration provided by said duration control circuit; a high voltage discharge circuit for providing a high tension discharge across said spark gap; circuit means connecting said duration control circuit to said repetition rate control and said repetition rate control to said high voltage discharge circuit, whereby said conditioned input signal causes the firing duration control circuit to initiate operation of said repetition rate control which in turn causes said high voltage discharge circuit to discharge across the spark gap in proper timed relation respective to the power stroke of the engine; said high voltage discharge circuit including a power darlington connected to be triggered by said repetition rate control, said rate control determining the number of times said power darlington is turned on during the time interval provided by said duration control.

4,131,101

ENCLOSURE SPANNING DRAIN FOR ENGINE VALLEY COVERS AND THE LIKE

Robert E. DeVinney, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sep. 2, 1977, Ser. No. 830,132
Int. Cl.² F02F *7/00*
U.S. Cl. 123—195 C **5 Claims**

1. The combination in a combustion engine of wall means defining a cavity for lubricated mechanism and adapted to contain a lubricant, said wall means having upwardly extending sides and an open top,

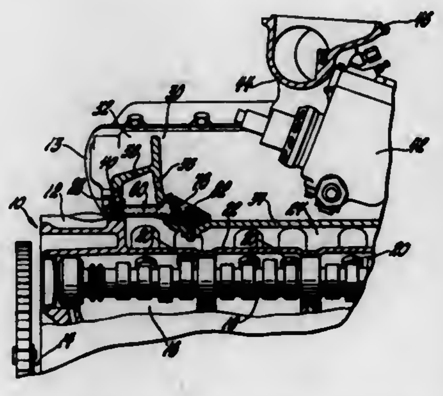
a cover member mounted on said wall means and closing said open top to retain fluids within the cavity and prevent dilution of the lubricant with foreign substances, said cover member having downwardly sloping wall portions defining an open valley extending within the upper part of said cavity,

and the improvement comprising:

a first drain opening through said cover member between said valley and lubricant cavity, said opening having an axis and forming an annular seat facing said valley,

a second drain opening through said wall means between said lubricant cavity and the exterior of said wall means, said second opening comprising a cylindrical bore having an axis aligned with said first opening but at an angle to said first axis,

a drain tube extending into and between said drain openings generally along the axis of said second opening, said drain tube including an annular sealing portion on its exterior which sealingly engages the cylindrical bore of said second opening and an enlarged head portion in said first opening, said head portion being centered on an axis substantially coincident with the axis of said first opening and sealingly engaging said annular seat, said drain tube having an open passage therethrough connecting said cover valley with the exterior of said wall means to drain said valley, and

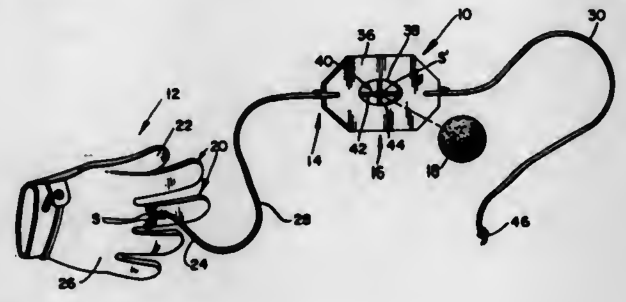


retaining means holding said drain tube in position such that the enlarged head and annular sealing portions, respectively prevent leakage of fluids into or out of said cavity through said first and second openings.

4,131,102

BALL THROWING SLING

John R. Polly, Jr., M.P.O. Box 5884, Oxnard, Calif. 93031
Filed Jul. 18, 1977, Ser. No. 816,679
Int. Cl.² A41B *3/00*
U.S. Cl. 124—5 **7 Claims**

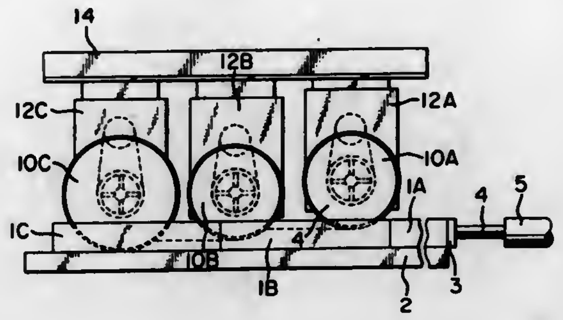


1. A sling, comprising, in combination:
(a) a glove;
(b) a longitudinally extending, flexible element having a pair of longitudinally spaced ends, and being attached to the glove at one of the ends; and
(c) pocket means inserted into the flexible element intermediate the longitudinal extent thereof for receiving an object to be thrown, the glove including a hand portion and a finger portion, the flexible element having the one of the longitudinal ends affixed to the finger receiving portion of the glove.

4,131,103

APPARATUS FOR SAWING STONE

Hiroshi Ishizuka, 19-2 Ebara 6-Chome, Shinagawa-Ku, Tokyo, Japan
Filed Apr. 12, 1977, Ser. No. 786,842
Claims priority, application Japan, May 17, 1976, 51-56343
Int. Cl.² B28D *1/04*
U.S. Cl. 125—13 R **3 Claims**



1. An apparatus for sawing stone blocks into slabs comprising:

a work bed extending in longitudinal direction of the apparatus and carrying the stone blocks adjacent to one another in a row;

a plurality of groups of rotary saw blades, each group comprising a plurality of saw blades each arranged with a spacing therebetween which corresponds to a desired thickness of the slabs to be obtained, each group of rotary saw blades being mounted on a common shaft driven by an electric motor means;

said plurality of groups of rotary saw blades being disposed in series one behind another along the work bed and adjustably arranged relative to the work bed of the apparatus;

means for feeding the stone blocks on the work bed through the groups of said saw blades, the saw blades of each group being arranged in alignment but in a different position relative to the work bed so that the saw blades of every group have common cutting planes but stepwise increasing cutting depths from the first to last group of saw blades, the improvement comprising:

a stone block feeding means including a main and an auxiliary feeder;

said main feeder includes a hydraulic piston member to push the stone block on said work bed at the rear end thereof towards the first group of saw blades; and

said auxiliary feeder being cooperatively combined with said main feeder and having another hydraulic piston member with a grasper at one end;

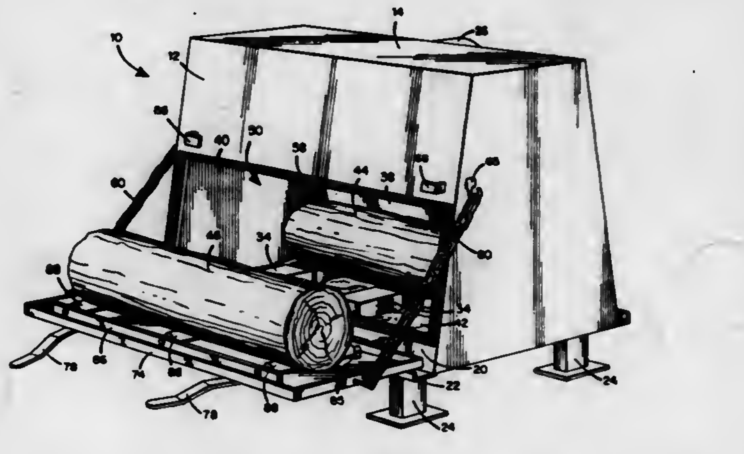
whereby the stone blocks positioned in a row can be transferred as a whole along the cutting planes in such a way that the auxiliary feeder is actuated to graspingly transfer the stone blocks toward the first group of saw blades in lieu of said main feeder when the piston member for said main feeder is retracted for loading an additional supply of stone blocks on the work bed, until the leading end of the additional supply of stone blocks comes into contact with the trailing end of the preceding stone block by the action of the piston member for said main feeder.

4,131,104

LOG-BURNING STOVE

James R. Choate, Rochester, N.H., assignor to Hydraform Products Corp., Rochester, N.H.
Filed Apr. 21, 1977, Ser. No. 789,517
Int. Cl.² F24C *1/00*
U.S. Cl. 126—60 **13 Claims**

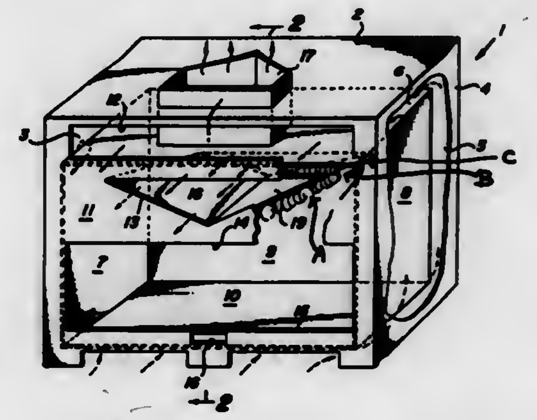
1. A log-burning stove which comprises:
(a) a shell defining a combustion chamber for the combustion of logs;
(b) a flue for the discharge of gaseous combustion products derived from the combustion of the logs;
(c) an entrance in one wall of the shell and into the combustion chamber for the introduction of logs into the combustion chamber;
(d) a door adapted to be placed in an open or a closed position, and which door, in the closed upright position, seals the entrance, and, in the open position, extends generally laterally outwardly adjacent to and from the lower bottom edge of the entrance;
(e) means to provide for the movement of the door between an open and a closed position; and
(f) movable means positioned on the internal surface of the door and disposed in the plane of the door, which means comprises a plurality of spaced-apart, freely rotatable rollers, each roller disposed for rotation on a fixed axis element, the ends of the axis element supported on the interior of the door, the rollers disposed on a plane generally parallel to the door and the axis elements of the rollers being generally perpendicular to the entrance when the door is in the open position, the means adapted when the door is in fully the open position to permit the movement of a log on the surface of such means generally parallel to the entrance to the stove and to a position adjacent to the stove entrance and to permit the log so positioned to be moved thereafter on the rollers in a different direction through the stove entrance and into the combustion chamber.



4,131,105

HEATING UNIT WITH VORTICAL AERОTHERMODYNAMIC FLOW CONTROL

Alexander J. Moncrieff-Yeates, 8924 Rhyme Court, Annandale, Va. 22003
Continuation-in-part of Ser. No. 570,798, Apr. 23, 1975, Pat. No. 4,056,091. This application Aug. 29, 1977, Ser. No. 828,930
Int. Cl.² F24B *7/00*
U.S. Cl. 126—121 **10 Claims**



1. In a heating unit including a fire enclosure defined in part by a back wall, side walls, a top surface, and having at least one flue opening, and a front wall extending downwardly from a

juncture with a front portion of said top wall and including a fire enclosure access opening therein, the improvement wherein

- A. said fire enclosure access opening is defined
  - a. at its upper extent by a first edge of said front wall disposed substantially below the enclosure top wall and
  - b. at its lower extent by a second edge of said front wall disposed substantially above the lower extreme of said fire enclosure at a position substantially at least as high as the level of support of fuel in said enclosure,
- B. the area of said juncture of said top and front walls defining throughout the extent of said juncture a laterally extensive aerothermodynamic vorticity area open to the flame enclosure generally and wherein heated air is induced to whirl in at least one vortex pattern having an axis parallel to said juncture,
- C. said flue opening being effective to draw exhaust gases from said pattern to maintain stability of said pattern, whereby the circumference of said pattern increases in direct proportion to the velocity of heated air flow and hence expands into the area between the level of the upper extent of said access opening and said flue opening to divert the flow of air entering said access opening downwardly to the level of fuel support.

4,131,106

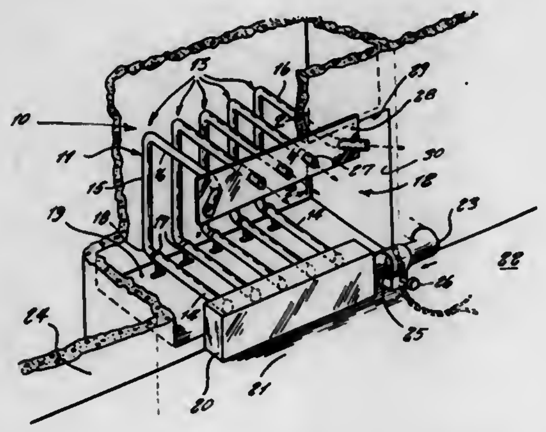
ENERGY SAVING FIREPLACE

Stanley Rusinek, Jr., and George Spector, both c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Sep. 30, 1976, Ser. No. 728,467

Int. Cl.² F24B *7/00*

U.S. Cl. 126—121 **2 Claims**



1. An energy saving fireplace heater comprising in combination, a cradle placable into a fireplace and consisting of a series of generally C-shaped pipes in parallel spaced apart relation, each said pipe comprising a horizontal lower leg, a vertical leg and an upper horizontal leg with bends therebetween, an end of said lower leg being inserted into an air manifold connected to an air duct leading outwardly of a house, said duct being intercepted by a motor-driven fan having controls for variable speed, each said lower leg of each said pipe being supported above the fireplace floor by a leg near a rear end thereof, and the ends of said pipe upper legs extending into a room at various angular positions, said manifold being located outside the fireplace on the room floors wherein said ends of said pipe upper legs are all retained in a common supporting plate, wherein a valve is provided along each said pipe horizontal lower leg including an outlet directing air toward a fire upon said cradle, said valve comprising a sleeve slidingly mounted over a perforated portion of said lower leg and including a handle extending beyond the manifold into the room for controlling the amount of air directed upon the fire.

4,131,107

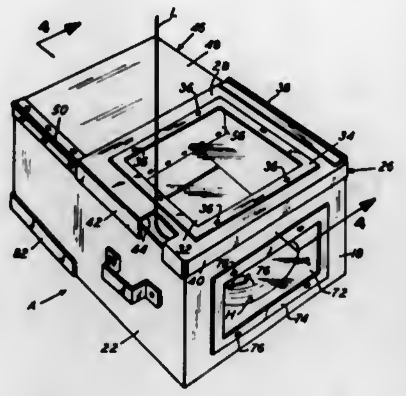
DEVICE FOR MELTING ICE AT A FISH HOLE IN THE ICE

Emil E. Godbout, 200 Douglas Rd., Carlton, Minn. 55718

Continuation of Ser. No. 715,985, Aug. 19, 1976, abandoned. This application Feb. 13, 1978, Ser. No. 877,000

Int. Cl.² F23C *3/00*

U.S. Cl. 126—271.2 R **4 Claims**



1. A device for melting ice at a fish hole comprising:

(a) an enclosure having first and second sidewalls connected to

(b) first and second end walls,

(c) a cover for the enclosure including a first partial cover hingedly connected at one edge to a portion of said first sidewall,

(d) a second partial cover hingedly connected at one edge to a portion of said second sidewall with an edge thereof abutting an edge of said first partial cover,

(e) said second partial cover having a baffle plate connected thereto at a right angle along one edge thereof and extended into the enclosure when the cover is closed upon the enclosure,

(f) said second partial cover having a heat shield carried by said cover and spaced therefrom,

(g) means hingedly connecting said end walls at each edge to each end of said side walls,

(h) said first partial cover having an opening adjacent to and extending through the edge thereof and adapted to receive a fish line for extension therethrough to a hole in ice on which the device is positioned,

(i) a partial bottom hingedly connected at one edge to said first end wall and beneath and substantially in alignment with said second partial cover adapted to receive heating means upon the inner surface thereof,

(j) said first partial cover having an opening formed therein for viewing an ice hole in line therewith and adjacent said partial bottom.

4,131,108

ANDIRON FOR SUPPORTING LOGS

Edward M. Bauder, 3807 E. Georgia St., Burnaby, B. C., Canada (V5C 2S7)

Filed Jan. 17, 1977, Ser. No. 759,876

Int. Cl.² F24B *13/00*

U.S. Cl. 126—298 **10 Claims**

1. An andiron for supporting on a hearth first and second primary fuel banks in an inverted V-position, the andiron having:

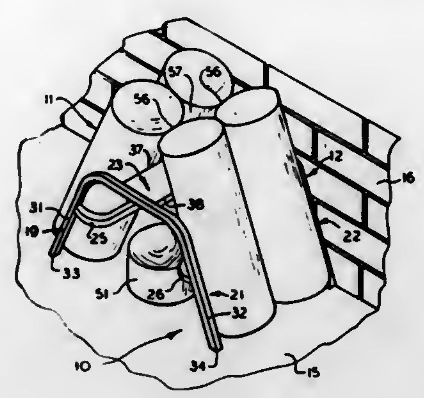
(a) a baffle member spaced at a baffle height above the hearth and having spaced generally horizontally disposed first and second edges which define a baffle width of between about 25 and 50% of the baffle height,

(b) spaced first and second positioning members positioned below the baffle member and spaced laterally relative to each other and the baffle member,

(c) frame means connecting the baffle member to the positioning members so as to form a self-supporting framework having at least one open end, and in which the baffle

member and the first positioning member on one side of the frame are positioned so that the first fuel bank extends between the first edge of the baffle member and the positioning member and is inclined to the vertical at an angle of inclination, and the second positioning member on the opposite side of the frame is positioned relative to the second edge of the baffle member so as to support the second fuel bank on the opposite side of the frame at a similar angle of inclination,

so that when correctly supported on the andiron, the fuel banks form a generally inverted V inclined at the angle of inclination.



4,131,109

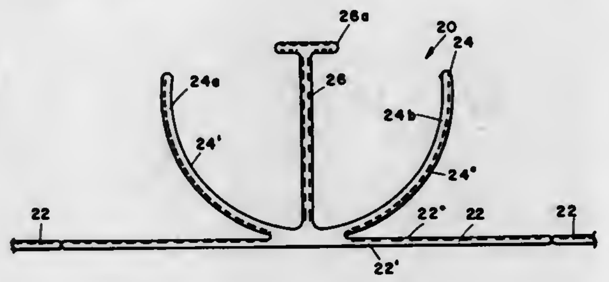
SOLAR COLLECTOR

DeWayne Coxon, and Gary N. Bregg, both of Cedar Springs, Mich., assignors to Jordan College, Cedar Springs, Mich.

Filed May 25, 1977, Ser. No. 800,336

Int. Cl.² F24J *3/02*

U.S. Cl. 126—270 **2 Claims**



1. A solar collector assembly comprising:

a housing having a tray and a radiant energy transmitting cover thereover; and a series of solar collector elements side-by-side in said tray, each said element comprising an elongated metallic extrusion having the following features:

an elongated base having an underside support surface and an upper radiant energy absorbing surface;

an elongated, generally T-shaped, radiant energy absorbing collector projecting upwardly above said base;

a pair of elongated arcuate generally quarter-cylindrical reflector members projecting upwardly and outwardly from said base astraddle of said collector, having concave inner reflector surfaces oriented generally toward said collector to reflect radiant solar energy to said collector, and having convex outer surfaces.

4,131,110

SOLAR ENERGY ABSORBER

J. Paul Jones, Jr., 644 Valley View La., Wayne, Pa. 19087

Filed Jan. 6, 1977, Ser. No. 757,487

Int. Cl.² F24J *3/02*

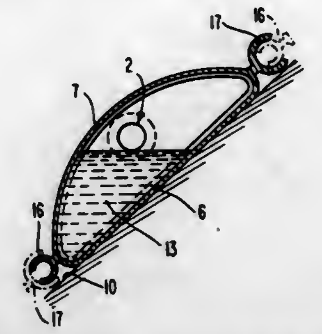
U.S. Cl. 126—271 **9 Claims**

1. For a solar energy collector:

an elongated, thin wall, hollow, plastic tank extending along a horizontal axis to be filled with a heat absorbing fluid, the wall of the tank being capable of absorbing solar energy and conducting the same to said fluid in contact with the wall;

fluid inlet means adjacent one end of the tank and spaced inwardly from the periphery of the tank;

fluid outlet means adjacent the opposite end of the tank and spaced inwardly from the periphery of the tank; and



the spacing of the inlet and outlet means with respect to the periphery of the tank and the horizontal orientation of the tank providing that without flow of fluid thru the inlet to the tank and with the outlet being open to discharge fluid, the portion of the tank below the inlet and outlet means retains a substantial reservoir of fluid to maintain the temperature of the plastic below its deformation temperature.

4,131,111

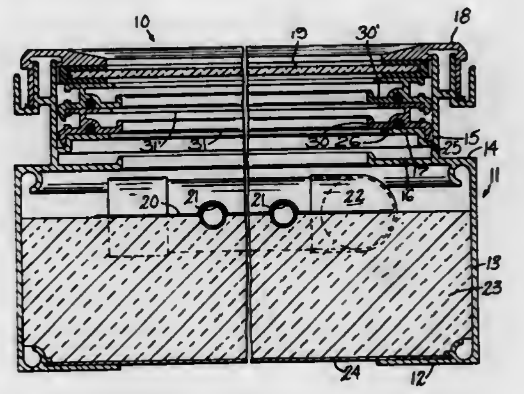
SOLAR ENERGY COLLECTOR

Thomas P. Hopper, Durham, Conn., assignor to Sunworks, Inc., Guilford, Conn.

Filed Feb. 28, 1977, Ser. No. 772,972

Int. Cl.² F24J *3/02*

U.S. Cl. 126—271 **7 Claims**



1. In a solar energy collector which comprises side and end walls defining a housing, an absorber within said housing, the improvement comprising a support ledge extending inwardly from said wall members above the absorber and below said cover member, a removable rectangular frame member having a thin transparent flexible sheet of material secured thereto and tensioned thereacross, said frame member resting on the support ledge, and cooperating means on said support ledge and said frame member for positioning and retaining said frame member in position on said support ledge.

4,131,112

PROBE FOR OBTAINING SAMPLE OF CERVICAL MUCUS

Louis Kopito, Brookline; Samuel R. Schuster, Wellesley, and Harold Kosasky, Brookline, all of Mass., assignors to Ovutime, Inc., Brookline, Mass.

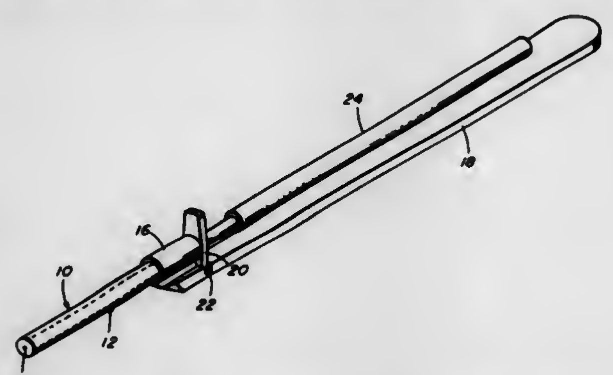
Filed Dec. 21, 1976, Ser. No. 753,007

Int. Cl.² A61B *10/00;* A61M *1/00*

U.S. Cl. 128—2 B **3 Claims**

1. A device for retrieving cervical mucus, said device comprising:

(a) a first handle;
(b) a second handle;
(c) a barrel having a rigid main body configuration and a rigid forward tip configuration, said rigid main body configuration and said rigid forward tip configuration being substantially continuous with respect to each other, said barrel being affixed to said first handle;
(d) a plunger having a resilient main body configuration and a resilient forward tip configuration, said resilient main body configuration and said resilient forward tip configuration being substantially continuous with respect to each other, said plunger being affixed to said second handle;
(e) said plunger being reciprocable within said barrel and the general diameter of said rigid main body configuration and the general diameter of said resilient main body configuration being substantially the same;
(f) the major portion of said rigid forward tip configuration of said barrel being relatively deep;
(g) the major portion of said resilient forward tip configuration of said plunger being relatively shallow;
(h) a cavity being defined between said resilient forward tip configuration of said plunger and said rigid forward tip configuration of said barrel such that, in a plane through the axis of said rigid tip configuration of said barrel and said resilient tip configuration of said plunger, a line at the surface of said resilient tip configuration of said plunger has no point of inflection and a line at the surface of said rigid tip configuration of said barrel has no point of inflection;

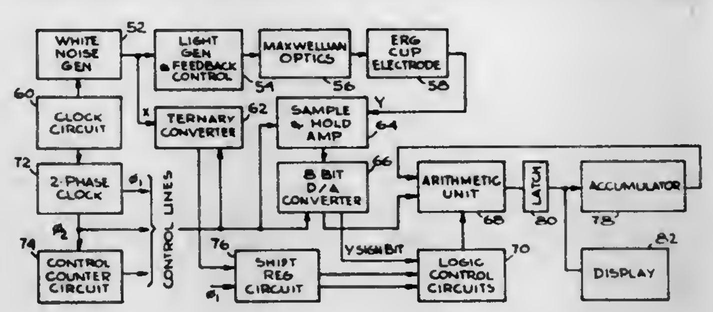


(i) forward motion of said resilient forward tip configuration of said plunger with respect to said rigid forward tip configuration of said barrel sequentially causing contact between successive increments of said resilient forward tip configuration of said plunger and successive increments of said rigid forward tip configuration of said barrel;
(j) withdrawal of said resilient forward tip configuration of said plunger with respect to said rigid forward tip configuration of said barrel sequentially causing separation of successive increments of said resilient forward tip configuration of said plunger and successive increments of said rigid forward tip configuration of said barrel;
(k) whereby fluid in said cavity is maintained as an integral mass as it flows through said aperture;
(l) said cavity being variable between a positive volume and a substantialy zero volume.

4,131,113
ERG ANALYSIS SYSTEM

Derek H. Fender, Altadena, and Arthur J. Koblasz, Sierra Madre, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.
Filed Aug. 19, 1976, Ser. No. 716,025
Int. Cl.^{2} A61B *3/00*
U.S. Cl. 128—2 T **10 Claims**

1. Apparatus for enabling the examination of the eye of a subject for determining the existence of medical problems, comprising:
means for generating white-noise electrical signals,
a light source,
means for modulating said light source with said white-noise electrical signals to produce modulated light,
means for applying said modulated light to the eye of a subject to cause the generation of ERG signals by the eye in response thereto, including means for correcting for the impedance of the device which converts the band-limited white-noise voltage signals into quasi-random intensity modutions,
means for deriving said ERG signals from the eye,
computer means for cross correlating said white noise electrical signals and said ERG signals for producing h_1 and h_2 kernels representative of the retinal system, and
means for displaying said h_1 and h_2 kernels wherefrom the existence of medical problems can be determined.



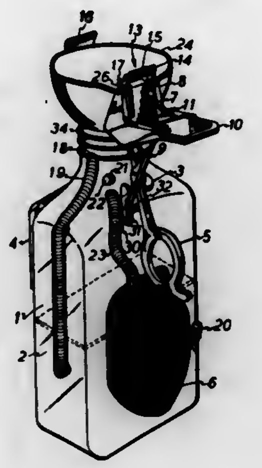
4,131,114
ORTHOPEDIC CAST

Harold B. Kirkpatrick, Easton, Conn.; Edward C. Distler, Warminster, Pa., and Marvin Menzin, Lexington, Mass., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.
Division of Ser. No. 536,254, Dec. 24, 1974, Pat. No. 4,020,832. This application Jan. 31, 1977, Ser. No. 764,199
Int. Cl.^{2} A61F *13/04*
U.S. Cl. 128—90 **1 Claim**

1. In combination, a spool, an orthopedic bandage comprising a flexible carrier of liquid pervious material wound on itself about said spool, and a minimal but adequate coating on said bandage of a curing solid-resin forming liquid composition comprising a mixture of 100 parts by weight of methylene diphenyl diisocyanate, 50 parts by weight of the reaction product of glycerine and propylene oxide having an average molecular weight of approximately 260, dibutyl phthalate as a plasticizer and from about 0.03 to about 0.30 parts by weight of dibutyl tin dilaurate as a catalyst, whereby said carrier becomes rigid throughout upon completion of said curing.

4,131,115
EYELIDS-TURNING AND EYE-WASHING FIXTURE

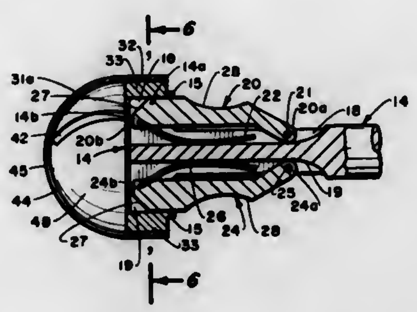
Sung S. Peng, No. 46 Lane 31, Alley 81, Sec. 2, Taipei, Taiwan
Continuation of Ser. No. 724,773, Sep. 20, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,969
Int. Cl.^{2} A61M *7/00*
U.S. Cl. 128—249 **4 Claims**



1. An eyelid-turning and eye-washing fixture comprising:
a bottle which is divided into a clean water container and a dirty water container;
a washing basin connected with said bottle;
spray means interconnecting said clean water container with said washing basin for causing the clean water in said container to spray out in said washing basin;
means for clipping and turning an eyelid affixed to said bottle and said washing basin.

4,131,116
ROTARY BONE CUTTER FOR SHAPING SOCKETS

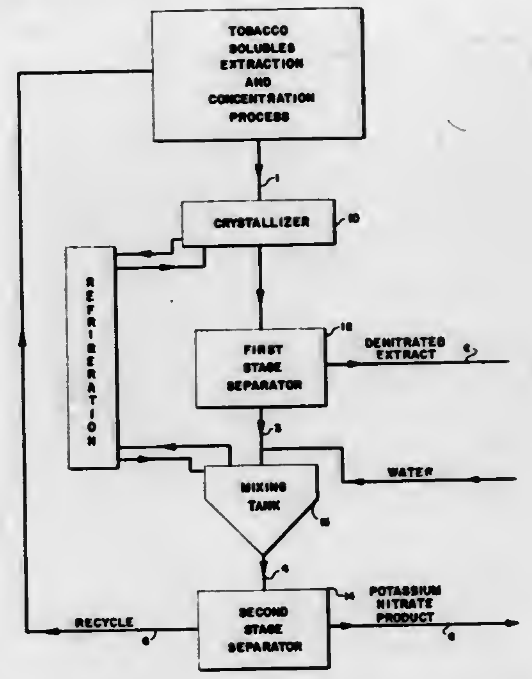
John R. Hedrick, La Crescenta, Calif., assignor to Pevrick Engineering Company, Inc., Sun Valley, Calif.
Filed May 2, 1977, Ser. No. 792,935
Int. Cl.^{2} A61B *17/32, 17/18*
U.S. Cl. 128—305 **8 Claims**



1. A bone cutter for shaping a socket comprising:
a shaft adapted to be selectively rotated at one end;
a cutter head comprising a hemispherical portion having a hemispherical exterior surface and containing a hollow chamber;
means located at the opposite end of said shaft for connecting said hemispherical portion to the opposite end of said shaft and for closing said chamber;
at least three elongate slots in a radial plane of said hemispherical portion connecting between said hemispherical exterior surface and said chamber, said slots coverging toward the center point of said hemispherical exterior surface but being unconnected to each other at said point; and
a cutting edge on the trailing portion of each of said slots and raised slightly above said hemispherical exterior surface of said hemispherical portion for moving material from said socket into said chamber during rotation of said shaft.

4,131,117
METHOD FOR REMOVAL OF POTASSIUM NITRATE FROM TOBACCO EXTRACTS

George F. Kite, Richmond; Grant Gellatly, Chester, and Richard G. Uhl, Highland Springs, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Dec. 21, 1976, Ser. No. 753,066
Int. Cl.^{2} A24B *3/14*
U.S. Cl. 131—140 C **1 Claim**



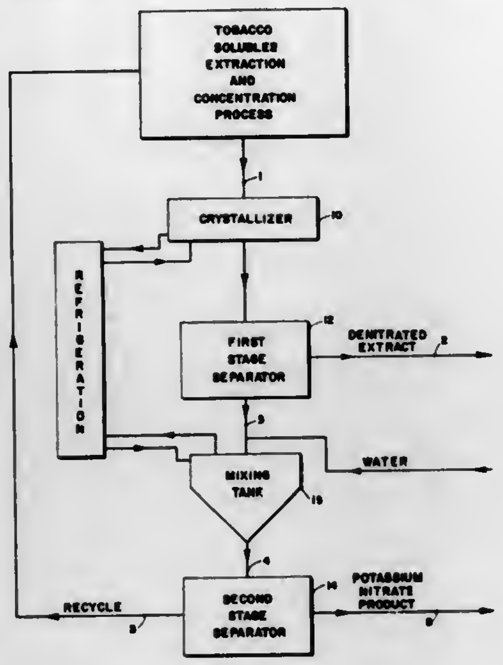
1. In a process for preparing reconstituted tobacco, including the steps of providing an aqueous extract of tobacco plant part solubles, separating the insoluble fibrous tobacco residue from the aqueous extract, and forming said residue into a paper-like sheet, the improvement which comprises:
(a) concentrating the aqueous extract under vacuum to a total solids content between about 30–70 percent;
(b) cooling the extract to a temperature between about 5°–25° F. to effect crystallization of potassium nitrate;
(c) separating and recovering a crystalline potassium nitrate sludge and a denitrated extract phase; and (d) recombining the denitrated extract phase with the paper-like sheet of tobacco, wherein the said extract phase has a nitrate-nitrogen content of about 0.3–0.5 percent.

4,131,118
METHOD FOR REMOVAL OF POTASSIUM NITRATE FROM TOBACCO EXTRACTS

Grant Gellatly, Chester, and Richard G. Uhl, Highland Springs, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Nov. 12, 1976, Ser. No. 741,448
Int. Cl.^{2} A24B *3/14, 15/02*
U.S. Cl. 131—140 C **4 Claims**

1. In a process for preparing reconstituted tobacco, including the steps of providing an aqueous extract of tobacco plant part solubles, separating the insoluble fibrous tobacco residue from the aqueous extract, and forming said residue into a paper-like sheet, the improvement which comprises:
(a) concentrating the aqueous extract under vacuum to a total solids content between about 30–70 percent;
(b) cooling the extract to a temperature between about 5°–25° F. to effect crystallization of potassium nitrate;
(c) separating and recovering a crystalline potassium nitrate sludge and a denitrated extract phase;
(d) recombining the denitrated extract phase with the paper-like sheet of tobacco, wherein the said extract phase has a nitrate-nitrogen content of about 0.3–0.5 percent;

(e) forming a slurry mixture of the crystalline potassium nitrate sludge of step(c) with water; and



(f) separating and recovering crystalline potassium nitrate of about 91 ± 6 percent purity from the slurry mixture.

4,131,119
ULTRASONIC CIGARETTE-HOLDER OR PIPE STEM

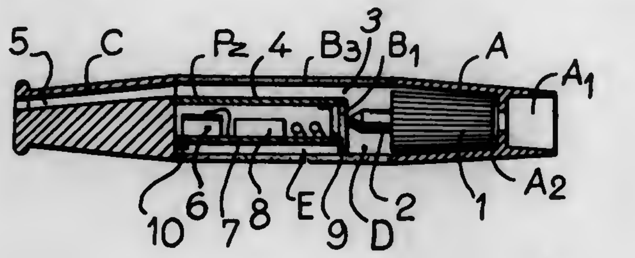
Claudine Blasutti, 83, rue de Champigny, Chennevières-sur-Marne, France (94430)

Filed Oct. 26, 1976, Ser. No. 735,278

Claims priority, application France, Jul. 20, 1976, 76 22075

Int. Cl.² A24F *13/02;* A24B *15/02*

U.S. Cl. 131—187 **8 Claims**



1. Cigarette-holder or pipe stem comprising an elongated body having an upstream end and a downstream end and containing an ultrasonic tobacco smoke treatment device comprising an elongated duct disposed eccentrically in relation to the longitudinal axis of the body having an inlet end to receive the products of tobacco combustion from the upstream end of said body and an outlet end to deliver treated products of combustion to the downstream end of the body, an ultrasonic vibration generator disposed in said duct to generate sound waves transverse to the direction of flow through the duct, said ultrasonic vibration generator comprising a piezoelectric ceramic element driven by an LED integrated circuit power oscillator, and a battery to energize said circuit, said ceramic element forming a portion of the wall of said duct.

4,131,120
ASH TRAY

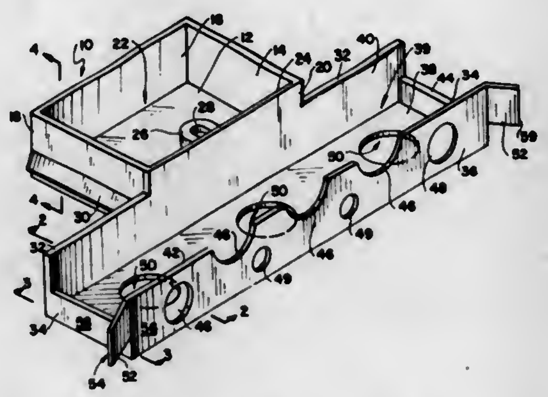
Ralph W. Edgar, 928 N. Vine, Orrville, Ohio 44667

Filed Nov. 18, 1977, Ser. No. 852,828

Int. Cl.² A24F *13/18, 19/10*

U.S. Cl. 131—235 R **11 Claims**

1. An ash tray comprising an ash receiving compartment, an adjacent compartment, said ash receiving compartment having a base and a pair of side walls and an end wall and a common wall upstanding therefrom, said pair of side walls and said end wall and said common wall defining an open mouth portion of said ash receiving compartment, means to slideably affix said ash receiving compartment to a panel of a motor vehicle, said adjacent compartment having a pair of end walls and said common wall and an opposed wall upstanding from a base portion affixed thereto, said pair of end walls and said common wall and said opposed wall defining an open mouth portion of said adjacent compartment, said base portion having a plurality of holes therein, said opposed wall having a plurality of holes therein, said opposed wall having a plurality of notches therein, hand grasping means affixed to said adjacent compartment for providing a finger grasping portion thereon, said open mouth portion of said ash receiving compartment being disposed located above said base of said ash receiving compartment, said open mouth portion of said adjacent compartment being disposed above said base portion, at least a portion of the marginal edge of said common wall defining said open mouth portion of said ash receiving compartment and said open mouth portion of said adjacent compartment.



4,131,121
METHOD AND DEVICE FOR SETTING CURLS IN HAIR

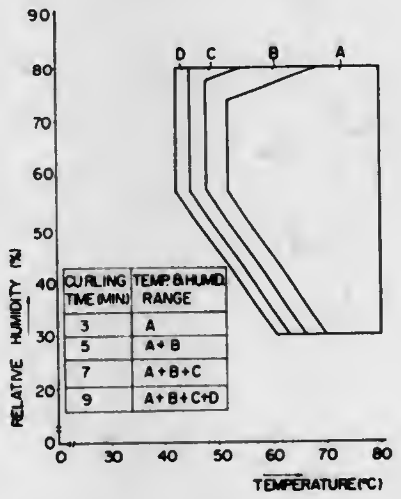
Masakatsu Araki; Shuhei Ochi; Toshio Kusunoki; Teizi Ishii, and Shinichi Sakata, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Mar. 18, 1976, Ser. No. 667,964

Claims priority, application Japan, Mar. 26, 1975, 50-36029

Int. Cl.² A45D *7/00*

U.S. Cl. 132—7 **14 Claims**



1. The method of curling hair comprising the step of applying an atmosphere of wet air prepared by simultaneously warming and humidifying air to rolled hair, wherein said atmosphere is within the range defined by respective temperature and relative humidity conditions of 47° C. and 80%, 47° C. and 62%, 62° C. and 30%, 80° C. and 30% and 80° C. and 80% for a minimum curling time of 3 minutes at a room atmosphere substantially of a temperature of 20° C. and a humidity of 40%.

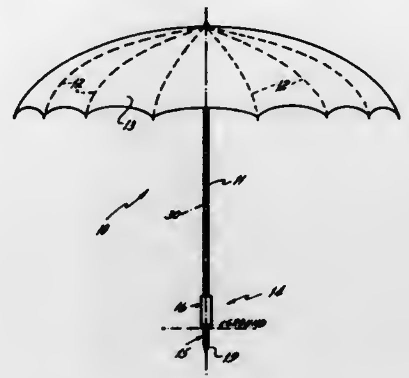
4,131,122
UMBRELLA STRUCTURE

C. Robert Brooks, Great Neck, N.Y., assignor to 'Totes', Incorporated, Cincinnati, Ohio

Filed Nov. 2, 1977, Ser. No. 847,844

Int. Cl.² A45B *9/04*

U.S. Cl. 135—76 **3 Claims**



1. An improved umbrella structure comprising
- a centerpost having an umbrella cover fixed thereto at one end,
- a rib structure connected between said centerpost and said cover, said rib structure being operable to open and close said umbrella as desired by a user,
- a handle section fixed to said centerpost at the other end, said handle section defining a storage chamber therein,
- a reversible pin having a stake-like point at one end and a connector at the other end, said connector being operable to connect said pin to said handle section in a stake position so that said stake-like point is exposed for staking said umbrella to ground and in a storage position where said stake-like point is seated in said storage chamber,
- a cap engageable with said connector when said pin is in said storage position, said cap cooperating with said handle section to establish an aesthetically pleasing contour to said handle, said handle section and pin defining a generally linear axis in said stake position, and said handle section, said pin and said cap defining a generally linear axis in said storage position, and
- a collar on said pin in combination with said connector, said collar serving to locate and to stop said pin in said stake position and in said storage position when in abutting relation with said handle section.

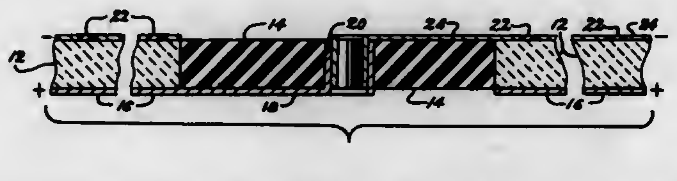
4,131,123
SOLAR CELL MODULE AND METHOD OF MAKING SAME

Richard P. Della-Vedowa, Granada Hills, and Ishaq M. Shahryar, West Los Angeles, both of Calif., assignors to Solec International, Inc., Los Angeles, Calif.

Filed Jan. 13, 1977, Ser. No. 758,930

Int. Cl.² H01L *31/04, 31/18*

U.S. Cl. 136—89 P **14 Claims**



1. In a method of making a solar module for converting light energy to electrical energy comprising a plurality of solar cell wafers disposed in planar configuration within an electrical insulating flat spacing member, each wafer having a back face substantially entirely coated with electrical conducting material forming a positive terminal, and a front light receiving face with a coated collecting grid thereon formed of the electrical conducting material, forming a negative terminal, including the steps of:
- (a) orienting uncoated wafers in spaced planar relation and between opposite faces of a spacing member having substantially the same thickness of the wafers,
- (b) applying, in a single operation, electrical conducting material to the back faces of the wafers and to the spacing member in the form of first electrical connectors extending laterally from the wafers adapted to electrically connect with an adjacent wafer, and
- (c) applying, in like manner, electrical conducting material to the front faces of the wafers, but in the form of grids, and to the spacing member, in the form of second electrical connectors extending laterally from the wafers to electrically connect with an adjacent wafer.

7. A solar module for converting light energy to electrical energy comprising a plurality of solar cell wafers disposed in planar configuration within an electrical insulating flat spacing member, each wafer having a back face substantially entirely coated with electrical conducting material forming a positive terminal, and a front light receiving face with a coated collecting grid thereon formed of the electrical conducting material, forming a negative terminal,
- (a) said wafers being oriented in spaced relation and between opposite faces of the spacing member, the spacing member being substantially the same thickness of the wafers,
- (b) the electrical conducting material being applied, in a single operation, to the back faces of the wafers and to the spacing member in the form of first electrical conductors extending laterally from the wafers adapted to electrically connect with an adjacent wafer, and
- (c) the electrical conducting material being applied, in like manner, to the front faces of the wafers, but in the form of grids, and to the spacing member, in the form of second electrical conductors extending laterally from the wafers adapted to electrically connect with an adjacent wafer.

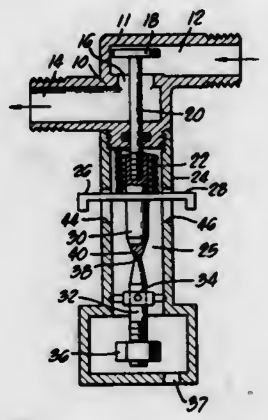
4,131,124
SEISMIC SAFETY CUTOFF DEVICE

Paul B. Sunde, 11356 Baird Ave., Northridge, Calif. 91324

Filed Nov. 26, 1976, Ser. No. 745,483

Int. Cl.² F16K *17/36*

U.S. Cl. 137—45 **9 Claims**



1. An improved seismic safety cutoff device for use with a valve of the type having a valve body structure and valve control stem for stopping the flow of a fluid in a conduit upon the occurrence of an external force produced by an earthquake or explosion, the improvement comprising:
- (a) housing means adaptable for mounting on the valve body structure;
- (b) stem-positioning means disposed within said housing means in operable association with the valve control stem for controlling the position of said valve control stem;
- (c) resilient biasing means disposed within said housing means acting upon and urging said stem-positioning means and valve control stem to the valve-closed position;
- (d) A substantially vertically-mounted pivotable rod disposed within said housing means in end-to-end contact with said stem-positioning means to retain the valve control stem in a valve-open position; and

(e) means responsive to a predetermined level of external force adjustably mounted on said pivotable rod for deflecting the pivotable rod upon application of an external force to said seismic safety cutoff device, thereby allowing the stem-positioning means and control stem to be displaced by the action of the resilient biasing means to the valve-closed position.

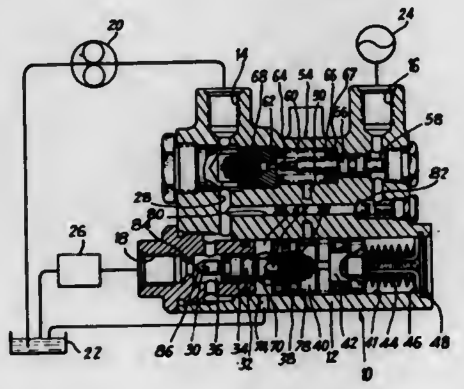
4,131,125
CHARGING VALVE FOR A FLUID PRESSURE ACCUMULATOR

Christian Tanguy, Frepillon, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed May 31, 1977, Ser. No. 802,218

Int. Cl.² G05D *16/10*

U.S. Cl. 137—118 **8 Claims**



1. An accumulator charging valve comprising a housing having an inlet orifice connectible to the outlet of a hydraulic pump, a first outlet orifice connectible to the pressure chamber of a fluid accumulator, and a second outlet orifice connectible to an open-centre hydraulic circuit, said charging valve comprising a principal passage between the inlet orifice and the second outlet orifice, a principal movable valve mounted in the passage and operated by a differential piston having a face of diameter exposed to the pressure prevailing at the inlet orifice and a face of larger diameter projecting into a control chamber forming a resilient variable volume enclosure, a leakage passage between the inlet orifice and a low-pressure reservoir, the leakage passage having a first portion of restricted cross-section situated between the inlet orifice and the control chamber, and a second portion situated between the control chamber and reservoir and also containing an orifice of restricted cross-section, the first portion comprising pilot means for permitting or interrupting the flow through the leakage passage as a function of the pressure level prevailing in the chamber of the accumulator.

4,131,126
MECHANICAL ACTUATING MEANS FOR HYDRAULIC CONTROL VALVES

Karel Chromik, Schliern, Switzerland, assignor to H. Bieri AG Liebefeld, Liebefeld/Könitz, Switzerland

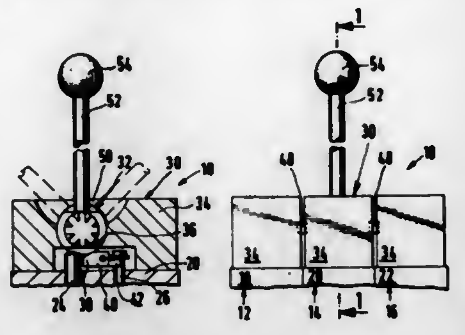
Filed Sep. 22, 1977, Ser. No. 835,742

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1976, 2646941

Int. Cl.² F16K *11/16, 31/524*

U.S. Cl. 137—270 **9 Claims**

1. Mechanical actuating means for hydraulic control valves assembled from individual units in a modular system, each of said control valves having a module housing and valve bodies adapted to occupy at least two control positions, and having valve body ends projecting from the module housings on the same side, said actuating means for each module comprising a cam housing adapted to be placed on the module housing and having a cam control member rotatably mounted and rotatable about an axis of rotation in said cam housing and which is adapted to be brought into engagement with said ends of said valve bodies for controlling the positioning of same, the axes of all of said cam control members being aligned with each other, and a coupling for the co-rotational joining together of the cam control members of adjacent modules in selectable relative angular positions to one another.



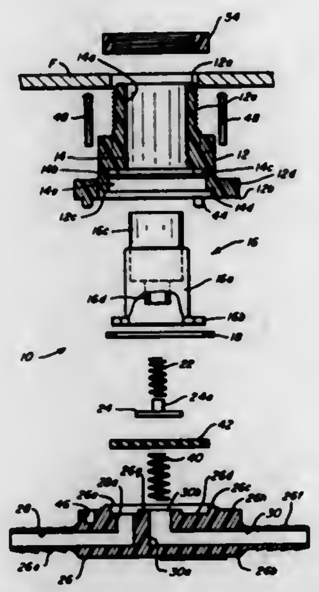
4,131,127
LOCKING VALVE

Jose V. Ferro, 3655 Glenhaven, Houston, Tex. 77025; Vincent M. Morales, 723 Cramer Ct., Katy, Tex. 77450, and Billy G. Reid, 1402 Avenue A, Houston, Tex. 77587

Filed Jan. 28, 1977, Ser. No. 763,319

Int. Cl.² F16K *35/06*

U.S. Cl. 137—384.6 **3 Claims**



1. A lockable valve for selectively prohibiting flow of fluid fuel from a fuel supply to a engine comprising:

a) a molded plastic housing means, including multiple housing components mutually aligned by male and female coupling means and held together by rivet means;

b) flow line receptacles, as integral parts of said housing means and equipped with anchoring shoulders, for receiving and anchoring flow line tubular members for conducting said fluid fuel from said fuel supply and to said engine, respectively;

c) a valve stem and a seat for selectively closing said valve for prohibiting flow of said fluid fuel to said engine;

d) a diaphragm seal, anchored by an annular clamping means formed by two opposed annular lips to fluidtight seal said housing means, for selectively fluid-tight sealing said valve stem to said seat to selectively close said valve; and

e) locking means, held within said housing means by a snap ring and oriented by an arcuate flange cooperating with a keyed passage, equipped with plunger means carrying said valve stem, whereby said valve may be closed by depression of said plunger means from a first position to a second position, and opened only by unlocking said locking means to release said plunger means to return to said first position.

4,131,128
CONTROL VALVE

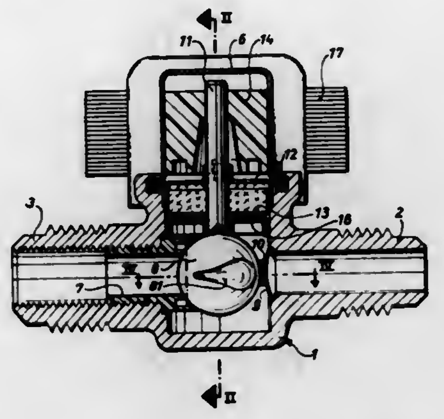
Rudibert Götzenberger, Neckarrems, Fed. Rep. of Germany, assignor to Ernst Flitsch GmbH U. Co., Fellbach, Fed. Rep. of Germany

Filed Apr. 1, 1977, Ser. No. 783,663

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1976, 2615009

Int. Cl.² F16K *31/04, 5/10*

U.S. Cl. 137—556 **9 Claims**



1. A control valve comprising:

(a) a casing defining an inlet conduit, a chamber, and an outlet conduit jointly constituting a flow path through said casing;

(b) an annular valve seat in said chamber formed with an opening therethrough, said flow path extending through said opening in a predetermined direction;

(c) a spherical valve member mounted in said cavity in movable engagement with said valve seat;

(d) operating means for moving said valve member about an axis transverse to said predetermined direction between two angularly spaced positions.

  (1) the spherical outer face of said valve member being formed with a notch elongated in a plane perpendicular to said axis through the center of said valve member,

  (2) said notch flaring in the direction of elongation thereof,

  (3) said notch in one of said positions of said valve member communicating simultaneously with said inlet and outlet conduits,

  (4) said notch in the other position of said valve member communicating with not more than one of said conduits; and

(e) yieldably resilient means in said cavity pressing said valve member toward said valve seat, said yieldably resilient means including,

  (1) a pressure plate making contact with said circumference in said one position of said valve member substantially in a point only, and

  (2) a spring interposed between said casing and said pressure plate.

4,131,129
DEVICE FOR CONTROLLING GAS FLOW INTO VESSELS

Raymond A. Firestone, 60 Hunter Ave., Fanwood, N.J. 07023

Filed Apr. 6, 1977, Ser. No. 785,036

Int. Cl.² F16K *17/02*

U.S. Cl. 137—596.12 **14 Claims**

1. A device for controlling gas flow into a vessel comprising:

(a) means for alternately connecting a vessel with a vacuum and gas source;

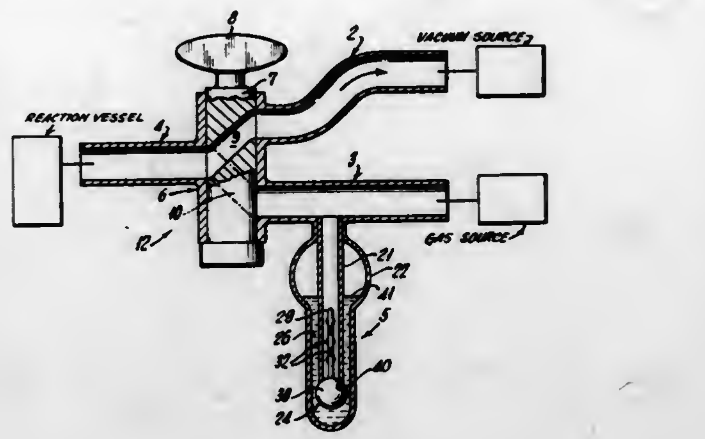
(b) a communicating means connecting said means with said gas source;

(c) a projection communicating with said communicating means and being open at its other end;

(d) a container enveloping at least a portion of said projection;

(e) a float within said container capable of sealing the open end of said projection;

(f) a liquid contained within said container and with its level above the open end of said projection; said liquid having a density such that it can urge the float into a sealing relationship with the end of said projection; and



(g) an exit means communicating with said container, said exit means being above the level of said liquid.

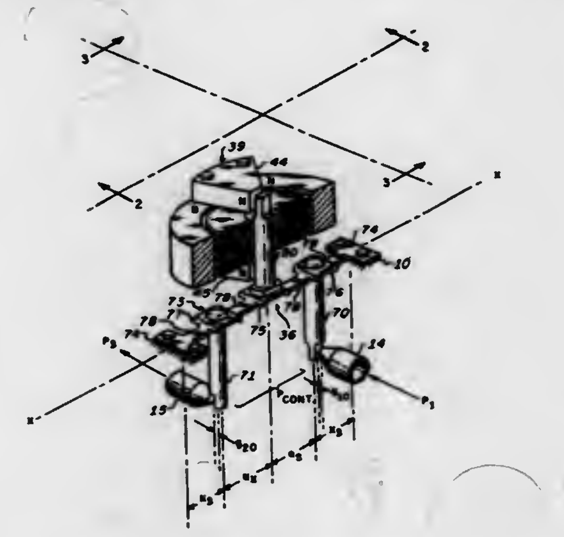
4,131,130
PNEUMATIC PRESSURE CONTROL VALVE

Joseph H. Ruby, Glendale, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jul. 18, 1977, Ser. No. 816,837

Int. Cl.² G05B *11/48;* F16K *11/14*

U.S. Cl. 137—596.17 **9 Claims**



1. A signal responsive fluid pressure control valve for providing a controllable output pressure from first and second input pressure sources proportional to an electrical control signal with minimum fluid mass flow comprising

a valve housing including a controlled pressure chamber,

a first nozzle connected with said first pressure source and extending into said chamber,

a second nozzle connected with said second pressure source and extending into said chamber,

first and second flapper means adjacent said first and second nozzles respectively and defining first and second gaps therebetween, said flapper means being adapted to be moved relative to said nozzles to increase and decrease said gaps and thereby control the resultant pressure within said chamber in accordance with the relative positions of said flapper means,

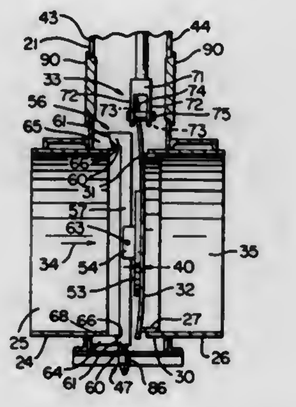
electric torque motor and armature means adapted to move said flapper means in accordance with said electrical control signal, and

resilient means coupling each of said flapper means with said housing and with said armature means, said resilient means providing simultaneous movement of both of said flapper means by said armature means to simultaneously increase one of said gaps and decrease the other, and providing independent movement of one of said flapper means by said armature means when the gap defined by the other thereof is decreased to zero.

4,131,131
VALVE CONSTRUCTION

Paul P. Frisch, Skokie, Ill., assignor to Dayco Corporation, Dayton, Ohio

Filed Jun. 22, 1977, Ser. No. 809,133
Int. Cl.^{2} F16K *37/00*
U.S. Cl. 137—559 **16 Claims**



1. A gate valve construction comprising; a valve body having an inlet and a circular discharge orifice; a flat flexible gate for said discharge orifice; means for supporting and moving said gate in front of and away from said orifice; said gate being adapted to be sealed against said orifice by upstream fluid pressure to define a dished configuration therein which is concave toward said inlet; a rigid back-up disc fixed against the central portion of said gate; said disc having a peripheral outline which is substantially less than the diameter of said orifice thereby enabling the outer portion of said flexible gate to define said dished configuration; and positioning means for said gate comprising, a bar having a central portion and a pair of projections extending in parallel relation from opposite ends thereof, means pivotally attaching said central portion to said backup disc, said means pivotally attaching including a pivot pin, said projections being disposed radially outwardly of said orifice with said gate disposed upstream of said orifice, each of said projections having a positioning surface thereon, and a pair of positioning members fixed in said valve body at diametrically opposed positions thereof and also radially outwardly of said orifice, each of said members having an inclined surface which is adapted to be engaged by an associated positioning surface, said inclined surfaces serving as cam surfaces which engage said positioning surfaces and position said bar and gate in front of said orifice while allowing free pivoting movement of said bar and gate about said pivot pin and also allowing unobstructed forming of said dished configuration.

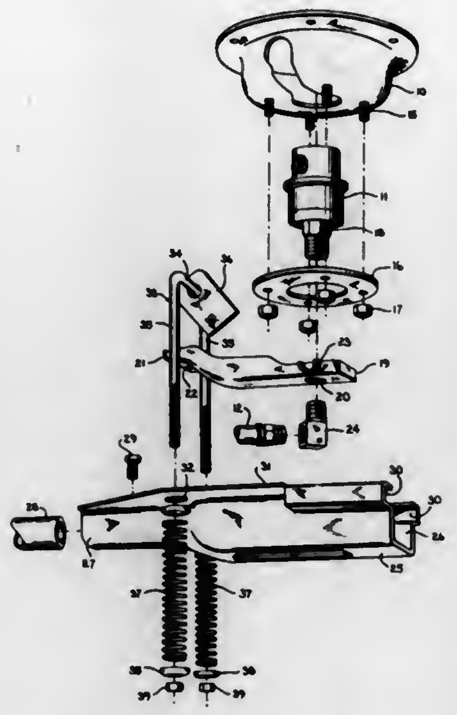
4,131,132
MOUNTING BRACKET ASSEMBLY

Frank P. Zierden, Oak Creek, Wis., assignor to Zierden Company, Oak Creek, Wis.

Filed Jan. 26, 1977, Ser. No. 762,505
Int. Cl.^{2} B08B *3/02;* F17D *1/14*
U.S. Cl. 137—615 **5 Claims**

1. In a car washing apparatus in which water flows from an overhead swivel cartridge having a rotatable outlet to a car washing hose which is supported by a boom attached to the outlet, the improvement which comprises a mounting bracket assembly which permits the boom and hose to be rapidly and safely disconnected from the swivel cartridge, said mounting bracket assembly comprising:

(a) a hinge plate adapted to be connected at one end to the rotatable outlet of the swivel cartridge,
(b) a boom body member supporting a boom and a car washing hose, said body member having a hinge plate receiving recess,
(c) compression means which exert a compressive force to retain the hinge plate in the hinge plate receiving recess of the boom body member, and

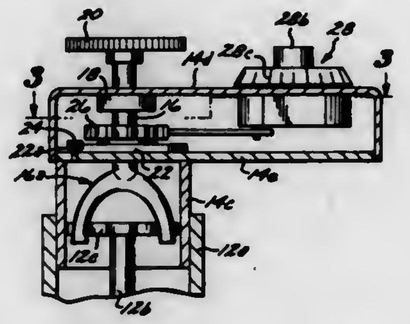


(d) jack means operatively connected with the compression means, said jack means being movable from an inoperable position to an operative position in which the jack means relieves the compressive force of the compression means so that the boom body member, boom and car washing hose can be readily disconnected from the swivel cartridge.

4,131,133
ADAPTOR FOR MANUAL LAWN AND GARDEN SPRINKLER VALVES

Donald D. Huwe, 17551 Orangetree La., Tustin, Calif. 92680

Filed Jun. 24, 1977, Ser. No. 809,793
Int. Cl.^{2} F16K *31/48*
U.S. Cl. 137—624.11 **4 Claims**



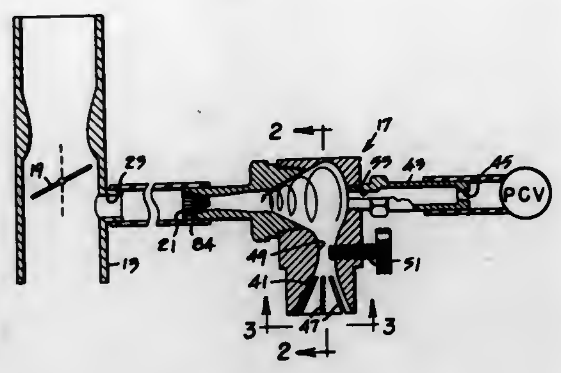
1. Adaptor for manual lawn and garden sprinkler valves comprising in combination,

a housing formed with a cylindrical extension adapted to have a sliding fit with a sprinkler valve to thereby be the sole support for said housing on said valve, said sliding fit enabling said adaptor to be easily transferred from one sprinkler valve to another,
a manually rotatable shaft in said housing engageable with manual valve operating means on said sprinkler valve,
torsion spring means on said shaft such that rotation of said shaft to open said valve causes energy to be stored in said spring tending to rotate said shaft to closed position,
and a timer in said housing having an arm engageable with said shaft to prevent rotation thereof by said spring until a predetermined time interval has elapsed.

4,131,134
FLUID FLOW REGULATOR

John E. Lindberg, Berkeley, Calif., assignor to Owen, Wickersham & Erickson, San Francisco, Calif.

Filed May 4, 1977, Ser. No. 793,557
Int. Cl.^{2} F15C *1/16*
U.S. Cl. 137—808 **12 Claims**



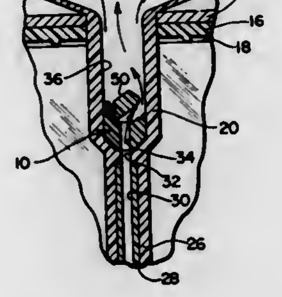
1. A gas flow regulator for controlling the amount of gas flow through the regulator and comprising,

inlet means for admitting a gas into the flow regulator,
outlet means for conducting the gas flow from the regulator, and
variable impedance means between the inlet means and the outlet means for producing an impedance to flow through the flow regulator and for varying that impedance as a function of the pressure differential across the variable impedance means and also varying that impedance as a function of acceleration in the gas flowing through the variable impedance means,
said variable impedance means having a configuration which produces an acceleration in the gas flowing through the variable impedance means.

4,131,135
ONE WAY CHECK VALVE CONSTRUCTION

Hans Peter Aleff, Old Sneech Pond Rd., Pole 188, R.D. 2, Cumberland, R.I. 02864

Filed Jul. 5, 1977, Ser. No. 813,216
Int. Cl.^{2} F16K *15/14*
U.S. Cl. 137—856 **8 Claims**

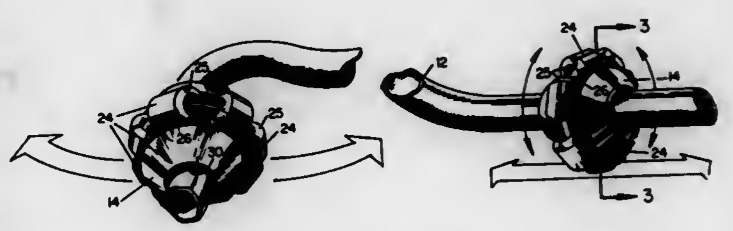


1. A valve adapted for positioning in a tubular passageway so as to permit the flow of fluid in one direction therethrough, said valve of one piece integrally molded plastic resinous composition and having a tubular body for fluid tight contact with the inner walls of said passageway, said body having a generally longitudinally orientated generally centrally disposed fluid receiving opening extending therethrough from a bottom surface thereof and terminating at an upper surface thereof, a molded plastic cover having first and second portions, said first cover portion hingedly connected to said body along one side thereof by a first hinge, said second cover portion hingedly connected to said first cover portion along an integral transversely extending second hinge connection proximal the upper surface of said body, said second portion having a lower face portion adapted for sealing contact with said upper body surface when said valve is disposed in said tubular passageway with outer surface portions of said first hinge contacting said passageway so as to rotationally upwardly bias said second portion about said second hinge against the natural plastic memory tendency of said second portion to assume its original as molded position with respect to said first portion, said second hinge by plastic memory normally urging said second portion downwardly against said upper body surface in sealing contact therewith so as to close said fluid receiving opening in a closed valve position, said second portion pivotally movable about said second hinge and towards said first cover portion to a non-sealing open valve position upon the application of a differential pressure thereto.

4,131,136
ROLLER GUARD FOR SWIMMING POOL CLEANING HOSES

Joseph J. Sawyer, P.O. Box 868, Longwood, Fla. 32750

Filed Oct. 11, 1977, Ser. No. 840,772
Int. Cl.^{2} F16L *57/00*
U.S. Cl. 138—110 **2 Claims**



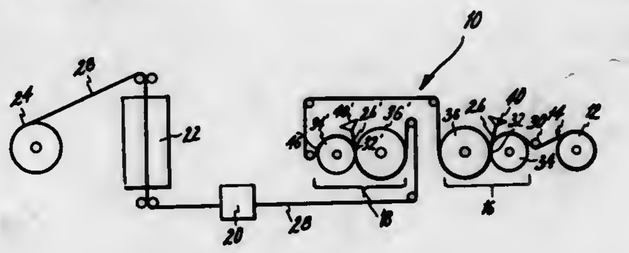
1. A guard for swimming pool cleaning hoses comprising:

a spool having a hole extending axially therethrough and a concavity about the periphery thereof, said hole dimensioned so as to receive said hose;
a plurality of roller segments based about said concavity and positioned therein;
means including a flexible shaft extending through all of said roller segments and about said concavity for rotatably supporting said roller means at the periphery of said spool, whereby said roller reduces frictional contact between said hose and a pool being cleaned; and wherein each roller segment comprises a cylinder with said shaft extending axially therethrough; and wherein each end of each cylindrical roller segment is beveled; and wherein said flexible shaft encircles said concavity; and wherein said hole is beveled outwardly away from the center of said spool; and wherein the specific gravity of said rollers is less than one.

4,131,137
COMPOSITE TUBULAR CASING FOR PROCESSED FOODS AND METHOD OF FABRICATING THE CASING

Stanley Lustig, Park Forest, and Ganapathy Vasudevan, Bolingbrook, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 23, 1976, Ser. No. 753,818
Int. Cl.^{2} F16L *11/04*
U.S. Cl. 138—118.1 **5 Claims**



1. A laminated composite tubular casing for covering a food

product adapted to be inserted therein and processed in situ, said composite food casing comprising:

a first substantially flattened tubular layer of a cellulosic material forming two sides bounded by two longitudinal edges;

a second substantially flattened tubular layer of a thermoplastic material forming two sides bounded by two longitudinal edges, said first tubular layer being enclosed within said second tubular layer with the longitudinal edges of said second layer being spaced apart from the longitudinal edges of said first layer and with each side of said second layer being bonded to the side of said first layer adjacent thereto; and

a beaded seam formed in said second layer extending the longitudinal length thereof proximate each edge and having a thickness greater than the thickness of said second layer and lying parallel to and separated from each longitudinal edge of said first layer by a predetermined lineal distance which averages above zero but no greater than about 0.003 inches over the longitudinal length of the casing.

4,131,138

HAND WEAVING LOOM

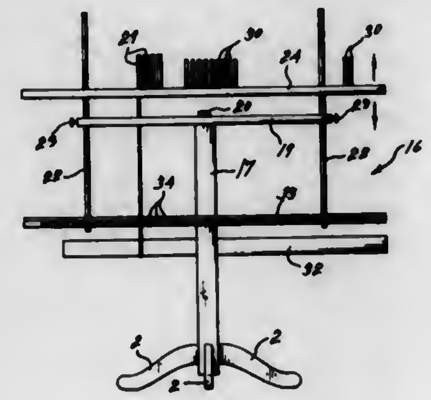
Guy Boisvert, 975 Belleville Ave., St. Vincent de Paul, Canada

Filed Nov. 1, 1977, Ser. No. 847,514

Claims priority, application United Kingdom, Nov. 3, 1976, 45697/76

Int. Cl.^{2} D03D *29/00*

U.S. Cl. 139—29 11 Claims



1. A hand weaving loom comprising a base having a post, a work platen connected to the top of said post, pins removably secured to said work platen and upwardly projecting endwise therefrom in laterally spaced-apart relationship, said pins extending in a row along an edge of said work platen, each of said pins having a warp yarn holding means at the free end portion thereof remote from the work platen, rods downwardly projecting endwise from the work platen, and a warp yarn holder adjustably carried by said rods at a distance below said work platen.

4,131,139

GAS FILLING METHOD FOR GAS SPRING

Hisao Tanabe, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan

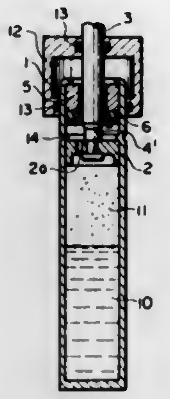
Filed Dec. 1, 1976, Ser. No. 746,639

Claims priority, application Japan, Dec. 10, 1975, 50/147604

Int. Cl.^{2} B65B *3/04*

U.S. Cl. 141—4 3 Claims

1. A method for filling gas into a container having a piston therein and a piston rod on said piston extending out of one end of said container and an annular seal at said one end of said container through which said rod extends in sealing relationship, said method comprising the steps of forming a reduced diameter portion in said rod at a position adjacent to said piston and having a radial depth greater than that for accomodating said annular seal therein without deformation of said seal, moving the rod out of said one end of the container to the maximum extended position in which said reduced diameter portion is within said annular seal and said annular seal terminates short of the bottom of said reduced diameter portion for leaving a gas filling passage between the reduced diameter portion and said annular seal, said passage communicating the inside and outside of the container, filling a high pressure gas into the container through said passage while said annular seal remains undeformed, thereafter moving the rod inwardly for bringing the unreduced diameter portion of the rod into sealing engagement with said annular seal to close said passage, and deforming a portion of the container positioned at a point along said container spaced from said one end to form a stop restricting the outward movement of the piston, thereby preventing the rod from moving to the maximum extended position wherein the seal ring and the reduced diameter portion of the rod have said gas filling passage therebetween.



4,131,140

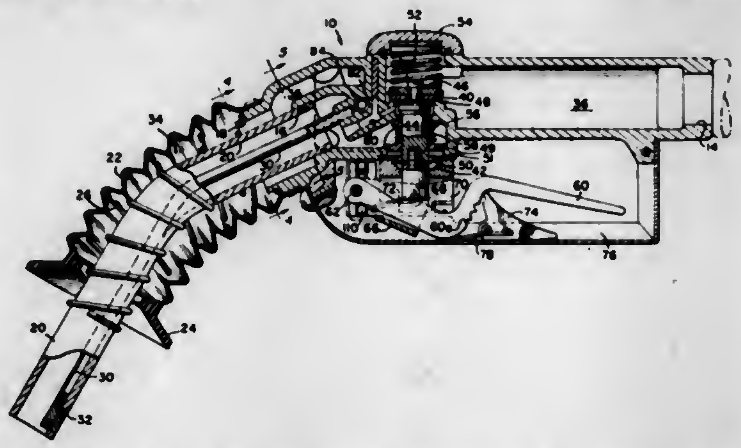
AUTOMATIC FLUID DISPENSING APPARATUS

Elmer M. Deters, Muscatine, Iowa, assignor to Wylain, Inc., Dallas, Tex.

Filed Dec. 28, 1977, Ser. No. 865,186

Int. Cl.^{2} B65B *3/26*

U.S. Cl. 141—206 17 Claims



1. An apparatus for dispensing fluid into a container comprising a housing having an inlet for receiving fluid and an outlet for discharging said fluid, passage means formed in said housing for permitting the flow of fluid from said inlet to said outlet, said passage means comprising a first passage for permitting a direct flow of fluid from said inlet to said outlet and a second passage for receiving a portion of the fluid passing from said inlet to said outlet, means for creating a vacuum zone in said housing in response to the flow of fluid through said second passage, a valve member disposed in said housing and movable in said housing to open said passage, a lever assembly movable relative to said housing between a first position in which it can be manually actuated to move said valve member into said passage-opening position and a second position in which it cannot be manually actuated to move said valve member into said passage-opening position, means disposed in said housing and in engagement with said lever assembly for exerting a first force against said lever assembly to urge said lever assembly to said first position, means responsive to the creation of said vacuum zone for exerting a second force against said lever assembly greater than said first force to urge said lever assembly to said second position, and means associated with said housing for sensing the absence of a predetermined fluid level in said container for relieving said vacuum and said second force so that said lever assembly is urged to said first potition.

4,131,141

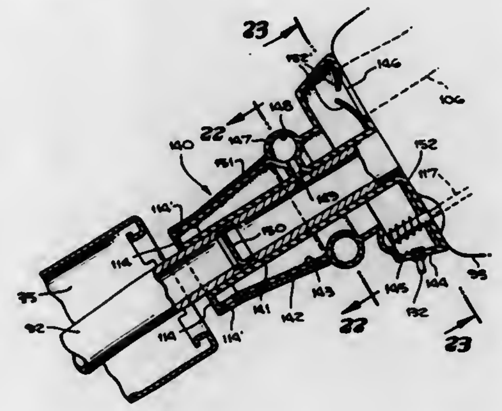
CONTAINED VOLATILE LIQUIDS VAPOR RETENTION SYSTEM

Joseph Weissenbach, 373 S. Hoover St., Los Angeles, Calif. 90020

Continuation-in-part of Ser. No. 387,958, Aug. 13, 1973, Pat. No. 3,977,379. This application Jul. 1, 1976, Ser. No. 701,654

Int. Cl.^{2} B65B *3/18*

U.S. Cl. 141—285 8 Claims



1. In a fuel tank system for receiving volatile fuel from a reservoir and for storing and dispensing said fuel to a tank for a combustion engine wherein the tank has walls forming a closed chamber, there being fuel conducting means from the reservoir, a discharge means for said chamber and a fill pipe on said tank having an inflow opening, and automatic nozzle means having a body in communication with the fuel conducting means, a spout extending from said body and an on-off trigger on said body normally biased to off position, a dispensing system including a combined fill mechanism and vapor return means in communication between the fuel conducting means and the tank, said dispensing system comprising a resilient annular muff adapted to seal within said fill pipe during a filling operation,

said muff comprising a vapor return passage having and inlet open to the interior of the fill pipe and an outlet open toward the reservoir,

said muff including flexible exterior and interior wall portions forming a resilient pocket, the exterior wall portion being compressible and adapted for temporary sealing engagement with the fill pipe, the interior portion being adapted to have a sealed engagement around said spout, said pocket comprising a portion of said vapor return means,

and a resilient trigger actuator in operating engagement with the trigger, said trigger actuator being mounted on a movable portion of said muff, said trigger actuator being responsive to movement of said movable portion of the muff upon engagement of the muff with the fill pipe when the muff is pushed into sealing position whereby to shift the resilient trigger actuator to on position.

4,131,142

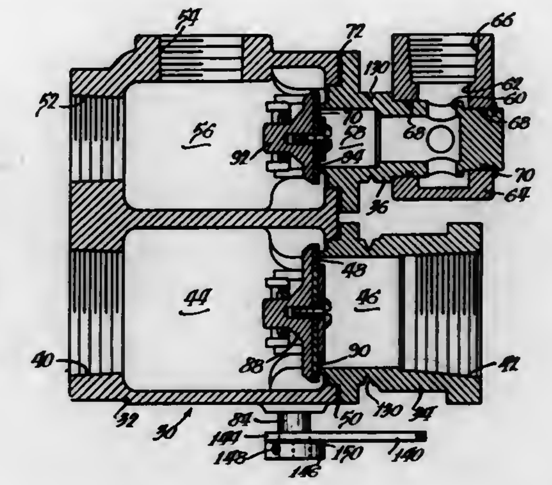
SAFETY VALVE FOR FUEL DISPENSERS INCLUDING VAPOR RECOVERY SYSTEMS

Robert H. Barr, Dubuque, Iowa, and John D. Eckel, Hazel Green, Wis., assignors to A. Y. McDonald Mfg. Co., Dubuque, Iowa

Filed Apr. 22, 1977, Ser. No. 790,054

Int. Cl.^{2} F16K *17/36*

U.S. Cl. 141—302 6 Claims



1. A safety valve for use in fuel dispensing systems including a vapor recovery system, said valve comprising:

a valve body;

first and second inlets in said body;

first and second outlets in said body;

first and second, separate, fluid flow passages in said body and extending between respective ones of said first and second inlets and outlets;

two valve seats in said body, one in each of said passages;

a shaft extending through and rotatable in said body adjacent said valve seats;

first and second clapper valves in said body, one in each passage, each clapper valve having a limited lost motion connection to said shaft to be rotatable therewith, with limited lost motion, between positions seated against and spaced from the associated valve seat;

a pair of means, one for each valve, biasing the associated valve towards its associated seat; and

means for normally holding said shaft in a position of rotation within said body wherein said valves are spaced from their associated seats and for sensing an unsafe condition in the vicinity of the valve body for releasing said shaft so that said biasing means will cause said valves to close.

4,131,143

APPARATUS FOR CUTTING FLOOR TRUSS WEB COMPONENTS

George L. Mayo, Fort Worth, Tex., assignor to Speed-Saw, Inc., Corvallis, Oreg.

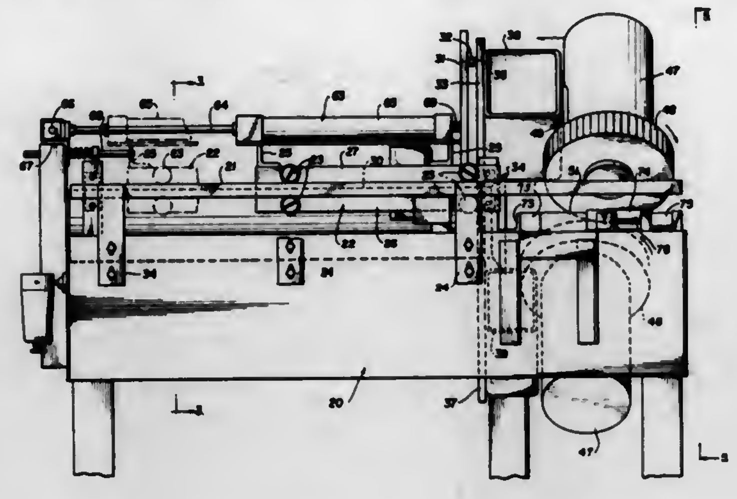
Filed Aug. 30, 1977, Ser. No. 829,056

Int. Cl.^{2} B27M *3/08;* B26D *1/14*

U.S. Cl. 144—30 24 Claims

1. An apparatus for cutting truss web components and the like comprising a support base, a carriage guidably mounted on the support base for fore and aft movement on a linear path, a power actuator coupled with the carriage to move it forwardly and rearwardly on the support base, a workpiece clamp means on the support base for positioning and holding a workpiece across the path of movement of the carriage, a rotationally adjustable member on the carriage having its axis of rotation extending longitudinally of the carriage, means to limit the extent of rotation of said member in opposite directions and to releasably lock the member in selected adjusted positions, a pair of rotary cutter heads mounted on the rotationally adjustable member and movable with the carriage and member relative to a workpiece in the clamp means, means to indepen-

dently adjust each rotary cutter head in two directions on said rotationally adjustable member so that the rotary blades of said heads can be accurately positioned in offset and slightly overlapping relationship to enable the blades during movement of the carriage to cut a workpiece into two sections and simultaneously produce a pair of right angular end faces on each workpiece section, and means to releasably secure said rotationally adjustable member in a selected adjusted position.



4,131,144

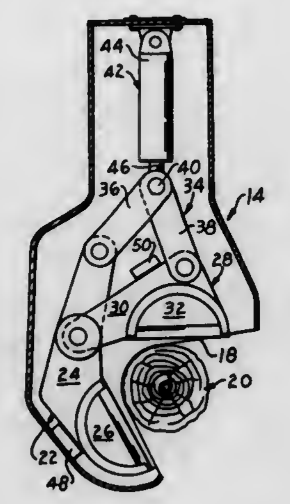
TREE SHEAR ASSEMBLY WITH TOGGLE LINKAGE

Robert L. Fischer, New Lenox, Ill., assignor to Caterpilliar Tractor Co., Peoria, Ill.

Filed Nov. 29, 1976, Ser. No. 745,741

Int. Cl.^{2} A01G *23/08*

U.S. Cl. 144—34 E **6 Claims**



1. Tree shearing apparatus comprising:
first blade means having a first blade movable between an open and a closed position for engaging and cutting one side of the body of a tree;
second blade means pivotally connected to the first blade means having a second blade operatively positioned in an opposed relationship to said first blade and moveable between an open position and a closed position for engaging and cutting another side of the body of a tree such that said blades are positioned substantially oppositely when in their respective closed positions;
a first link means;
a second link means pivotally connected to the first link means;
the first and second link means being pivotally connected to the first and second blade means, respectively, said second blade means being pivotally connected to said first blade means at a point between said first blade and the point whereat said first link means is pivotally connected to said first blade means;
means connected to the first and second link means for applying force to the first and second link means, the first and second link means being positioned and connected to the first and second blade means so that application of force to the first and second link means applied force to the first and second blade means simultaneously said first and second blades from said open to said closed position to provide shearing of the body of a tree disposed therebetween.

4,131,145

TREE CUTTING DEVICE

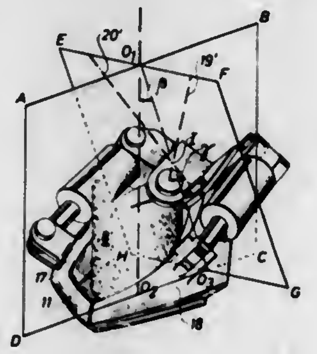
Erich Puna, Gävle, Sweden, assignor to Brundell och Jonsson AB, Gävle, Sweden

Filed Aug. 11, 1977, Ser. No. 823,735

Claims priority, application Sweden, Jul. 1, 1977, 7707674

Int. Cl.^{2} A01G *23/08*

U.S. Cl. 144—34 E **6 Claims**



1. A tree cutting device, comprising:
first and second separate shafts;
a pair of swingable arms having respective journalling means coupled to respective ones of said separate shafts so that said arms are swingably journalled on respective ones of said separate shafts which define respective swinging axes for said arms, each arm including a knife blade holder;
two curved knife blades mounted respectively to said knife blade holders of said arms;
power means coupled to said arms for moving said arms and said knife blades towards and away from each other;
each knife blade defining a portion of a surface of revolution, the center line of which coincides with the swinging axis of the respective arm on which the knife blade is mounted;
the axes of said separate shafts lying in a common plane that is inclined towards the center line of the trees to be cut; and
said separate shafts being arranged at an angle to each other so that their axes intersect at a point between the journalling means for said arms and the intersection between the common plane for said axes of said separate shafts and the center line of the maximum diameter tree to be cut.

4,131,146

HELICAL FLAKING HEAD WITH MULTIPLE CUTTING CIRCLE DIAMETERS

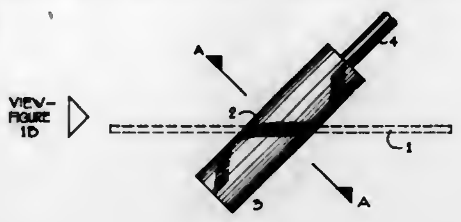
Peter Koch, Alexandria, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

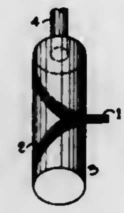
Filed Jun. 10, 1977, Ser. No. 805,370

Int. Cl.^{2} B27C *1/00*

U.S. Cl. 144—221 **2 Claims**

1. In a cutter head apparatus for milling a planar piece of lumber and simultaneously producing wood flakes therefrom the improvement wherein said apparatus comprises:
(a) a cylinder;
(b) means attached to said cylinder at one end to rotate said cylinder and to support said cylinders at an angle to the planar piece of lumber;
(c) a plurality of cutter knives mounted on the surface of said cylinder in a manner such that said cutter knives form a plurality of uniformly spaced, parallel, continuous helicles around said cylinder, said plurality of cutter knives being characterized by a sequential and progressively increasing knife height relative the cylinder surface, said plurality of cutter knives being closely grouped in a manner such that at any given cross section of said cylinder the separation between the trailing edge of the highest knife and the leading edge of the lowest knife constitutes from about 3/6 to 5/6 of the cylinder periphery.





4,131,147

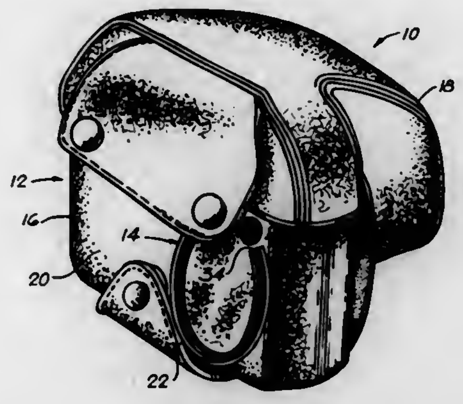
LENS CAP HOLDER FOR CAMERAS

Linus Schrage, 5201 S. Cornell, Chicago, Ill. 60615

Filed May 19, 1977, Ser. No. 798,334

Int. Cl.^{2} B65D *85/38*

U.S. Cl. 150—52 J **6 Claims**



1. A device for preventing the loss of a lens cap for a camera,
said device comprising a camera case of the ever-ready type having a body component and a front cover removably mounted thereon,
said body component of said case having a rear wall,
a generally circular lens cap having a ring-shaped mounting member with external screw threads thereon, and
a generally ring-shaped lens cap mount secured to the rear side of said rear wall on said body component of said camera case and projecting rearwardly from said rear wall,
said lens cap mount having a generally cylindrical opening with internal screw threads therein disengageably mating with said external screw threads on said lens cap for receiving and retaining the lens cap when not in use on the camera,
said lens cap mount being exposed on said rear wall and being fully and directly accessible for the direct and immediate mounting and removal of said lens cap on and from said lens cap mount.

4,131,148

PNEUMATIC TIRE FOR AGRICULTURAL AND INDUSTRIAL VEHICLES

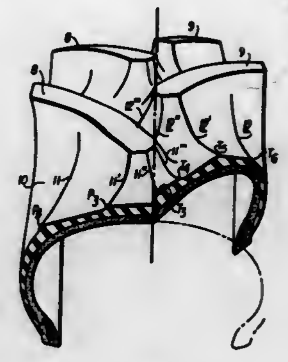
Guido Bertazzoli; Roberto Gironi, and Angelo Resentini, all of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Mar. 22, 1976, Ser. No. 668,917

Claims priority, application Italy, May 22, 1975, 23652 A/75

Int. Cl.^{2} B60C *11/08*

U.S. Cl. 152—209 B **6 Claims**



1. In a pneumatic tire for agricultural and industrial tractors, having a tread of the type comprising a plurality of lugs arranged in succession along the tire circumference in two contiguous series offset with respect to each other on the opposite sides with respect to the equatorial plane of the tire with tread surface portions therebetween, the lugs of each series extending obliquely from the tread lateral zone towards said equatorial plane and being longitudinally spaced apart from one another by a distance ranging between 1.5 and 6 times the longitudinal width of the lugs, the sides of said lugs showing a plurality of edges, the depth of the tread surfce between the lugs, measured with respect to the radially outer surface of said lugs, being substantially gradually decreasing from each lateral zone of the tread towards said equatorial plane, the tread comprising a plurality of corners extending at least on the tread portions between two adjacent lugs, the improvement wherein said corners form raised lines on said tread surface portions, said tread surface portions comprising a plurality of elementary flat surfaces and said corners constituting the junction line formed between every pair of contiguous flat surfaces, said continuous flat surfaces being radiused to one another, whereby each tire section taken with a plane either radial or parallel to the lugs of a series and intersecting the equitorial plane of the tire defines on said plane a profile which is constituted by a broken line of rectilinear lengths radiused to one another, each rectilinear length being the portion of said profile between two adjacent corners.

4,131,149

POLYURETHANE TIRE SIDEWALLS

Durward T. Roberts, Jr., Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

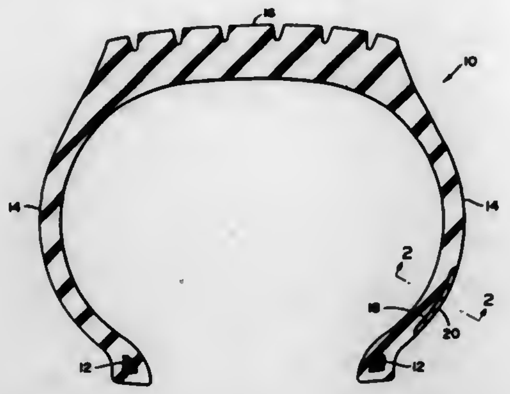
Continuation of Ser. No. 589,153, Jun. 19, 1975, abandoned. This application Dec. 21, 1976, Ser. No. 753,074

Int. Cl.^{2} B60C *9/14*

U.S. Cl. 152—357 A **7 Claims**

4. The method of coating a pneumatic tire having polyurethane in the surface exposed at a sidewall which method comprises (1) applying to said surface a colored coating composition comprising an elastomeric NCO-terminated polyurethane

prepolymer and a curing agent therefor wherein said NCO-terminated polyurethane prepolymer reacts with free —OH and —NH in the surface of said tire, and (2) heating to effect said reaction.



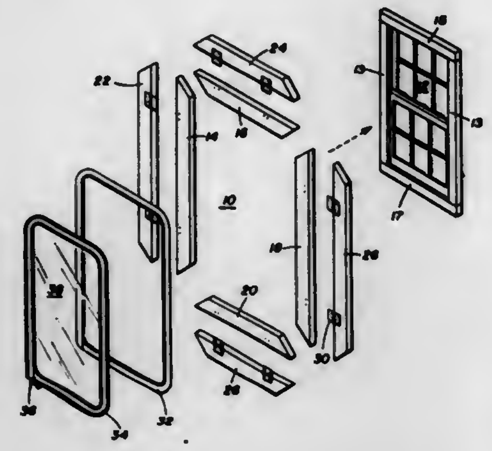
4,131,150
ZIPPER-TYPE WINDOW FOR HOMES

Edythe A. Papadakis, 1323 Willow Rd., Baltimore, Md. 21222

Filed May 16, 1977, Ser. No. 797,077

Int. Cl.^{2} E06B *3/30*

U.S. Cl. 160—368 R **3 Claims**



1. A zipper-type window insulating system for a window to be insulated, comprising:

a wall frame means surrounding said window to be insulated, said wall frame means consisting of a pair of side panels, a top panel, and a bottom panel, each said panel interfacing with adjacent panels to completely surround said window, a fastening means for affixing said wall frame means permanently to the interior wall surface around said window and any existing interior window casings, header and apron of said window;

a sealing means to seal said wall frame means to said interior wall surface, said sealing means being inserted between said wall frame means and said interior wall surface before said fastening means is used to permanently affix said wall frame means to said interior surface, said sealing means interfacing with the entire length of all said panels of said wall frame means, said fastening means holding both said wall frame means and said sealing means together and affixed tightly to said interior wall surface;

a solid and transparent window convering means, said window covering means being disposed over the interior surface of said window to be insulated and spaced therefrom, said window covering means extending beyond the perimeter of said window to be insulated to the approximate center of said panels that make up said wall frame means, a first reinforcement means affixed to and for reinforcing said window covering means along the outer periphery thereof, and a zipper element affixed to the periphery of said window covering means and said first reinforcement means, an adhesive fastening means for permanently affixing said window covering means, said first reinforcement means, and said zipper element to each other;

an attaching means for attaching said window covering means to said wall frame means, said attaching means consisting of a zipper member and a second reinforcement means, said zipper member being sandwiched between said second reinforcement means and said wall frame means to which both said second reinforcement means and said zipper member are permanently affixed by a second adhesive fastening means, said second reinforcement means and said zipper member being disposed around the entire wall frame means at the approximate center of the exposed face thereof and affixed thereto, said window covering means having been disposed over the interior surface of said window is attached to said wall frame means by connecting said zipper element of said window covering means to said zipper member of said attaching means to said wall frame means be engaging and operation of the zipper element around the periphery of said window covering means and the zipper member around the periphery of said wall frame means, said window covering means thereby being removably attached to said wall frame means to insulate said window; and

a decorative covering means for said attaching means attaching said window covering means to said wall frame means, said decorative covering means consisting of a decorative panel means having a pair of side decorative panels, a top decorative panel, and a bottom decorative panel, each said decorative panel configured on the ends thereof to removably fit together with each adjacent said decorative panel to form a framelike decorative covering of a size and configuration to removably cover said means attaching said window covering means to said wall frame means, each said decorative panel affixed to the outermost edge of each corresponding said panel of said wall frame means by a hinged means connected to each said decorative panel and to each corresponding said panel of said wall frame means, whereby said decorative covering means is enabled to effect the removable covering and uncovering of said attaching means for attaching said window covering means to said wall frame means.

4,131,151
REACTIVE GASEOUS COOLING MEDIUM FOR THE MANUFACTURE OF WIRE

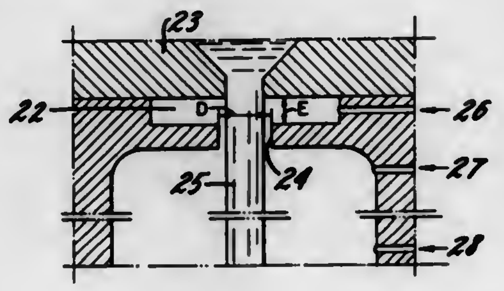
Bernard Pflieger, Chamalieres; Philippe Sauvage, and Francis Tombrel, both of Clermont-Ferrand, all of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Oct. 17, 1977, Ser. No. 842,896

Claims priority, application France, Oct. 15, 1976, 76 31803

Int. Cl.^{2} B22D *11/00*

U.S. Cl. 164—89 **11 Claims**



1. In a process for the manufacture of wire by projecting a jet of liquid steel which contains silicon and manganese through a nozzle into a cooling enclosure containing a reactive cooling medium which is a gaseous mixture having an oxidizing power with respect to the steel, the improvement which comprises controlling and limiting the oxidizing power of the reactive cooling medium by providing a gaseous mixture of an inert gas and/or a reducing gas with a gas which is an oxidant with respect to the steel, at least in the zone adjacent to the orifice of the nozzle, so as to prevent the formation of iron and manganese oxides and/or silicates and permit the formation of silica alone at the thermochemical equilibrium corresponding to the temperature prevailing near the orifice of the nozzle.

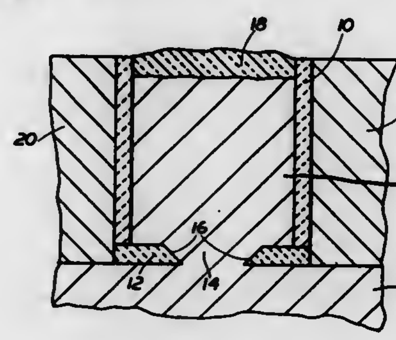
4,131,152
FEEDING UNIT FOR A CASTING

Ronald W. Ruddle, Cleveland, Ohio, and Frank Neat, Elora, Canada, assignors to Foseco Trading AG, Switzerland

Filed Dec. 30, 1976, Ser. No. 755,703

Int. Cl.^{2} B22C *9/08*

U.S. Cl. 164—359 **1 Claim**



1. In a feeding unit including a breaker core and an insulated riser sleeve for a casting mold in foundry practice, said riser sleeve having a given inside diameter, the improvements comprising providing an opening in said breaker core of a size from 20% to 35% of said diameter, said breaker core having an opening defined by walls which include inwardly toward said opening and said breaker core having a thickness of from 5% to 20% of said diameter, and said casting molds being defined to produce a casting having a ranginess factor (R factor) in excess of 2.

4,131,153
ROLLER APRONS FOR A MULTIPLE STRAND BILLET- OR BLOOM CASTING INSTALLATION CONTAINING MORE THAN TWO STRANDS FOR THE CONTINUOUS CASTING OF METALS, ESPECIALLY STEEL

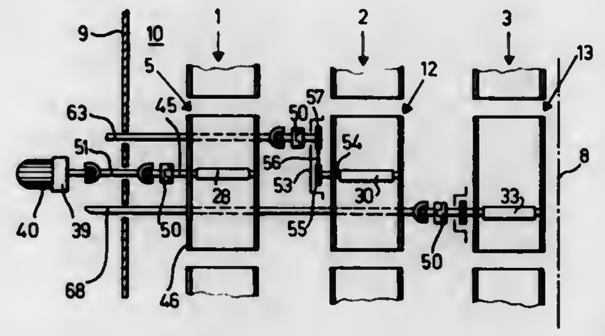
Markus Schmid, Zürich, Switzerland, assignor to Concast AG, Zurich, Switzerland

Filed Apr. 11, 1977, Ser. No. 786,639

Claims priority, application Switzerland, May 19, 1976, 6250/76

Int. Cl.^{2} B22D *11/12*

U.S. Cl. 164—442 **6 Claims**



1. A strand guide arrangement for a multiple strand billet or bloom casting installation working with more than two strands for the continuous casting of metals, especially steel, comprising;

a plurality of at least partially curved roller aprons for supporting the cast strands and extending in a casting direction, said roller aprons including inner roller aprons, neighboring roller aprons arranged on both lateral sides of said inner roller aprons and outer roller aprons, said outer roller aprons having only on one lateral side thereof a neighboring roller apron, each roller apron being subdivided into segments in said casting direction, each of said segments including rollers supporting the cast strand;

a power transmission shaft operatively connected to at least one of the rollers of each roller apron and

individual drive means connected to each respective power transmission shaft for driving said one roller said drive means being arranged substantially laterally outwardly of the other lateral side of at least one of said outer roller aprons;

each power transmission shaft which extends between a respective drive means and a respective roller of the inner roller aprons being arranged beneath one of the segments of the outer roller aprons and terminating at a location between the associated inner roller apron and its respective drive means whereby said one outer roller apron segment is removable from the casting installation without obstruction.

4,131,154
ROLLER APRON FOR A CONTINUOUS CASTING INSTALLATION FOR STEEL

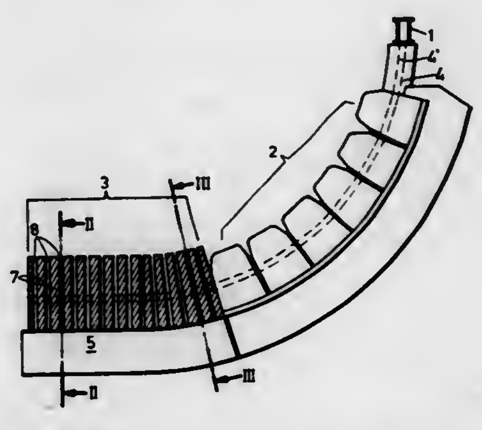
Raymond Vial, Lorette, France; Herbert Fastert, Wyckoff, N.J., and Heinrich Marti, Forch, Switzerland, assignors to Concast AG, Zürich, Switzerland

Filed Jul. 14, 1977, Ser. No. 815,664

Claims priority, application France, Jul. 16, 1976, 76 21829; Switzerland, May 13, 1977, 5992/77

Int. Cl.^{2} B22D *11/12*

U.S. Cl. 164—448 **9 Claims**



1. A roller apron for a continuous casting installation, especially for casting steel, to support and guide a strand moving in a predetermined direction of travel, comprising:

a machine frame;

comb-like arranged guide means disposed to both sides of the machine frame;

pairs of successive rollers mutually displaceable independently of one another along said guide means;

said guide means being disposed transversely with respect to the direction of travel of the strand;

each of said rollers having bearings for supporting said rollers;

a respective transverse support at which there are mounted the bearings of each one of the two rollers of a roller pair;

said transverse supports cooperating with the comb-like arranged guide means;

pressure cylinder means for moving said transverse supports; and

stop means provided at the machine frame against which there can be contactingly applied at least the transverse supports of non-driven rollers.

4,131,155
REVERSIBLE HEAT EXCHANGER OR REGENERATOR SYSTEMS

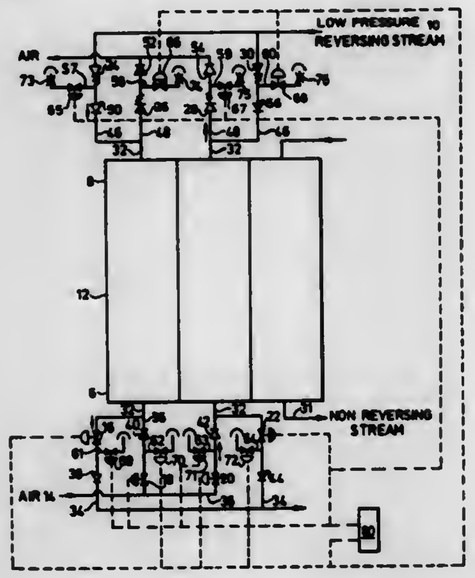
Robert M. Thorogood, London, England, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 652,681, Jan. 27, 1976, Pat. No. 4,063,588. This application Oct. 20, 1977, Ser. No. 843,816

Claims priority, application United Kingdom, Jan. 28, 1975, 3738/75

Int. Cl.² F28G *15/04, 9/00*

U.S. Cl. 165—1 **3 Claims**



1. A method of operating a reversible heat exchanger or regenerator system which method comprises the steps of passing a first gas through said heat exchanger or regenerator via an inlet branch at a first or warm end of said heat exchanger or regenerator and an outlet branch at a second or cold end thereof whilst venting leakage gas through a first vent pipe associated with an outlet branch at the warm end of said heat exchanger or regenerator and a second vent pipe associated with an inlet branch at the cold end thereof; and subsequently passing a second gas at a lower pressure than said first gas, through said heat exchanger via the inlet branch at the cold end of said heat exchanger and the outlet branch at said warm end of said heat exchanger whilst venting leakage gas through a third vent pipe associated with the inlet branch at said warm end of said heat exchanger or regenerator and a fourth vent pipe associated with the outlet branch at the cold end thereof.

4,131,156
FAN SHROUD

Albert W. Crumrine, Jr., Peoria; Theodore H. Fones, Washington; James M. Kostas, Peoria, and Raymond M. Vanderburg, Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 12, 1976, Ser. No. 731,473

Int. Cl.² F28F *13/12*

U.S. Cl. 165—51 **11 Claims**

1. An improved fan construction for use with engines utilizing circulating liquid coolant and radiators, said fan construction comprising:

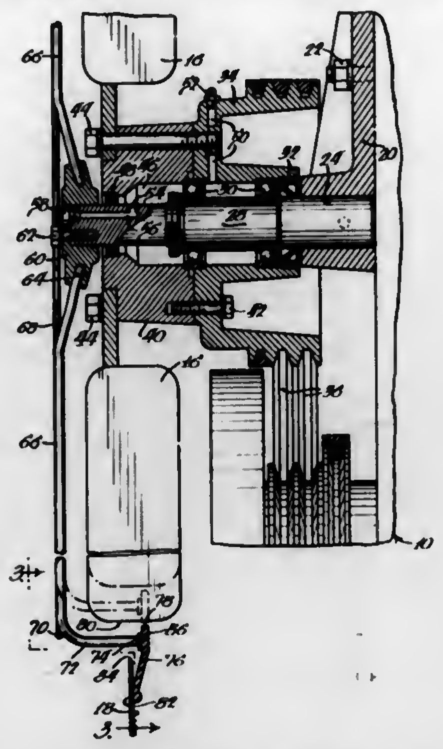
a shaft;

means secured to said shaft for mounting said shaft on an engine;

a sheave journalled on said shaft;

fan blades carried by said sheave and rotatable therewith;

a radially extending annular ring of elastomeric material about said fan blades and having an inner diameter spaced slightly radially outwardly of the tips of said fan blade and an outer periphery, the surface of said ring remote from said securing means being a sealing surface and extending generally radially of the shaft to slidably, peripherally, sealingly engage the exterior of a radiator shroud or the like about the periphery of an orifice therein; and



a perforate support for said ring, said support being secured to said ring and to said shaft, to fixedly position said ring inner diameter with respect to said tips.

4,131,157
ROTARY HEAT EXCHANGERS

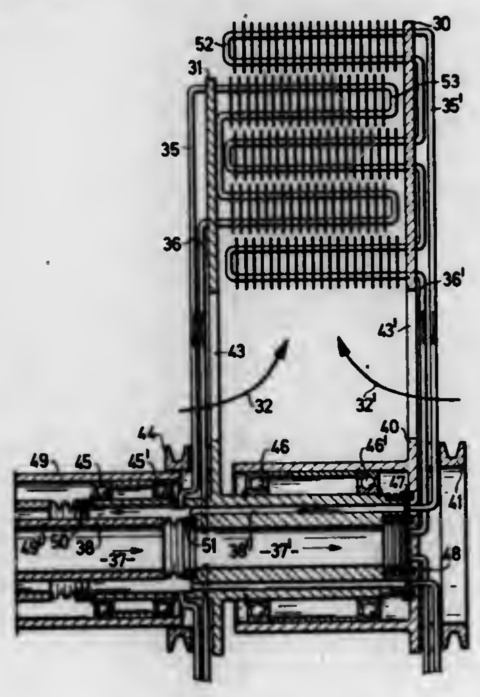
Nikolaus Laing, Hofener Weg 35 bis 37, 7141 Aldingen bei Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 566,533, Mar. 10, 1975, abandoned. This application Dec. 16, 1976, Ser. No. 751,193

Claims priority, application Australia, Mar. 18, 1974, 2225/74

Int. Cl.² F28D *11/02*

U.S. Cl. 165—86 **4 Claims**



1. Blower heat exchanger comprising first and second rotatable annular discs co-axially mounted with respect to each other, a plurality of axially spaced annular fins of a first diameter mounted on said first rotatable annular disc to form a first annular region and a plurality of axially spaced annular fins of a second diameter greater than said first diameter mounted on said first rotatable annular disc to form a second annular region radially spaced from said first annular region, a plurality of axially spaced fins of a diameter intermediate said first and second diameter mounted on the second rotatable disc to form a third annular region extending into the radial space between said first and second annular regions, and axially extending heat exchanger tubes connecting the axially spaced annular fins of each annular region with the tubes of the annular regions associated with each disc being interconnected to form a tube system associated with that disc.

4,131,158
STORAGE ARRANGEMENT FOR THERMAL ENERGY

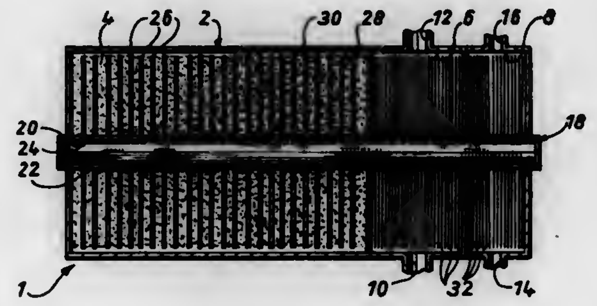
Ashok Abhat, Bombay, India, and Günther Neuer, Leinfelden-Echterdingen, Germany, assignors to Institut für Kerntechnik und Energiewandlung e.V., Stuttgart, Germany

Filed Jan. 19, 1977, Ser. No. 760,286

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1976, 2602530

Int. Cl.² F23D *21/00*

U.S. Cl. 165—104 S **7 Claims**



1. A thermal storage arrangement comprising:

(a) a container bounding a chamber therein;

(b) a material in said chamber undergoing a phase transition between the liquid state and the solid state when at a predetermined temperature;

(c) a first heat exchanger and a second heat exchanger, each heat exchanger being formed with an intake port and a discharge port and defining a through passage connecting said ports for flow of a heating and cooling medium between said ports;

(d) an elongated, sealed tube having a first longitudinal portion in said chamber, and second and third longitudinal portions outside said chamber and in thermal contact with a medium flowing through the passages of said first and second heat exchangers respectively;

(e) a plurality of fins of thermally conductive material transversely projecting from said first portion into direct contact with said material; and

(f) a fluid in said tube, said fluid being partly liquid and partly gaseous at said predetermined temperature.

4,131,159
HEAT EXCHANGER

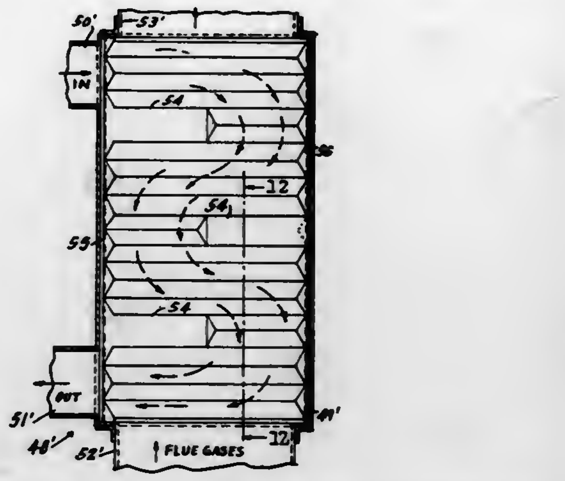
Wesley A. Long, Sylvania, Ohio, assignor to Karen L. Beckmann, Toledo, Ohio

Filed Jul. 26, 1976, Ser. No. 708,575

Int. Cl.² F28F *3/08*

U.S. Cl. 165—166 **4 Claims**

1. An indirect fluid-to-fluid heat exchanger comprising a core formed from a elongated sheet of metal having two opposed edges and a plurality of longitudinally spaced sections formed between and generally parallel to said edges, said sheet having pleat folds along a line between each two adjacent sections to define a first set of spaced fluid passages on one side of said sheet and a second set of spaced fluid passages on the other side of said sheet, said first and second passages alternating in said core, said edges defining ends of said core and said folds defining sides of said core, housing means enclosing said core and defining a side fluid inlet adjacent one end of said core and a side fluid outlet adjacent the other end of said core communicating with each passage in said first set and an end fluid inlet and an end fluid outlet communicating with opposed ends of each fluid passage in said second set, means sealing together adjacent edges of said sections defining each passage in said first set to prevent fluid flow between ends of said first and second passages, and corrugation means in each of said sections extending substantially normal to said flow passages so as to define a sinuous flow path in each of said flow passages, and means in said first fluid flow passages causing said sinuous flow path in said first fluid passages to have a different direction from said sinuous flow path in said second fluid flow passages.



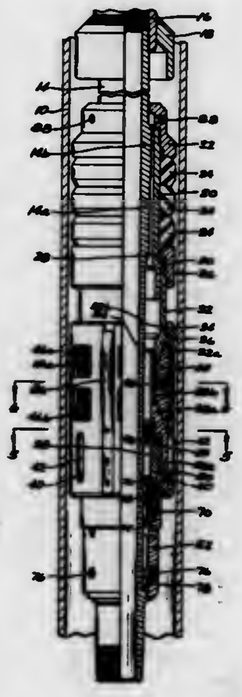
4,131,160
WELL TOOL WITH PRESSURE RESPONSIVE TIGHTENING MEANS

Chudleigh B. Cochran, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Filed Jul. 25, 1977, Ser. No. 818,583

Int. Cl.² E21B *33/128, 33/129*

U.S. Cl. 166—120 **23 Claims**



1. A well tool for use in a tubular well conduit, comprising:
- a. a tool body comprising:
  - i. radially extendable means for engaging the well conduit; and
  - ii. first and second tool body portions operatively associated with said radially extendable means and relatively movable longitudinally toward each other to extend said radially extendable means, said first tool body portion having means associated therewith operative to resist movement of said first tool body portion with respect to the well conduit in a first longitudinal direction;
- b. a mandrel assembly extending through said tool body and movable with respect to said first tool body portion in said

first direction, said mandrel assembly including means engageable with said second tool body portion to move said second tool body portion jointly with said mandrel assembly in said first direction whereby said mandrel assembly and said second tool body portion form an actuator to extend said radially extendable means;

c. lock means cooperative between said actuator and said first tool body portion to limit movement of said first and second tool body portions away from each other; and

d. tightening means associated with said lock means for tightening said lock means responsive to fluid pressure acting in a second direction opposite said first direction.

4,131,161

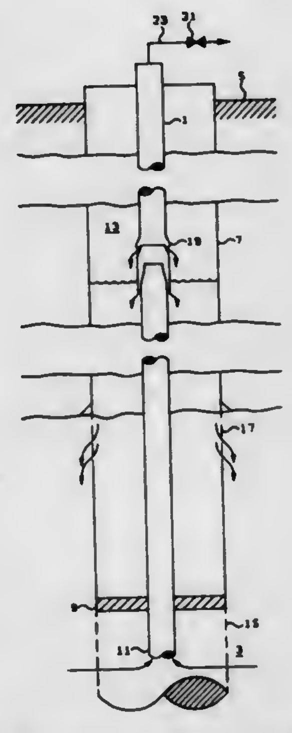
RECOVERY OF DRY STEAM FROM GEOTHERMAL BRINE

Ralph G. Lacquement, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 25, 1977, Ser. No. 827,518

Int. Cl.² E21B ***39/00, 43/00***

U.S. Cl. 166—265 **7 Claims**



1. An apparatus for recovering dry steam from geothermal brine comprising:

(1) a first pipe extending from the surface of the earth into a producing formation, said pipe closed at both ends and containing a second pipe of lesser diameter extending through the closed ends of said first pipe thereby forming an annular conduit between the pipes, said first pipe containing openings located in the pipe to be situated in the upper portion of said producing formation;

(2) said second pipe open at the lower end and at its upper end outside said first pipe terminated with a means for controlling flow therethrough; and

(3) a means for separation of brine from vapor, said means for separation located in said second pipe with means for discharging liquid into said annular conduit and passing vapor into the portion of said second pipe downstream of said means for separation.

5. A method for recovering dry steam from geothermal brine comprising:

(1) establishing flow of geothermal brine from a producing formation through the second pipe of an apparatus into a means for separation of brine from vapor located in said second pipe said apparatus comprising:

  (a) a first pipe extending from the surface of the earth into a producing formation, said pipe closed at both ends and containing a second pipe of lesser diameter extending through the closed ends of said first pipe thereby forming an annular conduit between the pipes, said first pipe containing openings located in the pipe to be situated in the upper portion of said producing formation;

  (b) said second pipe open at the lower end and at its upper end outside said first pipe terminated with a means for controlling flow therethrough; and

  (c) a means for separation of brine from vapor, said means for separation located in said second pipe with means for discharging liquid into said annular conduit and passing vapor into the portion of said second pipe downstream of said means for separation;

(2) separating the vapor and brine in said means for separation;

(3) discharging separated brine into the annular conduit formed between the two pipes;

(4) returning said separated brine by gravity flow into the producing formation;

(5) directing separated steam into the portion of the second pipe that is downstream of the means for separation; and

(6) recovering said steam through a flow control means at the outlet of the second pipe.

4,131,162

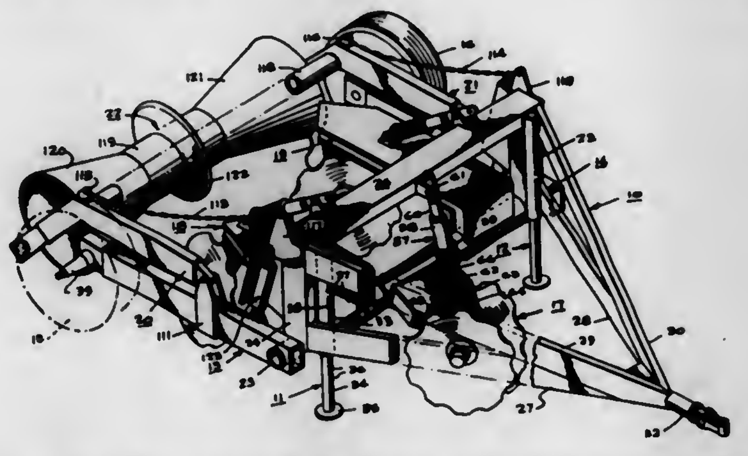
EARTH WORKING APPARATUS

James E. Schmitz, 521 Le Juene Rd., Orlando, Fla. 32808

Filed Dec. 11, 1975, Ser. No. 639,884

Int. Cl.² A01B ***63/16, 15/16***

U.S. Cl. 172—138 **22 Claims**



12. An earth working apparatus comprising a main frame having means for detachably connecting said apparatus to a prime mover, a pair of support arms operatively connected to forwardly disposed ends thereof to said main frame for pivotal movement about a transverse axis, ground engaging wheels mounted on said support arms, a lift arm operatively connected to each of said support arms for pivotal movement about a second transverse axis, an earth working implement mounted on said lift arms, means interconnecting each of said lift arms and said main frame for permitting said lift frame to be angularly displaced relative to said support frame when the ground working implement is in contact with the ground thereby permitting the ground working implement to follow the contour of the ground, and means operatively interconnecting each of said support arms and said main frame for angularly displacing said support arms relative to said main frame whereby upon actuation of said displacing means said means interconnecting said lift arms and said main frame will function to angularly displace said lift arms relative to said support frames, correspondingly causing said earth working implement to be lifted out of a ground engaging position.

4,131,163

STUBBLE ERADICATING IMPLEMENT

Paul A. Bezzerides, 14092 Avenue 416, P.O. Box 211, Orosi, Calif. 93647

Filed Apr. 25, 1977, Ser. No. 790,332

Int. Cl.² A01B ***35/18***

U.S. Cl. 172—145 **3 Claims**

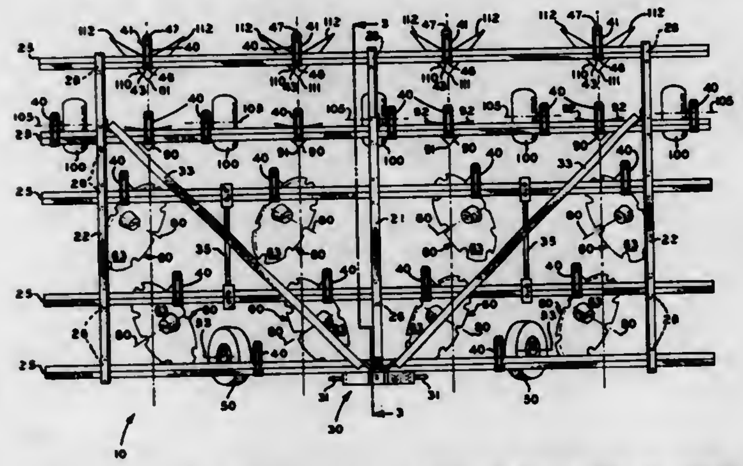
1. An implement for use on an earth surface having a ridge with debris including stubble disposed thereon and debris receiving furrows along opposite sides of the ridge, comprising:

(A) a frame;

(B) means mounting the frame for travel along the ridge;

(C) a pair of concavo-convex disk blades each concentric to a respective axis and each having a peripheral cutting edge;

(D) means mounting the blades for free rotation about their respective axes in fore and aft spaced relation along the ridge on opposite sides thereof, the axes being disposed in respective vertical planes substantially equally and oppositely angularly forwardly convergent with the ridge at from approximately 48° to 60° and said axes being forwardly inclined in their respective planes at from approximately 25° to 35° with their concave sides forwardly and upwardly disposed to scoop up debris and soil and deposit them in the furrows, said disk blades overlapping transversely of the ridge and having lowermost points adjacent to the center of the ridge and being in sufficient proximity that soil and debris encountered by the forwardmost blade are scooped up and rolled laterally in one direction where while still moving they encounter the forward edge of the following blade and in part are scooped up and rolled oppositely laterally of the ridge;



(E) a first furrowing shovel mounted on the frame in following relation to the blades and in alignment therewith to form a first furrow along the ridge and to discharge soil oppositely laterally onto the debris and soil in the furrows;

(F) a roller mounted on the frame rearwardly of the first shovel in alignment with each furrow for compacting rolling engagement with debris and soil deposited therein; and

(G) a second furrowing shovel mounted on the frame rearwardly of the first furrowing shovel and in alignment with the disk blades to form a furrow along the ridge and to discharge soil oppositely laterally onto the compacted debris and soil in the furrows to form an elevated seed bed therealong.

4,131,164

ADAPTIVE VALVE CONTROL SYSTEM FOR AN IMPACT DEVICE

Wilmer W. Hague, Fayetteville, and Charles W. Frame, Chambersburg, both of Pa., assignors to Chambersburg Engineering Company, Chambersburg, Pa.

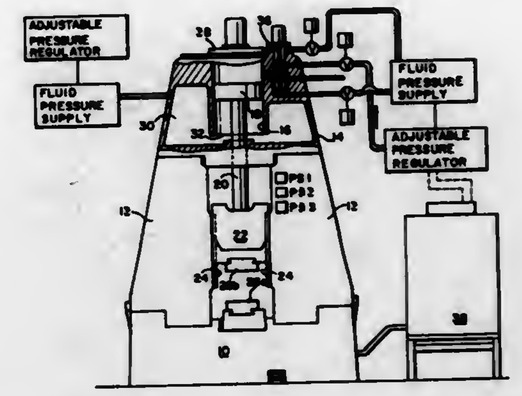
Filed Nov. 23, 1977, Ser. No. 854,022

Int. Cl.² F15B ***21/02***

U.S. Cl. 173—1 **10 Claims**

1. In a stroke control system for an impact device having a frame supporting at least one cylinder, a piston within said cylinder and means connecting said piston to a ram such that said ram is repeatedly movable relative to said frame from a retracted position to impact position, a driving fluid system, including a fluid supply and valve means connecting said fluid supply to a port into said at least one cylinder at a position in the cylinder to cause the fluid to drive said ram into impact position, and operating means for controlling said valve means, an improvement whereby the valve means is opened consistently when the piston in the ram driving stroke has just uncovered said port so that each successive blow of the ram is of consistent energy, comprising:

signal generating means producing a distinctive signal when the ram, in its return stroke, reaches each of a plurality of pre-selected positions, each defining the beginning of a time zone;



timing means connected to said signal generating means and responding to the respective signals to initiate time counting, measuring time from first generation of the distinctive signals that are produced; and

logic means connecting to and responding to the timing means and signal generating means to actuate said operating means if predetermined times in each zone are reached.

4,131,165

HAMMER DRILL

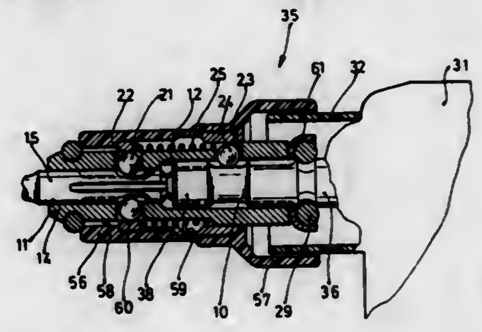
Karl Wanner, Echterdingen; Manfred Bleicher, Leinfelden, and Jörg Falchle, Bempflingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 14, 1977, Ser. No. 777,056

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1976, 2618596

Int. Cl.² E02D ***7/02;*** **B23B** ***5/34***

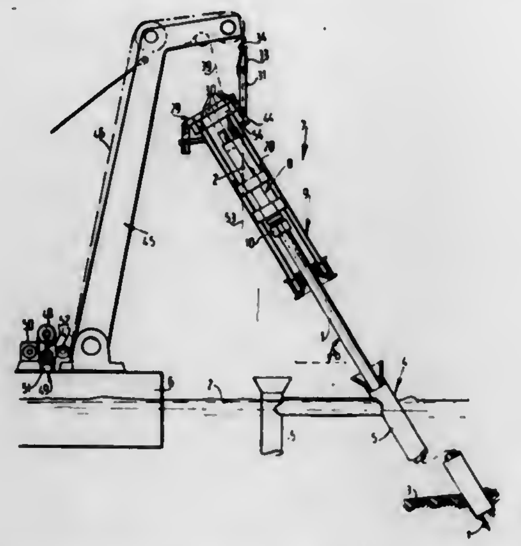
U.S. Cl. 173—48 **19 Claims**



1. In a hammer drill, a combination, comprising a movable tool having a longitudinal axis and a first end portion; a driving element substantially coaxial with said tool, said driving element having a second end portion adjacent said first end portion and directly transmitting axial impacts from said driving element to said tool without transmission of torque; a tool holder surrounding said first and second end portions and transmitting torque from said driving element to said tool without transmission of axial impacts, said tool holder including a sleeve-shaped element coaxially surrounding said first and said second portions and having a longitudinal axis, said sleeve-shaped member being axially movable relative to and connected for joint rotation with said tool and said driving element; drive means for driving said driving element; and means for absorbing axial impacts of said sleeve-shaped member and including an O-ring located in an annular groove provided on the outer surface of said driving element, and a cup-shaped element axially and radially embracing said O-ring.

4,131,166
PILE DRIVING DEVICE

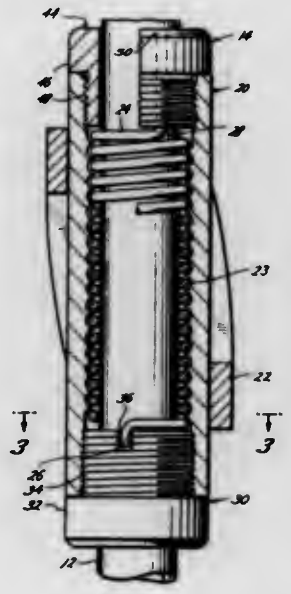
Hans G. Schnell, Hamburg, Fed. Rep. of Germany, assignor to Van Kooten B.V., Naarden, Netherlands
Continuation of Ser. No. 594,238, Jul. 9, 1975, abandoned. This application Jan. 6, 1977, Ser. No. 757,284
Claims priority, application Netherlands, Jul. 26, 1974, 7410148
Int. Cl.^{2} E02D *7/06*
U.S. Cl. 173—43 **14 Claims**



1. A pile driving device for driving a pile particularly into a soil located beneath a body of water, said device being adapted to be suspended from the hanger of a lifting device and comprising, a hammer, a guide frame for guiding said hammer, and suspension means for suspending the guide frame to a lifting device, said guide frame including a base piece surrounding the pile to be driven with a sliding fit and at least one guide stay fastened to said base for guiding the hammer, said suspension means engaging the hanger of the lifting device in a vertical plane of suspension extending transversely of the guide frame and located near the center of gravity of the pile driving device; and a head fastened to at least one guide stay of the guide frame, said head having a plurality of fastening areas for a suspension bracket.

4,131,167
RELEASABLE DRILL STRING STABILIZER

Vernon T. Richey, 1111 Blalock, Apartment 160, Houston, Tex. 77055
Continuation-in-part of Ser. No. 677,929, Apr. 19, 1976, abandoned. This application Aug. 3, 1977, Ser. No. 821,570
Int. Cl.^{2} E21B *17/00*
U.S. Cl. 175—323 **16 Claims**

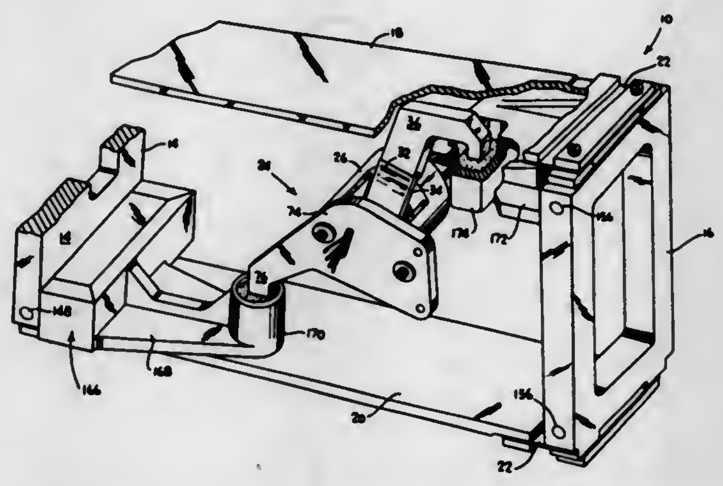


1. A stabilizer adapted to be releasably positioned on a drill collar for use in a drill string positioned in a well bore and above a drill bit which comprises:

- an elongate tubular body;
- spring means having upper and lower ends, connected to said tubular body;
- first means for anchoring one end of said spring means with the drill collar;
- second means for anchoring the remaining end of said spring means after said spring means has been wound around the drill collar on which the stabilizer is to be positioned sufficiently tight to functionally grip the drill collar thereby fixedly and releasably positioning and connecting said tubular body to the drill collar.

4,131,168
ASSEMBLY FIXTURES FOR MASS PRODUCIBLE WEIGHT MEASURING SYSTEM

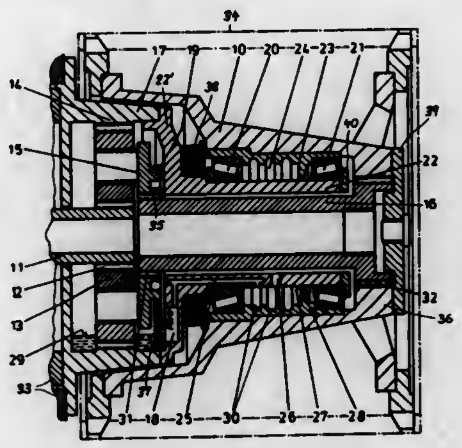
Edward R. Hordeski, Stamford; Louis T. Canevari, Norwalk, and Leonard J. Macari, Stamford, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Sep. 26, 1977, Ser. No. 836,761
Int. Cl.^{2} G01G *21/00*
U.S. Cl. 177—128 **10 Claims**



1. A fixture to facilitate assembly of a weight measuring system for determining the weight of an article, the system including a scale assembly, the assembly comprising a frame link, a load support link, and means providing displacement of the load support link with respect to the frame link as a function of the weight of an article, the system further including an optical detector adapted to measure load support link displacement, the detector comprising a light source adapted to generate a light beam, photodetector means positioned at the end of the light beam, an optical grating, the grating being carried by the detector and positioned between the light source and the photodetector means, the fixture comprising means adapted to position the frame link with reference to a vertical base plane and a horizontal base plane, means adapted to position the load support link with reference tod the vertical base plane and the horizontal base plane and means adapted to independently position the grating with reference to the vertical base plane and the horizontal base plane to thereby facilitate anchoring the grating to the frame link by potting whereby the grating may be preadjusted with respect to the base planes.

4,131,169
MOUNTING FOR TRACTION MEMBER WITH LATERAL STEP-DOWN TRANSMISSION

Jurgen Eickhoff, Tettnang, and Bernhard Binger, Ravensburg, both of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany
Filed Jun. 22, 1977, Ser. No. 808,988
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1976, 2629362
Int. Cl.^{2} B62D *55/12*
U.S. Cl. 180—9.62 **10 Claims**

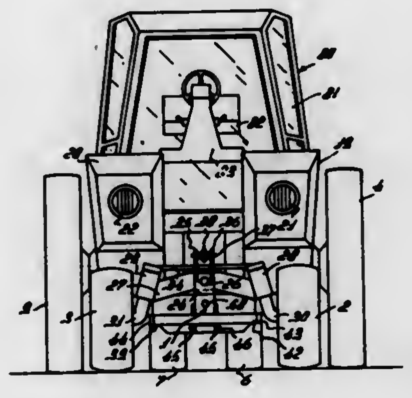


1. A mounting for a traction member of a vehicle provided with a frame and with an engine-driven power shaft, projecting laterally from said frame, comprising:

- a housing on said frame surrounding said power shaft;
- a hollow hub forming a rigid extension of said housing;
- a trunnion coaxially surrounding said hub;
- a pair of axially spaced journal bearings rotatably supporting said trunnion on said hub, said trunnion and said hub being separated by an annular clearance between said bearings;
- transmission means in said housing drivingly connecting said power shaft with said trunnion;
- conduit means forming a closed path for the circulation of a lubricant between said housing and said clearance; and
- pump means in said housing operatively coupled with said transmission means for circulating said lubricant along said path, said trunnion forming a thermally conductive wall around said clearance whereby the circulating lubricant is cooled upon passing through said clearance.

4,131,170
TRACTOR HAVING DUAL SIDE-BY-SIDE ENGINES

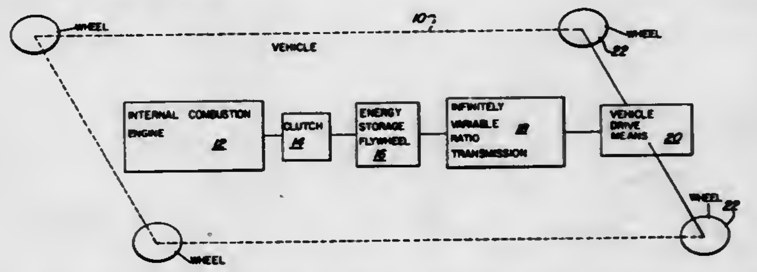
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland
Filed May 6, 1976, Ser. No. 683,940
Claims priority, application Netherlands, May 12, 1975, 7505526
Int. Cl.^{2} B60K *17/28*
U.S. Cl. 180—53 FE **47 Claims**



1. A tractor which comprises at least two forward and at least two after ground engaging wheels, said forward ground engaging wheels being spaced apart, a lifting device mounted on the tractor between said forward spaced-apart wheels, a pair of spaced-apart engines for propelling the tractor mounted directly over said forward spaced-apart wheels in substantially the same vertical longitudinal corresponding planes whereby one of said engines is mounted over each of said spaced-apart wheels, an operator's seat and controls for the tractor mounted completely behind the space defined between said engines whereby the visibility of said lifting device to an operator of the tractor seated in said seat is substantially unobstructed.

4,131,171
LOW ENERGY CONSUMPTION VEHICLE PROPELLED BY THERMAL ENGINE

John H. Keyes, P.O. Box 474, Nederland, Colo. 80466
Filed Apr. 11, 1977, Ser. No. 786,547
Int. Cl.^{2} B60K *9/00*
U.S. Cl. 180—54 R **22 Claims**



1. A method of simultaneously reducing fuel consumption in a vehicle propelled by a thermal engine and reducing the amount of pollutants emitted by the thermal engine, comprising the steps of:

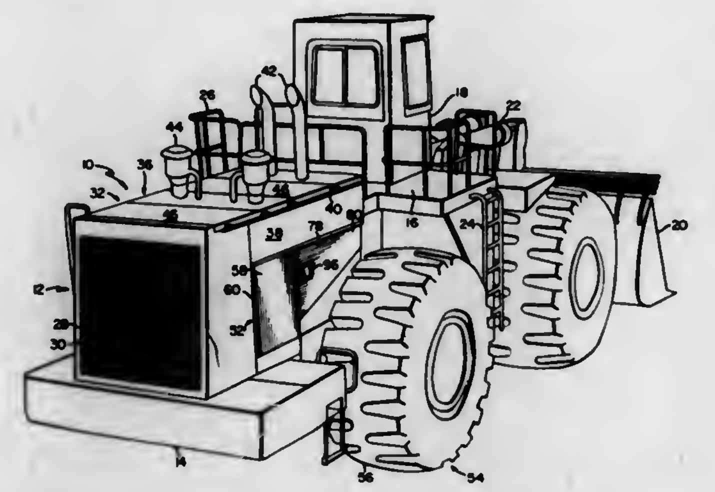
- providing an energy storage flywheel having an operational capability of accumulating sufficient energy for generally supplying intermittent high energy requirements for propelling the vehicle,
- positioning the energy storage flywheel within the vehicle,
- continuously operatively connecting the energy storage flywheel to the thermal engine during vehicle operation,
- continuously operating the thermal engine to produce energy to be utilized in propelling the vehicle during operation,
- regulating the thermal engine to generally produce a maximum quantity of energy marginally larger than that predetermined quantity of energy necessary to propel the vehicle at a generally constant predetermined and maximum speed,
- directly delivering energy produced by the thermal engine to the energy storage flywheel,
- accumulating a quantity of energy by the energy storage flywheel over a predetermined period of time sufficient to supply intermittent quantities of energy significantly greater than the maximum regulated quantity of energy supplied from the thermal engine,
- selectively removing quantities of energy from the energy storage flywheel a predetermined time after the energy produced by the thermal engine has been delivered to the flywheel, and
- utilizing at least part of the energy selectively removed from the energy storage flywheel for propelling the vehicle.

4,131,172
ACCESS PANEL FOR ENCLOSURES

Kenneth C. Wolfgram, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Jul. 11, 1977, Ser. No. 814,593
Int. Cl.^{2} B62D *25/10*
U.S. Cl. 180—69 R **14 Claims**

1. In a wheeled vehicle having an engine compartment, an enclosure for said compartment including a top wall and a vertically disposed side wall, an access opening for said compartment in said side wall, access to said opening being impeded by positionment partially behind an obstructing wheel of said vehicle, an access panel for selectively closing or open-

ing said access opening, said access panel including a first panel section and a second panel section, said panel sections being vertically hingedly adjacently interconnected and forming a composite unit with the sections being pivotal with respect to one another, vertical hinge means at one end of said composite unit hingedly connecting said composite unit proximate said opening and pivotally mounting said first panel section for pivoting about a vertical axis with respect to said opening, and additionally pivotally mounting said composite unit for pivoting about a vertical axis with respect to said opening, the plural pivotal relationships permitting a compound pivotal movement of the individual sections with respect to one another, and of the compound unit to move said access panel in a plane horizontally from behind said obstructing wheel for optimally uncovering said access opening in the restricted operating area behind the access impeding wheel.



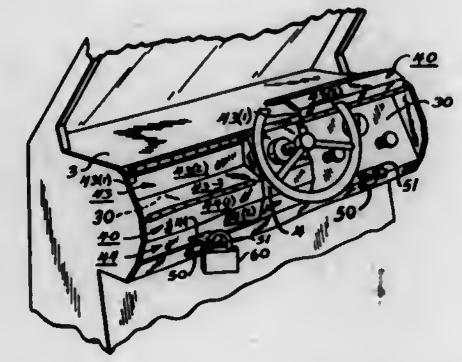
4,131,173
INSTRUMENT PANEL COVER FOR VANDALISM PROTECTION

Richard F. Boersma, Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Oct. 25, 1977, Ser. No. 844,646

Int. Cl.^{2} B60K *35/00*

U.S. Cl. 180—90 **10 Claims**



1. In a vehicle cab having a dashboard, an instrument panel mounted therein and a security cover for covering the instrument panel, the improvement comprising

a first pivotal cover section pivotally supported adjacent to the uppermost portion of the dashboard by a horizontally extending hinge, said first pivotal cover section extending downwardly from said hinged connection and bowed inwardly toward said instrument panel in a substantially concave cross-sectional contour to form a portion of an instrument panel security cover,

a second pivotal cover section pivotally supported from said first pivotal cover section by a second horizontally extending hinge, said second pivotal cover section extending downwardly from said hinged connection adjacent to the instrument panel to form a portion of the instrument panel security cover, and

means for releasably securing said second pivotal cover section to the vehicle dashboard to maintain the instrument panel covered.

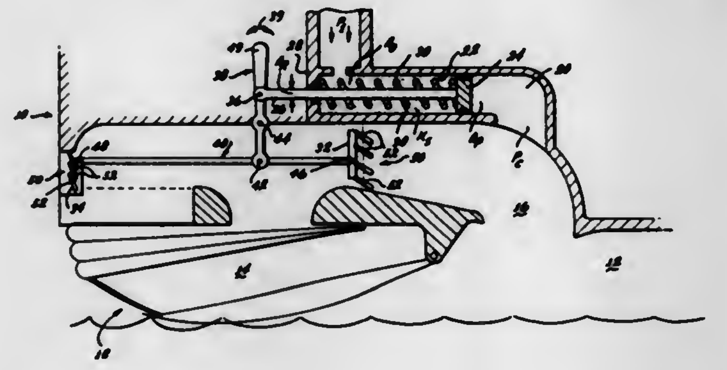
4,131,174
HEAVE ALLEVIATION AND CONTROL DEVICE FOR A SURFACE EFFECT SHIP

Michael A. Rickards, La Jolla, Calif., assignor to Rohr Industries, Incorporated, Chula Vista, Calif.

Filed Aug. 4, 1977, Ser. No. 821,694

Int. Cl.^{2} B60V *1/11*

U.S. Cl. 180—118 **9 Claims**



1. Heave alleviation and control apparatus for a surface effect ship, said ship having pressurized central and stern seal plenum chambers with ducting therebetween, said apparatus comprising:

an opening between said stern seal plenum chamber and the atmosphere;

a first valve means positioned in said opening; and

control means responsive to the pressure of said central plenum chamber including rigid valve connecting means for positively opening and closing said first valve means for maintaining a predetermined pressure in said stern seal plenum chamber.

4,131,175
AIR CUSHION VEHICLES

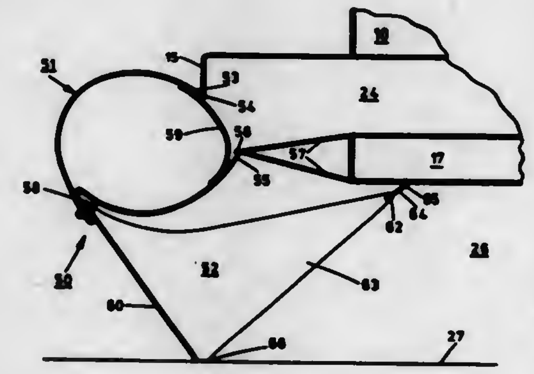
Raymond L. Wheeler, Cowes, England, assignor to British Hovercraft Corporation Ltd., Yeovil, England

Filed Jun. 16, 1976, Ser. No. 720,350

Claims priority, application United Kingdom, Jun. 20, 1975, 26413/75

Int. Cl.^{2} B60V *1/16*

U.S. Cl. 180—127 **6 Claims**



1. An air cushion vehicle having cushion-containing means at least partly constituted by a flexible skirt comprising an inflatable bag member constructed from impermeable flexible sheet material fixed to the vehicle hard structure along fixing lines that are spaced apart and one of which is situated at a level above the other whereby in operation when the bag member is inflated the major portion of the inflated section of the bag member is situated outboard of a vertical plane through the upper fixing line and there is no flow of air through the bag member to build up and sustain the vehicle supporting cushion, and a plurality of individual skirt elements, each element extending between attachment at a fixing line on the bag member and attachment at a fixing line on the underside of the vehicle hard structure so as to depend downwardly therefrom and terminate at a lower tip that is outboard of a vertical plane passing through at least the lower fixing line of the bag member to the vehicle hard structure, the dimension measured between the fixing lines of the skirt elements on the bag member and the vehicle hard structure being substantially larger than the dimension measured between the fixing lines of the bag member to the vehicle hard structure.

4,131,176
HYDRAULIC STEERING ARRANGEMENT

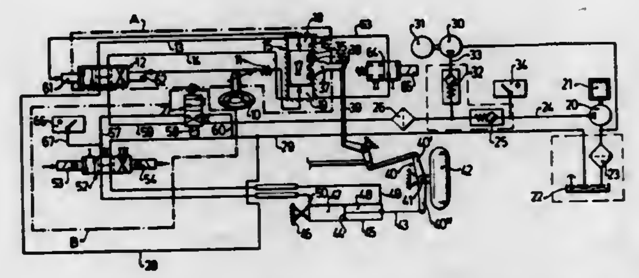
Manfred Ruoff, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 3, 1977, Ser. No. 848,086

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1976, 2652815

Int. Cl.^{2} B62D *5/10*

U.S. Cl. 180—131 **12 Claims**



1. A hydraulic steering arrangement for the wheels of a vehicle to be manually or automatically controlled, comprising linkage means connected to the wheels of the vehicle; a source of pressure fluid; manually operable means comprising a first multiple position valve adapted to be connected in circuit with said source, said first multiple position valve being movable between a neutral position and two working positions, hydraulically operated servo means in circuit with said first multiple position valve and mechanically connected to said linkage means for controlling the position of the latter, and a manually operable steering wheel connected to said first multiple position valve for moving the same between the positions thereof to thereby control movement of said servo means; automatically operable means comprising a second multiple position valve adapted to be connected in circuit with said source of pressure fluid, said second multiple position valve being movable between a neutral position and two working positions, hydraulically operated cylinder-and-piston means in circuit with said second multiple position valve and also mechanically connected to said linkage means; and a reversing valve connected upstream of said first and said second multiple position valve to said source of pressure fluid and movable between a first position connecting said first multiple position valve to said source of pressure fluid and a second position connecting said second multiple position valve to said source.

4,131,177
DUAL STEERING SYSTEM FOR VEHICLES

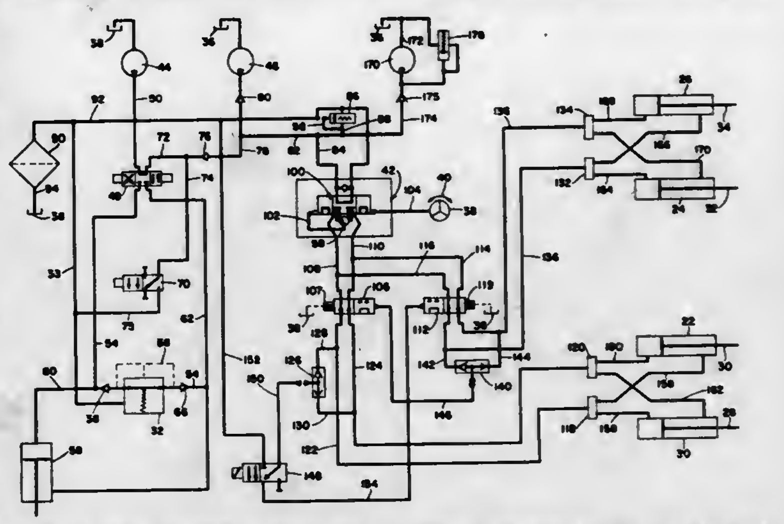
Edgar R. Goodbary, and Francis A. Bartley, both of Cardin, Okla., assignors to Goodbary Engineering Company, Cardin, Okla.

Filed Nov. 23, 1976, Ser. No. 744,431

Int. Cl.^{2} B62D *5/08*

U.S. Cl. 180—133 **5 Claims**

1. A dual hydraulic steering system for steering wheels of off-highway vehicles and comprising pump means operably connected directly in the steering system and operable by a vehicle engine for supplying hydraulic fluid for the steering system, primary steering cylinder means operably connected with the steering wheels for steering thereof, and secondary steering cylinder means operably connected with the steering wheels for steering thereof independently of said primary steering cylinder means upon failure of the primary steering cylinder means for any reason, and wherein independent valve means is operably connected with the primary and secondary steering cylinder means for normally providing fluid energization of said primary steering cylinder means and de-energization of said secondary steering cylinder means, said valve means including means responsive to a failure of said primary steering cylinder means for providing fluid energization of said secondary steering cylinder means and simultaneous de-energization of said primary steering cylinder means.



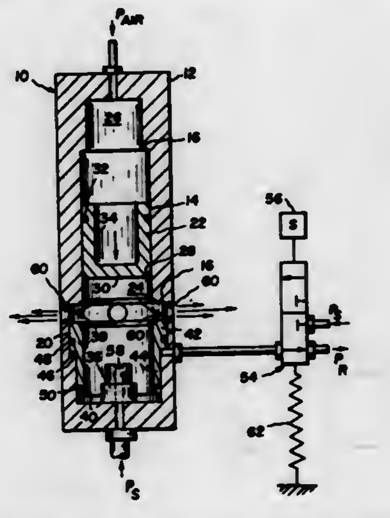
4,131,178
SEISMIC SOURCE FOR USE UNDER WATER

John V. Bouyoucos, Rochester, N.Y., assignor to Hydroacoustics, Inc., Rochester, N.Y.

Filed Nov. 30, 1977, Ser. No. 855,854

Int. Cl.^{2} G01V *1/04*

U.S. Cl. 181—120 **14 Claims**



1. A seismic signal source for use under water which comprises

(a) a housing having a cylinder,

(b) a piston slidably disposed in said cylinder for travel in opposite directions and dividing said cylinder into first and second chambers on opposite sides of said piston,

(c) said second chamber having a gas trapped therein which is compressed when said piston travels in one of said directions,

(d) means for supplying pressurized water to said first chamber,

(e) a water jet forming aperture extending through said housing into said first chamber,

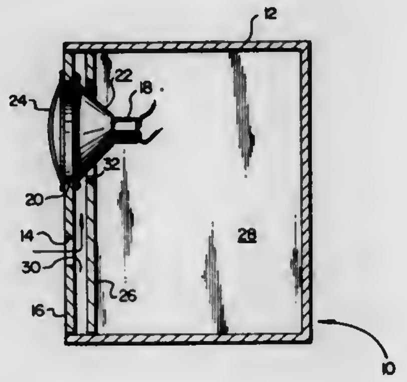
(f) a valve member slidably disposed in said first chamber in porting relationship with said jet aperture for opening said aperture to enable said piston to travel under the force of said compressed gas in the other of said directions to drive a jet of water through said aperture,

(g) said piston also being disposed in porting relationship with said jet aperture for closing said aperture after the opening thereof by said valve member to terminate said jet and generate a vapor cavity in the water outside said housing, the collapse of which produces the seismic signal, and

(h) means for actuating said valve member to close said jet aperture after said jet is terminated to enable the pressurized water in said first chamber to drive said piston in said one direction to reset said source and for opening said aperture when the next seismic signal is to be generated.

4,131,179
HIGH FIDELITY SPEAKER SYSTEM

Darrel L. Pope, 1918 Jacqueline Dr., Denton, Tex. 76201
Filed Dec. 17, 1976, Ser. No. 751,898
Int. Cl.² H05K *5/00;* G10K *13/00*
U.S. Cl. 181—156 **5 Claims**



1. A loudspeaker system comprising:

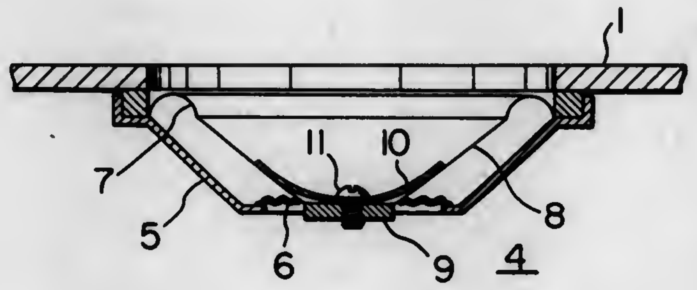
an enclosure, including a vent opening and a wall having a speaker opening;

a loudspeaker mounted at the speaker opening and having a speaker cone for generating air flow outside and inside the enclosure; and

means, including a partition with an aperture to receive the speaker cone therethrough, with edges of the aperture relatively closely spaced about the cone, for defining a first region away from said openings, and a second region adjoining the openings, said second region forming a duct between said aperture and said vent opening.

4,131,180
SPEAKER SYSTEM

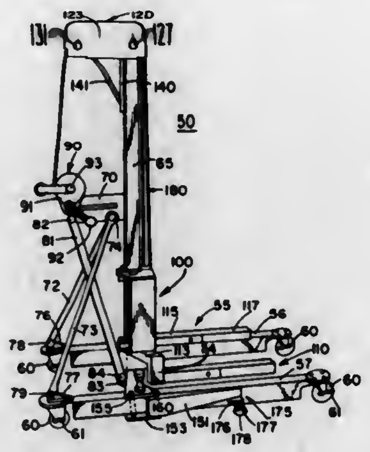
Yoichi Maeda, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 18, 1977, Ser. No. 778,998
Claims priority, application Japan, Apr. 12, 1976, 51-45258[U]
Int. Cl.² G10K *13/00;* H04R *7/00*
U.S. Cl. 181—163 **2 Claims**



1. A speaker system comprising an enclosure, a loudspeaker opening in said enclosure, a loudspeaker mounted over said loudspeaker opening, a further opening in said enclosure, a drone cone mounted over said further opening and driven by said loudspeaker, a first weight attached to the drone cone, a removable tuning weight, and fastening means removably fastening said removable tuning weight to the front side of said first weight and removable from the front side, said fastening means being frictionally attached to said first weight.

4,131,181
PORTABLE LIFT

Howard H. Vermette, No. 7 - 143rd St., Hammond, Ind. 46320
Filed May 16, 1977, Ser. No. 797,510
Int. Cl.² B66B *9/20*
U.S. Cl. 187—11 **7 Claims**



1. A portable lift comprising, a base, a single upright post supported on said base, a carriage surrounding said post slidably supported thereon, a pulley mounted on said carriage, a load supporting member connected to said carriage and extending forwardly of said post, a pulley unit as a single integrally formed structure comprising an elongated pulley housing and a pulley within said housing and a cable guide separate from said pulley extending through said elongated pulley housing, said pulley housing extendng rearwardly of said post forming a cantilever and supporting said pulley within said housing in substantial vertical alignment with said post, a winch supported on said post vertically intermediate said pulley housing and said base and extending rearwardly of said post, a cable connected to said winch and extending over said pulley in said pulley housing and extending forwardly and outwardly of said post and continuing downward around said pulley on said carriage then upwardly through said cable guide and thence downwardly to a connection point on said winch support rearwardly of said winch so that operation of said winch will through said cable cause said load supporting member to move up or down on said upright post, brace means coplanar with said upright post extending substantially from said connection point forwardly and downwardly to said base, spaced apart braces connected to said winch support near said upright extending rearwardly and downwardly toward the rear of said base, said brace means extending between said spaced apart braces, the portion of said cable extendng rearwardly of the post between said pulley and said winch in cooperation with said means connecting said winch support to said base providing a cantilever force which counter balances the force of the load at the front of the lift to permit lifting of loads twice the winch capacity.

4,131,182
SPEED PATTERN GENERATOR

Jerry D. Bass, Martinez, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Aug. 24, 1977, Ser. No. 827,399
Int. Cl.² B66B *1/30*
U.S. Cl. 187—29 G **7 Claims**

1. A speed pattern generator for manually operated construction elevator car controls, comprising:

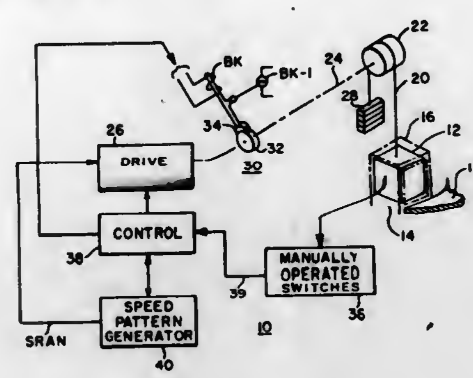
amplifier means having an input and an output, said amplifier means including a first operational amplifier,

integrating means having an input and an output, said integrating means including a second operational amplifier,

means connecting the output of said integrating means to the input of said amplifier means,

first pattern circuit means connected to the input of said amplifier means,

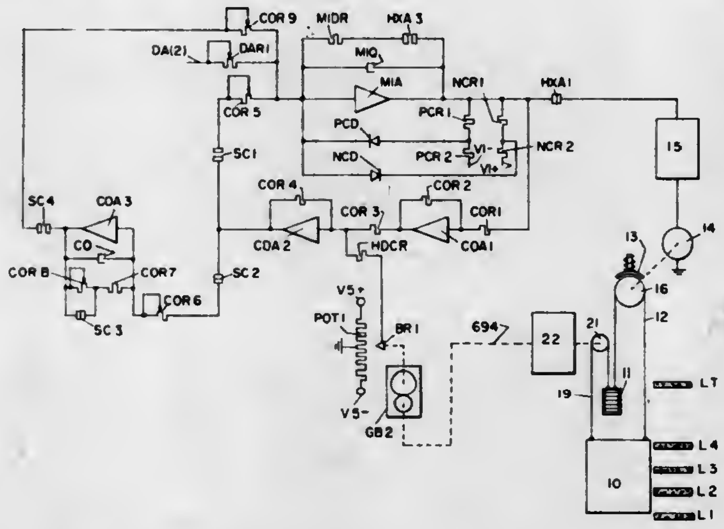
second pattern circuit means connected to the input of said integrating means,



and control means for activating and deactivating said first and second pattern circuit means in a predetermined sequence to provide a speed pattern signal at the output of said amplifier means.

4,131,183
SPEED DICTATION APPARATUS

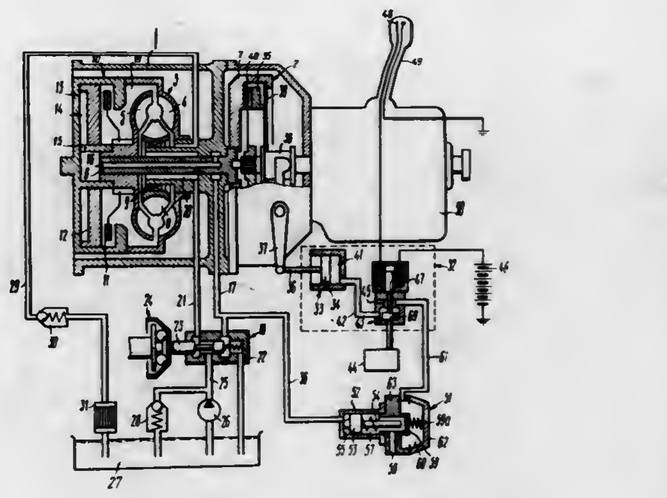
Otto A. Krauer, Tuckahoe, N.Y., assignor to Otis Elevator Company, New York, N.Y.
Filed Apr. 7, 1971, Ser. No. 131,989
Int. Cl.² B66B *1/28*
U.S. Cl. 187—29 R **5 Claims**



1. Speed dictation apparatus for an elevator car comprising a function generator generating a voltage which varies continuously as a function of time and controls the car's acceleration on each trip, a landing selector mechanism generating a voltage which varies continuously as a function of the distance the car is from the selected landing at which it is to stop on each trip, said latter voltage controlling the car's deceleration on each trip, signal generating means operating on each trip in which the car does not attain its rated running speed and generating a signal to stop accelerating in response to the selection of the landing at which the car is to stop, and control equipment connected to said function generator and said landing selector mechanism and receiving both said time controlled voltage and said distance controlled voltage, said control equipment operating in response to said signal to stop accelerating on any trip and causing said distance controlled signal to control the speed of said car from before the car starts its deceleration for that trip by initiating before deceleration starts a gradual transfer from control in which said time controlled voltage predominates to control in which said distance controlled voltage predominates.

4,131,184
VEHICLE HYDRAULIC TRANSMISSION

Leonid A. Rumyantsev; Jury K. Esenovsky-Lashkov, both of Moscow; Vasily T. Avershin, Brysansk; Vladimir Y. Ilnitsky, Brysansk, and Ivan L. Jurin, Bryansk, all of U.S.S.R., assignors to Tsentralny Nauchno Issledovatelsky Avtomobilny i Avtomotorny Institut Nami, Moscow and Proizvodstvennoe Obiedinenie "Baz", Bryansk, both of, U.S.S.R.
Filed Aug. 1, 1977, Ser. No. 820,688
Int. Cl.² F16D *47/06;* F16H *41/18*
U.S. Cl. 192—3.26 **3 Claims**



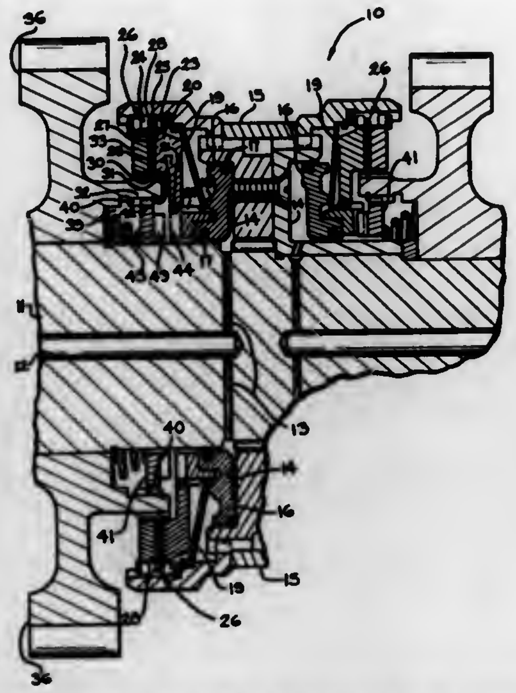
1. A vehicle hydraulic transmission comprising: a transmission clutch, a hydraulic torque converter, said transmission clutch and hydraulic torque converter being kinematically connected with each other; a direct drive clutch provided in said hydraulic torque converter for the purpose of locking together the impeller and turbine thereof; a vehicle engine shaft speed pickup, said direct drive clutch being actuated by hydraulic fluid pressure in response to a signal from said pickup; a transmission clutch engaging and disengaging arrangement having a power cylinder whose movable member is mechanically connected with the operating member of the transmission clutch, an air pressure source, and a positively controlled valve designed for the power cylinder to be alternately connected to said air pressure source and opened to the atmosphere through a throttling orifice; a valve arrangement connected through said positively controlled valve to the power cylinder for the latter to have a further provision for communication with the atmosphere, said valve arrangement being actuated by hydraulic fluid pressure in response to a signal from said vehicle engine shaft speed pickup.

4,131,185
FRICTION CLUTCH SYNCHRONIZER WITH RESILIENT GEAR COUPLING

Myron M. Schall, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio
Filed Jun. 3, 1977, Ser. No. 803,023
Int. Cl.² F16D *23/04, 25/061, 25/063*
U.S. Cl. 192—53 B **7 Claims**

1. A clutch assembly for engaging a first member and a second member comprising, a synchronization disc assembly operatively connected between said first member and said second member, a piston assembly positioned for applying force to said synchronization disc assembly for loading said disc assembly and urging said first and second members to approach synchronous rotation, said piston assembly mounting first set of gear teeth, said first set of gear teeth being mounted for rotation with said first member, a low mass body mounting a second set of gear teeth mateable with said first set of gear teeth, said low mass body being operatively connected for rotation with said second member, and means for urging said low mass body toward said first set of gear teeth, whereby upon actuation said piston assembly compresses said disc as-

sembly to urge said first member and said second member to approach synchronous rotation, actuation of said piston assembly causes said first set of gear teeth to contact said second set of gear teeth, said low mass body allows said second set of gear teeth to come into contact with said first set of gear teeth with a force that allows the gear teeth to slip against one another until synchronization of said first member and said second member is approached and the gear teeth mate in a positive full load relationship.



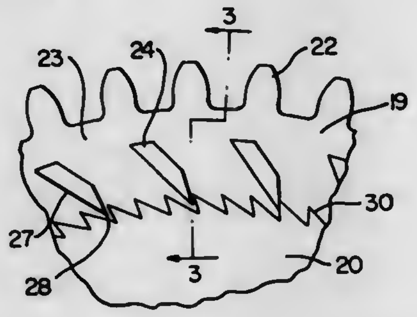
4,131,186
TIMER CONSTRUCTION AND CLUTCH CONSTRUCTION THEREFOR OR THE LIKE

Edgar E. Marquis, Newtown, and Joseph Discepolo, Waterbury, both of Conn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 31, 1977, Ser. No. 829,453

Int. Cl.^{2} F16D *11/10, 41/12*

U.S. Cl. 192—67 R **12 Claims**



1. In a timer construction having a timer motor and a selectable time period means adapted to be interconnected to said timer motor by a clutch means to drive said time period means for a selected time period, said clutch means comprising a first rotatable member driven by said timer motor and having a plurality of teeth arranged in a ring-gear like circular array, and a second rotatable member being axially movable and having a plurality of teeth on the outer periphery thereof, said rotatable members each having an axis of rotation, said second member being operatively interconnected to said time period means and being adapted to have some of its said teeth mesh with at least some of said teeth of said first member to be driven thereby when said second member is axially moved into said circular array of said teeth of said first member, the improvement wherein each tooth of said first member comprises a leg having opposed ends of which one end thereof is secured to said first member and the other end thereof is disposed in cantilever fashion relative to said first member, each leg having a tooth face that extends between said ends thereof and is substantially flat, each said tooth face facing at an angle to said axis of rotation of said first member, each said tooth face having an inner edge that is angled relative to said axis of rotation of said first member, said first member having a flat surface disposed substantially perpendicular to said axis of rotation thereof, said legs being secured to said flat surface and extending substantially perpendicular thereto.

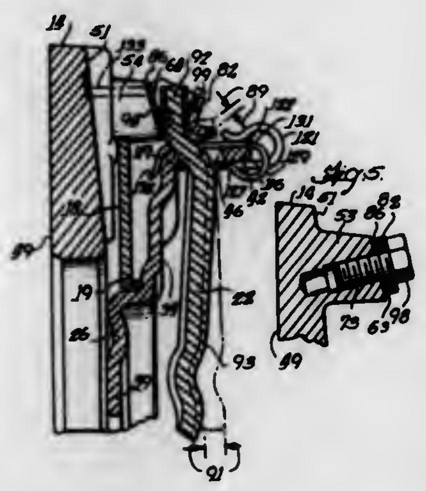
4,131,187
FRICTION CLUTCH APPARATUS

Grant H. Smith, and Ronald L. Carlson, both of Rockford, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed May 27, 1977, Ser. No. 801,176

Int. Cl.^{2} F16D *19/00, 13/46*

U.S. Cl. 192—99 A **5 Claims**



1. In a rotatable friction clutch assembly having a cover member, a pressure plate mounted for axial movement with respect to said cover member, spring means engaging said cover member and said pressure plate urging said pressure plate in one direction, and retracting levers mounted on said cover member and engaging said pressure plate effective to move said pressure plate with respect to said cover member against the bias of said spring means, the improvement in means for mounting said levers comprising;

a plurality of axially extending chordal wall portions formed in said cover member, each of said chordal wall portions being associated with a respective retracting lever, each of said chordal wall portions extending substantially at right angles to a dished portion of said cover member and including an aperture for receiving an outer portion of a respective retracting lever, each of said levers including a pair of laterally spaced slots disposed in said outer portion; and

a plurality of retainer clips mounted on said cover member arranged for retaining said levers in assembly with said cover member, each retainer clip having a pair of bight portions embracing a respective chordal wall portion, each of said bight portions including a leg portion engaging a respective slot in its associated retracting lever whereby the associated retracting lever is retained in a selected radial position with respect to said cover member.

4,131,188
LUBRICATION ARRANGEMENT FOR A COUPLING DEVICE

Loris J. Charchian, Troy, Mich., assignor to Dana Corporation, Toledo, Ohio

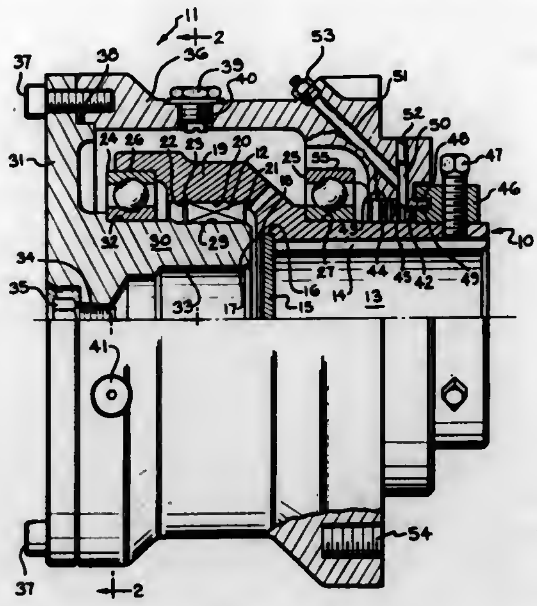
Filed Dec. 8, 1976, Ser. No. 748,585

Int. Cl.^{2} F16D *13/74*

U.S. Cl. 192—113 B **4 Claims**

1. A coupling assembly comprising an input driving member and an output driving member generally enclosing said input driving member being sealed therearound, said output driving

member forming a generally cylindrical housing said housing having an oil fill opening and plug on the cylindrical surface thereof, at least one oil fill level check opening and plug on the cylindrical surface and angularly displaced thereon relative to said oil fill opening and a vent on the face of said housing generally normal to said cylindrical surface and on the centerline thereof.



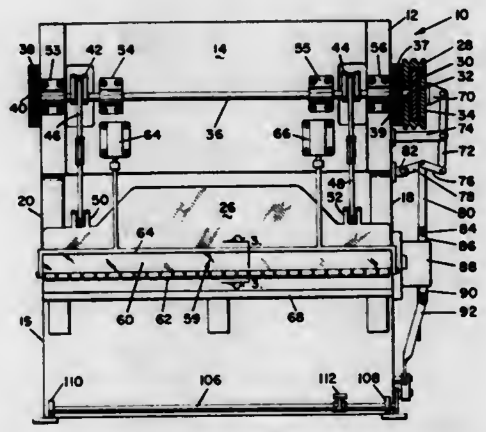
4,131,189
SAFETY APPARATUS FOR OPERATING CLUTCH ACTUATED, MOVABLE RAM MACHINES

Daniel R. Stephens, 7282 Judson Ave., Westminster, Calif. 92683

Filed Apr. 13, 1977, Ser. No. 787,290

Int. Cl.^{2} F16P *3/10;* B30B *15/12*

U.S. Cl. 192—129 B **11 Claims**



1. In combination:

a frame;

first and second elements carried on said frame, each of said elements being mounted for movement relative to the other of said elements and to said frame;

first movement restricting means, operable upon movement of said first and second elements together in one direction in a given degree relative to said frame for restricting further movement of one of said elements in further degree in said one direction while permitting such further movement of the other element; and

second movement restricting means responsive to a first condition for preventing relative movement between said first and second elements while permitting movement of said elements together relative to said frame.

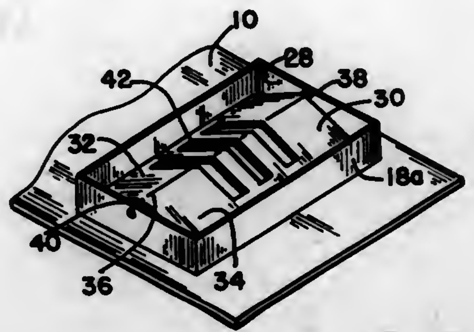
4,131,190
TAMPERPROOF COIN BOX CLOSURE

Harvey Gitlin, 2232 Bryn Mawr Ave., Philadelphia, Pa. 19131

Filed Apr. 1, 1977, Ser. No. 783,791

Int. Cl.^{2} G07F *9/06*

U.S. Cl. 194—1 B **6 Claims**



1. A tamperproof coin box closure to receive coins released by a coin slide comprising

a separator having an opening therein in a position to receive coins from the coin slide; and

a coin receiving member being pivotally secured within the opening and being adapted to permit the unrestricted passage of coins into the interior of the said coin box closure,

said member being provided with a plurality of coin accepting slots, said slots being of sufficient size to receive coins intended for passsage therethrough as the coins are released from the coin slide.

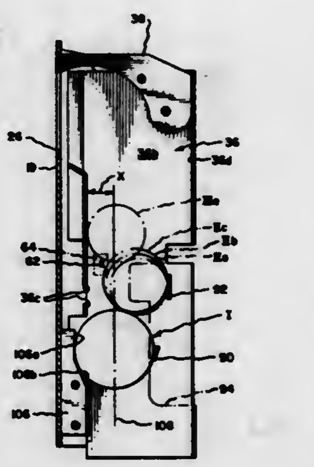
4,131,191
COIN OPERATED LOCK

Douglas A. Barth, Sinclairville, and Richard J. Chester, Kennedy, both of N.Y., assignors to American Locker Security Systems, Inc., Jamestown, N.Y.

Filed Sep. 19, 1977, Ser. No. 834,456

Int. Cl.^{2} G07F *1/04*

U.S. Cl. 194—92 **7 Claims**



1. In a coin operated lock of the type having a coin chute formed with vertically spaced coin inlet and discharge ends and being bounded at least in part by a pair of vertically extending coin edge guiding surfaces and a pair of vertically extending coin side guiding surfaces for constraining coins to move on edge downwardly therethrough, means for limiting passage of coins through said inlet end to coins of a diameter equal to or less than the diameter of a given denomination coin of a given currency intended to operate said lock, a stationary gauging means arranged relatively adjacent said discharge end, a coin selector mechanism arranged relatively adjacent said discharge end and when in a gauging position thereof cooperating with said gauging means for releasably supporting at least certain of the coins deposited in said chute and a coin feeler arranged relatively adjacent said inlet end and removably

insertable into said chute adjacent one of said edge guiding surfaces for sensing the presence of a coin supported in said chute in alignment therewith, characterized in that said lock may be moved from an unlocked into a locked condition only upon the sensing of the presence of a coin by said coin feeler whereafter said coin selector mechanism is moved to a release position for releasing coins retained in said chute for discharge through said discharge end, the improvement for accommodating said lock for operation by two coins of said given denomination, which comprises in combination:

said selector mechanism includes first and second gauging pawls movable between said gauging and release positions, said first pawl being arranged relatively adjacent said discharge end of said chute and when in said gauging position cooperating with said gauging means to support a first deposited coin of said given denomination therewithin while permitting passage of previously deposited improper coins of said given currency having a diameter less than said diameter of said given denomination coin downwardly through said discharge end, said second pawl being disposed relatively above said first pawl and when in said gauging position being spaced from said one of said edge guiding surfaces a distance in excess of said diameter of said given denomination coin, characterized in that placement of said pawls relative to one another, said one of said edge guiding surfaces, said gauging means and said coin feeler provides for alignment with said coin feeler of a second deposited coin of said given denomination while edge-to-edge supported by said first deposited coin and in edge-to-surface engagement with said second pawl and prevents alignment with said coin feeler of subsequently deposited improper coins of said currency while edge-to-edge supported by said first deposited coin and in edge-to-surface engagement with said second pawl or when edge-to-edge supported by one of said subsequently deposited improper coins and in edge-to-surface engagement with said one of said guiding surfaces.

4,131,192

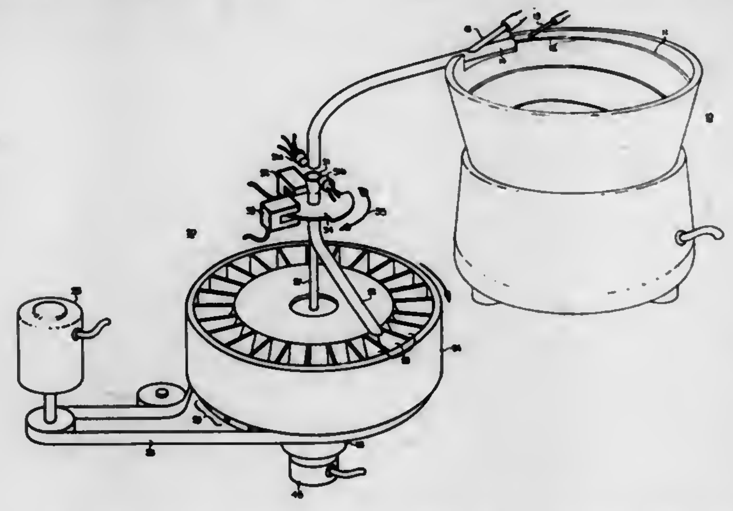
LAMP PARTS FEEDING DEVICE HAVING ROTATING REFERENCE FRAME

Thomas M. Cipolla, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 12, 1977, Ser. No. 832,395

Int. Cl.² B65G *47/00*

U.S. Cl. 198—469 **9 Claims**



1. A parts feeder for receiving parts at a variable rate and supplying those parts at a uniform rate or spacing comprising:

a generally circular tray having a plurality of storage means located about the periphery thereof;

means connected to said tray for rotating said tray at constant speed;

conveyor means having an entrance portion collinear with the axis of rotation of said tray and a portion extending over said storage means; said conveyor means being mounted for rotation about said axis of rotation in synchronism with the rotation of said tray;

stepper means connected to said tray and to said conveyor means for intermittently moving said conveyor means relative to said tray means; and

means for controlling the angular position of said conveyor means.

4,131,193

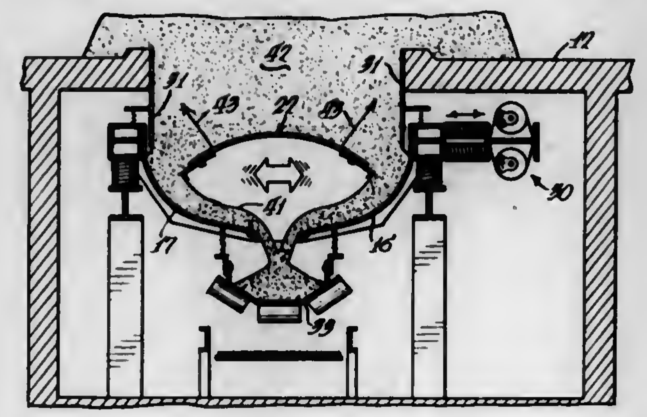
VIBRATORY APPARATUS

Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Continuation-in-part of Ser. No. 744,336, Nov. 23, 1976, abandoned. This application Nov. 14, 1977, Ser. No. 851,508

Int. Cl.² B65G *47/19*

U.S. Cl. 198—533 **4 Claims**



1. A vibratory apparatus for delivering particulate material and adapted for use in combination with a base having an aperture therein communicating with a passage beneath the base, said vibratory apparatus comprising a trough having an opening in the bottom thereof with the opening extending from one end of the trough to the other end thereof, said trough having side walls sloping downwardly and inwardly from the side of the trough to said opening, a deflector secured to the trough and extending upwardly therefrom, said deflector having its lower edges spaced from the side walls of the trough and having its center portion located above the opening in the trough, the angle to the horizontal of a line extending from the lower edges of the deflector to the adjacent edge of the opening being less than the static angle of repose of the material, means for mounting said vibratory apparatus in said aperture in the base to support material piled thereover, said mounting means including springs supporting the trough for vibratory movement, a vibration generator secured to said apparatus for vibrating the same in a direction transverse to the direction of extent of the opening, and a conveyor below the opening in the trough to receive material discharged therethrough.

4,131,194

SCRAPER BAR ASSEMBLY FOR ENDLESS CONVEYOR BELTS

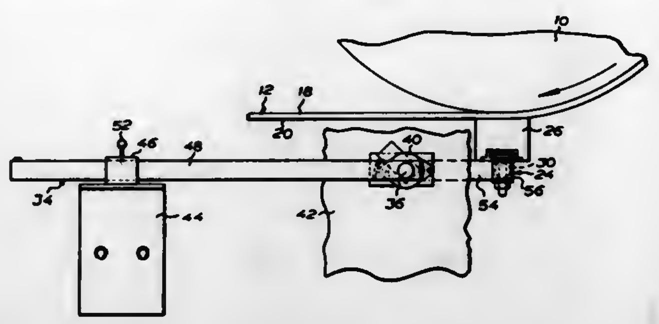
Sven E. Andersson, Chagrin Falls, Ohio, assignor to Trelleborg Rubber Company, Inc., Solon, Ohio

Continuation of Ser. No. 751,792, Dec. 17, 1976, abandoned. This application Mar. 23, 1978, Ser. No. 889,186

Int. Cl.² B65G *45/00*

U.S. Cl. 198—497 **9 Claims**

1. A scraper assembly for an endless conveyor belt having a belt surface and opposite belt side edges comprising, a plurality of scraper elements having belt engaging ends and mounting ends, said scraper elements each including a mounting plate providing said mounting end and a body of rubber directly attached to said mounting plate and providing said belt engaging end, means including a carrier member extending transverse to said belt side edges and supporting said scraper elements for said belt engaging ends to engage said belt surface, said carrier member having a surface extending in said transverse direction, said mounting plates of said scraper elements having mounting recesses therein, said mounting recesses having parallel opposite sides extending in said transverse direction and engaging longitudinally spaced portions of said carrier member surface, means received within the recesses for coacting with the surfaces forming each recess to removably mount each scraper element on said carrier member against said surface thereof, and said belt engaging ends of said scraper elements having parallel belt engaging scraper edges oblique to said parallel opposite sides of said mounting recess.



4,131,195

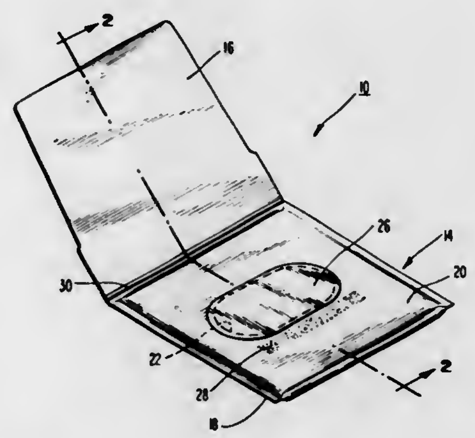
DISPOSABLE, COMPACTABLE MOISTURE IMPERVIOUS PACKAGE FOR PREMOISTENED SHEETS

Robert A. Worrell, Sr., Chester, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Continuation of Ser. No. 719,851, Sep. 2, 1976, abandoned. This application Dec. 12, 1977, Ser. No. 859,860

Int. Cl.² B65D *81/24*

U.S. Cl. 206—205 **7 Claims**



1. A disposable, pliable and compactable moisture-impervious package for dispensing a stack of premoistened sheets, said package comprising:

a. a pocket portion of pliable and compactable moisture-impervious material, said pocket portion including first and second walls adhered to each other to provide a compartment between them for receiving the stack of premoistened sheets;

b. the stack of premoistened sheets disposed within the compartment with flat surfaces of the sheets generally parallel to the first and second walls of the pocket portion;

c. a dispensing opening in one wall of the pocket portion and overlying the flat surfaces of the premoistened sheets, said dispensing opening having a long dimension extending transversely across said one wall and a short dimension substantially perpendicular to said long dimension, sheets of the stack being folded to provide a dispensing edge disposed generally perpendicular to the long dimension of said opening and intersecting said opening, the dispensing opening including a primary seal for preventing undesirable evaporation of moisture from the sheet;

d. a flap portion of pliable and compactable moisture-impervious material joined to the pocket portion through a hinge line that is generally parallel to the long dimension of the dispensing opening, said flap portion extending beyond the pocket portion and being foldable at the hinge line to overlie the dispensing opening; and

e. securing means for removably securing the flap portion to the pocket portion when the flap portion overlies the dispensing opening to provide a secondary moisture-impervious seal after the primary seal has been broken and between the dispensing of sheets, said securing means maintaining the secured connection between the flap portion and the pocket portion when said package is in a compacted or uncompacted state.

4,131,196

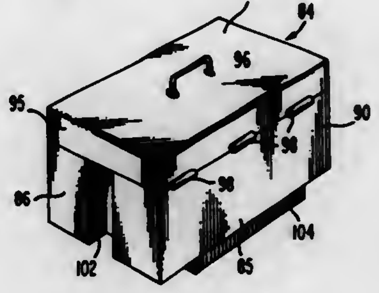
ICE SKATE CARRYING CASE WITH EXTERIOR END WALL SKATE SUPPORT

Frank Csutor, 408 Jefferson Ave., Bristol, Pa. 19007

Division of Ser. No. 567,588, Apr. 14, 1975, Pat. No. 4,021,054. This application Dec. 17, 1976, Ser. No. 751,940

Int. Cl.² A65D *85/18*

U.S. Cl. 206—278 **2 Claims**



1. A case for ice skates in the form of a carrying container of rectangular configuration comprising: a pair of end walls; a pair of side walls rigid with and extending between the end walls; a bottom wall rigid with and extending between the end walls and the side walls; and a lid defining a top wall and adapted to be opened to provide access to the container interior, at least one of the end walls being formed with a groove opening exteriorly of the container and extending in length fully from the bottom wall to the lid, said groove being of a width and depth proportioned for receiving and disposing the blade of an ice skate within, and wholly out of contact with the sides and bottom of, the groove, with the boot of the ice skate supported at its sides upon the container end wall as the respective, opposite sides of the groove, said carrying case being interiorly provided with parallel pairs of support rails supported on the bottom wall of the container, the rails of each pair being transversely spaced to receive the blade of the supported skate, the space therebetween being of a width and depth proportioned to receive the blade of an ice skate with the blade wholly out of contact with the rails and the bottom wall, and with the bottom of the boot of the ice skate supported at its sides upon the respective rails that define said space between them, the depth, width, and length of the container interior being relatively proportioned to dispose both boots of a pair of ice skates wholly out of contact with the several walls and the container cover, when the boots are supported on the respective pairs of rails with the blades disposed in the spaces defined between the rails of each pair.

4,131,197

CONTAINER FOR A CASSETTE CONTAINING A RECORDING TAPE, PARTICULARLY FOR A MAGNETIC-TAPE CASSETTE

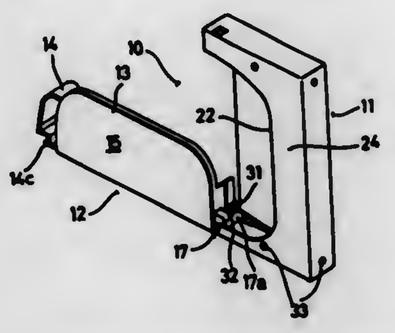
Anton Blankenmeister, Boehl-Iggelheim; Ludwig Peinecke, Frankenthal, and Dieter Koob, Worms, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 16, 1976, Ser. No. 751,115

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1975, 2555734

Int. Cl.² B65D *85/672*

U.S. Cl. 206—387 **7 Claims**



1. A container for the accomodation of a cassette containing a recording tape wound on reels, and in particular a magnetic tape cassette, said container comprising:

a hollow portion having substantially the shape of a rectangular parallelepiped formed by two parallel large-area side walls connected by four narrow walls,

a lid portion consisting of one of said narrow walls and having a support for the cassette which includes projections to prevent rotation of the reels in the cassette, said support being formed of at least a portion of one of said large-area side walls of said hollow portion,

a means located at the bottom end of said lid portion for permitting the pivotal movement of said lid portion together with said support about the adjacent bottom end of said hollow portion whereby the lid portion and support may be swung out from the open container,

a tab formed at the bottom end of said lid portion for engaging the cassette on said support during said pivotal movement, and

a spring member formed at the opposite top end of said lid portion which is arranged to cooperate with one of the adjacent walls of said hollow portion when opening and closing the container from the lid portion side thereof and also being adapted to press the cassette on the support against said tab.

4,131,198

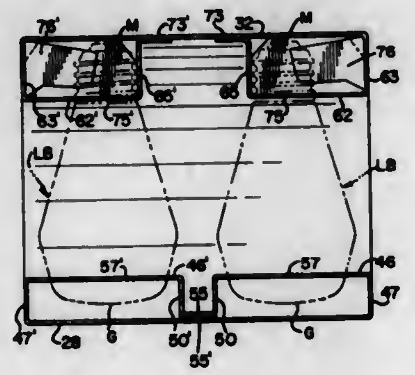
LIGHT BULB PACKAGE

Edward F. Fischer, Dumont, N.J., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

Filed Sep. 21, 1977, Ser. No. 835,152

Int. Cl.² B65D *85/42*

U.S. Cl. 206—419 **7 Claims**



1. A package comprising a pair of electric light bulbs disposed in row alignment and enclosed in an open ended tubular container which container is formed from a single blank of paperboard or similar foldable sheet material divided by hinge score lines into a series of hingedly connected panels including top, bottom and sidewall panels, said sidewall panels extending between outer side edges of said top and bottom wall panels in spaced diverging relation from the top panel to the bottom panel so as to provide a tube formation with truncated cone cross section, means for retaining the bulbs in row alignment and in spaced relation within said container which bulb retaining means is in the form of apertured panels disposed in planes which are generally parallel with and spaced from the top and bottom wall panels, said apertured panels extending between the inner faces of said sidewall panels in paired relation at the top and bottom of each end of said container which cooperate in providing pocket formations at each end of said container in which opposite ends of said bulbs are seated, said apertured panels being held in spaced relation relative to said top and bottom wall panels by narrow, integral hinged side edge panels which are disposed in face contacting relation with portions of said sidewall panels and in edge engagement with adjacent top and bottom wall panels, each of said apertured panels of each pair thereof at each of the container ends extending inwardly from the associated open end of said container to a narrow hinge panel which is secured to the confronting wall panel in hinged relation by a glue tab on the edge of said hinge panel.

4,131,199

RECORD DISK CARTRIDGE

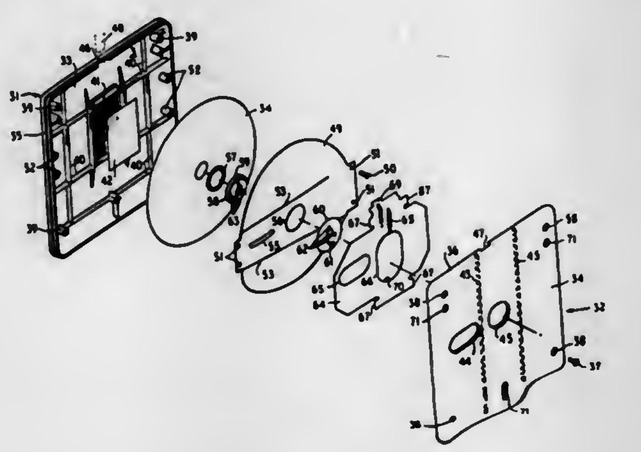
Michael R. Hatchett, Romsey, and Leonard J. Rigbey, Winchester, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1977, Ser. No. 846,228

Claims priority, application United Kingdom, Jun. 29, 1977, 27124/77

Int. Cl.² B65D *85/02, 85/30;* **G11B** *23/04*

U.S. Cl. 206—444 **16 Claims**



1. A record disk cartridge intended for use installed on a disk drive unit, the cartridge comprising a disk enclosure, a flexible record disk and hub assembly supported within the enclosure for rotation about an axis, said enclosure having first, second and third apertures, said first aperture through the enclosure to permit insertion therethrough of a record/playback head included in such a drive unit in the direction substantially parallel to said axis, said second aperture being through the enclosure through which the disk and hub assembly may be engaged for rotation, a shutter mechanism within the enclosure movable between a first position closing said first aperture and a second position opening said first aperture, biasing means biasing said shutter mechanism towards said first position, said third aperture through the enclosure through which prior to use said shutter mechanism is engaged and moved against the action of said biasing means to said second position, said shutter being in frictional engagement with said hub assembly when in said first position and completely disengaged from said hub assembly when in said second position.

4,131,200

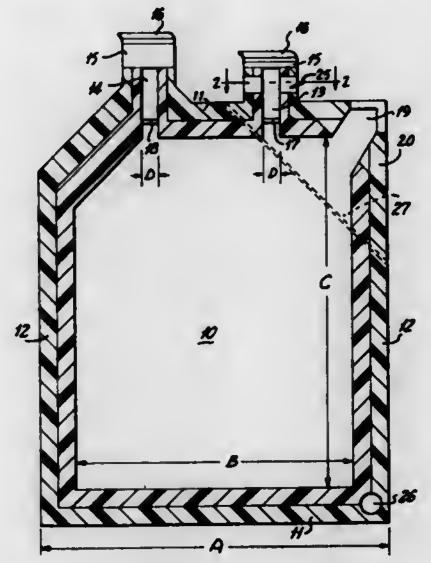
THERMOPLASTIC BLOOD BAG

Arthur P. Rinfret, New York, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jul. 6, 1976, Ser. No. 702,421

Int. Cl.² B65D *33/16, 81/00, 85/50*

U.S. Cl. 206—484 **14 Claims**



1. A sealed, flexible thermoplastic bag comprising: a fluid storage compartment enclosed by laminate edge seal sections; first and second access passageways each having an outer end joining walls integral with and extending through an edge seal with inner ends in fluid communication with said fluid storage compartment; first separably adhering unfused seal means transverse to the outer ends of each said first and second passageways and pull-tab means over each of such first seal means and associated therewith so as to open same on separation; second separably adhering unfused heat seal means transverse to each of said first and second passageways and intermediate said inner and outer ends, said fluid storage compartment and first and second access passageways each being substantially flat and two dimensional prior to fluid filling but deformable to three dimensional configuration, and formed by said laminate having at least two layers with the innermost layer being heat fusible to itself such that said edge seal sections comprise fused oppositely facing innermost layers with two unfused transversely spaced longitudinal sections each entirely transversely surrounded by the fused innermost layer and each adaptable for outward transversely diverging displacement of said innermost layer by external longitudinal penetration through said outer end so as to form said first and second access passageways.

4,131,201

CONTINUOUS BELT AGGREGATE SEPARATOR

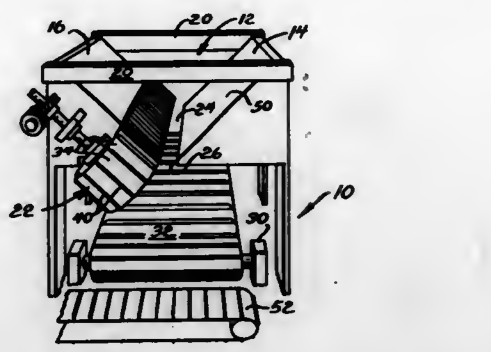
Thomas C. Meisel, Jr., Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 24, 1977, Ser. No. 827,206

Int. Cl.² B07C *5/12*

U.S. Cl. 209—661 **5 Claims**

1. A separator comprising an upwardly opening bin having converging functionally imperforate sides at its lowermost extremity, the lowermost edges of said sides being spaced to define a first discharge opening, at least one of said sides, adjacent said first opening, including a section unidirectionally movable longitudinally of said first opening, means for unidirectionally moving said section, and a second discharge opening at an end of said bin adjacent said section, said section comprising an endless, jointed cleated crawler type track.



4,131,202

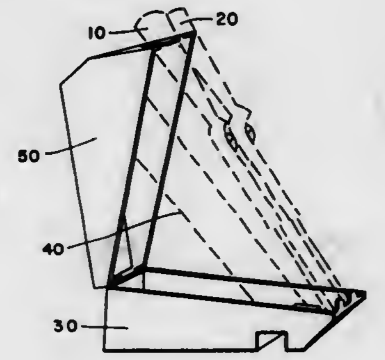
CONSOLE GUN RACK

Lyle K. Hansen, 1110 13th St., Rawlins, Wyo. 82301

Filed Jan. 27, 1976, Ser. No. 652,798

Int. Cl.² A47F *7/00*

U.S. Cl. 211—2 **3 Claims**



1. A console gun rack, comprising

a console having a lower portion with a front side, the front side of the lower portion of the console having a projection and an interior surface;

a receiver having a tapering base mounted on interior surface of the front side of the console whereby a rifle barrel tip and front sight may be received therein, said receiver having an integral bracket whereby said front sight may hang free;

a cover hingedly affixed to the lower portion of the console, said cover having a front side with groove in said front side for mating with the projection of said lower portion whereby the stock of a rifle may be received in said groove;

an access door mounted in said cover whereby said console may be used to store articles when not holding a rifle; and

holding means for holding said cover open relative to said lower portion whereby a rifle may be held by said console when said console is open.

4,131,203

WALL MOUNTED MODULAR UNITS

John A. Bridges, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.

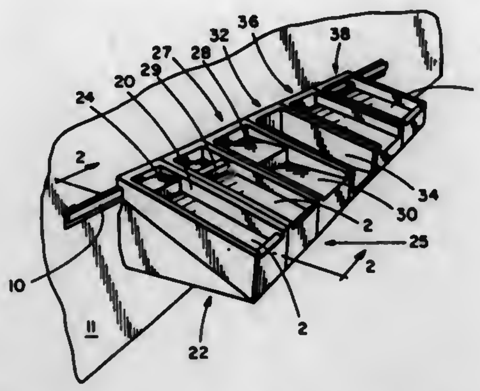
Filed Jan. 13, 1977, Ser. No. 759,067

Int. Cl.² A47F *3/14, 5/08*

U.S. Cl. 211—88 **9 Claims**

1. An article supporting unit for mounting on a vertically extending surface constituted by an upper section having an upper surface for the support of articles and a bottom extending downwardly to the horizontal and a lower section having a top extending downwardly from the horizontal, and said upper and lower sections are joined along their respective

bottoms and tops to form a hollow construction wherein said upper surface is the top thereof and said hollow construction has a back surface extending downwardly from said upper surface, and wherein said back surface has a recess formed therein and a tongue extending downwardly over a portion of said recess whereby said tongue may engage in an upwardly opening channel in an element on the vertically extending surface and a portion of said element will be disposed in said recess.



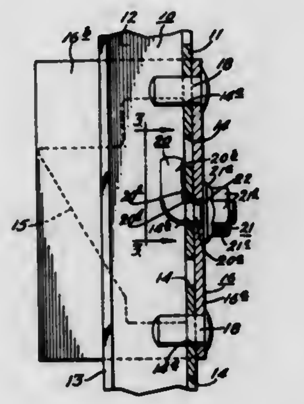
4,131,204
POSITIVE-LOCKING RELEASABLE CONNECTOR FOR STORAGE RACK HAVING VERTICALLY ADJUSTABLE LOAD SUPPORTS

Peter H. Jacoby, Perkasie, and Carl G. Seiz, Hatfield, both of Pa., assignors to Seiz Corporation, Perkasie, Pa.

Filed Nov. 20, 1975, Ser. No. 633,676

Int. Cl.² A47F *5/10*

U.S. Cl. 211—192 **3 Claims**



1. In combination with a storage rack column having a front flange with at least one aperture therein and a side flange extending along said front flange in close proximity with said aperture, a clip having a web with a hole adapted to at least partially register with said one aperture when said clip web is engaged flush against the front flange of the column, and means releasably fastening said clip to said column, the improvement wherein said releasable fastening means comprises: an angulated connector member having a threaded shank extending through said hole in said clip and said one aperture in said column and having a lug engaging the rear of the front flange of the column and being dimensioned lengthwise to extend away from said aperture a predetermined distance to engage said side column flange when inserted into said column, a nut threadedly engaged with said shank and engaging the front of said clip when said lug is operatively engaged in the column, said side column flange providing a reaction surface located inside said column in close proximity with said aperture so as to engage said lug and resist rotation thereof when said nut is tightened, said lug defining with said shank less than an orthogonal included angle so that said connector lug engages the inside of the front flange at a location spaced from said one aperture when said connector member is in a relaxed condition and said nut is engaged against the front of said clip, said connector member being fabricated of an elastically deformable material affording elastic flexure of said lug relative to said shank when said connector member is tensioned upon rotation of said nut and pressure engagement thereof with the front of said clip, said nut having a series of peripheral wrench flats and an annular flange having a clip-engaging surface extending radially outward beyond said flats orthogonal to the axis of the shank, said connector member having surface means forming an inwardly-facing recess at the juncture of said shank with said lug to facilitate insertion and withdrawal of said connector member, said clip hole and flange aperture being aligned with one another and said flange aperture being larger than said clip hole, said lug being sized to afford its passage axially through said hole in said clip and said aperture in said column front flange when said clip web is engaged against the front of said column and to pivot relative to said column into a position wherein said shank is coaxial with the hole in said clip whereby the connector member can be inserted into the column and withdrawn therefrom by a workman located in front of the column.

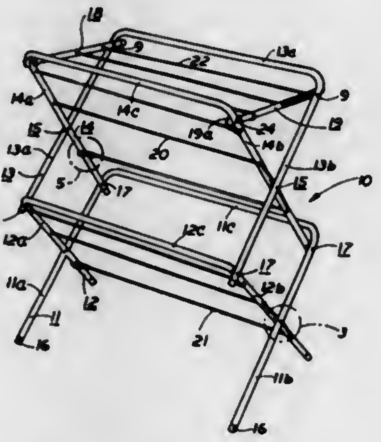
4,131,205
CLOTHES-DRYING RACK

Alexander J. Malecki, Warminster, Pa., assignor to General Home Products Corporation, Burlington, N.J.

Filed Jun. 14, 1977, Ser. No. 806,519

Int. Cl.² A47F *5/10*

U.S. Cl. 211—200 **12 Claims**



1. A collapsible rack comprising:

a. a first pair of integral generally inverted U-shaped rigid members made of metal, one of which has its legs disposed inwardly of and pivotally joined to the corresponding legs of the other near the midpoints thereof,

b. a second pair of integral generally inverted-U-shaped rigid members made of metal and being substantially identical to said first pair and disposed and pivotally joined to one another in a manner substantially identical to said first pair, said second pair also having at the free ends of its rigid members pivotal connections to said first pair at points on the legs of said first pair in the regions where they join the bights thereof,

c. means associated with said second pair and releasably connectable therebetween for bracing said rack in non-collapsed condition and also for maintaining said rack in said condition, and

d. elongated flexible cord means associated with selected ones of said first and second pairs and said bracing means for enabling articles to be supported therefrom, each of said cord means associated with one of said pairs comprising a continuous length of cord strung parallel to the bight of the inverted U-shaped member of said pair, and wherein one of said members of each of said first and second pairs has its legs separated from one another by a distance which is smaller than the distance separating the legs of the other member of its pair so as to provide a space between corresponding adjacent ones of said legs which is at least about as large as the diameter of said cord thereby to allow said parts of the lengths of cord to pass in said space between said legs without being appreciably pinched during collapsing or erection of said rack.

4,131,206
AUTOMATIC APPARATUS FOR FURNISHING WEB IN ROTARY PRESS

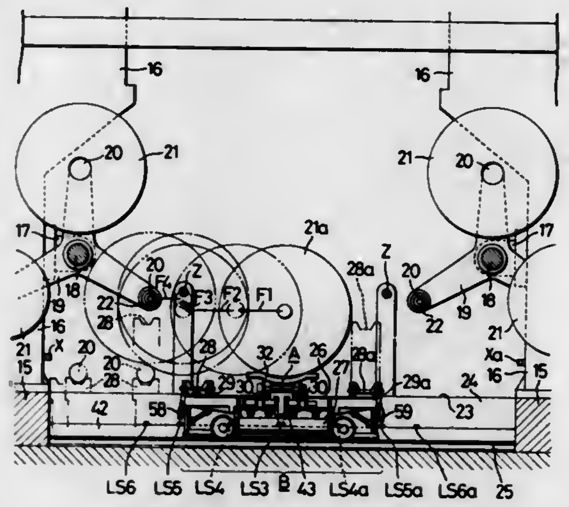
Tomoshi Kawada, Kawasaki, and Yuichi Okamura, Tokyo, both of Japan, assignors to Kabushiki Kaisha Tokyo Seisakusho and Kabushiki Kaisha Kaneda Kikai Seisakusho, both of, Japan

Filed Jul. 20, 1977, Ser. No. 817,432

Claims priority, application Japan, Mar. 4, 1977, 52-24127

Int. Cl.² B66F *9/14*

U.S. Cl. 214—1 BB **20 Claims**



1. An automatic apparatus for furnishing web in a rotary press comprising:

a double truck mechanism for supplying new web, said mechanism consisting of a first truck adapted to move along first rails extending parallel to a reel shaft and support a new web loaded on it and a second truck adapted to move along second rails extending right beneath and at right angles to said reel shaft and said first rails and support said first truck brought and loaded onto it, said second truck being provided with a main lifter for lifting and lowering the loaded first truck;

a pair of web core receptacles provided on said second truck adjacent to the oppsite ends thereof;

a mechanism for mounting and demounting a web core by causing advancement or retreat of center collars provided at mating ends of mating arms of pair tri-fulcated arm members of said reel shaft;

a photoelectric conversion detector means provided such that it is aligned to one end of a web in the state thereof mounted on said reel shaft; a means for positioning the new web in the width direction thereof by restricting the extent to which said first truck is brought onto said second truck in relation to the leading end of the new web when said first truck is brought onto said second truck; a web core collecting means operable by starting said second truck upon completion of the positioning of the new web in the width direction thereof, stopping the second truck when the leading end web core receptacle provided on the second truck reaches a position directly beneath the ends of arms of tri-fulcated arm members previously held in a predetermined waiting position and then causing retreat of center collars on the ends of the arms under the control of a stop confirmation signal to thereby cause the web core to fall onto said web core receptacle; a means for determining the height of the new web by re-starting the second truck under the control of a web core fall confirmation signal, stopping the second truck when the second truck reaches a position right beneath said photoelectric conversion detector means provided in front of and at the same level as said center collars, then raising said main lifter under the control of a stop confirmation signal and stopping the rising of said main lifter upon reaching of a predetermined relation of the hollow cylinder of the core of said new web on said lifter to the level of said detector means; a means for determining the position of said new web in the direction of depth of mounting of the new web by repeatedly causing re-start of said second truck under the control of a signal from said photoelectric conversion type detector means and stopping the second truck when the center of the second truck reaches a position right beneath said center collars; a new web mounting means for causing advancement of said center collars under the control of a stop confirmation signal; and a restoring means for lowering the main lifter by a center collar advancement signal, causing the retreat of the second truck under the control of a lifter descent confirmation signal, stopping the second truck upon restoration of the main lifter to the start position and bringing the first truck out of the second truck under the control of a restoration confirmation signal.

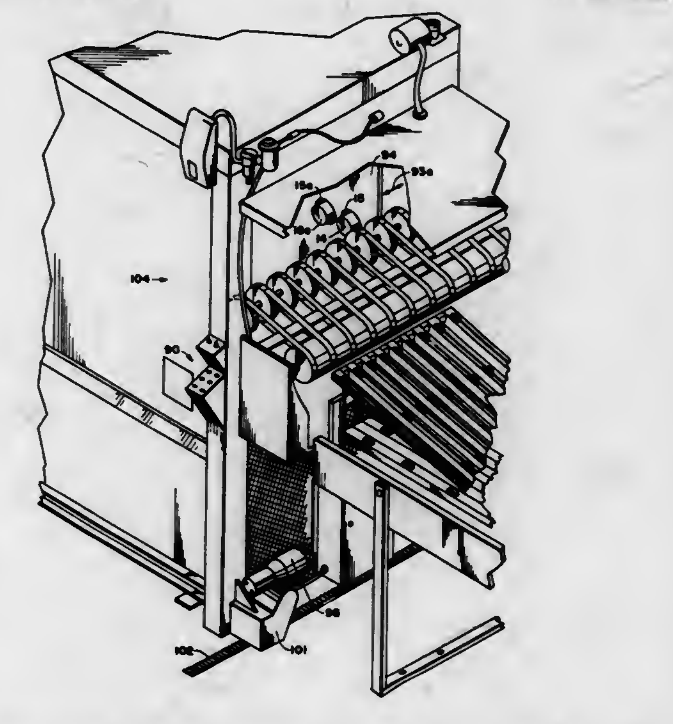
4,131,207
AUTOMATIC SHEET-STACKING AND TRANSPORT MACHINE

Arnold H. Scheinman, 64 Speir Dr., South Orange, N.J. 07079, and Ernst Paisker, 81 JFK Dr., Milltown, N.J. 08850

Filed Nov. 12, 1976, Ser. No. 741,478

Int. Cl.² B65G *57/06*

U.S. Cl. 214—6 DK **11 Claims**



1. An automatic sheet-stacking machine, comprising in combination:a stacking support means having a predetermined stack-receiving position for intermittently receiving in series consecutive aligned stacks of sheet-like items as an aligned single-combined stack of increased height; elevator means including a stacking support platform adapted to receive an aligned stack of the sheet-like items at said stack-receiving position, the elevator means being for moving the stacking support platform upwardly and downwardly and for a lowering of the stacking support platform when a sheet-like item is deposited thereon, to a predetermined extent of lowering, and for further additionally lowering the stacking support platform to a lower take-off position as a further-lowering signal becomes activated by the stacking support platform during the stacking support platform lowering toward the lower take-off position; and elevator switching means including a first switch means and a second switch means, a lever means adapted to be contacted by said stacking support platform and operatively connected to both said first and second switch means, the first switch means being first activatable by contact thereof with said stacking support platform when said stacking support

platform moves upwardly, said first activatable thereby setting said elevator means to thereafter move downwardly the stacking support platform as intermittently responsive to receipt of each one of said consecutive aligned stacks, and the second switch means being second activatable by contact thereof with said stacking support platform when said stacking support platform moves downwardly to said lower takeoff postition, said second activatable thereby setting said elevator means to thereafter move upwardly the stacking support platform to said predetermined stack-receiving position.

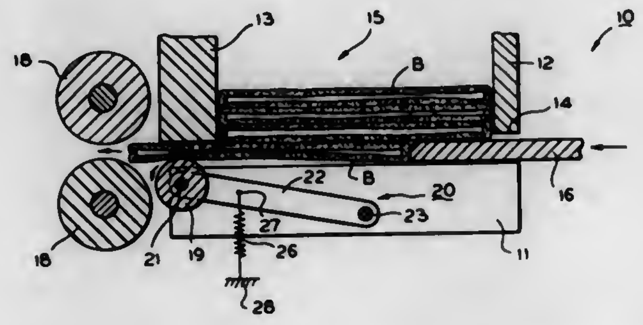
4,131,208
FEED MECHANISM FOR CARTON BLANKS

Ralph O. Vuilleumier, Malvern, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Aug. 3, 1977, Ser. No. 821,351

Int. Cl.² B65G *59/00*

U.S. Cl. 214—8.5 F **7 Claims**



1. In a feeding mechanism for delivering packaging forming material, such as folded carton blanks, without jamming, from a hopper toward a carton erecting mechanism, the combination of:

(a) a hopper containing a plurality of folded carton blanks arranged in a stack;
(b) support means located adjacent said hopper and having a surface extending in a plane generally parallel to the plane of movement of a blank moving means;
(c) a gate member positioned at the discharge end of said hopper and having an edge spaced from said support means;
(d) said blank moving means engageable with the outermost blank of said stack for moving said blank over said support means toward said gate member;
(e) biased metering means located below and adjacent said gate member edge for engaging the outside of said outermost blank only, as it passes by said gate member, and sufficiently biased to urge it snugly against said edge to prevent an adjacent blank from entering between said gate member and said outermost blank.

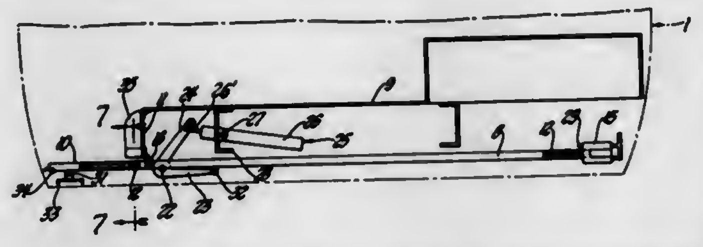
4,131,209
VEHICLE ENTRANCE RAMP

Donald L. Manning, 4002 Normanwood Dr., Orchard Lake, Mich. 48033

Filed Aug. 18, 1977, Ser. No. 825,752

Int. Cl.² B65G *67/02*

U.S. Cl. 214—85 **6 Claims**



5. In combination with a vehicle having a door opening and a floor within the vehicle opposite said opening, a vehicle frame underlying said floor, a ramp member movable through said opening from a stowed position under said frame to an extended position laterally of said floor, a lead screw journalled in the ramp member for longitudinal movement therewith through said opening, a motor mounted on the opposite end of the ramp member and drivingly connected to axially rotate the lead screw, a nut threadedly engaging the lead screw for effecting longitudinal movement of the screw and ramp member when said motor is energized, and nut supporting means hinged to the vehicle floor and operative to tilt the ramp member upwardly and interconnect its said opposite end and the adjacent edge of the floor when the ramp member is in its extended position.

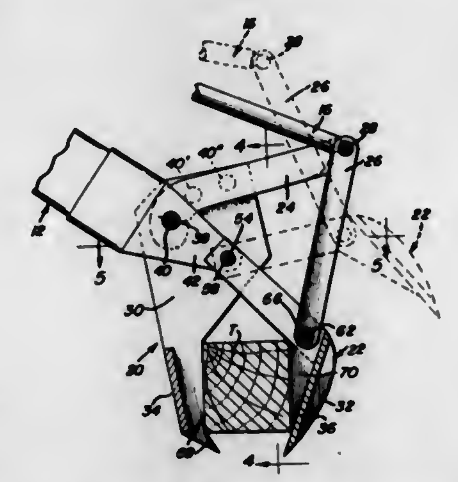
4,131,210
BACKHOE JAW ATTACHMENT

Clifford G. Everson, 1814 E. 8th St., Olympia, Wash. 98501

Filed Feb. 25, 1977, Ser. No. 772,343

Int. Cl.² B66C *1/22*

U.S. Cl. 214—147 G **4 Claims**



1. For use on a backhoe including a dipper stick, a jaw attachment comprising, in combination:

(a) a first jaw affixed to the dipper stick of the backhoe; and
(b) a second jaw pivotally mounted on the dipper stick of the backhoe for movement toward and away from the first jaw, the first jaw including first pin means for mounting the first jaw on the dipper stick of the backhoe and provided with a plurality of pairs of holes arranged for receiving the first pin means, only one of the pairs of holes receiving the first pin means at a time, the plurality of pairs of holes permitting adjustment of the angle of the first jaw relative to the dipper stick, the first jaw further including second pin means for affixing the first jaw on the dipper stick in cooperation with the first pin means, and for pivotally mounting the second jaw on the dipper stick for swinging movement relative to the first jaw.

4,131,211
RECEPTACLE MADE OF THERMOPLASTIC MATERIAL

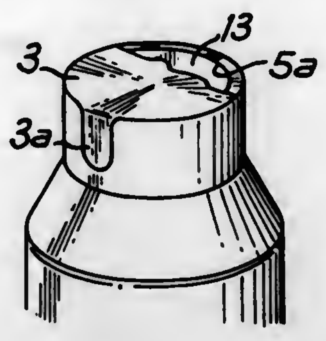
Yves J. Corbic, Chatou, France, assignor to Societe dite: Gatrun Anstalt, Vaduz, Liechtenstein

Filed Jul. 12, 1976, Ser. No. 704,730

Int. Cl.² B65D *1/06*

U.S. Cl. 215—2 **9 Claims**

1. A receptacle such as a bottle, a beaker or the like, comprising: a side wall made of thermoplastic material; an end wall made of thermoplastic material and integral with said side wall; a separate bottom hermetically closing a filling opening located opposite said end wall; at least one curved or polygonal slot at least partially closed on itself formed through the entire thickness of said end wall and having edges in the form of flanges of substantially rounded section; said slot being made by melting of said thermoplastic material; and a foil or cap covering at least partially said end wall and provided with a layer of adhesive material opposite said end wall, said covering foil or cap being hermetically fast with a zone of said end wall surrounding said at least one slot and the part of said end wall surrounded by said slot, whereby at least one extraction opening delimited by said slot is provided by removing said covering foil or cap and pulling thereby said part of said end wall surrounded by said at least one slot.



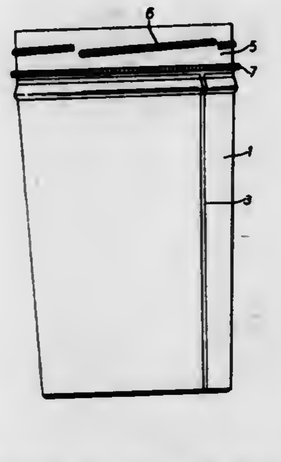
4,131,212
CONTAINERS

Kenneth F. Rumball, Great Bookham, England, assignor to Airfix Industries Limited, London, England

Filed Mar. 28, 1977, Ser. No. 781,990

Int. Cl.² B65D *41/34*

U.S. Cl. 215—252 **1 Claim**



1. A container having an opening surrounded by a rim, screw threads on the exterior of the container adjacent to but below said rim, a closure member having a cover part engageable with the rim of the container and a depending annular skirt having a substantially uniform, straight, vertical outer surface extended between the cover part and the lower edge of said skirt, screw threads on the interior of said skirt engageable with the screw threads on said container, a plurality of radially outwardly extending ratchet teeth on said container below the screw threads thereof, a plurality of radially inwardly extending ratchet teeth on a portion of the skirt of the closure member adjacent the lower edge thereof, said ratchet teeth being arranged to engage and prevent unscrewing of said closure member when the latter has been screwed to a position wherein the cover part is seated on the rim of said container, a plurality of circumferentially spaced perforations around said closure member extending through said skirt between the threads thereof and the portion containing the teeth of said closure member, said perforations defining a tearable line of weakness, and tab means integral with said portion of said closure member skirt carrying said teeth for enabling said portion to be manually torn free of the skirt of the closure member along the line of said perforations after said closure member has been screwed into a closing position on said container, thereby enabling said closure member to be unscrewed in an opening direction.

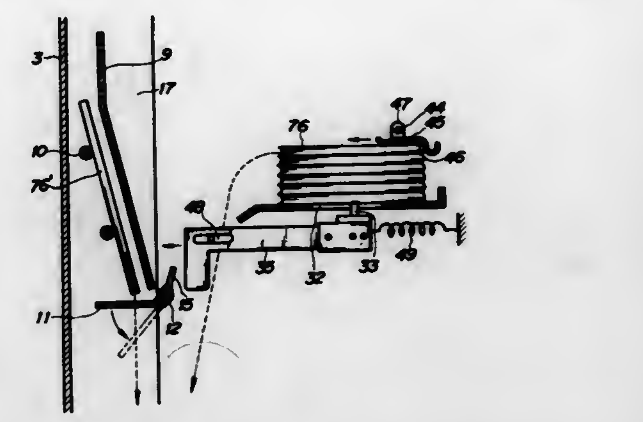
4,131,213
MAGAZINE VENDING MACHINE

Yoshihiro Tamura, No. 9, Fukuchiin-cho, Nara-shi, Nara-ken, and Takeshi Togashi, 22-5, Aza Kamenoko, Oaza Dogata, Turuoka-shi, Yamagata-ken, both of Japan

Filed Nov. 10, 1976, Ser. No. 740,751

Int. Cl.² G07F *11/20*

U.S. Cl. 221—14 **2 Claims**



1. A magazine vending machine which comprises:

a housing box having a front opening which is closed by a door provided with show-window means;
a first plurality of shelves provided on said door for displaying respective magazines through said show-window means, each said shelf of said first plurality of shelves having a respective bottom sheet movable from a horizontal level to a downwardly inclined position;
a second plurality of shelves provided within said housing box for stocking thereupon magazines in respective piles, each said shelf of said second plurality of shelves being provided with a respective pusher means which releases magazines one by one upon operation of the vending machine and also provided with respective sensing means which is operable to actuate a corresponding one of said pusher means for bringing a said bottom sheet to the inclined position upon exhaustion of magazines stocked on a corresponding shelf of said second plurality of shelves;
lever means projecting outwardly of said box, said lever means comprising a plurality of levers, each of said levers being operatively connected with a respective one of said pusher means and being manually operable upon the insertion of coins from its retracted position to its withdrawal position,
means for preventing operation of more than one of said levers at a time, said means for preventing including respective limit plates which extend along a direction of movement of said levers and are movable therewith, respective movable locking plates which engage with an end of respective said limit plates, said locking plates being positioned in abutment with adjacent ones of said locking plates in substantial vertical alignment with their lines of abutment coincident with points of contact with respective said limit plates, whereby upon movement of one of said limit plates between adjacent ones of said locking plates by action of one of said levers moves all of said locking plates in a vertical direction placing points of contact of remaining ones of said limit plates with said locking plates away from said lines of abutment; and
means for releasing change operative solely by each said lever, said means for releasing including a respective pusher plate fixed to and movable with each said lever, a respective lug engageble with each said pusher plate when said pusher plate moves forward, each said lug being fixed to an upper portion of a respective pusher which in turn is positioned in a lower portion of a change storing tube, a trough adjustable by a polygonal dial, said dial being rotatably adjustable of its position about an axis, and said trough being biased against said dial by resilient means.

4,131,214

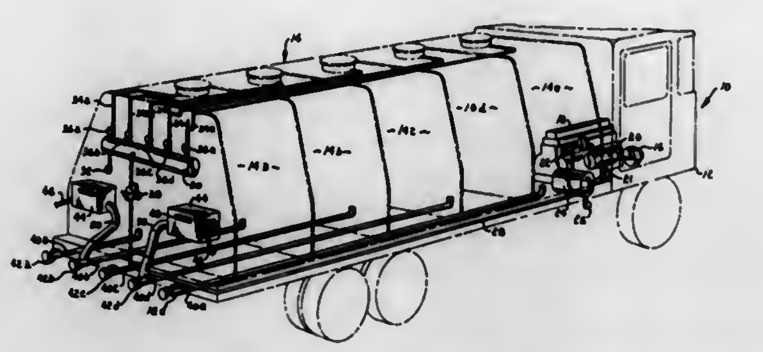
METHOD AND APPARATUS FOR EMPTYING THE CONTENTS OF A TANK CARRIED BY AN ENGINE-POWERED VEHICLE

Joe E. Rogers, Box 456, Waverly, Kans. 66871

Filed Jan. 24, 1977, Ser. No. 761,586

Int. Cl.² B67D *5/54*

U.S. Cl. 222—1 **6 Claims**



5. A method of emptying a petroleum product contained within a tank, said tank having a selectively operable control valve to permit egress of the petroleum product, said tank further being carried by an engine-powered vehicle when the vehicle is equipped with an air pump, adapted to be operated by the engine of the vehicle, a first surge tank coupled with said air pump for accumulating air under pressure, and air brakes that are operated by the pressurized air accumulated within said first surge tank, said method comprising the steps of:

accumulating within said first surge tank air from said air pump to provide a first source of air under pressure said first source of air under pressure being used to operate said air brakes;

accumulating within a second surge tank air from said air pump whenever the pressure of the air within said first surge tank is above a preset value to thereby provide a second source of air under pressure, said preset value being above the minimum pressure needed to operate said air brakes;

directing air from said second source of air under pressure to a point within said tank above the level of said petroleum product to thereby force said petroleum product from the tank when said control valve is open; and

turning off the engine of the vehicle whenever air from said second source of air under pressure is being directed to said tank.

4,131,215

DISPENSER WITH ADDITIVE OPTION

William B. Hansel, Media, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Jul. 5, 1977, Ser. No. 812,948

Int. Cl.² B67D *5/06*

U.S. Cl. 222—26 **6 Claims**

1. In a system for dispensing fuel having an underground storage tank for the fuel, a first pump for pumping the fuel from the storage tank, a first meter for measuring the quantity of fuel dispensed, electronic means responsive to electronic pulses for computing the cost to the customer of the quantity of fuel dispensed and for displaying the quantity and cost of fuel dispensed, the improvement comprising a system for allowing a customer to select an option of having an additive automatically added to the dispensed fuel and having the price of the additive computed into the cost display and including:

a. a storage reservoir for the additive which is separate from the underground storage tank for the fuel;

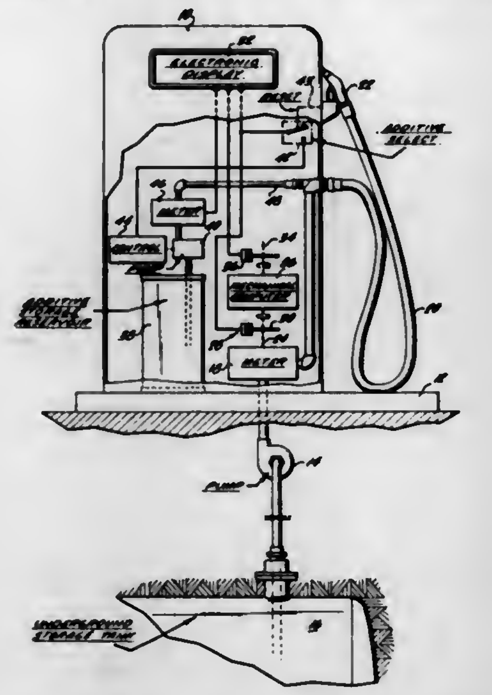
b. a second pump coupled to the storage reservoir for pumping slugs of additive from the storage reservoir to the fuel being dispensed;

c. a second meter for metering the quantity of additive dispensed by said second pump and for producing an output indicative thereof;

d. means for producing electrical pulses indicative of the cost and quantity of fuel and the cost of the additive dispensed;

e. means for coupling the electrical pulses indicative of the cost of additive dispensed to the display for inclusion with the electrical pulses indicative of the costs of the fuel dispensed whereby the amount of fuel dispensed and total cost of fuel and additives is shown by the display; and

f. selector means for selectively allowing additive to be dispensed along with the dispensed fuel at the option of the customer, said selector means, when in an additive dispensing position, activating said first meter to activate said second pump, said selector means including a switch means for optionally coupling the electrical pulses indicative of the quantity of fuel dispensed to the second pump.



4,131,216

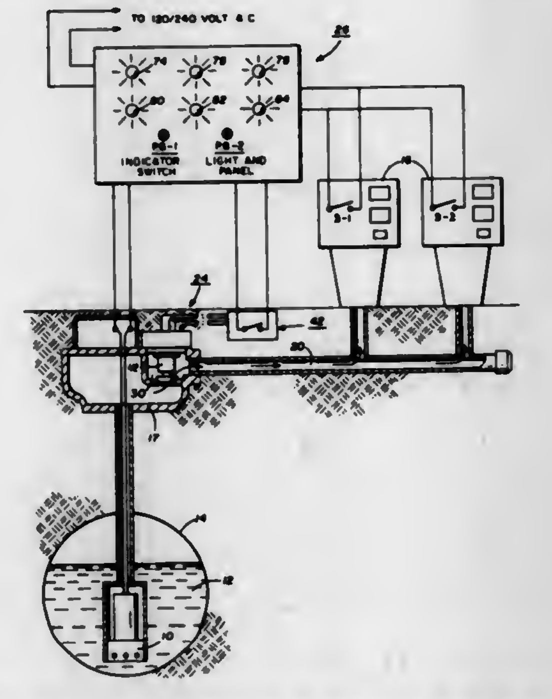
LEAK DETECTION SYSTEM AND METHOD FOR FLUID DELIVERY PIPING

William J. Gerstenmaier, and John A. Todd, both of Salisbury, Md., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 28, 1977, Ser. No. 791,812

Int. Cl.² B67D *5/14*

U.S. Cl. 222—52 **14 Claims**



1. In a fluid delivery installation including a fluid source, at least one fluid dispensing outlet, fluid supply piping connecting said fluid source with said dispensing outlet, and a pump capable of being selectively operative for supplying fluid under pressure from said source through said connecting piping to said dispenser outlet, a leak detector system for ascertaining existence of a fluid leak in said installation and comprising in combination:

a) bypass piping connected in parallel with at least a portion of said fluid supply piping;

b) a flow detector situated in said bypass piping and capable of being electrically energized for detecting existence of fluid flow in said bypass piping; and

c) control means to serially energize said flow detector in a predetermined sequence of go, no-go steps for ascertaining existence of a pipe leak.

4,131,217

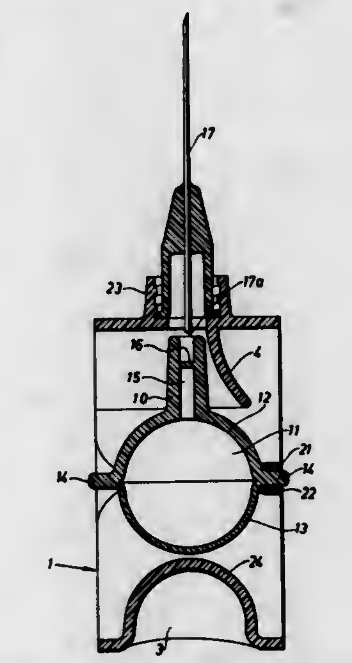
DEVICE FOR EMPTYING A CONTAINER

Owe Sandegren, Skärhamn, Sweden, assignor to Landstingens Inkopscentral, L I C, Svetsarvagen, Sweden

Filed May 19, 1977, Ser. No. 798,291

Int. Cl.² B67B *7/28*

U.S. Cl. 222—82 **3 Claims**



1. In combination, a container and a device for emptying the container, the container comprising two substantially dome-shaped container parts, the container parts having respective concave surfaces which face each other, the container parts communicating with each other to form the container having a peripherally extending joint along which said container parts are sealed together and an outwardly directed flange adjacent the joint, one of the container parts being relatively stiff in comparison with the other and being provided with means defining an outlet opening, the other container part being more flexible to enable it to be pressed into said one container part and substantially into alignment with the inside thereof in order to empty the container; and the emptying device comprising: a holder for the container, the holder having means defining an opening therein and means defining a gap to position and receive most of the flange of the container, the opening defining means and the gap defining means being arranged in relation to each other so that when the flange is inserted in the gap defined by the gap defining means, the outlet opening defined in the container is in substantial alignment with the opening defined in the holder; said holder being provided with an integral emptying member located opposite the said opening defined therein and said emptying member and adjacent connecting portions of the holder being sufficiently flexible to be manually displaceable in the direction of said holder opening for emptying of the container upon displacement of the said emptying member a distance in the direction of the opening defined in the holder sufficient as to press in said other flexible container part until it substantially abuts the inside of said one container part secured to the holder.

4,131,218

APPARATUS FOR DISPENSING GASOLINE HAVING AN INVERTED U-SHAPED CONDUIT

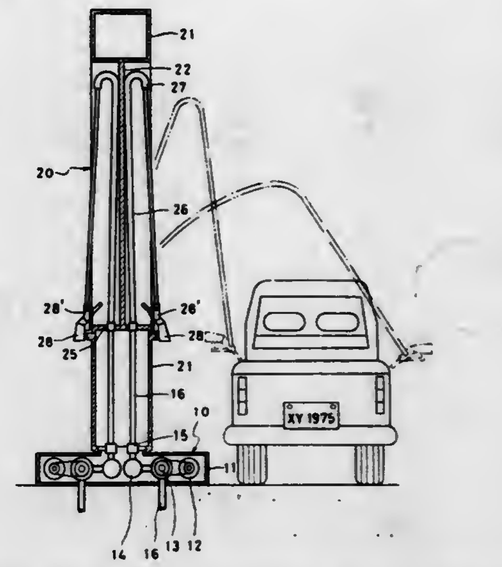
Hiyoshi Tatsuno, Tokyo, Japan, assignor to Tokyo Tatsuno Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1976, Ser. No. 716,619

Claims priority, application Japan, Sep. 3, 1975, 50/107440

Int. Cl.² B67D *5/06*

U.S. Cl. 222—527 **10 Claims**



1. A fuel filling apparatus comprising a fuel reservoir, a stationary conduit having one end leading from said reservoir, a dispensing nozzle, a flexible conduit, a pumping means for transferring the fuel from said reservoir and dispensing the fuel through said flexible conduit to said dispensing nozzle, and elastic means disposed along at least part of said flexible conduit to resiliently support said flexible conduit in a normally substantially inverted U-shaped configuration, an elongated vertical housing in which said inverted U-shaped conduit is disposed, said vertical housing being divided at a fixed elevation into a lower portion and an upper portion, said stationary conduit being disposed in said lower portion, said upper portion of said housing having at least three vertical side walls having a horizontal cross section which is generally U-shaped with one vertical side portion which is open, said U-shaped conduit having

an upwardly extending and substantially vertically disposed flexible conduit portion and a downwardly extending flexible conduit portion joined together by a cross-over flexible conduit portion, said upwardly extending flexible conduit portion having one end thereof connected by first connecting means to said stationary conduit at said fixed elevation, said downwardly extending portion having its downstream end thereof connected to said dispensing nozzle by second connecting means, a receiver means on said housing adjacent said fixed elevation for holding said nozzle when the latter is not dispensing fuel, said elastic means being constructed and arranged on said flexible conduit such that upon manual displacement of said dispensing nozzle in a generally lateral direction, said flexible conduit will be resiliently flexed and displaced as the flexible conduit is moved out of said housing through said open vertical side portion such that said cross-over flexible conduit portion is lowered to thereby increase the area for fueling vehicles with said dispensing nozzle, said flexible conduit in its unflexed condition having its inverted U-shaped configuration extending from said first connecting means to said second connecting means such that the flexible conduit in its inverted U-shaped unflexed condition supports a substantial portion of the weight of said nozzle in a position adjacent to said receiver means and said flexible conduit in its inverted U-shaped unflexed condition is accommodated in said housing.

4,131,219
POURING OF MOLTEN METALS

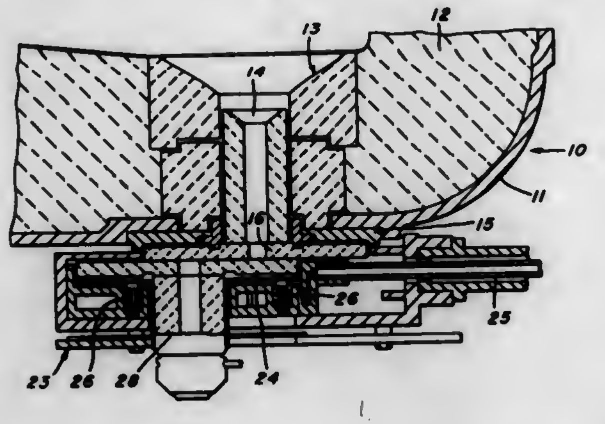
Robert D. Hind, Rotherham; Anthony Thrower, and Joseph W. Cadby, both of Sheffield, all of England, assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jul. 25, 1977, Ser. No. 818,792

Claims priority, application United Kingdom, Aug. 3, 1976, 32195/76

Int. Cl.² F16K *51/00*

U.S. Cl. 222—603 **8 Claims**



1. In combination with a nozzle having a frusto-conically tapered end portion for discharging a stream of molten metal, means for ejecting gas under pressure cocurrently with the molten metal stream in surrounding relation thereto over at least part of the emergent metal stream, said means comprising:
(a) a tubular member concentrically spaced from said nozzle and cooperating therewith to define an annular gas reservoir;
(b) gas inlet means communicating with said gas reservoir;
(c) said tubular member including a frusto-conical lip portion cooperating with the tapered end portion of said nozzle to define a convergent, open-ended annulus therebetween;
(d) a plurality of circumferentially spaced abutments disposed in said annulus to maintain the spacing between said tubular member and said nozzle; and
(e) said lip portion including a shallow, arcuate hollow downstream of said abutments operative to deflect gas passing through said annulus against the tapered end portion of said nozzle.

4,131,220
POUR TUBE MANIPULATOR FOR SLIDING GATE VALVE

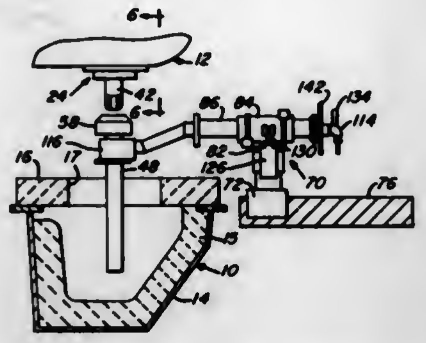
Charles H. Bode, Jr., Bethel Park; Anthony S. Saggio, Pittsburgh; George J. Wagner, Jr., McDonald, and Richard L. Wessel, Plum Borough, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 763,187, Jan. 27, 1977, abandoned. This application Feb. 3, 1978, Ser. No. 874,724

Int. Cl.² B22D *41/08*

U.S. Cl. 222—607 **15 Claims**

15. Means for mounting a pour tube in operative relation to the pour opening in a bottom-pour teeming vessel comprising:
a) a stationary base disposed remote from said teeming vessel;
b) mast means upstanding from said base having a longitudinal axis in laterally spaced relation to said pour opening, and said mast means being extensible and retractable along said longitudinal axis and rotatable thereabout;
c) open ended journal means attached to said mast means adjacent the upper end thereof, the axis of said journal means being substantially normal to the axis of said mast means;
d) an elongated arm coaxially disposed in said journal means for rotation about the longitudinal axis thereof and for relative axial movement with respect thereto, said arm having means adjacent one end for releasably mounting a pour tube with its axis substantially parallel to the axis of said pour opening;



e) means for imparting compound movement to said pour tube including means for rotating said arm within said journal means and for moving said arm axially with respect thereto; and
f) means for selectively adjusting the axial position of the pour tube mounting means with respect to said pour opening.

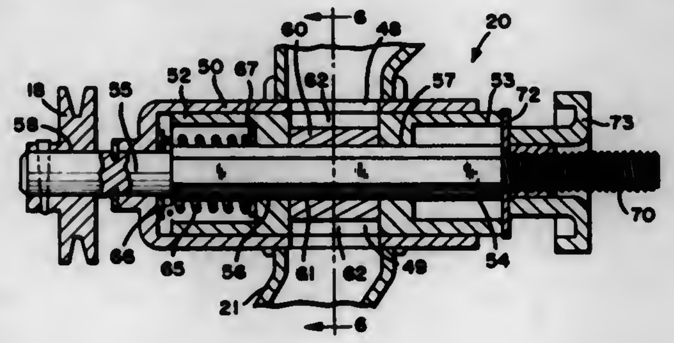
4,131,221
PLANTING AND FERTILIZING APPARATUS

Robert R. Yeager, Union City, Ohio, assignor to Lambert Corporation, Dayton, Ohio

Filed Aug. 13, 1976, Ser. No. 714,282

Int. Cl.² G01F *11/10*

U.S. Cl. 222—624 **1 Claim**



1. For use with a gardening apparatus having a frame, a ground engaging and ground driven wheel attached to the frame, a storage hopper supported on the frame, and a fertilizer feed chute connected to the bottom of the hopper for distributing fertilizer therefrom; a fertilizer feeding mechanism located in the chute, comprising:
(a). a tube supported in the chute,
(b). means defining entry and exit openings into and out of said tube in and intercepting the flow path of the fertilizer through the interior of the fertilizer feed chute,
(c). a drive shaft for the fertilizer feeding mechanism supported for rotation in the tube,
(d). means connecting the wheel of the gardening apparatus to said drive shaft for rotating said drive shaft as the wheel rotates,
(e). a feed gear drivably mounted on said drive shaft for rotation therewith as said drive shaft is rotated, said feed gear being axially displaceable along said drive shaft and having gear teeth around its periphery,
(f). means biasing said feed gear for displacement axially along said drive shaft away from one end thereof,
(g). said shaft being threaded on the other end thereof,
(h). screw means threaded onto said threaded drive shaft end in opposition to said biasing means for shifting said feed gear axially along said drive shaft in response to rotational adjustment of said screw means on the threaded end of said drive shaft to position said feed gear with respect to

said entry and exit openings for selectively exposing portions of said gear teeth thereto in response to the axial position of said feed gear teeth with respect to said entry and exit openings, and
(i). a first feed gear extension on said drive shaft between said biasing means and said feed gear, and a second feed gear extension on said drive shaft on the opposite side of said feed gear between said feed gear and said screw means, said feed gear extensions being separate pieces from said feed gear to provide for feeding the fertilizer with such a gear while closing the portions of said entry and exit openings not exposed to said gear as said gear is shifted axially along said drive shaft in said tube, said mechanism providing for quickly, easily, accurately, and rapidly adjusting and regulating the amount of fertilizer fed by said feed gear as it is rotated by said drive shaft.

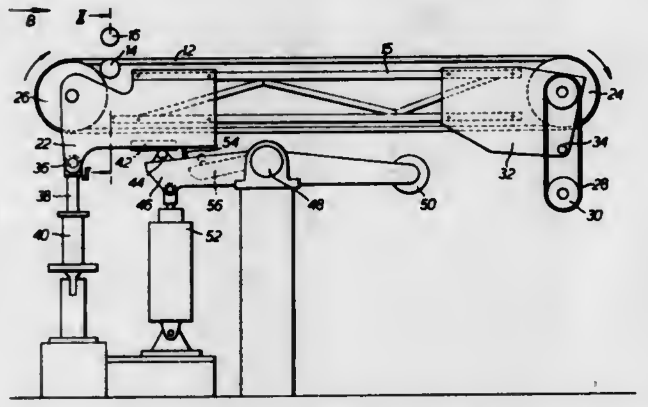
4,131,222
SNAPPING OF SHEETS OF GLASS

Joseph B. Hodgkinson, Billinge, Near Wigan, England, assignor to Pilkington Brothers Limited, St. Helens, England

Filed Sep. 20, 1977, Ser. No. 834,924

Int. Cl.² C03B *33/02*

U.S. Cl. 225—3 **12 Claims**



1. A method of snapping a sheet of glass having at least one score line extending along the sheet and separating the snapped portions by a predetermined amount, comprising advancing at least the leading edge of the sheet over conveying means, exerting on at least the leading edge of the sheet a plurality of forces diverging away from one another in the direction of advance, raising the trailing edge of the sheet above the leading edge and imposing on the sheet at its trailing edge a bending moment about its direction of advance which is sufficient to snap the sheet along any score line parallel to the direction of advance but is insufficient to break any unscored area of the sheet, and continuing to advance the snapped portions of the sheet so formed over the conveying means while maintaining the diverging forces, thereby effecting a lateral separation between the snapped portions of the sheet.

4,131,223
APPARATUS FOR GAPPING A SLIDE FASTENER

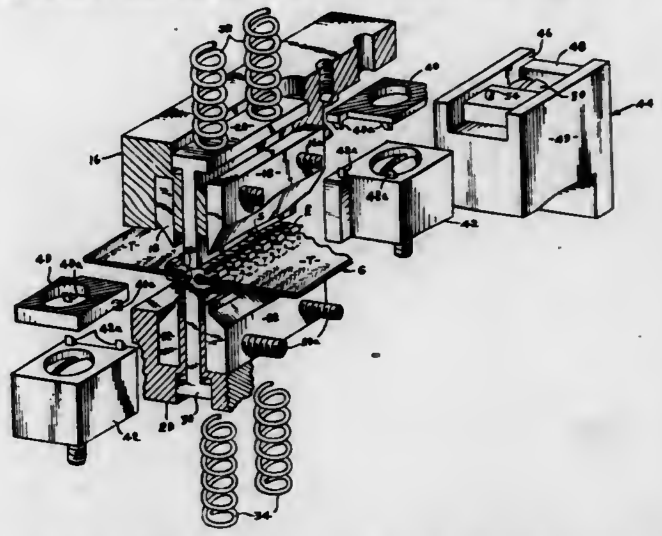
William D. Aureli, Watertown, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Dec. 5, 1977, Ser. No. 857,777

Int. Cl.² B26D *1/06, 9/00;* B26F *3/00*

U.S. Cl. 225—94 **5 Claims**

1. Apparatus for forming a desired gap in the lines of fastener elements in a slide fastener chain, the chain comprising a pair of stringers each having longitudinally aligned U-shaped plastic fastener elements held in longitudinally spaced relation by a pair of cords molded respectively into the ends of the legs of the U-shaped elements, the openings of the elements receiving respectively the edges of the slider tape, stitches securing the lines to the respective tapes, the elements of the two stringers being interengaged, the apparatus comprising
(a) means to support the slide fastener in the area of the desired gap and hold it in proper lateral position with respect to the apparatus including a pair of aligned opposed spring-biased elongate guides disposed longitudinally of the lines and engaging the lines from opposite sides at approximately the zone of interengagement of the lines;
(b) a pair of vertically closing jaws adjacent the guides and carrying
(1) a pair of sets of knives with one set on opposite sides of the guides respectively, the sets being cooperatively positioned and slightly laterally offset and adapted, as



the jaws close, to break the legs of the fasteners in area of the desired gap of the respective lines at positions adjacent the stitches; and
(2) four sets of cooperating cutters, each cutter set being disposed transversely of the lines of fasteners and adapted in the closing of the jaws to sever the cords at positions at the end of the desired gap;
whereby the portion of the lines of fastener elements in the desired gap after the reopening of the jaws may be removed to leave in the gap only the tapes and the residual stitches.

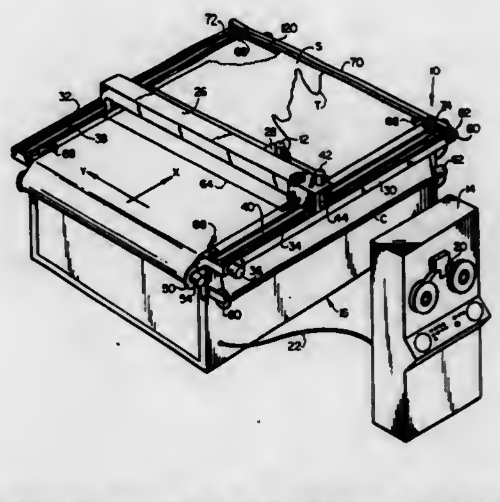
4,131,224
DETACHABLE INDEXING DEVICE AND METHOD

Heinz J. Gerber, West Hartford, and David J. Logan, Glastonbury, both of Conn., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Jul. 22, 1977, Ser. No. 818,013

Int. Cl.² B65H *17/36*

U.S. Cl. 226—8 **13 Claims**

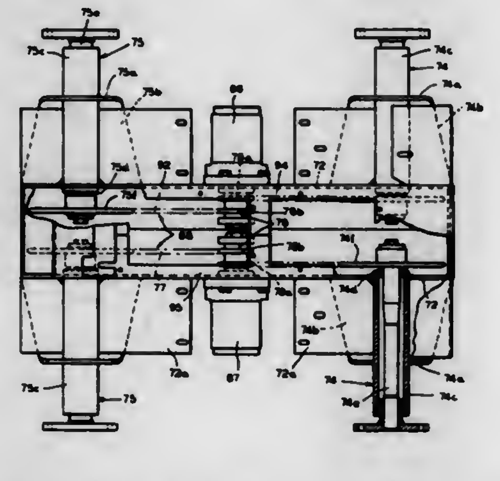


7. A method of precisely indexing a strip of sheet material over the work surface of a table in one coordinate direction by means of a carriage which carries an instrument and traverses the work surface in said direction from one end to an opposite end with accuracy sufficient to position the instrument for operation at different points of the material on the work surface comprising:
locating a strip-engaging member in a parking position at one end of the work surface while the carriage is position-

ing the instrument in an operation over the sheet material on the work surface;
after the operation over the sheet material on the work surface, positioning the carriage at said one end of the work surface where the engaging member is in the parking position;
attaching the engaging member to the carriage for traversing movement over the work surface with the carriage;
coupling the strip of sheet material to the carriage by means of the strip-engaging member; and
indexing the coupling strip over the work surface of the table by moving the carriage and attached engaging member.

4,131,225
METHOD OF MAKING A VEHICLE TRANSMISSION CASE

James J. Bauer, Lisbon; Larry E. Albright, Gwinner, both of N. Dak.; James L. Werner, Lamar, Mo.; Thomas M. Sagaser, and Lonnie D. Hoechst, both of Gwinner, N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.
Division of Ser. No. 654,256, Feb. 2, 1976, Pat. No. 4,055,262. This application Jul. 8, 1977, Ser. No. 807,983
Int. Cl.² B23K *31/02;* B60K *17/04*
U.S. Cl. 228—161 **3 Claims**

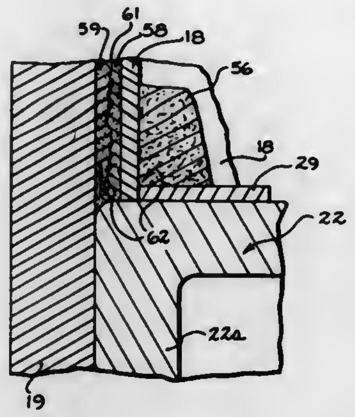


1. A method of manufacturing a transmission case for a vehicle, comprising,
forming a pair of matched halves each having a side wall element, and a peripheral wall element extending laterally from the side wall element and terminating in a laterally facing peripheral edge,
mounting axle housings for receiving stub axles therein, to each said case half, adjacent the ends of the case half, in position thereon extending laterally therefrom in direction opposite the direction of the peripheral wall element,
boring the axle housings as mounted on separate halves of the case for reception of the stub axles,
placing the case halves together with the edges of the peripheral wall elements in interfacing juxtaposition, and
securing the case halves together,
whereby the side wall elements from side walls of the case, and the two peripheral wall elements together form top, bottom, and end walls of the case.

4,131,226
SULFUR ELECTRODE CONTAINER CONSTRUCTION AND METHOD OF MANUFACTURE

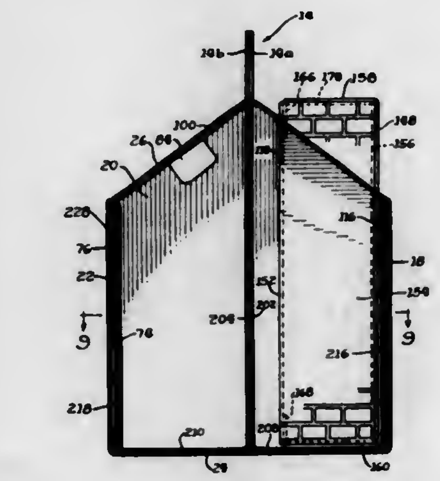
Manfred W. Breiter, Schenectady; Debajyoti Chatterji, Latham; Randall N. King, Johnstown, and Dong-Sil Park, Schenectady, all of N.Y., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Sep. 28, 1977, Ser. No. 837,381
Int. Cl.² B65D *25/14;* B23K *31/00;* H01M *2/00, 2/08*
U.S. Cl. 228—198 **1 Claim**

1. The method of making a sulfur electrode container construction of a type for containing sulfur in liquid form comprising the steps of forming a sheet of anti-corrosive foil material into a cylindrical body, disposing said body into a cylindrical container of a material which is significantly subject to corrosion by liquid sulfur, disposing said cylindrical body into the container in a manner disposing the outer sidewall of the body in closely spaced relation to the sidewall of the container to form a protective liner within the container while permitting sulfur vapor to pass into the spacing defined between the inner sidewall surface of the container and the outer wall surface of the cylindrical liner to form a coating of sulfides of the container and liner materials in interlocked relation to support the liner from the wall of the container while filling the space therebetween to block liquid sulfur from entering therebetween.



4,131,227
CARRYING AND STORAGE CASE

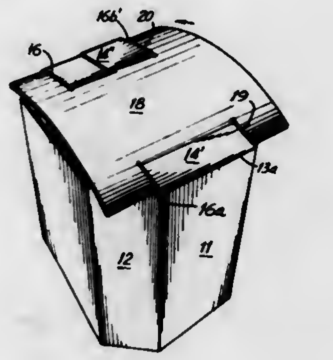
Donna J. Patton, Chicago, and Robert G. Riess, Park Ridge, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed Apr. 21, 1977, Ser. No. 789,475
Int. Cl.² B65D *79/00*
U.S. Cl. 229—8 **4 Claims**



1. A carrying case shaped to resemble a house having four walls, a roof and a floor, comprising:
a first sheet of rigid stock shaped and folded to form the four walls, floor and roof of the house, said roof having an aperture and a slot defined therein;
a second sheet of rigid stock interposed between two of said walls to form a dividing wall, said second sheet including a handle portion extending through the slot in said roof and forming a carrying handle for said case, said second sheet being folded onto itself to form two panels, said dividing wall being formed from said two panels to form a double thickness wall, one of said panels being folded and disposed adjacent to said floor on one side of said dividing wall and adjacent to the one of said walls opposite said one side of said dividing wall, the other one of said panels being folded and disposed adjacent to said floor on the other side of said dividing wall and adjacent to said wall opposite said other side of said dividing wall, said first sheet being folded over the portions of said first and second panels adjacent to said respective walls opposite said dividing wall, thereby retaining said portions of said first and second panels adjacent said walls opposite said dividing wall;
a third sheet of rigid stock shaped and folded to form a hollow rectangular cylinder having at least one movable end cover, said rectangular cylinder extending from within said case through the aperture in said roof to form a chimney and to define a separate, self-contained storage compartment within said defined case.

4,131,228
BOTTOM FOR BULK BINS

Edward J. Barry, Creve Coeur, Mo., assignor to International Paper Company, New York, N.Y.
Filed Aug. 22, 1977, Ser. No. 826,466
Int. Cl.² B65D *13/00*
U.S. Cl. 229—23 R **11 Claims**

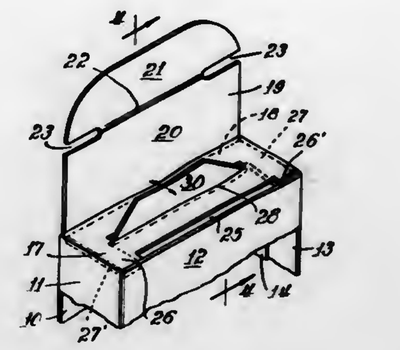


1. In a paperboard bulk bin, provided with: a side wall formed from a plurality of alternating, foldably connected, substantially rectangular, upstanding side panels and corner panels; each of said side panels having a horizontally disposed, substantially rectangular flap, foldably connected to the bottom edge thereof; each of said corner panels having a horizontally disposed, four-sided, tapered flap, foldably connected to the bottom edge thereof and positioned atop adjacent rectangular flaps; and each of said tapered flaps and rectangular flaps being foldably connected to a triangular gusset panel, horizontally disposed between them; the improved bottom pad which comprises:
an unscored, unfolded, generally rectangular, substantially planar, substantially rigid member, having two pairs of parallel slots, extending from opposite side edges thereof;
said pairs of slots being substantially aligned; and
the foldable connections between each of two rectangular flaps, on opposite sides of the bin, and the pairs of triangular gusset panels, about each of said two rectangular flaps, being disposed within said slots of said bottom pad, so that the portions of said bottom pad, between each pair of said parallel slots, are between one of said two rectangular flaps and its foldably connected pair of triangular gusset panels.

4,131,229
LOCK TOP FOR FOLDING CARTON

Guy Nastasi, 1251 Ash Ave., Bensenville, Ill. 60106
Filed Oct. 25, 1977, Ser. No. 844,925
Int. Cl.² B65D *5/10*
U.S. Cl. 229—39 R **3 Claims**

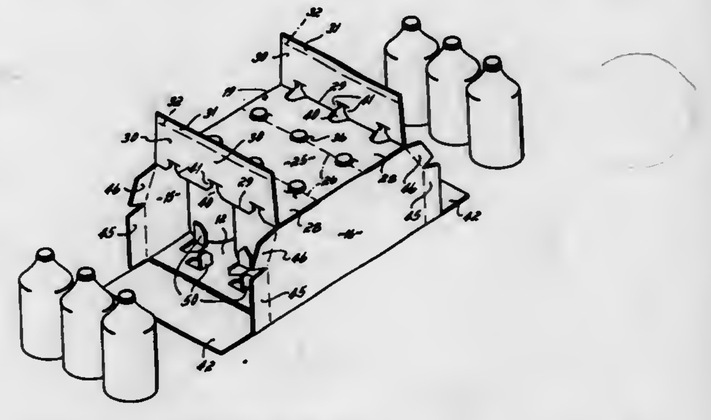
1. In a folding box of cardboard or the like having two pair of opposed sides and a closure at one end which closure comprises a pair of flaps each extending from one side respectively of one of said pair of sides toward the other side of said one pair and a third flap extending from one side of the other pair toward the other side of said other pair, said third flap being outwardly of the pair of flaps, said third flap having latching means engaging at least one of said pair of flaps, said flaps having inner and outer faces, the improvement comprising:
a first of said pair of flaps having a longitudinal slot therein which slot is approximately centrally located in said one flap; and



the other of said pair of flaps comprising a back portion and a front portion with a line of juncture therebetween, said front portion including a tab bent upwardly at said line of juncture, said back portion of said other flap lying in juxtaposition to the inner face of said first flap with said tab extending through said slot and lying in juxtaposition to the outer face of said first flap.

4,131,230
TWELVE BOTTLE CARTON

Allen W. Koehlinger, and Norman J. Fox, both of Cincinnati, Ohio, assignors to R. A. Jones & Co. Inc., Covington, Ky.
Filed Jan. 30, 1978, Ser. No. 873,276
Int. Cl.² B65D *5/02*
U.S. Cl. 229—40 **4 Claims**



1. A carton for bottles comprising,
a bottom panel, vertical end panels hinged to the bottom panel, a top panel hinged to the end panels, said top panel having
a) a center section hinged to the end panels,
b) a pair of intermediate sections hinged to said center section on said first hinge lines,
c) a pair of side sections hinged to said intermediate sections on second hinge lines,
d) three bottle neck receiving openings on each hinge line,
and side flaps hinged to said bottom panel and adapted to be secured to said side sections,
whereby, with said intermediate and side sections swung upwardly, a first row of bottles may be introduced into each side of said carton until their necks engage said holes on the first hinge line, said intermediate side sections may be swung to a horizontal attitude to capture said first row of bottles, a second row of bottles may be inserted into each side of said carton until their necks engage said holes on said second hinge line and thereafter said side sections may be swung down and glued to said side flaps.

4,131,231

FIREPLACE HEATING SYSTEM

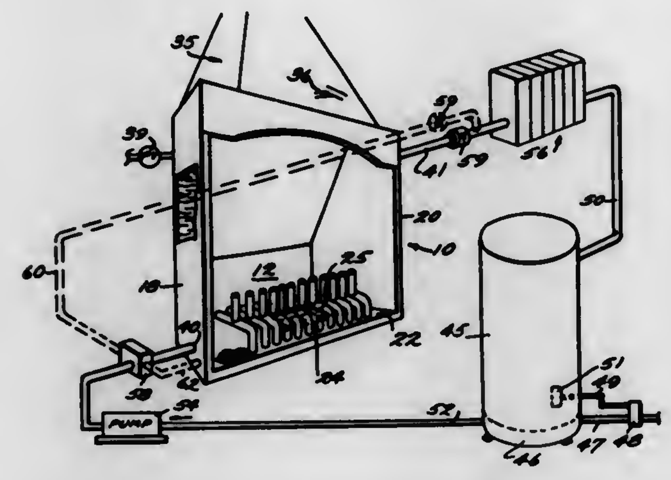
Clarence W. Cleer, Jr., Kane, Pa., assignor to Ridgway Steel Fabricators, Inc., Ridgway, Pa.

Division of Ser. No. 687,631, May 18, 1976, Pat. No. 4,025,043, which is a continuation-in-part of Ser. No. 495,107, Aug. 5, 1974, Pat. No. 3,958,755. This application Feb. 1, 1977, Ser. No. 764,904

The portion of the term of this patent subsequent to May 18, 1993, has been disclaimed.

Int. Cl.² F24D *3/00*

U.S. Cl. 237—8 R **8 Claims**



1. A heating system for heating a confined area said system comprising:
- (a) a hot water storage tank,
- (b) means for heating water in said water storage tank,
- (c) a fireplace jacket remote from said means for heating water in said storage tank comprising means for circulating water directly around an open-hearth wood-burning fireplace adapted to have an open fire therein, said fireplace jacket comprising a grate member having a first header and a second header vertically above said first header, a liquid inlet to said first header, and a liquid outlet from said second header, and a plurality of liquid-conducting pipes for supporting logs thereon, said pipes extending between said first header and said second header and in flow communication therebetween and having portions thereof for supporting wood to be burned in said open-hearth wood-burning fireplace thereon,
- (d) a powered pump,
- (e) means for transferring the heat of hot water in said storage tank and fireplace jacket to areas remote from but operatively connected to said tank and jacket, and
- (d) means for providing operative communication between said pump, fireplace jacket, hot water storage tank, and heat transferring means so that water heated by an open fire in said fireplace will be circulated to and from said storage tank by said pump and will be in operative communication with said transfer means whether or not said means for heating water in said storage tank is operating.

4,131,232

AUTOMATIC SHOWER DISPENSER

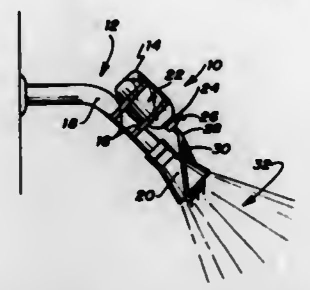
Angeline D. Pollinzi, 6425 Westlake, Dallas, Tex. 75214

Filed May 23, 1977, Ser. No. 799,226

Int. Cl.² B05B *7/24, 9/00*

U.S. Cl. 239—314 **8 Claims**

1. An automatic dispensing device attachable to a conventional shower head for introducing a controlled flow of liquid additive to the spray of water flowing from the openings in the front of the shower head, comprising:
- a plastic container suitable for holding a quantity of the liquid additive, said container including an opening for receiving and discharging the liquid additive,
- means for attaching said container to the shower head such that the liquid additive may flow from said container opening under the force of gravity,
- a valve attachable to said opening of said container for controlling the flow of liquid additive, and
- a first tubular portion communicating with said valve, a second tubular portion communicating with said first portion and extendig to two diverging tubular members, and a third tubular portion communicating with the ends of said two diverging members, said third portion being located subjacent the openings in the shower head and including a plurality of discharge openings, such that the liquid additive drips under the force of gravity into the flow of water from the shower head.



4,131,233

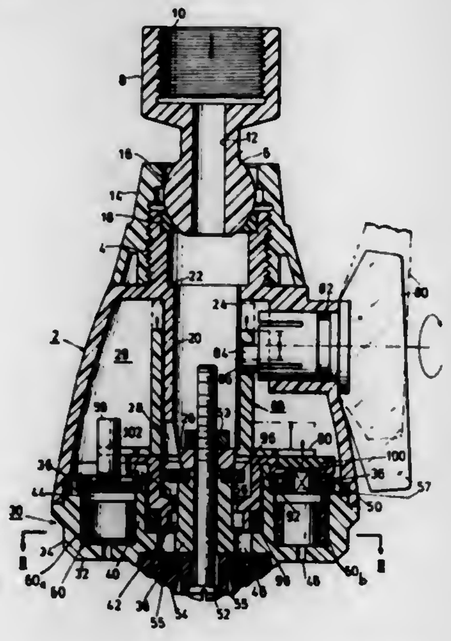
SELECTIVELY-CONTROLLED PULSATING WATER SHOWER HEAD

Shulamith Koenig, 3 Kadesh Barnea, Tel Aviv, Israel

Continuation-in-part of Ser. No. 713,615, Aug. 11, 1976, Pat. No. 4,089,471. This application Jul. 29, 1977, Ser. No. 820,328

Int. Cl.² B05B *3/06*

U.S. Cl. 239—381 **10 Claims**



1. A pulsating water shower head, comprising: a housing having an inlet connectable at its upper end to a supply of water; a spray block at the lower end of the housing; said spray block including a bottom wall, a top wall, an annular side wall joining the bottom and top walls, and an annular partition wall coaxial with said annular side wall and partitioning the space between same and the top and bottom walls into a central chamber and an annular chamber therearound; said spray block bottom wall being formed with a first group of water outlet openings leading from said central chamber, and a second group of water outlet openings leading from said annular chamber; said spray block top wall being formed with a first passageway for introducing water into said central chamber, and a second passageway for introducing water into said annular chamber; a plurality of freely movable members disposed within said annular chamber and drivable therearound by the water inletted into the housing, for ouletting the water through said second group of openings in the form of a pulsating spray, while the water outletted through the first group of openings is in the form of a continuous spray; and a manually-controlled diverter for selectively opening one of said passageways in the spray block top wall and closing the other to selectively enable either the continuous spray or the pulsating spray to be outletted from the lower head.

4,131,234

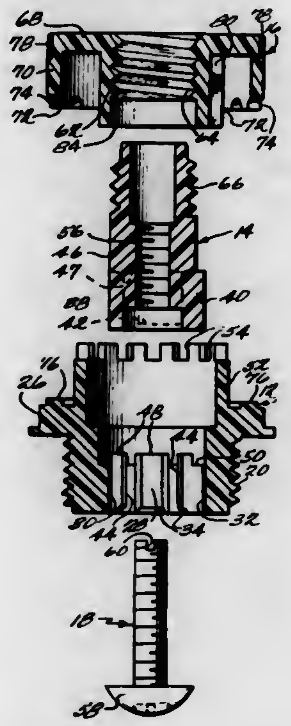
ADJUSTABLE BUBBLER SPRINKLER HEAD

James R. Pescetto, Springfield, Ill., assignor to L. R. Nelson Corporation, Peoria, Ill.

Filed Aug. 12, 1977, Ser. No. 824,113

Int. Cl.² B05B *1/14*

U.S. Cl. 239—457 **14 Claims**



1. A sprinkler head comprising:
- an annular body having means on a lower portion thereof for fixedly securing the same to a supply member having a source of water under pressure communicated therewith;
- said body having a tubular member therein defining an interiorly threaded opening extending axially in relation to said annular body;
- an adjusting screw threadably mounted in said interiorly threaded opening, said screw having an enlarged head on the lower end thereof disposed in communicating relation to the water under pressure communicated with said body;
- means within said body defining inlet passage means disposed in flow restricted relation with respect to said adjusting screw head whereby the axial position of said adjusting screw head determines the amount of flow of water through said inlet passage means;
- said body having an annular wall disposed outwardly of said inlet passage means and extending upwardly therefrom for directing the flow of water passing through said inlet passage means upwardly along the interior thereof;
- a spray adjusting member mounted on the upper end portion of said tubular member for axial adjustment with respect thereto;
- said spray adjusting member having an upper end wall extending radially outwardly in a position above said annular wall so as to receive the water flowing upwardly therealong and direct the same outwardly;
- said spray adjusting member having a peripheral wall extending downwardly from the periphery of said upper end wall in spaced relation to said annular wall so as to cause the flow of water directed outwardly by said upper end wall to pass downwardly between the interior of said peripheral wall and the exterior of said annular wall; and
- cooperating downwardly facing surface means on the lower portion of said peripheral wall and upwardly facing surface means on said body for confining the water flowing downwardly between said peripheral wall and said annular wall into an outwardly directed spray pattern which can be varied depending upon the axial position of adjustment of said spray adjusting member with respect to said body.

4,131,235

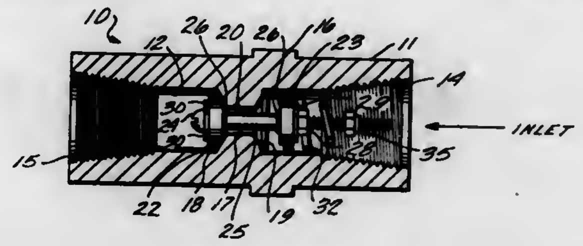
DUAL-FUNCTION VALVE

Calvin A. Lieding, Glendora, Calif., assignor to Irrigation Specialties Company, San Gabriel, Calif.

Filed Nov. 1, 1976, Ser. No. 737,335

Int. Cl.² B05B *1/30;* **F16K** *17/04*

U.S. Cl. 239—533.15 **8 Claims**



1. A normally closed dual-function valve for insertion in an irrigation water line upstream of a sprinkler head, the valve being arranged to block water flow through the line when the flow rate is above or below a normal operating range of flow rates to provide excess-flow and anti-drain protection, the valve comprising:
- a valve body having a passage therethrough with inlet and outlet ends adapted for connection to upstream and downstream water conduits respectively, the body further including first and second valve seats in the passage;
- closure means disposed within the passage to be movable between first and second positions and including first and second closure surfaces configured to seal against the first and second seats respectively, the first closure surface being sealed against the first seat with the second closure surface being separated from the second seat in the first closure-means position, and the second closure surface being sealed against the second seat with the first closure surface separated from the first seat in the second closure-means position; and
- resilient means disposed between the body and closure means and exerting a force to move the closure means to the first position and away from the second position whereby the valve is closed by the first seat and closure surface until upstream water pressure is sufficiently higher than downstream water pressure to move the closure means against the force exerted by the resilient means to a position intermediate the first and second positions for normal water flow through the valve, and whereby excessive water flow through the valve will further overcome the force exerted by the resilient means to drive the closure means to the second position so the valve is closed by the second seat and closure surface.

4,131,236

HIGH VELOCITY LIQUID JET CUTTING NOZZLE

David H. Saunders, Cranfield, England, assignor to The British Hydromechanics Research Association, Cranfield, England

Filed Dec. 17, 1976, Ser. No. 751,718

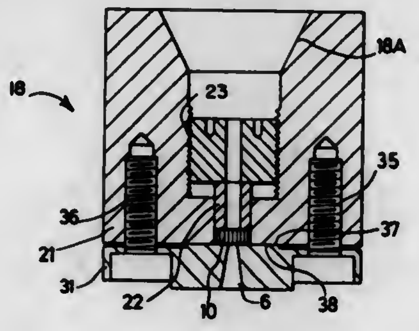
Claims priority, application United Kingdom, Dec. 24, 1975, 52891/75; Jun. 15, 1976, 24751/76

Int. Cl.² B05B *1/00*

U.S. Cl. 239—589 **14 Claims**

1. A high velocity liquid jet nozzle, for use in a liquid jet cutting apparatus, comprising:
- a high pressure liquid pipe having an outlet for the supply of high pressure liquid;

a cup-shaped holder connected to the high pressure liquid pipe;
a mounting seated in the holder and attached to the outlet of the high pressure liquid pipe; and
a nozzle member supported by the mounting in communicative connection with the outlet of the high pressure liquid pipe, for use in the formation of a high velocity jet of liquid from the high pressure liquid pipe, in which:
a piece of artificial sapphire is formed with a circular, internally polished aperture;
the aperture has a convergent inlet portion, a uniform diameter intermediate portion extending from the inlet portion and having a length of one-quarter to five times said diameter, and a divergently bevelled outlet portion;
the inlet portion is formed as a surface of revolution about the axis of the aperture, of a smooth curved arc which blends tangentially into the intermediate portion;
the intermediate portion is formed as a surface of revolution, about the axis of the aperture; and



the outlet portion is formed as a surface of revolution, about the axis of the aperture, making a sharp junction with the intermediate portion, and the angle of divergence of said lastmentioned surface is sufficiently great to ensure that a jet of high pressure liquid issuing from the intermediate portion of the aperture leaves the surface of the outlet portion without significant disturbance to the jet;
wherein the mounting supporting the nozzle member is a reusable mounting which is removably supported within said cupshaped housing and comprises at least two separable body members connected together, fastening means for releasably securing the body members together, an aperture extending through the body members and formed with an internal step on which the nozzle member is seated so that the nozzle aperture is in co-axial alignment with the mounting aperture, said apertures in turn being in co-axial alignment with the outlet of said pipe, and a separable sleeve which is mounted on a said body member and is co-axially disposed within the mounting aperture for pressing the nozzle member onto the step.

4,131,237
SPREADING IMPLEMENTS

Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely NV, Maasland, Netherlands

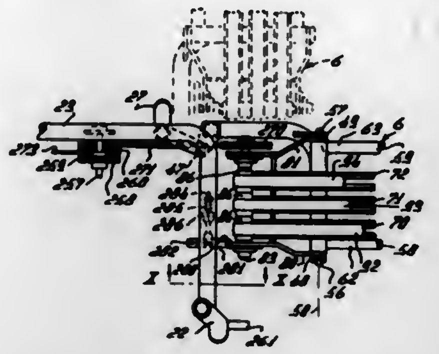
Filed Dec. 15, 1975, Ser. No. 640,730

Claims priority, application Netherlands, Dec. 19, 1974, 7416559

Int. Cl.² A01C *17/00*

U.S. Cl. 239—664 **20 Claims**

1. A spreading implement comprising a frame supporting a hopper for material to be spread and an elongated conveyor system extending laterally from each side of said hopper with respect to the direction of normal travel, said system comprising side-by-side elongated conveyors that extend laterally from each side of said hopper, outlet means adjacent the bottom of said hopper and said oulet means communicating material to said conveyors, driving means connected to move said conveyors and each conveyor comprising a belt having an outer end with a rotatable spreading member being positioned adjacent said end, said spreading member being engaged by said driving means and synchronized with the movement speed of said conveyors, said conveyor system including a boom that is connected to said frame by two pivot connections, said boom being pivotable relative to said frame about an upwardly extending axis and a substantially horizontal axis, and said driving means having transmission parts mounted on said boom that disengage when said boom is pivoted about the upwardly extending axis.



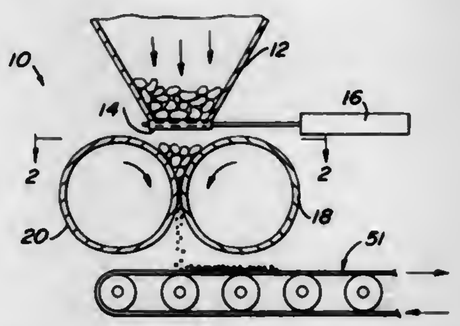
4,131,238
ULTRASONIC GRINDER

William B. Tarpley, Jr., West Chester, Pa., assignor to Energy and Minerals Research Co., Kennett Square, Pa.

Filed Sep. 15, 1977, Ser. No. 833,632

Int. Cl.² B02C *19/18*

U.S. Cl. 241—30 **14 Claims**



1. Apparatus for comminuting materials comprising first and second elements cooperating to mechanically comminute materials at a nip therebetween, at least one of said elements is resonant, a source of vibratory energy connected to said resonant element, said source being of sufficient power levels so that vibratory action may be transmitted by said resonant element to the material being comminuted to cause cyclic fatigue stresses in the material while the material is being mechanically comminuted, and motor means separate from said source of vibratory energy, said motor means being connected to said resonant element for causing the mechanical comminution of the material being treated.

4,131,239
FLUID ENERGY MILL FOR LARGE PARTICULATE MATERIALS

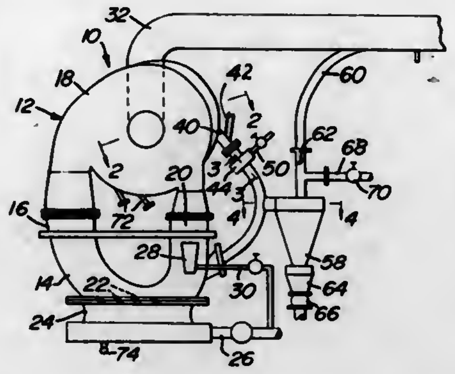
Nicholas N. Stephanoff, Haverford, Pa., assignor to Energy Processing and Equipment Co., Bala Cynwyd, Pa.

Filed Jun. 13, 1977, Ser. No. 805,878

Int. Cl.² B02C *19/06*

U.S. Cl. 241—39 **5 Claims**

1. A grinding mill comprising a generally annular housing including an inlet grinding chamber at one portion of said housing, a classification chamber at the opposite portion of said housing, an upstack connecting one end of said inlet chamber to one end of said classification chamber, an exhaust port in communication with the inner periphery of said classification chamber, a downstack in opposed relation to said upstack and connecting the opposite end of said inlet chamber to the opposite end of said classification chamber, a feed inlet at the junction of said downstack and inlet chamber, said feed inlet leading into said inlet chamber, a plurality if tangentially-arranged gaseous fluid nozzles leading into said inlet chamber from a source of gaseous fluid under pressure, a by-pass duct extending from the outer periphery of that portion of said classification chamber which is adjacent to said downstack to that portion of said inlet chamber which is adjacent to said downstack and to said feed inlet, reject means in said by-pass duct for removing the heavier particles passing through said by-pass duct while the lighter particles continue to move through said by-pass duct into said inlet chamber, said reject means comprising a slot in the outer peripheral wall of said by-pass duct, said slot being in communication with a separator for separating heavier rejected particles from lighter rejected particles and gaseous fluid, and blow-back means for passing gaseous fluid under low pressure through said slot into said by-pass duct.



4,131,240
EXPANDABLE MANDREL REEL

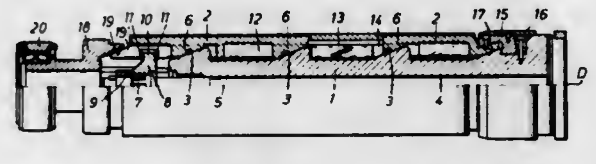
Werner Keulertz, Duisburg, and Karl-Heinz Wessel, Dinslaken, both of Germany, assignors to DEMAG, Aktiengesellschaft, Duisburg, Germany

Filed Oct. 14, 1977, Ser. No. 842,369

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1976, 2548197

Int. Cl.² B65H *75/18*

U.S. Cl. 242—72.1 **10 Claims**



1. An expandable mandrel reel for coiling strip-like rolling material, particularly hot strip, comprising
(a) a mandrel shaft;
(b) a plurality of expandable mandrel segments disposed along said shaft;
(c) a tie rod axially displaceable in said shaft and connected to said segments;
(d) a plurality of cooperating opposed wedge faces disposed between said shaft and said segments;
(e) said faces inclined from the axis of said shaft in the longitudinal direction thereof; the improvement characterized by
(f) said shaft being square in cross section;
(g) each face of said shaft having a centrally disposed rectangular extension extending radially therefrom forming fins;
(h) each said fin forming a pair of parallel flanks;
(i) a lateral guide for said segments on each flank of each fin;
(j) each said segment having a cooperating recess for engaging said lateral guides;
(k) the said plurality of cooperating wedge faces for each segment disposed internally thereof;
(l) the said plurality of cooperating wedge faces for said shaft disposed directly on said shaft; and
(m) the said wedge faces on said shaft positioned at right angles to said fin flanks.

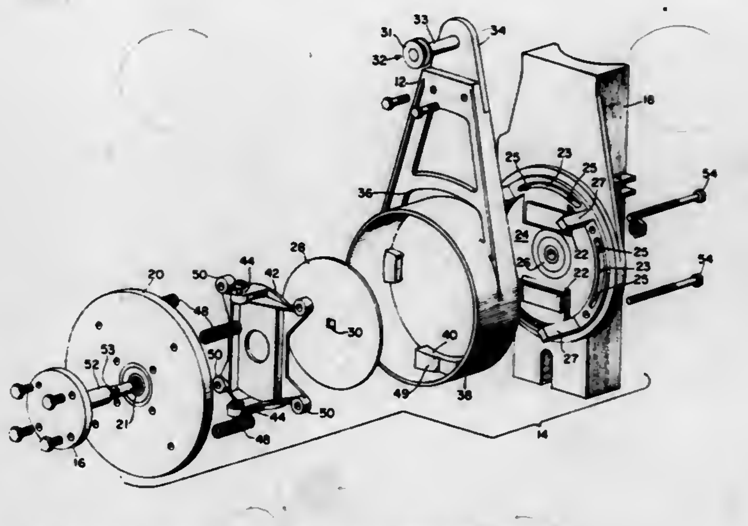
4,131,241
STRAND DISPENSING DEVICE

Harry F. Meier, Cincinnati, Ohio, assignor to Alaskaug, Inc., Cincinnati, Ohio

Filed Sep. 15, 1977, Ser. No. 833,568

Int. Cl.² B65H *59/04*

U.S. Cl. 242—156.2 **3 Claims**



1. A strand dispensing device comprising:
a support means for supporting a storage apparatus for strand material; said support means being selectively rotatable;
a self-contained mechanical brake means affixed to and cooperating with said support means to selectively prevent rotation of said support means; and
a lever means engagably affixed to said mechanical brake means for guiding said strand material and for engaging and disengaging said mechanical brake means; said brake means having:
a first brake pad fixedly attached to a stationary first pad support means;
a second brake pad fixedly attached to a non-rotatably fixed second pad support means, said first and second brake pads being in face-to-face relationship;
a brake disk disposed between said first and second brake pads, said brake disk being affixed to said support means for supporting a storage apparatus for strand material;
a resilient means for urging said second pad support means toward said first pad support so as to engage said brake disk with said first and second brake pads; and
a wedge means fixedly attached to said lever means for separating said first and second brake pads, said wedge means having a wedge support rotatably mounted on said first pad support means and fixedly attached to said lever means, and a plurality of wedge blocks fixedly attached to said wedge support and engaging said second pad support means.

4,131,242
UNIVERSAL WINDING ARBOR

Salomon S. Flores, 2046 N. Kedvale, Chicago, Ill. 60639

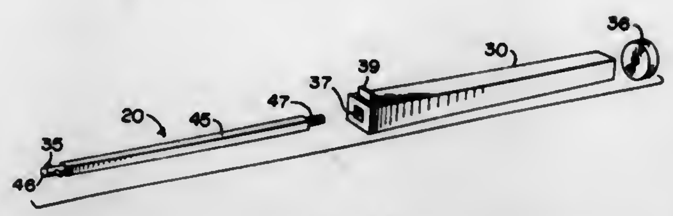
Continuation-in-part of Ser. No. 719,404, Sep. 1, 1976, abandoned. This application Mar. 21, 1977, Ser. No. 779,309

Int. Cl.² B65H *75/02*

U.S. Cl. 242—1 **1 Claim**

1. A universal winding arbor for use in forming transformers comprising the combination of an arbor core and an arbor block, said arbor core having a center portion of polygonal cross section with first and second end portions of relatively smaller circular cross section, said arbor core extending substantially through said arbor block for substantial enclosure of

said center portion, said first and second end portions protruding on opposite sides of said arbor block and said first portion being threaded for acceptance of a nut, a pin through said second end portion opposite said first end portion, said pin being biased against said arbor block by the tightening of said nut on said first end portion, said arbor block being hollow and accepting the center portion of said arbor core in a close-fitting relationship, and, a stop extending transverse to the axis of said arbor core on an end of said arbor block adjacent said transverse pin for use in commencing the formation of said transformers.

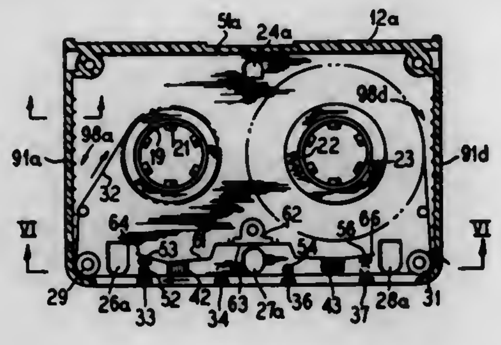


4,131,243

TAPE CASSETTE

Tetsuo Machida, Tagajyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 701,678, Jul. 1, 1976, Pat. No. 4,062,506.
This application Aug. 3, 1977, Ser. No. 821,357
Claims priority, application Japan, Jul. 23, 1975, 50-102221
Int. Cl.^{2} G03B *1/04;* G11B *15/32*
U.S. Cl. 242—199 **4 Claims**



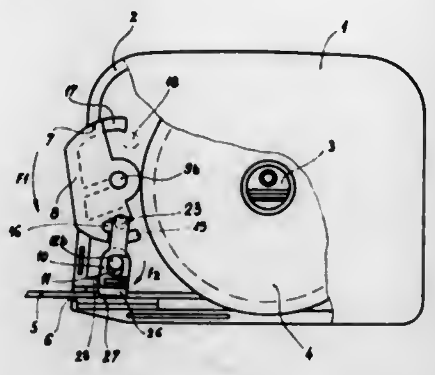
1. A tape micro-cassette formed of molded plastic and having a pair of mating lower and upper cassette members and a pair of sidewalls at opposite ends thereof, and including a pair of tape reels rotatably mounted in said cassette with thin film magnetic tape extending between said reels and said tape wound on said reels such that it is payed out from one reel and taken up by the other reel on the sides of said reels adjacent said pair of sidewalls and said tape travels substantially parallel and in close proximity to said pair of sidewalls and said cassette having a portion available for recording and playback functions along a front wall of said cassette which has an open area, a pair of guide rollers for said tape mounted in the corners of said cassette between said front wall and said pair of sidewalls, respectively, a plurality of tape guides extending generally parallel to said front face of said cassette and providing guides for said tape at said front face and said inner walls of said pairs of sidewalls, said sidewalls being formed with roughened areas so that as the tape is payed out from one reel and taken up by the other reel it contacts the roughened areas of said inner pair of sidewalls, which prevents said thin film tape from adhering to said pair of sidewalls.

4,131,244

TAPE MEASURE BRAKE

Michel Quenot, Besancon, France, assignor to Stanley-Mabo S.A., Besancon, France

Continuation of Ser. No. 776,305, Mar. 10, 1977, abandoned.
This application Dec. 27, 1977, Ser. No. 864,834
Claims priority, application France, Mar. 29, 1976, 76 09869
Int. Cl.^{2} B65H *75/48;* G01B *3/10*
U.S. Cl. 242—107.2 **11 Claims**



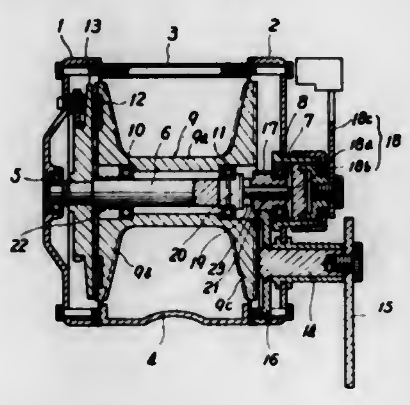
8. In a tape rule or the like linear measuring instrument comprising a casing having an outlet slot for a measuring-tape wound on a winding drum, a tape return spring and a tape locking device which comprises a control button and a brake block which in a locking position grips the tape against an inner bearing face of the casing, the improvement in which the tape locking device comprises first and second levers pivotally connected together about a common first pivoting axis to form an elbow-joint, the first lever forming the control button and being tippably mounted about a second fixed pivoting axis, the second lever extending to an end part forming said brake block and being tippably mounted about a third axis and movable in translation towards and away from the tape, said levers being able to tip between an unlocking position in which said first pivoting axis is spaced apart on one side of a line of junction connecting said second and third pivoting axes and the brake block is spaced apart from the tape, and a locking position in which said first pivoting axis is located on the other side of said line of junction with said brake block coacting with the tape.

4,131,245

FISHING REEL HAVING AN IMPROVED DRAG MECHANISM

Hideo Noda, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jan. 27, 1978, Ser. No. 872,902
Claims priority, application Japan, Jan. 31, 1977, 52-11065[U]; Jan. 31, 1977, 52-11066[U]
Int. Cl.^{2} A01K *89/02*
U.S. Cl. 242—217 **10 Claims**



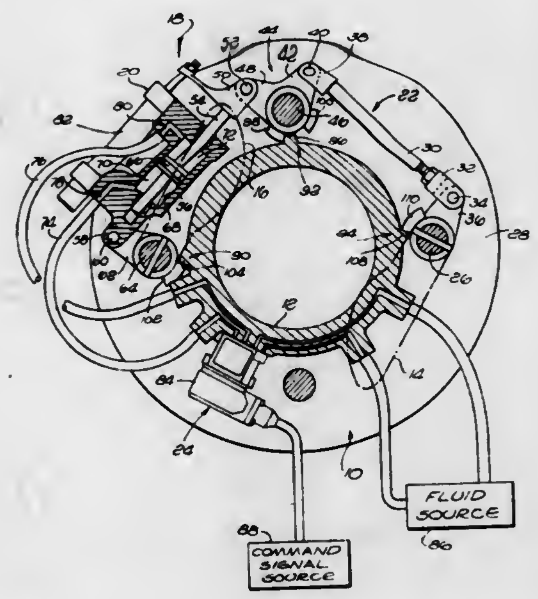
1. A fishing reel comprising:
a pair of substantially parallel spaced apart housings;
a spool spindle journaled between said housings;
a spool having a trunk and a pair of flanges formed at opposite axial ends of said trunk;
means for supporting said spool on said spindle such that said spool is rotatable and axially movable with respect to said spindle;
a handle operative to rotate said spindle;
a master gear through which said spindle is rotated by said handle;
a drag mechanism for frictionally transmitting the rotation of said spindle to said spool; and
a control mechanism for moving said spool axially of said spindle to control the driving force transmitted from said drag mechanism to said spool; said drag mechanism comprising: a drag plate and a friction plate, said drag plate being fixed to said spindle and normal to the axis of said spindle, said friction plate being mounted to the outer lateral surface of one of said flanges which is opposite to said drag plate, said control mechanism being operative to move said spool in one axial direction with respect to said spindle to bring said friction plate into contact with said drag plate, thereby frictionally transmitting the rotation of said handle to said spool, said control mechanism being further operative to move said spool in the other axial direction with respect to said spindle to remove said friction plate from contact with said drag plate, thereby allowing said spool to freely rotate.

4,131,246

THRUST VECTOR CONTROL ACTUATION SYSTEM

Richard J. Rotmans, Saugus, Calif., assignor to Textron Inc., Providence, R.I.

Filed Feb. 4, 1977, Ser. No. 765,713
Int. Cl.^{2} F02K *1/20*
U.S. Cl. 244—3.22 **6 Claims**



1. A thrust vector or control system for a rocket motor having a nozzle exit end comprising:
a pair of opposed control spoiler blades pivotally attached adjacent said nozzle exit end;
actuator means;
mechanical linkage means;
first means for connecting said actuator means to one of said spoiler blades; and
second means for connecting said linkage means between the other of said spoiler blades and said actuator means.

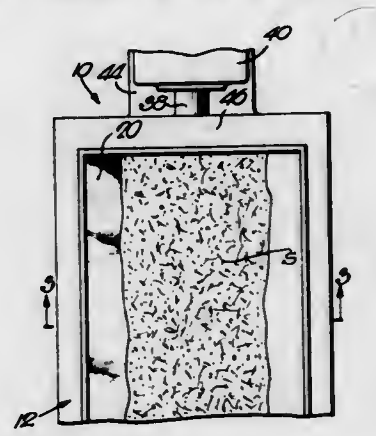
4,131,247

APPARATUS FOR REDUCING FRAGMENTARY STOCK

Victor Danberg, 6 Mary Ann La., Wallingford, Conn. 06492

Continuation-in-part of Ser. No. 712,656, Aug. 9, 1976, abandoned. This application Aug. 26, 1977, Ser. No. 827,885
Int. Cl.^{2} B02C *23/38*
U.S. Cl. 241—49 **2 Claims**

1. Apparatus for reducing fragmentary stock into smaller particles, comprising a chamber with an axis having a peripheral wall about said axis and opposite endwalls, and stock inlet and outlet passages leading to and from said peripheral wall; a sizing screen in said chamber in cover relation with said outlet passage; a rotor in said chamber having a hub mounted for rotation about said axis and being inwardly spaced from said peripheral wall by an annular gap, and angularly spaced cutting tools on and turning with said hub and projecting outwardly therefrom into said gap, with said cutting tools being blades having turning cutting edges and being disposed in a ring-shaped path about said axis; stationary cutting tools on said peripheral wall, said turning tools acting to centrifugally force stock in said chamber into an annular formation and to propel the same in the form of a stream on said peripheral wall, with said stationary and turning cutting tools cooperating to cut said stock into particles for passage through said screen; and fan means in said chamber outlet, with each of said endwalls having within the cylindrical confines of said path an opening through which said gap is exposed to the atmosphere so that on operation of said fan means the ensuing draft of atmospheric air enters said chamber through said openings into said gap, and passes through the stock stream and then through said screen and chamber outlet, with said turning cutting tools agitating the air drawn by said fan means into said gap through said openings and thereby keeping the stock in said stream in a turbulent condition.

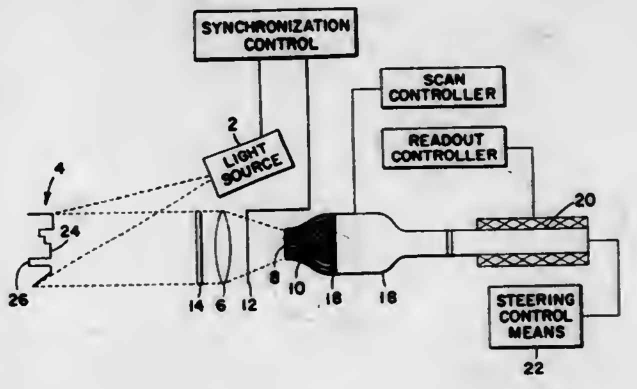


4,131,248

OPTICAL RANGE RESOLUTION SYSTEM

David B. Berglund, Grand Prairie, Tex., assignor to E-Systems, Inc., Dallas, Tex.

Filed Mar. 13, 1968, Ser. No. 712,722
Int. Cl.^{2} F42B *15/02;* F41G *9/00, 11/00*
U.S. Cl. 244—3.16 **12 Claims**



1. Sensor apparatus for guidance systems, said sensor apparatus comprising:
means receiving light of a single pulse reflected from a target area and focusing said reflected light to form a two-dimensional image,
means receiving said two-dimensional image and operable to convert said two-dimensional image into a quantized, straight line image,
means receiving said straight line image and converting said

straight line image into a two-dimensional display wherein each quanta of said straight line image is displayed in a time-dependent position,

means receiving said two-dimensional display and converting said display into an electrical signal,

steering control means forming a part of said guidance system, and

means applying said electrical signal to said steering control means.

4,131,249

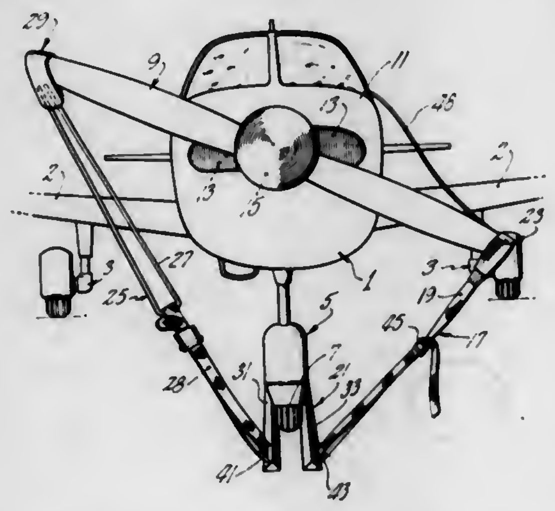
EXTERNAL PORTABLE PROPELLER ROTATOR

Ronald S. Watson, P.O. Box 9599, San Diego, Calif. 92109

Filed Dec. 23, 1977, Ser. No. 863,984

Int. Cl.² B64F *1/34*

U.S. Cl. 244—53 A **12 Claims**



1. A device for starting an aircraft engine which is capable of being started by rotating a propeller connected thereto comprising a first connecting means for holding said propeller in a desired fixed position, a second connecting means for applying a force on said propeller for rotating said propeller, said first connecting means including a first tip cap means at one end adapted to be placed on one blade tip of said propeller, said second connecting means including a second tip cap means at one end adapted to be placed on another blade tip of said propeller, an anchor means for positioning below said aircraft propeller, said first connecting means being adapted to be connected at another end to said anchor means, said second connecting means being adapted to be connected at another end to said anchor means, said first connecting means including a quick-release device for releasing said first tip cap means whereby said second connecting means can pull said propeller in a direction to rotate said propeller about its axis on said aircraft engine for starting the engine.

4,131,250

HELICOPTER BLADE ICE PROTECTION SYSTEMS

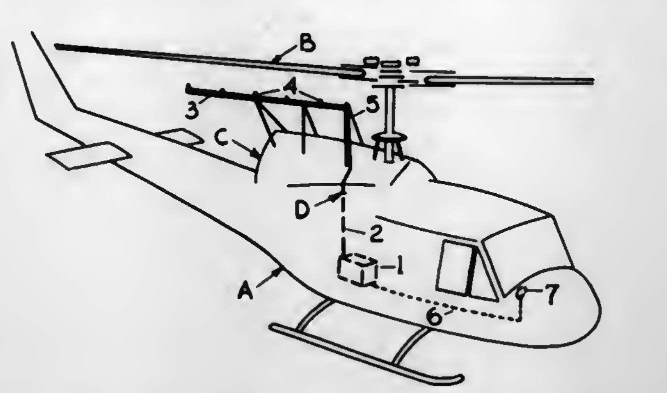
Earle T. Binckley, 31812 National Park Dr., Laguna Niguel, Calif. 92677

Filed Jun. 13, 1977, Ser. No. 806,091

Int. Cl.² B64D *15/10*

U.S. Cl. 244—134 R **1 Claim**

1. A means for preventing the accumulation of ice on a helicopter main rotor blade, the system comprising a tank for carrying the supply of freezing point depressant fluid, a pump mounted in the tank to move the fluid from the tank through tubing to the nozzles, said pump to be actuated by a switch accessible to the pilot, tubing between the tank and the nozzles for carrying the fluid, a nozzle array mounted in the shadow area of the rotor mast, external to the helicopter, and that sprays the fluid upward into the path of the rotor blades.



4,131,251

AERIAL DELIVERY WEDGE

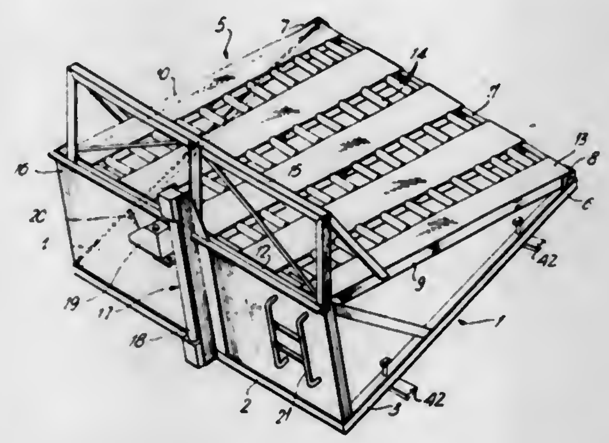
Robert G. Lloyd, Trenton; Anthony C. Street, Winnipeg, both of Canada, and Donald M. G. R. Golden, deceased, late of Edmonton, Canada (by Jean J. Golden, executrix), assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Canada

Filed Feb. 25, 1977, Ser. No. 771,986

Claims priority, application Canada, Mar. 11, 1976, 247709

Int. Cl.² B64D *1/08*

U.S. Cl. 244—137 R **14 Claims**



1. A portable and adjustable cargo handling device, for use in an aircraft, comprising:

(a) a planar base dimensioned to be received on aircraft cargo loading ramp;

(b) means to secure said base to said ramp;

(c) a platform superimposed on said base and having an upper load supporting surface;

(d) means pivotally connecting said platform and said base;

(e) lifting means connected to said platform for pivoting the platform relative to the base to selectively vary the angle of inclination of the load supporting surface relative to a plane defined by said base so that when said ramp is in a closed position said platform is in a substantially horizontal plane within said aircraft; said platform including friction reducing means on the load supporting surface thereof to facilitate sliding movement of a load thereover.

4,131,252

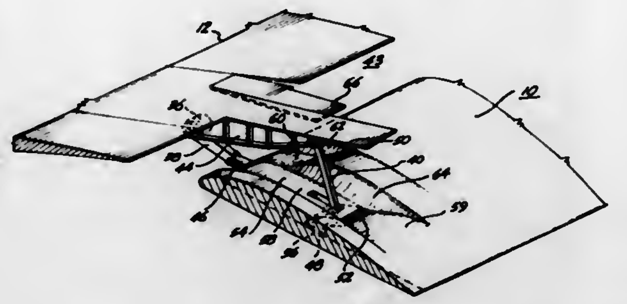
APPARATUS FOR COMPENSATING FOR AIRFLOW BLOCKAGE IN AIRCRAFT SLOTTED FLAP ASSEMBLIES

Roy D. Dean, and Richard H. Weiland, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 696,398, Jun. 15, 1976, abandoned. This application Aug. 3, 1977, Ser. No. 821,530

Int. Cl.² B64C *9/02*

U.S. Cl. 244—212 **16 Claims**



12. In an airplane flap assembly including a flap having an upper surface and a lower surface and an airplane wing wherein said flap is attached to extend spanwise along the trailing edge of said wing by at least one support means that extends between said wing and said flap, said flap being positionable relative to said wing to define a spanwise airflow slot between said wing and the upper surface of said flap for directing air over the upper surface of said flap with said slot extending for substantially the full spanwise dimension of said flap and said support means being disposed in the airstream directed through said airflow slot, said flap being retractable to define a substantially continuous aerodynamic surface with said airplane wing, said upper surface of said flap including a recessed region extending rearwardly from the leading edge of said flap to an aft terminating edge located forwardly of the trailing edge of said flap, said recessed region for receiving at least a portion of said support means when said flap is retracted, wherein the improvement comprises airflow means for directing a stream of air to a predetermined rearwardly extending portion of said upper surface of said flap that is contiguous to said support means to compensate for airflow blockage through a portion of said slot between said flap and said wing that is caused by disposing said support means in said airflow slot, said airflow means including:

- a rampway for directing that portion of the airflow which passes through said slot and into said recessed region of said flap upper surface upwardly and rearwardly for passage across a first portion of said upper surface of said flap that is located aft of said recessed region, said rampway defining an aerodynamically smooth inclined surface between said aft terminating edge of said recessed region and said first portion of said upper surface of said flap; and
- an airflow duct extending between an air inlet opening in the lower surface of said flap and an air outlet opening in the upper surface of said flap, said air inlet opening being located rearwardly of said flap leading edge and having a spanwise dimension substantially less than the spanwise dimension of said flap, said air outlet opening being located outboard of and substantially adjacent to said recessed region at a position intermediate to said leading edge of said flap and said aft terminating edge of said recessed region, said outlet opening having a spanwise dimension substantially less than the spanwise dimension of said flap, said airflow duct being configured and arranged to discharge the airstream passing through said airflow duct for rearward flow along at least a portion of said predetermined region of said flap upper surface in which said airflow blockage occurs, said airflow duct and said rampway being further configured and arranged for supplying airflow of sufficient volume and velocity to cause the combined airflow provided to said blocked airflow region by said airflow duct and by said airflow slot to energize a boundary layer of air along said blocked airflow region of said upper surface of said flap.

4,131,253

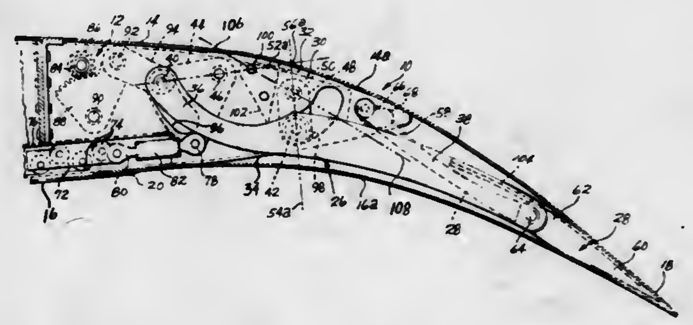
VARIABLE CAMBER TRAILING EDGE FOR AIRFOIL

Edwin J. Zapel, Hobart, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 21, 1977, Ser. No. 817,541

Int. Cl.² B64C *3/48*

U.S. Cl. 244—219 **15 Claims**



1. A variable camber airfoil comprising:

a. a support frame,

b. upper and lower skins attached to said frame,

c. a trailing edge end section,

d. a variable camber upper skin section extending from said frame to said trailing edge end section,

e. a variable camber lower skin section connecting to the trailing edge end section and extending forwardly therefrom toward said frame,

f. a walking beam positioned between the upper and lower variable camber skin sections, said walking beam comprising a forward positioning section and a rearwardly extending locating arm,

g. positioning means to locate said forward positioning section of the walking beam relative to said frame, said positioning means comprising:

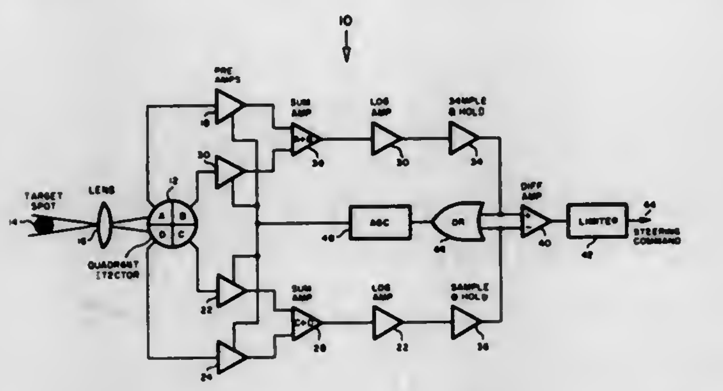
  1. a first forward connecting means interconnecting a forward connecting portion of the positioning section of the walking beam to said frame for movement of the forward connecting portion back and forth on an upwardly and forwardly slanting path,
  2. a second rearward connecting means interconnecting a rearward connecting portion of the positioning section of the walking beam to the frame for movement back and forth on an upwardly and rearwardly slanting path, whereby said positioning section is constrained to move in a manner that forward movement thereof rotates said locating arm downwardly, and rearward movement thereof rotates said locating arm upwardly,

h. a trailing edge beam, comprising:

  1. a forward portion connected to said frame,
  2. a rear portion connected to said trailing edge end section,
  3. an intermediate portion connected to said locating arm, whereby downward or upward rotational movement of the locating arm of the walking beam causes a corresponding downward or upward rotational movement of the trailing edge beam of a correspondingly greater degree of rotation relative to said locating arm.

4,131,254
WIDE INSTANTANEOUS DYNAMIC RANGE PROPORTIONAL SIGNAL PROCESSOR

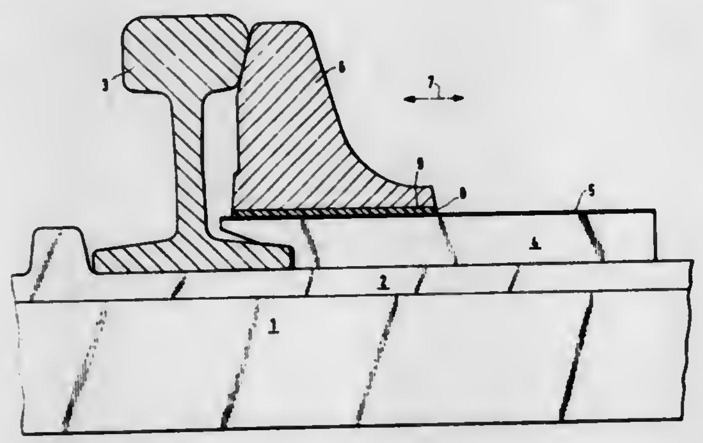
William C. Underwood, Orlando, Fla., assignor to Martin Marietta Corporation, Orlando, Fla.
Continuation of Ser. No. 181,616, Sep. 17, 1971, abandoned. This application Apr. 19, 1976, Ser. No. 678,508
Int. Cl.^{2} F41G *7/00, 7/18;* G01S *9/02*
U.S. Cl. 244—3.16 **23 Claims**



1. A signal processor having a wide instantaneous dynamic range and usable in conjunction with a pair of channels relatable to the same sensing plane, comprising detector means, at least one pair of channels connected to receive outputs from said detector means, amplifier means including a logarithmic amplifier operatively disposed in each of said channels, connected to receive the respective outputs of said detector means and functioning to amplify a wide range of levels of signals, and difference amplifier means connected to receive the output of said channels, and serving to produce a signal the polarity of which is indicative of the channel having the higher output, such that appropriate commands can be generated, and sample and hold means in each channel and utilized for converting pulse type signal outputs into signals of longer duration, thus to provide sufficient time for the comparison by said difference amplifier means of the outputs of said channels.

4,131,255
RAIL SWITCH ARRANGEMENT

Manfred Menia, Hard, Austria, assignor to Heinz Faigle, Hard, Austria
Filed Feb. 4, 1977, Ser. No. 765,543
Claims priority, application Austria, Feb. 9, 1976, 877/76; Oct. 14, 1976, 7670/76
Int. Cl.^{2} E01B *7/00*
U.S. Cl. 246—430 **10 Claims**

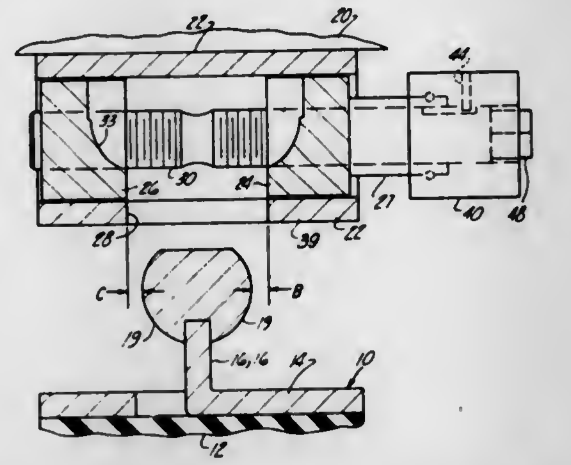


1. In a rail switch arrangement including a support an elongated rail fixedly mounted on said support, and an elongated rail blade mounted on said support for movement toward and away from a position contiguously adjacent said fixedly mounted rail, said support having a substantially horizontal top face and said blade having a bottom face, the improvement which comprises:

(a) a frame formed with an opening;
(b) fastening means fastening said frame to said bottom face and
(c) a sheet member of synthetic resin composition fixedly received in said opening and slidingly engaging said top face during said movement of the rail blade.

4,131,256
ENGINE MOUNT

Erwin F'Geppert, Novi, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jul. 27, 1977, Ser. No. 819,309
Int. Cl.^{2} B60K *1/00*
U.S. Cl. 248—3 **3 Claims**

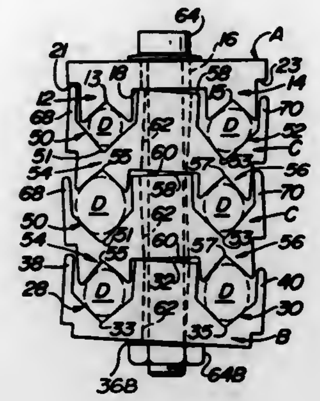


1. An engine mount comprising a vehicle-attached base; an engine-attached hollow rail adapted to rest on the base; said base having an engine hold-down element adapted to project through an opening in a lower surface of the rail so that said element assumes a centralized position in the rail interior; two spaced-apart jaws slidably positioned within the rail at opposite sides of the hold-down element; and a screw threaded through said jaws for moving same into clamped positions against opposite side surfaces of the hold-down element; the screw threads engaged with one jaw being right-handed, and the screw threads engaged with the other jaw being left-handed, whereby the jaws move simultaneously toward the hold-down element; the jaws and screw being freely adjustable as a unit on the rail, whereby the jaws apply equal pressures on the hold-down element; said screw having an actuator end located outside the hollow rail; one of said jaws having a tubular shield surrounding the screw actuator end to obstruct access thereto when the jaws are spread apart to a maximum permissible distance.

4,131,257
STACKING CABLE CLAMP

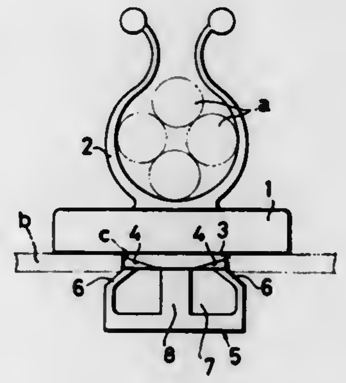
Maurice Sterling, Willow Grove, Pa., assignor to Eby Company, Philadelphia, Pa.
Filed Nov. 14, 1977, Ser. No. 851,137
Int. Cl.^{2} F16L *3/10;* H01R *7/24*
U.S. Cl. 248—67.5 **5 Claims**

1. A cable clamp comprising first and second outer jaw members and at least one intermediate jaw member adapted to be retained between said first and second outer jaw members, each said intermediate jaw member including a pair of spaced female portions contained within one side thereof and a pair of spaced male portions projecting from an opposite side thereof, said first outer jaw member including a pair of spaced male portions, said second outer jaw member including a pair of spaced female portions, said pairs of male portions loosely interfitting within corresponding pairs of female portions and including abutting limit stops at the interfaces therebetween, V-shaped notches longitudinally extending in each of said male portions, and V-shaped grooves longitudinally extending in each of said female portions to define diamond shaped pigeon hole jaws when said male and female portions interfit with each other, lateral guides at the outer margins of each of said female portions, and bolt means loosely passing through bores in said first and second outer jaw members and said intermediate jaw members for drawing said members together whereby a plurality of cables of different diameters can be stacked in fixed disposition with each other without pinching.



4,131,258
CONNECTOR FOR PLATES

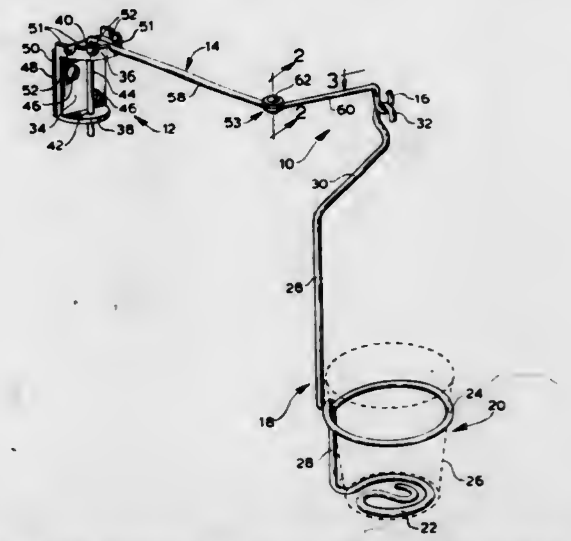
Seiji Okuda, and Takuo Yuda, both of Yokohama, Japan, assignors to Nifco, Inc., Tokyo, Japan
Filed Jun. 14, 1976, Ser. No. 695,355
Claims priority, application Japan, Jun. 13, 1975, 50/79428
Int. Cl.^{2} F16B *13/10;* F16L *3/02*
U.S. Cl. 248—73 **9 Claims**



1. A one-piece plastic connector adapted for use in a polygonal shaped aperture in a flat plate, including an imperforate head portion, operating means disposed on one surface of said head portion, a noncircular fitting portion means disposed on the other surface of said head portion and having means defining a configuration substantially complimentary to the shape of said polygonal aperture in said plate, said fitting portion means including slanted surfaces tapering toward each of the corners thereof in the direction of said head but terminating in axially spaced relation to said head, a centrally disposed resilient plate-like anchor member extending axially out from and angularly disposed relative to said slanted surfaces on said fitting portion, said member having side-to-side dimension slightly smaller than the largest dimension of the aperture in said plate but greater than the distance between opposite sides of said polygonal aperture, said member being provided with inclined shoulders on the sides where the anchor member joins said fitting portion, said anchor member further including a pair of through apertures that form a centrally disposed rigid post-like member extending from the distal portion of the transverse surfaces of said plate-like member to the center of said imperforate head with its associated noncircular fitting portion, a free entering end including relatively flexible beam-like transverse portions extending radially outwardly from said post-like member a substantial extent, a pair of resilient substantially uniform thickness side walls extending generally perpendicular from the ends of said transverse member to a point intermediate the axial extent of said post-like member and thence angularly inwardly to their point of attachment to said fitting portion to thereby provide inclined shoulders in the form of resilient cam surfaces whereby upon application to a complimentary apertured workpiece said side walls and said free entering beam-like end portions flex during rotation until said fitting portion is seated in said aperture.

4,131,259
SWINGING CUP HOLDER

Peter Franks, 77 Anglesey Blvd., Toronto, Ontario, Canada
Filed May 10, 1977, Ser. No. 795,638
Int. Cl.^{2} A01G *9/02*
U.S. Cl. 248—311.1 R **6 Claims**



1. A suspension holder for a beverage cup and which comprises;

a mounting member adapted to be secured upon a structural member and having upper and lower flanges extending in a generally horizontal manner therefrom, registering opening means formed in said upper and lower flanges, upstanding lug means formed around said upper flange, and defining therebetween a plurality of recesses spaced radially around said opening;

a support member comprising elongated arm means, and joint means incorporating pivot means whereby a portion of said elongated arm means may be swung relative to another portion thereof, and a generally vertical leg at an inner end of said elongated arm means, shaped and dimensioned to fit rotatably within said registering openings in said upper and lower flanges, and an adjacent portion of said elongated arm means being shaped and dimensioned to fit between two adjacent said lug means whereby to secure said elongated arm means in a predetermined rotational position relative to said mounting means, and being adjustable between said rotational positions by raising of said leg means and swinging of said arm means into a new position between two further said lug means;

coupling means at the free end of said elongated arm means;

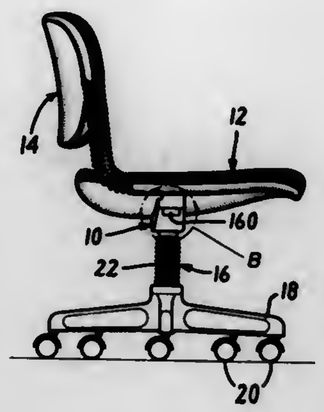
a hanger comprising a linear spine portion and an upper portion extending from an upper end of said spine angularly upwardly with respect thereto;

releaseable hook means at the upper end of said hanger, being releaseably interengeable with said coupling means whereby said hanger may be suspended therefrom, and,

a cup-holder secured to the lower end of said spine portion of said hanger, and said hook means on the upper end of said hanger being disposed generally axially relative to said cup holder.

4,131,260
CHAIR SEAT MOUNT WHICH PERMITS THE SEAT TO TILT FORWARD

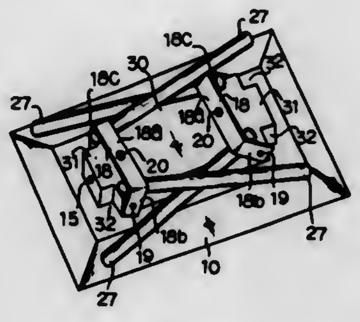
Emilio Ambasz, New York, N.Y., assignor to Center for Design Research and Development N.V., Curacao, Netherlands Antilles
Continuation-in-part of Ser. No. 795,098, May 9, 1977. This application Feb. 7, 1978, Ser. No. 875,801
Int. Cl.² A45D ***19/04***
U.S. Cl. 248—384 **34 Claims**



1. A seat mount for supporting a chair seat on a base comprising a mounting plate rigidly secured to the base, a seat-supporting bracket located under generally the center of the seat and carrying the seat, a transverse axle joining the bracket and plate for tilting of the bracket and seat about an axis extending transversely of the seat, co-engageable stop surfaces associated with the bracket and plate and positioned relative to each other to engage and stop forward tilting when the seat is tilted to a forward rake position in which the front of the seat is located a substantial distance below the back of the seat and the seat is at an inclination of about 4½° to the horizontal, and at least one compression spring located rearwardly of the axis of the axle and engaged under compression between the bracket and mounting plate and yieldably restraining the bracket and thus the seat from tilting forward about the axis.

4,131,261
FOLDING MEANS FOR SUPPORTING LEGS OF ROASTER OVEN WITH HIGH STABILITY

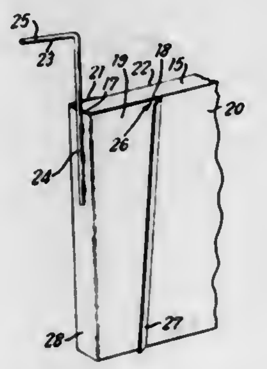
Min-Ching Shy, 20 Alley 18, La. 109 Hoping St., Yang Ho Town Taipei Hsien, Taiwan
Continuation-in-part of Ser. No. 757,054, Jan. 5, 1977, Pat. No. 4,063,703. This application Sep. 28, 1977, Ser. No. 837,475
Int. Cl.² F16M ***11/32;*** **F24C** ***15/08***
U.S. Cl. 248—439 **5 Claims**



1. Foldable means for supporting legs of a roaster oven or the like having an oven body, an oven belly extending from said oven body, tongue portions extending from opposite ends of said oven belly, said foldable means including a U-shaped frame pivotally connected on each of said opposite ends of said oven belly, each of said U-shaped frames being pivotally connected to said belly at ends of said side portions of the U-shaped frame located remotely from the intermediate portion of said U-shaped frame connecting the two side portions thereof, said tongue portion having a screw hole for reception of a locking screw provided on said intermediate portion when said frame is adjusted so the said screw is in line with said hole, a button on said screw for effecting rotation thereof and consequently advancement or retraction of said screw, a pair of supporting legs structurally related with each of said U-shaped frames, said structural relationship being characterized in that upper portions of said supporting legs are fixed to said U-shaped frame structurally related thereto at the intersection of the intermediate portion and one of the sides internally of said U-shaped frame whereby said upper portions of said supporting legs will be located between said U-shaped frame and said tongue portion when said legs are placed in standing position to enhance stability thereof.

4,131,262
DEVICE FOR RETAINING HOT TOP LINING SLABS

John W. Bowers, Guelph, Canada, assignor to Foseco International Limited, Birmingham, United Kingdom
Filed May 20, 1977, Ser. No. 799,057
Claims priority, application United Kingdom, May 27, 1976, 22122/76; Canada, Jul. 23, 1976, 257705
Int. Cl.² B22D ***7/10***
U.S. Cl. 249—202 **8 Claims**

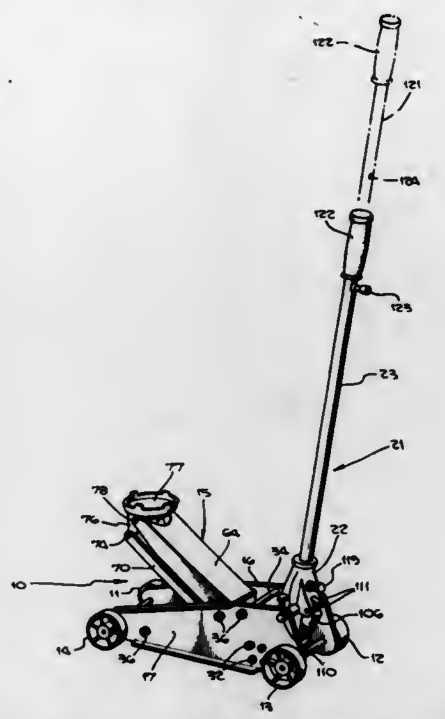


1. An end cap assembly for use with a hot top slab for a casting mold, said slab having an inwardly facing surface, an outwardly facing surface and an edge portion, said end cap assembly comprising an end cap having a plate portion whose height is substantially equal to the depth of said slab and which bears against the inwardly facing surface of said slab, and a wedging plate having an edge portion, said plate portion having one portion bent to define a passageway to receive the edge portion of the wedging plate, said wedging plate having a height substantially equal to the depth of said slab, the passageway in said plate portion being downwardly and outwardly inclined, with respect to the edge portion of said slab, means to secure the plate portion to said slab and suspension means connected to said end cap for supporting said end cap and said slab on said casting mold.

4,131,263
FIXED LIMIT LIFTING JACK

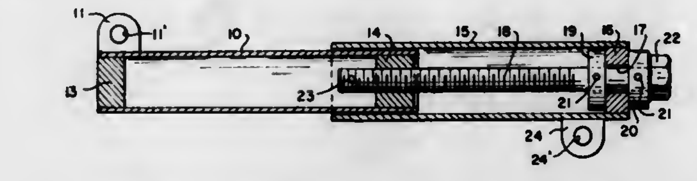
Julius F. John, Redondo Beach, Calif., assignor to Norco Industries, Inc., Gardena, Calif.
Filed Oct. 19, 1977, Ser. No. 843,595
Int. Cl.² B66F ***5/04***
U.S. Cl. 254—8 B **12 Claims**

1. In a lifting jack comprising a frame, an elevating linkage pivotally mounted on the frame, a hydraulic housing on the frame having a hydraulic reservoir therein, and a hydraulic power cylinder operatively connected between said frame and said elevating linkage, the combination of a hydraulic network interconnecting said reservoir and said power cylinder and actuating means for said network, said network comprising a first bore in communication with said power cylinder and checked against return flow from said power cylinder, a second bore in communication with said reservoir and checked against flow to said reservoir, and a third bore in communication between said power cylinder and said reservoir, said third bore having an exposed outer end and a combined reverse action and load limit subassembly in said third bore, said actuating means comprising a pump and a pump actuator pivotally mounted on said frame, said pump actuator including reverse control for said elevating linkage, said pump having a pump chamber in communication jointly with said first and second bores, whereby to draw fluid from said reservoir and force fluid into said power cylinder, said load limit subassembly comprising a check valve seat and a load limit check valve element in said third bore seating in a direction to stop flow to said power cylinder, a bushing in fixed position closing the outer end of said third bore, a resilient actuator for said check valve element located between the load limit check valve element and said bushing, said reverse control comprising a stem member extending through said bushing into engagement with said resilient actuator, said stem member having an adjustment of position relative to said resilient actuator whereby to relieve tension in said resilient actuator to establish flow from said power cylinder to said reservoir and enable lowering of said elevating linkage.



4,131,264
LOAD BINDER APPARATUS

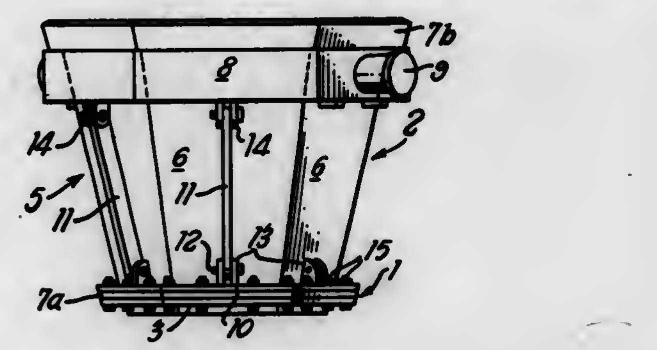
William W. Patterson, III, and Eugene F. Grapes, both c/o W. W. Patterson Company 830 Brocket St., Pittsburgh, Pa. 15233
Continuation-in-part of Ser. No. 805,185, Jun. 9, 1977, abandoned. This application Dec. 27, 1977, Ser. No. 864,690
Int. Cl.² B66F ***3/10***
U.S. Cl. 254—67 **9 Claims**



1. A load binder or lashing tightener apparatus comprising a first inner elongate sleeve member closed at one end, an anchor adjacent said closed end, a threaded nut fixed in the other end of said first sleeve, a second outer sleeve having one end adapted to telescope over the first inner sleeve in close fitting relationship, at least one anchor means on said second sleeve adjacent the other end, screw means extending through the second sleeve, one end threadingly engaging the nut in said first sleeve, the other end rotatably fixed in the said other end of said second sleeve and drive means on said other end for rotating said screw whereby said second sleeve is caused to telescope over the first sleeve and the anchor means on said sleeves are brought together, said sleeves being freely rotatable relative to one another, and wherein the sleeves are of cylindrical form having anchor means on each of said sleeves adjacent their remote ends extending radially outward from each sleeve generally on opposite sides from each other, said sleeves being freely relatively rotatable whereby said anchor means are free to align themselves to provide maximum pull through the binder.

4,131,265
SLAG POTS

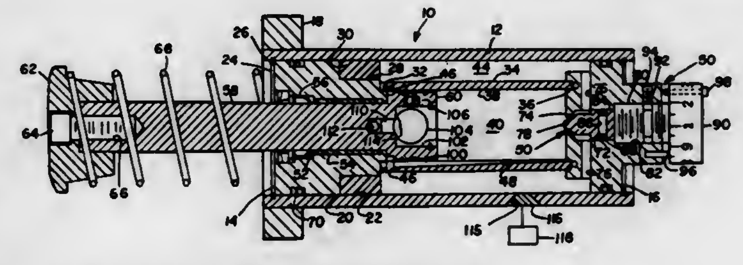
Walter A. McCray, 20200 Sheldon Rd., Cleveland, Ohio 44142
Filed Oct. 12, 1977, Ser. No. 841,516
Claims priority, application United Kingdom, Oct. 12, 1976, 42355/76
Int. Cl.² F27D ***15/00***
U.S. Cl. 266—275 **5 Claims**



1. A slag pot comprising an upper portion formed of a plurality of metal plates welded together, constituting sidewalls of the pot and a lower portion floor of the pot secured to said sidewalls, lower out-turned lips extending from the lower edge of at least certain of said plates, said lips each having openings to permit the passage of bolts through said openings and corresponding openings in said floor in order to secure said floor to said sidewalls using bolts, upper out-turned lips extending from upper edges of at least certain of said plates, a trunnion ring of a shape dimensioned to fit about the upper edges of said plates, said trunnion ring carrying at least one pair of opposite trunnions, upper side supports mounted on said trunnion ring and lower side supports extending from said lower out-turned lips, hinged rods each secured to one of said upper and lower side supports to secure said trunnion ring whereby said trunnion ring may be removed by the separation of said bolts from said floor such that said floor may be replaced with a new floor by again securing said bolts in place.

4,131,266
ADJUSTABLE SHOCK ABSORBER

Walter L. Carter, Troy, Mich., assignor to Jackson Machine Products, Madison Heights, Mich.
Filed Oct. 19, 1977, Ser. No. 843,561
Int. Cl.² F16F ***9/48***
U.S. Cl. 267—34 **4 Claims**



1. A fluid shock absorber comprising:
a housing having a longitudinal bore;
a sleeve longitudinally positioned in said housing bore to define a piston chamber within said sleeve and an accumulator chamber in the annular space between said sleeve and said housing;
pressure fluid in said chambers;

a piston rod having a piston at its inner end, said piston having a rod end and a head end, said piston being slideably mounted in said piston chamber to divide said piston chamber into a high-pressure chamber at the head end of said piston and a low-pressure chamber at the rod end of said piston, the other end of said piston rod extending outwardly of one end of said housing to an initial position for engagement by a member to be decelerated;

first support means carried at said one end of said housing for slideably supporting said piston rod, said first support means sealingly engaging said housing while supporting one end of said sleeve in said longitudinal position;

second support means carried at the other end of said housing for sealingly engaging said housing while supporting the other end of said sleeve in said longitudinal position, said sleeve having a longitudinally disposed, tapered slot along its inside surface, said tapered slot providing a fluid passage axially along the outside surface of said piston connecting said high-pressure chamber to said low-pressure chamber, said tapered slot having a small cross-sectional area near said other end of said sleeve and a large cross-sectional area near said one end of said sleeve such that movement of said piston from said one end of said sleeve toward the other end of said sleeve reduces the effective cross-sectional area of said fluid passage and, thus, reducing the rate at which fluid flows from said high-pressure chamber to said low-pressure chamber;

means communicating the larger cross-sectional area end of said slot to said accumulator chamber;

said second support means having a through bore which terminates in a valve seat, said valve seat communicating with said high-pressure chamber;

said through bore having a radially disposed passage communicating with said accumulator chamber;

valve means disposed in said through bore, said valve means having a conically shaped end engaging said valve seat;

said valve means having a threaded body threadingly engaging said second support means;

said valve means having a knob at its external end, said knob having indicia thereon;

a stem, said stem being disposed between said conically shaped end and said threaded body, said stem slidingly engaging said through bore, said stem having a recess formed therein, said recess having means for sealingly engaging said through bore;

said conically shaped end being selectively movable toward and away from said valve seat by rotating said knob to provide an externally adjustable restriction between said high-pressure chamber and said accumulator chamber;

said second support member having a threaded bore laterally disposed and entering said through bore;

a lock screw carried in said threaded bore, said lock screw lockingly engaging said valve body;

a stop pin carried at the periphery of said knob, said pin projecting toward said second support member, and;

a second stop pin carried by said second support member, said second stop pin being engaged by said first pin to allow only one revolution of movement of said knob.

4,131,267

APPARATUS FOR HOLDING WORKPIECE BY SUCTION

Takatoshi Ono, and Michio Ikeda, both of Tokyo, Japan, assignors to Disco Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1978, Ser. No. 911,902

Int. Cl.^{2} B25B ***11/00***

U.S. Cl. 269—21 **8 Claims**

1. Apparatus for holding a workpiece by suction comprising

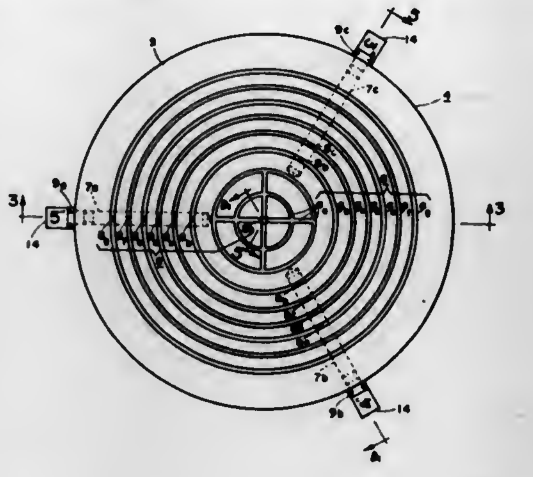
a table top having an upper surface and a plurality of separate grooves in said surface,

said table top having at least one radial bore extending under said grooves,

said bore being interconnected with at least some of said grooves by holes, respectively, to provide pneumatic communication therebetween,

a sleeve in said bore, said sleeve having a central axially extending passage therethrough, the position of said sleeve relative to said bore being independently changeable,

said sleeve having a plurality of openings axially alignable with said holes in said bore whereby pneumatic communication between certain grooves and the sleeve passage is established,



the axial locations of certain of said openings in the respective sleeves being different, and

a source of vacuum connectable to said passage of said sleeve,

the number of said grooves subject to suction being changeable through selective change of the position of said sleeve relation to said bore.

4,131,268

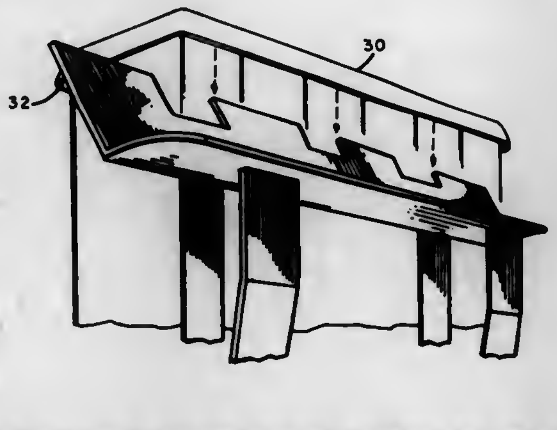
RADIATOR CORE SUPPORT DEVICE

Gerard Valade, 23 Cliff Ave., Old Orchard Beach, Me. 04064

Filed Jun. 9, 1978, Ser. No. 913,952

Int. Cl.^{2} B23Q ***3/02***

U.S. Cl. 269—47 **4 Claims**



1. A radiator core support device adapted for use upon the sides of a radiator testing tank comprising:

a base member;

a first inner wall retainer member affixed to said base member;

a first outer wall retainer member affixed to said base member on an opposite side from said inner wall retainer member spaced apart from said inner wall retainer member a distance sufficient to allow a side of said radiator testing tank to pass therebetween;

a header lip catch member affixed to said base member and extending therefrom at an angle thereto;

a pair of header apertures defined along the upper edge of said header lip catch member; and

a clamp aperture centrally defined along the upper edge of said header lip catch member, said device adapted to be slidably movable along the side of said radiator testing tank and adapted to support a radiator core when suspended therefrom.

4,131,269

DEVICE FOR PROTECTION OF VEHICLE WINDOWS AGAINST ICE OR FROST

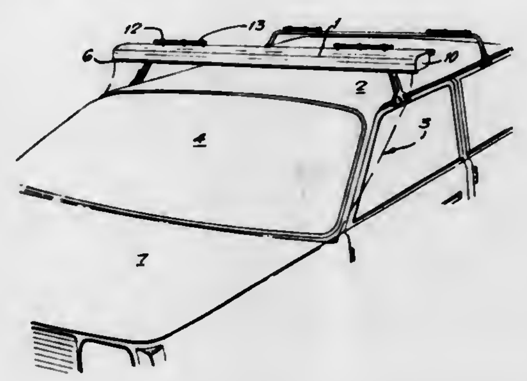
Hans Brattrud, 2870 Dokka, Norway

Filed Jan. 25, 1977, Ser. No. 762,342

Claims priority, application Norway, Jan. 27, 1976, 760249

Int. Cl.^{2} B60J ***1/20***

U.S. Cl. 296—95 Q **8 Claims**



7. A device for the protection of vehicle windows against frost and ice comprising an elongated housing having a roller blind mounted therein to be pulled out to cover at least one window of a vehicle on which it is mounted; an electric heating means within a hollow core of the roller blind for melting snow and ice.

4,131,270

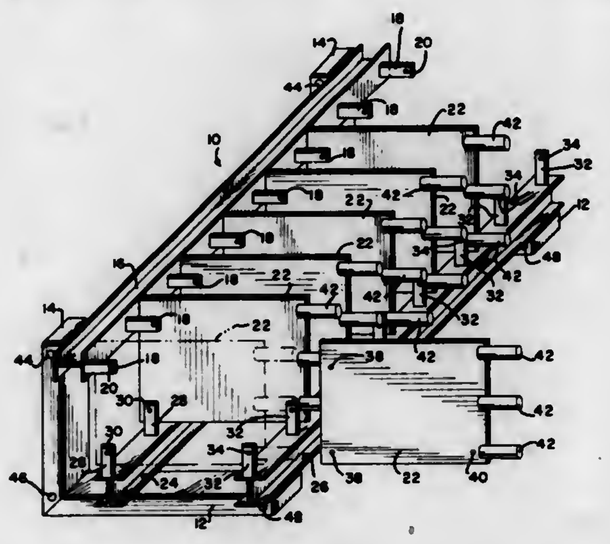
MEANS FOR POSITIONING STEAM CONDENSER TUBE SUPPORT PLATES

George J. Williams, Chalfont, and Robert C. Boyer, Bethlehem, both of Pa., assignors to Ecolaire Incorporated, Malvern, Pa.

Filed Apr. 22, 1977, Ser. No. 789,921

Int. Cl.^{2} B25B ***1/20***

U.S. Cl. 269—321 W **7 Claims**



1. Apparatus for use in constructing a condenser comprising:

(a) an elongated generally L-shaped member defined by generally perpendicular legs,

(b) means at spaced points on said member to facilitate connection with a lifting means for lifting said member,

(c) means to facilitate locating tube support plates at spaced points along said member including a plurality of aligned sets of locating members, said sets of locating members being partially disposed on each of said legs at spaced points along the length of said L-shaped member.

4,131,271

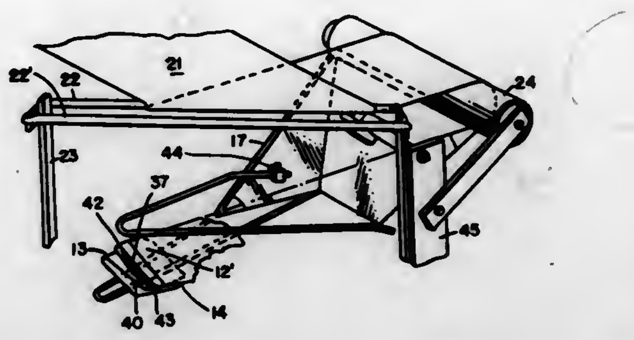
METHOD AND APPARATUS FOR INTERFOLDING

Howard J. Slawny, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Jun. 13, 1977, Ser. No. 806,107

Int. Cl.^{2} B41L ***1/30***

U.S. Cl. 270—40 **1 Claim**



1. A method of sequentially folding elongated webs into Z-type configurations to achieve a continuous stack of interfolded webs comprising

(A) pulling first web material along a linear path of travel having longitudinally extending first and second vertical marginal planes (13, 14) and through the first of a series of horizontal spaced apart folding devices (17) in said path, each folding device consisting essentially of:

(i) a first planar part (25) having a generally trapezoidal shape providng a horizontal folding edge (26) extending transversely across said path and having first and second end points (27, 28) respectively in said first and second vertical marginal planes, said trapezoidal shape providing second and third folding edges (29, 30) extending respectively from said first and second margin end points upwardly and rearwardly relative to said path of travel and being upwardly divergent relative to each other,

(ii) a second planar part (31) having a generally triangular shape to provide a fourth folding edge (32) extending forwardly in said path from said first margin end point (27) and in said first vertical marginal plane (13), and a connecting edge (29') connected to said first planar part (25) along said second folding edge (29), and

(iii) a third planar part (33) also having a generally triangular shape and having a fifth folding edge (34) extending from said first margin end point (27) diagonally forwardly relative to said path and across said path to terminate in said second vertical marginal plane (14), and a connecting edge (32') connected to the fourth folding edge (32) of said second part (31),

(iv) said apparatus also including a sixth folding edge (35) connected at at least one end (36) thereof to one of said frame and its associated folding plate and extending diagonally across said path from a point slightly above said second margin end point (14) forwardly to said first vertical marginal plane (13), said sixth folding edge (35) being located above said fifth folding edge (34) and intersecting said first vertical marginal plane (13) a spaced distance rearwardly of the intersection of said fifth folding edge (34) with said second vertical marginal plane (14) whereby each folding plate has a triangular open bottom defined by said first (26) and fifth (34) folding edges and said second vertical marginal plane (14),

whereby said web material develops three longitudinally extending portions:

(a) a constant width middle portion (37) passing under said horizontal folding edge (26) and over said third planar part (33),

(b) a gradually widening upper portion (38) passing around said third folding edge (30) and under said sixth folding edge (35), and

(c) a gradually widening lower portion (40) passing around said second folding edge (29), over said second planar part (31), around said folding edge (32) and rolling around said fifth folding edge (34),

(B) pulling second web material through the next device in said series while pulling the now Z-folded first web material under said next device and positioning the upper portion (38) of said first web material in contact simultaneously with the gradually widening lower portion (40) of the second web material and the constant width middle portion (37) thereof to cause said first web material upper portion (38) to enter between said second web material lower and middle portions (40, 37), and

(C) repeating the above sequence for each successive folding device.

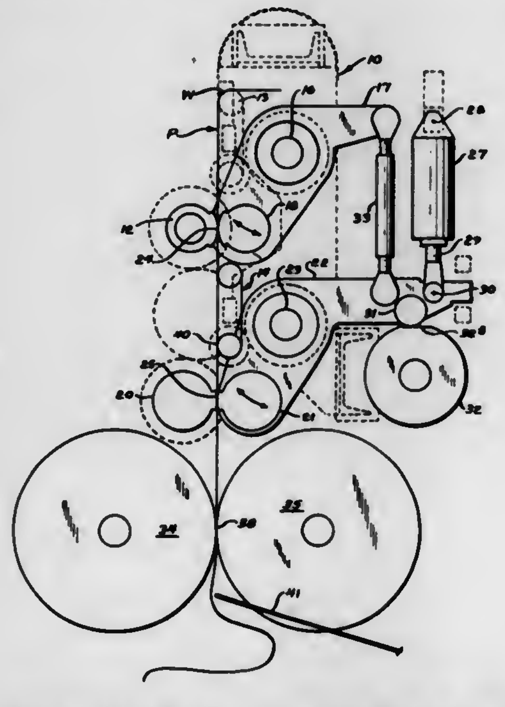
4,131,272
METHOD AND APPARATUS FOR SEPARATING A CONTINUOUS STREAM OF CONNECTED BUSINESS FORMS INTO EXACT COUNT ZIG-ZAG FOLDED STACKS

Richard E. Hartnig, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Jun. 13, 1977, Ser. No. 806,110

Int. Cl.² B65H *45/16*

U.S. Cl. 270—73 **8 Claims**



1. In a method of separating a continuous stream of connected business forms into exact count zig-zag folded stacks for packaging, the steps of:

continuously advancing an elongated web along a linear path toward a station for zig-zag folding, said web including a longitudinally extending control margin and equally spaced apart lines of perforation defining business forms therebetween,

after a predetermined number of said lines of perforation have passed a point in said path, applying nipping forces to said web along transverse lines upstream and downstream of a given line of perforation and within the length of the business forms on either side of said given line of perforation, the downstream nipping force imparting a higher velocity to said web than the upstream nipping force whereby said web is burst along said given line of perforation,

removing at least said downstream nipping force from said web prior to the time the line of perforation subsequent to said given line of perforation passes the line of application of said upstream nipping force, and

zig-zag folding said web in said station along each said line of perforation, the line of perforation immediately preceding said given line of perforation being gripped incident to zig-zag folding at about the time of web bursting along said given line of perforation.

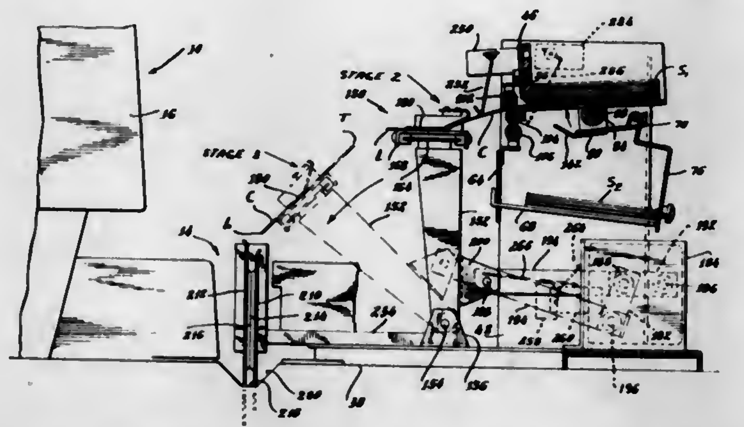
4,131,273
RECORD CARD FEEDING APPARATUS

Fred W. Kufrin, Janesville, and John H. Carpentier, Ft. Atkinson, both of Wis., assignors to Oce-Industries Inc., Chicago, Ill.

Filed May 13, 1977, Ser. No. 796,677

Int. Cl.² B65H *5/10, 9/04, 9/10*

U.S. Cl. 271—4 **23 Claims**



1. An apparatus for feeding record cards to and from a utilization station in a record card utilization machine, said feeding apparatus comprising:

A. support means including
  1. an origination hopper formed to hold a stack of cards prior to utilization, and
  2. a collection hopper, spaced from said origination hopper, formed to receive cards after utilization;

B. an alignment platform in the region of the utilization station;

C. carriage means for receiving a card with at least a portion of a leading edge of the card projecting from said carriage means, for delivering the card to the utilization station and for returning the card for collection in said collection hopper, said carriage means being mounted for reciprocal, pivoted movement between a first card receiving and returning position in the proximity of said hoppers and a second card delivery position in operative proximity to the utilization station;

D. means for feeding a card from said origination hopper to said carriage means with at least the portion of the leading edge of the card projecting therefrom while in the first position;

E. motive means for reciprocally pivoting said carriage means from the first position to the second with said leading edge contacting said alignment platform to align said card in the utilization station and back to the first position; and

F. means for removing a card from said carriage means while in the first position and returning it to the collection hopper.

18. An apparatus for delivering record cards to and from a utilization station in a record card utilization machine, said delivering apparatus comprising:

A. support means including
  1. an origination hopper formed to hold a stack of cards prior to utilization, and
  2. a collection hopper, spaced from said origination hopper, formed to receive and stack cards after utilization,

B. carriage means for receiving a card from said origination hopper, delivering it to the utilization station and returning it to the collection hopper, said carriage means being mounted
  1. for reciprocal pivoted movement between a first card receiving and returning position in the proximity of said hoppers and a second card delivery position in operative proximity to the utilization station, and
  2. for movement transverse to the plane of its pivoted movement; and

C. cam means, mounted at said utilization station, for engaging and moving said carriage means transversely to the plane of its pivoted movement into proper alignment in the utilization station to properly align at least one edge of a card received thereby for utilization by the machine.

4,131,274
SHEET FEED CASSETTE

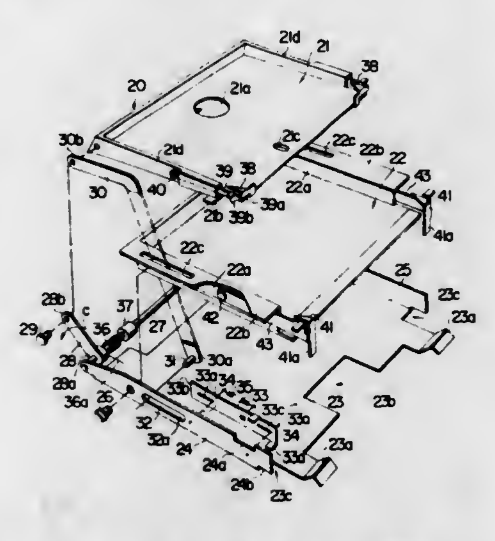
Takaji Sue, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 8, 1976, Ser. No. 748,757

Claims priority, application Japan, Dec. 15, 1975, 50/149900

Int. Cl.² B65H *1/28, 3/44, 3/56*

U.S. Cl. 271—9 **1 Claim**



1. A sheet feed cassette apparatus comprising:

a first sheet tray for receiving a stack of first sheets thereon;

a first pair of vertically movable corner claws disposed adjacent the front end of the first sheet tray along the opposite sides thereof and urged in a direction to retain the opposite corners of the leading end of a stack of the first sheets placed on the first tray;

respective projections operatively integral with each of the first corner claws;

a second sheet tray disposed below the first tray for receiving a stack of second sheets thereon;

a second pair of vertically movable corner claws disposed adjacent the front end of the second tray along the opposite sides thereof and urged in a direction to retain the opposite corners of the leading end of a stack of the second sheets placed on the second tray;

guide means formed on the opposite sides of the second tray for slidably carrying the first tray between a feed position and a non-feed position, the guide means being effective to guide the projections in a manner such that the first pair of corner claws associated with the first tray assume a lowered position when the first tray is in its feed position and assume a raised position when the first tray is retracted to its non-feed position;

a cassette frame for supporting the first and second sheet trays; and

means for pivotably mounting the first tray on the cassette frame comprising a pair of support arms each having one of its ends pivotally connected with the rear end of the cassette frame and the other of its ends pivotally connected with the rear end of the first tray.

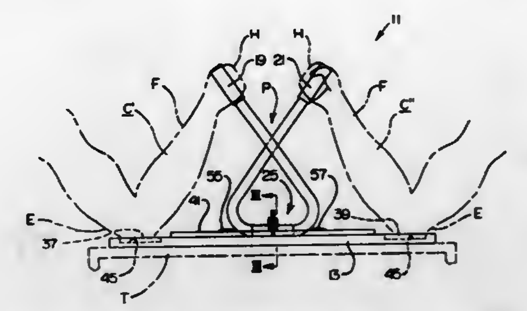
4,131,275
ARM WRESTLING DEVICE

Eleanor J. Gandy, and Ann H. Lockhart, both of 867 Maple Dr., Memphis, Tenn. 38108

Filed Sep. 1, 1977, Ser. No. 829,739

Int. Cl.² A63B *67/00*; A63F *9/00*

U.S. Cl. 273—1 R **10 Claims**



1. A device for use in contests in which two contestants attempt to force one another's forearm from a substantially vertical position to a substantially horizontal position, said device comprising: a base means; a first arm means including a grip member for being gripped by one of the contestants; a second arm means including a grip member for being gripped by the other of the contestants; and an attachment means for pviotally attaching said first and second arm means to said base means in such a manner that when said first or second arm means is forced to pivot downward by one of the contestants, the other of said first or second arm means will be forced to pivot downward a like amount; said first and second arm means crossing one another in such a manner that when said first arm means is forced downward by one of the contestants it will contact and press against said second arm means at the point where said first and second arm means cross one another and that when said second arm means is forced downwardly by one of the contestants it will contact and press against said first arm means at the point where said first and second arm means cross one another.

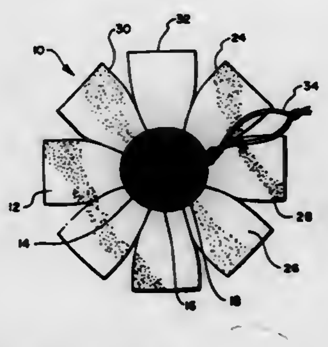
4,131,276
NON-INJURIOUS AMUSEMENT BALL AND METHOD OF MAKING SAME

Ren Judkins, 2260 Belaire Dr., Salt Lake City, Utah 84109

Filed Sep. 26, 1977, Ser. No. 836,630

Int. Cl.² A63B *43/02, 45/00, 37/14*

U.S. Cl. 273—58 C **7 Claims**



1. An amusement ball comprising:

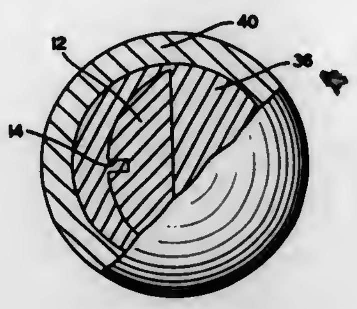
a first plurality of resilient cellular foam strips each having an essentially uniform first length;

a second plurality of resilient cellular foam strips each having an essentially uniform second length that is shorter than said first length, said second foam strips being placed so as to essentially surround said first plurality of foam strips; and

a band placed around the middle of said first and second foam strips, said band being sufficiently tightened to cause said foam strips to be tightly gathered about their middle, thus forming a compact resilient core essentially enclosed by said foam strips, and said foam strips being bent to form an essentially spherical configuration.

4,131,277
BOWLING BALL

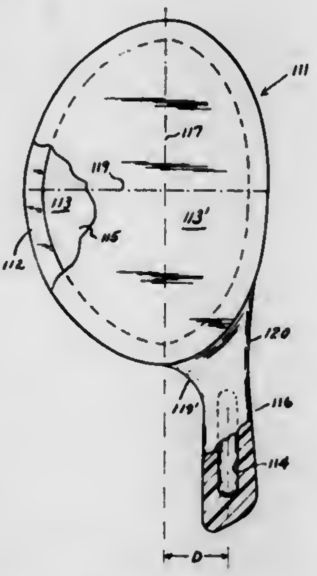
John L. Randolph, 1076 N. Jacoby Rd., Akron, Ohio 44321
Filed Nov. 14, 1977, Ser. No. 850,915
Int. Cl.² A63B *37/14*
U.S. Cl. 273—63 D **10 Claims**



1. A bowling ball, the surface of which is composed of a matrix of hard, strong resin resistant to impact, containing domains of elastomeric material chemically bonded to the surrounding matrix.

4,131,278
GAME RACKET WITH SEMI-RESILIENT IMPACT SURFACES AND AN OFFSET HANDLE

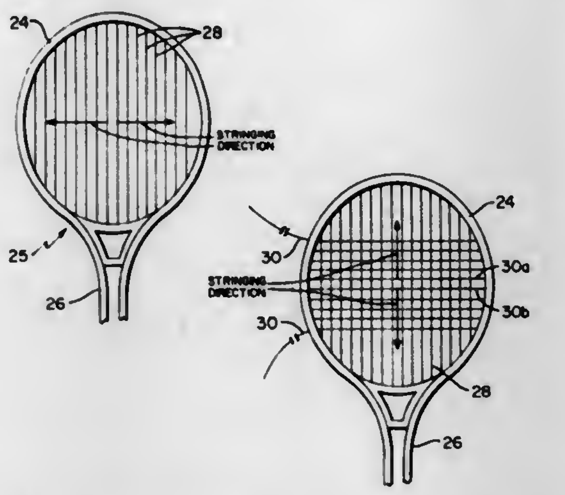
Joseph Goldenberg, Hyattsville, Md., assignor to Pap-et, Inc., Washington, D.C.
Filed Jun. 7, 1977, Ser. No. 804,386
Int. Cl.² A63B *59/00*
U.S. Cl. 273—67 R **3 Claims**



1. A game racket comprising a main body including means defining a flat sealed air chamber having resiliently yieldable plate-like striking surfaces, and a handle connected to said main body on an axis parallel to but offset from a center line of said main body by a distance sufficient to enable a user's index finger to supportingly engage behind said main body substantially at said center line, whereby to provide guiding support of the racket when striking a ball, wherein said main body comprises a rigid ring member with relatively thin plate-like front and rear panels peripherally sealingly secured on opposite sides of said ring member, wherein said ring member is substantially oval in shape and is continuously outwardly convex at its opposite lateral sides, the major axis of the ring member extending substantially parallel to said handle, wherein the radius of curvature of the ring member at the minor axis of the ring member is substantially greater at the lateral side thereof near the handle axis than at the lateral side thereof remote from the handle axis, and wherein the corner between said handle and the smaller-radius lateral side of the ring member is arcuately curved with a relatively short radius of curvature and the corner between said handle and the larger-radius lateral side of the ring member is arcuately curved with a relatively long radius of curvature, to facilitate gripping of the handle.

4,131,279
TENNIS RACKET AND STRINGING METHOD

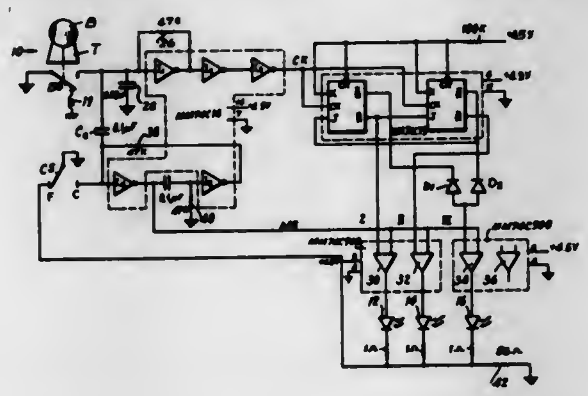
John M. Ogden, 6540 Parkland Ave., Cincinnati, Ohio 45233
Filed Aug. 23, 1976, Ser. No. 716,425
Int. Cl.² A63B *51/00*
U.S. Cl. 273—73 D **4 Claims**



4. A tennis racket comprising an open frame; said frame terminating in a handle; a plurality of main strings parallel to said handle and secured under tension in said frame, said strings being first tensioned at the center and then outwardly; a plurality of cross strings interwoven with said main strings and secured under tension in said frames; and said main strings and cross strings being secured under tension in said frame from the central portion and then outwardly therefrom.

4,131,280
ELECTRONIC TEE OFF DEVICE

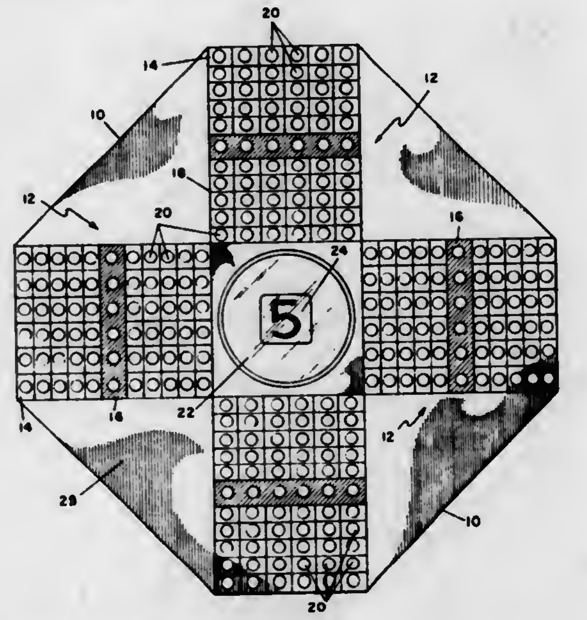
Karel A. Poortman, De Brei 4, Ingen, Netherlands
Continuation-in-part of Ser. No. 590,689, Jun. 26, 1975, Pat. No. 4,000,904. This application Dec. 28, 1976, Ser. No. 754,979
Claims priority, application Netherlands, Jul. 4, 1974, 7409067
Int. Cl.² A63B *69/36*
U.S. Cl. 273—184 R **11 Claims**



1. A tee-off device comprising tee means for supporting a golf ball which is to be driven from said tee means, said tee means having a pair of conditions one of which is a ball-supporting condition assumed by said tee means when the golf ball is supported thereby and the other of which is an empty condition different from said ball-supporting condition and automatically assumed by said tee means when a golf ball is driven therefrom, a plurality of light-source means situated adjacent said tee means at a location where any one of said light-source means when energized is visible to a golfer driving a golf ball from said tee means, said plurality of said light-source means respectively providing light of different colors when energized, preparatory circuit means operatively connected with said plurality of light-source means for placing the latter in a condition remaining unenergized but ready to be energized in such a way that at any given instant only one of said light-source means is in a condition ready to be energized with the condition of being ready to be energized being transferred among the plurality of light-source means so that at any given instant the operator cannot know which of the differently-colored light-source means is in a condition ready to be energized, said tee means cooperating with said preparatory circuit means for rendering the latter operative only while said tee means is in said ball-supporting condition thereof, and operating circuit means operatively connected to said plurality of light-source means and said tee means for cooperating with said preparatory circuit means to energize momentarily in a haphazard manner only that one of said light-source means which happens to be in said condition ready to be energized when said tee means assumes said empty condition thereof upon driving of a golf ball therefrom, the location of the plurality of light-source means being such that the momentarily energized light-source means will only be visible to the golfer when he is properly positioned with respect to the golf ball carried by said tee means, whereby upon detecting a particular color from that one of said light-source means which has been haphazardly energized the golfer will know that he remained properly positioned up to the time when the golf ball has been driven.

4,131,281
GAME BOARD APPARATUS

Samson R. Taylor, 54 Bower St., Boston, Mass. 02119
Filed Nov. 21, 1977, Ser. No. 853,455
Int. Cl.² A63F *3/00*
U.S. Cl. 273—248 **3 Claims**



1. A game apparatus comprising:

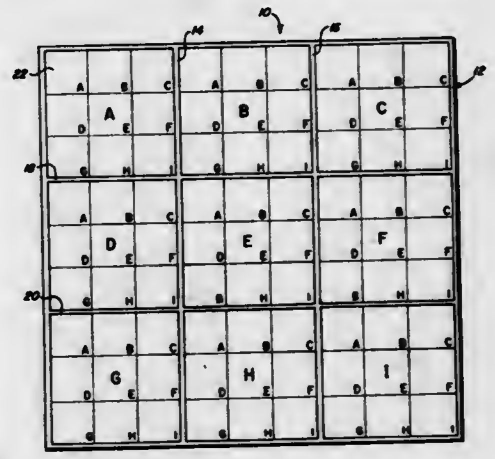
an eight-sided game board having defined thereon four game zones, each of said game zones located adjacent to alternate sides of said game board, each of said game zones including a storage zone, a starting zone, and a playing zone, said storage zone having defined therein a plurality of marker receptacles positioned in six parallel columns positioned perpendicular to the side of said game board adjacent to the storage zone and five rows perpendicular to said columns, said starting zone having defined therein six marker receptacles each located at the end of one of said storage zone columns of marker receptacles, said playing zone having defined therein a plurality of marker receptacles arranged in an array of six columns and five rows, said six playing zone marker receptacle columns each being in line respectively with said six storage zone marker receptacle columns, said game board further having defined therein four board zones, each board zone located between said game zones, said game board yet further having a centrally located die-agitating device with one die therein having imprinted on five sides thereof a different number from one to five with one side of the die being blank;

a plurality of marker pieces for placement within said marker receptacles by each player of the game; and

said starting zone further having means for distinguishing same from said playing and storage zones.

4,131,282
BOARD GAME APPARATUS

Robin L. Boyer, 618 E. Calavar Rd., Phoenix, Ariz. 85022; Sonja E. Lazarus, 2133 W. Turney #89B, Phoenix, Ariz. 85015, and F. O. Buck, Jr., 6127 N. 13th St., Phoenix, Ariz. 85014
Filed Jun. 17, 1977, Ser. No. 807,374
Int. Cl.² A63F *3/00*
U.S. Cl. 273—271 **15 Claims**



1. A game apparatus useable by at least a first and a second player comprising:

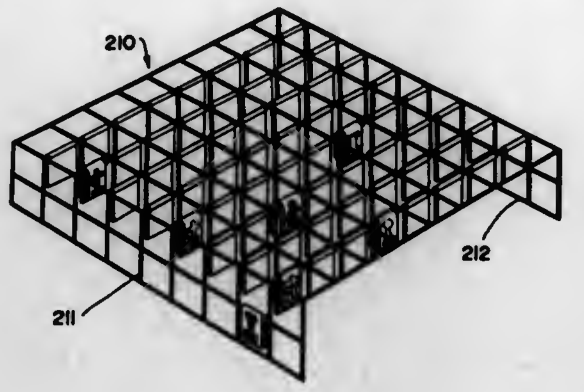
- (a) a master matrix;
- (b) first dividing means for dividing said master matrix into an array of n submatrices;
- (c) second dividing means for dividing each of said n submatrices into n subdivisions;
- (d) first identifying means attached to each said submatrix for identifying each said submatrix;
- (e) second identifying means corresponding to said first identifying means and attached to each said subdivision for identifying each said subdivision within each said submatrix; and
- (f) subdivision occupation identification means positionable within each said subdivision for identifying subdivisions previously occupied by the first player and subdivisions previously occupied by the second player.

4,131,283
GAME APPARATUS

Vaclav Havlik, 888 Foster City Blvd., Foster City, Calif. 94402
Division of Ser. No. 625,185, Oct. 23, 1975, Pat. No. 4,055,345. This application Oct. 25, 1977, Ser. No. 845,327
Int. Cl.² A63F *3/02*
U.S. Cl. 273—282 **12 Claims**

1. Game apparatus comprising a game board including means mounting a plurality of playing fields in row and column array with at least every other one of the playing fields in each row and column of said array being associated with an opening extending all the way through said board; wherein said means mounting said plurality of playing fields comprises a mesh formed of mutually perpendicular elongated support members interconnected to provide a plurality of generally square openings therebetween and said plurality of playing fields comprises a plurality of squares dimensioned to be received within said openings with each of said plurality of squares being received within a different one of said square openings, said means mounting said plurality of playing fields also comprising means swingably attaching each of said squares along the same side thereof only to the adjacent one of a parallel set of support

members of said mesh and a plurality of game pieces each comprising a pair of indicia bearing bodies and means joining said pair of bodies to each other at one of their ends, said



joining means being of sufficient extent to enable each pair of bodies to be disposed in generally parallel relation on opposite sides of a square with the indicia on respective bodies being visible from opposite sides of the board.

4,131,284
DAMPER MEANS FOR DAMPING THE RESONANCE OF DISC RECORD TONE ARMS

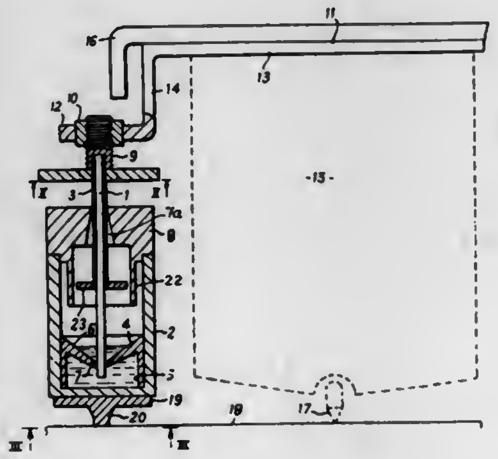
Alexander R. Rangabe, Stoneacre, Denmead, Portsmouth, England

Filed Feb. 20, 1976, Ser. No. 659,841

Claims priority, application United Kingdom, Feb. 28, 1975, 8476/75

Int. Cl.^{2} G11B *3/30*

U.S. Cl. 274—23 R **27 Claims**



1. Damper means for damping the resonance of a disc record tone arm of the kind having a limb, adapted at one end for pivotal support in respective planes parallel with and normal to the plane of the record, and a cartridge including a stylus, said cartridge being mounted on the limb at a location remote from said end adapted for pivotal support, and being secured against vertical movement relatively to the limb, the damper means comprising:

a first element, secured relatively to the tone arm cartridge;

a second element in relatively movable engagement with said first element and extending toward the plane of the record in the operative position of the damper means;

energy absorbing means, comprising energy absorbing material, disposed between said first and second elements, for causing resistive force to be applied with respect to relative movement between said first and second element; and

skid means, connected to said second element for causing the damper means to come into direct mechanical contact with the record, when the damper means is in the operative position thereof, in such a manner that the damper means can slide transversely of the record trace without significant tracking of the record trace by the damper means,

whereby variation in tracking force is reduced as the stylus traverses warps in the record surface.

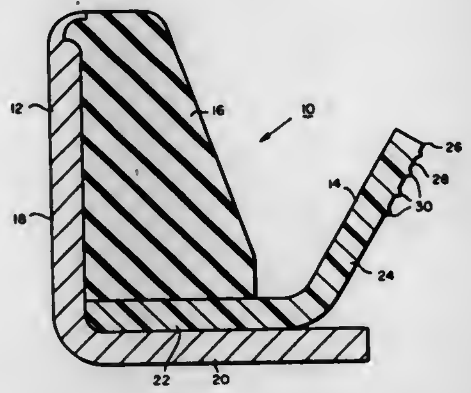
4,131,285
BONDED TFE LIP SEAL

Dennis N. Denton, Bessemer City, and David G. Boyd, Gastonia, both of N.C., assignors to Garlock Inc., Rochester, N.Y.

Division of Ser. No. 538,542, Jan. 6, 1975, abandoned. This application Nov. 8, 1976, Ser. No. 739,431

Int. Cl.^{2} F16J *15/32*

U.S. Cl. 277—1 **13 Claims**



1. A method for making a shaft seal of the type including a single annular metal case including a cylindrical portion and a radial flange and an annular flexible non-elastomeric sealing element having a radial portion in contact with said radial flange and also having a frusto-conical portion with a sealing lip on the distal end thereof comprising positioning an annular synthetic rubber filler ring in the annular space between said cylindrical portion of said metal case and said radial portion of said sealing element and being spaced away from and out of contact with said frusto-conical portion of said sealing element, and bonding said filler ring solely to both said cylindrical portion of said metal case and said radial portion of said sealing element, said positioning and bonding steps comprising molding said filler ring in place, and including the step of molding a plurality of hydrodynamic pumping elements on a shaft engaging surfce of said frusto-conical portion of said sealing element during said molding step.

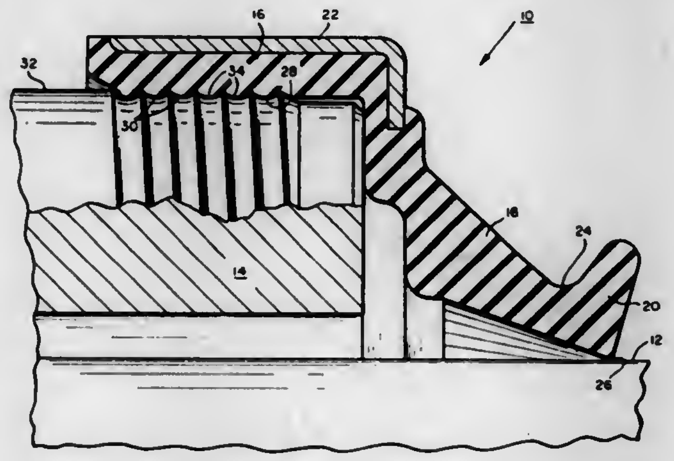
4,131,286
SEAL AND METHOD FOR ATTACHING SEAL

Dean R. Bainard, Bethel Township; York County, S.C., assignor to Garlock Inc., Rochester, N.Y.

Filed Jun. 30, 1976, Ser. No. 701,350

Int. Cl.^{2} F16J *9/06*

U.S. Cl. 277—152 **3 Claims**



1. Apparatus comprising a unitary seal attached to a housing,

said seal including an integral mounting portion and sealing portion, said sealing portion including a sealing lip portion, both of said portions being made of elastomeric material and said mounting portion having at least one elastomeric, molded screw thread on a mounting surface thereof, said housing having at least one screw thread on a corresponding mounting surface thereof, said seal being attached to said housing by said screw-threaded surfaces being in screw threaded contact with each other, and said screw thread of said mounting portion having a different number of threads per inch than said screw thread of said housing, whereby the mis-match in the number of screw threads causes the screw thread on the mounting portion to cross-thread while still providing a good and satisfactory attachment.

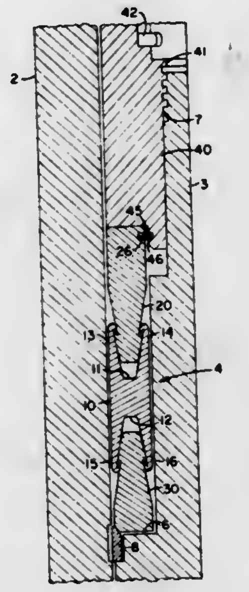
4,131,287
ANNULAR SEAL

Richard H. Gunderson, and William T. Ilfrey, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Jul. 11, 1977, Ser. No. 814,080

Int. Cl.^{2} F16J *15/08*

U.S. Cl. 277—191 **10 Claims**



1. A seal for sealing an annular volume existing between an outer cylindrical member having an inner sealing surface and an inner cylindrical member having an outer sealing surface comprising:

a sealing ring adapted to be positioned between the sealing surfaces of the cylindrical members, the sealing ring having a first set of two sealing lips projecting in one direction from the sealing ring defining a first channel where one of the sealing lips is capable of sealingly contacting the inner sealing surface of the outer cylindrical member, and the other sealing lip is capable of sealingly contacting the outer sealing surface of the inner cylindrical member, the sealing ring having a second set of two sealing lips projecting in the opposite direction as the first set of sealing lips from the sealing ring defining a second channel where one sealing lip of the second set of two sealing lips is capable of sealingly contacting the inner sealing surface of the outer cylindrical member and the other sealing lip of the second set of two sealing lips is capable of sealingly contacting the outer sealing surface of the inner cylindrical member;

a first setting ring at least partially disposed within the first channel and capable of contacting the sealing lips defining the first channel;

a second setting ring at least partially disposed within the second channel and capable of contacting the sealing lips defining the second channel, the surfaces of the setting rings and the sealing lips which contact each other when the setting rings are moved toward the sealing ring being adapted in a manner such that the sealing lips are spread into sealing contact with the sealing surfaces of the cylindrical members when the setting rings are moved toward the sealing ring; and

means for connecting the setting rings to the sealing ring.

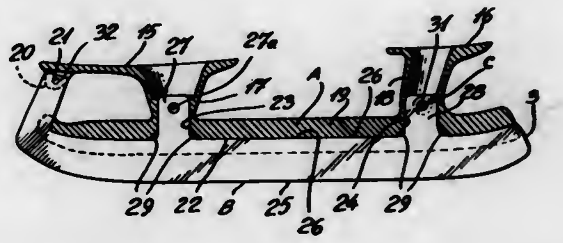
4,131,288
SKATE WITH REPLACEABLE BLADE

Stephen G. Wilson, 592 Lemoyne Ave., Beloeil, Quebec, Canada

Filed Aug. 3, 1976, Ser. No. 711,201

Int. Cl.^{2} A63C *1/30*

U.S. Cl. 280—11.17 **3 Claims**



1. A skate, comprising:

a frame having front and rear sole plates, front and rear pedestals extending, respectively, from said front and rear sole plates, and a tube-shaped section mounted on said pedestals, said sole plates, pedestals and tube-shaped section comprising a single, integral, die-cast unit;

a blade comprising an elongated body and having front, intermediate and rear tangs extending from one edge of said elongated body, the other edge of said elongated body comprising a sharpenable edge;

said tube-shaped section being provided with a groove for receiving said blade;

each pedestal having a slot extending inwardly from said groove to receive a respective tang of said blade;

said blade being held firmly in said groove with said intermediate tang in said slot of said front pedestal and said rear tang in said slot of said rear pedestal;

and means for removably retaining said blade in said frame, said means for removably retaining comprising:

locking pin holes extending transversely through said rear pedestal on either side of the receiving slot therein;

a registering opening in the rear tang of said blade;

a locking pin extending through the locking pin holes and the registering opening;

said locking pin having a head at one end thereof, the dimensions of said head being greater than the cross-sectional dimensions of said locking pin holes, said head seating on one of the outer surfaces of said rear pedestal;

said locking pin having a groove at the other end thereof for receiving a removable, resilient locking member;

said locking member, when in said groove, engaging a second outer surface of said rear pedestal to retain the pin in position.

4,131,289
SKI EQUIPMENT CARRIER

Karen Maller, 265-24 74th Ave., Glen Oaks, N.Y. 11004

Filed Aug. 24, 1976, Ser. No. 717,068

Int. Cl.^{2} A63C *11/10*

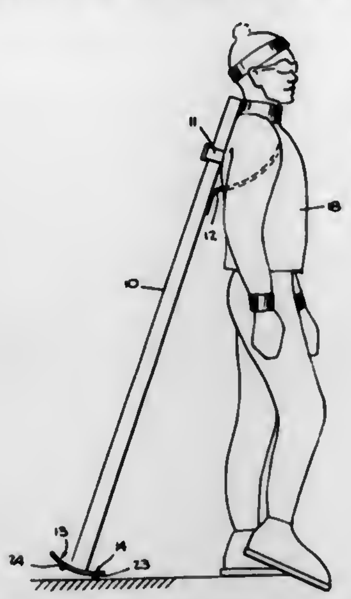
U.S. Cl. 280—11.37 K **9 Claims**

4. An apparatus for carrying ski equipment, comprising:

(a) a container member adapted to substantially fully accommodate ski equipment comprised of one or more skis and/or ski poles, said container member having inner and outer surfaces and being foldable into compact form when the ski equipment is removed therefrom;

(b) a base member integral with one end of said container member; and

(c) skid means affixed to said base member wherein said base member is bowed and wherein skid means comprises freely rotating ball-like rollers and a projection connected to the base member such that the apparatus when containing the ski equipment can stand alone in a vertical position by resting on the rollers and the projection and such that when the apparatus is tilted forward to be transported by the skier the projection no longer engages the ground and the apparatus is permitted to be transported over a bare surface on the rollers and snow covered surfaces on the bottom surface of the base member.



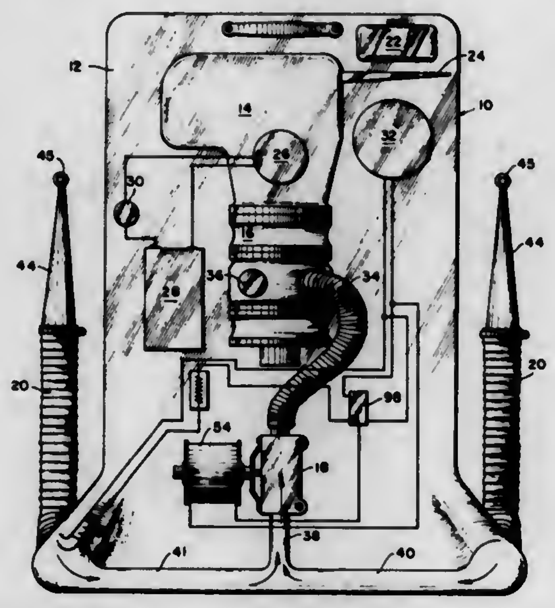
4,131,290
SKI PROPULSION PACK

Joseph A. McMillan, P.O. Box 1331, Pagosa Springs, Colo. 81147

Filed Oct. 17, 1977, Ser. No. 842,479

Int. Cl.² A63C *11/00*

U.S. Cl. 280—11.37 R 9 Claims



1. A muscle assisting device for aiding the arms of a user in making pulling motions, comprising:

(a) an air pump having an air intake;

(b) linearly expandable and contractable hose means having an end connected to said air intake and an opposite closed end;

(c) suction release means having a first position venting said air intake and hose means to the atmosphere and a second position sealing the air intake and hose means against entrance of outside air;

(d) switch means for selectively moving said suction release means between first and second positions;

(e) attaching means for engaging the closed end of said hose means with the arms of the user; and

(f) motor means connected to said pump for providing power thereto, the pump and motor means being carrier by the user.

4,131,291
TILTABLE AND REMOVABLE SKI ATTACHMENT

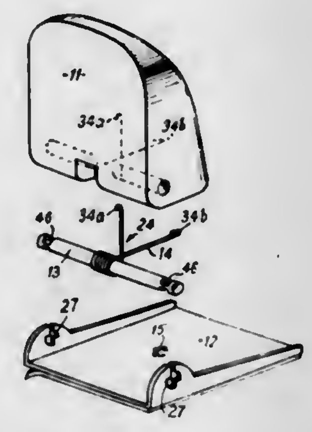
Dieter Thon, Munich, Fed. Rep. of Germany, assignor to Safety Jet Skisicherheitsbugel GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 8, 1976, Ser. No. 748,613

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1975, 2555514

Int. Cl.² A63C *11/00*

U.S. Cl. 280—11.37 E 9 Claims



1. An anti-crossing attachment for skis comprising:

(i) a base plate having a base portion, for attachment to a ski, and spaced opposed upstanding side wall portions on said base portion, each side wall portion having therein an aperture including a slot one end of which opens at the upper edge of the side wall portion and the other end of which terminates in an opening of greater width than the slot,

(ii) a deflector having an upper end and a lower end and with an axle engaged transversely through the lower end and projecting at each of its ends from the deflector, said axle being locked against rotation with respect to the deflector, said axle having in each of its projecting ends a portion of reduced diametral thickness which is dimensioned to permit it to be passed, when the axle is in a first position of rotation, through the slot into the opening, but to be incapable of passing outwardly from the opening through the slot when the axle is in a second position of rotation 90° removed from said first position, said first position corresponding to the deflector being in a lowered condition with respect to the base plate and said second position corresponding to the deflector being in a raised condition with respect to the base plate,

(iii) disengageable resilient means to act between the base plate and the deflector to urge the deflector to raised condition,

(iv) stop means on the deflector to abut against the base plate and limit movement of the deflector in one direction to raised position.

4,131,292
FRONT SKI ATTACHMENT FOR MOTOR BIKE

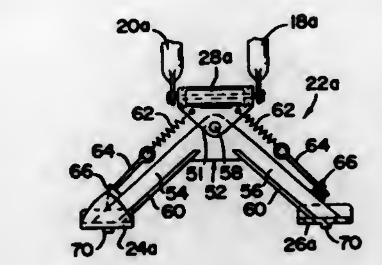
Melvin J. Swech, 1414 Garfield Ave., Brunswick, Ohio 44214

Filed Mar. 10, 1977, Ser. No. 776,124

Int. Cl.² B62M *27/02*

U.S. Cl. 280—14 2 Claims

1. A ski attachment for a motor bike or the like for use to replace a front wheel of the vehicle, which vehicle has a pair of parallel front support arms adapted to operatively position a wheel and its support sleeve at the lower end of said support arms, said attachment comprising a pivotably mounted support sleeve adapted to be positioned by and extend between the support arms replacing a wheel and its support sleeve, a pair of skis, and a reenforcing means secured to and extending between said support sleeve and said skis to form a unit therefrom, said support sleeve having a dependent flange thereon and said reenforcing means comprising an A-shaped metal frame fixedly secured at its base portions to said skis and secured to said support sleeve at said dependent flange; and adjustable tension means connecting said skis to opposed edge portions of said flange, and said ski unit can pivot laterally of the bike.



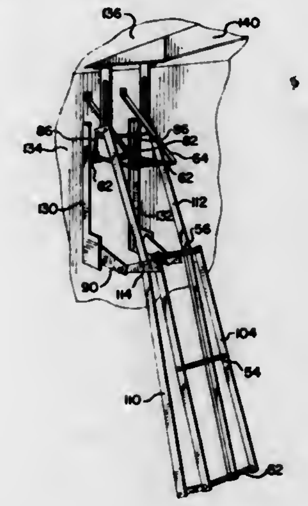
4,131,293
RETRACTABLE SERVICE LADDER

John J. Kindle, Bettendorf, Iowa, assignor to International Harvester Company, Chicago, Ill.

Filed Oct. 14, 1977, Ser. No. 842,446

Int. Cl.² B60R *3/02*

U.S. Cl. 280—166 12 Claims



1. In a combine having an access platform integral with a combine body, a stowable access ladder comprising:

a ladder frame pivotally mounted to said combine body below said access platform, said ladder frame including a pair of hinge leaves having apertured ends, the hinge leaves being elongated brackets acting as spacing members locating said ladder away from said combine body, a pair of frame members one fixed at an upper end thereof to each hinge leaf, a pair of rung carriers, one fixed at an upper end thereof to each hinge leaf, a pair of spreaders each spaced between the lower ends of said frame members and said rung carriers, a plurality of rungs spaced between each of said rung carriers between the lower end and the upper end of said rung carriers;

a linkage member having an elongated longitudinal slot in a midsection thereof fixedly mounted in vertical alignment to said combine body below said access platform and above said pivotal mounting of said ladder frame;

a support strap having an integral upper support strap pin and an integral tab, the support strap pivotally attached at a lower end thereof to said ladder frame and having the pin slidably carried in said slot of said linkage member at an upper end thereof;

a spring grounded to said combine body at a point below the lower termination point of said elongated slot of said linkage member and attached to said tab of said support strap, whereby

said spring is relatively relaxed when said ladder frame has been pivoted to a fully deployed position corresponding to said upper support strap pin being at the lower extreme of the slot of said linkage member and said spring is partially extended when said ladder frame is in a stowed position where said upper support strap pin is in the middle of said slot.

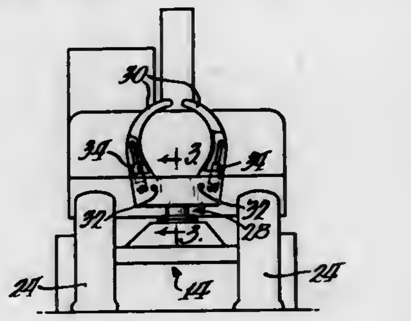
4,131,294
SKIDDING AND BUNCHING TRAILER

Robert G. Johnson, Rothschild, and Earl D. Drefcinski, Wausau, both of Wis., assignors to J. I. Case Company, Racine, Wis.

Filed Mar. 10, 1977, Ser. No. 776,138

Int. Cl.² B60P *7/12*

U.S. Cl. 280—179 R 8 Claims



3. A trailer attachment for a tree harvester comprising a main frame including an elongated axle having ground engaging wheels at opposite ends thereof, a support frame carried by said main frame, a grapple frame pivoted about a generally horizontal axis on said support frame and having a generally flat upper support surface for supporting trees thereon, and biasing means pivoted at one end on said support frame through a first pivot and at an opposite end on said grapple frame through a second pivot, said first and second pivots being arranged so that said pivots and said horizontal pivot axis are located in a common inclined plane to position said upper support surface generally horizontal when trees are removed from said grapple frame.

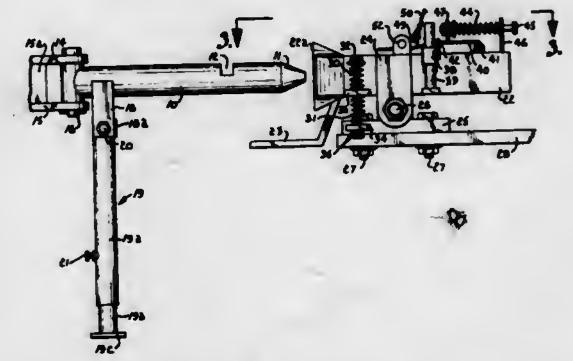
4,131,295
QUICK CONNECT HITCH ASSEMBLY

Clarence Highberger, Highway 59 North, Garnett, Kans. 66032

Filed Sep. 19, 1977, Ser. No. 834,340

Int. Cl.² B60D *7/00*

U.S. Cl. 280—475 8 Claims



1. A hitch assembly for coupling first and second vehicles for towing, said hitch assembly comprising:

a bar member adapted to be mounted on the first vehicle in substantially horizontal extension therefrom, said bar member having a notch defined therein;

a body member adapted to be mounted on the second vehicle, said body member having a substantially hollow interior and an open end for receiving said bar member;

at least one substantially straight guide post on said body member;

a sleeve received on said guide post for sliding movement axially thereon;

a latch element carried on said sleeve for movement therewith between a hitching position projecting into the interior of said body member at a location to register with said notch in a manner to retain said bar member hitched to said body member within the latter, and a release position displaced from said notch; and

resilient means for biasing said latch element to the hitching position,

said bar member having a free end portion formed to engage a cooperating surface of said latch element in camming fashion to automatically displace the latter from its hitching position as the bar member is entering said body member, with said resilient means effecting automatic movement of said latch element to the hitching position in registration with said notch when the bar member reaches a fully inserted position within the body member.

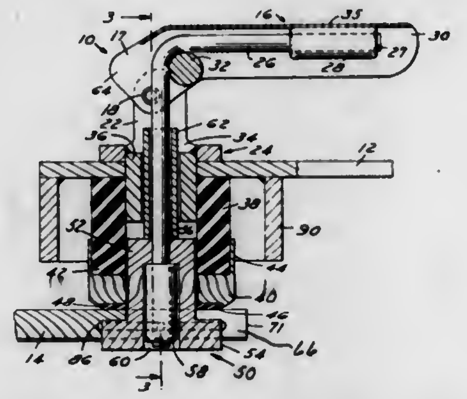
4,131,296
SELF-DAMPING TRAILER HITCH

Don S. Strader, Marietta, Ga., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Jan. 9, 1978, Ser. No. 867,690

Int. Cl.² B60D *1/00*

U.S. Cl. 280—485 **12 Claims**



1. A trailer hitch for releasably coupling a draft vehicle to a drawn vehicle comprising a draw tongue adapted to extend from one of said draft and drawn vehicles; coupling means carried for bodily movement beneath said draw tongue; means for selectively bodily moving said coupling means upwardly and downwardly beneath said draw tongue; and a drawbar adapted to extend from the other of said vehicles including means defining a laterally opening slot adapted to receive said coupling means in a downward position of said coupling means and means defining a downwardly opening recess communicating with said slot and adapted to capture a portion of said coupling means as the latter is drawn upwardly by said moving means, said coupling means thereby coupling said drawbar to said draw tongue in an upward captured position of said coupling means.

4,131,297
DOUBLE AXLE SUSPENSION

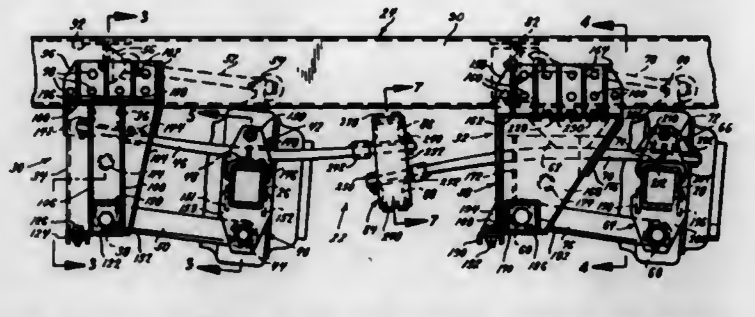
John E. Raidel, Rte. 9, Box 400-M, Springfield, Mo. 65804

Filed Oct. 1, 1976, Ser. No. 728,868

Int. Cl.² B60G *5/04*

U.S. Cl. 280—682 **25 Claims**

1. A vehicle suspension assembly for a vehicle having a chassis and front and rear axles comprising front and rear hanger assemblies depending from the vehicle chassis, a shackle assembly, a front leaf spring extending between the front hanger assembly and the shackle assembly, a rear leaf spring extending between the rear axle and the shackle assembly, means flexibly mounting the front spring to the front hanger assembly, means flexibly mounting the front and rear spring to the shackle assembly, all of said flexible mounting means permitting longitudinal deflection of the springs with respect to its associated mounting, the front leaf spring having a part between the front hanger assembly and the shackle assembly bearing downwardly against the front axle, a spring guide between the front axle and the part of the front leaf spring bearing thereon to permit relative longitudinal sliding movement between the front leaf spring and the front axle, and a load pad means supported by the rear hanger assembly, the rear leaf spring having an area between the rear axle and the shackle assembly bearing upwardly against the load pad means.



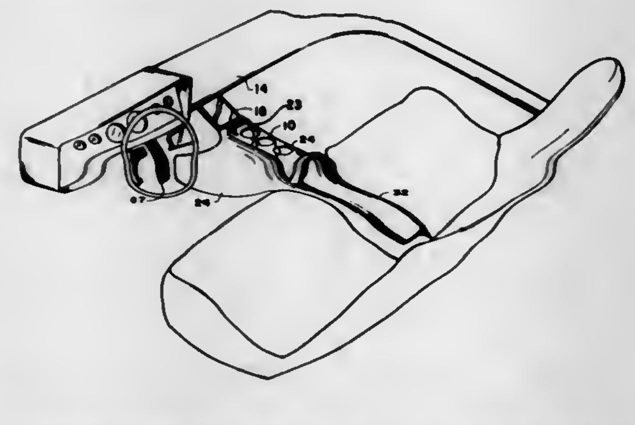
4,131,298
COMBINED ARM AND LEG REST FOR DRIVERS

Ulysee Douglas, 3203 W. Vernon Ave., Los Angeles, Calif. 90008

Filed Jun. 8, 1977, Ser. No. 804,717

Int. Cl.² B60R *27/00*

U.S. Cl. 280—727 **2 Claims**



1. A combined leg and arm rest device which is attachable in an automobile to the dashboard of the automobile comprising

a clamping member adaptable for fastening to a dashboard, said clamping member joined by a swivel joint to a plate member,

said plate member secured to an arm rest member and secured to a leg support member, with

said arm rest member extending from the plate member in a direction opposed from said clamping member, and

said leg supporting member extending, in the installed position, downwardly and towards the normal position of the leg of a driver of the vehicle.

4,131,299
GAS GENERATOR FOR INFLATABLE VEHICLE COLLISION BAG

Koichi Ono; Toshiyuki Takahara, both of Tatsuno, and Tetsuyoshi Ito, Himeji, all of Japan, assignors to Daicel Ltd., Sakai, Japan

Filed Apr. 5, 1977, Ser. No. 784,880

Claims priority, application Japan, Apr. 5, 1976, 51-38041

Int. Cl.² B60R *21/08*

U.S. Cl. 280—736 **6 Claims**

1. A gas generator for an inflatable vehicle safety bag, comprising:

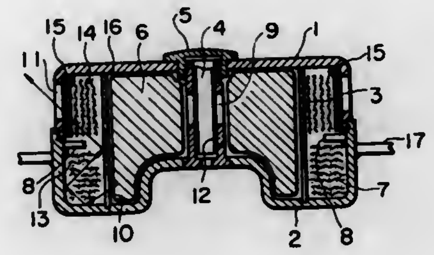
a) a cylindrical, skirted diffuser cap having a plurality of gas outlet openings spaced around its skirt,

b) a cylindrical, skirted base member having a central recess therein and engageable with the cup skirt to define therewith a generator housing,

c) a hollow cylindrical squib holder centrally and axially disposed between the cup and base member and having a plurality of spaced openings around its periphery,

d) a partition ring axially disposed between the cup and base member in a concentric manner with respect to the squib holder and the engaged skirts, to thereby define a first hollow cylindrical chamber between the ring and the holder and a second hollow cylindrical chamber between the skirts and the ring, and having a plurality of spaced openings in its lower periphery proximate the base member,

e) an annular diverter ring disposed on the inner periphery of the engaged skirts proximate the midpoint thereof and extending inwardly in the second chamber toward the partition ring but terminating short thereof,



f) first and second laminar wire gauze bodies disposed in and substantially filling the second chamber below and above the diverter ring, respectively, said first and second laminar wire gauze bodies being disposed substantially perpendicular to one another and further being disposed with respect to the spaced openings in said diffuser cup and the spaced openings in said partition ring so that gas passing through said second chamber passes through said first and second laminar wire gauze bodies at oblique angles,

g) sintered metallic fiber ring disposed in the second chamber above the diverter ring and between the second wire gauze body and the openings in the diffuser cup skirt, said sintered metallic fiber comprising stainless steel fibers sintered to a sheet of stainless steel wire gauze,

h) an electric ignition squib disposed in the squib holder, and

i) a gas generating chemical agent disposed in the first chamber.

4,131,300
INFLATOR FOR AUTOMOBILE SAFETY DEVICE

Donald G. Radke, Rochester, and Donald J. Lewis, Troy, both of Mich., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 376,866, Jul. 5, 1973, abandoned. This application Dec. 30, 1974, Ser. No. 537,497

The portion of the term of this patent subsequent to Aug. 26, 1992, has been disclaimed.

Int. Cl.² B60R *21/00*

U.S. Cl. 280—737 **3 Claims**

2. An apparatus for inflating at least one safety device, said apparatus comprising:

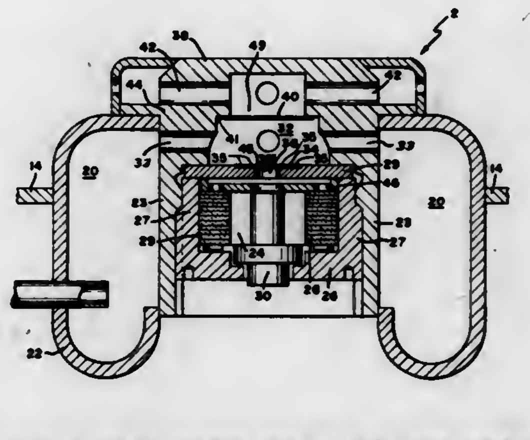
(a) a stored gas chamber adapted to be filled with a compressed gas;

(b) a gas generating chamber, adjacent to but separate from said stored gas chamber, said gas generating chamber being adapted to contain a combustible material, said combustible material being adapted to generate high pressure combustion gas in said gas generating chamber upon combustion, said gas generating chamber being adapted to contain an actuating means for igniting said combustible material, thereby causing combustion of said combustible material;

(c) a mixing chamber in communication with said stored gas chamber, in which mixing chamber said stored compressed gas and said generated combustion gas are mixed to form a hybrid gas adapted for inflating said safety device;

(d) a combustion gas barrier disposed between said mixing chamber and said gas generating chamber, said combustion gas barrier being adapted to prevent said stored compressed gas from entering said gas generating chamber from said mixing chamber prior to actuation of said combustible material, and being designed to rupture when the heat and pressure in said gas generating chamber exceed a predetermined temperature and pressure of said combustion gas barrier, whereby said combustion gas flows into said mixing chamber;

(e) an outlet means being disposed between and being adjacent to said mixing chamber and said safety device, through which outlet means said hybrid gas passes from said mixing chamber to said safety device; and



(f) a hybrid gas barrier disposed between said mixing chamber and said outlet means to prevent said stored compressed gas from entering said outlet means from said mixing chamber prior to actuation of said combustible material, said hybrid gas barrier being adapted to rupture when the heat and pressure in said mixing chamber exceed a predetermined temperature and pressure, whereby said hybrid gas flows through said outlet means and into said safety device; and wherein:

(g) said combustion gas barrier has weak points disposed therein, said weak points being designed to rupture when the heat and pressure in said gas generating chamber exceed a predetermined temperature and pressure; and

(h) said combustion gas barrier ruptures only at said weak points and thereby produces small ports in said barrier, thereby increasing the velocity of said combustion gas passing through said ports.

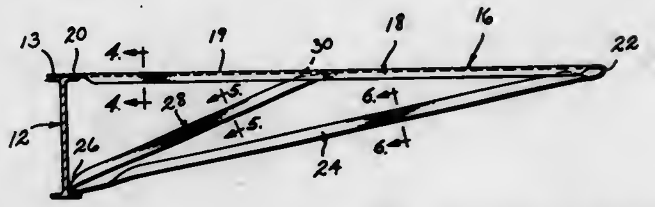
4,131,301
CHASSIS FOR A MOBILE HOME

Michael F. Werner, Elkhart, Ind., assignor to Skyline Corporation, Elkhart, Ind.

Filed Jun. 29, 1977, Ser. No. 811,049

Int. Cl.² B62D *63/06*

U.S. Cl. 280—789 **7 Claims**



1. In a chassis for a mobile home, said chassis including longitudinal frame members interconnected by a plurality of transverse frame members, each longitudinal frame member

having an inner side and an outer side, the inner sides of said longitudinal frame members being oppositely positioned, outriggers projecting laterally from the outer side of each longitudinal frame member, the improvement wherein each outrigger is of a one piece strip construction comprising:

an upper horizontal section, a lower angled section, and a brace section; said horizontal section connected at one end to a said longitudinal frame member and having its other end spacedly located from said longitudinal frame memeber; said angled section connected at one end by a first bend to the other end of said horizontal section and extending downwardly thereform under said horizontal section;

said angled section terminating at its other end adjacent the longitudinal frame member; said brace section having one end connected by a second bend to the other end of said angled section and extending diagonally therefrom between said angled section and horizontal section, said brace section terminating at its other end at a location intermediate the ends of said horizontal section; the other end of said brace section being connected to said horizontal section at said location; said angled and brace sections being connected to said longitudinal frame member adjacent said second bend spacedly below the connection of said horizontal section one end to the longitudinal frame member.

4,131,302

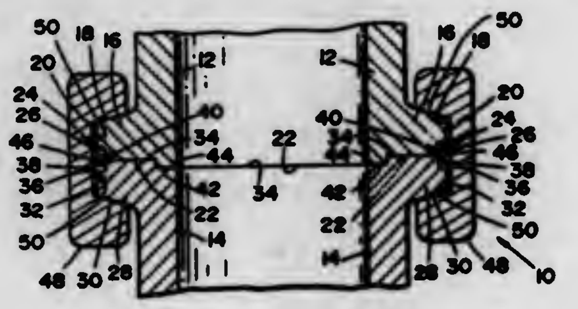
CLAMP-WELDED PIPE JOINT

Byron H. Leonard, Jr., Atherton, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Division of Ser. No. 695,605, Jun. 14, 1976, Pat. No. 4,065,846. This application Sep. 1, 1977, Ser. No. 829,696

Int. Cl.^{2} F16L *13/04*

U.S. Cl. 285—114 **2 Claims**



1. A pipe joint comprising: first and second pipe segments having male frustoconical skirts extending outwardly around the periphery of confronting portions of said pipe segments; said frustoconical skirts having mutually opposed machined and mated surfaces; said frustoconical skirts when mated defining angularly inclined sidewalls sloping from a broad cross section radially adjacent said pipe segments to a narrow cross section radially remote from said pipe segments; said skirts uniformly compressed towards each other such that said mated surfaces are in intimate contact; each of said skirts having an annular groove adjacent confronting portions of said periphery, thereby defining a mating ridge for receiving a seal weld; a seal weld sealably fusing said first and second pipe segments along said mating ridge defined by said uniformly compressed skirts; and a collet having a plurality of circumscribing segments extending around said skirts with a female frustoconical channel mating said male frustoconical skirts, said female frustoconical channel defining two opposed angularly inclined sidewalls sloping from defining a broad cross section of said channel radially adjacent said pipe segments to a narrow cross section radially remote from said pipe segments, said collet including means for circumferentially compressing said collet onto said juxtaposed skirts, thereby axially compressing said first and second pipe segments, for providing the mechanical strength of said pipe joint and for maintaining each of said skirts uniformly compressed with said seal weld extending across said ridge.

4,131,303

TELESCOPIC ASSEMBLY FOR PIPES FOR CONVEYING FLUIDIZED MATERIALS

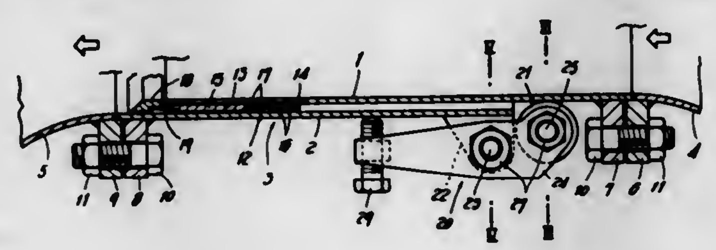
Katsumi Nagasaki, Sakai; Koichi Tanimura, Suita; Yoshihiro Inoue, Nishinomiya; Hiroyuki Yamazaki, Amagasaki, and Tetsuo Momose, Hirakata, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Jul. 5, 1977, Ser. No. 812,683

Claims priority, application Japan, Jul. 8, 1976, 51-81554

Int. Cl.^{2} F16L *27/12*

U.S. Cl. 285—302 **9 Claims**



1. A telescopic pipe assembly comprising an inner pipe and an outer pipe each having an end coaxially fitted one within the other for bi-directional relative axial movements,

a scraper attached to said end of the inner pipe and elastic means for urging the scraper into pressing contact with the inside peripheral surface of the outer pipe,

packing means mounted on the outer peripheral surface of the inner pipe inwardly of said end from said scraper for providing a minute clearance with the inside peripheral surface of the outer pipe, and

spacer means mounted on the outer pipe adjacent said end thereof, said spacer means including a plurality of rollers contacting the outer peripheral surface of the inner pipe for maintaining a uniform clearance between said pipes.

4,131,304

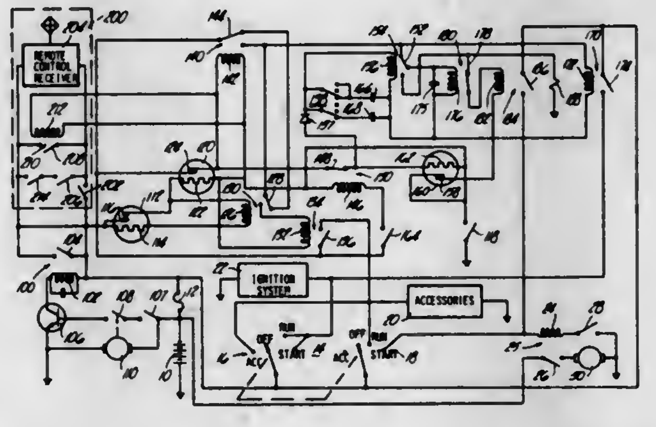
AUTOMATIC STARTER FOR VEHICLE

Richard J. Wagner, 125 North Dr., Wyandotte, Mich. 48192

Filed May 9, 1977, Ser. No. 795,288

Int. Cl.^{2} F02N *11/08*

U.S. Cl. 290—38 C **18 Claims**



1. An automatic starting system for an internal combustion engine having a source of electrical power having one output connected to a common ground, an ignition system, a starting interlock, a throttle for controlling the speed of the engine and an electrically actuated starter motor for cranking the engine comprising:

means for generating an activation signal;

first timer means for generating a start energize signal for a first predetermined time after the initiation of said activation signal;

an interlock switch generating an interlock signal when the starting interlock is in its actuated position;

means for generating an engine-running signal indicative that the engine has started and is running under its own power;

a throttle solenoid for moving the throttle to a start position when energized;

start signal generator means energized in response to said start energize signal, said interlock signal and the absence of said engine-running signal for generating a first signal energizing said ignition system, a second signal energizing said throttle solenoid, and a third signal energizing the starter motor to crank the engine, said start signal means generating said third signal a predetermined time after said first and second signal, and further operative to terminate said second and third signals in response to said engine running signal; and

a second timer means for generating a termination signal de-energizing said start signal generator and terminating said first, second and third signals, a second predetermined time after the initiation of said start energize signal.

4,131,305

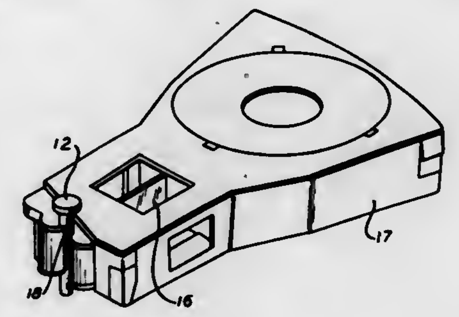
LEADER PIN

Ira Lopata, 35 Sutton Pl., New York, N.Y. 10022

Filed May 11, 1977, Ser. No. 796,027

Int. Cl.^{2} B65H *75/28*

U.S. Cl. 242—74 **10 Claims**



1. A leader pin comprising:

(a) a rod,

(b) a knob on one end of the rod,

(c) a bifurcated section at the other end of the rod, defining a longitudinal slot for a strip to be inserted therebetween,

(d) one portion of the bifurcated section at the other end of the rod being longer than the other,

(e) a first fin on the longer portion of the bifurcated section extending across a plane defined by the slot, to restrain a strip in the slot against latitudinal movement in the slot,

(f) an elongated tube dimensioned to receive the rod,

(g) a longitudinal slit in the tube through which the strip in the slot may extend,

(h) the rod positioned in the tube,

(i) a second fin on the longer portion of the bifurcated section of the rod extending away from a plane defined by the slot in the rod, to restrain the rod from sliding out of the tube when they are engaged together.

4,131,306

DOOR LOCK ACTUATOR WITH OVERRIDE MECHANISM

John Sokoly, Detroit, and Kenneth N. Roberts, Canton, both of Mich., assignors to Essex Group, Inc., Fort Wayne, Ind.

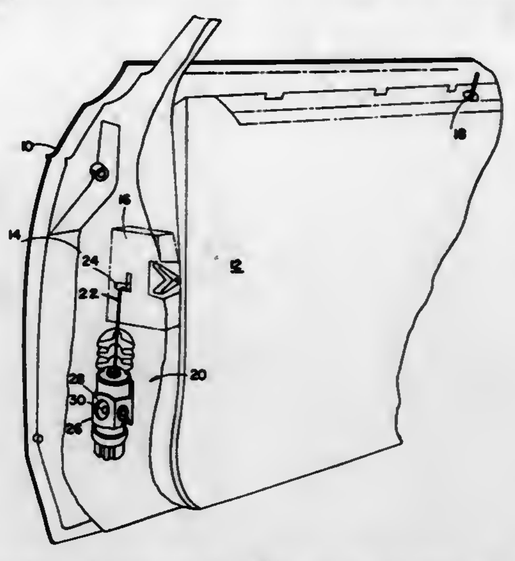
Filed Jul. 14, 1977, Ser. No. 815,480

Int. Cl.^{2} E05C *13/10*

U.S. Cl. 292—201 **2 Claims**

1. In a door locking apparatus including a locking mechanism movable between locked and unlocked positions, manually reversible power operated drive means connected to said locking mechanism for moving it between said locked and unlocked positions, non-yielding manual means connected to said lock mechanism for moving it between said locked and unlocked positions, said power operated drive means being caused to reverse whenever said manual means is used to lock or unlock said lock mechanism, the improvement which comprises:

bracket means for normally mounting said drive means in a fixed position relative to said locking mechanism, said bracket means including means for allowing disengagement of said drive means and said bracket means whenever said drive means is jammed and said manual means is moved from said locked position to said unlocked position.



4,131,307

AUTOMATIC HOOKING SAFETY-HOOK FOR DOORS OF DWELLINGS AND OFFICES

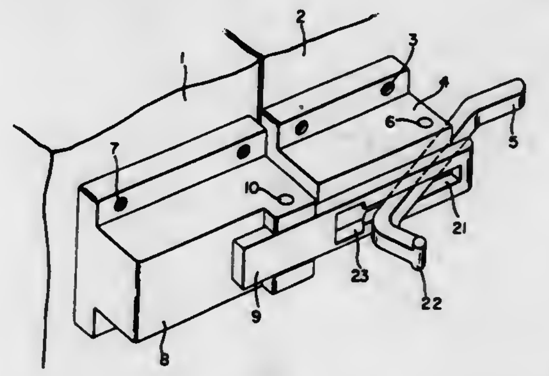
Rita De Rossi, Via del Trullo 60, Rome, Italy (00100)

Filed Mar. 22, 1977, Ser. No. 779,962

Claims priority, application Italy, Mar. 31, 1976, 48805

Int. Cl.^{2} E05C *17/24*

U.S. Cl. 292—268 **10 Claims**



1. An automatic hooking safety hook for securing a door pivotally mounted in a door frame and normally openable in an arc about a point lying substantially in the plane of the door frame, said safety hook comprising:

a rocking member having an engaging end and adapted for attachment to a door frame for pivotal movement in a plane substantially perpendicular to the plane of the door frame between a disengaging position, in which said engaging end is positioned adjacent the door frame, and an engaging position, in which said engaging end is pivoted away from the door frame;

an eyed member adapted for attachment to a door and including means for receiving said rocking member engaging end;

bias means for biasing said rocking member engaging end away from the door frame toward its engaging position to retain said engaging end engaged within said receiving means;

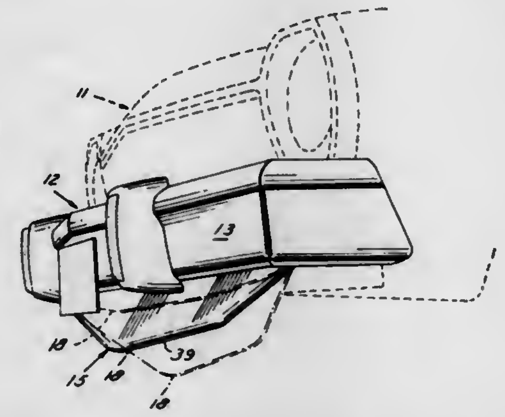
first actuating means operable from inside the door for pivoting said rocking member engaging end toward the door

frame to its disengaging position to permit release of said engaging end from said receiving means; and
second actuating means operable from outside the door for pivoting said rocking member engaging end toward the door frame to its disengaging position to permit release of said engaging end from said receiving means.

4,131,308
SELF-DEPLOYING CHIN SPOILER FOR A VEHICLE

Thomas C. Holka, Farmington Hills; James V. Chabot, Birmingham, and Charles Haddad, West Bloomfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 9, 1978, Ser. No. 868,170
Int. Cl.^{2} B62D *37/00*
U.S. Cl. 296—1 S **9 Claims**



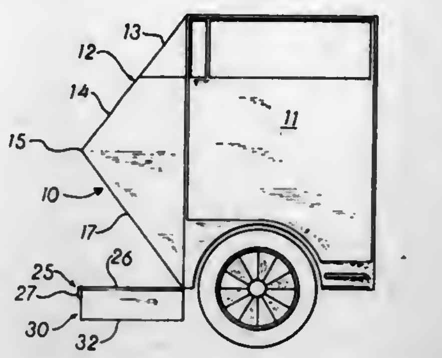
1. A combination of a laterally extending bumper mounted on the front end of a vehicle and a self-deploying chin spoiler mounted beneath the bumper,
the vehicle bumper having an ornamental face bar and a reinforcing member concealed therebehind,
and the chin spoiler comprising a support means attached to said bumper reinforcing member,
an airfoil contoured along its leading edge to complement the frontal contour of the bumper face bar,
hinge means securing the airfoil along its rear edge to the support means rearwardly of said bumper reinforcing member,
and biasing means interposed between the support means and the airfoil normally biasing the latter toward the underside of the bumper face bar in a concealed position beneath the vehicle,
the hinge means providing a hinge axis extending laterally of the vehicle about which the airfoil is deployable,
the biasing means resisting such deployment until the speed of the vehicle reaches a predetermined velocity at which air pressure exerted upon the upper surface of the airfoil overcomes the biasing force of the biasing means.

4,131,309
VEHICLE WIND DEFLECTOR

Lowell D. Henke, P.O. Box 1505, Conrad, Mont. 59425

Filed Sep. 23, 1977, Ser. No. 836,028
Int. Cl.^{2} B62D *35/00*
U.S. Cl. 296—1 S **10 Claims**

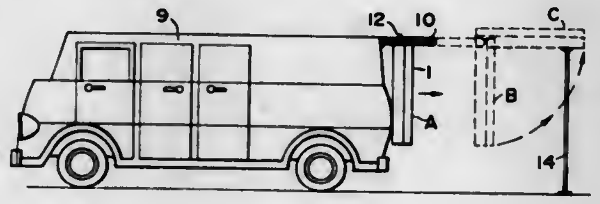
1. A frontal assembly for attachment to a cab-over-engine type vehicle including a wind deflector extending from the front thereof and a bumper assembly located below said wind deflector extending beyond the leading edge of said wind deflector; said wind deflector including a plurality of substantially flat sections with a first section extending downwardly and forwardly from the vehicle body and diminishing in width from a width substantially the same as that of said vehicle body at a point adjacent the lower edge of the windshield of said vehicle to a reduced width at its most forward edge, a second section extending downwardly and rearwardly from said leading edge of said first section toward the bottom of said vehicle body, and side sections extending from the side edges of said first and second sections toward the sides of said vehicle body, said first section being positioned in a plane intersecting the top of said vehicle body and said second section being positioned in a plane intersecting the bottom of said vehicle body.



4,131,310
COMPACT CAMPING RIG

Keith W. Martinsen, 6745 Riverside Dr. E., Windsor, Ontario, Canada (N8S 1C1)

Filed Jul. 18, 1977, Ser. No. 816,725
Int. Cl.^{2} B60P *3/34*
U.S. Cl. 296—23 R **2 Claims**



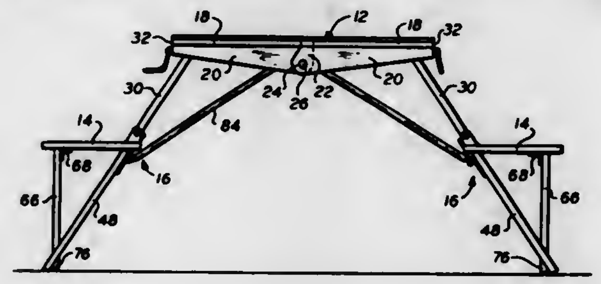
1. A folded self-contained camping rig which is attachable to the rear of a van or similar vehicle, in order to avoid wind drag, obstruction to sun roofs and air vents, and occupation of valuable room within said van, comprising in combination a rectangular central box with a partly enclosed bottom, having hingedly attached to each of two opposite sides thereof, a rectangular box-shaped wing, each of said wings having an open side opposite to the said hinged side, said wings being of the same length but half the width of the central box; the partly enclosed part of said central box being provided with a pair of doors to form an enclosed cupboard within the central box; a removable rectangular cover for the remaining open part of the central box, which is equipped with fold-away legs for the purpose of converting it into a table; extendable means for attaching said rig to the rear of said van and for supporting one end of said rig when unfolded for use; a pair of legs for supporting the free end of said rig when it is unfolded; and a tent of canvas or similar material which is attachable to the perimeter of the unfolded and erected rig, and to the rear of the van to which said rig is attached, and said tent being provided with flaps which cover the unfolded rig to form a roof for said tent, said tent being also divided into two equal but opposite sections for storing each section into each of said hinged wings.

4,131,311
COMBINED FOLDING TABLE AND SEAT ASSEMBLY

Edwin Nikitits, Lachine, and Jean G. Demers, Outremont, both of Canada, assignors to Franklyn M. Markus, Quebec, Canada

Continuation-in-part of Ser. No. 625,695, Oct. 24, 1975, Pat. No. 3,994,527. This application May 5, 1976, Ser. No. 683,327
The portion of the term of this patent subsequent to Nov. 30, 1993, has been disclaimed.
Int. Cl.^{2} A47B *39/00*
U.S. Cl. 297—159 **34 Claims**

1. In a collapsible combined table and confronting seat of the type wherein said seat and table are relatively pivotally movable between an open position wherein said table and seat are horizontal and the front edge of said seat is disposed adjacent and below one end of said table and a folded position wherein said seat is in substantially parallel relation with said table, an improved collapsible linkage for supporting said table and seat in said open position and for permitting said pivotal movement to said folded position, said linkage comprising:
a support member pivotally mounted at one end thereof to said table adjacent said one end of said table for movement between an open position in which said support member extends downwardly from said table and a closed position in which said support member is in confronting parallel relation with the bottom surface of said table;
a main leg, means for operatively pivotally mounting said main leg on said support member for movement relative to said support member between an open position in which said main leg and said support member are in substantially co-planar end-to-end relation and a closed position in which said main leg and support member are in confronting substantially parallel relation, whereby when said support member and said table are in their open position and said support member and said main leg are in their open position, said main leg extends downwardly away from said table, and when said table, said support member and said main leg are in their respective closed positions, said main leg and said support member are in confronting parallel relation with the bottom of said table;
means for pivotally mounting said seat on said support member for relative pivotal movement between an open position in which said seat extends outwardly away from said support member and substantially parallel to said table and a closed position in which said seat is in parallel relation with said support member;
another leg member, said other leg member being pivotally mounted along one edge thereof on said seat adjacent the edge of said seat remote from said table for movement between an open position in which said other leg member extends downwardly from said seat toward the bottom of said main leg when said main leg is in its open position relative to said support member and a closed position in which said other leg is in substantially parallel relation with said seat; and
means for detachably connecting said other leg to said main leg when all the elements of said linkage are in their respective open positions.

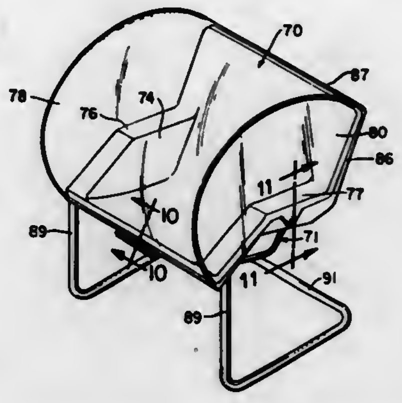


4,131,312
OUTDOOR FURNITURE WITH REMOVABLE WEATHER COVER

Robert J. Price, 10 Steepletop Rd., Rowayton, Conn. 06853

Filed Mar. 18, 1977, Ser. No. 779,034
Int. Cl.^{2} A47C *7/00*
U.S. Cl. 297—184 **12 Claims**

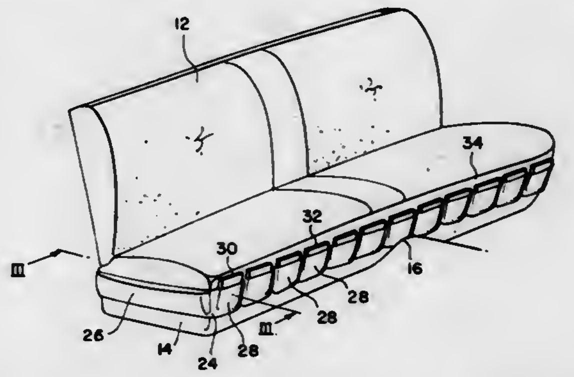
1. A weather protected outdoor chair or the like, which comprises
(a) a chair body having bottom, back and side wall panels,
(b) said panels forming an upwardly and forwardly facing body receiving recess,
(c) said panels and chair body being so constituted and assembled as to be relatively weatherproof to the wind-driven elements except as to the upwardly facing recess,
(d) a cover removably received on said chair body,
(e) said cover being structurally self-supporting and, when in covering position, serving to fully protect said recess from wind-driven elements,
(f) means for supporting the chair body,
(g) means on the chair body and/or supporting means for retaining said cover in an inactive position,
(h) said chair body having opposed, laterally outwardly extending substantially continuous flanges, extending substantially uninterruptedly from the upper edge of the back panel to the forward edge of the front panel,
(i) intermediate portions of said substantially continuous flanges forming armests,
(j) said cover having first portions extending laterally outward over the upwardly facing surfaces of said substantially continuous flanges and second portions extending downwardly in regions laterally outward of said flanges.



4,131,313
REMOVABLE STORAGE COMPARTMENT FOR AUTO SEATS

James E. Jacobs, 903 Tabor Rd., Rte. 13, Box 171, Gadsden, Ala. 35901

Filed Nov. 14, 1977, Ser. No. 850,898
Int. Cl.^{2} B60R *3/08*
U.S. Cl. 297—188 **5 Claims**



1. A removable storage compartment unit adapted to be detachably secured to a seat assembly of a vehicle about the side periphery of the seat portion of said seat assembly, comprising
a band-like member formed of two bands of flexible material joined together along a common bottom edge, which edge is generally parallel to the longitudinal axis of said member, with said bands joined together at spaced distances to form a plurality of first pockets in the member, open to the top edge of the member, which top edge is opposed to said bottom edge, with an individual strap secured to each end of the member, said straps each fitted with means to detachably engage together, in which
the unit is of a length to fit entirely about the front, rear and opposed end sides of an automobile seat, when the straps are engaged together.

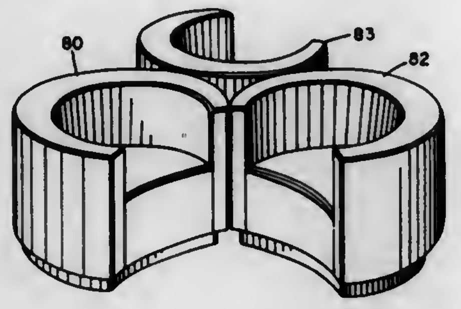
4,131,314
SEATING FURNITURE

Robert L. Knapp, Grand Rapids; Leif Blodee, Holland, and William R. Van Loo, Grand Rapids, all of Mich., assignors to American Seating Company, Grand Rapids, Mich.

Division of Ser. No. 774,230, Mar. 4, 1977, abandoned. This application Nov. 9, 1977, Ser. No. 849,892

Int. Cl.² A47C *15/00*

U.S. Cl. 297—248 **2 Claims**



1. In combination, first and second furniture elements, each including a lower skirt of rigid sheet material formed to define a uniform curvature over a major portion thereof, said skirt being disposed such that its width extends vertically; a joinder member including a base adapted to rest on a floor and defining first and second elongated slots conforming to said uniform curvature of said skirts and adapted to receive the same in side-by-side relation; and means for locking said skirts into said slots, said locking means including a flanged element removable from said joinder member and extending above both skirts when said flanged element is secured to said joinder member and said skirts are received in said slots to hold said skirts in their respective slots by preventing said skirts from being withdrawn vertically from their associated slots.

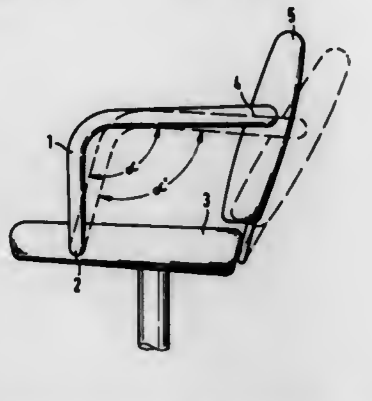
4,131,315
CHAIR WITH DEFORMABLE ARMREST

Burkhard Vogtherr, Kandern, Fed. Rep. of Germany, assignor to Firma Drabert Sohne, Minden, Fed. Rep. of Germany

Filed Sep. 29, 1977, Ser. No. 837,793

Int. Cl.² A47C *3/00*

U.S. Cl. 297—286 **3 Claims**



1. A chair or other article of furniture for sitting comprising:
- a seat,
- a reclinable backrest portion pivotally connected to said seat,
- at least one armrest member being integrally formed of a generally horizontal portion pivotally secured to said backrest portion and a generally vertical portion pivotally secured to said seat, both said horizontal and vertical portions of said armrest member being substantially rigid, said armrest member having a further arcuate portion which joins said vertical and horizontal portions and is bendable to permit variation of the angle of inclination of said backrest portion relative to said seat by deformation of said arcuate portion while permitting said horizontal and vertical portions to remain essentially straight.

4,131,316
VEHICLE SEATS

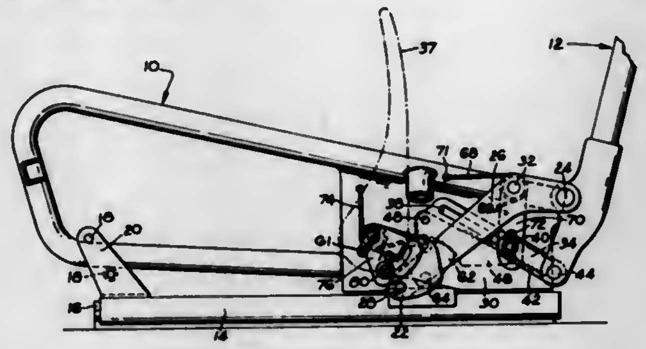
Joseph Pallant, Albrighton, and John P. Johndrow, Wildwood, both of England, assignors to H. R. Turner (Willenhall) Limited, Walsall, England

Filed Jun. 24, 1977, Ser. No. 809,630

Claims priority, application United Kingdom, Jul. 2, 1976, 27562/76; Nov. 27, 1976, 49594/76

Int. Cl.² A47C *1/02*

U.S. Cl. 297—341 **7 Claims**



1. A vehicle seat comprising a seat base, a backrest and structure supporting the seat base for sliding movement forwardly and rearwardly, the backrest and seat base being coupled together at spaced pivotal connections by a link which is also pivotally coupled to the supporting structure below its said pivotal connections with the backrest and seat base, releasable locking means being provided to maintain said link in a fixed predetermined angular position, whereby, when said locking means is released, folding of the backrest relative to the seat base pivots said link about its pivotal connection with said supporting structure and thereby imparts sliding movement to the seat base, said vehicle seat including second releasable locking means for controlling the angular inclination or said backrest relative to the seat base, said second locking means comprising an elongate member mounted on the seat base, below the pivotal connections between the link and the seat base and backrest, for sliding displacement in its lengthwise direction and a locking element mounted on said seat base and operable to engage said elongate member and being connected to said backrest by coupling means which, when said locking element is inoperable, translates angular movement of the backrest about its pivotal connection with said link into said sliding displacement of the elongate member whereby the backrest can be pivoted to a desired angular setting and held at such setting by rendering said locking element operable.

4,131,317
MINING MACHINE HAVING ADVANCING MINE ROOF SUPPORTS

Will B. Jamison, Bethel Park, Pa., and Henry Fleck, Columbus, Ohio, assignors to Consolidation Coal Company, Pittsburgh, Pa.

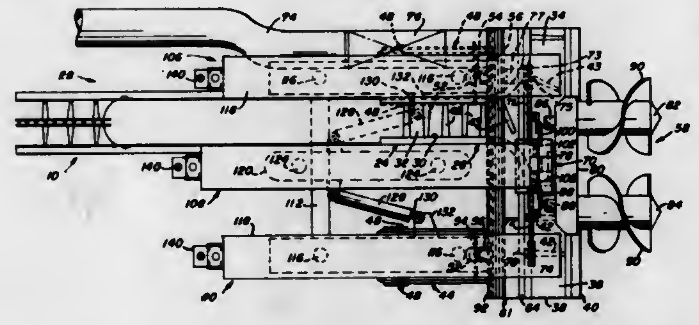
Continuation of Ser. No. 623,493, Oct. 17, 1975, abandoned, which is a continuation of Ser. No. 457,459, Apr. 3, 1974, abandoned. This application Nov. 29, 1976, Ser. No. 745,965

Int. Cl.² E21C *25/06, 25/52, 29/22;* E21D *15/44*

U.S. Cl. 299—31 **14 Claims**

1. A mining machine comprising ,
- a body portion having arm members pivotally secured thereto and extending forwardly therefrom, said arm members positioned in spaced parallel relation to each other,
- a support frame rigidly secured transversely to the front end portion of said arm members,
- an upper guide bar rigidly supported on said support frame and extending transversely relative to said body portion front end portion,
- a lower guide bar rigidly supported on said support frame below said upper guide bar and positioned parallel thereto,

- a carriage slidably mounted for transverse movement on said upper and lower guide bars and rotatably supporting a dislodging means,
- a pair of sprocket members rotatably supported at the opposite end portions of said support frame,
- a chain reeved about said sprocket members, said chain having end portions secured to said carriage,
- drive means for rotating one of said sprockets to rotate said chain and move said carriage transversely of said body portion on said upper and lower guide bars,
- means connected to the front end portion of said body portion for conveying dislodged material to the rear of said body portion,



- first vertically adjustable roof support means positioned on said body portion for supporting the roof of the mine,
- second vertically adjustable roof support means movably positioned relative to said body portion for supporting the roof of the mine as said body portion and said dislodging means advance forwardly in the mine, and
- piston cylinder means for connecting said second roof support means to said body portion for permitting relative movement between said body portion and said second roof support means as said second roof support means supports the mine roof.

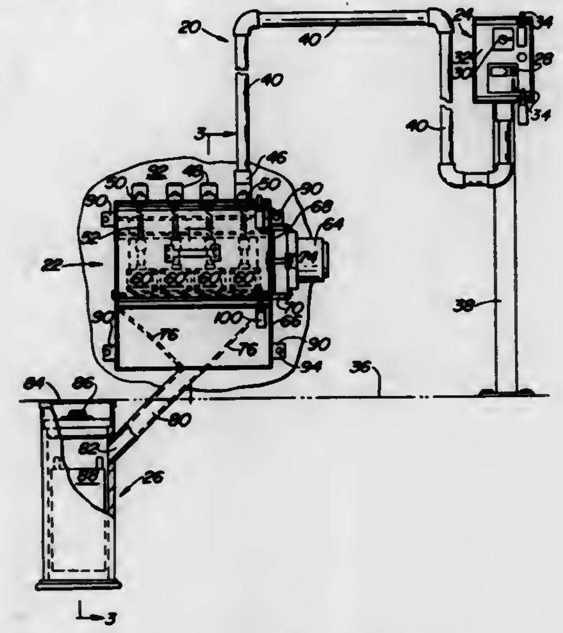
4,131,318
VACUUM COIN COLLECTION APPARATUS

Curtis Deem, c/o Sherman Industries, Inc., 600 W. Broad St., Palmyra, N.J. 08065

Filed Oct. 11, 1977, Ser. No. 841,077

Int. Cl.² B65G *51/02*

U.S. Cl. 302—2 R **15 Claims**



1. A coin collection apparatus comprising:
- a collection chamber;
- a plurality of inlets to said collection chamber;
- each inlet being adapted to communicate with a separate and discrete source of coins;
- vacuum means for applying a vaccum to said chamber and for pneumatically conveying coins through said inlets into said collection chamber;
- blocking means for blocking each of said inlets;
- moving means for moving said blocking means from said blocking position to an open position; and
- a vault communicating with said collection chamber for receiving coins from said collection chamber.

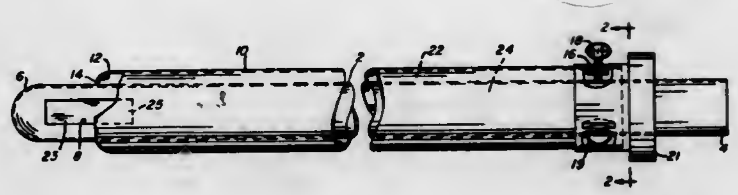
4,131,319
TRANSPORTING DEVICE AND METHOD OF TRANSPORTING

Daniel J. Klos, Franklin, Pa., assignor to Conair, Inc., Franklin, Pa.

Filed Jun. 26, 1975, Ser. No. 590,457

Int. Cl.² B65G *53/24, 53/42*

U.S. Cl. 302—58 **7 Claims**



1. A device for use in transporting a particulate or pulverant material comprising a pair of radially spaced telescopic tubular members with the inner telescopic member thereof having a closed end with at least one axially extending passageway in the side thereof spaced axially from said closed end with one end of said passageway being adjacent to said closed end and with the outer telescopic member thereof having the end closest to said closed end in slidable engagement with the outer surface of said inner telescopic member, said pair of telescopic members being selectively axially locatable with respect to each other such that the extent of said passageway communicating therebetween is selectively variable and at least one of said tubular members having the end thereof remote from said passageway being adapted to be connected to means for providing a gaseous fluid flow through the space between said tubular members, said passageway and said inner telescopic member.

4,131,320
CONVEYOR DEVICE FOR LETTERS, CARDS OR OTHER THIN ARTICLE

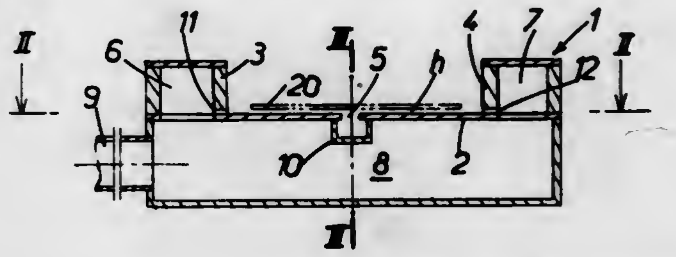
Jean-Pierre Volat, Aix-en-Provence, and Jean-Louis E. Pichon, Marseilles, both of France, assignors to BERTIN & Cie, Plaisir, France

Filed Jun. 11, 1975, Ser. No. 585,883

Claims priority, application France, Jun. 11, 1974, 74 20107

Int. Cl.² B65G *51/02*

U.S. Cl. 302—2 R **2 Claims**



1. A generally trough-shaped topless track for conveying letters or like separate warpable thin articles of varying size and weight upon a supporting fluid layer, comprising:
- two longitudinal strips extending in an even plane alongside each other and physically bottoming said track, said strips having respectively adjacent though transversely spaced inner sides which bound a longitudinally-extending continuous slot-like passage formed through the track bottom,

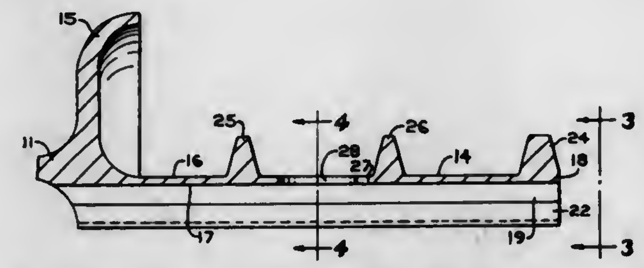
and remote outer sides which define the width of said track, each strip presenting between the inner and outer sides thereof a compact, smooth, and continuous surface designed for upholding adherence of fluid flow against said strip;

upright sidewalls projecting from said strips along said outer sides thereof to bound said track; and

a multiplicity of nozzles comprising elongated slots having a lower side immediately at said surface and an upper side slightly above said surface located adjacent the foot of said sidewalls and distributed along said outer sides of said strips at a level therewith to open flush with the respective compact, smooth, and continuous surfaces thereof, said nozzles being oriented towards said slot-like passage with some inclination towards the direction of motion of the articles, and being designed, when fed with pressure fluid, to issue over each strip a sheet of motive fluid coating said strip with a fluid layer adhering to said compact, smooth, and continuous surface thereof, said fluid exhausting through said continuous slot-like passage.

4,131,321
TORQUE LUG DRIVE

J. James A. Hall, 220 Kenbrook Dr. #6, Vandalia, Ohio 45377
Filed Jul. 27, 1976, Ser. No. 709,235
Int. Cl.^{2} B64C *25/42*
U.S. Cl. 301—6 A **4 Claims**



1. A torque lug mounting for an aircraft wheel half and disc-type brake assembly comprising a drum coaxial and integral with said wheel half, said wheel half having a rim with a flange, said drum extending axially away from said flange to an outer edge and having a thin lightweight wall with an outer surface and an inner surface, a thick annular reinforcing rib positioned on said outer surface at said outer edge and having a thickness measured axially of said drum which is substantially greater than the thickness of said wall measured radially of said drum and torque-transmitting lugs extending radially inward and axially across said inner surface at spaced-apart positions circumferentially of said drum for engagement with brake members of said assembly and for reinforcing said drum.

4,131,322
WHEEL TRIM RETENTION

Hans R. Beisch, Amherstburg, Canada, and Heinrich J. Hempelmann, Warren, Mich., assignors to Norris Industries, Inc., Ypsilanti, Mich.
Filed Sep. 20, 1976, Ser. No. 724,926
Int. Cl.^{2} B60B *7/06*
U.S. Cl. 301—37 PB **43 Claims**

9. A means for retaining a trim member in position on a vehicle wheel comprising:

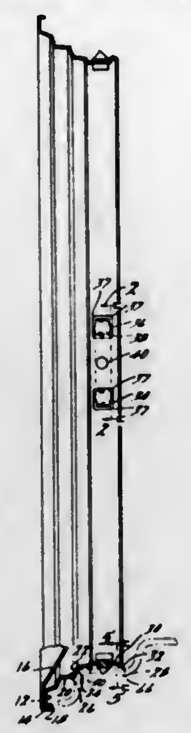
a vehicle wheel having a generally axially extending annular flange portion adjacent the axially outer edge thereof and an annular safety groove disposed immediately adjacent and axially inwardly of said annular flange portion;

a trim member installed on said vehicle wheel, said trim member comprising;

a retention band;

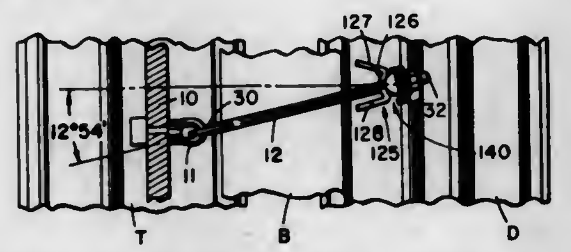
a plurality of primary retention members secured to a radially outer surface of said retention band and having portions bitingly engaging said annular flange portion of said wheel at circumferentially spaced locations thereof; and

secondary retention means integrally formed on said retention band, said secondary retention means engaging said safety groove of said wheel in response to distortion of said retention band caused by said engagement of said primary retention members and said annular flange portion of said wheel at circumferentially spaced locations thereof, said safety groove engagement locations being circumferentially disposed between said annular flange engagement locations.



4,131,323
DUAL WHEEL ASSEMBLY FOR TRACTORS

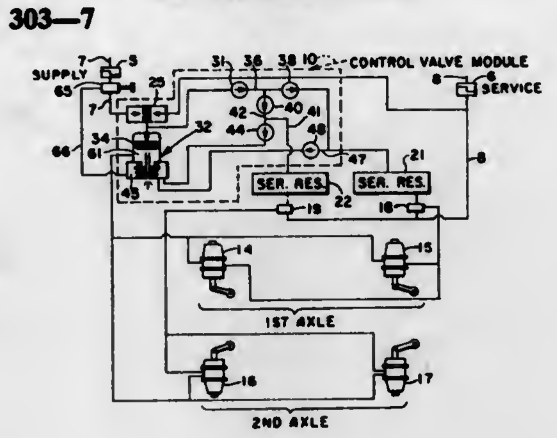
William J. Dietrich, Sr., Congerville, Ill., assignor to DMI, Inc., Goodfield, Ill.
Continuation-in-part of Ser. No. 655,132, Feb. 4, 1976, abandoned. This application Jan. 24, 1977, Ser. No. 761,704
Int. Cl.^{2} B60B *11/00*
U.S. Cl. 301—36 R **5 Claims**

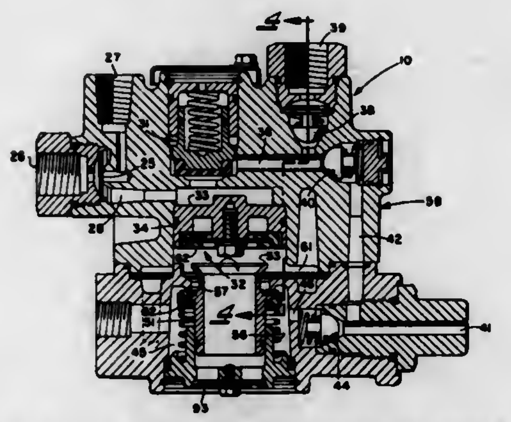


1. In apparatus for securing a rim of a dual wheel to a rim of a tractor wheel, the improvement comprising: a plurality of attaching means spaced about said tractor wheel; a plurality of generally U-shaped bracket means fixed to the interior of said dual wheel, each bracket providing a curved bearing surface, said bracket means being spaced at different angular intervals than the angular spacing of said attaching means, each bracket further defining a generally T-shaped slot including a base portion communicating through an edge of said curved bearing surface and a laterally elongated portion communicating with said base slot portion; a plurality of fastener means for securing associated ones of said attaching means and said bracket means, some of said attaching means being offset clockwise relative to said bracket means and some of said attaching means being offset counterclockwise relative to their associated bracket means; and a plurality of adjustment means, one for each fastener means, each adjustment means including a first adjusting member having a bearing surface curved to permit adjustment to achieve offset alignment, said curved surface of said first adjusting member engaging said curved bearing surface of an associated bracket means, a second adjusting member having a curved surface for permitting adjustment of said fastener in a radial direction of said tractor wheel, said curved surfaces of said first and second adjusting members facing opposite directions.

4,131,324
TRACTOR-TRAILER AIR BRAKE SYSTEM WITH TRAILER MULTI-FUNCTIONAL EMERGENCY CONTROL VALVE FIXTURE

Sham L. Kurichh, Owosso, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Nov. 30, 1977, Ser. No. 856,119
Int. Cl.^{2} B60T *13/00*
U.S. Cl. 303—7 **4 Claims**





1. A trailer air brake system in combination with a tractor air supply line and a tractor air control line comprising;

a pair of spring-set brake actuators for each set of wheels; each said actuator having a spring chamber and a service chamber;

a service relay valve for each reservoir connected therewith and the service chambers of said actuators for each said set of wheels for passing air from the corresponding reservoirs to said associated service chambers, said relay valve being connected with said tractor air control line to receive signal pressure;

a control valve module for receiving air under pressure from said lines and distributing the air to said reservoirs and said spring chambers, said module comprising a housing and valve elements supported therein defining;

a two-way check valve connecting with said lines and constructed for forwarding air from the line having the higher pressure;

a relay valve having an inlet chamber, an outlet chamber, a cylinder and piston located for receiving signal air from said two-way check valve and mechanism interacting with said piston to exhaust air from the outlet chamber;

a first check valve located and constructed for passing air from said two-way check valve at a selected minimum pressure;

a second check valve receiving air from said first check valve and discharging air into a first of said reservoirs;

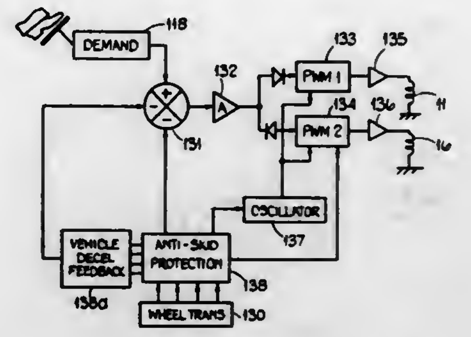
a third check valve receiving air from said first check valve and discharging air into a second of said reservoirs;

a fourth check valve receiving air from said third check valve and from said second reservoir and discharging air into said relay valve inlet portion;

said outlet portion of said relay valve being connected to said spring chambers.

4,131,325
ELECTRICALLY CONTROLLED FLUID BRAKE SYSTEM

John P. Bayliss, Redditch, England, assignor to Girling Limited, Birmingham, England
Continuation of Ser. No. 642,382, Dec. 19, 1975, abandoned. This application Aug. 12, 1977, Ser. No. 824,107
Claims priority, application United Kingdom, Jan. 2, 1975, 157/75
Int. Cl.^{2} B60T *8/00*
U.S. Cl. 303—93 **3 Claims**



1. A vehicle braking system comprising a chamber having means therein movable by fluid pressure to apply at least one wheel brake; an electrically operable inlet valve and an electrically operable outlet valve for controlling the flow of fluid into and out of said chamber respectively; and an electrical circuit for controlling said valves, said circuit having a first variable signal input means responsive to driver operation of said braking system, a second variable signal input means responsive to the degree of brake application achieved by the fluid pressure, error signal generating means connected to said first variable input means and to said second variable input means for producing an error signal of polarity and magnitude corresponding to the difference between the signals received from said first variable input means and said second variable input means, and means for generating a pulse train of selected frequency including a pair of pulse width modulation devices each having an input from said error signal generating means, one of said pulse width modulating means having an output connected to said outlet valve, the other of said pulse width modulation means having an output connected to the inlet valve, and means responsive to the polarity of the error signal for determining which one of the pulse width modulation means is operated, said pulse width modulation means acting on said pulse train to produce a mark-space ratio determined by the magnitude of the error signal, whereby the degree of brake application may be varied to bring the error signal to substantially zero and excessive wheel deceleration detection means is connected to the pulse width modulation means associated with said outlet valve and is adapted to apply a continuous signal to said outlet valve to open the same when wheel deceleration greater than said predetermined valve is detected and is also connected to said error signal generating means to override the signal thereto from said variable input means.

4,131,326
ANTI-SKID BRAKE CONTROL APPARATUS

Katsuki Takayama, Chiryu, and Masamoto Ando, Aichi, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan
Filed Feb. 24, 1977, Ser. No. 771,570
Claims priority, application Japan, Mar. 19, 1976, 51-30200; Mar. 23, 1976, 51-32331; Mar. 23, 1976, 51-32332
Int. Cl.^{2} B60T *8/14*
U.S. Cl. 303—115 **6 Claims**

1. An anti-skid brake control apparatus for a vehicle including a fluid pressure cut-off valve for opening or closing a fluid pressure conduit between a master cylinder and wheel cylinders in response to a skid sensing signal, comprising:

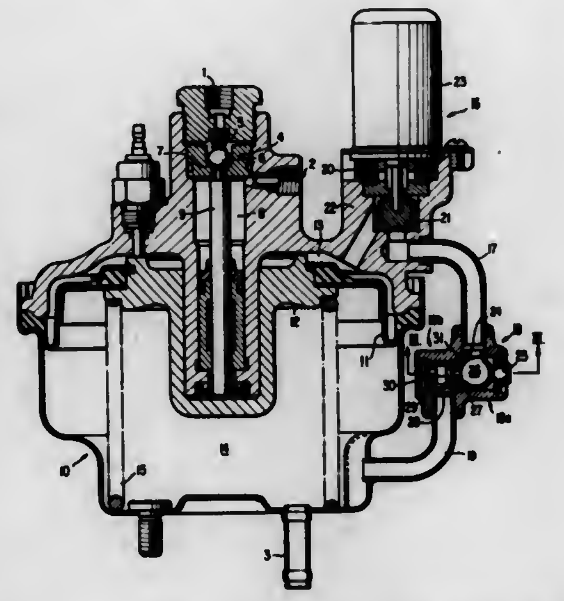
a plunger adjacent said cut-off valve for reducing or increasing said wheel cylinders pressure by controlling the capacity of said fluid pressure conduit between said cut-off valve and said wheel cylinders,

a servo-device adjacent said plunger having first and second chambers divided by a servo-piston, said servo-piston being adapted for moving said plunger by means of operational fluid pressure,

a change-over valve interconnecting said first and second chambers for admitting or draining said operational fluid to or from one of said first and second chambers in response to said skid sensing signal,

a pressure sensing valve positioned between said servo-device and said change-over valve adapted to be closed when the pressure difference between said first and second chambers reaches a predetermined value during a pressure re-applying stage after decreasing said wheel cylinders pressure and

an acceleration responsive valve connected by a passage member with said sensing valve so as to be opened when said vehicle is decelerated above a predetermined value including a ball disposed within a connecting chamber, and a by-pass passage interconnecting said pressure sensing valve and said acceleration responsive valve connecting chamber, said pressure sensing valve and said acceleration responsive valve being arranged in a series within a fluid pressure passage.



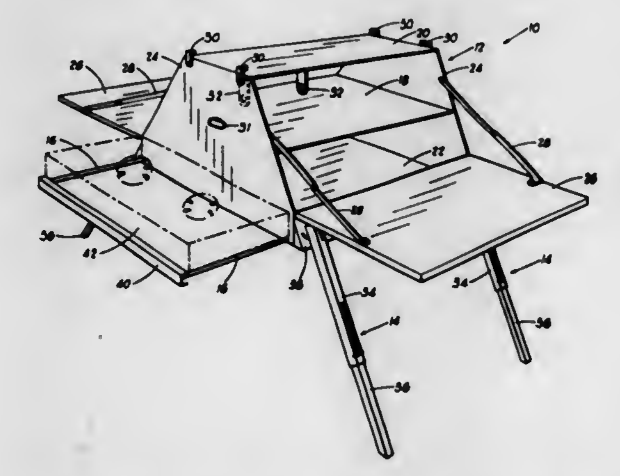
4,131,327
PORTABLE PICNIC AND CAMPING CABINET TABLE

Esther L. Marshall, and William B. Allen, both of 7031 E. Orme, Wichita, Kans. 67207

Filed Dec. 2, 1977, Ser. No. 857,031

Int. Cl.² A47F *5/08*

U.S. Cl. 312—241 **4 Claims**



1. A portable picnic and camping cabinet table for storing picnic and camping supplies therein and converting into an outdoor kitchen when set up, the cabinet table comprising:

a cabinet housing having a horizontal shelf therein for storing the supplies, said cabinet housing including a top portion, a bottom portion, end portions, and foldable side portions, the foldable side portions hingeably attached to the bottom of said housing and forming a table surface when folded outwardly and lowered into a horizontal position;

four telescoping legs pivotally mounted at the corners of the bottom of the side portions of said housing, said legs when raised into a horizontal position disposed against the bottom of the side portions of said housing; and

a pair of horizontal retractable extension rods slidably received in the bottom of one of the end portions of said housing, said rods when pulled outwardly from said housing supporting a camp stove or the like thereon;

a leg bracket attached to the corners at the bottom of the side portions of said housing, said leg bracket having a semi-circular slot therein for receiving a bolt therethrough, the bolt received through the top of said upper leg and secured to a wing nut for tightening said upper leg to said leg bracket, said semi-circular slot allowing said upper leg to be pivoted from a horizontal position adjacent the side portions of said housing downwardly at various angles from the vertical depending on the level of the ground surface and pivoted outwardly from said housing into a horizontal position for transporting the cabinet table by said legs;

said retractable rods include a tansverse rod support attached to one end of said rods for rigidly supporring siad rods when they are extended outwardly from said cabinet housing and preventing objects from falling outwardly off the ends of said rods; and

foldable braces attached at one end to the side portions of said housing and at the other end to the inside of the end portions of said housing, said foldable braces allowing the side portions to be folded outwardly into a horizontal position and bracing the side portions when the side portions are used as a table.

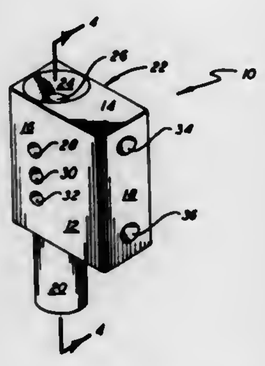
4,131,328
ELECTRICAL CONNECTOR FOR SEQUENTIAL CONNECTION AND DISCONNECTION OF CIRCUITS

Frank M. Minar, Long Branch, and Peter A. Abitante, Westfield, both of N.J., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 25, 1977, Ser. No. 845,278

Int. Cl.² H01R *3/06*

U.S. Cl. 339—14 R **17 Claims**



1. A connector assembly for providing sequential connection and disconnection of electrical circuits coupled thereto comprising, in combination:

a support body with a plurality of substantially identical male connector members each extending from said support body a uniform distance;

a connector body with plurality of substantially identical apertures therein, each aperture being positioned and of a size sufficiently large to receive each said male connector

member on said support body when said support body and said connector body are urged toward each other, said connector body has a plurality of detent openings disposed along each said aperture;

each said aperture in said connector body having a female connector barrel disposed therein, each said barrel being disposed in an aperture so that it is capable of electrically contacting the male connector member received in the aperture housing said barrel, when said support body is urged toward the said second connector body; and

means to selectively locate each said barrel member at a desired position within the aperture housing each said barrel member.

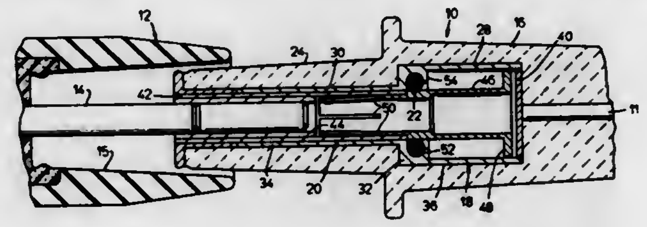
4,131,329
CURRENT INTERCHANGE FOR A GAS ACTUATED BUSHING

Richard P. Flatt, Oconomowoc, Wis., assignor to RTE Corporation, Waukesha, Wis.

Filed Nov. 10, 1976, Ser. No. 740,376

Int. Cl.² H01R *13/52*

U.S. Cl. 339—111 **16 Claims**



1. An electrical connection comprising: a housing,

an electrically conductive member extending through said housing,

means for supporting said member in a fixed position in said housing,

a bore contact mounted in said housing for reciprocal movement relative to said conductive member,

and current interchange means electrically connected to and mounted on said conductive member in a position to encircle said bore contact and having an inside diameter smaller than the diameter of said bore contact for maintaining electrical communication between the outside surface of said bore contact and said conductive member.

4,131,330
MOUNTING DEVICE FOR ELECTRICAL CONNECTORS

Lawrence J. Stupay, Endicott, N.Y., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 672,430, Mar. 31, 1976, abandoned.

This application Jun. 27, 1977, Ser. No. 810,482

Int. Cl.² H01R *9/00;* H02B *1/02*

U.S. Cl. 339—125 R **10 Claims**

1. A one-piece molded device comprising:

a mounting platform, said mounting platform including a front side,

a rear side, and integrally formed upper and lower sections, said upper section comprising

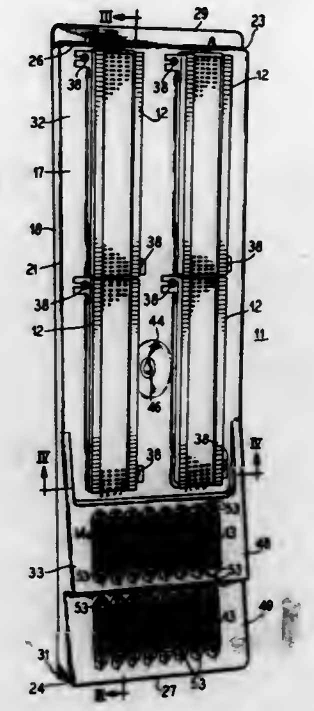
means for supporting a first plurality of longitudinally elongate electrical connectors of a first type, and

means defining a passageway on said front side at the rear of the supported first plurality of connectors, said passageway being closed along the longitudinal, rear and upper transverse sides thereof for providing a protective housing for wiring to the first connectors and for protecting the wiring from abrasion from and contact with a building wall, the lower transverse side of said passageway being open communicating said passageway on said front side with said lower section on said rear side to permit the wiring to extend to the rear side of said lower section; and

said lower section comprising

connector mounting means including slots adapted to receive and house electrical connectors of a second type, and

means for supporting the second plurality of electrical connectors in association with said slots,



whereby the rear building wall side of said lower section is exposed to permit wiring extending from said passageway to be engaged with contacts on the rear side of the second plurality of electrical connectors.

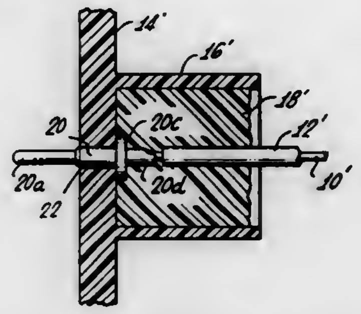
4,131,331
WATERPROOF ELECTRICAL CONNECTOR

Giles A. Kendall, Jr., Glendora, Calif., assignor to Clemar Mfg. Corp., Azusa, Calif.

Filed Nov. 18, 1977, Ser. No. 852,852

Int. Cl.² H01R *3/02;* H05K *5/06*

U.S. Cl. 339—126 RS **6 Claims**



1. A waterproof electrical connector assembly comprising:

a portion of a wall of a housing through which electrical connection is to be made, said wall portion being of a plastic material;

an opening in said wall portion through which electrical connection is to be made; and

a conductive insert dimensioned to be fitted in said opening by sufficient force to exceed the compressive yield strength of the plastic material and to induce cold flow of the material into surface imperfections of said insert, thereby forming a substantially perfect watertight seal.

4,131,332

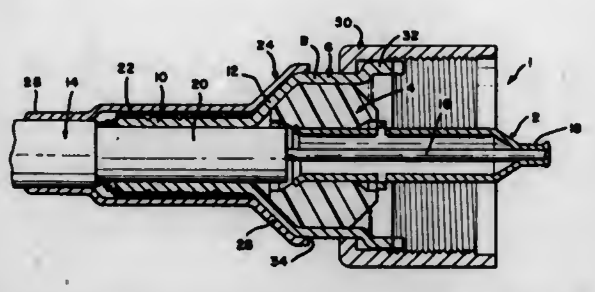
RF SHIELDED BLANK FOR COAXIAL CONNECTOR

Richard S. Hogendobler, Camp Hill, and Robert M. Murray, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 758,731, Jan. 12, 1977, Pat. No. 4,070,751. This application Aug. 23, 1977, Ser. No. 827,193

Int. Cl.² H01R *17/04*

U.S. Cl. 339—177 R **2 Claims**



1. In a coaxial connector having a center contact, a sleeve form connector body connected respectively to a center conductor and to an outer conductive sheath of a coaxial cable and a ferrule concentrically received over said sheath and said connector body, the improvement comprising:

said connector body being stamped and formed from a single metal blank and being characterized by a smaller diameter sleeve form section and a larger diameter sleeve form section integrally joined by a transition of frustoconical section, said connector body having a longitudinal seam entirely the length thereof and at least one additional slit in said frustoconical transition,

said ferrule being unitary and seamless and radially crimpable,

said unitary ferrule at least partially covering said larger diameter sleeve form section,

said unitary ferrule being radially crimped over said cable sheath and said smaller diameter sleeve form section, and

said unitary ferrule intimately encircling and engaging said frustoconical section, thereby spanning across each said slit and spanning across a portion of said seam which runs through said frustoconical section to eliminate signal attenuation and shielding leakage.

4,131,333

OPTICAL STABILIZER HAVING SPACE REFERENCED MOTION

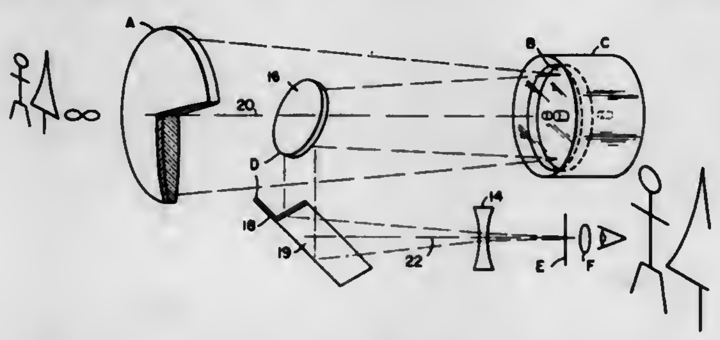
William E. Humphrey, Oakland, Calif., assignor to Optical Research and Development Corporation, Pleasant Hill, Calif.

Division of Ser. No. 298,050, Oct. 16, 1972, Pat. No. 3,964,817, which is a continuation-in-part of Ser. No. 75,965, Sep. 28, 1970, Pat. No. 3,711,178, and Ser. No. 215,485, Jan. 5, 1972, Pat. No. 3,761,157. This application Jun. 7, 1976, Ser. No. 693,617

The portion of the term of this patent subsequent to Jan. 16, 1990, has been disclaimed.

Int. Cl.² G02B *23/02*

U.S. Cl. 350—16 **4 Claims**



1. An optical instrument for stabilizing an image upon being subjected to angular vibrational orientation, said optical instrument comprising: an optical path for receiving light from an object and transmitting light to an imaging plane; a fluid filled chamber within said optic path including first and second windows for permitting the entrance and exit of light from said chamber; optically transmittive means disposed within the optic path interior of said fluid filled chamber for receiving incident rays from said object and transmitting rays to said imaging plane; means for maintaining said optically transmittive means within said optic path interior of said fluid chamber; means for biasing said optically transmittive means to a neutral position; and means in combination with at least one of said windows for generating an optical wedge proportionate to the relative angular displacement between said optically transmittive means and said window.

4,131,334

LIGHT POLARIZING MATERIALS, SUSPENSIONS THEREOF, AND PROCESS FOR MANUFACTURING SUCH SUSPENSIONS

Michael Witte, Chatham, N.J.; Robert L. Saxe, New York, and Robert I. Thompson, Plainview, both of N.Y., assignors to Research Frontiers Incorporated, Plainview, N.Y.

Filed May 11, 1977, Ser. No. 795,820

Int. Cl.² G02B *5/30;* G02F *1/01*

U.S. Cl. 350—147 **19 Claims**

1. A method for forming a light-polarizing material for use in a light valve, comprising:

(a) hydrogenating an unsaturated bond of a branch chain of an organic compound to form a saturated bond compound;
(b) forming a salt of the compound formed in step a;
(c) forming a perhalide of the compound of step b; and
(d) forming a suspension of the perhalide in a liquid, wherein the suspension is light polarizing.

4,131,335

PHOTOGRAPHIC LENS SYSTEM

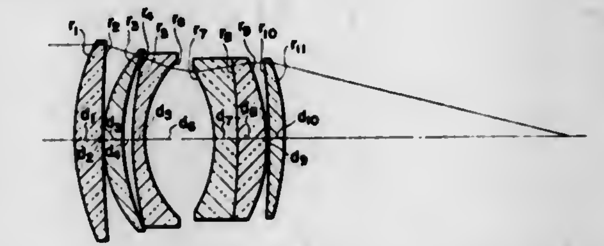
Tadashi Kimura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1977, Ser. No. 780,090

Claims priority, application Japan, Mar. 23, 1976, 51-31832; Mar. 4, 1977, 52-23499

Int. Cl.² G02B *9/60*

U.S. Cl. 350—218 **16 Claims**



1. A photographic lens system comprising a first, second, third, fourth and fifth lens components, said first lens component being a positive lens with its convex surface postioned toward the object side, said second lens component being a positive meniscus lens with its convex surface positioned toward the object side, said third lens components being a negative meniscus lens with its convex surface positioned toward the object side, said fourth lens component being a negative cemented meniscus doublet with its concave surface positioned toward the object side, said fifth lens component being a positive lens, said photographing lens system satisfying the following conditions:

$$0.51f < \sum_{i=1}^{10} d_1 < 0.58f \tag{1}$$

$$0.14f < \sum_{i=1}^{5} d_i < 0.2f \tag{2}$$

(3) $0.5f < f_{12} < 0.6f$

(4) $-10.7 < r_8 < -0.6$

(5) $0.04 < n_5\text{-}n_4 < 0.13$

wherein reference symbol

$$\sum_{i=1}^{10}$$

d_i represents the overall length of the lens system, reference symbol

$$\sum_{i=1}^{5}$$

d_i represents the length from the surface on the object side of the first lens component to the surface on the image side of the third lens component, reference symbol f_{12} represents the total focal length of the first and second lens components, reference symbol r_8 represents the radius of curvature of the cemented surface of the fourth lens component, reference symbols n_4 and n_5 respectively represent refractive indices of respective lenses constituting the fourth lens component, and reference symbol f represents the focal length of the lens system as a whole.

4,131,336

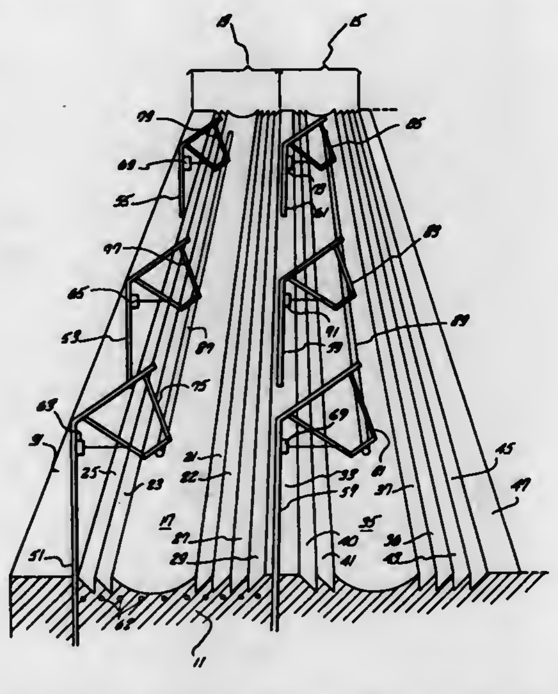
PRIMARY REFLECTOR FOR SOLAR ENERGY COLLECTION SYSTEMS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Charles G. Miller, Pasadena, and James B. Stephens, La Crescenta, both of Calif.

Division of Ser. No. 762,363, Jan. 25, 1977, which is a division of Ser. No. 598,969, Jul. 24, 1975, Pat. No. 4,065,053. This application May 15, 1978, Ser. No. 906,297

Int. Cl.² G02B *5/10*

U.S. Cl. 350—292 **8 Claims**



1. A large primary solar reflector for use with a solar energy collection system, comprising:

a porous supporting structure having a linear sawtooth-like profile;

pipes having small orifices therein embedded in said supporting structure; and

a reflective material overlaying said supporting structure and being held to the surface thereof by a negative pressure at the surface created by drawing a vacuum on said pipes.

4,131,337

COMPARISON READER FOR HOLOGRAPHIC IDENTIFICATION CARDS

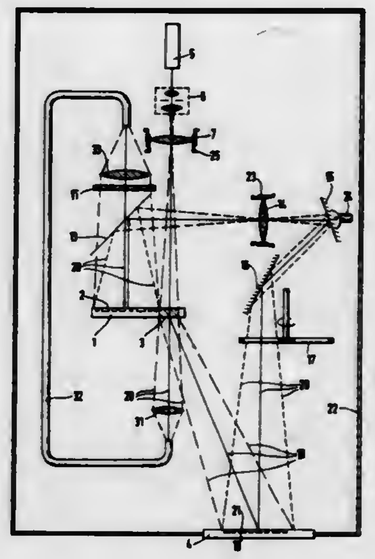
Roland Moraw, and Günther Schädlich, both of Naurod, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 16, 1977, Ser. No. 769,345

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1976, 2606348; Oct. 25, 1976, 2648180

Int. Cl.² G03H *1/22;* G06K *9/08*

U.S. Cl. 350—3.86 **19 Claims**



1. A device for verifying an identification element having visible indicia thereon and on an adjacent portion thereof having a transmission hologram of said visible indicia as originally placed on the identification element, said device comprising:

(a) means for illumination of both said hologram and said visible indicia from the same side of said identification element;
(b) means, including a generally planar surface, for displaying an optically produced image on said surface;
(c) means, associated with said image displaying means, for producing an optical image of the visible indicia on the identification element;
(d) means associated with said image displaying means, for producing a reconstructed image of the hologram on the identification element;
(e) means for projecting said optical image and said reconstructed holographic image, in superimposed register, upon said planar surface;

wherein said optical image producing means and said reconstructed holographic image producing means comprise a laser as a common source of radiation for each; and

wherein said optical image projecting means comprises means including a beam attenuator for optically directing a beam from said laser which has passed through said hologram as a laser light of zero order diffraction upon the visible indicia on the identification element and for adjusting the intensity of said laser light of zero order of diffraction for equalizing the intensity of the optical image to the intensity of the laser radiation of the first order of diffraction forming the reconstructed holographic image on said planar surface.

4,131,338

MEASUREMENT OF INTERPUPILLARY DISTANCE

Henry M. Zalewski, 194 Washington Ave., Carteret, N.J. 07008

Filed May 24, 1977, Ser. No. 799,954

Int. Cl.² A61B *3/10, 3/04, 3/00;* G02C *11/02*

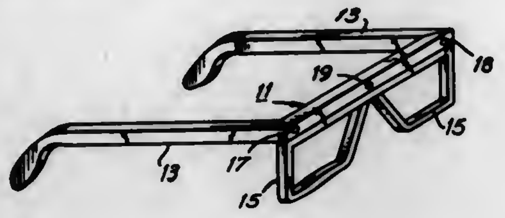
U.S. Cl. 351—5 **2 Claims**

1. A method of measuring distant vision interpupillary distance, comprising in combination the steps of:

fixing the patient's vision on a first indicium located adjacent one of the user's temples,

establishing, as a zero point, a point directly before the center of the patient's pupil on the same side as said first indicium,

fixing the patient's vision on a second indicium located adjacent the other of said user's temples,



noting, as a measurement point, a point directly before the center of the patient's pupil on the same side as said second indicium, and

taking, as the distant vision interpupillary distance, the lateral distance between said zero point and said measurement point.

4,131,339
POWER DIODE

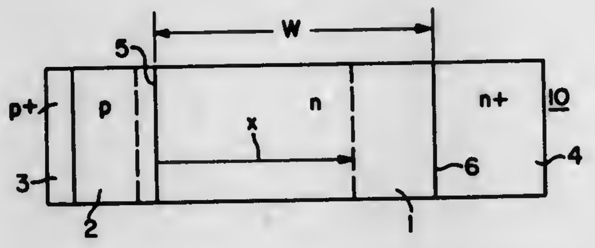
Friedrich Dannhäuser, and Alfred Porst, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 15, 1977, Ser. No. 768,940

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1976, 2608432

Int. Cl.² H01L *29/90*

U.S. Cl. 357—13 **4 Claims**



1. A power diode comprising a body of semiconductor material, said body containing a first zone of a given thickness and a given specific resistance and having a first-type conductivity, an outer zone adjacent to one of two opposed major surfaces of said first zone, said outer zone being of the same semiconductor material as said first zone, having a lower specific resistance than said first zone and having a second-type conductivity, a p-n junction only between said first zone and said outer zone, another outer zone adjacent to the other opposed major surface of said first zone, said another zone being of the same semiconductor material as said first zone, said another outer zone having said first-type conductivity, and being doped to a higher concentration than said first zone, ohmic electrical contact being made to only said outer zone and said another outer zone, the specific resistance and thickness of the first zone being so adapted to each other the $U_B < U_{pT}$, wherein U_B is the avalanche voltage and U_{pT} is the potential at which the space charge zone includes the entire first zone.

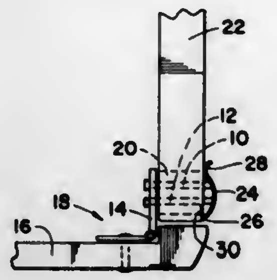
4,131,340
ADJUSTABLE EYEGLASS TEMPLE

Sidney Preston, 410 Parkside Ct., Copiague, N.Y. 11726

Filed Jan. 10, 1977, Ser. No. 757,905

Int. Cl.² G02C *5/20*

U.S. Cl. 351—118 **7 Claims**



1. An eyeglass frame comprising:

an eyepiece;

a pair of temples, each of said temples adapted to be mounted at one end of said eyepiece, whereby each of said temples have one surface facing one another and an external surface, each of said external surfaces of said temples having a plurality of vertical ridges near said eyepiece;

hinge means for rotatably connecting each of said temples to said eyepiece;

means between each of said temples and said hinge means for adjustably mounting said temple on said hinge means to vary the length of said temple relative to said eyepiece, said means including

an elongated slot in said temple,

pin means having one end mounted on said hinge means passing through said slot, and

resilient clamp means fixed to the other end of said pin means and engaging said vertical ridges on said temple, for clamping said temple to said hinge means.

4,131,341
OPHTHALMIC DEVICE

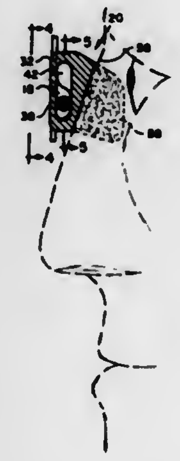
James B. Bradley, Jr., 110 Monteleon Dr., West Monroe, La. 71291

Filed Apr. 25, 1977, Ser. No. 790,382

The portion of the term of this patent subsequent to Jun. 28, 1994, has been disclaimed.

Int. Cl.² G02C *5/02, 5/12*

U.S. Cl. 351—132 **10 Claims**



1. A one-piece preformed detachable nosepiece for use with an ophthalmic eyeglass frame having a pair of facing nosepiece mounting tabs formed thereon, the nosepiece being designed to permit vertical and angular adjustment to fit the bridge of the user's nose precisely and to permit the adjustment of the level of the eyeglass lens in relation to the plane of the user's eyes so that the lens conforms more accurately to the ophthalmic prescription, comprising:

- (a) a generally box shaped forward portion having formed thereupon a pair of opposed side surfaces, for positioning between the mounting tabs, and having formed thereupon a front and a rear surface, said box shaped forward portion having formed therein and between said opposed side surfaces a vertical elongated slot extending from one opposed side surface to the other opposed side surface;
- (b) a nose bridge mount formed on the rear surface of said box shaped portion and being formed with a pair of rearwardly and outwardly extending projections for positioning on the bridge of the nose of the user of the ophthalmic eyeglass frame and to provide a large surface for positioning and retaining the ophthalmic eyeglass frame in a fixed position; and
- (c) a generally concaved surface formed between said pair of projections and being formed in the shape of the bridge of the user's nose and being narrower at the top than at the bottom thereby providing a concave shape that retards slippage of the nosepiece.

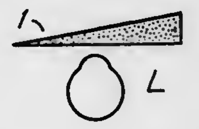
4,131,342
STEREOSCOPIC OPTICAL VIEWING SYSTEM

Leslie P. Dudley, 11088 Ophir Dr., #307, Los Angeles, Calif. 90024

Continuation of Ser. No. 606,763, Aug. 22, 1975, abandoned, which is a continuation-in-part of Ser. No. 518,356, Oct. 29, 1974, abandoned. This application Dec. 14, 1976, Ser. No. 750,430

Int. Cl.² G03B *21/32*

U.S. Cl. 352—43 **5 Claims**



1. A method for producing an animated cartoon program for exhibition on a motion picture or television screen, and for viewing the animated cartoon program, including the following steps: making two sequences of drawings, one representing background and the other representing foreground, the foreground drawings being produced with opaque pigment on transparent supports and being superimposed in order on the background drawings in close proximity thereto during the photographic operation; progressively changing in a horizontal direction the locations of characters or details in the foreground drawings relative to the locations of characters or details in the background drawings, so that when the program is exhibited the transit times of said moving characters or details will be within the limits of 1 to 8 seconds; and viewing the program through a monocular neutral filter having a density substantially between 0.9 and 1.1 to achieve a stereoscopic effect due to differential visual time-lag.

4,131,343
HIGH SPEED MOVIE CAMERA

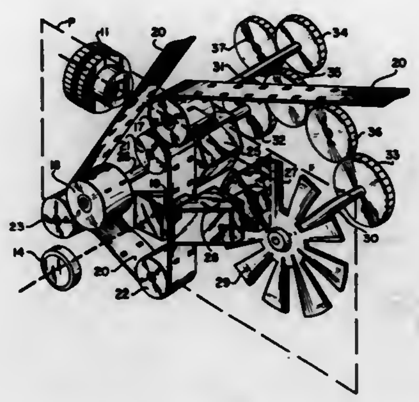
Robert D. Shoberg, Ventura, Calif., assignor to Photonic Systems, Inc., Sunnyvale, Calif.

Filed Jun. 15, 1977, Ser. No. 806,623

Int. Cl.² G03B *41/00*

U.S. Cl. 352—84 **5 Claims**

1. A high speed movie camera including, in combination:
- (a) first and second sprocket rollers for passing film into and receiving said film from a film gate respectively;
- (b) an optical means for imaging a scene to be photographed on said film gate including a multi-surfaced prism connected to said second sprocket roller for rotation therewith to cause an imaged scene to move along said film gate with movement of said film through the film gate and first and second light directing means for folding the optical path between said multi-surfaced prism and said film gate to accommodate a longer back focus objective lens within a given sized casing than would otherwise be accommodated;
- (c) shutter means passing in between said first and second light directing means intercepting light passed to said film gate after each rotation of said multi-surfaced prism through a given circumferential distance to enable a series of separate images to be successively recorded on the film while the film continuously moves; and
- (d) positive interconnecting means between said multi-surfaced prism, said shutter means and said first sprocket roller for providing simultaneous rotation thereof in a predetermined synchronous relationship.



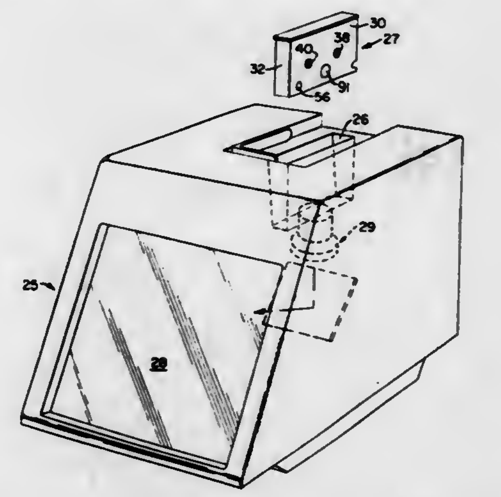
4,131,344
MOTOR CONTROL SYSTEM FOR AUTOMATIC PROCESSING OF PHOTOGRAPHIC FILM STRIPS

Herbert L. Hardy, Sudbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 3, 1977, Ser. No. 756,542

Int. Cl.² G03C *11/00*

U.S. Cl. 352—130 **6 Claims**



1. Apparatus for use with a spool adapted to wind a photographic film strip thereonto upon being driven and distributing means for applying film processing material upon the film strip as it is wound upon the spool, said apparatus comprising a motor operable to drive the spool, means for receiving and storing an electrical charge, means to apply current to said receiving and storing means as the film strip is being wound upon the spool and motor speed control means responsive to the charge stored in said receiving and storing means having reached a first predetermined level for changing the speed of said motor in a first manner and for subsequently changing the speed of said motor in a second manner when the stored charge in said receiving and storing means has reached a second predetermined level higher than said first predetermined level.

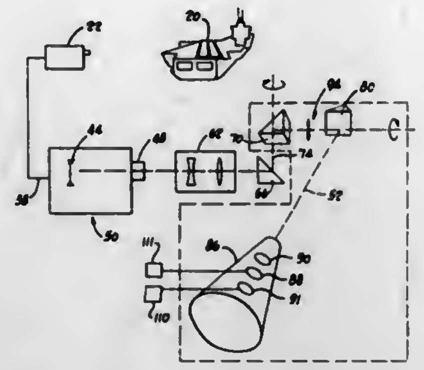
4,131,345
VISIBLE LIGHT PROJECTION DEVICE

Jerome T. Carollo, Ormond Beach, Fla., assignor to The Singer Company, Binghamton, N.Y.

Filed Oct. 27, 1977, Ser. No. 845,884

Int. Cl.² G03B ***29/00***

U.S. Cl. 352—132 **12 Claims**



1. A visible light projection device capable of projecting an image from an image source to a screen in a variety of angular orientations and sizes comprising:

(a) a first prism rotatable about a first axis for receiving and bending incident light rays;

(b) a second prism for receiving light rays from the first prism, the second prism rotatable about a second axis, transverse to the first axis, and mounted for revolution about said first axis;

(c) a zoomable lens fixed relative to the second prism and capable of receiving the light rays from the second prism and projecting an image on the screen.

(d) a first means for controlably rotating said first prism and for revolving said second prism; and

(e) second means for rotating said second prism.

4,131,346
PROJECTOR

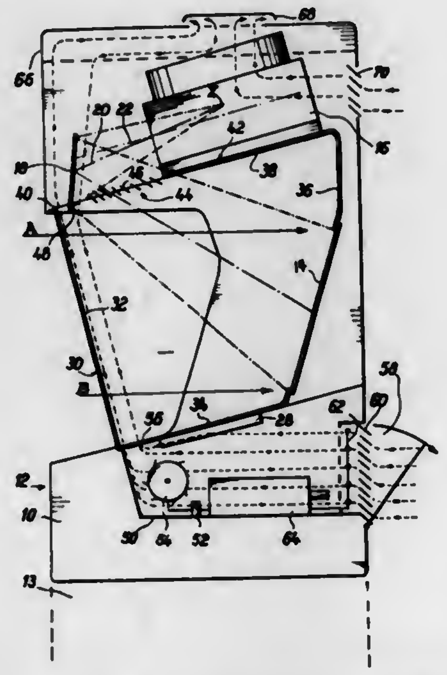
Rolf Dieckhoff, Marienstrasse 26, D-7050 Waiblingen, Fed. Rep. of Germany

Filed Aug. 18, 1977, Ser. No. 825,635

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1976, 2640227

Int. Cl.² G03B ***31/00, 21/16, 21/28***

U.S. Cl. 353—15 **14 Claims**



1. A projection device for projecting a successive series of pictures comprising:

a housing having front, rear, and side walls and at least one window opening provided in the front wall of said housing;

a generally planar projection screen which is disposed closely adjacent to the rear wall of said housing and which can be viewed through said window opening, said screen being slanted upwardly and rearwardly toward said rear wall;

a plastic unitary insert mounted with said housing which includes a transparent inspection window pane covering said window opening, an upper support face for supporting a projector, and a device for fixing a deflection mirror at a desired angle of deflection;

a projector having a projection axis, a lens having an optic axis and a picture chute for the successive receipt therein of slides, said chute being mounted with an abutment which is adapted to retain the slide received therein in a projection position which is eccentric with respect to said optical axis of said lens, said projector being supported on said upper support face outside of the viewing range defined between said window opening and said projection screen and adjacent to said rear wall of said housing in such a manner that the path of rays emitted therefrom is directed towards the front wall of said housing, said optic axis of said lens and said projection axis being inclined downwardly and forwardly towards the front wall of said housing with said projection axis being inclined downwardly and forwardly at a greater angle than said optic axis; and

a single deflection mirror disposed adjacent to said front wall of said housing above said window opening which is fixed at a desired angle of deflection by said device for fixing so as to deflect the rays emitted from said projector toward said projection screen.

4,131,347
LIGHT BEAM PROJECTING APPARATUS

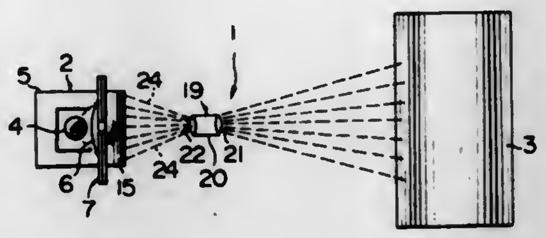
Mitsuo Hashimoto, Kodaira, and Mitsuo Koguchi, Omuta, both of Japan, assignors to Bridgestone Tire Company Limited and Mitsui Miike Seisakusho Engineering Company Limited, both of Tokyo, Japan

Filed Apr. 11, 1977, Ser. No. 786,626

Claims priority, application Japan, Apr. 17, 1976, 51-43884

Int. Cl.² B29H ***17/00;*** **G03B** ***21/26***

U.S. Cl. 353—28 **5 Claims**



1. A light beam projecting apparatus for use in production of an endless rubberized cord fabric on a tire building drum, comprising:

a light beam projector disposed in spaced and opposed relation with said tire building drum to wrap a band-formed rubberized cord fabric;

an indicator assembly located in the vicinity of said light beam projector and interposed between said light beam projector and said tire building drum, said indicator assembly including an indicator film having a multiplicity of indicating lines spaced from each other in a direction parallel to the rotational axis of said tire building drum to be projected upon the peripheral surface of said tire building drum;

a pair of plates having one ends hinged together by hinge means to be operable for facilitating entry of said indicator film therebetween and each having a central portion formed transparently and convexedly toward said tire building drum; and

a focus lens assembly arranged between said tire building drum and said indicator assembly and including at least a focus lens in alignment with the light beam projected through said indicator film by said light beam projector so as to focalize and enlarge indicated lines projected on the peripheral surface of said tire building drum.

4,131,348
COLLAPSIBLE MICROFILM READER

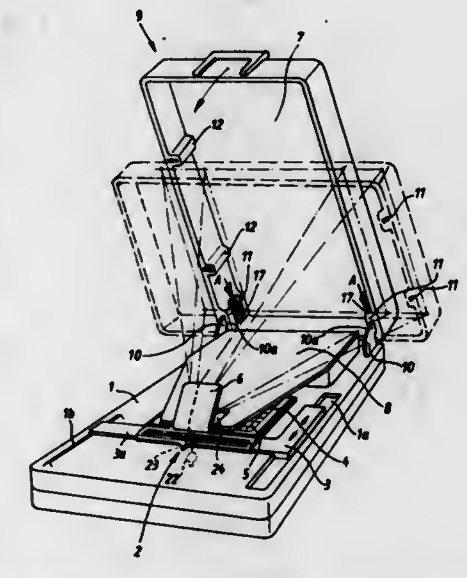
Wilfried Hofmann; Guenther Leuder, both of Taufkirchen; Walter Rauffer, Munich; John Krueger, Munich, and Adolf Koopmann, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG., Leverkusen, Fed. Rep. of Germany

Filed Apr. 27, 1977, Ser. No. 791,471

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1976, 2618470

Int. Cl.² G03B ***21/30***

U.S. Cl. 353—72 **5 Claims**



1. In a collapsible microfilm reader with a body containing a projector, the reader having a rectangular cover containing a projection surface which is longer in one direction of the cover than the other, the cover being hingedly attached to the body, the improvement which comprises at least one releasable hinge connection between the body and the cover, the hinge connection having a first connecting element connected to the body and a second, mating connecting element connected to a first edge of the cover, and at least one further third connecting element similar to the second connecting element on one of the sides of the cover that is perpendicular to said first edge thereof.

4,131,349
LOW COST SENSITOMETER WHICH PROVIDES HIGHLY ACCURATE READINGS

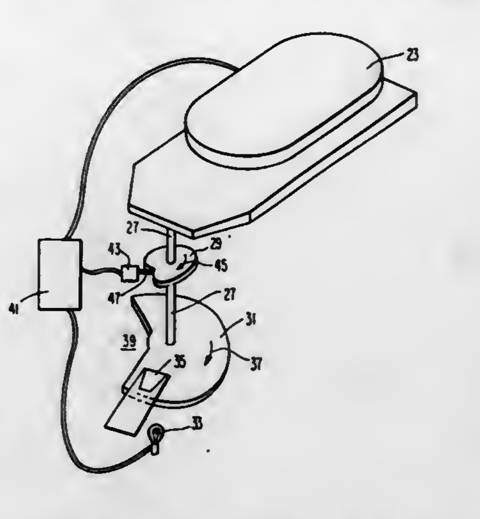
Philip E. Tobias, 1872 Watson Rd., Abington, Pa. 19001

Filed Aug. 8, 1977, Ser. No. 822,724

Int. Cl.² G03B ***41/00***

U.S. Cl. 354—20 **1 Claim**

1. A light sensitometer which is employed to permit photosensitive material to be subjected to an accurately determined exposure of light comprising in combination: housing means having a top piece, said top piece formed so that at least a portion thereof is a transparent section; graded gray scale means formed to permit predetermined amounts of light to pass therethrough, said graded gray scale means disposed to be in the path of any light passing through said transparent section; light source means formed to be alternatively energized and deenergized and disposed within said housing means so that light therefrom can pass through both said transparent section and said graded gray scale means; sector shutter means mounted on a shaft and formed to be capable of making a complete rotation and further formed and disposed with respect to said light source and said transparent section so that when said sector shutter is at rest and during the initial part of said complete rotation from rest, said sector shutter will block light from passing from said light source to said transparent section and further formed so that during a later portion of said complete rotation said sector shutter will permit light to pass from said light source to said transparent section, whereby during a complete rotation of said sector shutter said light source will be energized for a sufficiently long period so that its power input and its light output will be stabilized before light is permitted to pass to said transparent section; cam means mounted on said shaft; motor means coupled to said shaft to cause said shaft to rotate when said motor is energized; electrical circuitry means coupled to said cam means, said motor means and said light source whereby when said light source is energized said motor means will be energized to cause said sector shutter and said cam means to be rotated and whereby said cam means will cause said circuitry means to automatically deenergize said motor means and said light source at a predetermined time.



4,131,350
EXPOSURE CONTROL DEVICE FOR CAMERA

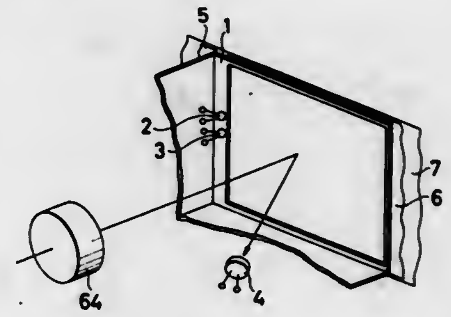
Takashi Uchiyama, Yokohama; Ryoichi Suzuki, Kawasaki; Tokuichi Tsunekawa, Yokohama; Hiroyoshi Kawana; Yusuke Ono, both of Tokyo, and Mutsuhide Matsuda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1977, Ser. No. 839,832

Claims priority, application Japan, Oct. 8, 1976, 51-121736; Oct. 8, 1976, 51-121737; Oct. 8, 1976, 51-121738

Int. Cl.² G03B ***7/08***

U.S. Cl. 354—31 **13 Claims**



1. An exposure amount control device for a camera comprising:

a light emitting means capable of illuminating the film portion outside of picture frame,

a first light measuring means capable of measuring the light emitted from the light emitting means and reflected from the film portion outside of picture frame, said means producing an electrical signal corresponding to the light reflected from the film portion outside of picture frame,

a second light measuring means capable of measuring the light reflected from the shutter plane and the film picture plane, said means producing an electrical signal corresponding to the light reflected from the shutter plane and the film picture plane,

a photographing information setting means, said means producing an electrical signal corresponding to the set photographing information,

a computing means for computing the electrical signal output from the second light measuring means and the electrical signal output from the photographing means, said means producing an electrical signal corresponding to the computed value,

a standard signal producing means, said means producing an electrical signal whose level is equal to that of the electrical signal produced by the first light measuring means when the reflexibility of the shutter plane is equal to that of the film plane,

a detecting means for comparing the electrical signal output of the first light measuring means with that of the standard signal producing means so as to detect the difference between the both electrical signals, said means producing an electrical signal in accordance with the difference between the both electrical signals, and

a shutter time determining means for determining the exposure time of the shutter in accordance with the electrical signal output of the computing means, said means including a compensating means for compensating the exposure time with the electrical signal output of the detecting means so as to obtain a proper exposure time.

6. An exposure amount control device for a camera comprising;

a first light measuring means capable of measuring the light reflected from the shutter plane and the film plane, said means producing an electrical signal corresponding to the light reflected from the shutter plane and the film plane,

a change over means connected to the output terminal of the first light measuring means, said means being changed over into a first position before taking a picture and into a second position at taking a picture,

a memory means for memorizing the electrical signal output from the first light measuring means corresponding to the light reflected from the shutter plane when the change over means is in the first position,

a comparison means for comparing the electrical signal output of the first light measuring means corresponding to the light reflected from the film plane with the value memorized in the memory means when the change over means is in the second position, said means producing an electrical signal corresponding to the difference between the outputs of the both means,

a second light measuring means capable of measuring the light reflected from the shutter plane and the film plane, said means producing an electrical signal corresponding to the light reflected from the shutter plane and the film plane,

a photographing information setting means, said means producing an electrical signal corresponding to the set photographing information,

a computing means for computing the electrical signal output of the second light measuring means and that of the photographing information setting means, said means producing an electrical signal corresponding to the computed value, and

a shutter time determining means for determining the exposure time corresponding to the electrical signal output of the comparison means so as to obtain the proper exposure time.

4,131,351

BATTERY CHECKER FOR A CAMERA WITH A FLASH LIGHT UNIT

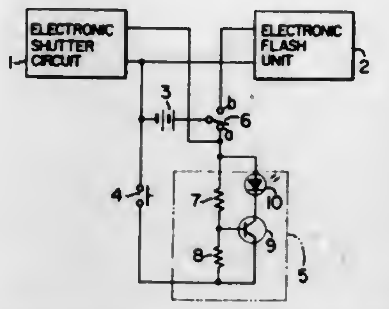
Hiroshi Iwata, and Tetsuo Yamaoka, both of Osaka,, Japan, assignors to West Electric Co., Ltd., Osaka, Japan

Filed Feb. 16, 1977, Ser. No. 769,215

Claims priority, application Japan, Feb. 20, 1976, 51/18138; Jul. 19, 1976, 51/86457

Int. Cl.^{2} G03B *15/05, 7/00;* H01H *9/00*

U.S. Cl. 354—60 F **7 Claims**



1. A battery checker for a camera which includes an electronic shutter circuit for automatically controlling exposure in accordance with the brightness of an object, an electronic flash unit, and a battery which energizes both said shutter circuit and said electronic flash unit, comprising:

a voltage detector circuit selectively connectable with said battery for providing an output signal when the voltage across said battery exceeds a predetermined value;

means responsive to said output signal for providing a visual indication when the voltage across said battery exceeds said predetermined value; and,

a mechanical switch having a first operative position which connects said battery to said flash light unit and disconnects said voltage detector circuit from said battery and a second operative position which disconnects said battery from said flash light unit and connects said voltage detector circuit with said battery.

4,131,352

PHOTOGRAPHIC APPARATUS OF THE SELF-DEVELOPING TYPE

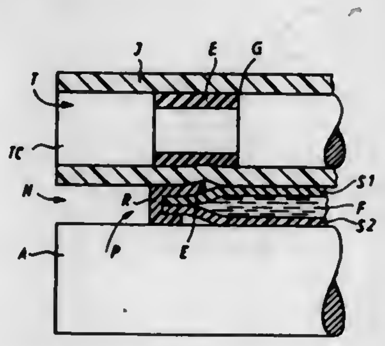
Günter Fauth, Unterhaching, and Herbert Müller, Aasling, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed May 27, 1977, Ser. No. 801,386

Claims priority, application Fed. Rep. of Germany, May 29, 1976, 2624209

Int. Cl.^{2} G03B *17/50*

U.S. Cl. 354—86 **8 Claims**



1. In a photographic apparatus of the self-developing type, a combination comprising a pair of pressure rollers defining with one another a nip, one of said rollers having a rigid cylindrical core provided in an outer circumferential surface thereof with a pair of axially spaced circumferential grooves, elastically compressible means in said grooves, and a jacket of resilient synthetic plastic material shrunk onto said core so as to surround said circumferential surface and overlie said grooves; and self-developing film pack means having a pair of juxtaposed sheet elements at least one of which defines an exposure area, edge binders externally overlapping transversely spaced edges of said sheet elements which bound respective margins of said exposure area, and a supply of processing fluid captured between said sheet elements and adapted to be spread over said exposure area, said elastically compressible means being adapted to yield to said edge binders when said film pack means passes through said nip so that the pressure on said edge binders cannot prevent said processing fluid from spreading to said margins.

4,131,353

PHOTOGRAPHIC CAMERA

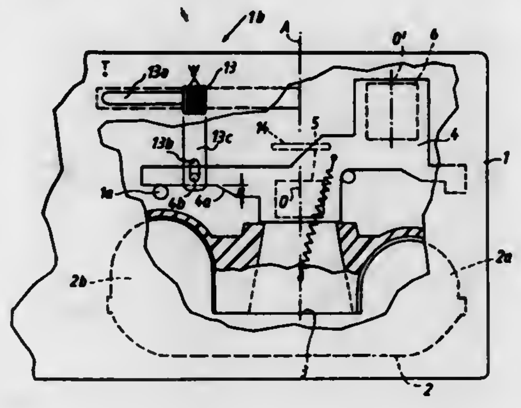
Dieter Engelsmann, Unterhaching, Fed. Rep. of Germany, assignor to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Dec. 20, 1976, Ser. No. 752,315

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1975, 2558276

Int. Cl.^{2} G03B *3/00, 13/02*

U.S. Cl. 354—197 **8 Claims**



1. In a multiple-lens photographic camera having an optical axis, a combination comprising a housing; at least two different photographic lenses; means including a carrier slidable transverse to said optical axis and mounting said lenses for displacement in said housing also transverse to said optical axis between respective lens-changing positions in each of which a different one of said lenses is located on said optical axis; and means for imparting to at least one of said lenses a component of movement in direction longitudinally of said optical axis in response to a displacement of said lenses in said direction transverse to said optical axis, including cooperating cam and follower portions on said housing and said carrier for effecting movement of said carrier in said longitudinal direction in response to sliding of said carrier in said transverse direction.

4,131,354

SELECTIVE MODE ANGLE FINDER FOR SLR CAMERA

Teruo Hagiwara, Kawagoe, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1977, Ser. No. 784,758

Claims priority, application Japan, Apr. 7, 1976, 51/42702

Int. Cl.^{2} G02B *23/14;* G03B *13/08, 19/12*

U.S. Cl. 354—224 **6 Claims**

1. A selective mode viewfinder attachment for a single lens reflex camera, comprising:

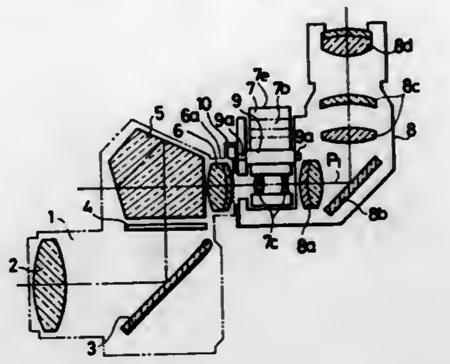
(a) a bent cylindrical housing member having an L-shaped cross-section and open at both ends,

(b) a mirror disposed in the housing member to define an optical axis therethrough from one end to the other having an angular bend of approximately 90°,

(c) a telescopic optical system disposed in the housing member in alignment with the optical axis,

(d) a cylinder member rotatably mounted in the housing member about an axis parallel to but offset from the optical axis, said cylinder member including a solid portion selectively alignable with the optical axis of the attachment to thereby block any reverse incident light from entering the viewfinder eyepiece,

(e) a pair of spaced passages defined in the cylinder member and extending longitudinally therethrough parallel to the cylinder axis and radially spaced therefrom a distance equal to the offset distance between the cylinder axis and the optical axis,



(f) magnifying lens means disposed in one of the passages, and

(g) means for attaching one end of the housing member to the viewfinder eyepiece of an SLR camera in alignment with the optical axis thereof, whereby picture composition and accurate focusing may be implemented by rotating the cylinder member to align a selected one of the passages with the optical axis of the attachment.

4,131,355

FINDER OPTICAL SYSTEM FOR SINGLE LENS REFLEX PHOTOGRAPHIC CAMERAS

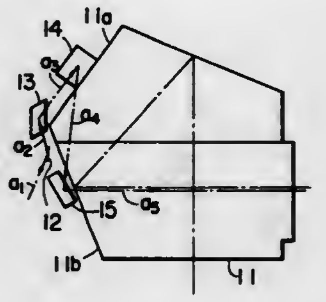
Tadashi Kimura, Tokyo, and Fumitaka Watanabe, Hachiouji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1977, Ser. No. 790,752

Claims priority, application Japan, Apr. 27, 1976, 51-52060[U]

Int. Cl.^{2} G03B *13/02, 19/12*

U.S. Cl. 354—225 **2 Claims**



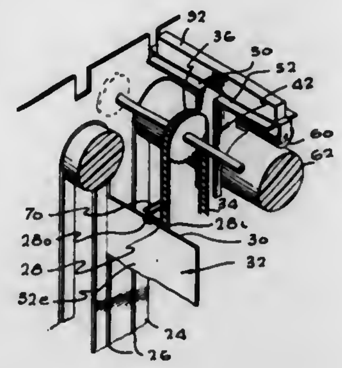
1. A finder optical system for single-lens reflex photographic cameras wherein an even number of at least four small reflecting surfaces are arranged on the front surface of a pentagonal prism, an optical information such as graduation on the diaphragm dial or shutter speed dial arranged on the diaphragm ring or shutter ring of the camera is reflected consecutively by said small reflecting surfaces so as to emerge from said pentagonal prism, whereby said optical information is visible at any optional position around the field of view in the finder, and wherein said reflecting surfaces consist of a first small reflecting surface, a second small reflecting surface, a third small reflecting surface and a fourth small reflecting surface, said first small reflecting surface functioning to reflect said optical information upward, said second small reflecting surface functioning to further reflect the optical information reflected by said first small reflecting surface in such a way that said optical information is directed upward along the front upper surface of said pentagonal prism, and said third and fourth small reflect-

ing surfaces functioning to permit observing an image of the optical information from said second small reflecting surface at any desired position around the field of view in a finder.

4,131,356
SHEET FILM PROCESSOR

Gunter Schmidt, Malibu, Calif., assignor to Cubic Productron, Chula Vista, Calif.

Filed May 2, 1975, Ser. No. 574,003
Int. Cl.² G03D *17/00, 3/02, 3/08*
U.S. Cl. 354—322 2 Claims



1. Apparatus for processing a sheet of film by moving it through tanks containing processing solutions comprising:

means defining a sheet path which includes a plurality of loop portions, each leading down into and up out of one of said tanks, said means comprising a pair of parallel edge guide means extending along said path for engaging opposite side edge portions of said sheet of film;

a plurality of push fingers;

a plurality of support fingers; and

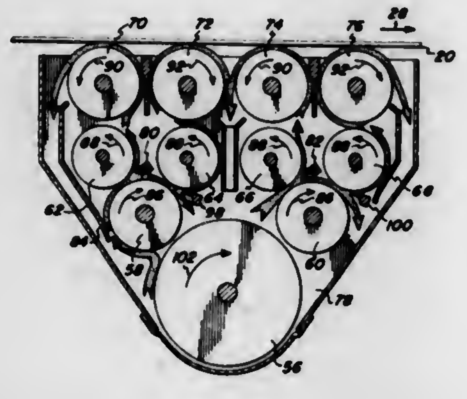
belt means for moving each of said push and support fingers along at least one of said loop portions to push sheets of film therealong;

each of said push fingers being movable with respect to said belt means, and each of said support fingers located immediately behind one of said push fingers along the length of said path, to stop the downward fall of a film sheet onto a push finger.

4,131,357
SEQUENTIALLY ACTIVATED DEVELOPMENT SYSTEM FOR AN ELECTROPHOTOGRAPHIC PRINTER

Richard L. Forbes, 2nd, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 21, 1977, Ser. No. 779,669
Int. Cl.² G03G *15/00;* B05B *5/02*
U.S. Cl. 355—3 DD 26 Claims



1. An apparatus for developing a latent image arranged to be recorded on a surface, including:

a plurality of developing rollers disposed closely adjacent to the surface;

means for activating and de-activating said plurality of developing rollers sequentially with said plurality of developing rollers being activated and de-activated in the same order;

a housing defining a chamber for storing a supply of developer material therein;

a cylindrical member having a plurality of buckets disposed about the periphery thereof for advancing developer material from the chamber of said housing:

at least one transport roller disposed adjacent to the buckets of said cylindrical member and arranged to receive the developer material therefrom;

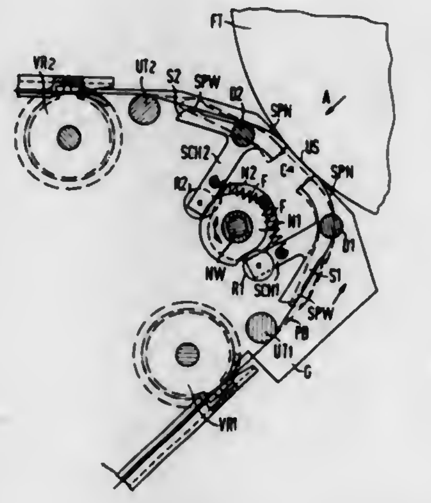
at least a pair of feed rollers disposed closely adjacent to said transport roller for receiving developer material therefrom, each of said pair of feed rollers being associated with one of said developing rollers for furnishing an individual supply of developer material thereto; and

at least one blade member positioned closely adjacent to said pair of feed rollers to control the amount of developer material advanced to each of said pair of feed rollers from said transport roller.

4,131,358
DEVICE FOR MOVING A PATH OF A MOVING DATA CARRIER TOWARD AND AWAY FROM A SURFACE AREA OF A SUB-CARRIER

Josef Windele, Puchheim, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Jul. 29, 1977, Ser. No. 820,216
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1976, 2636326
Int. Cl.² G03G *15/044;* B65H *23/26*
U.S. Cl. 355—3 TR 13 Claims

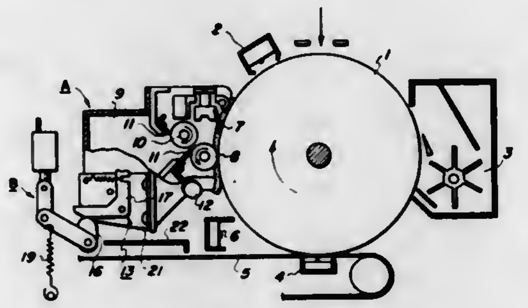


1. A device for moving a path of a moving data carrier toward and away from a surface of a sub-carrier and particularly for moving a path of a moving paper web toward and away from a surface area of a photoconductive sub-carrier at a reproducing station of an electrostatic printer, said device comprising means supporting and moving a data carrier along a given path, said means for supporting and moving including two pivotal support members, each of said support members being mounted on a frame to pivot around respective pivot points, and means for pivoting said support members between a first position with the data carrier disposed closely adjacent the surface area of the sub-carrier and a second position with the data carrier spaced from the surface area of the sub-carrier, each of said pivot points being arranged symmetrically to a point on the surface area of the sub-carrier at which the data carrier lies closest to the sub-carrier as the support members assume said first position, each of said support members having a first data carrier engaging zone on one side of its pivot point adjacent said point on said surface area and a second data carrier engaging zone on the opposite side of its pivot point, each of said data carrier engaging zones being in continual engagement with the data carrier and of a configuration so that the data carrier is tautly engaged by said zones regardless of the position of the pivotal support members.

4,131,359
SENSITIVE MEDIUM CLEANER FOR USE IN ELECTROPHOTOGRAPHIC COPYING MACHINE

Ko Honda, Ebina, Japan, assignor to Rank Xerox Limited, London, England

Filed Apr. 27, 1977, Ser. No. 791,355
Claims priority, application Japan, Apr. 28, 1976, 51/052503[U]
Int. Cl.² G03G *21/00, 15/10*
U.S. Cl. 355—15 2 Claims



1. A copying apparatus having a cleaning unit for removing toner from the surface of a sensitive imaging medium comprising:

a cleaning blade for removing toner from said surface;

a toner collection member with a collection roll for receiving toner removed by said blade and a pinch roll cooperating with said collection roll to define a nip comprising an entrance to a toner collection sump;

drive means for driving said collection roll and said pinch roll in a first movement to transport the toner removed by said blade away from said surface toward said collection sump;

means for supporting said blade and said collection roll in a housing for a second, pivotal, movement toward and away from said surface between respective operative and inoperative positions;

means for automatically providing said second, pivotal, movement of said blade and said collection roll away from said surface at the completion of a copying operation in response to the non-operation of said copying apparatus;

toner fall preventing means responsive to said second movement of said blade and said collection roll away from said surface for continuing said first movement of said collection roll to continue the transporting of toner by said collection roll away from said surface during said second movement of said blade and said collection roll away from said surface,

said toner fall preventing means including energy accumulation means comprising a spring associated with said drive means for said collection roll and means for loading said spring during operation of said copying apparatus to accumulate energy from said drive means and for unloading said spring after said apparatus has stopped operating for applying said accumulated energy to said collection roll to continue said first movement thereof after the stopping of the copying apparatus,

and said toner fall preventing means further including selective coupling means for selectively coupling said spring to said collection roll as it is unloaded to provide said continued first movement.

4,131,360
DUPLEX REPRODUCTION SYSTEM EMPLOYING COPY SHEET CLEANER

John F. O'Brien, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 27, 1977, Ser. No. 801,111
Int. Cl.² G03G *21/00*
U.S. Cl. 355—15 2 Claims

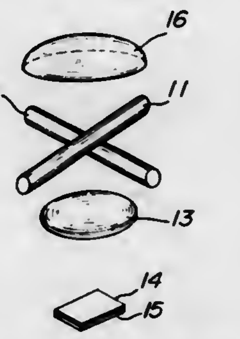
1. A method of improving copy quality in duplex reproduction systems comprising the steps of:

(a) providing a processor;
(b) feeding sheets with front and back sides through said processor to receive images of document front sides on the front sides thereof;
(c) cleaning the back side of said sheets;
(d) advancing said sheets to a sheet receiving tray;
(e) refeeding said sheets through said processor to receive back side images of documents on the back sides thereof; and
(f) cleaning the front side of said sheets; and receiving said sheets in an output means.

4,131,361
ILLUMINATION DEVICE

Tadashi Morokuma, and Kenichi Oinoue, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 8, 1977, Ser. No. 814,119
Claims priority, application Japan, Jul. 16, 1976, 51-84553; Jul. 16, 1976, 51-84554
Int. Cl.² G03B *27/54*
U.S. Cl. 355—70 3 Claims



1. An illumination device used in the case of forming, on a dupe film, a visible copy of an image pattern of a master film, comprising an elongated bar-shaped light source including a center portion having a brightness and a peripheral portion for emitting light in all directions, and a collimator lens having an optical axis that passes through the center high brightness portion of said light source, said master film being located at directly below said collimator lens and placed on said dupe film.

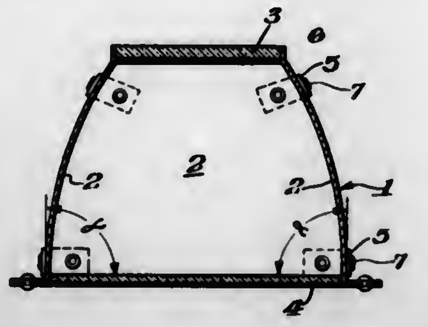
4,131,362
LIGHT-MIXING COMPARTMENT FOR A LIGHT PROJECTOR

Mario Gandini, Brixen, Italy, assignor to DURST AG Fabrik Fototechnischer Apparate, Bolzano-Bozen, Italy

Filed Aug. 17, 1977, Ser. No. 825,293
Claims priority, application Italy, Aug. 24, 1976, 4846 A/76
Int. Cl.² G03B *27/76*
U.S. Cl. 355—71 6 Claims

1. A light-mixing compartment for a photographic color printing apparatus having a light entrance and light emergence sections comprising a plurality of externally convexly curved internally reflective side sections connecting the light emergence to the light entrance sections, a light diffusing screen is disposed adjacent the light emergence section of the compartment, the convexly curved side sections having an angle of curvature, and the angle between a tangent to the portion of the side section disposed adjacent the light emergence section

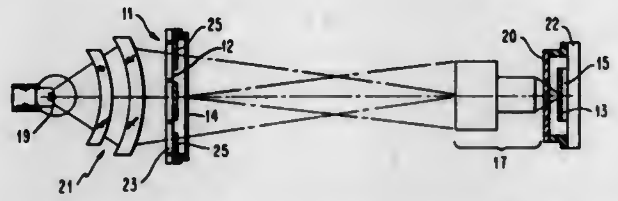
ranges from about 75° to 105° whereby the quality and distribution of the light mixture is substantially uniform, the cross-sectional area of the compartment increasing from light entrance to light emergence sections.



4,131,363
PELLICLE COVER FOR PROJECTION PRINTING SYSTEM

Vincent Shea, and Walter J. Wojcik, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,632
Int. Cl.^{2} G03B *27/62*
U.S. Cl. 355—75 **5 Claims**



1. A projection printing mask comprising a pattern of opaque and transparent areas formed on a transparent substrate and a cover bonded to the substrate said cover including a pellicle which is a transparent film having a thickness of from about 0.2 to 6 microns which is spaced from about 1 to 125 millimeters from the pattern such that the pattern is protected against damage and dirt and the images of any dirt particles on the outer surface of the pellicle are maintained out of focus so that the images will not be printed when the pattern is printed on a light sensitive substrate.

2. A projection printing system for forming an image on a light sensitive substrate said system comprising a mask having a transparent substrate with a pattern of opaque and transparent areas formed on one surface thereof, an illuminating system for directing light through the mask to the light sensitive substrate, optical means for forming a focussed image of the pattern on the light sensitive substrate and a pellicle cover means for maintaining the images of any dirt particles on the mask out of focus so that the images will not be printed on the light sensitive substrate, said pellicle cover means being bonded to the transparent substrate and completely covering the pattern and including a pellicle which is a thin transparent film having a thickness of about 0.2 to 6 microns and being spaced from about 1 to 125 millimeters from the pattern such that the cover means does not substantially effect the optical path length of the system.

4,131,364
PAPER GUIDE DEVICE FOR COPYING MACHINES

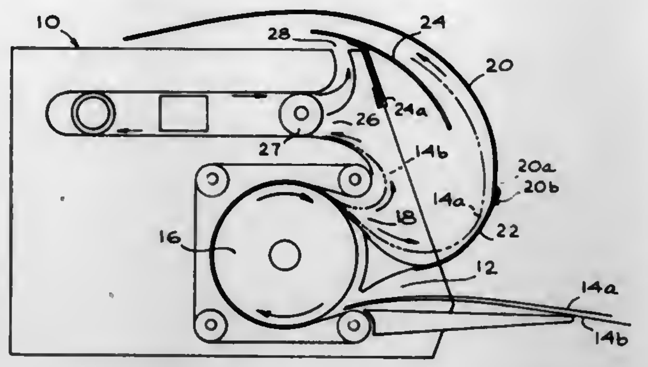
Jose A. Moreno, 612 Westboro Ave., Alhambra, Calif. 91803

Filed Nov. 3, 1977, Ser. No. 848,278
Int. Cl.^{2} G03B *27/30*
U.S. Cl. 355—106 **11 Claims**

1. In a paper guiding device for copied original sheets being discharged froman opening in a copying machine, comprising:

(a) a first upwardly extending paper guiding means, mounted below the said opening along which the discharged original is caused to move upwardly;

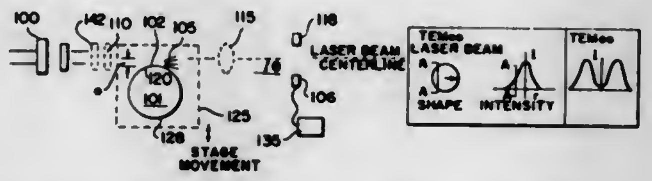
(b) a second paper guiding means, mounted at a location on the copying machine above and extending beneath said first paper guiding means, so as to create a passage therewith, through which a portion of said origianl will pass before coming to a standstill on the copying machine.



4,131,365
METHOD AND APPARATUS FOR DETERMINING OBJECT POSITION AND DIMENSION USING A DIFFRACTION WAVE

Timothy R. Pryor, 1578 Cherrylawn Crescent, Windsor, Ontario, Canada (N9E 1P4)

Division of Ser. No. 505,777, Sep. 13, 1974, Pat. No. 4,009,965, which is a continuation-in-part of Ser. No. 253,421, May 15, 1972, Pat. No. 3,884,581, and Ser. No. 358,547, May 9, 1973, Pat. No. 3,883,249. This application Nov. 24, 1976, Ser. No. 744,755
Int. Cl.^{2} G01B *9/02, 11/26*
U.S. Cl. 356—356 **12 Claims**



1. A method of determining the position of an object comprising the steps of directing an electromagnetic wave front of known spatial intensity distribution from a wave source onto a boundary of an object to produce a diffraction boundary wave, determining from said diffraction wave the portion of said wave of known spatial intensity distribution intercepted by said object boundary and determining therefrom the position of said object.

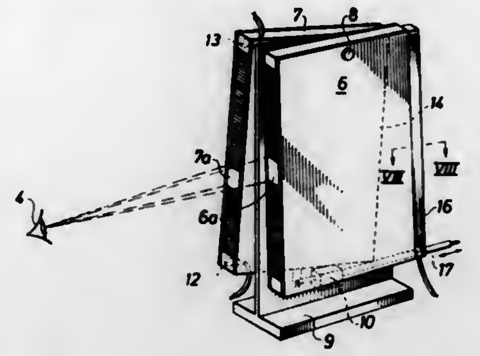
4,131,366
DIRECTION INDICATING DEVICE

Magnus R. Forss, Eremitvägen 4, 183 50 Täby, Sweden

Filed Jan. 13, 1977, Ser. No. 759,214
Claims priority, application Sweden, Jan. 27, 1976, 7600840
Int. Cl.^{2} B64D *45/08*
U.S. Cl. 356—140 **2 Claims**

1. A device for indicating to an observer in a vehicle the deviation between the actual direction to a remote object and a predetermined reference direction, comprising

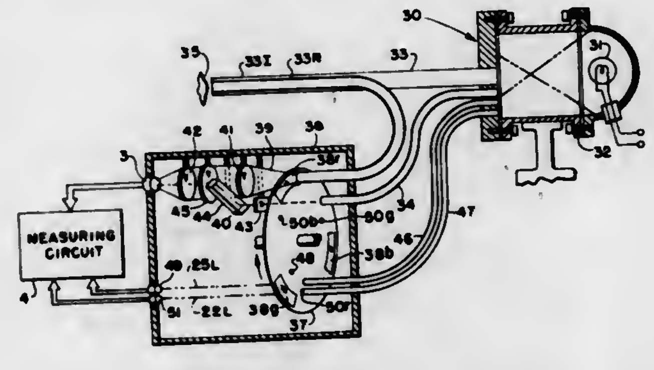
first and second light transmitting units mounted on support means for angular movement of one relative to the other and in position for each of said units to present a separate visual display visible to the observer, each of said units having an input end facing the object and an output end facing the observer and including an array containing a plurality of elongated light guides which are optically insulated from one another and oriented with their longitudinal axes parallel to one another for passing substantially only plane-parallel light beams through said array, the input ends of said units being positioned to receive light from one or more natural or artificial sources, and the output ends of said units being positioned each to present a light spot visible to the observer, the units being angularly movable relative to each other around an axis perpendicular to the longitudinal axes of the light guides and to said input and output ends; the displacement of the one light spot relatively the other along the output ends indicating the magnitude of said direction deviation.



4,131,367
TRISTIMULUS COLORMETER WITH INTERNAL REFLECTANCE COMPENSATION

Park French, Aurora, and William H. Conaway, Paris, both of Ohio, assignors to Sterndent Corporation, Mount Vernon, N.Y.

Continuation-in-part of Ser. No. 721,108, Sep. 7, 1976. This application Nov. 2, 1976, Ser. No. 737,905
Int. Cl.^{2} G01J *3/46, 3/48*
U.S. Cl. 356—405 **30 Claims**



1. An optical measuring apparatus, comprising:

transducer means for producing an electrical output representative of an input thereto,

means for directing an unknown input to said transducer means causing the latter to produce an unknown electrical signal,

integrator means for integrating in one polarity direction one of said unknown electrical signal and a reference electrical signal for a predetermined duration to produce an integrated signal level and then the other of said electrical signals in the opposite direction,

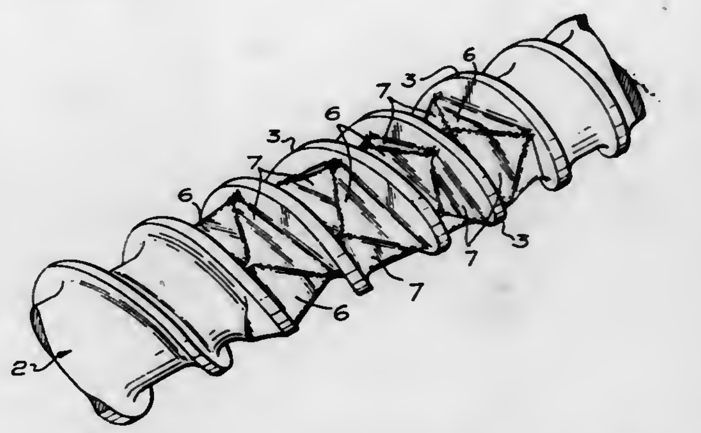
output means for producing an electrical output signal indicative of the relative time after said integrator means commences the latter integration that the output of said integrator means achieves a pre-established level, whereby said electrical output signal is representative of a comparison of said unknown and reference electrical signals and, thus, of the relative value of said unknown input, and

compensating means for changing the relative time at which said electrical output signal achieves said pre-established level, said compensating means including means for adding a compensating voltage to said unknown electrical signal for simultaneous integration therewith.

4,131,368
SCROLLS FOR EXTRUDING MACHINES

Michael I. Iddon, Leyland, England, assignor to Iddon Brothers Limited, Lancaster, England

Continuation-in-part of Ser. No. 675,408, Apr. 9, 1976, abandoned. This application Nov. 18, 1977, Ser. No. 852,869
Int. Cl.^{2} B29B *1/10*
U.S. Cl. 366—81 **2 Claims**

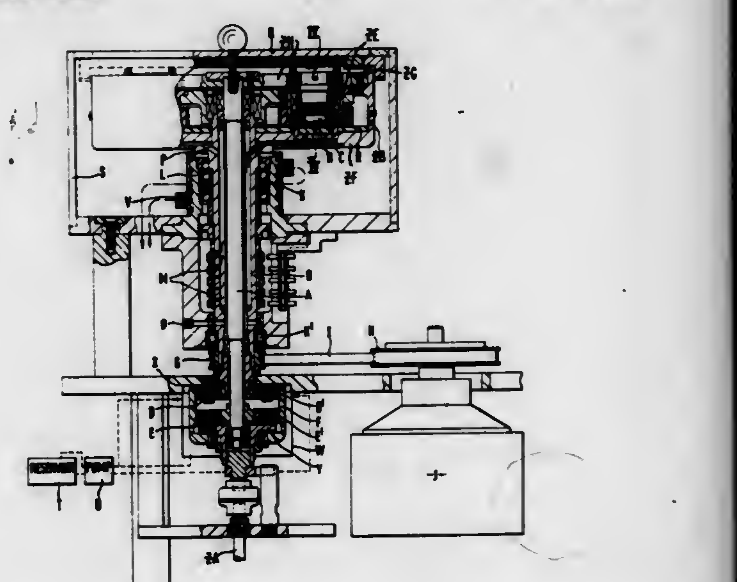


1. A rotatable scroll for an extruding machine comprising a series of helical flights and means in at least one longitudinal zone along the scroll providing a series of facets arranged in pairs between the helix flights, the facets of each pair being alternatively angled in an upward and then downward direction relatively to the helix leading or trailing edges, the pairs of facets being repeated along the length of the zone, and disposed around the root diameter of the scroll between successive flights in the zone, each of said surfaces being inclined inwardly from adjacent the outer periphery of the scroll flight.

4,131,369
CENTRIFUGAL HOMOGENIZER

Manfred Gordon, 11 Belle Vue Rd., Wivenhoe, nr. Colchester, Essex, and Bernard W. Ready, 22 Wesley Ave., Colchester, Essex, both of England

Filed Jul. 27, 1977, Ser. No. 819,454
Claims priority, application United Kingdom, Aug. 6, 1976, 32833/76
Int. Cl.^{2} B01F *9/00;* B04B *1/00, 9/08*
U.S. Cl. 366—146 **10 Claims**



1. A method of mixing a composition in the liquid state, comprising the steps of:

enclosing the components of the composition in a tube;

positioning the tube by tube location means carried by a member which is mounted for spinning about a spin axis, the tube location means being mounted for rotation relative to the member about an axis of rotation substantially parallel to said spin axis and spaced therefrom; and spinning the member about said spin axis for a period of time and rotating the location means about said axis of rotation for at least part of the spinning period;

whereby the tube is subjected to spinning about said spin axis of the member, and to end-to-end rotation about said axis of rotation of the tube location means.

4,131,370
MICRO STIRRER

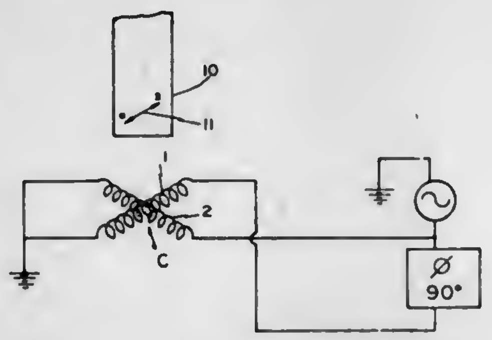
Noel L. W. Lawrence, and Surinder S. Latti, both of London, Canada, assignors to Temtron Electronics Ltd., London, Canada

Filed Apr. 1, 1977, Ser. No. 783,872

Claims priority, application Canada, Mar. 17, 1977, 274181

Int. Cl.² B01F *13/08*

U.S. Cl. 366—273 **5 Claims**



1. A micro stirrer for stirring the solution within a cuvette comprising:
- (a) a longitudinal magnetic member freely mounted within the cuvette and adapted to rotate in response to a magnetic field;
- (b) four coils lying in the same plane each orthoginally placed relative to adjacent coils and said coils placed below the exterior of the cuvette; and,
- (c) means for energizing, sequentially, each of the said coils momentarily with a square wave form whereby a rotational magnetic field is created by the coils, a portion of the magnetic field extending upwardly into the cuvette to influence the magnetic member and to thereby impart rotation to the member in response to the magnetic field, the rotating member stirring the contents of the cuvette.

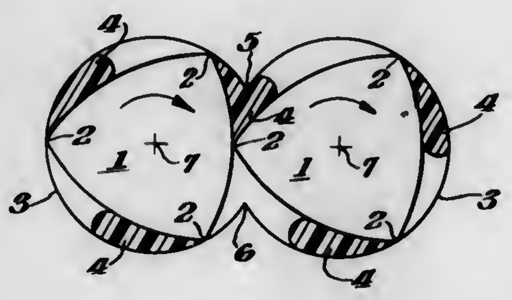
4,131,371
CO-ROTATING MULTIPLE SCREW PROCESSOR

Daniel G. Tynan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 3, 1977, Ser. No. 822,999

Int. Cl.² B01F *7/00*

U.S. Cl. 366—301 **7 Claims**



1. A screw material processor embodying a housing, a multiplicity of parallel, intersecting, cylindrical bores in said housing and a multiplicity of fully intermeshed co-rotating in-phase screws, each operating in one of said bores, each screw being provided with equal numbers of threads, said threads comprising at least a first thread cut along a first helix in sliding contact with the bore of the processor housing with longitudinal axis coincident with the axis of rotation of said screw and at least one additional thread of reduced crest radius as compared with said first thread cut along a helical course concentric with said axis of rotation, said screws having longitudinally staged eccentric cross-sections the geometric centers of which lie on a helical curve having its central axis concentric with said axis of rotation, the amplitude of said helical curve being preselected to provide clearance of said additional thread with respect to said processor bore for spreading process material.

4,131,372
ENDLESS FABRIC RIBBON CASSETTE FOR TYPEWRITERS OR LIKE MACHINES

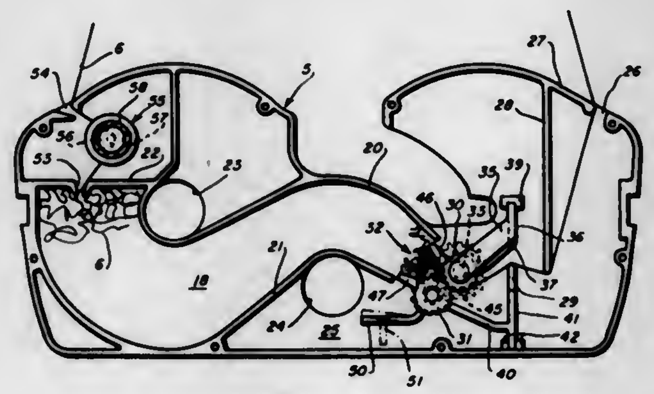
Hans Hengelhaupt, Nuremberg, Fed. Rep. of Germany, assignor to Triumph Werke Nurnberg A.G., Nuremberg, Fed. Rep. of Germany

Filed Apr. 22, 1977, Ser. No. 789,966

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1976, 2618379

Int. Cl.² B41J *33/10*

U.S. Cl. 400—196.1 **4 Claims**



1. In combination with a unidirectional ribbon transport mechanism having a train of gears, the last gear on said train of gears serving to wind up a carbon ribbon in a carbon ribbon cassette,
- a fabric ribbon cassette having a bottom wall, side walls and a removable cover,
- exit and entry openings in the side walls of said cassette, a chamber having inlet and outlet openings in said cassette,
- an endless fabric ribbon randomly folded in said chamber and extending therefrom externally of said cassette between said exit and entry openings,
- a drive and driven feed roller,
- means supporting said drive and driven rollers for rotation in said cassette at the inlet end of said chamber whereby rotation of said feed rollers pulls ribbon from the outlet side of said chamber and from said exit to said entry openings and folds ribbon into the entry side of said chamber,
- said means supporting said driven feed roller comprising a flexible arm mounted in said cassette which in unflexed state holds the driven roller in loose engagement with the drive roller
- means acting on said flexible arm to flex said arm and to bias said driven feed roller into meshing engagement with said drive roller upon assembly of the cassette cover to the cassette, and
- an external gear secured to said drive roller for driving engagement with an intermediate one of the gears in said train of carbon ribbon feed gears when said fabric ribbon cassette is loaded on said transport mechanism.

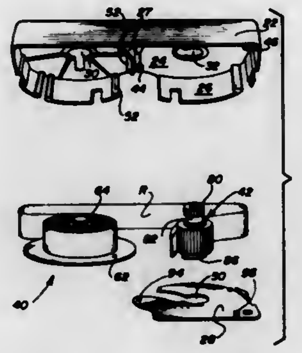
4,131,373
TYPEWRITER RIBBON CARTRIDGE

Donald E. Rakow, Rockwall, Tex., assignor to Liquid Paper Corporation, Dallas, Tex.

Filed Jun. 10, 1977, Ser. No. 805,348

Int. Cl.² B41J *33/14*

U.S. Cl. 400—208 **9 Claims**



1. A typewriter ribbon cartridge comprising:
- an upper wall member,
- side walls extending downwardly from said upper wall member forming an area between the side walls and upper wall member,
- a ribbon takeup spindle having one end rotatively supported by said upper wall member,
- a cover attached to the side walls opposite said upper wall member and rotatively supporting the end of said ribbon takeup spindle opposite said upper wall member, said cover closing only a portion of the area beneath said upper wall member and said portion being adjacent said ribbon takeup spindle,
- a ribbon supply spool including a supply spool shaft and a ribbon supply spool platform attached to one end of said supply spool shaft, and
- means for rotatively supporting the end of said ribbon supply spool shaft opposite said ribbon supply spool platform from said upper wall member with said ribbon supply spool platform positioned beneath said upper wall member to substantially cover the area below said upper wall member not covered by said cover.

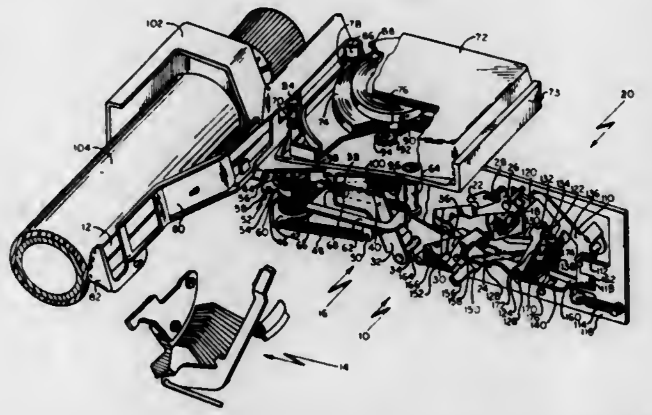
4,131,374
DUAL SEGMENT CONTINUOUS MOTION RIBBON FEED MECHANISM

Richard F. Porterfield, Cortland, N.Y., assignor to SCM Corporation, New York, N.Y.

Filed Aug. 18, 1977, Ser. No. 825,737

Int. Cl.² B41J *33/14*

U.S. Cl. 400—232 **9 Claims**



1. A ribbon feed mechanism having a ribbon engaging means and a member operatively connected to the ribbon engaging means for driving the ribbon engaging means for incrementally feeding ribbon, the improvement comprising:
- a first drive means including a power source operatively connected to the member for driving the member to advance the ribbon an initial segment of the feed increment; and
- a second drive means operatively connected to the member for driving the member to advance the ribbon a final segment of the feed increment with a continuous motion from the initial segment and upon disengagement of the first drive means from the power source.

4,131,375
SPLINED JOINTS

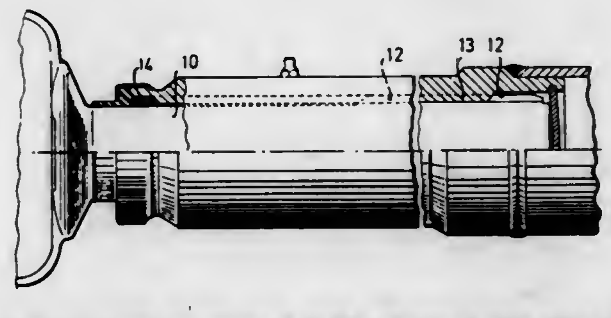
Leslie G. Fisher, Birmingham, England, assignor to Guest, Keen & Nettlefolds, Limited, Warley, England

Filed Aug. 30, 1977, Ser. No. 829,150

Claims priority, application United Kingdom, Sep. 4, 1976, 36748/76

Int. Cl.² F16D *1/06*

U.S. Cl. 403—13 **4 Claims**



1. A splined joint between a shaft having a plurality of axially extending radially outwardly projecting teeth spaced apart angularly about the rotational axis of the shaft and a muff having a plurality of axially extending radially inwardly projecting teeth spaced apart angularly about the rotational axis of the muff, the teeth of each member fitting between the teeth of the other member to permit relative axial sliding movement and torque transmission between the members, the improvement wherein:
- a. said muff defines an internal chamber adjacent to its end from which the shaft projects,
- b. a guide ring is disposed in said chamber, the guide ring being of dimensions to exert constraint upon relative radial movement between the shaft and muff,
- c. said chamber in the muff is provided with a plurality of angularly spaced radially inwardly extending projections which engage the outer surface of the guide ring,
- d. said projections are aligned with respective teeth of the muff but project radially inwardly to a smaller extent than the teeth of the muff,
- e. said guide ring having radially outwardly extending projections for engaging in the grooves left between the projections of the muff when the guide ring is first introduced into said chamber,
- f. said guide ring is made of a material which can be sheared in response to rotation of the ring relative to the muff so that the inner faces of the projections of the muff are brought into contact with newly exposed circumferential face portions of the ring produced by the said shearing of the projections upon rotation of the ring, and
- g. said chamber and guide ring are provided with respective formations which cooperate to prevent axial displacement of the guide ring from the open end of the chamber.

4,131,376

FITTING FOR DETACHABLE CONNECTING STRUCTURAL PARTS

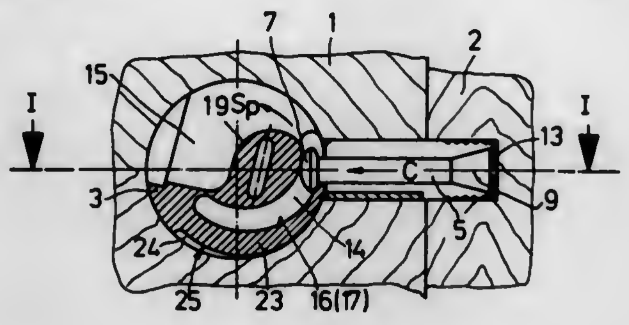
Peter Busse, Vlotho, Germany, assignor to Richard Heinze, Germany

Filed Mar. 10, 1977, Ser. No. 776,428

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1976, 2610200; Jun. 4, 1976, 2625182

Int. Cl.^{2} F16B *12/20*

U.S. Cl. 403—12 **15 Claims**



1. A fitting for detachably connecting two abutting structural parts, said fitting comprising (a) a connecting member operable for insertion in a bore hole of a first of said structural parts, said connecting member comprising an expandable sleeve and a bolt-shaped expansion member, said bolt-shaped expansion member being disposed in said sleeve for axial displacement therein, one end of said expansion member defining a widening conical section operable to expand said sleeve upon displacement and a second end defining an engagement surface; and (b) a cylindrical locking element operable to be rotatably disposed in a second of said structural parts and to communicate with the engagement surface of said expansion member when said first and second structural parts are in abutting relationship, said locking element comprising (i) a first eccentric surface defining a first recess in said locking element, said eccentric surface being developed about the axis of rotation of said locking element and being operable to engage the engagement surface on said bolt-shaped expansion member at the point on said surface at maximal radial distance from the axis of rotation and upon rotation of said locking element in a first direction, to effect displacement of said bolt-shaped expansion member relative to said first structural part, and (ii) an abutment surface operable to restrain said expandable sleeve, the distance between said eccentric surface and the axis of rotation decreasing and the distance between said eccentric surface and said abutment surface increasing upon rotation of said locking member in said first direction.

4,131,377

CABLE JOINT AND METHOD OF MAKING SAME

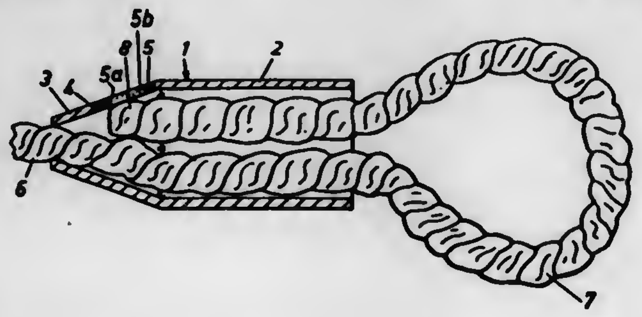
Gerhard Rohland, Ruvigliana-Lugano, Switzerland, assignor to Gerro Gerhard Rohland AB, Vastra Frolunda, Sweden

Filed Nov. 8, 1977, Ser. No. 849,596

Claims priority, application Switzerland, Nov. 9, 1976, 014110/76

Int. Cl.^{2} F16G *11/02*

U.S. Cl. 403—14 **8 Claims**



1. In a cable joint having an inspection hole, the cable joint being of the kind comprising a clamping sleeve of deformable material, the clamping sleeve being provided with an end portion and being arranged, when compressed, to lock a cable end section which has been passed through the sleeve and positioned in a loop, with the cable end passed back into the sleeve, the clamping sleeve being further provided with an opening therethrough intermediate the ends thereof which is located adjacent the cable end so that it is visible through the opening, the improvement comprising an insert made from a material that is harder than the material of the clamping sleeve and is placed in said opening during the compression of the clamping sleeve for the purpose of preventing uncontrollable material flow and insuring that the cable end is visible through said opening in the compressed sleeve.

4,131,378

SELF-LOCKING HINGE

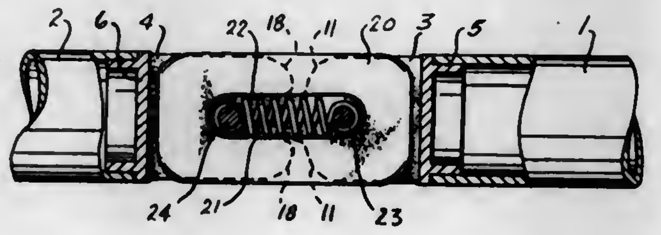
Lee F. Daws, Kingston, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Jan. 9, 1978, Ser. No. 867,836

Claims priority, application Canada, Jan. 11, 1977, 269457

Int. Cl.^{2} F16C *11/10*

U.S. Cl. 403—93 **5 Claims**



1. A self-locking hinge for interconnecting two relatively foldable structural elements comprising a pair of lugs for connection to the elements in opposed end-to-end relationship, the opposed ends of each lug having a pair of arms with a recess therebetween, at least one arm on one lug having a locking projection, at least one arm on the other lug having a locking groove for receiving said projection to lock said lugs in an open position; a yoke extending from between the pair of arms of one lug to between the arms of the other lug; at least one slot in said yoke, pin means extending through each pair of arms and said slot in the yoke for pivotally connecting each lug to the yoke; the slot permitting limited movement of said pin means in a direction generally axially of said lugs, for consequent disengagement of said locking projection and groove, whereby both lugs can be rotated about the axis of the pin means to a closed position; and spring means in said slot biasing the pin means of one lug toward the pin means of the other lug, and consequently biasing the lugs towards each other to maintain the locking projection in said groove when the lugs are in the open position, the springs means permitting limited movement of the pin means and lugs away from each other for closing the hinge.

4,131,379

SELF-RETAINING CONDUIT ANCHORING DEVICE

Donald G. Gordy, and David P. Klosterman, both of Moberly, Mo., assignors to Orscheln Lever Sales Co., Moberly, Mo.

Filed Jan. 27, 1978, Ser. No. 872,912

Int. Cl.^{2} F16B *9/00*

U.S. Cl. 403—197 **13 Claims**

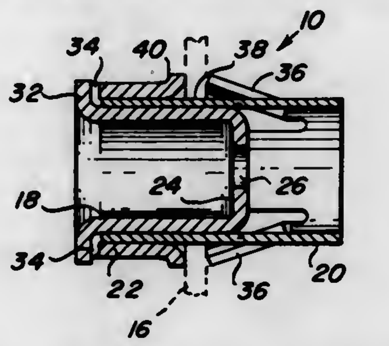
1. A self-retaining anchoring assembly for mounting a coaxial cable within a through bore defined in a support member, said coaxial cable including concentrically arranged inner and outer members, comprising

(a) an inner sleeve member having at one end radially outwardly extending first abutment means, said inner sleeve member including adjacent its other end internal stop means arranged for engagement by the extremity of the outer cable member when said cable member is introduced axially into said inner sleeve member from said one end thereof with the inner cable member projecting from the other end thereof;

(b) an outer sleeve member mounted concentrically about said inner sleeve member, said outer sleeve member being in abutting engagement at one end with said inner sleeve first abutment means, said outer sleeve member including adjacent said one end radially outwardly extending second abutment means; and

(c) an annular collar member arranged concentrically about said outer sleeve member and in abutting engagement at one end with said outer sleeve second abutment means;

(d) said outer sleeve member including adjacent its other end a plurality of integral, circumferentially spaced external resiliently outwardly biased prong portions that extend at one end in the direction of the said outer sleeve member one end, the extremities of said prongs being spaced from the other end of said collar member a distance equal to the thickness of said support member, whereby when the end of the anchoring assembly adjacent the said other end of said outer sleeve member is progressively introduced within the support bore to a position in which the other end of said collar member is in engagement with one face of the support member, the extremities of the prong members, following inward compression during insertion of the outer sleeve member within the support bore, are resiliently expanded outwardly to positions in which the prong extremities are in engagement with the opposite face of the support member, thereby to prevent axial displacement of the anchoring assembly relative to the support member.



4,131,380

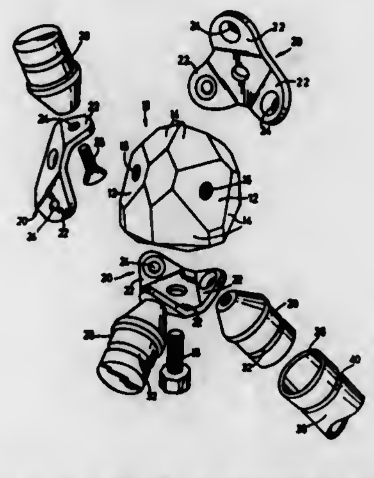
SHAFT END COUPLING MEANS

Michael C. De Bliquy, P.O. Box 69732, Bryanston 2021, South Africa

Filed Aug. 3, 1977, Ser. No. 821,488

Int. Cl.^{2} F16D *1/00*

U.S. Cl. 403—217 **10 Claims**



1. Coupling means for use in erecting a framework structure, which includes a node having on its outer surface a plurality of primary faces disposed in a predetermined arrangement and secondary faces associated with the primary faces, each secondary face being arranged to occupy the same position relative to a primary face as other secondary faces occupy relative to their associated primary faces; and at least one retaining member having holding means for holding it on a primary face of the node, the retaining member having at least one ear locatable on a secondary face associated with the primary face on which the retaining member is locatable, the ear having a locating formation to permit location of the end of a cross member or a connector for a cross member in a load supporting position against a secondary face of the node.

4,131,381

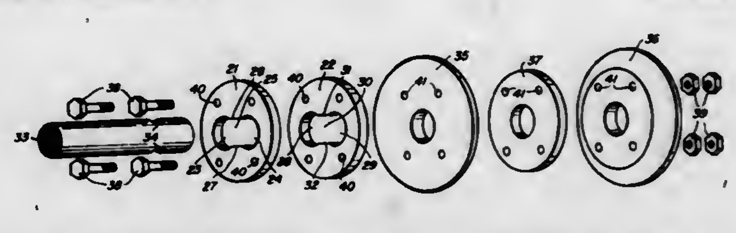
MEANS AND METHOD FOR MOUNTING A STRUCTURE ON A SHAFT

Albert K. Alberts, 1084 Canyon Crest Dr., Bountiful, Utah 84010

Filed Nov. 21, 1977, Ser. No. 853,117

Int. Cl.^{2} B25G *3/00*

U.S. Cl. 403—353 **9 Claims**



1. A mechanical assembly for mounting on a shaft that has transverse grooves in respective diametrically opposite sides thereof intermediate its length, said grooves providing substantially rectilinear slideways, the assembly comprising a structure to be secured to the shaft for rotation therewith, said structure having a close-fitting opening for freely receiving the shaft; a securement plate having an opening with a main portion adapted to receive the shaft and with an auxiliary portion extended laterally from said main opening and defined by mutually opposite rail formations for snugly receiving the grooved portion of the shaft when such grooved portion and said plate are in lateral registry; and means for securely fastening the securement plate to said structure when said plate is positioned on said shaft with its rail formations in mating relationship with said grooves of the shaft.

4,131,382

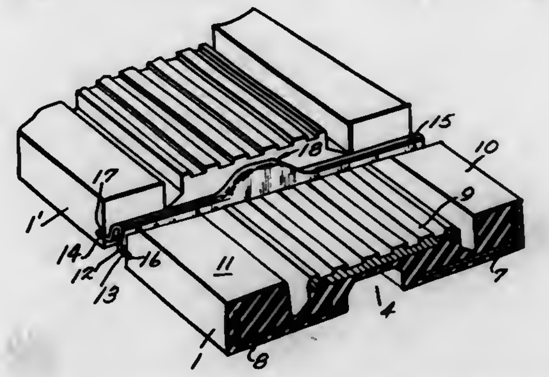
EXPANSION JOINTS

Lawrence A. Hymo, 9414 Macklin Ct., Alexandria, Va. 22310

Filed Dec. 14, 1977, Ser. No. 860,574

Int. Cl.^{2} E01C *11/10*

U.S. Cl. 404—69 **6 Claims**



2. In a roadway expansion joint comprising a first and second adjoining pavement section, spaced from each other to provide a gap therebetween, each said pavement section having a blockout adjacent said gap, said blockout opening upwardly and toward said gap to receive an expansion joint,

a rubber cushion expansion joint comprising a plurality of elongated units,

each said unit comprising first and second elongated rubber cushions, each said rubber cushion having a top surface, a bottom surface, an outer surface and end surfaces, said rubber cushion units being secured respectively in said blockouts on opposite sides of said gap so that the top surfaces of said rubber cushions form part of the roadway surfaces, and means connecting said rubber cushions, said connecting means forming a watertight connection between said rubber cushions and allowing movement of said rubber cushions toward and away from each other to accommodate opening and closing of said gap,

said plurality of units being secured in said blockouts in end-to-end relationship along the length of said expansion joint,

and end-to-end connecting means which connect the ends of adjoining units along said expansion joint;

the improvement wherein said rubber cushions have a longitudinally-extending groove in their bottom or outer surfaces and including a flexible sealing member in said groove and extending outwardly into contact with said blockout to seal against leakage of water.

4,131,383

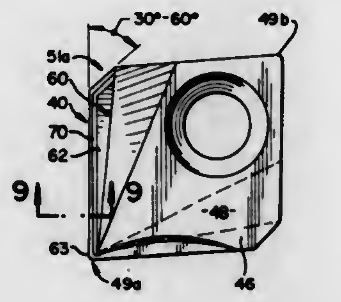
INSERT TYPE DRILL AND INSERT THEREFOR

Thomas R. Powers, Rogers, Ark., assignor to TRW Inc., Cleveland, Ohio

Division of Ser. No. 708,836, Jul. 26, 1976, Pat. No. 4,072,438. This application Dec. 7, 1977, Ser. No. 858,262

Int. Cl.^{2} B26D *11/00*

U.S. Cl. 407—114 **5 Claims**



1. A cutting inset for use in a drill of the type described comprising:

a solid unitary body having opposed, parallel, upper and lower faces each in the shape of a parallelogram having a pair of opposed acute angle corners;

peripheral side walls joining said upper and lower faces and extending generally perpendicular thereto;

a first recess extending inwardly of said body from the upper face continuously along the entire length of a peripheral edge of said upper face from a first acute angle corner to a first obtuse angle corner, the bottom of said first recess being defined by a bottom surface which is inclined downwardly from the top face in a direction from the first acute angle corner to the first obtuse angle corner, the bottom surface of said first recess intersecting the respective peripheral side wall to define a first cutting edge which extends generally diagonally of the respective side wall; a second recess extending inwardly of the lower face continuously along the entire length of a peripheral edge of the lower face from said first acute angle corner to the second obtuse angle corner, the bottom of said second recess being defined by a bottom surface which is inclined downwardly from the lower face in a direction from the first acute corner to the second obtuse corner, the bottom surface of said second recess intersecting the respective peripheral side wall to define a second cutting edge which extends generally diagonally of the respective side wall, each obtuse angle corner being chamfered to provide each said first and second cutting edges with a short end portion that lies in the plane of said respective cutting edge but is inclined relative thereto; and,

the peripheral side wall portions under each said chamfered corner being inclined in a direction inwardly of the insert body relative to the associated cutting edge end portion to provide cutting clearance for drilling operations.

4,131,384

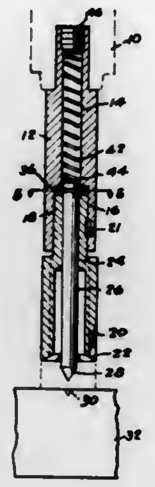
ARBOR FOR ANNULAR HOLE CUTTER

Everett D. Hougen, G-5072 Corunna Rd., Flint, Mich. 48504

Filed Sep. 8, 1977, Ser. No. 831,363

Int. Cl.^{2} B23B *47/00, 51/00*

U.S. Cl. 408—68 **12 Claims**



1. An arbor for an annular hole cutter comprising a shank having means at its upper end for connection with a rotary driven spindle, the lower end of said arbor being adapted for mounting an annular hole cutter thereon, said shank having an axial bore therein which opens through the lower end of said shank, a pilot pin axially slideable in said bore, said pin being insertable into said bore and being adapted to be withdrawn therefrom through said open end of said bore, a compression spring in said bore acting on the upper end portion of said pin and yieldably biasing the pin downwardly in said bore to a position wherein the leading end of the pin extends axially beyond the leading end of an annular cutter on said arbor, and means independent of said spring fixed axially in said bore and resiliently engaging said pin adjacent its upper end when in said biased position and applying a radial force thereto to frictionally retain the pin in said bore, said resilient means comprising the sole means for retaining the pin in said bore.

4,131,385

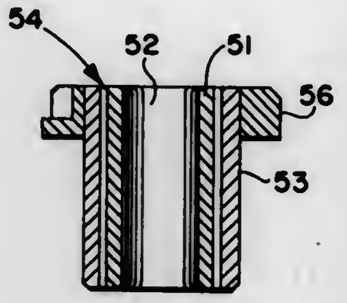
ALIGNMENT BUSHING

Rajendra K. Narang, 1525 Bonnie Rd., Macedonia, Ohio 44056

Filed Nov. 3, 1975, Ser. No. 628,397

Int. Cl.^{2} B23B *39/00, 47/00;* B23G *1/00*

U.S. Cl. 408—241 B **7 Claims**



1. An alignment bushing positionable in an opening through a jig plate or the like for accurately guiding a tool through the jig plate to a workpiece, comprising a cylindrical guide member insertable in the jig plate opening and having a substantially uniform, cylindrical central passage therethrough for guiding the tool to the workpiece and a substantially uniform, cylindrical exterior surface and holding means concentric about at least a part of said guide member and temporarily selectively coupled thereto at any location along the guide member required to attach the guide member to the jig plate for accurate guiding of the tool to the workpiece, said guide member being removable from and reversibly positionable in said holding means, whereby the guide member may selectively be reversed after wearing of one end thereafter to present the uniform end of the passage to the tool for guidance purposes, and said holding means being coextensive with the longitudinal extent of said guide member, whereby said guide member forms an insert within a cylindrical passage in said holding means.

4,131,386

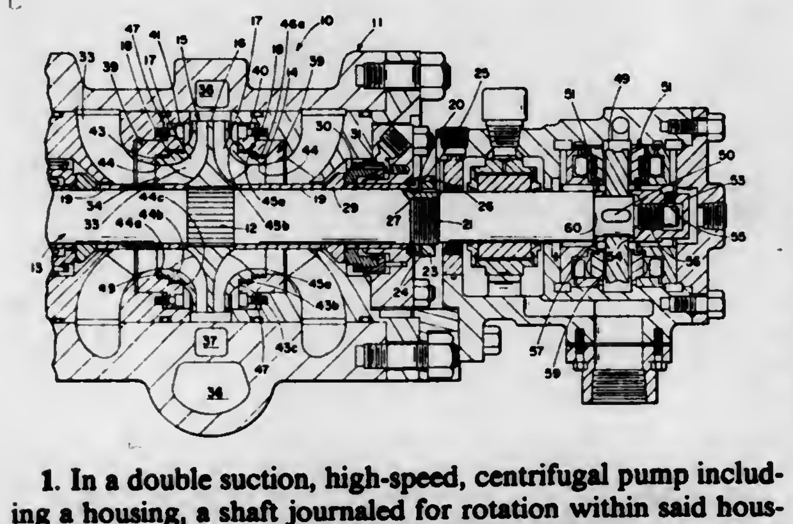
SEALING SYSTEM FOR CENTRIFUGAL PUMP

William J. Mabe, Jr., Thornton, Colo., assignor to Sundstrand Corporation, Rockford, Ill.

Filed May 5, 1977, Ser. No. 794,170

Int. Cl.^{2} F01B *11/08*

U.S. Cl. 415—98 **2 Claims**



1. In a double suction, high-speed, centrifugal pump including a housing, a shaft journaled for rotation within said housing, an impeller chamber located within said housing, inlet and outlet means for said chamber, an impeller body fixed to said shaft within said chamber, first and second sets of impeller blades fixed to opposite sides of said body for rotation with said shaft to pump fluid from said inlet means to said outlet means, first and second shrouds integrally formed with said first and second sets of blades, respectively, and first and second sealing rings associated with said first and second shrouds, respectively, said rings being mounted within said chamber and held against rotation with said impeller, the improvement comprising a first set of two sealing surfaces on said first shroud, said surfaces in said first set being spaced axially from each other and extending in a radial direction and facing in a first axial direction, a second similar set of sealing surfaces on said second shroud facing in the opposite axial direction, first and second sets of sealing walls on said first and second sealing rings and associated with said first and second sets of sealing surfaces respectively, said associated sealing surfaces and walls extending parallel to and facing each other and being spaced from each other a fixed axial distance, a cylindrical surface formed in each of said shrouds in each of said sets concentric with said shaft and being connected between said two sealing surfaces of said sets, an axially extending cylindrical wall formed in each of said sealing rings and connected between said two sealing walls in each set, said cylindrical walls normally being spaced radially outward from said cylindrical surfaces a distance greater than said fixed axial distance between said associated sealing surfaces and sealing walls, means associated with one of said sealing rings for precisely adjusting the axial distance between said first and second sets of sealing walls, and adjustable means connectable between said shaft and said housing for precisely locating said impeller within said chamber when assembling said pump so that the axial distance between said first set of sealing surfaces and said first set of sealing walls is substantially the same as the axial distance between said second set of sealing surfaces and said second set of sealing walls to keep fluid from leaking substantially from said outlet means to said inlet means by flowing between said sealing surfaces and walls.

4,131,387

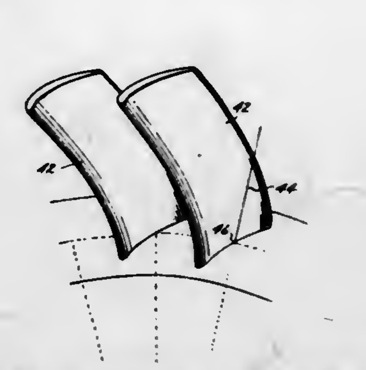
CURVED BLADE TURBOMACHINERY NOISE REDUCTION

Stephen B. Kazin, West Chester, and Ram K. Matta, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 27, 1976, Ser. No. 662,150

Int. Cl.^{2} F01D *5/12*

U.S. Cl. 415—119 **2 Claims**



1. In an aircraft gas turbine engine turbomachinery stage comprising adjacent upstream and downstream blade rows, one of which is rotatable, the improvement wherein the blades of the upstream row are physically curved with a local physical radial lean distribution in the circumferential direction such that the sum of the physical lean and the inherent aerodynamic lean in the circumferential direction results in the integrated acoustic power, P_w, of the bladed stage being essentially at a minimum at the flight approach power operating condition where P_w is generally defined by the relationship:

$$P_w = 2\pi \int_{r_{hub}}^{r_{tip}} \frac{P_m^2}{\rho c}\, r\, dr, \text{ where:}$$

r_{hub} = upstream blade row hub radius;
r_{tip} = upstream blade row tip radius;
P_m = RMS acoustic pressure;
ρ = motive fluid density;
c = acoustic velocity (speed of sound);
r = radius; and
dr = incremental radius.

4,131,388

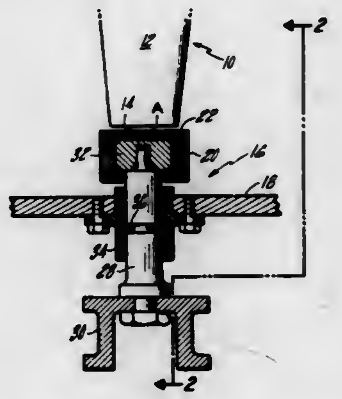
OUTER AIR SEAL

Robert F. Brodell, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 26, 1977, Ser. No. 800,979

Int. Cl.^{2} F01D *11/08, 25/24;* F02C *7/20*

U.S. Cl. 415—138 **9 Claims**



1. For a gas turbine engine having an engine case, a segmented, outer air seal of the type adapted to circumscribe the tips of the rotor blades, wherein the improvement comprises:

a continuous ring positioned externally of the engine case for radially positioning the outer air seal, wherein said radial position is determined by a substantially fixed position of the continuous ring.

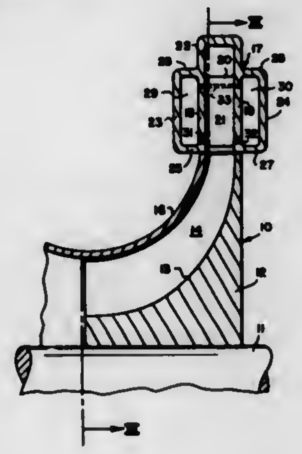
4,131,389
CENTRIFUGAL COMPRESSOR WITH IMPROVED RANGE

George L. Perrone; Robert W. Boorman, both of Phoenix; Michael R. Holbrook, Glendale, and Eugene A. Zanelli, Scottsdale, all of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 636,255, Nov. 28, 1975, abandoned. This application Apr. 25, 1977, Ser. No. 790,718

Int. Cl.² F04D *29/44*

U.S. Cl. 415—211 13 Claims



1. In a compressor of the type having a centrifugal impeller and a diffuser at the periphery thereof, the diffuser including spaced sidewalls and spaced vanes extending therebetween, the spaces between the vanes having inlet ends adjacent the periphery of said impeller, the improvement comprising:

- means in connection with said diffuser forming a plenum; and
- passage-forming means establishing communication between the inlet ends of the spaces between the diffuser vanes and said plenum to equalize the pressure in the inlet ends of all such spaces during the operation of the compressor, said passage-forming means extending along a substantially constant static pressure line across each of said spaces and said plenum being otherwise closed to minimize fluid flow from said plenum through said passage-forming means.

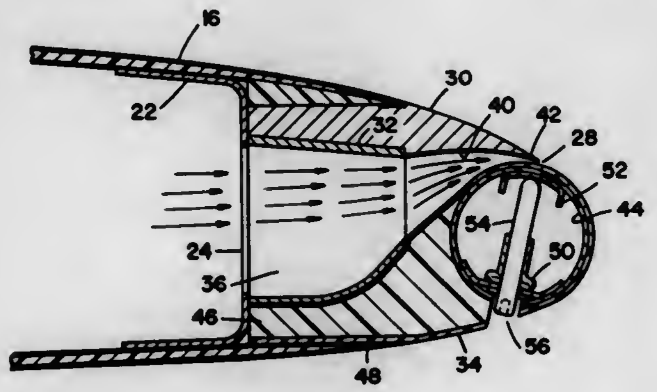
4,131,390
CIRCULATION CONTROLLED ROTOR BLADE

Jacob Schmidt, deceased, late of Van Nuys, Calif. (by Mia H. Schmidt, administratrix), assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 27, 1977, Ser. No. 810,539

Int. Cl.² B64C *27/18*

U.S. Cl. 416—20 R 13 Claims



1. A circulation controlled rotor blade comprising:

(a) a skin folded to form a sandwich, the fold of said sandwich being the leading edge of said rotor blade;

(b) a spanner within said sandwich and attached to said skin to provide structural support;

(c) a rear spar within and attached to said sandwich near the open end opposite the fold, said rear spar having a plurality of holes therethrough;

(d) a fluted core having a plurality of openings with thin sidewalls, said openings being aligned with said rear spar;

(e) a lip bonded to the upper surface of said fluted core and to the underside of the upper portion of said sandwich at said open end;

(f) a coanda edge having a flexible spanwise tube and a leg integral with said tube to provide stiffening, the upper surface of said leg being bonded to the bottom of said fluted core such that said tube is in juxtaposition with said lip to form a spanwise slot, and the lower surface of said leg being bonded to the interior of the lower portion of said sandwich at said open end so that said fluted core, lip and coanda edge form a trailing edge assembly capable of supporting the coanda effect; and

(g) means for conducting compressed fluid through said rotor blade, said rear spar and said fluted core to produce a uniform, laminar flow from said slot.

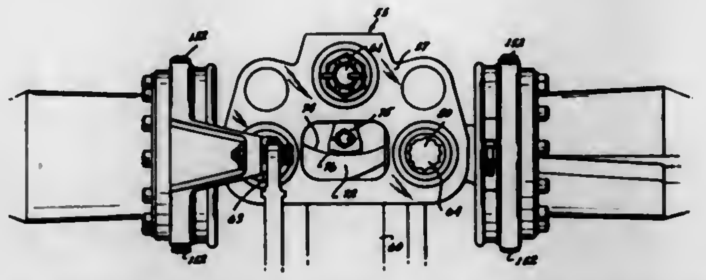
4,131,391
ROTOR HUB AND OIL SEAL

Frank D. Robinson, Rancho Palos Verdes, Calif., assignor to Robinson Helicopter Co., Torrance, Calif.

Filed Oct. 4, 1976, Ser. No. 729,162

Int. Cl.² B64C *27/36*

U.S. Cl. 416—140 6 Claims



1. An underslung rotor structure for a rotorcraft having two rotor blades driven by a rotor shaft, comprising:

- a hub mounted on the rotor shaft for rotation by it and including a teeter hinge having a hinge axis passing perpendicularly through the axis of the rotor shaft to provide tilting movement of said hub relative to the rotor shaft about the axis of said teeter hinge, and further including two coning hinges having axes parallel to the axis of the teeter hinge but located below it and offset from the axis of the rotor shaft for mounting the rotor blades to the hub so as to provide independent substantially unopposed coning movement of each rotor blade relative to said hub so as to balance the aerodynamic forces on each blade with the centrifugal forces on each blade, whereby stick shake is substantially eliminated; and,
- a friction teeter hinge restraint including an arm on each rotor blade extending inwardly of each coning hinge and having an upper surface curved so as to lie at a substantially constant distance from said teeter hinge axis when the rotor blades are at rest, and a droop stop extending from the rotor shaft to engage said upper surface so that when the rotor blades are at rest teetering of said hub is yieldably opposed by friction between said droop stop and said upper surface and so that when said rotor blades are driven said droop stop is spaced from said upper surface permitting the rotor blades to tilt and cone freely.

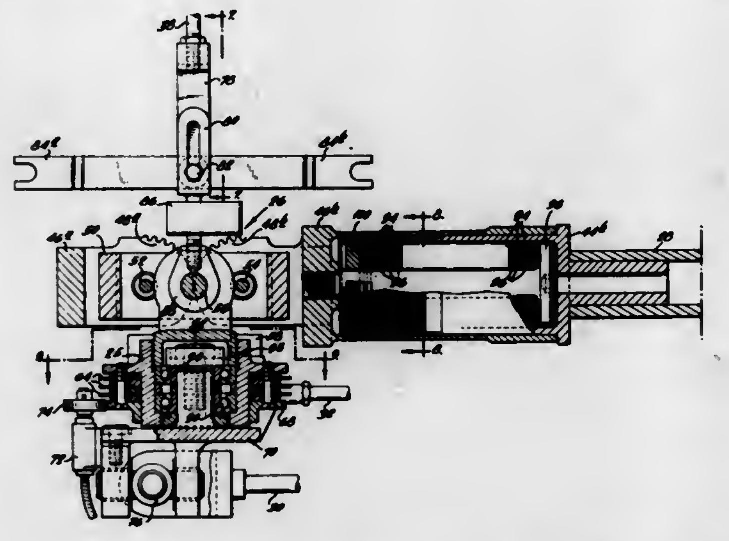
4,131,392
DEPLOYABLE ROTOR

Justin J. Barzda, Windsor, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 664,714, Mar. 8, 1976, Pat. No. 4,017,043. This application Jan. 31, 1977, Ser. No. 764,485

Int. Cl.² B64C *11/28, 27/50*

U.S. Cl. 416—142 4 Claims



1. Coning synchronization apparatus for deploying a pair of parallelly folded rotor blades pivotally mounted for movement between stowed and flight positions, comprisng, in combination:

- a rotor hub for rotating about a first axis;
- teeter means hingingly connected to said hub about a second axis perpendicular to said first axis for teetering on the second axis about said hub; and
- sector means formed to be connected to said blades at respective rotor ends thereof and pivotally mounted to said teeter means for maintaining concomitant spreading of said blades to a predetermined position intermediate of the stowed and flight positions, and independent spreading between the predetermined and flight positions, said sector meas comprising a pair of opposed arcuate surfaces intermeshing between the stowed and predetermined positions of said blades, and spaced apart from each other between the predetermined and flight positions of said blades.

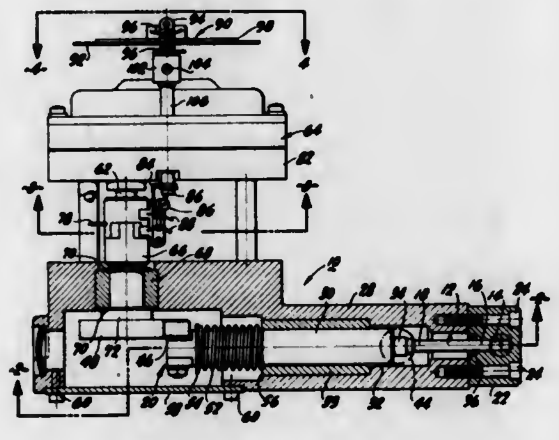
4,131,393
FLUID PUMP MECHANISM

Haakon T. Magnussen, Jr., Pinole, Calif., assignor to Altex Scientific, Inc., Berkeley, Calif.

Filed Jan. 21, 1977, Ser. No. 761,433

Int. Cl.² F04B *49/00*

U.S. Cl. 417—22 27 Claims



1. A fluid pump mechanism for delivering fluid against a back pressure comprising:

a. piston, at least a portion of which is reciprocative within a chamber having a fluid inlet and fluid outlet said piston having a first end portion and a second end portion, said first end portion contacting the fluid, said piston being capable of filling and emptying said chamber;

b. motive means for reciprocating said piston within said chamber at a selected substantially constant speed, said substantially constant speed determined by constant speed setting means for setting said motive means at a substantially constant speed, said motive means at a substantially constant speed, said motive means contacting said second end portion of said piston;

c. valve means for permitting the filling and emptying of said chamber coordinated with the pressure exerted by said piston within said chamber; said piston, motive means and valve means cooperating to produce a time duration of fluid flow from said chamber ralative to said selected substantially constant speed;

d. control means for changing the speed of said motive means at a preselected portion of the time period of said reciprocation of said piston within said chamber, said control means including detection means for detecting and signaling the inception of the chamber filling stroke of said piston and the termination of said chamber filling stroke of said piston; filling means for changing said constant speed of said motive means at the inception of the chamber filling stroke of said piston and returning said motive means to said constant speed at the termination of said chamber filling stroke of said piston said filling means being activated and deactivated by said detection means signal.

4,131,394
METHOD FOR TRANSPORT OF MANURE AND A DEVICE ACCORDING TO THE METHOD

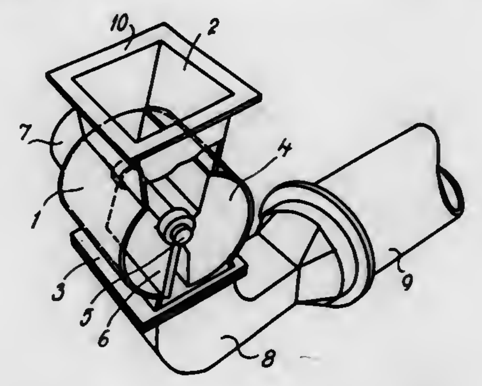
Bror A. Sjöblom, Gottne, Moliden, Sweden (S-890 26)

Continuation of Ser. No. 631,125, Nov. 11, 1975, abandoned. This application Apr. 13, 1977, Ser. No. 787,499

Claims priority, application Sweden, Jan. 23, 1976, 7414262

Int. Cl.² F04C *21/00;* F04B *15/02*

U.S. Cl. 417—481 4 Claims



1. An apparatus for transporting manure under pressure comprising:

- a generally cylindrical housing presenting a generally upwardly facing peripheral inlet opening and a generally downwardly facing peripheral outlet opening said inlet and outlet openings being separated by a first peripheral distance;
- elongate, rotatable piston means disposed in said housing and presenting first and second generally radially extending driving surfaces connected by a partially generally cylindrical surface having a peripheral extent sufficient to block said inlet opening, said first and second driving surfaces being separated by a second peripheral distance greater than the first peripheral distance between said inlet and outlet openings;
- drive means for rotating said piston means in both angular directions about a generally central axis of said housing; and

elongate, movable valve means, mounted in said housing for pivotal movement about said generally central axis of said housing to project solely generally radially downwardly from said generally central axis into said outlet opening, and movable between first and second circumferentially spaced positions engaging said housing at opposed junctures with said outlet opening, said valve means cooperating with the driving surfaces of the piston means to urge the manure downwardly through the outlet opening with the driving surfaces of the piston means coming into close proximity with the valve means when the piston is at its lowermost travel about the central axis.

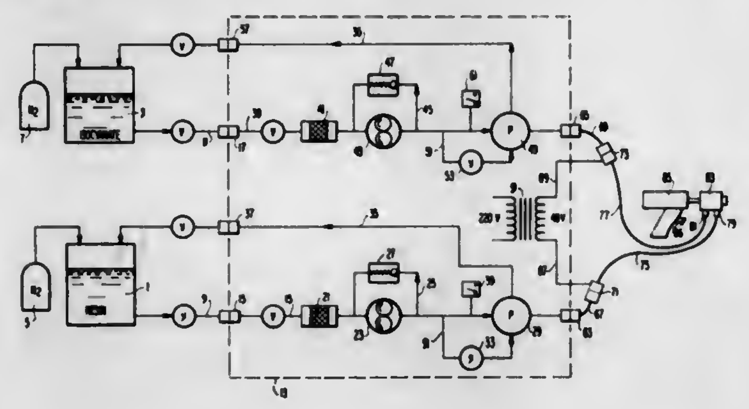
4,131,395
FEEDER FOR APPARATUS FOR EJECTING A MIXTURE OF A PLURALITY OF LIQUIDS

Frederick E. Gusmer; Denis S. Commette, both of Mantoloking, and Robert A. Bairunas, Bordentown, all of N.J., assignors to Gusmer Corporation, Old Bridge, N.J.

Filed Sep. 29, 1976, Ser. No. 727,981

Int. Cl.² F04B *1/12, 23/10*

U.S. Cl. 417—271 **6 Claims**



1. A feeder for apparatus for ejecting a mixture of a plurality of liquids, the feeder comprising a plurality of swash plate pumps one individual to each said liquid, a further pump individual to each said swash plate pump for feeding a respective said liquid to the associated said swash plate pump from a supply of said liquid, positive drive means comprising a drive motor and a drive chain common to all said pumps for driving all said pumps in unison, each said swash plate pump having a swash plate, means mounting each said swash plate for swinging movement about an axis parallel to the plane of the swash plate, and means for individually adjusting the amount of said swinging movement of each said swash plate independently of the adjustment of any other said swash plate.

4,131,396
HERMETIC COMPRESSOR LUBRICATION SYSTEM WITH TWO-STAGE OIL PUMP

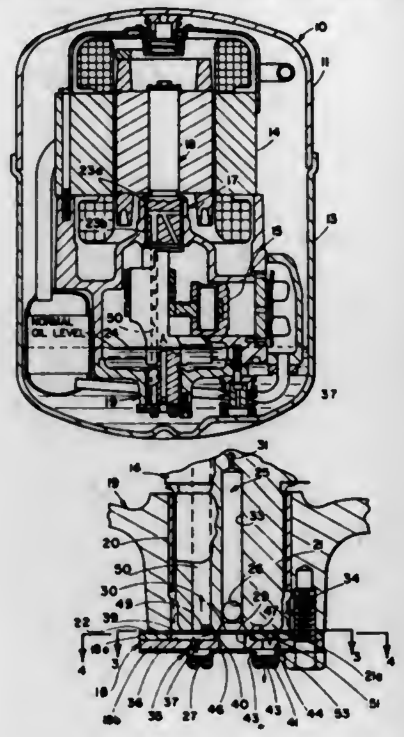
George T. Privon, and Andrew W. Paczuski, both of Bristol, Tenn., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Apr. 7, 1977, Ser. No. 785,712

Int. Cl.² F04B *17/00;* F01M *1/00, 9/00, 1/10*

U.S. Cl. 417—372 **25 Claims**

1. In a hermetic compressor including, a hermetically sealed housing, an electric motor mounted within said housing, a driven shaft connected to and depending from said motor and having a lower end portion immersed in a sump of lubricant in the housing, bearing surfaces supporting said shaft within said housing, means supported within said housing and drivingly connected with said shaft to be driven by said motor for compressing refrigerant gases from within said housing, the improvement in said compressor comprising, a lubrication system for supplying lubricant to said bearing surfaces including, first and second stage pumps located within said lower end portion of said shaft, an inlet to said first stage pump communicating with the sump, said inlet for said first stage pump is coincident with the rotational axis of said shaft, and a vent for refrigerant gases communicating directly with said inlet and extending through said shaft concentrically along the axis thereof for at least for some distance above said first stage pump for directing flashed refrigerant gases away from said first stage and back to the interior of said housing above said sump.



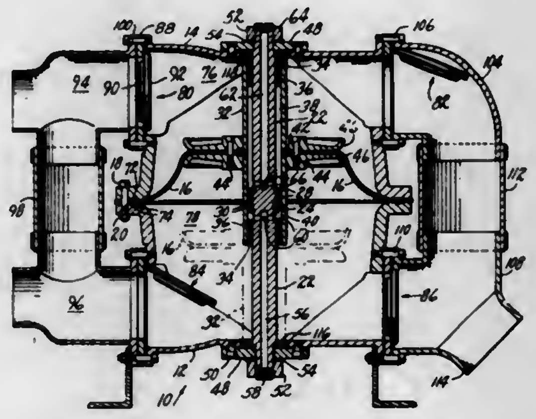
4,131,397
PUMPS

Jerome H. Milgram, Cambridge, Mass.; Vance S. Bartoo, Somerville, N.J., and Burdett H. O'Connor, Marblehead, Mass., assignors to Offshore Devices Inc., Peabody, Mass.

Filed Apr. 14, 1977, Ser. No. 787,383

Int. Cl.² F04B *17/00*

U.S. Cl. 417—404 **8 Claims**



1. A pump comprising a housing and a single diaphragm together defining a pumping chamber, means including a set of inlet and outlet valves for controlling the passage of liquid into and out of the chamber, and hydraulically actuated means contained within the housing for imparting a pumping motion to the diaphragm and a tubular connector arranged to clamp the housing on the margin of the diaphragm and formed with a conduit for supplying hydraulic fluid to the hydraulically actuated means.

4,131,398
GLASS WASHING ELECTROMAGNETIC PUMP, MORE PARTICULARLY FOR WINDSCREENS OF MOTOR VEHICLES

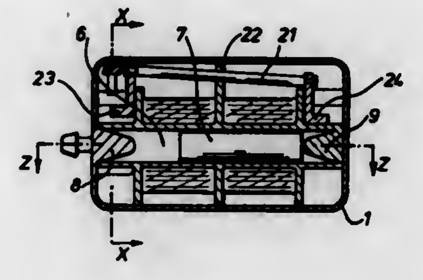
Onofrio Rocchitelli, 20, Via Stoppani, Rho, Milan, Italy (20017)

Filed Nov. 17, 1976, Ser. No. 742,701

Claims priority, application Italy, Nov. 24, 1975, 29561 A/75

Int. Cl.² F04B *17/04*

U.S. Cl. 417—418 **7 Claims**



1. An electromagnetic glass washing pump comprising:
a cylinder;
a magnetically sensitive reciprocating piston housed in said cylinder;
two electromagnets positioned around said cylinder so that said electromagnets are at opposing ends of said cylinder;
said electromagnets electrically connected in series;
a switch having two fixed contacts and a central movable contact;
said central movable contact of said switch electrically connected to said electromagnets at said electromagnets' series connection;
said fixed contacts of said switch electrically connected to said electromagnets at the ends remote from said series connection so that one of said fixed contacts is electrically connected to one electromagnet and the other said fixed contact is electrically connected to the other said electromagnet;
said fixed contacts of said switch connected to a D.C. power supply so that one of said fixed contacts is maintained at a higher voltage than the other said fixed contact;
said central movable contact alternately contacting said fixed contacts and electrically shorting the electromagnet connected between said fixed contact and said series connection;
said central movable contact moving between said fixed contacts so that during switching said central movable contact is not contacting either of said fixed contacts allowing current to pass through both electromagnets;
a casing having a fluid inlet and a fluid outlet surrounding said cylinder;
means to selectively introduce fluid from said fluid inlet into said cylinder alternately at either end of said cylinder;
means to selectively discharge fluid from said cylinder to said fluid outlet alternately at either end of said cylinder;
said reciprocating piston alternately forcing fluid from the cylinder at one end while drawing fluid into the cylinder at the other end;
a fulcrummed rod having magnetically sensitive ends;
said magnetically sensitive ends of said rod in magnetic communication with an electromagnetic field induced alternately at each end of said cylinder by said electromagnets so that said rod rocks toward the end of said cylinder which is electromagnetically energized;
said movable contact attached to one end of said fulcrummed rod so that the rocking motion of said fulcrummed rod causes the movable contact to complete a circuit alternately with said fixed contacts to induce the electromagnetic field at the opposite end of said cylinder.

4,131,399
PERISTALTIC TUBE PUMP WITH MEANS PREVENTING COMPLETE OCCLUSION OF TUBE

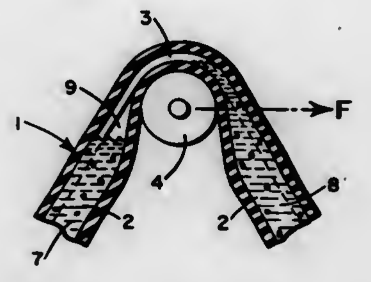
Gérard Calvet, Ivry-sur-Seine, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Jul. 2, 1976, Ser. No. 702,205

Claims priority, application France, Jul. 8, 1975, 75 21360

Int. Cl.² F04B *43/08, 43/12, 45/06*

U.S. Cl. 417—477 **13 Claims**



1. In a peristaltic pump assembly, the improvement which comprises a peristaltic tube of flexible material having an inlet end and an outlet end, the wall of the tube being provided with at least one wall surface irregularity rendering the cross-section of the wall of the tube noncircular cylindrical in at least that region on which flat roller tube flattening elements of the peristaltic pump act in flattening the tube against an arcuate backing element to exercise a peristaltic pumping action, the irregularity leading to at least one arcuate reservoir being defined by the inside wall of the tube when the tube is flattened in said region, within which arcuate reservoir gas can collect while liquid is being peristaltically pumped through the tube.

4,131,400
HYDRAULIC ROTARY SCREW MACHINE WITH AXIAL BALANCING PISTON

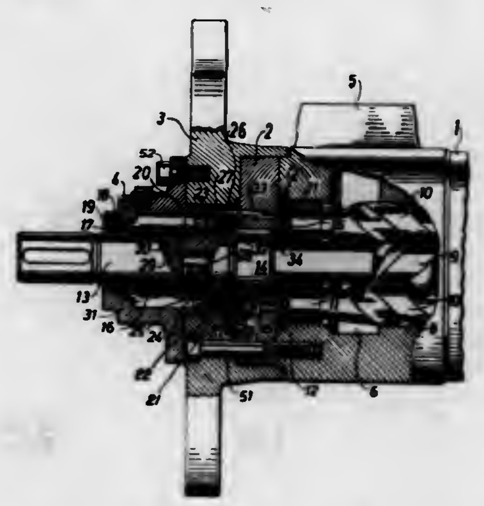
Lars Segerström, Skarholmen, Sweden, assignor to Aktiebolaget Imo-Industri, Stockholm, Sweden

Filed Apr. 19, 1977, Ser. No. 788,968

Claims priority, application Sweden, Apr. 27, 1976, 7604832

Int. Cl.² F04C *17/12, 29/00*

U.S. Cl. 418—203 **1 Claim**



1. A hydraulic screw machine comprising a housing, a drive screw extending axially of the housing; a plurality of idler screws extending axially of the housing and intermeshing with said drive screw; a shaft integral with said drive screw and protruding from one end of said housing; means forming a shaft seal space about said shaft at said end of the housing, said shaft seal space being at a pressure lower than that of a high-pressure side of the machine; a piston formed integral with a shaft of the drive screw, having an outer diameter equal to or smaller than the outer diameter of the drive screw, said piston extending with a close fit through a bore in the housing between the shaft-seal space and said high-pressure side; a plate

of greater diameter than the piston being affixed to said shaft at a side of the piston facing away from said drive screw; a leak passage along the periphery of the piston: said plate having a side facing away from the piston being subjected to pressure prevailing in said shaft seal space and the opposite side of the plate radially outwardly of the piston being subjected to a pressure intermediate the pressure prevailing in said shaft seal space and the pressure at said high-pressure side of said machine; abutment means connected to said housing, facing radially outward portions of sais opposite sides of the plate and being adapted to confine said plate in an axial direction while permitting limited axial movement thereof between said abutment means.

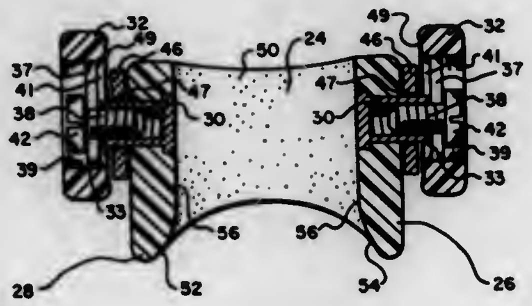
4,131,401
OPHTHALMIC MOLD DEVICE

James B. Bradley, Jr., 110 Monteleon Dr., West Monroe, La. 71291

Division of Ser. No. 573,907, May 2, 1975, Pat. No. 4,032,223. This application Apr. 1, 1977, Ser. No. 783,946

Int. Cl.² B29C *5/00*; B29D *12/02*

U.S. Cl. 425—2 **9 Claims**



1. A device utilized for forming a molded impression of a portion of a person's nose, the impression being used to form a nosepiece for the person's eyeglass frames, comprising:

(a) a mold for retaining a predetermined quantity of a molding substance utilized in forming the nose impression;

(b) A frame for retaining the mold, said frame being formed generally in a configuration similar to a person's eyeglass frames but without a nosepiece and having a pair of temples hingedly attached thereto; and

(c) means, associated with said mold and said frame, for removably attaching said mold to said frame.

4,131,402
DEVICE FOR THE MUTUAL CENTERING OF RELATIVELY MOVABLE MECHANIC ELEMENTS, PARTICULARLY USED ON TIRE CURING PRESSES

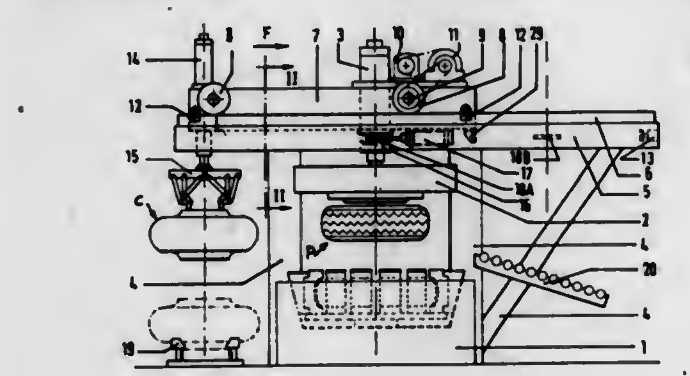
Dante Pirovano, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Nov. 7, 1977, Ser. No. 849,215

Claims priority, application Italy, Nov. 15, 1976, 29324 A/76

Int. Cl.² B29H *5/08*

U.S. Cl. 425—38 **16 Claims**



1. An operating press mechanism comprising:

a mold including a first portion fixed to a support device and a second portion adapted to mate with said first portion,

a frame attached to said support device,

a truck movable horizontally on said frame,

a first means coupling said second mold portion to said truck,

means for imparting relative vertical movement between said first and second mold portions for opening and closing said mold,

vise means including a pair of jaws adapted to open and close attached to one of said frame and said truck at a first predetermined position,

a first tooth attached to the other of said frame and said truck at a second predetermined position for engaging with said vise when closed between said jaws, said first and second predetermined positions defining a desired alignment between said first and second portions of said mold obtained when said jaws are closed about said tooth,

means for controlling a coarse movement of said truck on said frame to cause a first approximate mutual alignment of said vise and said first tooth, and

means for controlling a precise alignment of said first and second portions of said mold, said means for controlling a precise alignment including means for closing said jaws about said first tooth to thereby impart relative movement between said truck and said frame thereby causing said desired alignment between said first and second portions of said mold.

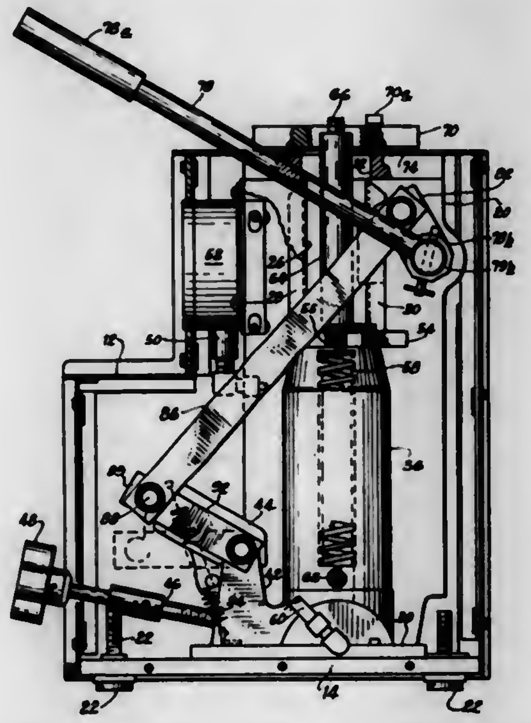
4,131,403
MOUNTING PRESS

Marvin W. Keith, Jr., Evanston, Ill., assignor to Buehler Ltd., Evanston, Ill.

Continuation of Ser. No. 603,102, Aug. 8, 1975, abandoned. This application Sep. 9, 1977, Ser. No. 831,892

Int. Cl.² B29C *3/00*

U.S. Cl. 425—127 **7 Claims**



1. In a portable mounting press for mounting a metallographic specimen in a plastic mount by applying heat and pressure to a mold containing the specimen and plastic molding material, the press having a frame including a pair of upright side frame members, an apertured top member and a base, a hydraulic jack positioned upright on the base between the side frame members and having a jack actuator located at the front of the jack adjacent the lower end thereof and pivotally movable about a horizontal actuator pivot axis, a downwardly biased ram plate positioned above the hydraulic jack for upward movement upon actuation of the jack, an upright ram secured to the top of the ram plate and extending upwardly through an aperture in the top member, a mold fixedly mounted to the top member and having a mold bottom closure member carried on the upper end of the ram, whereby actuation of the jack will raise the mold bottom closure within the mold to increase pressure therein, the improvement comprising improved force transmitting means for operating the jack actuator to increase the stability of the press and eliminate the need for bolting the same down, said force transmitting means including, in combination, a horizontal crank shaft extending between said side frame members, said crank shaft being located substantially above said actuator pivot axis and rearwardly thereof and being rotatable about its own axis, a manually operable generally forwardly extending handle secured to said crank shaft for rotating the same, a plurality of force-transmitting links interconnecting said crank shaft with said jack actuator to effect pivotal movement of said actuator by manual pumping of said handle, said links including a first link mounted to said crank shaft for conjoint rotation therewith, said first link having a length less than the length of said jack actuator thereby producing a mechanical advantage facilitating manual movement of said handle, and at least one additional link interconnecting said first link with said actuator.

4,131,404
DEVICE FOR THE PROTECTIVE COVERING OF OPTICAL FIBRES

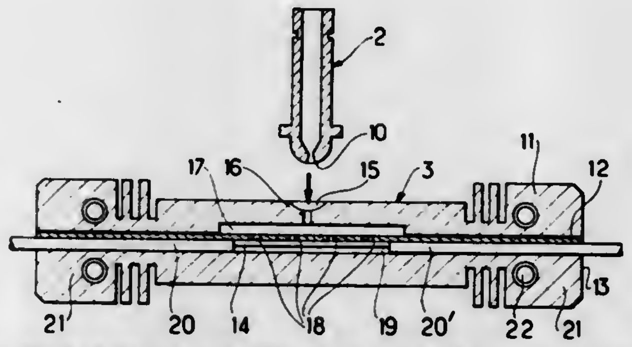
René Dubost, La Tour du Pin; Francis Gauthier, Oullins, and Georges Mignien, Meyzieu, all of France, assignors to Societe Anonyme Dite: Les Cables de Lyon, Lyons, France

Filed Jul. 19, 1977, Ser. No. 817,528

Claims priority, application France, Jul. 29, 1976, 7623179

Int. Cl.² B29F *1/10*

U.S. Cl. 425—129 R **3 Claims**



1. An apparatus for forming a protective covering on an optical fibre, by butt welding the ends of two fibres for the purpose of covering a base length of fibre on either side of the butt weld between two covered lengths of fibre, and comprising: a press employing means for transmitting air pressure through a piston in an injection cylinder in working relation thereto, said injection cylinder having means to feed raw moldable material into a mold in alignment therewith, means to close said mold around the base length of said fibre, said mold being defined by three separable parts; a first part for delimiting a distributed-feed chamber on its downward side, facing the fibre and having a cup on its upward side facing the cylinder, with at least one passageway leading from the cup into the chamber; a second part, being a plate with a half-round groove on its downward side facing the fibre and having a plurality of feed holes in two staggered rows along said groove, each row of said holes on either side of a vertical plane passing through the center line of said half-round groove and normal to the horizontal plane passing through said center-line; said passageway being positioned on said center-line, and a third part, with a half-round groove on its upward side complementary to the groove of said second part, to form a cylindrical mold print of the dimensions and geometry of the covering to be formed, said second and third parts having receiving means to position said covered lengths of fibre.

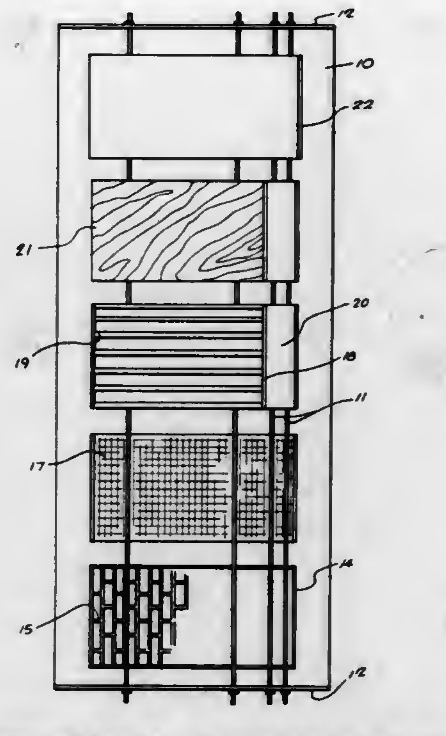
4,131,405
APPARATUS FOR PRODUCING STRUCTURAL PANELS

Richard L. Moore, 764 Humboldt St., Denver, Colo. 80218

Continuation-in-part of Ser. No. 420,390, Nov. 30, 1973, abandoned. This application Apr. 19, 1976, Ser. No. 678,312

Int. Cl.² B28B *7/02, 7/22, 7/26*

U.S. Cl. 425—143 **4 Claims**



1. A set of elements for use in simultaneously producing a series of prestressed and reinforced cementitious building panels of substantially rectangular shape with a shallower wall portion and a deeper foundation portion on a casting table, comprising:

a plurality of box-like forming means adapted to be placed in spaced relation to one another on the casting table each box-like forming means including a first form member for the bottom of the panel, a second form member in parallel, spaced relation to said first form member for the top of the panel, and parallel, spaced bulkhead forms for the sides of the panel, said first form member being adapted to be immovably secured to said casting table and being comprised of a plurality of modules removably stacked one on top of another in a plane to form said deeper foundation portion;

stacking means on the outside surface of said first form member in spaced relation from the ends of said first form member for maintaining said modules in stacked relation, said stacking means including a socket permanently affixed on said side of each of said modules in positions such that a socket on each module is in vertical alignment with a socket on a module vertically adjacent thereto, and a stake adapted for insertion through said vertically aligned sockets; and

hinge means on said modules for pivotally connecting said modules one to another, and in which said stacking means are provided on each of said modules whereby the lower of said modules can be selectively stacked while the upper of said modules remain unstacked.

4,131,406
TOOLS FOR MAKING IMPRESSIONS IN HARDENABLE MATERIALS

George A. Fresquez, 4883 Fond du Lac Ct., San Diego, Calif. 92117

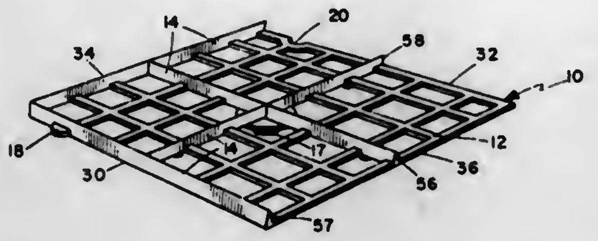
Filed Oct. 11, 1977, Ser. No. 840,837

Int. Cl.² E04G *11/06*; B28B *11/10*

U.S. Cl. 425—385 **2 Claims**

1. A tool for making impressions in hardenable materials comprising:

blade means comprising a plurality of elongated blades lying substantially in a stamping plane,
a platform grid,
said blade means being secured to said platform grid,
means for pressing said blade means into said hardenable materials,
said blade means having a penetrating tip and a platform attachment portion,



said platform attachment portion having substantially greater width than said penetrating tip producing a tapering platform-to-tip transverse profile,
at least a portion of one of said blades lying adjacent an edge of said platform and forming a closed end of said tool,
at least one of said blades terminating in a mating blade face adjacent an edge opposite said closed end of said tool,
said mating blade face having a longitudinal profile complimentary to said transverse profile.

4,131,407

DEVICE FOR FORMING TUBE WITH THICKENED SOCKET END

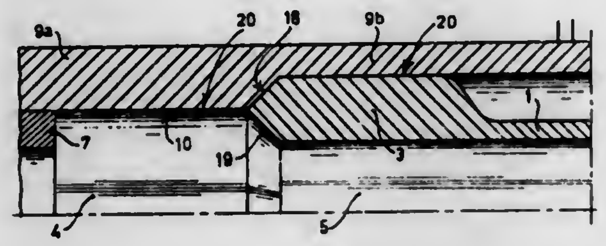
Warner J. de Putter, Hardenberg, and Willem C. den Hertog, Zwolle, both of Netherlands, assignors to Wavin B.V., Netherlands

Continuation of Ser. No. 578,662, May 19, 1975, abandoned, which is a division of Ser. No. 352,329, Apr. 18, 1973, Pat. No. 3,899,565. This application Aug. 9, 1976, Ser. No. 712,769

Claims priority, application Netherlands, Apr. 19, 1972, 7205280

Int. Cl.^{2} B29C ***17/00***

U.S. Cl. 425—393 **4 Claims**



1. A device for forming a plastic tube with a thickened socket end comprising:

(a) a socket-forming cylindrical mandril and a cylindrical core member coupled together through a bevelled connecting surface, said mandril having an outer diameter greater than the outer diameter of said core member, said core member serving to receive over its outer surface a tube to be deformed;

(b) a hollow cylindrical mould having a first cylindrical mould portion fittingly and slidably engaging the outerside of said socket-forming mandril such that said first mould portion is at least partially positioned over said socket-forming mandril;

(c) a second cylindrical hollow mould portion connected to said first cylindrical mould portion, said second cylindrical hollow mould portion being disposed over said core member and having an inner diameter greater than the outer diameter of said socket-forming cylindrical mandril, said second cylindrical mould portion covering a portion of a tube to be deformed when such a tube is positioned over said core member;

(d) one of said socket-forming cylindrical mandril and said hollow cylindrical mould including means for passing cooling medium therethrough for cooling at least one of the surfaces of the plastic tube, after deformation, in an area adjacent to either said hollow cylindrical mould or said cylindrical core member;

(e) means for coaxially moving said hollow mould and said socket-forming mandril in opposite directions such that when a tube is placed over said core member and between said core member and said hollow mould, the end of the tube therebetween then being heated to its deformation point, the end of the tube will first expand so as to contact the second cylindrical hollow mould portion and then be allowed to slide over onto the outer side of said socket-forming mandril to form said thickened socket end; and

(f) said cylindrical mandril including means for forming a groove within the side of said thickened socket end in contact with said outer side of said socket-forming mandril.

4,131,408

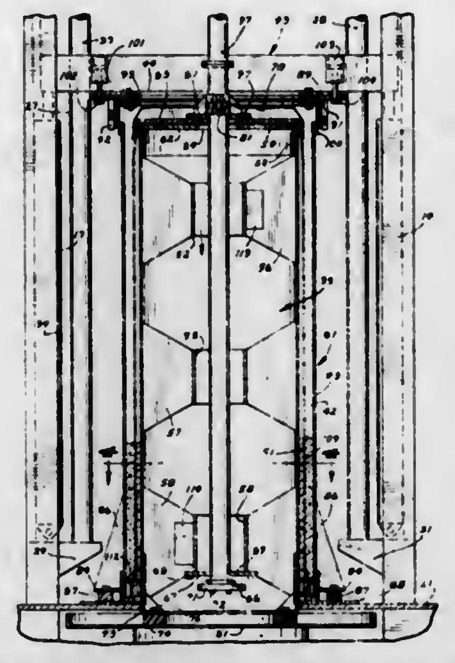
MACHINE FOR MAKING DRY CAST CONCRETE PIPE

Joseph P. Schulster, 14830 San Marcos Dr., Brookfield, Wis. 53005; Stephen N. Halbach, 48 Merrill St., Nashua, Iowa 50658; Darrell Haar, 444 Lee Ave., Woodstock, Ontario, Canada (N4S 643), and Theron L. Crawford, 20501 W. Downie Rd., New Berlin, Wis. 53151

Filed Aug. 3, 1977, Ser. No. 821,540

Int. Cl.^{2} B28B ***21/12***

U.S. Cl. 425—410 **47 Claims**



1. An apparatus for making dry cast concrete product comprising: an upright frame, a cross head movably mounted relative to said frame for movement between a down position and an up position, a rotatable shaft connected to the cross head and movable with the cross head, said shaft extended downwardly from the cross head, said cross head having drive means for rotating the shaft, an upright core supported on a support when the cross head is in the down position, said shaft extended downwardly into the core, said core and shaft having cooperating means for allowing the shaft to rotate independent of the core when the cross head is in the down position and for moving the core upwardly with the shaft whereby the core is lifted by the shaft in reponse to movement of the cross head from its down position to the up position, a jacket surrounding the core mounted on a support, said jacket being spaced from the core defining a chamber between the core and jacket, means closing the top of the core, means for moving concrete to the top of the core, at least one arm secured to the shaft, said arm located above the core and operable on rotation of the shaft to move concrete from the top of the core to the chamber, and means for moving the cross head from the down position to the up position whereby the core is withdrawn from the concrete product formed in the chamber between the core and jacket.

4,131,409

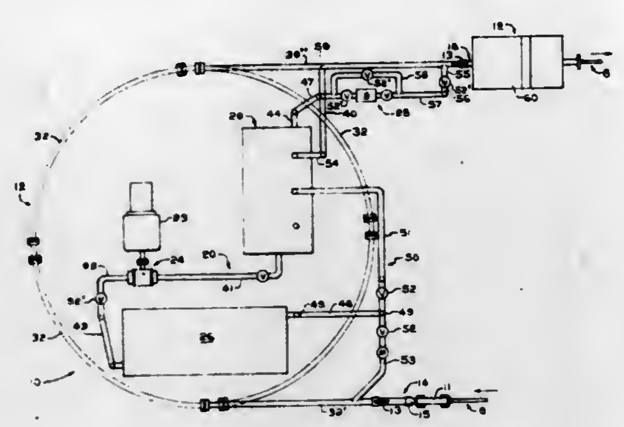
APPARATUS FOR VULCANIZING HOSE

William R. Babbin, Barberton, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 25, 1977, Ser. No. 827,515

Int. Cl.^{2} B29C ***25/00;*** **B29H** ***7/14***

U.S. Cl. 425—445 **7 Claims**



1. Apparatus for vulcanizing elastomeric hose comprising, an elongated chamber, said chamber having an entrance end and an exit end, means for circulating fluid at selected elevated temperature and pressure through said chamber from adjacent said entrance end to said exit end, fluid recovery means mounted adjacent to said exit end of the said chamber, means for recycling fluid from said recovery means to said fluid circulating means, said entrance end of said chamber having sealing means for receiving and moving unvulcanized hose into said chamber through said entrance end for transport through said chamber by said circulating fluid, and said fluid recovery means having a fluid level higher than in said chamber and said entrance end to provide a head of pressure to said fluid, and said fluid recovery means having an overflow conduit located therein to regulate said level in said fluid recovery means and provide an air chamber therein.

4,131,410

INJECTION BLOW-MOLDING MACHINE

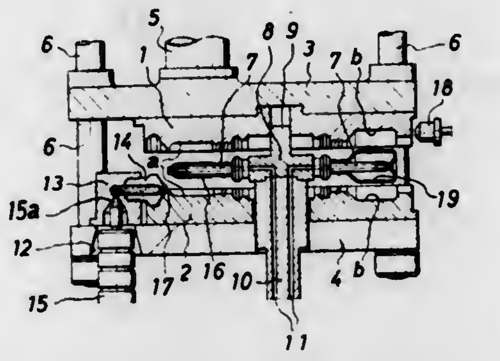
Katashi Aoki, 6037, Oaza Minamijo, Sakaki-machi, Hanishina-gun, Nagano-ken, Japan

Continuation of Ser. No. 253,818, May 15, 1972, abandoned. This application Aug. 9, 1977, Ser. No. 823,053

Claims priority, application Japan, May 21, 1971, 46-34628

Int. Cl.^{2} B29D ***23/03***

U.S. Cl. 425—533 **3 Claims**



1. In an injection blow-molding machine of the type comprising a pair of female mold-halves attached to a movable plate and a fixed plate, respectively, with a parison cavity and a blow-molding cavity being formed symmetrically about a plane between the female mold-halves, and corresponding to each cavity a male mold having a blow hole therethrough and supported around a male mold supporting member fixed to a rotating shaft extended freely rotatable through the one of the female mold-halves which is attached to the fixed plate, wherein the improvement comprises a fixed hot-runner block, operable to receive an injection nozzle and receive molten material therefrom, is provided adjacent to the fixed mold half defining said parison cavity, wherein further a fixed hot-runner nozzle is disposed between the parison cavity and the hot-runner block, said fixed hot-runner nozzle having an inlet operable to receive and communicate molten material from said hot-runner block to a hot-runner nozzle outlet orifice, which is disposed perpendicular to said plane of symmetry and is operable to inject said molten material into said parison cavity, wherein further a gate in the form of a channel is provided within said fixed mold half, and between the outlet of said fixed hot-runner nozzle and said parison cavity, to cause a projecting portion to be formed on the bottom of each parison produced in the parison cavity, whereby molten material from said injection nozzle is communicated from said injection nozzle, through said hot-runner block and out of said fixed hot-runner nozzle outlet into said gate to there define a projecting portion of said parison immediately adjacent said hot-runner nozzle outlet, whereby said projecting portion remains attached to the bottom of the parison after the mold halves have been opened and said male mold supporting member is raised out of said fixed mold half, in a direction perpendicular to said plane of symmetry.

4,131,411

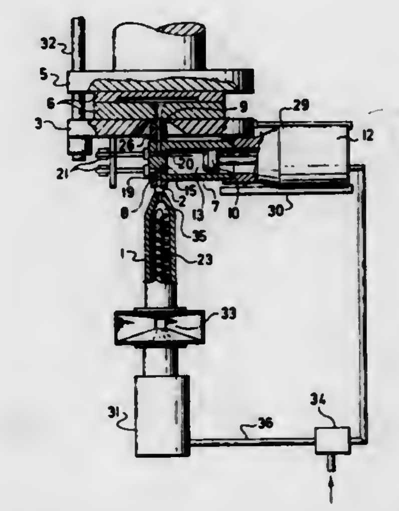
ARRANGEMENT FOR MANUFACTURE OF VOLUMINOUS PRODUCTS MADE OF PLASTICS

Lubomir Kupf, Praha, and Vladimir Kos, Luzna, both of Czechoslovakia, assignors to Statni vyzkumny ustav materialu, Prague, Czechoslovakia

Filed Mar. 21, 1977, Ser. No. 779,499

Int. Cl.^{2} B29F ***1/04***

U.S. Cl. 425—559 **3 Claims**



1. In an apparatus for injecting a volume of plastic melt into a mold through an inlet nozzle thereof, the improvement comprising:

a transfer unit comprising a cylindrical body having an end plate and a transfer chamber in said unit adjacent said end plate, a piston disposed in said chamber and mounted for sliding movement toward and away from said end plate, and a first hydraulic power cylinder coupled to said piston for urging said piston toward said end plate,
the portion of said piston adjacent said end plate having a generally frustoconical shape with a space between the periphery of the piston end face and the adjacent chamber wall,
said end plate having an inlet port, an inlet duct extending between said inlet port and said chamber, an inlet control valve in said inlet duct, an outlet port, means operatively associated with said end plate for coupling said outlet port to said inlet nozzle of said mold, an outlet duct extending between said outlet port and said chamber, and an outlet control valve in said outlet duct, said inlet and outlet

control valves having actuating means operable independently of each other;

an injection unit having a hollow filling cylinder with an outlet aperture communicating with said inlet port, the longitudinal axis of said cylinder being generally aligned with said inlet nozzle of said mold, an injection worm in said cylinder for feeding fluid material to said outlet aperture,

a second hydraulic power cylinder coupled to said worm; and

common hydraulic means connected to said power cylinders for operating said power cylinders.

4,131,412

FUEL IGNITION SYSTEM HAVING INTERLOCK PROTECTION AND ELECTRONIC VALVE LEAK DETECTION

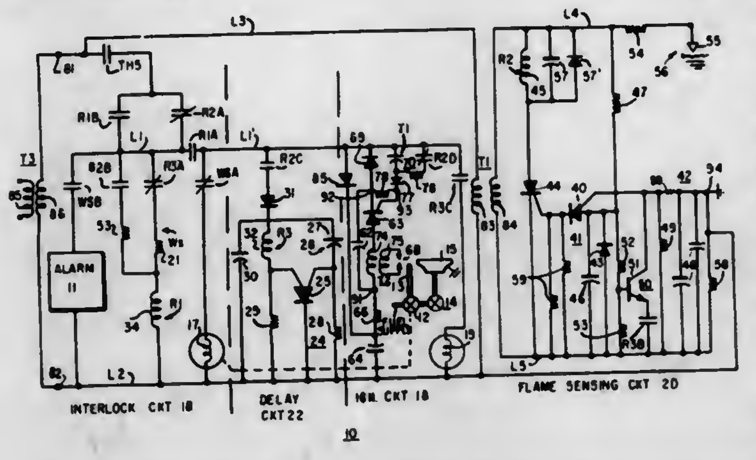
Russell B. Matthews, Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 621,670, Oct. 14, 1975, Pat. No. 4,035,134. This application Mar. 7, 1977, Ser. No. 774,959

The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.

Int. Cl.^{2} F23Q *9/12*

U.S. Cl. 431—16 **15 Claims**



1. In a fuel ignition system including a pilot valve operable when energized to supply fuel to a pilot outlet for ignition to establish a pilot flame, and a main valve operable when energized to supply fuel to a burner apparatus for ignition by the pilot flame to provide a flame at said burner apparatus, a control circuit comprising interlock means including first switching means operable when enabled to energize said pilot valve, and to prepare an energizing path for said main valve, activate means operable in response to a request for heat to enable said first switching means, second switching means, flame sensing means for maintaining said second switching means disabled in the absence of a flame at said pilot outlet to permit said first switching means to be enabled by said activate means and for enabling said second switching means to operate when a pilot flame is established at said pilot outlet to prevent said first switching means from being enabled by said activate means, and delay means enabled by said second switching means when a pilot flame is sensed to effect the energization of said main valve at the end of a time interval initiated by the operation of said second switching means, said flame sensing means preventing the energization of said main valve in the event that a flame is provided at said burner apparatus during said time interval.

4,131,413

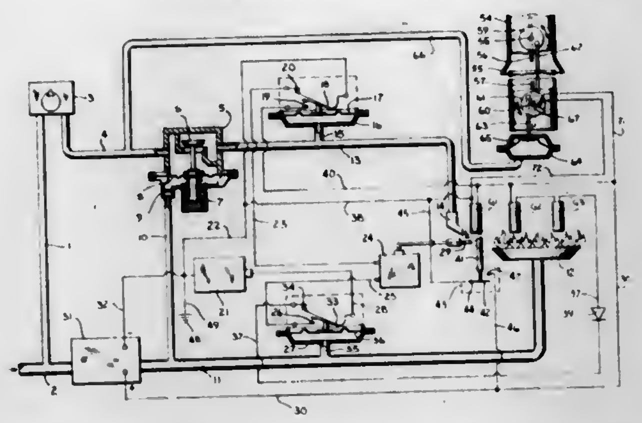
SELF-CONTAINED ELECTRIC IGNITER WITH RECHARGEABLE BATTERY

Robert W. Ryno, Mequon, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Sep. 9, 1977, Ser. No. 831,751

Int. Cl.^{2} F23Q *9/08*

U.S. Cl. 431—44 **10 Claims**



1. A self-contained ignition system for a gas burning heating unit having a pilot burner and a main gas burner, which comprises conduit means to conduct incoming gas to the pilot burner and the main gas burner, a rechargeable battery of a predetermined capacity located in the system, an igniter electrically connected to the battery, a pilot pressure switch activated by the pressure of the gas flowing to the pilot burner to initiate current flow from the battery to the igniter and thereby provide a spark from the igniter to ignite the gas flowing from the pilot burner, a main gas valve controlling the flow of gas through the main gas burner conduit means to the main gas burner, a voltage generating means located adjacent the pilot burner and actuated by the flame of the burner to produce a voltage providing a current to electrically open the main gas valve, additional voltage generating means in series with the first generating means and located adjacent the first named generating means and heated by the main gas burner to generate a predetermined voltage, a burner pressure switch connected to the main gas burner conduit means and actuated by the pressure of the gas in the main gas burner conduit means to establish an electrical circuit between the voltage generating means and the battery to recharge the battery and means in the circuit between the battery and the voltage generating means to prevent reverse flow of current from the battery to the generating means and a safety valve disposed in the pilot burner conduit means and constructed to close within a predetermined length of time in the event the pilot burner fails to ignite the incoming gas.

4,131,414

LANTERN WITH KEROSENE PREHEATER

Richard D. Curtis, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed May 11, 1977, Ser. No. 795,710

Int. Cl.^{2} F21H *7/00*

U.S. Cl. 431—104 **3 Claims**

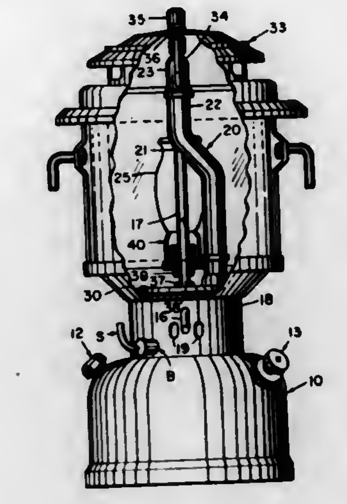
1. A preheat apparatus for a kerosene lantern, the preheat apparatus comprising:

(a) a generator tube for vaporizing kerosene,

(b) a generally annular cup surrounding said generator tube and having a bottom wall and inner and outer walls defining a reservoir,

(c) a wick supported by the bottom wall of the cup for vaporizing kerosene, the wick having an outer surface which is spaced inwardly from the outer wall of the cup and extends above the outer wall of the cup to provide a vaporization space between the wick and the outer wall, and

(d) a foraminous element surrounding the wick and extending above the wick for entraining air in the kerosene vapor which is vaporized by the wick, the foraminous element including a generally cylindrical portion which surrounds the wick and is spaced outwardly from the outer surface of the wick and an upper portion which extends above the wick and which is constricted inwardly for providing a flame opening, the size of the flame opening and the vaporizing area of the wick being such that the vaporized kerosene, when ignited, produces a tall, narrow flame which encompasses a major portion of the generator tube.



4,131,415

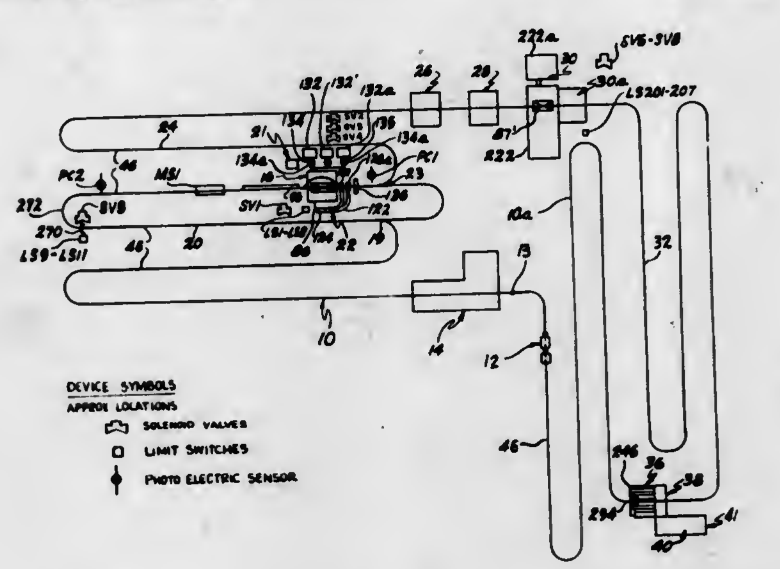
CANDLE MANUFACTURING SYSTEM AND METHOD

Robert W. Flinn, Lakewood, Ohio, and Roy D. Robinson, Osceola, Ark., assignors to American Greetings Corporation, Cleveland, Ohio

Filed Mar. 14, 1977, Ser. No. 777,429

Int. Cl.^{2} B29C *25/00, 13/00*

U.S. Cl. 264—138 **9 Claims**



1. In a method of producing dipped taper candles including an overhead conveyor system with a mobile rack suspended therefrom, comprising providing rows of candle wicks on the rack in generally weight tensioned suspended relation therefrom, reciprocating the rack with the suspended wicks and associated tensioning weights through a predetermined number of dipping cycles at a dipping station including a tank of melted wax, to build up candle formations about the wicks, moving the rack and suspended candle formations to a cutoff station, clamping the candle formations to hold the latter stationary, including clamping said weights and holding the latter stationary from opposite ends thereof, and during said clamping cutting off the bases of the candle formations including the wax coated weights, to free the candle formations from the tensioning weights.

4,131,416

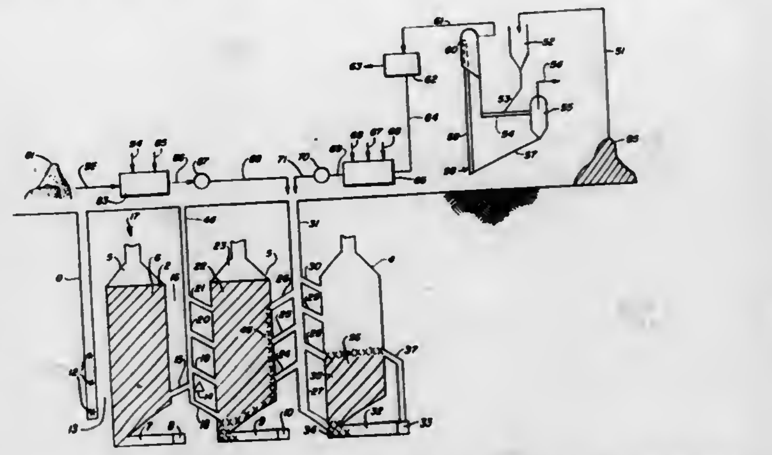
SLURRY BACKFILLING OF IN SITU OIL SHALE RETORT

George H. Watson, Naperville, and Thomas L. Speer, Warrenville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 30, 1977, Ser. No. 829,144

Int. Cl.^{2} E21C *41/10*

U.S. Cl. 299—2 **8 Claims**



1. A process for the subterranean in situ retorting of oil shale and disposal of spent shale from surface retorting comprising:

forming a subterranean in situ retort so that the subterranean retort contains a mass of rubblized oil shale;

passing a retorting fluid through said rubblized mass so as to substantially retort said mass and recover hydrocarbons;

cooling the subterranean retort;

introducing water into the subterranean retort to wet the retorted mass of rubblized oil shale, prior to the introduction of a slurry of water and spent shale from surface retorting;

introducing a slurry comprising water and spent oil shale from surface retorting into said subterranean retort;

and introducing a slurry comprising water and sand at one or more points in the subterranean retort so as to form one or more drainage paths for the removal of water from the slurry of water and spent shale from surface retorting; so that the spent shale from surface retorting is effectively disposed of and a mechanically and environmentally suitable underground formation is established.

4,131,417

CARBON ELECTRODE PRODUCTION

Donald D. Dwight, Albemarle, N.C., assignor to Aluminum Company of America, Pittsburgh, Pa.

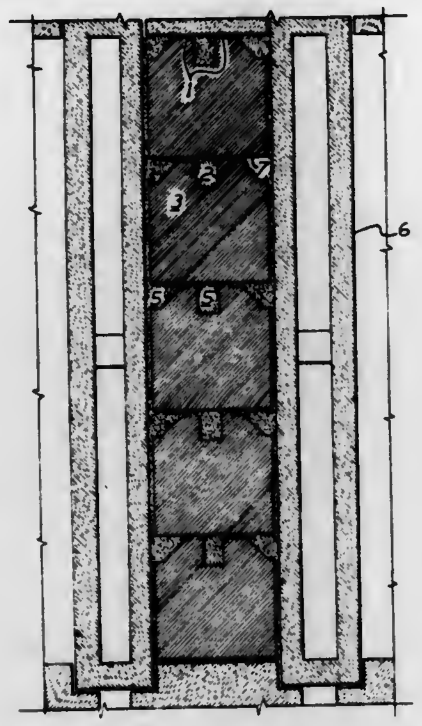
Filed Jun. 15, 1977, Ser. No. 806,714

Int. Cl.^{2} F27D *5/00*

U.S. Cl. 432—6 **2 Claims**

1. A method including baking two carbon articles in a chamber, wherein the improvement comprises the steps of: a) providing a protrusion and a stub hole on a face of one of the articles and arranging the articles side by side in the chamber with said protrusion and said stub hole located between the articles, whereby during baking any bonding between the articles is limited to the region of the protrusion so that the articles can later be separated with relative ease, and b) subsequently baking the carbon articles in the presence of a carbona-

ceous particulate support, with the carbonaceous particulate support being present in the stub holes, whereby the prevention of stub hole distortion and adjoining carbon article blistering is improved.



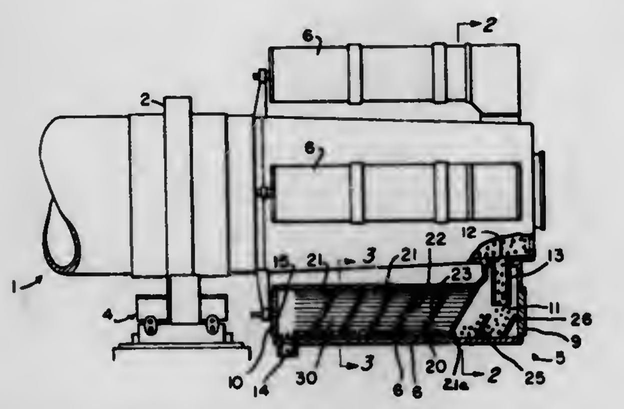
4,131,418
TUBE COOLERS FOR ROTARY KILNS

Douglass J. Kramm, Allentown; Thomas R. Lawall, Emmaus, and Paul Talago, Center Valley, all of Pa., assignors to Fuller Company, Catasauqua, Pa.

Filed May 23, 1977, Ser. No. 799,885

Int. Cl.^{2} F27D *15/00*

U.S. Cl. 432—80 **13 Claims**



10. Apparatus for cooling solid particulate material thermally treated in a rotary kiln including a plurality of elongated cylinders adapted to be mounted on a rotary kiln for rotation with said rotary kiln about the axis of the kiln, each of said cylinders having an inlet at one end for receiving hot solid particulate material discharged from said kiln; an outlet at the other end for discharging cooled solid particulate material from the cylinder; an inlet as said other end of the cylinder for supplying cooling air to the cylinder whereby the cooling air passes through the cylinder, the hot solid particulate material is cooled and the cooling air is supplied to the kiln as preheated combustion air; apparatus for improving the heat exchange within the cylinder comprising;

- a helical conveyor mounted within each of said cylinders for advancing material from the inlet for solid particulate material to the outlet for solid particulate material; and
- a plurality of circumferentially spaced apart fins mounted in each of said cylinders between at least some of the adjacent flights of said conveyor.

4,131,419
FURNACE FOR THE HIGH TEMPERATURE-HIGH PRESSURE TREATMENT OF MATERIALS WHICH INCLUDES PRESSURE MEDIUM CIRCULATION CHANNELS

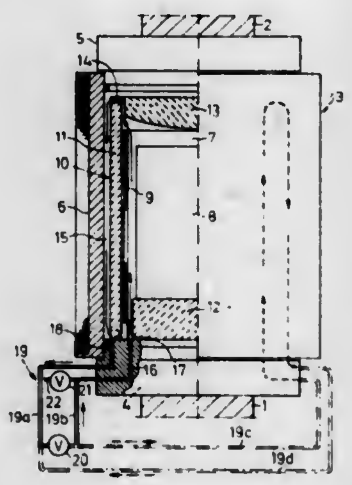
Sven-Erik Isaksson, Robertsfors, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed May 20, 1977, Ser. No. 798,863

Claims priority, application Sweden, May 25, 1976, 7605887

Int. Cl.^{2} F27B *5/04*

U.S. Cl. 432—205 **6 Claims**



1. In a furnace for the isostatic hot pressing of a workpiece which comprises:

- a hollow cylinder;
- separate end closures for sealing the open ends of the pressure cylinder, the end closures projecting into the cylinder;
- heating members positioned within the pressure cylinder defining therewithin a furnace space; and
- an insulated casing surrounding the furnace space and the heating members, the insulated casing including an insulating sheath supported at one end by a first of the separate end closures;
- the improvement wherein;
- said insulating sheath is fixedly connected at said one end to said first end closure in a gas-tight fashion, and in such an orientation to provide a gap between itself and the inner wall of the hollow pressure cylinder;
- said insulating sheath includes a channel means therein at the end thereof opposite to the end connected to said first end closure so as to provide fluid communication between said furnace space and said gap; and
- said first end closure includes means for providing two paths for pressure gas communication therethrough, one path to supply pressure gas to said furnace space and one path to provide pressure gas exit from said gap and thus, together with said channel means, provide circulation of said pressure gas to cool same, and pressure gas supply means for said two paths, said supply means including a valve means.

4,131,420
DRIVE CONNECTION FOR CONVEYOR ROLL

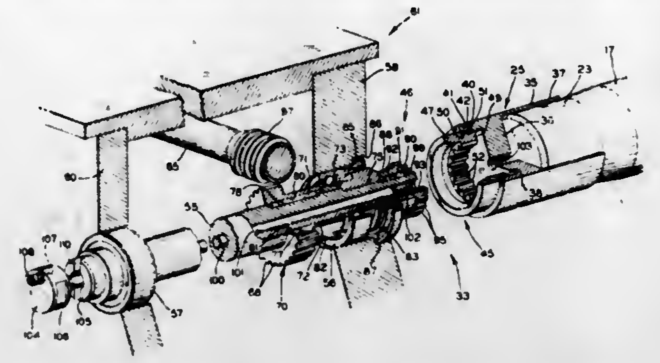
Alfred H. Miller, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed May 2, 1977, Ser. No. 792,905

Int. Cl.^{2} F27B *9/14*; B65G *13/06*

U.S. Cl. 432—246 **11 Claims**

1. In a conveyor roll for use in a sheet material supporting and conveying operation including a drive train and means connecting said drive train to said conveyor roll; the improvement wherein said connecting means comprises a coupling having a first section secured to one end of said conveyor roll, a second section having a portion telescopically received within said first section and provided with an axially projecting drive shaft operatively connected to said drive train, internal gear means formed on said first coupling section, external gear means mounted on said second section portion, said gear means engageable with each other for transmitting the torque from said second coupling section to said first coupling section, and a retaining screw detachably connecting said drive shaft to said conveyor roll and locking said gear means of said first and second coupling sections in an engaged, intermeshing relation.



4,131,421
COKE OVEN CONSTRUCTION

Werner Abendroth, Haltern, Germany, assignor to Firma Carl Still Recklinghausen, Germany

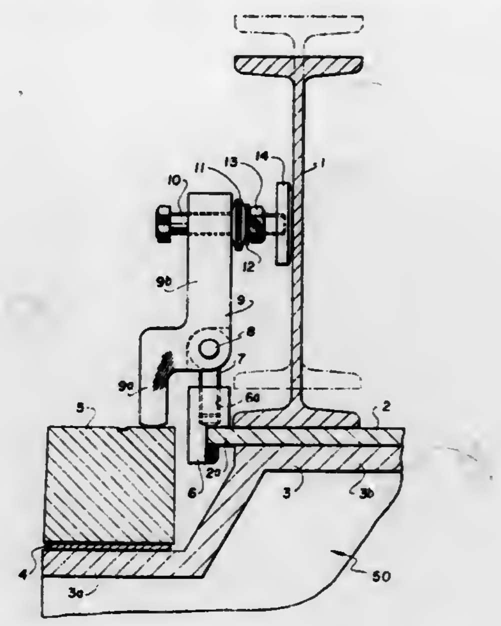
Filed Oct. 11, 1977, Ser. No. 840,960

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1976, 2646117

Int. Cl.^{2} F27D *1/00, 1/18*

U.S. Cl. 432—247 **7 Claims**

1. A coke oven construction for the fastening of furnace door frames to the armor of horizontal, blockwise arranged coking furnaces, comprising a coke oven furnace having an armor plate, a furnace frame secured to said armor plate, a metal plate overlying said armor plate and having an edge extending outwardly from said armor plate, an anchor stand mounted on said metal plate adjacent said frame and extending outwardly therefrom, a hooked member engaged over the edge of said plate, a pivot member threadedly connected to said hooked member, a toggle member pivoted on said pivot member and having a first arm extending toward the furnace and bearing against said furnace frame and a second arm extending outwardly from the furnace alongside said anchor stand, a pressure plate overlying said anchor stand and slidable therealong, a bolt threaded through said second arm and bearing against said pressure plate to press said second arm away from said pressure plate and to press said first arm against said frame.



4,131,422
POLYMER-PRINTED FABRIC AND METHOD FOR PRODUCING SAME

Manuel A. Thomas, and Jerry A. Cogan, Jr., both of Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Feb. 22, 1977, Ser. No. 770,877
Int. Cl.² C09B *65/00;* **D06P** *1/36*
U.S. Cl. 8—31 **18 Claims**

1. A method for imparting a dyeable pattern to a synthetic textile fabric substrate formed of synthetic fibers selected from the group consisting of polyester, acrylic, nylon, and blends thereof which comprises:

applying to said substrate, in a predetermined pattern, an aqueous admixture consisting essentially of from about 1 to about 45 percent of a substantially water-soluble acid dyeable polymer having a cationic charge in milliequivalents/gram of polymer of from about 0.01 to about 5, said aqueous admixture having a viscosity of from about 5 to about 50,000 centipoise; drying the resulting polymer printed substrate at a temperature effective to remove substantially all of the water therefrom; curing the substantially dried polymer printed substrate, and, dyeing the cured polymer printed substrate with a dye admixture containing an acid dyestuff preferential to the polymer coated portion of the substrate.

4,131,423
PROCESS FOR DYEING CELLULOSE FIBERS WITH VAT OR SULFUR DYES AND OXYHALOGEN ACID

Hiroshi Kato, Chibashi, Japan, assignor to Ise Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1977, Ser. No. 820,317
Claims priority, application Japan, Dec. 2, 1976, 51-144029
Int. Cl.² C09B *9/00, 49/00*
U.S. Cl. 8—34 **10 Claims**

1. In a process for dyeing cellulosic fibers, in which a water-soluble dye selected from the group consisting of sulfur dyes, vat dyes and sulfur vat dyes is reductively dissolved for adherence to the fibers and the dye is then fixed on said fibers by an oxidative treatment, the improvement which comprises using an oxyhalogen acid selected from the group consisting of $HClO_3$, $HBrO_3$ and HIO_3 as an oxidizing agent for said oxidative treatment.

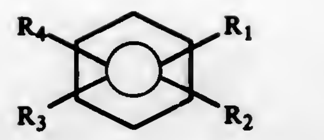
4,131,424
METHOD OF DYEING USING THE COMBINATION OF CERTAIN HALOGENATED HYDROCARBONS AND AROMATIC SOLVENTS IN AN AQUEOUS DYE ADMIXTURE

George Cocoros, Gaffney; Thomas V. Chambers, Inman, both of S.C., and Julian J. Hirshfeld, Gastonia, N.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

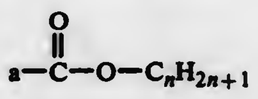
Filed Jul. 21, 1977, Ser. No. 817,585
Int. Cl.² D06P *5/06, 5/04, 1/44;* **C09B** *67/00*
U.S. Cl. 8—172 R **17 Claims**

1. A method of dyeing synthetic fibers, comprising the steps of:

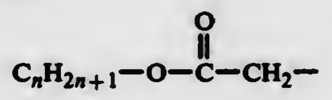
1. contacting the fibers with an aqueous dyeing admixture including from about 0.5% to 20% by weight based on the weight of said admixture of an organic dyeing formulation, said organic dyeing formulation including:
   a. from about 40% to 98% by weight based on the weight of said formulation of a halogenated hydrocarbon compound chosen from the group consisting of methylene chloride, chloroform, and 1,2 dichloroethane;
   b. from about 1% to 60% by weight based on the weight of said formulation of an aromatic carrier, said aromatic carrier being chosen from the group chosen from the group consisting of:
      i. Benzene derivatives having the structural formula



wherein each R_1, R_2, R_3 and R_4 individually is chosen from the group consisting of: a hydrogen, an alkyl group having 1–5 carbon atoms, a halogen, a hydroxyl group, a phenyl group,

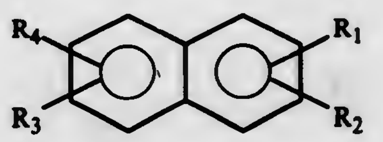

$$\mathrm{a{-}\overset{\overset{O}{\|}}{C}{-}O{-}C_nH_{2n+1}}$$

group with n=1−5, a

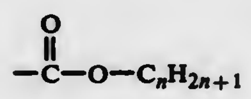

$$\mathrm{C_nH_{2n+1}{-}O{-}\overset{\overset{O}{\|}}{C}{-}CH_2{-}}$$

group with n=1−3, a benzyl group, a phenethyl group, and an $—NO_x$ group with x=1−3, and at least one of R_{1-4} is a moiety other than hydrogen;

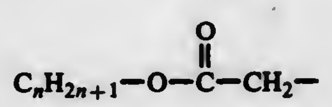
ii. Naphthalene derivatives having the structural formula



wherein R_1 - R_4 individually is chosen from the group consisting of: a hydrogen, an alkyl group having 1–5 carbon atoms, a halogen, a hydroxyl group, a phenyl group,


$$\mathrm{{-}\overset{\overset{O}{\|}}{C}{-}O{-}C_nH_{2n+1}}$$

group with n=1−5, a


$$\mathrm{C_nH_{2n+1}{-}O{-}\overset{\overset{O}{\|}}{C}{-}CH_2{-}}$$

group with n=1−5, a benzyl group, a phenethyl group and an $—NO_x$ group with x=1−3, and at least one of R_{1-4} is a moiety other than hydrogen;

iii. mixtures of said aromatic compounds;

c. an amount of dyestuff which is effective to dye said fibers to the desired depth of color;

d. an effective amount of an emulsifier to disperse said halogenated hydrocarbon, said aromatic carrier and said dyestuff in said aqueous dyeing admixture;

2. heating the fabric to an effective temperature for an effective amount of time to fix the dyestuff; and
3. recovering the dyed fibers.

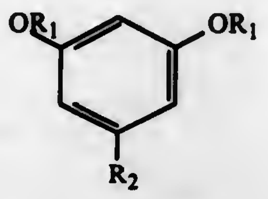
4,131,425
UREA ASSAY

Jerry W. Denney, Carmel, Ind., assignor to American Monitor Corporation, Indianapolis, Ind.

Division of Ser. No. 740,612, Nov. 10, 1975, Pat. No. 4,074,972. This application Mar. 13, 1978, Ser. No. 885,596
Int. Cl.² G01N *33/16*
U.S. Cl. 23—230 B **4 Claims**

1. A process for the quantitation of urea in a fluid sample, comprising reacting the sample with a reagent containing an acidic solution of o-phthalaldehyde and an acidic solution of a chromogenic compound of the general class of compounds

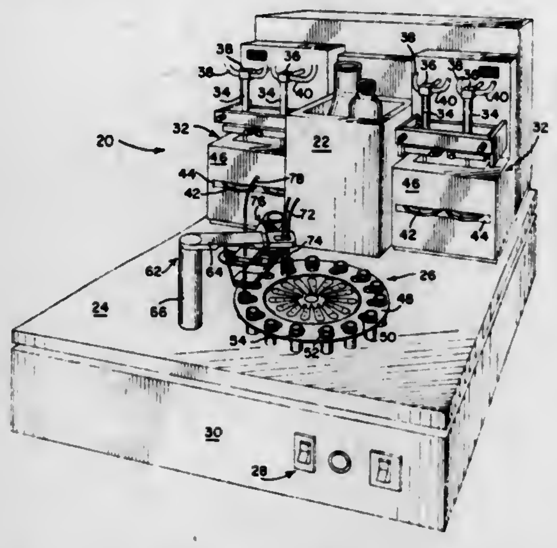
consisting of 1,3 or 1,3,5 di- or tri-substituted hydroxy or methoxy benzene compounds, which have the following general structure:



where R_1 = —H, or —CH_3 and
where R_2 = —H, or —OH, or —OCH_3 and measuring the absorbance of the reacted sample mixture.

4,131,426
TIP WIPER APPARATUS AND METHOD

Richard J. Range, Silver Spring, Md., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Aug. 24, 1977, Ser. No. 827,221
Int. Cl.^{2} G01N *1/14*
U.S. Cl. 141—1 **15 Claims**

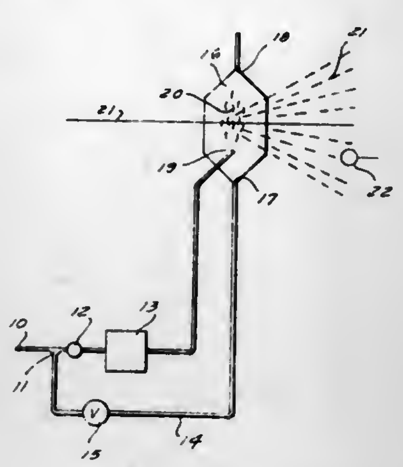


15. A method of wiping the tip of a sample aspirating and dispensing tube, said method comprising inserting said tube tip within a sample container, drawing an aliquot portion of said sample into the interior of said tube, withdrawing said tube from said container, supporting said tip portion against deflection and moving said tip portion of said tube toward a container into which said liquid is to be discharged, advancing two continuous ribbons of absorbent material from a supply station to a takeup station in response to movement of said tip support while guiding selected portions of said ribbons generally along the movement path of said tip and urging them into wiping contact with said tip during movement thereof toward said container into which said liquid is to be discharged.

4,131,427
CHROMATOGRAPHY DETECTOR

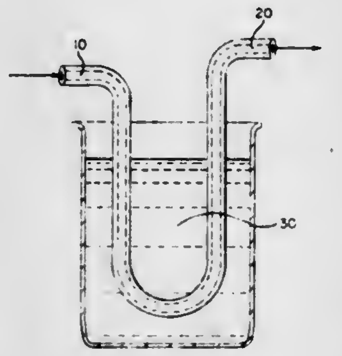
Stewart Karp, 15 Field La., Roslyn Heights, N.Y. 11577
Continuation-in-part of Ser. No. 767,647, Feb. 10, 1977, abandoned. This application Feb. 13, 1978, Ser. No. 877,489
Int. Cl.^{2} G01N *31/08, 21/46, 21/26*
U.S. Cl. 23—230 R **2 Claims**

2. An apparatus for detecting and determining the quantity of a solute present in the carrier stream which emerges from a chromatographic column which comprises; a means for directing said carrier stream into a mixing cell in which said carrier stream mixes with a reference stream thereby causing the appearance of schlieren when said solute is present in said carrier stream; a means for directing a light beam through said cell to detect said schlieren, thereby causing the change of direction of some position of said light beam when said solute is present in said carrier stream; and a means for detecting some or all of said light which had changed direction.



4,131,428
METHOD OF ADJUSTING PH

Albert A. Diggens, Newton, Mass., assignor to Orion Research Incorporated, Cambridge, Mass.
Continuation-in-part of Ser. No. 775,210, Mar. 7, 1977, abandoned. This application Jan. 13, 1978, Ser. No. 869,316
Int. Cl.^{2} G01N *27/10, 27/40, 27/46*
U.S. Cl. 23—230 R **26 Claims**



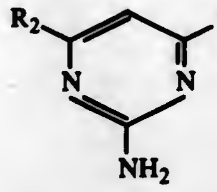
1. In a method for potentiometrically determining low levels of ion activity in sample streams without interference of hydrogen ion, the improvement comprising:
continuously passing the sample stream over one side of an inert non-impermeable non-wetting membrane that is permeable to a low molecular weight base reagent; and
diffusing a low molecular weight base reagent through the membrane and into the stream by contacting the other side of said membrane with the base reagent to thereby raise the pH of the stream to a value which eliminates interference of hydrogen ions without dilution of the sample stream and without introducing any interfering, reactive, or test ions into the sample stream.

4,131,429
UREA ASSAY

Jerry W. Denney, Carmel, Ind., assignor to American Monitor Corporation, Indianapolis, Ind.
Division of Ser. No. 740,612, Nov. 10, 1976, Pat. No. 4,074,972. This application Mar. 13, 1978, Ser. No. 885,600
Int. Cl.^{2} G01N *33/16*
U.S. Cl. 23—230 B **3 Claims**

1. A process for the quantitation of urea in a fluid sample, comprising reacting the sample with an acidic solution of o-phthalaldehyde and an acidic solution of a compound consisting of 4 or 4,6 substituted 2-aminopyrimidines where the

substituting group is an electron withdrawing group which have the following general structure:

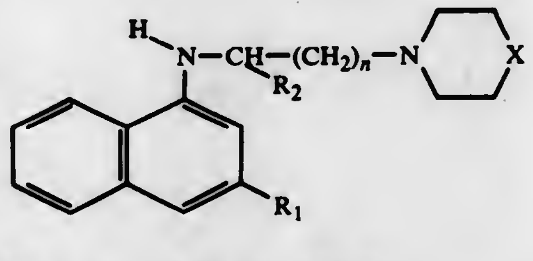


where R_1 is —H or —OH or —OCH_3
where R_2 is —OH or —OCH_3 and measuring the absorbance of the reacted sample mixture.

4,131,430
UREA ASSAY

Jerry W. Denney, Carmel, Ind., assignor to American Monitor Corporation, Indianapolis, Ind.
Division of Ser. No. 740,612, Nov. 10, 1976, Pat. No. 4,074,972. This application Mar. 13, 1978, Ser. No. 885,597
Int. Cl.^{2} G01N *33/16*
U.S. Cl. 23—230 B **2 Claims**

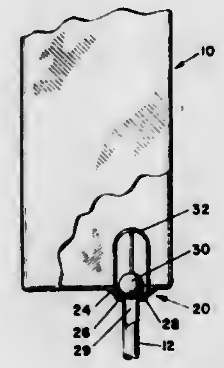
1. A process for the quantitation of urea in a fluid sample, comprising reacting the sample with a reagent containing an acidic solution of o-phthaladehyde and an acidic solution of a chromogenic compound of the general class of compounds which have the following general structure:



where R_1 = -H, —OCH, or —OH and
where R_2 = -H, —CH_3 or —C_2H_5 and
where X = O or C and
where n = 1, 2 or 3 and measuring the absorbance of the reacted sample mixture.

4,131,431
BLOOD SHUT-OFF VALVE

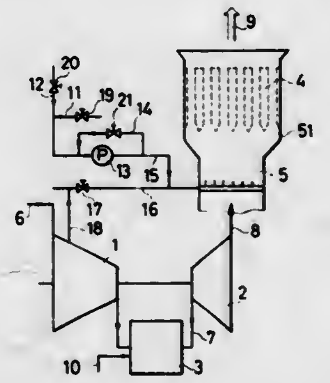
George G. Siposs, 2855 Velasco La., Costa Mesa, Calif. 92626
Filed Dec. 27, 1976, Ser. No. 754,345
Int. Cl.^{2} A61M *1/03*
U.S. Cl. 422—45 **10 Claims**



1. A heart-lung oxygenator, said oxygenator having a reservoir and said reservoir having a blood outlet at the bottom of said reservoir;
a blood shutoff valve positioned at the outlet of said reservoir so that said blood shutoff valve can close when blood level falls in said reservoir, said valve comprising:
a valve body for connection into an extra-corporeal blood circuit, said valve body including an inlet, an outlet tube and an outlet member, said outlet member having a step therein;
a valve seat, said seat comprising an O-ring positioned in said step, said O-ring having an interior opening through which blood can flow to said outlet tube;
a valve member adapted to move from a position on said valve seat where it closes said valve to a position above said valve seat where it leaves said valve seat open for blood flow therethrough, said valve member being buoyant in blood so that in a fully charged system in the presence of blood, hemostatic force urges said valve member away from said valve seat to permit passage of blood downward through said outlet; and
restraining means secured to said outlet means and positioned near said valve seat, said restraining means comprising a cage which has legs secured to said outlet member with said legs extending upwardly away from said outlet member, said cage comprising an umbrella secured to said upright legs adjacent to the top thereof to restrain said ball in the vicinity of said outlet member, said umbrella being shaped to protect said ball against hemodynamic force which may cause closing, said umbrella engaging said valve member to retain said valve member in a position adjacent to said valve seat so that a lowering of blood level causes said valve member to move towards said valve seat and close said valve seat as blood level descends to said valve seat, said O-ring being in its recess so that said valve member can move onto said O-ring seat without delay or obstruction.

4,131,432
APPARATUS FOR THE TREATMENT OF GAS TURBINE EXHAUST GAS

Isao Sato; Yoshihiro Uchiyama; Youji Ishibashi; Satoshi Tsukahara; Ryoichiro Oshima, and Yukio Hishinuma, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Japan
Filed Feb. 10, 1977, Ser. No. 767,612
Claims priority, application Japan, Feb. 10, 1976, 51-12833
Int. Cl.^{2} B01J *8/04;* **C10B** *21/20;* **F01N** *3/15, 3/16*
U.S. Cl. 422—177 **7 Claims**



1. Apparatus for treatment of combustion gas containing nitrogen oxides exhausted from a gas turbine that extracts work from high pressure combustion gases obtained from a combustion chamber burning fuel and compressed air, the apparatus for treatment being mounted within an exhaust duct leading from the turbine to the environment and including means arranged in the exhaust duct for silencing sound, wherein the improvement comprises:
means for containing reagent liquid including a reagent that will reduce the nitrogen oxides;
means arranged in the exhaust duct for holding catalyst including a plurality of gas permeable containers extending across the exhaust duct transversely with respect to the flow of the combustion gases through the exhaust duct; said plurality of gas permeable containers having intervals, therebetween in a direction transverse to the flow of the combustions gas;
catalyst, within each of said containers, that increases the

reduction reaction between the reagent and the nitrogen oxides contained within the combustion gas;

a plurality of atomizer means for atomizing the reagent liquid with air while injecting the reagent liquid upstream of said containers, so that the water of the reagent liquid cools the combustion gases to a temperature suitable for reaction with the reagent; said atomizer means including a plurality of liquid nozzles and an immediately adjacent plurality of air nozzles; said atomizer means further including a compressor for the gas turbine, air conduit means conducting pressurized air from said compressor commonly to all of said air nozzles, liquid conduit means conducting the reagent liquid from said means for containing reagent liquid commonly to all of said liquid nozzles, a liquid pump within said liquid conduit means for pressurizing the reagent liquid, valve means within said air conduit means for controlling the flow of pressurized air to said air nozzles, and valve means within said liquid conduit means for controlling the flow of pressurized reagent liquid to said liquid nozzles.

4,131,433

FUEL ADDITIVES, ADDITIVE COMPOSITIONS AND METHODS OF EMPLOYING SAME TO PREVENT CORROSION OF METAL SURFACES IN CONTACT WITH HOT GASEOUS COMBUSTION PRODUCTS

James F. Scott, Mt. Kisco, N.Y., assignor to The Perolin Company, Inc., Wilton, Conn.

Filed Jul. 27, 1977, Ser. No. 819,339

Int. Cl.² C01L *1/28*

U.S. Cl. 44—51 **46 Claims**

1. A fuel additive composition useful for incorporation in or admixture with fuels such that upon combustion of the fuels or in the presence of said additive composition when introduced into the fuel combustion products, metal surfaces in contact with said combustion products are subject to reduced corrosion and ash deposition, said additive composition consisting essentially of one or more compounds containing the elements selected from the group consisting of magnesium, silicon, chromium and chlorine, said elements Mg, Si plus Cr, Cl being present in said additive composition in the weight ratio 1/>0.5/>1.0, respectively, the compound or compounds in said composition containing said elements silicon and magnesium forming or providing the compounds SiO_2 and MgO, respectively, in said combustion products in the weight ratio of at least 1 part SiO_2 to 1 part of MgO.

4,131,434

CATALYTIC COMPOSITION FOR INTERNAL COMBUSTION ENGINES, FURNACES AND BOILERS

Francisco Gonzalez, Juan Cordero 27, Circuito Pintores, Ciudad Satelite, Mexico

Continuation-in-part of Ser. No. 560,893, Mar. 21, 1975, abandoned. This application Sep. 24, 1976, Ser. No. 726,317

Claims priority, application Mexico, Jun. 3, 1974, 151431

Int. Cl.² C10L *1/22*

U.S. Cl. 44—62 **8 Claims**

1. A petroleum derived fuel composition of improved efficiency comprising:

a) a basic fuel selected from the group comprising fuel oil, diesel oil and gasoline, and

b) an additive composition comprising a mixture of aromatic hydrocarbons with up to two methyl groups, lower alkyl aliphatic ketones, and bicyclic terpene compounds of the formula $C_{10}H_{16}$, said additive composition being present in a microvolumetric concentration between 1/500 and 1/5000 by volume of the basic fuel.

4,131,435

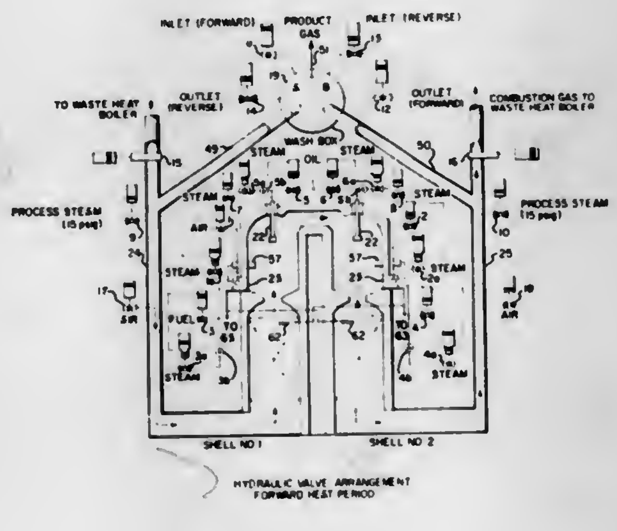
AUTOMATIC CONTROL APPARATUS FOR OIL GAS MACHINE OPERATION

John C. Eck, Convent Station, N.J., assignor to Wilputte Corporation, New Providence, N.J.

Continuation-in-part of Ser. No. 594,217, Jul. 9, 1975, abandoned. This application May 19, 1977, Ser. No. 798,386

Int. Cl.² C10G *9/04*

U.S. Cl. 48—61 **2 Claims**



1. In automatic control apparatus for a unit comprising a pair of oil gas generators each of the type comprising two reactor shells operative alternately in a reverse directional flow system for the production of product gas, and wherein each of said gas generators comprises:

(a) inlet and outlet conduits for fuel, air, process oil, process steam, purge steam and product gas;

(b) solenoid controlled valves in said conduits for said two reactor shells of each of said gas generators for controlling burner fuel supply, burner air supply, process oil supply, process steam and burner purging steam therefor;

(c) rotary sequence switch means comprising a plurality of individual switches;

(d) circuitry so connecting each one of the switches of said switch means to at least one of said valves that rotation of said switch means effects operation of the valves of each one said generators in a manner to cause forward heat and forward make periods incident to rotation of said switch means through 50% of a full revolution, and reverse heat and reverse make periods for the same generator in the succeeding 50% of a full revolution of said switch means; and

(e) a wash box for each one of said pair of generators each wash box having two compartments via which product gas from the corresponding generators alternately passes to a receiver, the improvement wherein valve means is provided for reversing flow of liquid through the compartments of each of the said wash boxes, and wherein circuitry is provided between said sequence switch means and said valve means to cause flow of liquid through the wash boxes in one direction for forward phases of operation and in a reverse direction for reverse phases of operation of the corresponding generators.

4,131,436

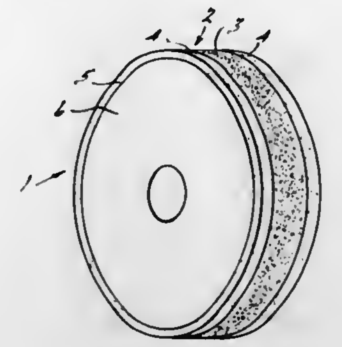
OPHTHALMIC FLAT ROUGHING WHEEL

Ronald C. Wiand, 1790 Washington, Birmingham, Mich. 48009

Filed Sep. 12, 1977, Ser. No. 832,362

Int. Cl.² B24D *5/14, 7/14*

U.S. Cl. 51—309 R **11 Claims**



1. An ophthalmic flat roughing wheel having a circumferential layer made of a diamond-containing metallic matrix having a relatively greater concentration of diamond in the center than at the edges.

4,131,437

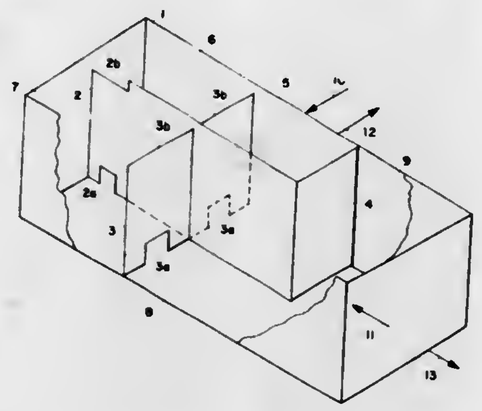
PROCESS FOR THE CONTINUOUS MULTISTAGE DEGASIFICATION OF LIQUID SULFUR

Thomas M. Campbell, Baytown, Tex.; William H. Ringler, Morristown, and Howard Lerner, Parsippany, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 642,346, Dec. 19, 1975, abandoned. This application Jun. 29, 1977, Ser. No. 810,916

Int. Cl.² B01D *19/00*

U.S. Cl. 55—53 **15 Claims**



1. A process for the degasification of H_2S-rich liquid sulfur which comprises (1) continuously introducing said sulfur into the first stage of a contacting zone containing more than one discrete contacting stage such that the sulfur occupies the lower portion of said contacting zone; (2) continuously introducing an H_2S-lean carrier gas into the upper portion of the first stage of said contacting zone such that said carrier gas is separated from the liquid sulfur by an interface; (3) continuously withdrawing H_2S-lean liquid sulfur depleted in H_2S from the lower portion of a subsequent stage of said contacting zone; and (4) continuously withdrawing an H_2S-rich carrier gas from the upper portion of a subsequent stage of said contacting zone, the liquid sulfur within said contacting zone being maintained within a temperature range of from about 120° to about 160° C. as well as being recirculated within at least one discrete contacting stage at a rate of from about 1 to about 100 times the sulfur feed rate to said contacting stage.

4,131,438

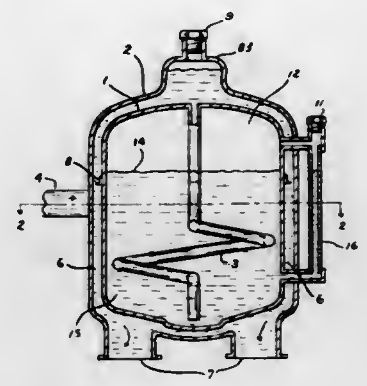
DEGASSER AND LIQUID SEAL RESERVOIR

John S. Debrotnic, Seattle, Wash., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 4, 1977, Ser. No. 848,622

Int. Cl.² B01D *19/00*

U.S. Cl. 55—204 **2 Claims**



1. An apparatus for separating gas bubbles from a flowing liquid, comprising:

a. a vertically disposed inner cylinder,

b. a coaxially oriented outer cylinder of a diameter slightly larger than the inner cylinder,

c. a liquid inlet opening in the outer cylinder oriented to introduce the flowing liquid tangential to the outer cylinder in a substantially horizontal plane,

d. a liquid outlet opening in the lower region of the outer cylinder,

e. a baffle ring means, disposed horizontally between the two cylinders and above the liquid inlet opening, for limiting the flow rate of the liquid above said means to a rate incapable of drawing gas bubbles from above said means down into the liquid flowing below said means,

f. at least one gas trap means, in the shape of a vertically oriented trough along the outer surface of the inner cylinder extending from a location below the liquid inlet opening to a location above the baffle ring means, for separating gas bubbles from the flowing liquid by vortex action within the trough and entraining the gas bubbles within the trough until they rise above the baffle ring means, and

g. a gas venting means in the upper region of the outer cylinder and substantially above the baffle ring means.

4,131,439

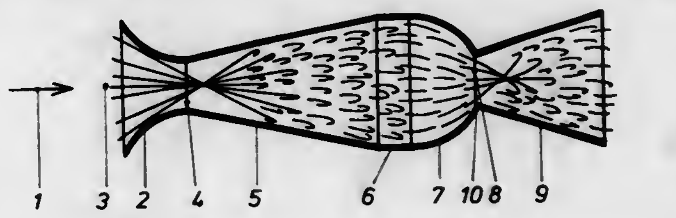
DEVICE FOR THE DEDUSTING OF DUST-CONTAINING GASES

Heinz Hölter, Beisenstrasse 39-41, 4390 Gladbeck, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 735,946, Oct. 27, 1976, abandoned. This application May 18, 1977, Ser. No. 798,237

Int. Cl.² B01D *47/10*

U.S. Cl. 55—220 **1 Claim**



1. A tubular device for dedusting dust-containing gases in which liquid in finely-distributed form has been incorporated, the device having a) an upstream inlet end, b) a downstream outlet end, c) at least one venturi-like constriction means therebetween for receiving dust-containing gaseous and liquid particles and for causing paths of the dust-containing gaseous and liquid particles to intersect one another when said dust-containing gaseous and liquid particles are concurrently passed

into said device through the upstream inlet end and past the constriction means from an upstream position; said constriction means comprising a first converging section having a decreasing cross-sectional dimension terminating at a position of narrowest cross-section, the paths of said particles intersecting downstream of the position of narrowest cross-section, and d) a first diverging section extending downstream of the position of narrowest cross-section; e) a second converging section positioned downstream of the first diverging section, the second converging section having a cross-sectional dimension which decreases more than linearly in the direction of the downstream outlet end; and f) a second diverging section adjoined downstream of said second converging section, the second diverging section and said second converging section joining at a junction which includes means for promoting contact between liquid and dust particles in a gas stream passed therethrough, the contact-promoting means comprising tear-off edge means for developing turbulence.

4,131,440

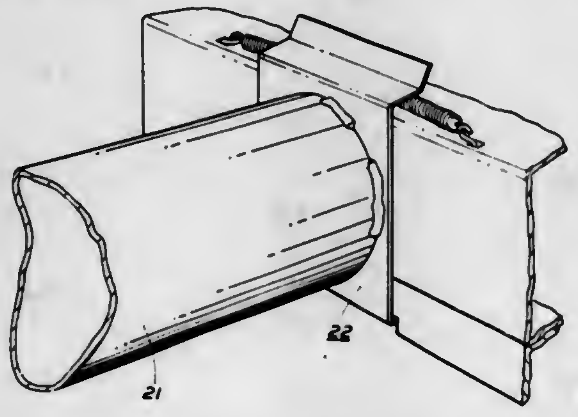
QUICK-CONNECT-AND-DISCONNECT ASSEMBLY

Eskill Aurell, Växjö, Sweden, assignor to Aktiebolaget Svenska Flaktrabriken, Nacka, Sweden

Filed Nov. 10, 1977, Ser. No. 850,098

Int. Cl.² B01D *46/04*

U.S. Cl. 55—302 **6 Claims**



1. A quick-connect-and-disconnect assembly comprising a transverse element latched to a longitudinal element, said longitudinal element having a top wall and a front wall disposed substantially perpendicular to one another, said front wall having along the edge opposite said top wall a depending flange portion, said transverse element having an L-shaped clip, said L-shaped clip being inverted to have a body portion adapted to engage flush against the front wall of the longitudinal element and a foot portion disposed substantially at right angles to said body portion and adapted to overlie said top wall of the longitudinal member, said clip having along the edge opposite said foot portion a latching element comprising a reversely-bent lip adapted to engage behind a free edge of said flange portion when said body portion is engaged flush against said front wall, the distance between said foot portion and said latching element being greater than the height of said front wall to enable vertical displacement of said clip while engaged flush with said front wall whereby when said latching element is engaged behind said flange, portion clearance space is provided between said foot portion and said top wall, and on one of said longitudinal and transverse elements a resilient retainer operable to fill the space between said foot portion and said top wall and to thereby resiliently maintain said latching element in engagement with said flange portion.

4,131,441

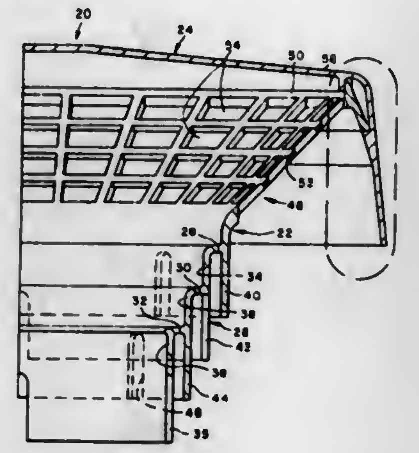
MULTI-SIZE RAIN HOOD

Everett H. Randall, Warwick, R.I., assignor to Fram Corporation, East Providence, R.I.

Filed Nov. 17, 1976, Ser. No. 742,962

Int. Cl.² B01D *50/00*

U.S. Cl. 55—385 R **2 Claims**



1. A two-piece rain hood for the air intake system of an internal combustion engine comprising an annular body having an open end and a cover, said body having a tubular portion and a radially outwardly flared portion extending from the tubular portion, said cover joining with said body for closing said open end, said flared portion including a substantially conical wall having structure defining openings through which air communicates, said cover and said body including means locking said cover to said body, said locking means preventing separation of the cover from the body after the cover is mounted on the body, said cover including a closing portion closing said open end, and a circumferentially extending portion projecting from the closing portion and circumscribing the flared portion, said means for locking the cover on the body being positioned on the open end of the flared portion and on the cover at the juncture of the closing portion and the circumferentially extending portion thereof, said conical wall terminating in a pair of circumferentially extending legs diverging from a common point at the juncture of said legs with the conical wall, a circumferentially extending shoulder on the circumferentially extending portion of the cover facing the closing portion of the cover, and a circumferentially extending ring on the closing portion of the cover, one of said legs engaging said shoulder, the other leg engaging said ring which prevents radial inward movement of the other leg toward the center of said cover.

4,131,442

PNEUMATIC COMPACTOR FOR PARTICULATE DESICCANT

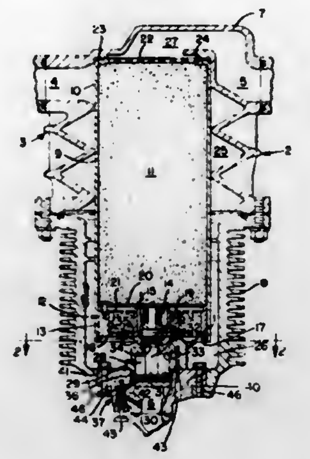
Lanier Frantz, Salem, Va., assignor to Graham-White Sales Corporation, Salem, Va.

Filed Apr. 29, 1977, Ser. No. 792,451

Int. Cl.² B01D *39/00*

U.S. Cl. 55—387 **6 Claims**

1. In a compressed gas filter assembly, the combination, with a filter unit having a housing removably seating between inlet and outlet ports thereof an open-ended canister containing a desiccant for selectively adsorbing a contaminant from gas passing therethrough between said ports, of sealing means between a downstream end of said canister and a seat therefor in said housing for sealing between said ports, and a pneumatic compactor comprising piston means actuated by compressed gas for applying force to said desiccant and therethrough on said canister for respectively compacting said desiccant and pressing said sealing means between said canister and housing for sealing between said ports.



4,131,443

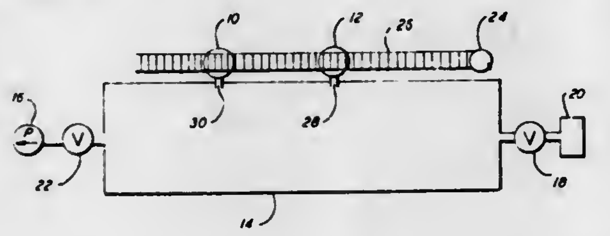
FUSED SILICA NUCLEAR MAGNETIC RESONANCE AND FILTER CELLS WITH STABILIZED VAPOR DENSITIES

Donald S. Bayley, Bedford, N.Y., assignor to The Singer Company, Little Falls, N.J.

Filed Feb. 2, 1977, Ser. No. 765,136

Int. Cl.² C03B *5/16;* G01N *27/00;* G02B *5/24*

U.S. Cl. 65—17 **8 Claims**



1. A method for making fused silica cells containing an unsaturated vapor of atoms having an S_o ground state, such that the cells will have a stable vapor density, comprising:

(a) removing absorbed gases from fused silica cell blanks by baking out the cell blanks until the pressure of the absorbed gases in the cell blanks is reduced to around 10^{-7} torr;
(b) cooling the cell blanks from a temperature of around 900° C. to a temperature of around 800° C. over a period of at least two hours;
(c) cooling the cell blanks to room temperature;
(d) driving the vapor from a reservoir into the cell blanks;
(e) subjecting the cell blanks and the vapor contained therein to optical resonance radiation for around four hours at room temperature while the cell blanks are connected to the reservoir;
(f) establishing a prescribed vapor density within the cell blanks; and
(g) sealing off the cell blanks when the prescribed vapor density has been established.

4,131,444

METHOD FOR INCREASING THE STRENGTH AND DENSITY OF LEAD TITANATE CERAMIC BODIES

Basil E. Walker, Oxon Hill, Md.; Robert C. Pohanka, Springfield, Va.; Paul L. Smith, Westgate, Md., and Roy W. Rice, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 25, 1977, Ser. No. 818,710

Int. Cl.² C03B *11/00;* C04B *15/14, 35/00*

U.S. Cl. 65—32 **9 Claims**

1. A method for producing a lead titanate ceramic from a lead titanate composition susceptible to Curie-point degradation which comprises hot-pressing a lead titanate composition comprising at least 98 weight percent of lead titanate with no other constituent in excess of one weight percent to form a lead titanate ceramic at a pressure from 1000 to 9000 psi and at a temperature from 700° C. to 1100° C. if said lead titanate is in a reducing atmosphere or at a temperature from 700° to 1200° C. if said lead titanate is in an oxidizing atmosphere; and cooling said lead titanate ceramic to room temperature.

4,131,445

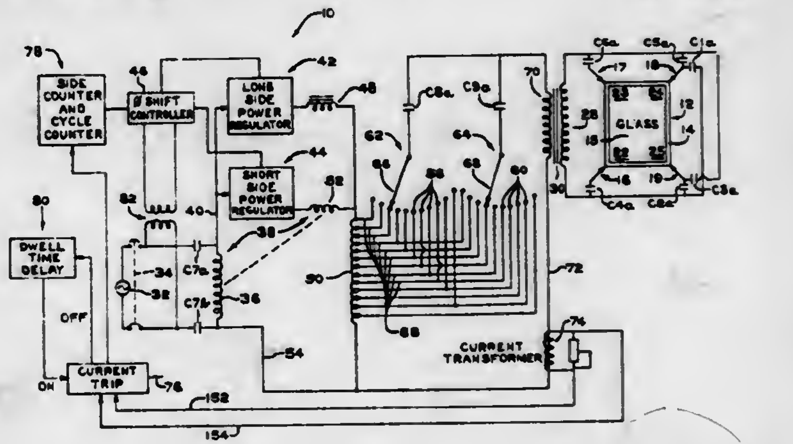
METHOD OF SELECTIVELY HEATING AN EDGE OF A GLASS SHEET DURING A WELDING PROGRAM

Michael E. Klockenga, Peoria, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 23, 1977, Ser. No. 836,258

Int. Cl.² C03C *27/00*

U.S. Cl. 65—40 **10 Claims**



1. In a method of heating marginal edge portions of a glass sheet having corners to a fusing temperature, wherein the method includes the step of applying a conductive stripe to marginal edge portions of the sheet; sequentially applying a voltage to adjacent pair of sheet corners to pass an electrical potential along the conductive stripe between the adjacent sheet corners; practicing the sequentially applying step for a predetermined number of heating cycles to heat the marginal edge portions to a temperature sufficient to pass current therethrough; and alternately applying an electrical potential to diagonally opposed corners of the sheet, wherein marginal edge portions on one side of diagonally opposed corners is a first current path and marginal edge portions on the other side of the diagonally opposed corners is a second current path, the improvement comprising:

adjusting the heat input into one or more of said marginal edge portions in one of said current paths during the last heating cycle until the difference in resistance between said first and second current paths is substantially reduced.

4,131,446

METHOD AND APPARATUS FOR MANUFACTURING FLAT GLASS ON MOLTEN METAL

George A. Dickinson, St. Helens, England, assignor to Pilkington Brothers Limited, St. Helens, England

Continuation-in-part of Ser. No. 840,328, Oct. 7, 1977, abandoned, which is a continuation of Ser. No. 776,482, Mar. 10, 1977, abandoned. This application Nov. 21, 1977, Ser. No. 853,459

Claims priority, application United Kingdom, Nov. 30, 1976, 49918/76

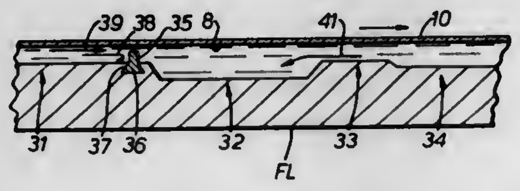
Int. Cl.² C03B *18/02*

U.S. Cl. 65—99 A **38 Claims**

1. A method of manufacturing flat glass comprising advancing a ribbon of glass along a molten metal bath, constraining molten metal flow at a location of the bath substantially to forward flow entrained beneath the ribbon and counterflows alongside the ribbon from downstream of said location, receiv-

ing return flow of molten metal travelling in an upstream direction towards said location in a region of greater bath depth than the bath depth in an adjacent region, and establishing lateral access to the region of the bath supporting the ribbon upstream of said location for counterflows of molten metal coming from said region of greater bath depth.

19. Apparatus for manufacturing flat glass comprising an elongated tank structure having end walls, side walls and a floor for containing a bath of molten metal, means for delivering glass to the bath at a controlled rate and advancing the glass in ribbon form along the bath, means for applying traction to the ultimate ribbon of glass, and a transverse barrier on the floor of the tank structure at a location in the region of the downstream end of an attenuation zone in which the glass accelerates along the bath and the ribbon is attenuated to a desired width and thickness, the barrier extending beyond the position of the edges of the ribbon and the top of the barrier being positioned below the level of the bath surface by a distance which is effective to constrain molten metal flow at that location substantially to forward flow of molten metal entrained beneath the ribbon and counterflow of molten metal alongside the ribbon, and wherein the floor of the tank structure is shaped to define just downstream of said barrier a reserve zone for molten metal flows, which reserve zone is of greater depth than the bath depth in an adjacent region.



4,131,447

CRUCIBLE FOR THE PRODUCTION OF SINGLE-MATERIAL LIGHT-GUIDING FIBERS

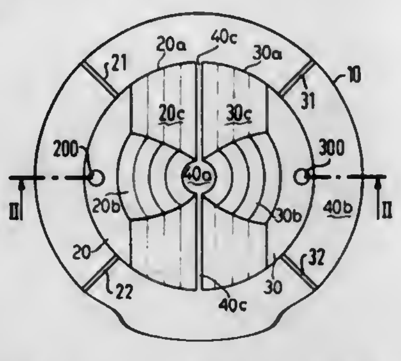
Hubert Aulich, Munich, and Josef Grabmaier, Kempfenhausen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 21, 1977, Ser. No. 761,267

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1976, 2603876

Int. Cl.² C03B *5/26, 37/00*

U.S. Cl. 65—325 **9 Claims**



1. A crucible for the production of a light-guiding fiber having a core portion connected by web portions to a surrounding annular member, comprising:
   (a) an outer cylindrical member having an inner wall;
   (b) a pair of separate hollow bodies not connecting to one another, each hollow body having an outer wall, an inner wall, and gas flow means for gas flow through an interior of the hollow body;
   (c) support means between the inner wall of the outer cylindrical member and each hollow body for supporting the hollow bodies within the cylindrical member such that their inner walls face each other; and
   (d) an exit nozzle formed at an exit end of the crucible, said exit nozzle including: (i) a core forming means formed at lower edge portions of the facing inner walls of the hollow bodies, (ii) web forming means connecting to the core forming means and formed at exit edge portions of the inner walls, and (iii) annular member forming means connected to the web forming means and formed at the outer cylindrical member and exit edge portions of the hollow body outer walls.

4,131,448

N-ORGANO-N-PHOSPHONOMETHYLGLYCINE-N-OXIDES AND PHYTOTOXICANT COMPOSITIONS CONTAINING SAME

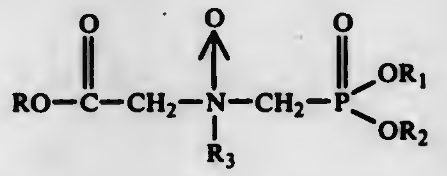
John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 613,708, Sep. 9, 1975, Pat. No. 4,062,669, which is a division of Ser. No. 313,706, Dec. 11, 1972, abandoned. This application Sep. 26, 1977, Ser. No. 836,338

Int. Cl.² A01N *9/36*

U.S. Cl. 71—86 **16 Claims**

1. A herbicidal composition comprising an inert adjuvant and an effective amount of a compound of the formula



$$RO-\overset{\overset{O}{\|}}{C}-CH_2-\underset{\underset{R_3}{|}}{\overset{\overset{O}{\uparrow}}{N}}-CH_2-\overset{\overset{O}{\|}}{P}\begin{matrix}\diagup OR_1\\ \diagdown OR_2\end{matrix}$$

wherein R_1 and R_2 are each independently selected from the group consisting of hydrogen, salt forming alkali or alkaline earth metal cations, ammonium or organic ammonium groups, said organic ammonium group being derived from an organic amine having a molecular weight below about 300 and containing not more than two amine groups, R is selected from the same group as R_1 plus lower alkyl, and R_3 is selected from the group consisting of alkyl of 1 to 12 carbon atoms, allyl, cyclohexyl, phenalkyl and phenoxyalkyl of 7 to 8 carbon atoms, and the mono and dichloro or bromo derivatives of such alkyl, allyl, cyclohexyl, phenalkyl and phenoxyalkyl.

4,131,449

PROPANIMIDOTHIOIC ACID DERIVATIVES

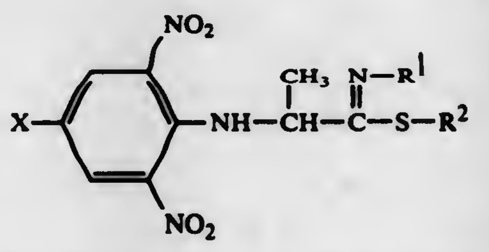
Ian D. Entwistle, Sittingbourne, England, assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 17, 1977, Ser. No. 842,772

Int. Cl.² A01N *9/36, 9/12, 9/14;* **C07C** *119/00*

U.S. Cl. 71—98 **9 Claims**

1. A compound of the formula



wherein X is a hydrogen atom, a halogen atom having an atomic number of from 9 to 35, inclusive, or an alkyl group containing from 1 to 6 carbon atoms optionally substituted by from 1 to 3 halogen atoms having an atomic number of from 9 to 35, inclusive, and R^1 and R^2 each independently is an alkyl group containing from 1 to 3 carbon atoms, or an acid addition salt thereof selected from hydrochloric, hydrobromic, sulfuric, fluorosulfonic, phosphoric, nitric, boric, borofluoric, maleic, fumaric, citric, tartaric, methanesulfonic, ethansulfonic, acetic or crotonic acid.

4,131,450

PROCESS FOR MANUFACTURING COBALT-BASE REDUCED POWDER

Yuichi Saito; Masayuki Iijima, and Osamu Mayama, all of Niigata, Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 765,433, Feb. 4, 1977, abandoned. This application Feb. 9, 1978, Ser. No. 876,274

Int. Cl.² B22F *9/00;* **C22C** *19/08*

U.S. Cl. 75—0.5 BA **4 Claims**

1. A process for manufacturing a cobalt-base reduced powder which comprises:
   adding, to a main raw material powder comprising cobalt oxide powder, chromium oxide powder and carbon powder, at least one metal oxide powder selected from the group consisting of manganese oxide powder, vanadium oxide powder, titanium oxide powder, tantalum oxide powder, niobium oxide powder, boron oxide powder, hafnium oxide powder, tungsten oxide powder, molybdenum oxide powder, iron oxide powder, nickel oxide powder and copper oxide powder;
   mixing and pulverizing these powders to prepare a mixed powder;
   reducing said mixed powder by heating to obtain a reduced sponge-like mass; and
   finely pulverizing said reduced sponge-like mass.

4,131,451

METHOD FOR REMOVING ZINC FROM ZINC-CONTAINING SLAGS

Mark M. Lakernik, Strastnoi bulvar, 13a, kv. 32; Roza I. Shabalina, ulitsa Udaltsova, 4, kv. 26; Alexandr F. Gavrilenko, ulitsa Yaroslavskaya, 1/9, kv. 71; Anatoly A. Yakovenko, bulvar Yana Rainisa, 14, korpus 2, kv. 73; Anatoly I. Golovachev, Otkrytoe shosse, 6, kv. 48, and Tatyana S. Egorova, ulitsa Mescheryakova, 9, kv. 2, all of Moscow, U.S.S.R.

Filed May 10, 1977, Ser. No. 795,485

Int. Cl.² C22D *7/06*

U.S. Cl. 75—14 **8 Claims**

1. A method for recovering zinc from a molten zinc-containing slag bath comprising the steps of:
   reducing zinc containing compounds in said molten slag bath by superimposing said reducing agent onto said molten slag bath and flowing nitrogen into said molten slag bath in an amount of 0.5 to 3.5 $Nm^3/min.m^2$ of the molten bath surface to stir said molten slag bath and mix it with said reducing agent;
   maintaining the temperature of said molten slag bath at a temperature ranging from 1220 to 1400° C.; and
   recovering zinc by condensation from the gases passing out of said molten slag bath.

4,131,452

METHOD FOR DIRECT MANUFACTURE OF CRUDE STEEL

Per H. Collin, Falun, Sweden, assignor to Stora Kopparbergs Bergslags AB, Falun, Sweden

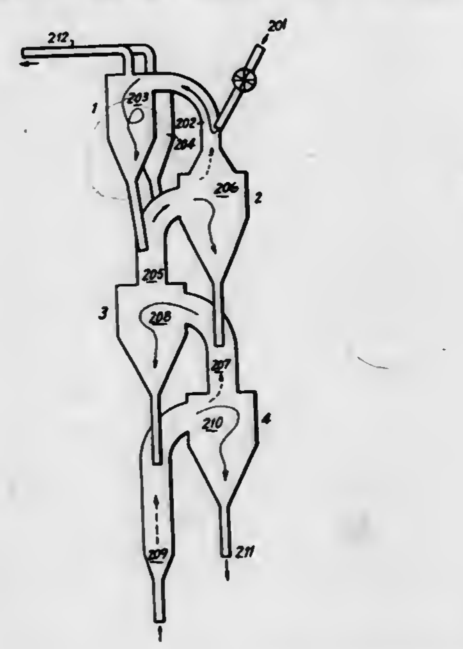
Filed Mar. 14, 1977, Ser. No. 777,554

Claims priority, application Sweden, Mar. 17, 1976, 7603359

Int. Cl.² C21C *7/00*

U.S. Cl. 75—60 **5 Claims**

1. A method for making of crude steel by melt reduction, using as raw materials fine grained, iron oxide containing material, fine grained solid, liquid, and gaseous fuels and mixtures of said fuels and oxygen gas wherein fine grains are of a size less than 1 mm, comprising the steps of feeding the reaction, materials into a molten steel bath through at least one compound nozzle, each of which has a central opening and two concentrically surrounding annular slits, injecting said iron oxide containing material or iron oxide materials wherein the same are pre-reduced to FeO, by admixing said iron oxide materials with a fuel including fine grained slag formers, said injecting of the iron oxide, fuel and slag formers being into the steel bath through the inner annular slit at such a depth under the surface of the bath that said iron oxides become melt reduced before these reach the surface of the bath, injecting oxygen, at the same time as said iron oxide containing material, fuel and slag formers are being injected, through the central, circular opening and injecting hydrogen, through the outer annular slit at such a rate that the heat requirement for the melt reduction is satisfied by partial combustion in the bath of hydrogen and carbonaceous material in said fuel and producing reaction gas thereby, utilizing a part of a heat content of said reaction gas and utilizing said reaction gas for said pre-reduction of the iron oxide containing material, catalytically converting to H_2 the reaction gas leaving the steel bath, separating from said catalytically converted H_2 gas, CO_2 and H_2O, said residual gas thus being obtained consisting of hydrogen, which is injected through the outer annular slit of said compound nozzle.



4,131,453

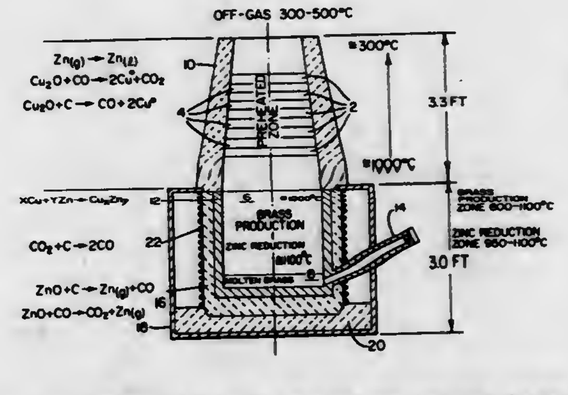
PYROMETALLURGICAL BRASS PRODUCTION

Jonathan J. Kim, Chelmsford; Thomas A. Loose, Billerica, and Chih-Chung Wang, Lexington, all of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Aug. 18, 1977, Ser. No. 825,641

Int. Cl.² C21B *3/04*

U.S. Cl. 75—72 **12 Claims**



1. A pyrometallurgical process for producing brass from a material containing a significant quantity of oxidized zinc, said process comprising the steps of:
   1. adding carbon to said material and a sufficient amount of copper to provide a mixture having an overall Zn/Cu weight ratio of a selected value of 0.66 or less;
   2. adding the mixture to the top of a shaft furnace;
   3. preheating the mixture in the shaft of said furnace to a temperature of 300° C. or more;

4. allowing the mixture to descend in said furnace to a brass producing zone through which zinc vapor rises to cause the vapor to alloy with copper to form brass which settles and forms a molten brass reservoir;
5. allowing the mixture to descend in said furnace to a zinc reduction zone wherein the temperature is above 950° C. and where ZnO in the mixture is reduced to produce zinc vapor which rises to the brass zone;
6. condensing zinc vapor rising through the brass producing zone in the shaft of said furnace to reduce the need for treating zinc vapor outside the furnace; and,
7. removing liquid brass from the molten brass reservoir.

4,131,454
PROCESS FOR RECOVERING SILVER AND GOLD FROM CHLORIDE SOLUTIONS

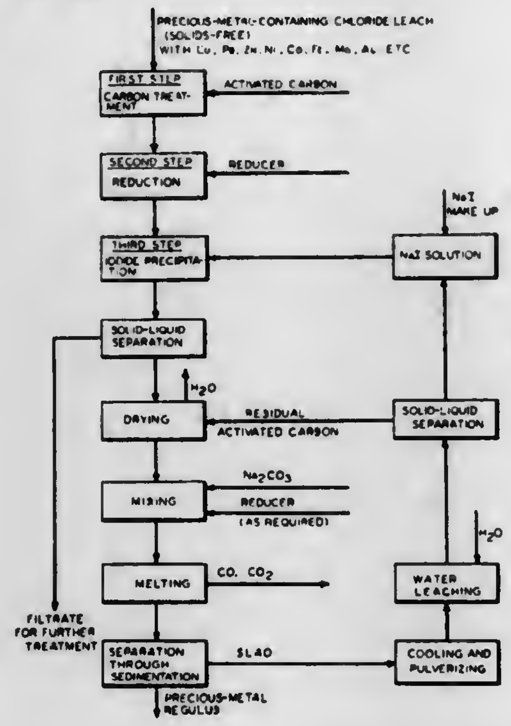
Norbert L. Piret; Meinolf Höpper, and Herbert Kudelka, all of Duisburg, Germany, assignors to Duisburger Kupferhütte, Duisburg, Germany

Filed Nov. 2, 1977, Ser. No. 847,888

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1976, 2656233

Int. Cl.² C22B *11/04*

U.S. Cl. 75—83 **23 Claims**


PRECIOUS-METAL-CONTAINING CHLORIDE LEACH (SOLIDS-FREE) WITH Cu, Pb, Zn, Ni, Co, Fe, Mo, As ETC
FIRST STEP CARBON TREATMENT
ACTIVATED CARBON
SECOND STEP REDUCTION
REDUCER
NaI MAKE UP
THIRD STEP IODIDE PRECIPITATION
NaI SOLUTION
SOLID-LIQUID SEPARATION
H2O
DRYING
RESIDUAL ACTIVATED CARBON
SOLID-LIQUID SEPARATION
Na2CO3
MIXING
REDUCER (AS REQUIRED)
H2O
MELTING
CO, CO2
WATER LEACHING
FILTRATE FOR FURTHER TREATMENT
SEPARATION THROUGH SEDIMENTATION
SLAG
COOLING AND PULVERIZING
PRECIOUS-METAL REGULUS

1. Process for selectively separating precious metal selected from the group consisting of gold, silver and mixtures thereof from a chloride solution of the precious metal and other heavy metal, the other heavy metal being the main constituent of the solution, which comprises:

(a) adding to the solution finely divided activated carbon for reduction of gold in solution to gold metal and absorption of the gold metal by the carbon, thereafter,
(b) adding an aqueous solution of an iodine compound for selective precipitation of further precious metal and the formation of an admixture of the precipitated metal in the solution,
(c) the pH of the solution during steps (a) and (b) being such that hydrolysis with the metal ions does not occur,
(d) the potential of the solution during step (b) being such that no substantial decomposition of the iodine compound occurs,
(e) separating the precipitated precious metal and active carbon from the admixture formed in step (b), drying the separated precious metal and active carbon and admixing the dry product with an iodine binder and subjecting the resulting admixture to reduction for formation of a regulus containing the precious metal.

4,131,455
SILVER RECOVERY

Lars T. Edwards, and Lyle N. Trowbridge, both of Queensbury, N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 9, 1977, Ser. No. 859,154

Int. Cl.² C22B *11/04*

U.S. Cl. 75—118 R **9 Claims**

1. Method for recovery of metallic silver of high purity from acid insoluble silver salt contaminated with more than about 2,000 ppm other metals, which method comprises:

a. first washing said silver salt with water at a pH less than 3;
b. then reacting thus washed silver salt with alkali metal borohydride at a pH greater than 12 to form metallic silver; and
c. recovering metallic silver contaminated with less than 1,000 ppm of such other metals.

4,131,456
CHILL-FREE FOUNDRY IRON

Lev V. Peregudov, ulitsa Puzakova 39, Kv. 231, and Mikhail M. Malashin, ulitsa Liteizina, 74, kv. 30, both of Tula, U.S.S.R.

Filed Dec. 12, 1977, Ser. No. 859,759

Int. Cl.² C22C *37/00*

U.S. Cl. 75—124 **3 Claims**

1. A chill-free foundry iron consisting essentially of, in per cent by weight:

carbon	from 2.8 to 4.0
silicon	from 1.5 to 2.6
manganese	from 0.2 to 1.2
cerium	from 0.01 to 0.05
aluminium	from 0.06 to 0.6
calcium	from 0.04 to 0.10
sulfur	up to 0.20
phosphorus	up to 0.30
and iron	the balance

4,131,457
HIGH-STRENGTH, HIGH-EXPANSION MANGANESE ALLOY

Earl L. Frantz, Reading, Pa., assignor to Carpenter Technology Corporation, Reading, Pa.

Filed Oct. 11, 1977, Ser. No. 840,799

Int. Cl.² C22C *22/00*

U.S. Cl. 75—134 M **23 Claims**

1. A high thermal expansion and/or high electrical resistivity manganese alloy having high mechanical strength, in weight percent, comprising about

	w/o
Copper	5-30
Nickel	5-30
Nitrogen	0.1-1.0

the balance being at least about 65% to less than 85% manganese, and in which the nitrogen present is substantially in solid solution and strengthens the alloy.

4,131,458
ELECTRICAL CONTACT MATERIAL OF SILVER BASE ALLOY

Mitsunori Satoh, Yokohama; Masayuki Hijikata, Tokyo; Hiroshi Maeda, Funabashi, and Ichiro Morimoto, Tokyo, all of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Oct. 18, 1977, Ser. No. 843,281

Claims priority, application Japan, Oct. 21, 1976, 51/125451

Int. Cl.² C22C *5/06*

U.S. Cl. 75—173 R **2 Claims**

1. An electrical contact material consisting essentially of silver and uniformly dispersed in the silver,

(a) 1 to 12 atomic % of zinc oxide and
(b) 0.1 to 1 atomic % of tellurium oxide, the total amount of (a) and (b) being 2 to 13 atomic %, and all amounts being calculated as metal.

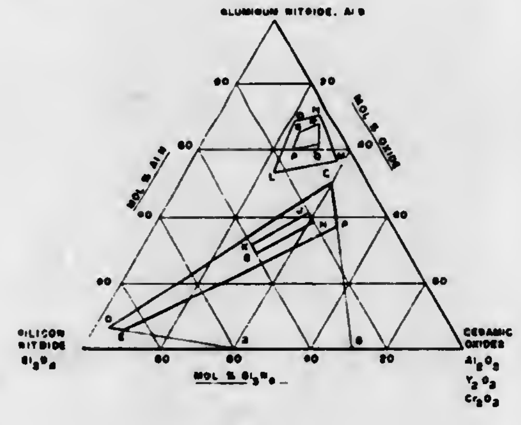
4,131,459
HIGH TEMPERATURE RESISTANT CERMET AND CERAMIC COMPOSITIONS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of and Wayne M. Phillips, La Crescenta, Calif.

Division of Ser. No. 633,876, Nov. 20, 1975, Pat. No. 4,072,532. This application Dec. 8, 1977, Ser. No. 858,766

Int. Cl.² C22C *29/00*

U.S. Cl. 75—203 **15 Claims**



1. A process for producing a high temperature oxidation resistant cermet composition which comprises sintering a mixture of (a) metal or metal alloy particles and (b) a ceramic material comprising silicon nitride and an oxide selected from the group consisting of aluminum oxide, yttrium oxide and chromium oxide, to form a cermet composition of said metal or metal alloy particles coated with and dispersed in a solid solution of said ceramic material.

4,131,460
METHOD OF PRODUCING A SINTERED COMPOSITION

Raymond L. Orford, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

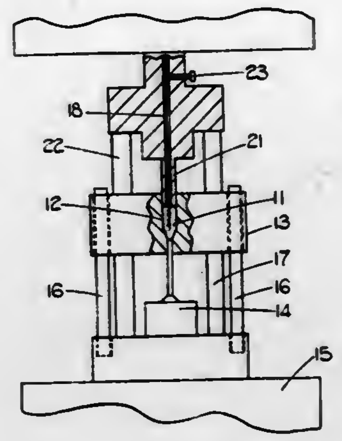
Filed Mar. 17, 1977, Ser. No. 778,605

Claims priority, application United Kingdom, Mar. 20, 1976, 11321/76

Int. Cl.² B22F *1/00;* H01R *39/20*

U.S. Cl. 75—204 **10 Claims**

1. A method of producing a brush for a dynamo electric machine, including the steps of compacting a powder from which the brush is to be made comprising a mixture of silicon carbide, copper and carbon around one end of an electrical lead with the remainder of the lead projecting from the compacted powder, and then heating in a non-reducing atmosphere the assembly of the lead and the compacted powder to sinter



the powder into the required brush and physically electrically connect the lead to the brush.

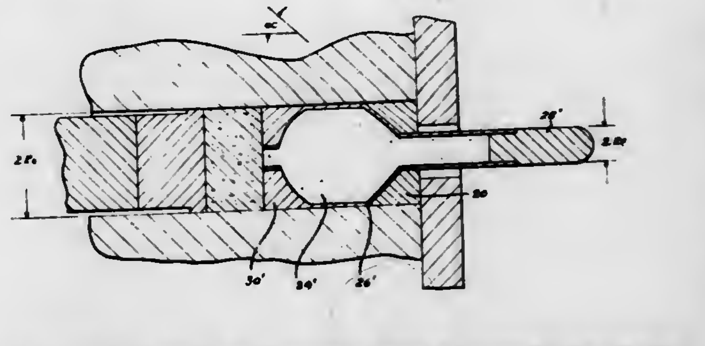
4,131,461
METHOD AND APPARATUS FOR USE IN THE EXTRUSION OF BILLETS

Vincent De Pierre, and Ferdinand J. Gurney, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 21, 1977, Ser. No. 808,490

Int. Cl.² B22F *3/02, 3/20*

U.S. Cl. 75—208 CS **3 Claims**



1. An extrusion billet, for extrusion metal powder products, for passing through a die having a radius R_f and an entrance taper having a half angle α comprising: a metal container having a cylindrical element, a nose cap at one end of the cylindrical element and a tail cap at the other end of the cylindrical element; said nose cap having a projection extending into said container; said projection having a contour substantially conforming to the relationship

$$Z_o = \frac{R_o}{3\sin\alpha}\left[1 - \frac{R_f3}{R_o3}\right]\left[2 - 3\left(1 - \frac{R_12}{R_o2}\sin^2\alpha\right)^{\frac{1}{2}} + \left(1 - \frac{R_12}{R_o2}\sin^2\alpha\right)^{-\frac{1}{2}}\right]$$

where Z_o is the distance of the contour surface from a plane passing through the apex of the contour surface; Ro is the outside radius of the billet; and R_1 is the radius measured from the longitudinal axis of the billet to the contour surface corresponding to Z_o; said tail cap having a concave contour substantially the same as the contour of the projection on the nose cap; a powder filling tube, having a portion passing through said tail cap; a finely divided metal powder within the metal container.

3. The method for making metal powder filled billets for extrusion through a die having a radius R_f and an entrance taper with a half angle α, comprising: machining a nose cap, adapted to fit into one end of a cylindrical housing, with a convex projection approximately conforming to the relationship

$$Z_o = \frac{R_o}{3\sin\alpha}\left[1 - \frac{R_1 3}{R_o 3}\right]\left[2 - 3\left(1 - \frac{R_1 2}{R_o 2}\sin^2\alpha\right)^{\frac{1}{2}} + \left(1 - \frac{R_1 2}{R_o 2}\sin^2\alpha\right)^{-\frac{1}{2}}\right]$$

where Z_o is the distance of the contour surface from a plane passing through the apex of the contour surface; Ro is the outside radius of the billet; and R_1 is the radius measured from the longitudinal axis of the billet to the contour surface corresponding to Z_o; machining a tail cap, adapted to fit the other end of a cylindrical housing, with a concave surface approximately conforming to the relationship

$$Z_o = \frac{R_o}{3\sin\alpha}\left[1 - \frac{R_1 3}{R_o 3}\right]\left[2 - 3\left(1 - \frac{R_1 2}{R_o 2}\sin^2\alpha\right)^{\frac{1}{2}} + \left(1 - \frac{R_1 2}{R_o 2}\sin^2\alpha\right)^{-\frac{1}{2}}\right]$$

drilling a hole in the tail cap; securing a filler tube in said hole; securing the nose cap and the tail cap in opposite ends of a cylinder with the concave projection and the concave surface directed inwardly of the cylindrical housing; filling the cylindrical housing with a fine metal powder.

4,131,462
ELEMENT FOR THERMOPLASTIC RECORDING

Tzuo-Chang Lee, and Jacob W. Lin, both of Bloomington, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 17, 1976, Ser. No. 658,324

Int. Cl.² G03G *5/10, 13/22;* B41M *5/20*

U.S. Cl. 96—1.5 R **15 Claims**

1. An improved thermoplastic holographic recording medium comprising in sequence:
   - a substrate coated with an electrically conductive layer;
   - a photoconductive layer on the electrically conductive layer;
   - an insulating layer over the photoconductive layer which insulating layer is photosensitive at a wavelength other than the recording wavelength; and
   - a thermoplastic layer over the insulating layer.

4,131,463
ELECTRIC RECORDING PROCESS OF IMAGES USING ELECTRON SENSITIVE LAYER CONTAINING TRIVALENT COBALT COMPLEX AND COMPOUND HAVING CONJUGATED π BOND SYSTEM

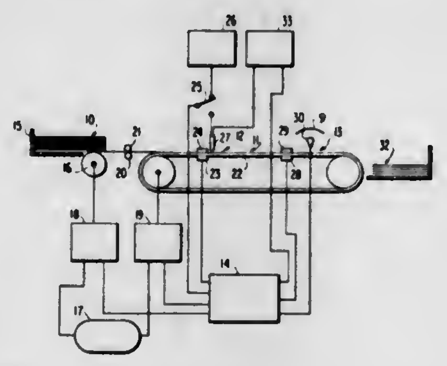
Masayoshi Tsuboi, Asaka; Yoshiaki Suzuki, Minami-ashigara, and Masatoshi Tabei, Asaka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sep. 19, 1977, Ser. No. 834,736

Claims priority, application Japan, Sep. 17, 1976, 51-111515

Int. Cl.² G03G *17/02*

U.S. Cl. 96—1 E **8 Claims**



1. An image-recording process for recording images by using a recording material comprising a support, at least the surface of which is electrically conductive, with this electrically conductive surface having thereon an electron-sensitive composition layer substantially containing a trivalent cobalt complex compound, a compound having a conjugated π bond system capable of forming at least a bidentate ligand with a divalent or trivalent cobalt ion and a binder as an image-recording layer, which process comprises the steps of:
   (1) imagewise generating in said image-recording layer sufficient electric current to form a latent image; and
   (2) reducing said trivalent cobalt complex compound in the areas wherein the electric current has passed in step (1) by substantially uniformly heating at least said image-recording layer.

6. An image-recording process for forming visible images using an image-recording material comprising a support, at least the surface of which is electrically conductive, having on said electrically conductive surface a layer of an electron-sensitive composition substantially containing (a) a trivalent cobalt complex compound, (b) a compound having a conjugated π bond system capable of forming at least a bidenate ligand with a divalent or trivalent cobalt ion, (c) a binder and (d) a compound capable of absorbing electromagnetic waves of a wavelength not longer than about 350 nm as an ultraviolet light absorbing agent, which comprises:
   imagewise passing sufficient electric current in said electron-sensitive composition layer to form a latent image or a primitive visible image, and heating at least said electron-sensitive composition layer to thereby reduce said trivalent cobalt complex compound in the areas of said electron-sensitive composition layer where said latent or primitive visible image has been formed, thus a visible image with a higher optical density in conformity with said latent or primitive visible image being formed in said electron-sensitive composition layer.

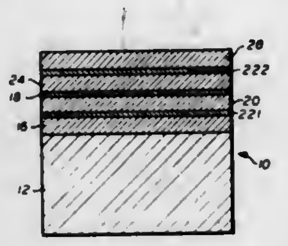
4,131,464
FALSE COLOR PHOTOGRAPHIC ELEMENT AND PROCESS

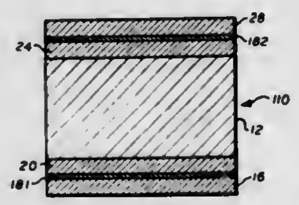
Avrum Silverman, 9512 Braddock Rd., Fairfax, Va. 22032

Continuation-in-part of Ser. No. 703,413, Jul. 8, 1976, abandoned, which is a continuation-in-part of Ser. No. 578,397, May 19, 1975, abandoned, which is a continuation-in-part of Ser. No. 447,290, Mar. 1, 1974, abandoned. This application Jul. 29, 1977, Ser. No. 820,023

Int. Cl.² G03C *7/16, 1/76*

U.S. Cl. 96—22 **21 Claims**





1. A photosensitive element for producing a false color image from a monochromatic source image and the like; comprising four light sensitive silver halide emulsion layers having a composition to produce differing tonal gradations; two emulsion layers containing color couplers and the other two emulsion layers free of color couplers; said photosensitive element having a supoort for supporting the four emulsion layers; said photosensitive element also comprising integral means for the differential reexposure of two emulsion layers; one of said four emulsion layers producing a negative dye image in a first color, another of said four emulsion layers producing a positive dye image in a second color, the remaining two emulsion layers producing a positive dye image and a negative dye image both in the same third color; the four dye images forming three substantially opposite tonal gradations in cyan, magenta and yellow colors.

4,131,465
RADIATION SENSITIVE POLYMERIC O-NITROPHENYL ACETALS AND ELEMENT

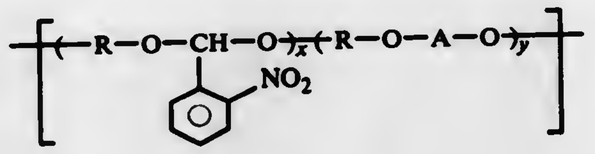
Constantine C. Petropoulos, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 684,696, May 10, 1976, Pat. No. 4,086,210. This application Sep. 27, 1977, Ser. No. 836,987

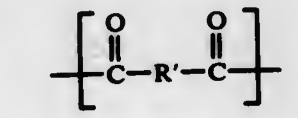
Int. Cl.² G03C *1/94*

U.S. Cl. 96—35 **18 Claims**

1. A radiation-sensitive composition comprising a radiation-sensitive linear polymer comprising recurring units of the structure



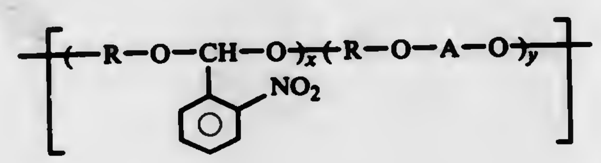
where
   x ranges from 1 to 20 and
   y is 0 or 1,
   R is the divalent residue of an organic diol capable of forming a linear polyacetal with an aldehyde,
   A is



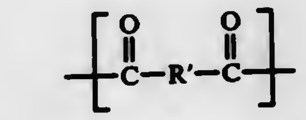
$$\left[-\overset{O}{\overset{\|}{C}}-R'-\overset{O}{\overset{\|}{C}}-\right]$$

where R′ is arylene, and a solvent for said polymer.

10. A radiation-sensitive element comprising a support bearing a layer of a radiation-sensitive linear polymer comprising recurring units of the structure



where
   x ranges from 1 to 20 and
   y is 0 or 1,
   R is the divalent residue of an organic diol capable of forming a linear polyacetal with an aldehyde,
   A is



$$\left[-\overset{O}{\overset{\|}{C}}-R'-\overset{O}{\overset{\|}{C}}-\right]$$

where R′ is arylene.

4,131,466
PHOTOGRAPHIC METHOD OF MAKING RELIEF MEMBER WITH NEGATIVE DYE IMAGE

Masahiro Nomura, Kasukabe, and Yutaka Hirabayashi, Tokyo, both of Japan, assignors to Somar Manufacturing Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 336,322, Feb. 27, 1973, abandoned. This application Dec. 8, 1975, Ser. No. 638,362

Claims priority, application Japan, Mar. 5, 1972, 47/22564

Int. Cl.² G03C *5/34, 5/24;* G03F *1/00*

U.S. Cl. 96—49 **8 Claims**

1. A method of making a photorelief member comprising the steps of
   exposing to an image of actinic radiation a member comprising a transparent synthetic resin film and a photoinsolubilizable layer formed thereon having a thickness from 0.5 micron to 12 microns, said layer comprising (a) type A gelatin having an isoelectric point of about 7 to 9 and a pH of from about 4 to about 9 and (b) a photosensitive, diazonium compound consisting of a condensation product of an unsubstituted p-aminodiphenylamine or a substituted p-aminophenylamine where the functional group is substituted directly to the phenyl nuclei, said functional group being selected from the group consisting of an alkyl group containing 1 to 4 carbon atoms, an alkoxy group containing 1 to 4 carbon atoms, a halogen and a combination thereof and an aldehyde where the ratio of said type A gelatin to said photosensitive, diazonium compound is 20:1 to 60:1, by weight, to thereby photoinsolubilize the exposed portions of the layer;
   subsequent to said exposing step, dyeing said layer with an aqueous solution of a dye selected from the group consisting of an acid dye and a direct dye so that both the exposed and unexposed portions of said layer are dyed; and
   subsequent to said dyeing step, washing the dyed layer with water to dissolve the unexposed portions of said layer to thereby form said photorelief member comprising the dyed photoinsolubilized layer portions disposed on said transparent synthetic resin film.

4,131,467
4,7-DIHYDROXYBENZIMIDAZOLE HYDROBROMIDE AS ANTIFOGGER

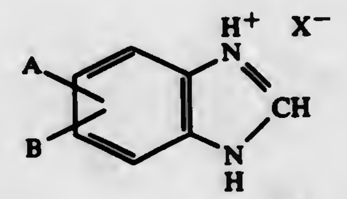
John H. Bigelow, St. Petersburg, Fla., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 23, 1977, Ser. No. 854,262

Int. Cl.² G03C *5/30, 1/34*

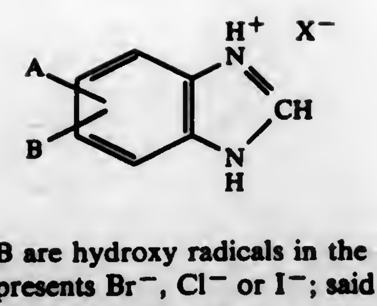
U.S. Cl. 96—66.3 **15 Claims**

1. A photographic element comprising a support having thereon a light-sensitive silver halide emulsion layer, said layer containing a dihydroxybenzimidazole hydrohalide of the formula



wherein A and B are hydroxy radicals in the 4,7 or 5,6 positions, and X^- is Br^-, Cl^- or I^-, the concentration of said hydrohalide being 5×10^{-6} mole to 5×10^{-2} mole/mole of silver halide.

8. A photographic developer containing a silver halide developing agent and a dihydroxybenzimidazole hydrohalide of the formula



wherein A and B are hydroxy radicals in the 4,7 or 5,6 positions and X^- represents Br^-, Cl^- or I^-; said dihydroxybenzimidazole hydrohalide being present in an amount of 10^{-6} to 10^{-2} moles/liter of developing solution.

4,131,468
DIAZOTYPE MATERIALS

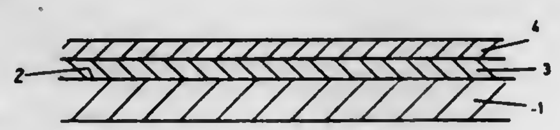
Stuart C. Rennison, Hadleigh; John A. Pope, Colchester, and Timothy D. Andrews, East Bergholt, near Colchester, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 17, 1975, Ser. No. 542,021

Claims priority, application United Kingdom, Jan. 25, 1974, 3591/74

Int. Cl.² G03C *1/52, 3/02*

U.S. Cl. 96—75 **7 Claims**



1. A light sensitive diazotype material suitable for use in high speed copying machines which comprises a plastic support film coated with a layer which includes a light sensitive diazonium compound and also
   (a) a resinous binder applied directly to the surface of the support film or to an underlying subbing layer, or
   (b) a receptive plastics material impregnated with said diazonium compound,

wherein an anti-slip material comprising a homopolymer or copolymer of acrylic acid or methacrylic acid or a lower alkyl ester of acrylic acid or methacrylic acid in which the alkyl group contains up to 8 carbon atoms as an anti-slip material is either incorporated in said layer which includes said diazonium compound or applied thereto to produce a surface roughness, said homopolymer or copolymer being present in an amount of 0.75 to 25 mg/dm^2 of the film surface.

4,131,469
PHOTOGRAPHIC ELEMENT WITH POLYMERIC AMMONIUM MORDANT

Takushi Miyazako; Shinji Sakaguchi; Sosuke Hanai, and Yukio Karino, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

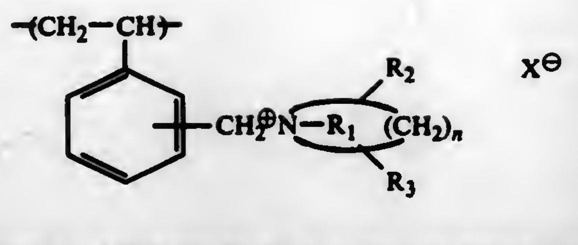
Filed Sep. 1, 1977, Ser. No. 829,858

Claims priority, application Japan, Sep. 1, 1976, 51-104525

Int. Cl.² G03C *1/40, 7/00, 1/84, 1/72*

U.S. Cl. 96—77 **12 Claims**

1. A diffusion-transfer, integral negative image-receiving, photographic element comprising a support having thereon at least one layer containing a silver halide photographic emulsion associated with a dye image-providing material which is capable of providing an acidic and diffusible dye or a precursor thereof and at least one hydrophilic colloid layer containing a polymer in an amount of at least 10% by weight based on the weight of the hydrophilic colloid used therein with repeating units in which at least 20 mol % of the repeating units are represented by the following general formula (I)



(I)

wherein R_1 represents an alkyl group containing 1 to 12 carbon atoms, an aralkyl group, an aryl group or an allyl group; R_2 and R_3, which can be the same or different, each represents a hydrogen atom, an alkyl group, an aralkyl group, an aryl group or an allyl group, where the total number of carbon atoms present in the main chain and/or ring of R_2 and R_3 is less than 16; n represents an integer from 2 to 20; and $X^{\ominus}$ represents an anion.

4,131,470
PROCESS FOR THE STABILIZATION AND ANTIFOGGING OF PHOTOGRAPHIC SILVER HALIDE EMULSIONS

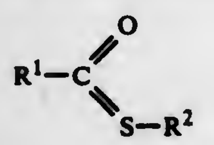
Günther Fischer, Leipzig; Beate Wenzel, Dessau-Süd; Steffen Scheithauer, Dessau; Udo Franz, Dresden; Karl-Wilhelm Jünge, Dessau; Christof Schröter, Leipzig; Siegfried Gahler, Wolfen, and Johannes Morgenstern, Pirna-Copitz, all of Germany, assignors to VEB Filmfabrik Wolfen, Wolfen, Fed. Rep. of Germany

Filed Dec. 21, 1976, Ser. No. 753,145

Int. Cl.² G03C *1/28, 1/34*

U.S. Cl. 96—107 **7 Claims**

1. A process for the stabilization and anti-fogging of a photographic silver halide emulsion including chemical sensitization and coating of said emulsions onto a support, characterized in that a stabilizing and anti-fogging amount of at least one compound represented by the general formula:



is added to said emulsion, wherein
   R^1 represents a member selected from the group consisting of alkyl, alkenyl, cycloalkyl and aralkyl, either unsubstituted or substituted by one or multiple substituents selected from the group consisting of halogen, hydroxy, alcoxy, acyloxy, carboxy, alcoxycarbonyl and cyano;
   or an aryl selected from the group consisting of phenyl and napthyl, either unsubsituted or substituted by one or multiple substituents selected from the group consisting of halogen, hydroxy, alcoxy, acyloxy, carboxy, alcoxycarbonyl, cyano, alkyl, cycloclkyl phenyl, napthyl, amino, nitro and sulfo;
   R^2 represents a member selected from the group consisting of alkyl, alkenyl and aralkyl, either unsubstituted or substituted by one or multiple substituents selected from the group consisting of halogen, hydroxy, carboxy, and cyano; or an aryl selected from the group consisting of phenyl and napthyl, either unsubstituted or substituted by one or multiple substituents selected from the group consisting of halogen, hydroxy, alcoxy, acyloxy, carboxy, alcoxycarbonyl, carbonamido, cyano, alkyl, cycloalkyl, aryl, amino, acylamino, nitro and sulfo.

4,131,471
SYNTHETIC POLYMERIC SILVER HALIDE PEPTIZER

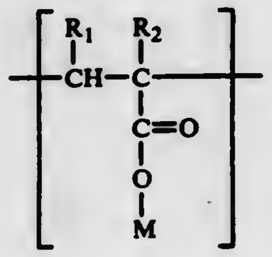
Maurice J. Fitzgerald, Canton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 638,820, Dec. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 532,165, Dec. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 337,433, Mar. 2, 1973, abandoned. This application Jun. 13, 1977, Ser. No. 805,863

Int. Cl.² G03C *1/72*

U.S. Cl. 96—114 **28 Claims**

1. A photosensitive silver halide emulsion wherein the silver halide grains have absorbed on their surface a substantially continuous layer of an emulsion peptizer consisting essentially of a water soluble film-forming polymeric silver halide grain-growing protective colloid having in its structure at least about one mole percent repeating units of the formula



wherein R_1 is hydrogen, a lower alkyl group comprising a 1–4 carbon atom group, or halogen; R_2 is hydrogen, a lower alkyl group comprising a 1–4 carbon atom group, a halogen or cyano group; M is $—CH_2Z$ or $—CHY_2$ where Z is $—CX_3$, $—(CF_2)_rCF_3$ or $—(CF_2)_sH$ where X is —Br, —Cl or —F, r is 1–8 and s is 1–9; and Y is $—CH_2X$ or $—CX_3$, and at least one of R_1, R_2, or M comprises a halogen.

4,131,472
METHOD FOR INCREASING THE YIELD OF BATCH PROCESSED MICROCIRCUIT SEMICONDUCTOR DEVICES

James L. MacDonald, Jr., Sherman Oaks, and Richard A. Mink, Northridge, both of Calif., assignors to Align-Rite Corporation, Burbank, Calif.

Filed Sep. 15, 1976, Ser. No. 723,333

Int. Cl.² G03C *5/00, 5/04*

U.S. Cl. 96—38.3 **5 Claims**

1. Method of improving the yield of batch processed microcircuit semiconductor devices, comprising the steps of:
   producing a master photomask for each layer of a semiconductor microcircuit, each said photomask comprising a plurality of identical dies imprinted upon a transparent plate covering said plate with said identical die images disposed in a dimensionally controlled matrix;
   photographically marking each die in said matrix with unique indicia;
   producing from each said master photomask a working plate, using such working plates for all required layers of the device to produce a batch of semiconductor devices, inspecting such devices, and recording the indicia of all defective devices;
   inspecting the individual dies of the master photomasks indicated by such recorded indicia and repairing those dies found to be defective, then producing from said repaired master photomasks new working plates, and using such plates to produce further batches of semiconductor devices.

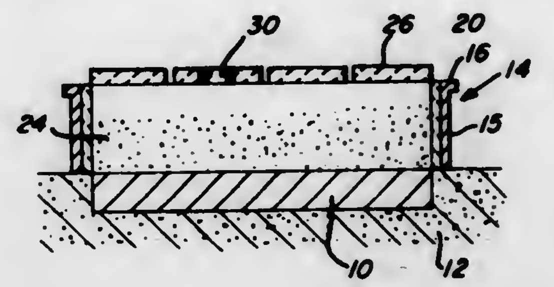
4,131,473
METHOD OF FORMING A HIGH-TEMPERATURE ABRASION-RESISTANT COATING ON A FERROUS METAL SUBSTRATE, AND RESULTING ARTICLE

Robert H. Kachik, Washington Township, Westmoreland County, and Arthur J. Pignocco, Franklin Township, Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 332,987, Feb. 15, 1973. This application Sep. 4, 1974, Ser. No. 503,202

Int. Cl.² C09D *5/38*

U.S. Cl. 106—1.12 **4 Claims**



1. A composition mixture for exothermically depositing a hard facing metallic layer onto a metallic substrate, consisting essentially of an exothermic fuel powder selected from the group consisting of aluminum, magnesium, calcium, silicon, and mixtures thereof; a particulate matrix forming material selected from the group consisting of Fe_2O_3, Fe_3O_4, Cr_2O_3 and mixtures thereof; and a boron containing material selected from the group consisting of boric oxide, ferroboron and mixtures thereof in an amount sufficient to yield from 4 to 7% boron in the hard facing metallic layer.

4,131,474
MOLDING SAND MIXTURES

Hiroshi Uchikawa, Funabashi, and Hajime Kato, Yokohama, both of Japan, assignors to Onoda Cement Company, Ltd., Yamaguchi, Japan

Continuation of Ser. No. 604,022, Aug. 12, 1975, abandoned. This application Jun. 8, 1977, Ser. No. 804,731

Int. Cl.² B28B *7/34*

U.S. Cl. 106—38.35 **6 Claims**

1. A molding sand mixture comprising 100 weight parts of molding sand and a mixture containing
   (a) from 2–20 weight parts of a rapid hardening cement selected from the group consisting of:
   (i) calcium aluminate containing rapid hardening cement prepared by blending Portland cement, fly ash cement, blast furnace cement or silica cement with a mixture consisting of 3–96% by weight of anhydrous gypsum and a ground amorphous glass of calcium aluminate consisting of 20–80% CaO and 80–20% Al_2O3;
   (ii) a calcium aluminate rapid hardening cement prepared by blending Portland cement, fly ash cement, blast furnace cement or silica cement with a mixture of 3–96% by weight of anhydrous gypsum and crystals of calcium aluminate consisting of $CaO.2Al_2O_3$, $CaO.Al_2O_3$, 12 $CaO.7$ Al_2 O_3 or mixture thereof;
   (iii) a calcium haloaluminate containing rapid hardening cement prepared by
      adding anhydrous gypsum to clinker powder consisting of $3CaO.SiO_2$ solid solution, $2CaO.SiO_2$ solid solution and $2CaO.Fe_2O_36CaO.2Al_2O_3.Fe_2O_3$ solid solution, and calcium haloaluminate having the formula 11 $CaO.7$ $Al_2O_3.CaX_2$ where X is halogen and wherein the Al_2O_3/SO_3 mole ratio in the cement is 0.5–2.0; and
   (iv) mixtures thereof;
   (b) 3–15 weight parts of water;
   (c) from 0.01–1.0 weight parts of a polymeric water holding agent or from 0.03–2.0 weight parts of a polymeric water reducing agent; and

(d) from 0.01–3.0 parts by weight of lime;

wherein said polymeric water holding agent is methylcellulose, polyvinyl alcohol, alginic acid, sodium alginate, polyethylene oxide, or a water-soluble melamine resin;

wherein said polymeric water reducing agent is naphthalenesulfonic acid formalin condensation product, an alkylnaphthalenesulfonic acid-formalin condensation product, an alkylnaphthalenesulfonic acid-naphthalenesulfonic acid-formalin copolycondensate, a polycondensate salt of alkylaldehyde and creosote oil fractionated at a b.p. of from 200° to 315° C. (55% of creosote oil), or a water-soluble melamine resin, wherein the number of naphthalene rings in said naphthalene-containing condensation products is more than 5.

4,131,475

FABRICATION OF SHELL INVESTMENT MOLDS

Paul S. Svec, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 591,168, Jun. 27, 1975, abandoned. This application Oct. 12, 1976, Ser. No. 731,854

Int. Cl.^{2} B28B *7/34*

U.S. Cl. 106—38.3 **10 Claims**

1. An investment mold suitable for the casting and solidification of a superalloy therein comprising:

a plurality of first layers of a first type alumina-silica coating material disposed one upon the other;

at least a portion of one surface of one of the first layers defining at least one cavity in the mold for the casting of a melt of metal therein;

the first type coating material is derived from a mixture of three different fused alumina flour grain sizes 70–75% by weight of the mixture of 240 mesh; 10–20% by weight of the mixture of 320 mesh, and the remainder 400 mesh, wherein the alumina to silica ratio, in weight percent, upon final firing of the mold is from about 88:12 to about 95:5;

a plurality of second layers of a second type alumina-silica coating material disposed upon each other and upon the pluraity of first layers, to strengthen the mold, and

a sand coat of a fused alumina material disposed between and binding together mutually adjacent coating material layers.

4,131,476

ADDITIVE FOR GREEN MOLDING SAND

Ronald E. Melcher, and Frederick W. Schaefer, both of Madison, N.J., assignors to Whitehead Brothers Company, Florham Park, N.J.

Filed Aug. 5, 1977, Ser. No. 822,265

Int. Cl.^{2} B28B *7/34*

U.S. Cl. 106—38.35 **16 Claims**

1. A method for imparting improved hot sand properties to a green molding sand consisting essentially of sand, clay as a binder and moisture which comprises admixing said sand, clay and moisture with at least one salt selected from the group consisting of a lithium or a magnesium salt of a lower alkanoic acid in an amount sufficient to impart improved hot sand properties to said green molding sand.

4,131,477

MOULDING COMPOSITION FOR MAKING FOUNDRY MOULDS AND CORES

Naum Y. Kagan, 2 ulitsa Mariinoi roschi, 14, kv. 48; Vladimir M. Bortnik, Eiskaya ulitsa, 8/29, kv. 36; Isai V. Korenbljum, Veernaya ulitsa, 3, korpus 4, kv. 112, all of Moscow; Jury A. Razumeev, Novomytischinsky prospekt, 39, kv. 1, Mytischi Moskovskoi oblasti; Abram M. Lyass, Sharikopodshipnikovskaya ulitsa, 2, kv. 42, Moscow; Pavel A. Borsuk, Nizhne-Pervomaiskaya ulitsa, 59, kv. 10, Moscow; Zokhrab G. O. Usubov, B. Cherkizovskaya ulitsa, kvartal 8-11, korpus 21, kv. 106, Moscow, and Valentina A. Dmitrieva, ulitsa Trofimova, 25, kv. 43, Moscow, all of U.S.S.R.

Continuation of Ser. No. 672,721, Apr. 1, 1976, abandoned, which is a continuation of Ser. No. 577,785, May 15, 1975, abandoned, which is a continuation of Ser. No. 439,980, Feb. 6, 1974, abandoned. This application Feb. 9, 1977, Ser. No. 767,032

Int. Cl.^{2} B28B *7/34*

U.S. Cl. 106—38.35 **43 Claims**

1. A moulding composition for making self-setting foundry moulds and cores comprising foundry sand as a filler; a substance selected from the group consisting of ligno-sulphonates of alkali metals, alkali earth metals, ammonium and mixtures of said ligno-sulphonates as a binding ingredient; and a phenolic compound selected from the group consisting of phenol, pyrocatechin, resorcinol, hydroquinone, pyrogallol, phloroglucine, oxyhydroquinone, ortho-cresol, metal-cresol, para-cresol, and mixtures thereof as an additive.

4,131,478

SEALING GLASS COMPOSITIONS AND METHOD

Earl K. Davis, Tempe, and Kent W. Hansen, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 26, 1977, Ser. No. 828,017

Int. Cl.^{2} C03C *3/10*

U.S. Cl. 106—53 **2 Claims**

1. A non-devitrifying sealing glass composition consisting essentially of about 85–91 weight percent of solder glass and about 15–9 weight percent of Al_2O_3 wherein the solder glass consists essentially of by weight: SiO_2 about 3 percent, PbO about 66 percent, PbF_2 about 5 percent, ZnO about 9 percent, CdO about 5 percent and B_2O_3 about 12 percent.

4,131,479

TRANSPARENT CERAMICS

Noboru Ichinose, Yokohama; Hideo Ookuma, Kawasaki; Toshiaki Mizutani, Yokohama, and Hideaki Hiraki, Kawasaki; all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1977, Ser. No. 775,468

Claims priority, application Japan, Mar. 8, 1976, 51-24217; Jul. 14, 1976, 51-82920; Jul. 14, 1976, 51-82921; Jan. 25, 1977, 52-6428; Jan. 25, 1977, 52-6429

Int. Cl.^{2} C04B *35/00*

U.S. Cl. 106—39.5 **2 Claims**

1. A transparent, single phase, complex oxide ceramic material of the formula $(Sr_{1-x}Ca_x)(Li_{\frac{1}{4}}Nb_{\frac{3}{4}})O_3$ wherein x is 0.01–0.50.

4,131,480

PUMPABLE CEMENTITIOUS COMPOSITIONS

Lawrence H. McCurrich, Chesham, and Steven A. Lammiman, Hemel Hempstead, both of England, assignors to Fosroc Holdings (U.K.) Limited, England

Filed Mar. 16, 1977, Ser. No: 778,276

Int. Cl.^{2} C04B *7/02*

U.S. Cl. 106—93 **16 Claims**

1. In a cement composition comprising a hydraulic cement, water and a porous light weight aggregate, the improvement comprising adding to said composition 0.001% to 0.04% by weight of said composition of a dispersing agent, 0.001% to 0.04% of a gelling agent and an effective amount of a plasticizer with said improvement reducing the absorption of water by said aggregate such that said composition with said improvement can be readily pumped under high pressure.

4,131,481

POLYMER COMPOSITION

Paul H. Drake, London; Colin J. Humphris, West Ewell, and John E. Preedy, Croydon, all of England, assignors to The British Petroleum Company Limited, London, England

Filed Mar. 22, 1977, Ser. No. 780,275

Claims priority, application United Kingdom, Apr. 7, 1976, 14081/76

Int. Cl.^{2} C04B *21/02*

U.S. Cl. 521—91 **11 Claims**

1. A structural foam material comprising the foamed reaction product of the paste-like cement mass obtained upon mixing an ion-leachable glass selected from the group consisting of an aluminosilicate and a fluoroaluminosilicate with a polycarboxylic acid in the presence of water.

4,131,482

CONTINUOUSLY OPERATING SUGAR CENTRIFUGE

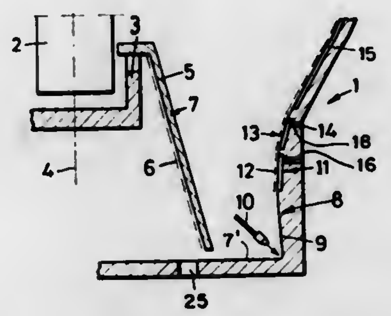
Walter Dietzel, Braunschweig, Fed. Rep. of Germany, assignor to Braunschweigische Maschinenbauanstalt, Braunschweig, Fed. Rep. of Germany

Filed Apr. 25, 1977, Ser. No. 790,613

Claims priority, application Fed. Rep. of Germany, May 5, 1976, 7614228[U]

Int. Cl.^{2} C13F *1/10*

U.S. Cl. 127—19 **9 Claims**



1. In a basket structure for a continuously operating sugar centrifuge into which massecuite is continuously supplied by feeding and accelerating means including a preseparating stage and a further separating stage, the improvement comprising washing stage means arranged between said preseparating stage and said further separating stage, said washing stage means comprising three zones including a juicing-up zone, an intermediate zone and a separating zone, arranged in that order as viewed in the flow-direction of the material being centrifuged, said juicing-up zone having impermeable and unperforated wall means with a radial spacing from said preseparating stage, said intermediate zone comprising first separating screen means with an open screening area of maximal 2% of its total area, said separating zone comprising wall means having a radially outward inclination of up to 10° relative to the vertical, whereby the separating zone has an outwardly flaring upper end, said separating zone further comprising second screen means having a maximum of open area relative to its total area, said upper end of said separating zone merging into said further separating stage, and washing liquid supply means operatively arranged for feeding washing liquid into said juicing-up zone.

4,131,483

METHODS FOR CLEANING ARTICLES WITH UPWARD FLOWING LIQUIDS

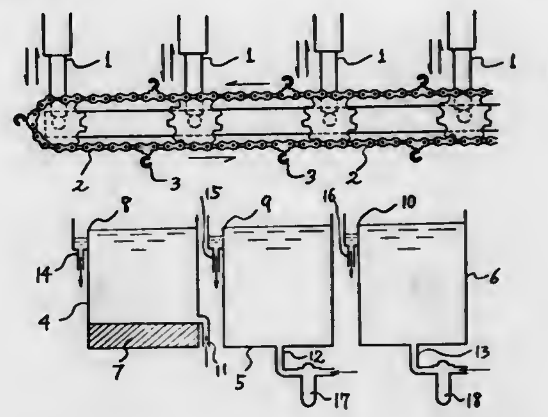
Shunji Iwahashi, Shinsenrikita; Masahiro Yamasaki, Ibaraki, and Takanori Fujita, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 27, 1977, Ser. No. 801,313

Claims priority, application Japan, May 28, 1976, 51-62557; Jun. 1, 1976, 51-64965

Int. Cl.^{2} B08B *3/12*

U.S. Cl. 134—1 **6 Claims**



1. A method for cleaning synthetic resin articles, which comprises (1) carrying the articles into a cleaning zone where they are contacted with an aqueous detergent solution which is allowed to flow upward and to which an ultrasonic wave is applied, (2) carrying the articles from the cleaning zone to a rinsing zone where they are contacted with warm water which is allowed to flow upward, (3) carrying the articles from the rinsing zone to a dipping zone where they are contacted with additional fresh warm water which is allowed to flow upward, and then (4) pulling the articles up slowly from the dipping zone to drain off the water attached to the articles, the average rates of the upward flow in steps (1), (2), and (3) being 5 to 500 mm/min, 100 to 1000 mm/min and 50 to 500 mm/min, respectively.

4. A method for cleaning synthetic resin articles, which comprises (1) carrying the articles into a cleaning zone where they are contacted with an aqueous detergent solution which is allowed to flow upward and to which an ultrasonic wave is applied, (2) carrying the articles from the cleaning zone to a rinsing zone where they are contacted with warm water which is allowed to flow upward, (3) carrying the articles from the rinsing zone to a dipping zone where they are contacted with additional fresh water which is allowed to flow upward, and then (4) pulling the articles up slowly from the dipping zone to drain off the water attached to the articles, the rate of pulling being 20 to 30 cm/min at a warm temperature of 60° to 70° C.

4,131,484

FREQUENCY ADJUSTING A PIEZOELECTRIC DEVICE BY LASERING

Robert D. Caruso, Salem, N.H., and Gerald A. Setter, Jr., West Seneca, N.Y., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Feb. 13, 1978, Ser. No. 877,541

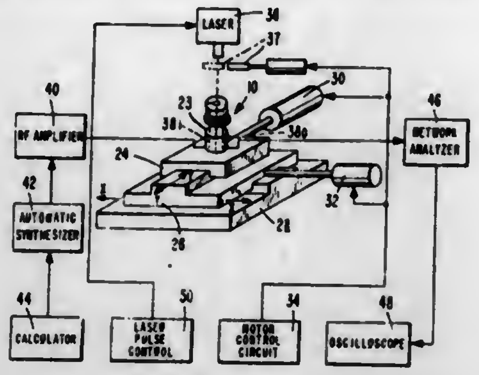
Int. Cl.^{2} B08B *7/02;* **B23K** *31/10;* **H04R** *17/10*

U.S. Cl. 134—1 **10 Claims**

1. A method of adjusting the resonant frequency of a piezoelectric device, which comprises:

laser machining electrode material from the piezoelectric device to change the resonant frequency of the device to a nominal value; and

simultaneously electronically cleaning the piezoelectric device by overdriving the device at a high current level in comparison to the current level at which the device normally is operated, to prevent lasered particles which cause



electrical instability of the device in subsequent operation from accumulating on the device.

4,131,485

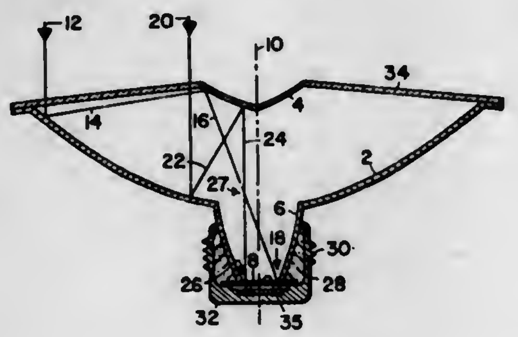
SOLAR ENERGY COLLECTOR AND CONCENTRATOR

Aden B. Meinel, and Walter B. Meinel, both of Tucson, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 822,583, Aug. 8, 1977, abandoned. This application Mar. 6, 1978, Ser. No. 883,558

Int. Cl.² H01L *31/04;* F24J *3/02*

U.S. Cl. 136—89 PC **33 Claims**



1. An apparatus for collecting energy from a remote electromagnetic radiation source, the apparatus having a cross section generally symmetrical about an axis, a cross section of the apparatus comprising in combination:

first reflective means for collecting and reflecting the energy from the remote source, said first reflective means being concave and having a shape generally of a conic section, said first conic section shape having an axis substantially coincident with the axis of the apparatus, said first reflective means having an aperture around said apparatus axis;

second reflective means spaced from said first reflective means for collecting said energy reflected from said first reflective means and for further reflecting the energy through said aperture in said first reflective means, that portion of said second reflective means lying on one side of the axis of the apparatus and facing said first reflective means being convex and having a shape generally of a conic section, said second conic section shape having an axis being angularly displaced from the axis of the apparatus; and

receiving means for absorbing said further reflected energy, a nominal ray crossover point of said further reflected energy being between said second reflective means and said receiving means, said receiving means being positioned to receive said further reflected energy through said aperture in said first reflective means, said further reflected energy being thereby dispersed generally over said receiving means.

11. The apparatus according to claim 1 wherein said receiving means comprises a photovoltaic cell.

4,131,486

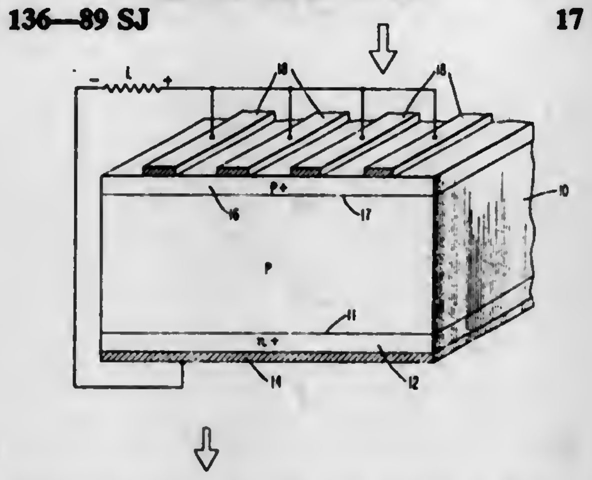
BACK WALL SOLAR CELL

Henry W. Brandhorst, Jr., Berea, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 760,771, Jan. 19, 1977, abandoned. This application Apr. 24, 1978, Ser. No. 899,123

Int. Cl.² H01L *31/06*

U.S. Cl. 136—89 SJ **17 Claims**



1. An energy converter for the conversion of radiant energy to electrical energy comprising

a first semiconductor material of one conductivity type having a face for receiving said radiant energy and an oppositely disposed back face, said first semiconductor material having a thickness between about 5 μM and about 500 μM,

a region of a semiconductor material of said one conductivity type along said energy receiving face and forming a first interface with said first semiconductor material, said region having a greater surplus of majority carriers and therefore being of greater conductivity than said first semiconductor material, said region having a thickness of between about 0.1 μM and about 10.0 μM and

a layer of second material on said back face of said first semiconductor material and forming a second interface remote from said region and selected from a metallic material and a semiconductor material of opposite conductivity type, whereby a rectifying junction is formed between said first and second materials at said second interface at said back face, said layer having a thickness of between about 0.1 μM and about 10.0 μM.

4,131,487

GETTERING SEMICONDUCTOR WAFERS WITH A HIGH ENERGY LASER BEAM

Charles W. Pearce, Emmaus, Pa., and Vincent J. Zaleckas, Union, N.J., assignors to Western Electric Company, Inc., N.Y.

Filed Oct. 26, 1977, Ser. No. 846,222

Int. Cl.² H01L *21/265*

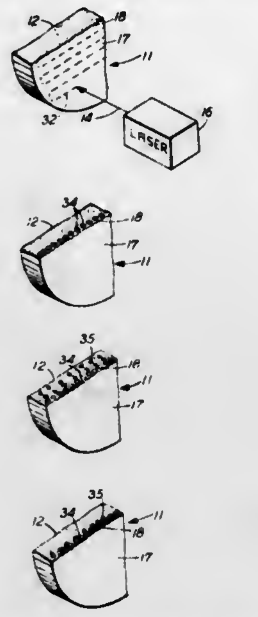
U.S. Cl. 148—1.5 **2 Claims**

1. A method of making semiconductor devices in one surface of a wafer, which includes at least two diffusion and simultaneous heating steps, comprising:

directing a laser beam on the opposite surface of the wafer so that such surface absorbs such beam to vaporize spots of the wafer and form shallow overlapping holes to produce lattice damage intensification and strain in the region of such surface, the laser beam being directed either before the diffusion and heating steps or between the two diffusion and heating steps or after the heating and diffusion steps;

scanning in a raster pattern such opposite surface with such beam while it is so directed to blanket said surface with the lattice damage intensification; and

heating the wafer at a temperature and for a time sufficient to produce a dislocation array adjacent to the region of damage intensification to relieve the strain and attract mobile defects in the wafer toward the array and away from the surface of the wafer on which the devices are to be formed, the combination of the laser produced damage



intensification and heating contactlessly gettering the wafer to reduce defects in the semiconductor devices made from the wafer without contaminating the wafer.

4,131,488

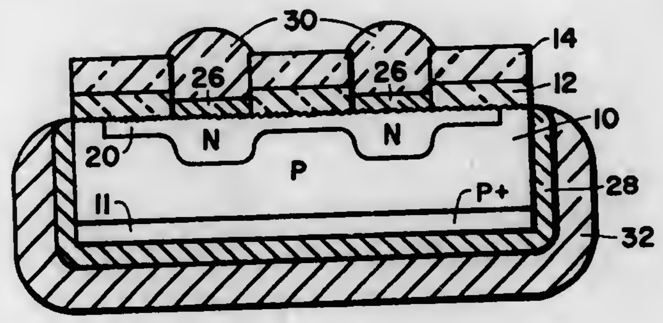
METHOD OF SEMICONDUCTOR SOLAR ENERGY DEVICE FABRICATION

Israel A. Lesk, Scottsdale, and Robert A. Pryor, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 645,600, Dec. 31, 1975, abandoned. This application Apr. 25, 1977, Ser. No. 792,438

Int. Cl.² H01L *21/263, 31/04*

U.S. Cl. 148—1.5 **11 Claims**



1. A process for forming a semiconductor solar energy device comprising the steps of:

providing a silicon wafer of a first conductivity type with two major surfaces;

introducing a doping impurity of said first conductivity type into both major surfaces simultaneously;

forming an oxide layer on both major surfaces following the introduction of said doping impurities;

removing said oxide layer from a first major surface of said wafer;

treating said first major surface to form a textured pyramidal surface structure while masking a second major surface opposite said first major surface from said texture treating;

forming a thin layer of silicon dioxide in contact with said first major surface;

forming a thin layer of silicon nitride on said layer of silicon dioxide to form an antireflective coating; and

forming a shallow layer of semiconductor material of a second conductivity type opposite said first conductivity type of said first major surface.

4,131,489

CHROMATE CONVERSION COMPOSITION AND METHOD FOR COATING ALUMINUM USING LOW CONCENTRATIONS OF CHROMATE, PHOSPHATE AND FLUORIDE IONS

Nelson J. Newhard, Jr., Plymouth Meeting, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Mar. 31, 1978, Ser. No. 892,376

Int. Cl.² C23F *7/26*

U.S. Cl. 148—6.16 **16 Claims**

1. An aqueous acidic solution, for coating the surface of a metal selected from the group consisting of aluminum and alloys thereof in which aluminum is the principal ingredient, which consists essentially of from about 0.005 to about 0.2 grams/liter of CrO_3, from about 0.02 to to about 0.4 grams/liter of phosphate ion, and from about 0.005 to about 0.04 grams/liter of fluoride ion, the pH of the solution being less than about 3.5.

4,131,490

METHOD FOR SCARFING SURFACE DEFECTS OF A METAL PIECE

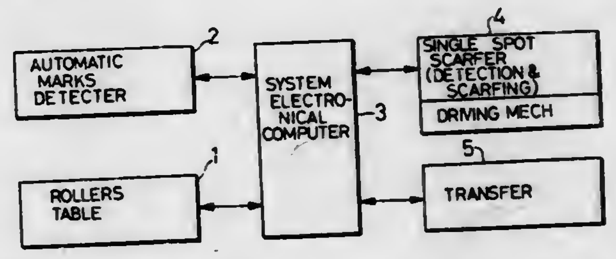
Akiyoshi Oishi; Tamotsu Harada, and Takashi Ishikawa, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 27, 1975, Ser. No. 590,806

Claims priority, application Japan, Jul. 1, 1974, 49-74322

Int. Cl.² B23K *7/06*

U.S. Cl. 148—9.5 **9 Claims**


AUTOMATIC MARKS DETECTER
2
SYSTEM ELECTRONICAL COMPUTER
3
4
SINGLE SPOT SCARFER (DETECTION & SCARFING)
DRIVING MECH
1
ROLLERS TABLE
5
TRANSFER

1. A method of treating defects on or beneath the surface of a metal piece comprising the steps of:

(a) marking directly on the surface of the metal piece with patterns formed by assigned colored marks of a specific size and shape which represent the position extent, type and depth of the defects;

(b) optically detecting the colored marks with a mark detector;

(c) storing the detected marks into an electronic computer as a metal surface image on a mesh configuration, the computer being able to recognize the position, extent, type and depth of the surface defects from the stored metal image;

(d) electronically correcting for transverse shifts and editing the stored marks into unit scarfing areas;

(e) electronically calculating an optimum scarfing depth for each scarfing area;

(f) supplying the edited and calculated information to a scarfing machine to permit automatic scarfing of the surface detects.

4,131,491

TORSION BAR AND METHOD OF FORMING THE SAME

George L. Joseph, Morgan Hill, Calif., assignor to FMC Corporation, San Jose, Calif.

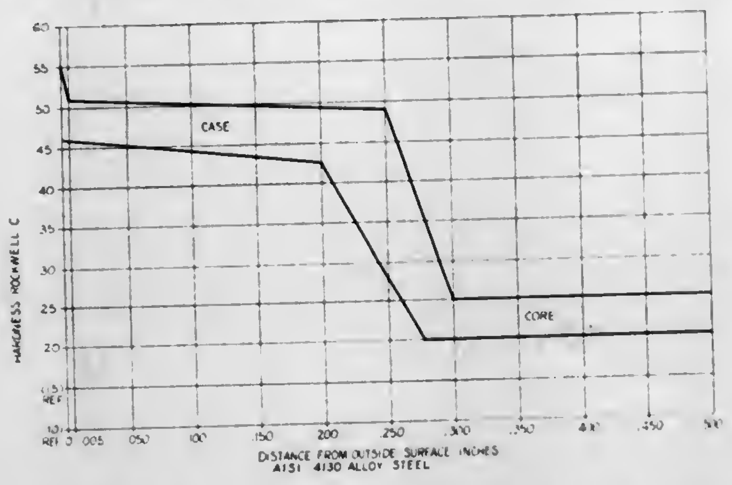
Filed Dec. 22, 1977, Ser. No. 863,558

Int. Cl.² C21D *1/10, 7/04, 9/00*

U.S. Cl. 148—12 B **44 Claims**

1. A method of forming a torsion bar having an outer case and a core from a steel alloy bar of the desired size and shape and with a medium carbon content, or a steel bar having similar hardenability characteristics; comprising the steps of through hardening the bar to a predetermined hardness, case

hardening the bar for transforming austenite in the case into martensite which expands inducing a high compressive stress near the surface of the bar with the compressive stresses diminishing radially inward to the center of the bar, retaining the core at a temperature below the transformation temperature for resisting expansion of both the case and the core and for



inducing hoop and axial compressive stresses and radial tensile stresses in the case, and presetting the hardened bar by cold working the bar at least twice by applying sufficient torsional stresses on the bar for twisting the bar beyond its initial yield strength causing a redistribution of stresses and inducing residual torsional stresses in the case and in the core in a direction opposite to the direction of the applied torque.

4,131,492
STEEL ARTICLE HAVING A NITRIDED AND PARTLY OXIDIZED SURFACE AND METHOD FOR PRODUCING SAME

Shingi Fushimi, Yokosuka, and Takeshi Miyata, Yokohama, both of Japan, assignors to Nissan Motor Company, Ltd., Japan

Filed Apr. 6, 1977, Ser. No. 785,235

Claims priority, application Japan, Apr. 8, 1976, 51/38806

Int. Cl.^{2} C23C ***11/16***

U.S. Cl. 148—16.6 **5 Claims**

1. A method of hardening a steel article which is to be mated with a separate article so as to make face-to-face contact, said article having good wear resistance and smoothly fitting the separate article substantially from the start of use, the method comprising:

a. heating said steel article in an ammonia gas atmosphere containing less than 1% by volume of oxygen;
b. continuing heating of the steel article at a temperature of 450 to 650° in an ammonia gas atmosphere containing from 1 to 10% by volume of oxygen so that a surface region of the steel article is nitrided, with the formation of an oxidized layer as an outermost part of the nitrided layer.

4,131,493
FLUX-CORED WELDING WIRE

Samuil M. Gurevich, Bulvar Lesi Ukrainki, 2, kv. 2; Vadim N. Zamkov, Bulvar Lesi Ukrainki, 2, kv. 8, and Valery P. Prilutsky, ulitsa Nikolsko-Botanicheskaya, 15/17, kv. 4, all of Kiev, U.S.S.R.

Filed Dec. 20, 1974, Ser. No. 534,724

Claims priority, application U.S.S.R., Jan. 22, 1974, 1990025

Int. Cl.^{2} B23K ***35/34***

U.S. Cl. 148—23 **8 Claims**

1. A fluxed-core wire for inert-gas shielded fusion welding of titanium and its alloys, comprising a tubular casing made of a metal selected from a group including titanium and its alloys and a powder flux core consisting essentially of (percent by weight):

CaF_2 — 40 to 50,
BaF_2 — 5 to 10,
a fluoride of a rare-earth element — 18 to 20, and
SrF_2 — the rest,

the ratio of the weight of the powder flux to the total weight content of titanium in said wire being from about 0.3:1 to 1:1.

4,131,494
CORROSION RESISTANT MAGNETIC ALLOY

Kenichiro Momose, Ebina, and Kiyoshi Kumagai, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 4, 1977, Ser. No. 774,500

Claims priority, application Japan, Mar. 8, 1976, 51/24234; Jul. 28, 1976, 51/89042

Int. Cl.^{2} H01F ***1/14;*** **C22C** ***38/42, 38/52***

U.S. Cl. 148—31.57 **3 Claims**

1. A corrosion resistant magnetic alloy with high magnetic permeability, said alloy consisting essentially of Ni in an amount ranging from 30% to less than 35% by weight, Cr in an amount ranging between 8% and 12% by weight, a metal selected from the group consisting of Co, Cu and mixtures thereof, and the balance of essentially Fe, the Co content when present ranging between 2% and 5% by weight and the Cu content when present between 1% and 5% by weight, the initial magnetic permeability of said alloy being at least 1000 and the flux density under a magnetic intensity of 10 oersteds.

4,131,495
PERMANENT-MAGNET ALLOY

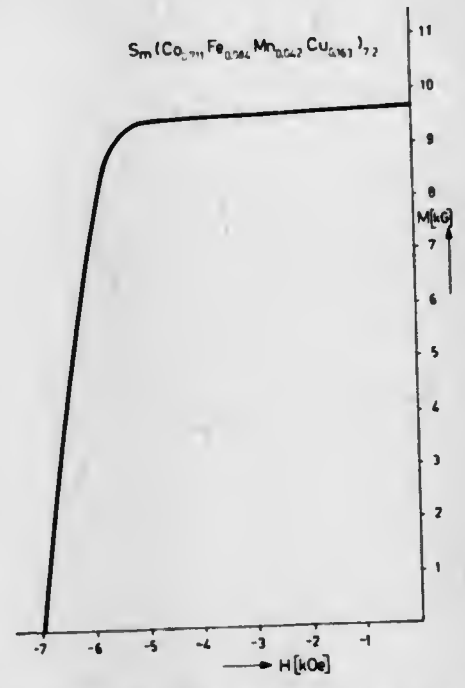
Anton Menth, Nussbaumen; Hartmut Nagel, Wettingen, and Ulrich Spinner, Aeugst, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Nov. 30, 1976, Ser. No. 746,226

Claims priority, application Switzerland, Dec. 2, 1975, 15631/75

Int. Cl.^{2} H01F ***1/04, 1/14, 7/02***

U.S. Cl. 148—31.57 **4 Claims**



1. A permanent magnet alloy selected from the group consisting of

RE $(Co_{1-u-w-y}Fe_uCr_wCu_y)_z$

wherein RE is samarium, cerium, cerium mischmetal (MM), praseodymium, neodymium, lanthanum or mixtures thereof and

$0.05 < u < 0.13$
$0.02 < w < 0.05$
$0.10 < y < 0.18$
$7.0 < z < 7.5$

which has been prepared by the process which comprises melting and casting said alloy from starting materials followed by homogenization heat-treating the alloy of the molten and cast starting materials at a temperature just above the solidus temperature or in the temperature range in which the non-RE and non-Co components of the alloy have their maximum solubility in the RE_2Co_{17} mixed crystals; crushing and grinding the alloy to a particle size of from 2 μm to 10 μm; magnetically aligning the resultant powder; isostatically compressing the resultant powder; sintering the resulting briquette just below the solidus temperature; and finally annealing the alloy at a temperature between 700° C. and 900° C.

3. A process for preparing a permanent magnet alloy selected from the group consisting of

RE $(Co_{1-u-w-y}Fe_uCr_wCu_y)_z$

wherein RE is samarium, cerium, cerium mischmetal (MM), praseodymium, neodymium, lanthanum or mixtures thereof and

$0.05 < u < 0.13$
$0.02 < w < 0.05$
$0.10 < y < 0.18$
$7.0 < z < 7.5$

which comprises melting and casting said alloy from starting materials followed by homogenization heat-treating the alloy of the molten and cast starting materials at a temperature just above the solidus temperature or in the temperature range in which the non-RE and non-Co components of the alloy have their maximum solubility in the RE_2Co_{17} mixed crystals; crushing and grinding the alloy to a particle size of from 2 μm to 10 μm; magnetically aligning the resultant powder; isostatically compressing the resultant powder; sintering the resultant briquette just below the solidus temperature; and finally annealing the alloy at a temperature between 700° C. and 900° C.

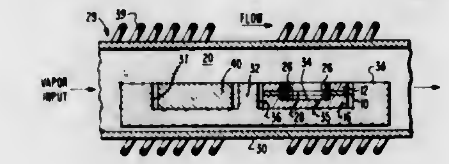
4,131,496
METHOD OF MAKING SILICON ON SAPPHIRE FIELD EFFECT TRANSISTORS WITH SPECIFICALLY ALIGNED GATES

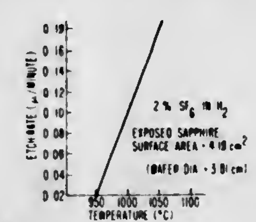
Charles E. Weitzel, Princeton, and David R. Capewell, Browns Mills, both of N.J., assignors to RCA Corp., New York, N.Y.

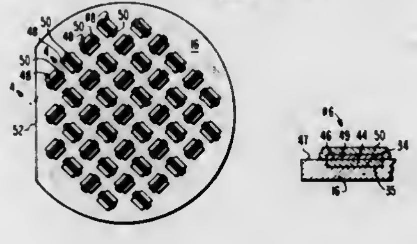
Filed Dec. 15, 1977, Ser. No. 860,855

Int. Cl.^{2} H01L ***21/86, 27/12***

U.S. Cl. 148—175 **11 Claims**







1. A process for manufacturing field effect transistors on an insulating substrate selected from the group consisting of sapphire, spinel and beryllium oxide; comprising:

(a) depositing a mask comprising a layer of silicon nitride directly on an exposed surface of said insulating substrate;
(b) defining an aperture in said mask to expose portions of the underlying insulating substrate;
(c) exposing said mask and said exposed portions of said insulating substrate to a gas mixture comprised of sulfur hexafluoride gas and a carrier gas at a temperature less than 1050° C. for a time period sufficient to form blind holes in said insulating substrate;
(d) epitaxially growing silicon in said blind holes; and
(e) forming field effect transistors in said epitaxially grown silicon, the gates of said field effect transistors being aligned orthogonal to the projection of the "c" axis on the "r" plane of said insulating substrate.

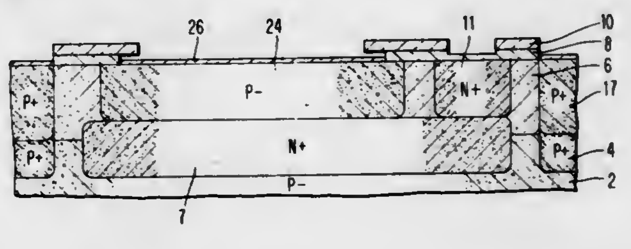
4,131,497
METHOD OF MANUFACTURING SELF-ALIGNED SEMICONDUCTOR DEVICES

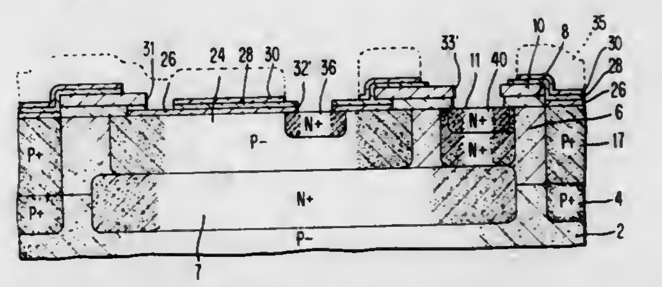
Bai-Cwo Feng, Wappingers Falls, and George C. Feng, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 12, 1977, Ser. No. 814,829

Int. Cl.^{2} H01L ***23/306, 21/265***

U.S. Cl. 148—187 **32 Claims**





8. A method for forming an impurity region in a semiconductor substrate comprising the steps of:

forming a first masking layer atop said substrate, said layer including lower and upper materials which are selectively etchable with respect to each other;
etching a first window within said first masking layer so as to cause a portion of said upper material to overhang said lower material at the periphery of said first window;
forming a second masking layer atop said substrate within said first window so as to fill-in said overhang, said layer including lower and upper materials which are selectively etchable with respect to each other;
said upper material of said second masking layer covering at least the portion of said upper material of said first masking layer at the periphery of said first window;
said upper materials being etchable by the same etchant;
etching at least a second window through said upper and lower materials of second masking layer, said material at said periphery acting as a mask; and
introducing an impurity through said second window into said substrate to form said impurity region.

4,131,498

METALLIC SPONGE INCENDIARY COMPOSITIONS

Carl F. Lucy, Albany, Oreg., assignor to Teledyne Industries, Inc., Albany, Oreg.

Filed Jan. 25, 1978, Ser. No. 872,167

Int. Cl.² C06B *45/00*

U.S. Cl. 149—2 **5 Claims**

1. An incendiary composition comprising teflon and a metal sponge selected from the group consisting of zirconium and hafnium.

4,131,499

LOW SMOKE PROPELLANT

David A. Flanigan, Huntsville, Ala., assignor to Thiokol Corporation, Newtown, Pa.

Continuation-in-part of Ser. No. 720,532, Sep. 7, 1976. This application Jun. 8, 1977, Ser. No. 804,683

Int. Cl.² C06B *45/10*

U.S. Cl. 149—19.3 **7 Claims**

1. A low smoke propellant composition which comprises:

(a) a nitramine,

(b) a solid binder component based on a hydroxy or carboxy substituted perfluorocarbon powder, and which is substantially free of metallic fuel.

4,131,500

TIRE BUILDING DRUM

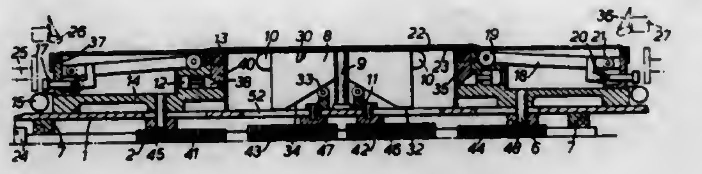
Michael A. Wilde, Winsley, and David J. Lucas, Melksham, both of England, assignors to Avon Tyres Limited, Wiltshire, England

Continuation of Ser. No. 638,854, Dec. 8, 1975, abandoned. This application Aug. 3, 1977, Ser. No. 821,418

Claims priority, application United Kingdom, Dec. 9, 1974, 53219/74

Int. Cl.² B29H *17/12*

U.S. Cl. 156—131 **14 Claims**



1. A tyre building drum for building a stage-I carcass of a tyre which comprises:

a circumferential ring of drum segments defining a cylindrical surface on which tyre components can be laid up,

a radial post disposed centrally of each of said segments upon which each of said segments can move radially and be guided during such radial movement so as to expand or contract the cylindrical surface;

an expansible ring at each end of the drum and means for expanding the rings to lock the components against surrounding beads; and

means arranged to expand the drum radially by movement of the drum segments radially outwardly upon said posts by at least 25% of the radius of the drum and substantially radially beyond the expanded bead ring each segment having a surface cooperating with the expanding means for enabling the segment to act radially against the components throughout the expansion movement, and each segment having a surface for holding the components axially outwards in the expanded state of the drum, and lash-back means arranged to lash-back the part of the components beyond the expansible rings by acting through the components against the holding surface.

4,131,501

METHOD AND APPARATUS FOR SPLICING RUNNING WEBS OF LOW TENSILE STRENGTH

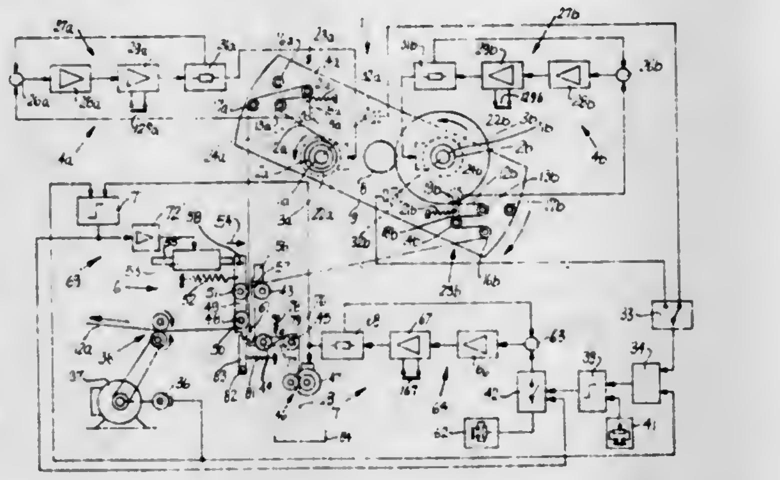
Hubert Böttcher; Joachim Pfannmüller; Hartmut Kaebernick, all of Hamburg; Wolfgang Steiniger, Börnsen, and Horst-Dieter Preuss, Hamburg, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Fed. Rep. of Germany

Filed Dec. 1, 1977, Ser. No. 856,573

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1976, 2655791

Int. Cl.² B65H *19/08*

U.S. Cl. 156—157 **18 Claims**



1. A method of splicing a fresh web to a running web, particularly of splicing webs which are used in the manufacture and/or processing of smokers' products, comprising the steps of advancing the running web along a predetermined path; maintaining the leader of the fresh web at a location adjacent a portion of said path; placing a uniting band, both sides of which are adhesive, between said location and said portion of said path; gradually accelerating the fresh web to the speed of the running web, including applying to the leader of the fresh web a tensional stress ahead of the uniting band; confining successive increments of the fresh web at said location to movement in the general direction of movement of the running web; shifting at least one of the webs against the uniting band and toward the other web so that the uniting band connects the webs to each other and moves with the running web; severing the running web behind the moving uniting band; relaxing the tensional stress upon the fresh web ahead of the moving uniting band; and thereupon severing the fresh web ahead of the moving uniting band.

7. Apparatus for splicing a fresh web to a running web by means of a uniting band which is adhesive at both sides thereof, particularly for splicing webs which are used in the manufacture and/or processing of smokers' products, comprising means for advancing the running web along a predetermined path; means for maintaining the leader of the fresh web at a location adjacent a portion of said path; means for separably holding a uniting band between said location and said portion of said path; means for gradually accelerating the fresh web to the speed of the running web, including means for applying a tensional stress to the leader of the fresh web ahead of said holding means; means for confining successive increments of the fresh web at said location for movement in the general direction of movement of the running web; splice forming means including means for shifting at least one of the webs against the uniting band and toward the other web in response to acceleration of the fresh web to the speed of the running web so that the uniting band connects the webs to each other and moves with the running web; means for severing the running web behind the moving uniting band; means for relaxing the tensional stress upon the fresh web ahead of the moving uniting band; and means for thereupon severing the fresh web ahead of the moving uniting band.

4,131,502

METHOD OF LAMINATING ADHESIVE TO A PLURALITY OF SPACED FIBER STRIPS

Panchanan Mitra, Stapleford, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 26, 1977, Ser. No. 845,754

Claims priority, application United Kingdom, Nov. 6, 1976, 46267/76

Int. Cl.² B32B *5/00*

U.S. Cl. 156—179 **15 Claims**

1. A method of preparing ribbons of unidirectional fiber-reinforced plastics material comprising the steps of

i) laying, alternately, unidirectional fibers in a series of discrete parallel strips and a series of auxiliary strips onto a plastics material on a backing comprising a first continuous release sheet, wherein the auxiliary strips are different from said unidirectional fiber strips and serve to prevent the spreading of said unidirectional fiber strips and adhere to surplus resin between the unidirectional fiber strips,

ii) applying to the unidirectional fibers and auxiliary strips a second continuous release sheet,

iii) applying heat and pressure such that the plastics material flows about the unidirectional fibers to form a series of coherent ribbons,

iv) removing only one of the release sheets, and

v) removing the auxiliary strips from between the ribbons of unidirectional fiber-reinforced plastics material with the surplus plastics material adhering thereto without cutting the backing release sheet to form a release sheet with a plurality of spaced resin impregnated unidirectional fiber strips thereon.

4,131,503

METHOD AND APPARATUS FOR SEALING AND CUTTING THERMOPLASTIC MATERIAL

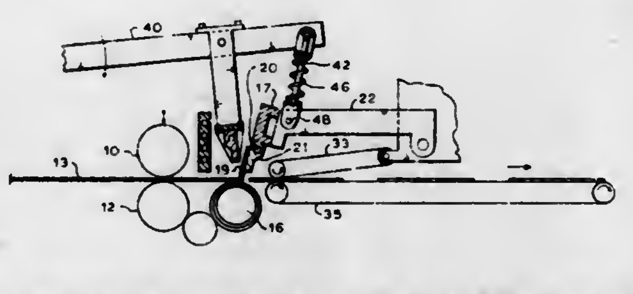
Gary G. Plate, Burlington, Canada, assignor to A.T.R. Equipment Industries Ltd., Mississauga, Canada

Continuation of Ser. No. 729,228, Oct. 4, 1976, abandoned. This application Apr. 3, 1978, Ser. No. 892,607

Claims priority, application Canada, Sep. 2, 1976, 260418

Int. Cl.² B32B *31/18, 31/20*

U.S. Cl. 156—250 **7 Claims**



2. A sealing-cutting mechanism for use in a bag-making machine for manufacturing bags from a thermoplastic material of flexible tubular stock comprising, in combination: a sealing roll mounted on said machine for intermittent rotation adapted to receive said stock thereon, a first pivot arm and a blade mounted on said first pivot arm for reciprocal movement of the blade onto and away from the stock on the roll, means for heating said blade, a second pivot arm and a sealing bar mounted on said second pivot arm for reciprocal movement of the sealing bar onto and away from the stock on the roll, means for heating said sealing bar, biasing means interconnecting said first and second pivot arms such that the blade is normally disposed lower than the sealing bar whereby downward actuation of the second pivot arm depresses the first pivot arm for sequential abutment of the blade and of the sealing bar on the stock, means for tensioning said stock material adapted to remove severed portions of stock material from the bag-making machine, and means for actuating said pivot arms for abutment of the blade when heated onto said stock material when said stock material is under tension for severing the stock material permitting removal of severed stock by said tensioning means and for sequential abutment of the sealing bar when heated onto the stock material against the sealing roll for sealing the severed edge of the stock material while said stock material is under no effective tension.

4,131,504

HAND LABELLER

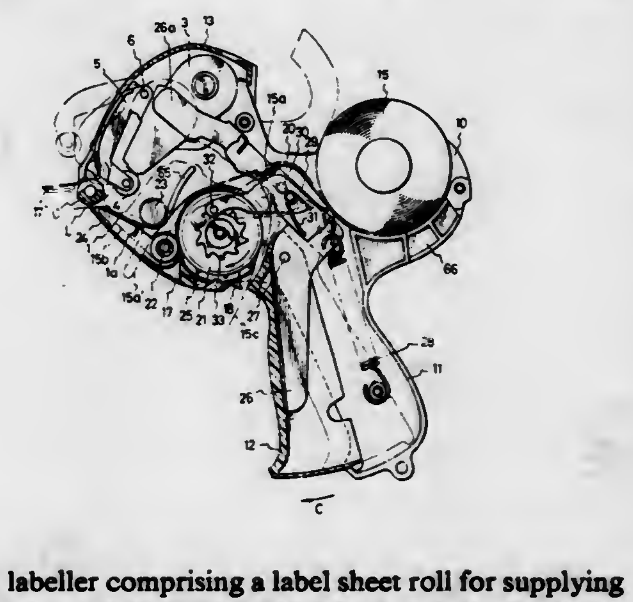
Akira Furutu, Tokyo, Japan, assignor to Japan Bano'K Co., Ltd., Tokyo, Japan

Filed May 24, 1977, Ser. No. 800,030

Claims priority, application Japan, Dec. 30, 1976, 52-176172[U]; Dec. 30, 1976, 52-176173[U]; Dec. 30, 1976, 52-176175[U]

Int. Cl.² B41F *1/28, 21/00*

U.S. Cl. 156—384 **16 Claims**



1. A hand labeller comprising a label sheet roll for supplying a label sheet having a label blank laminated on a carrier paper, a typing device for pressing said label sheet onto an anvil plate thereby to effect a typing on said label blank for each one of the successive label pieces, and labelling means for labelling the label carrying the typed information onto an object, wherein said labelling means include a labelling cam having a cut out or partially removed back, said labelling cam being allowed to swing reciprocatorily within such an angular range that said removed back does not interrupt the passage of an ink roller, wherein said label sheet roll is adapted to be supported by a supporting member passing through a bore formed therein between two walls of the labeller body, said supporting member having at least one slit extending from one axial end to an intermediate portion thereof toward the other axial end, and a retaining portion provided in the vicinity of the starting end of the slit, said retaining portion being for engaging a cooperating retaining portion formed on one wall of said labeller body to be located by the later, said slit being engaged by a projection formed in said wall of said labeller body thereby to prevent said supporting member from dropping from said labeller body.

4,131,505

ULTRA-SONIC HORN

Paul H. Davis, Jr., St. Charles, Ill., assignor to DuKane Corporation, St. Charles, Ill.

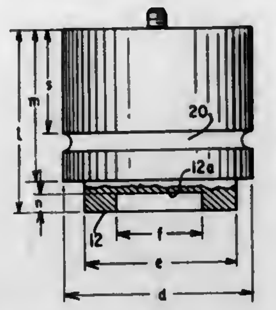
Filed Dec. 12, 1977, Ser. No. 859,919

Int. Cl.² B23K *1/06;* B29C *27/08*

U.S. Cl. 156—580.1 **11 Claims**

1. An ultrasonic transmitting member having an input at one end and an output at the other end, said member being of metal and dimensioned to operate at ½ wavelength resonance in the order of 20 kHz and having substantially throughout the length thereof transverse dimensions of from about 4 inches to about 7 inches, said member being adapted to normally transmit acoustic energy longitudinally thereof between input and output ends, said member having a peripheral groove at its outer side surface extending inwardly from such outer surface to

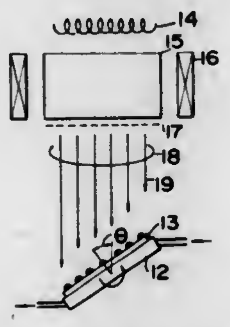
define the groove depth and said groove extending in planes transversely of the longitudinal axis of such member, said groove having its width in the direction of said longitudinal axis and its depth normal to the outer side surface of said member, said depth being between about ¼ inch and about ⅜ inch, said groove being located generally near or within the output half of said member and wholly spaced from the output end thereof by a distance of at least ¼ inch and acting to distribute output sonic energy at the output end of said member in substantial amplitude at the outermost regions of said output end.



4,131,506
METHOD OF PRODUCING ECHELETTE GRATINGS

Susumu Namba, Tokyo, and Yoshinobu Aoyagi, Kamifukuoka, both of Japan, assignors to Rikagaku Kenkyusho, Wako, Japan

Filed Dec. 15, 1976, Ser. No. 750,914
Claims priority, application Japan, Dec. 19, 1975, 50-151283
Int. Cl.² H01L *21/306;* B44C *1/22;* C03C *15/100, 25/06*
U.S. Cl. 156—643 **7 Claims**

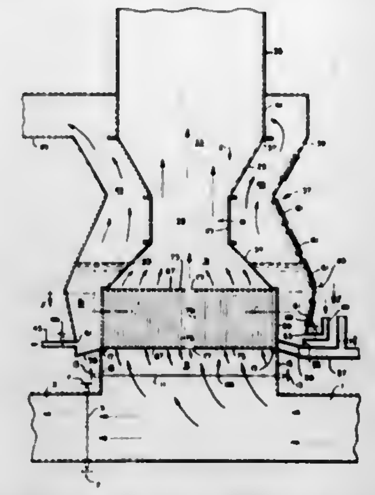


1. A method of producing echelette gratings comprising the steps of:
   using holographic masking techniques to produce a mask grating on a substrate;
   rotating the masked substrate with respect to a source of a beam of charged particles to form a desired oblique angle between the beam and surface of the masked substrate;
   projecting a beam of charged particles onto the masked substrate at the desired oblique angle to the surface of the substrate for eroding the substrate thereby leaving sawtooth parallel grooves in the substrate; and
   water cooling the masked substrate while it is being eroded by the beam of charged particles.

4,131,507
EVAPORATOR

Adolfo J. Morales, 6000 Leonardo St., Coral Gables, Fla.
Filed Feb. 15, 1977, Ser. No. 768,681
Int. Cl.² B01D *1/00*
U.S. Cl. 159—23 **1 Claim**

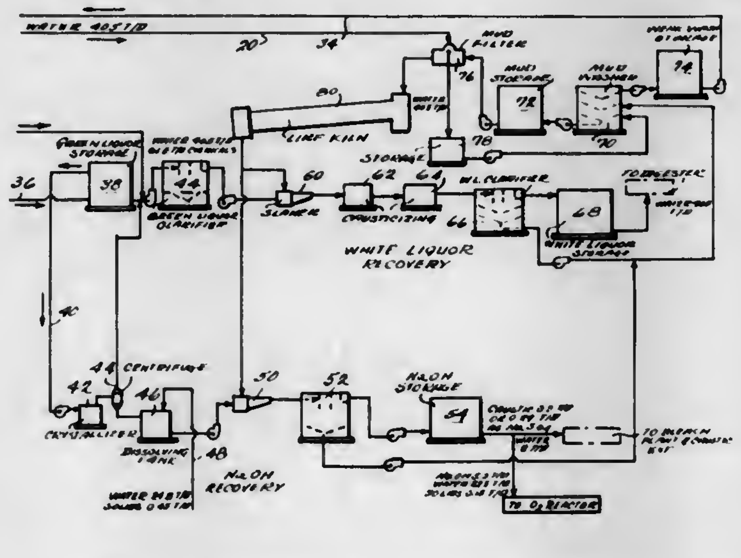
1. An evaporating apparatus including in combination, a source of hot waste gases, a heat transmitting area, a hot gas orienting means positioned between said source of hot waste gases and said heat transmitting area, said hot gases flowing through said orienting means and into said transmitting area, an evaporating area in heat transfer relationship with said transmitting area, and said heat transmitting area includes a lower generally bell shaped area, an upper generally inverted bell shaped area spaced from said lower bell shaped area and a central diametrically constricted area connecting said two first named areas, and the wall of said heat transmitting area being spaced from the outer wall of said evaporating area and the outer wall of said evaporating area conforming generally to the configuration of the upper generally inverted bell shaped area, and the width of the upper portion of the evaporating area adjacent to the constricted area and of the lower bell shaped area of the heat transmitting area.



4,131,508
RECOVERY SYSTEM FOR OXYGEN BLEACHING OF PULP

Oliver A. Laakso, Glens Falls, N.Y., assignor to Kamyr Inc., Glen Falls, N.Y.

Filed Mar. 12, 1973, Ser. No. 339,760
Int. Cl.² D21C *11/04*
U.S. Cl. 162—30 K **3 Claims**



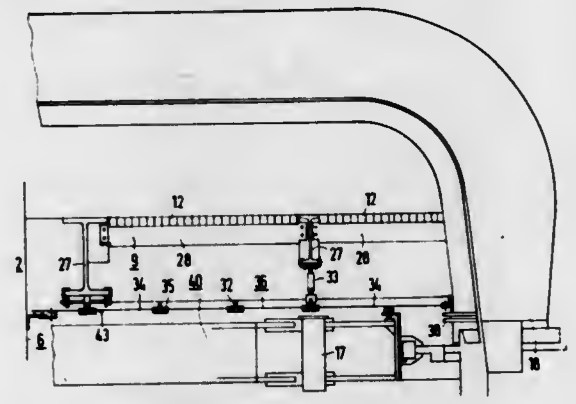
1. A method of digesting and then oxygen bleaching cellulosic fiber material in successive zones and subsequently regenerating white liquor for digesting and sufficient NaOH for oxygen bleaching so that no make-up source of NaOH for oxygen bleaching is necessary, said method comprising the steps of
   (a) feeding spent liquor, including spent liquor from the oxygen bleaching zone and spent black liquor, to a green liquor recovery system,
   (b) concentrating said spent liquor,
   (c) burning said spent liquor to produce a smelt,
   (d) dissolving said smelt to produce green liquor containing a solution of sodium carbonate, sodium sulfide, and dregs,
   (e) feeding a first portion of said green liquor to a white liquor recovery system and subsequently treating said green liquor to recover white liquor therefrom,
   (f) recycling said recovered white liquor to said digesting zone,
   (g) feeding a second portion of said green liquor to an NaOH recovery system, and subsequently (i) treating said green liquor in a crystalizer to form sodium carbonate crystals,

(ii) separating said crystals in a centrifuge, (iii) dissolving said separated crystals in a tank to produce a sodium carbonate solution, (iv) slaking said sodium carbonate solution with calcium oxide in a slaker to produce a sufficient quantity of NaOH solution suitable for treatment of cellulosic fiber material in said oxygen bleaching zone so that essentially no additional NaOH solution from a make-up source is necessary to continuously effect oxygen bleaching, and (v) separating the resulting NaOH solution in an NaOH clarifier, and
   (h) recycling said NaOH solution to said oxygen bleaching zone.

4,131,509
PRESSURE RELIEF DEVICE FOR A NUCLEAR REACTOR CONTAINMENT BUILDING

Friedrich Haidlen, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed Mar. 24, 1976, Ser. No. 669,920
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1975, 2513822
Int. Cl.² G21C *9/00*
U.S. Cl. 176—38 **7 Claims**



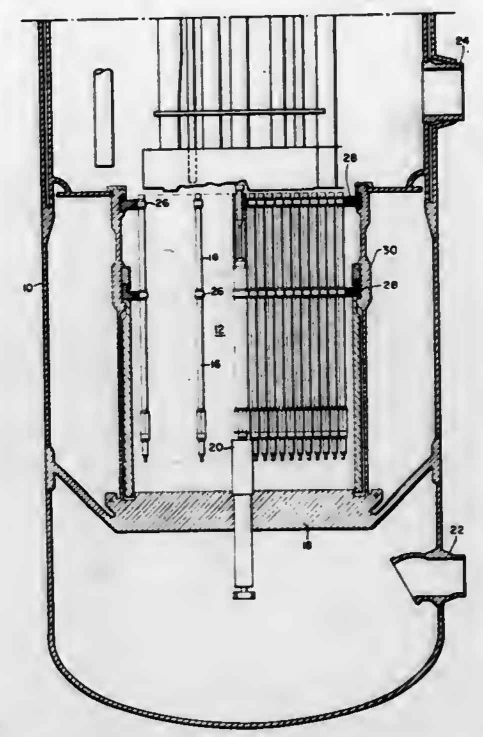
1. In a reactor building having equipment rooms wherein a nuclear reactor, steam generators and circulating pumps are disposed, and having operating rooms separated from the equipment rooms by ceilings and walls largely formed of concrete and provided with relief openings for reducing differential pressures during a reactor accident, the relief openings being formed in a grid-shaped steel girder construction carrying a flat tight skin destructible at a given pressure produced during a reactor accident, the steel girder construction having gratings at the upper side thereof formed with a narrow mesh capable of being walked upon during operation of the reactor, and having said tight skin at the underside thereof in the form of a multiplicity of cassette-shaped membranes suspended therefrom and spaced from the gratings.

4,131,510
MAGNETIC NUCLEAR CORE RESTRAINT AND CONTROL

Martin H. Cooper, Monroeville, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 21, 1977, Ser. No. 808,574
Int. Cl.² G21C *7/30*
U.S. Cl. 176—50 **5 Claims**

1. A nuclear reactor comprising a fluid coolant circulated through a core supported within a reactor vessel, said core including a plurality of substantially vertical coextending fuel assemblies, at least some of said assemblies having a compressible structure laterally interposed therebetween in a compressed configuration at selected operating conditions, and means for selectively relieving compression of said structure upon a preselected temperature of said coolant so as to laterally displace portions of said core, said means including electromagnetic restraint structure having a curie temperature with a predetermined relation to said preselected temperature, said restraint structure positionable to laterally compact said core and compress said compressible structure in response to a coolant temperature below said preselected temperature and

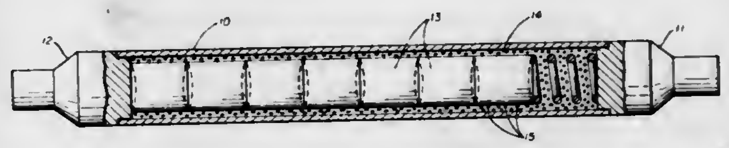


inherently positionable to allow lateral expansion of said core and compressible structure in response to a coolant temperature above said preselected temperature.

4,131,511
NUCLEAR FUEL ELEMENT

Walter J. Mordarski, Wallingford, Conn., and Jerome Roth, Royersford, Pa., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 4, 1977, Ser. No. 765,462
Int. Cl.² G21C *3/02*
U.S. Cl. 176—68 **9 Claims**



1. A fuel pin for a nuclear reactor, including,
   a casing of zirconium alloy formed into a tube which is closed at each end, a stack of axially aligned nuclear fuel pellets positioned within the casing, and material formed into microspheres which are friable with a controlled crushing strength and which are porous with a controlled density and having substantially no fissionable components positioned in the annulus between the stack of pellets and the internal wall of the casing.

4,131,512
METHOD FOR DETECTING MICROBIAL PATHOGENS EMPLOYING A CUSHIONING AGENT

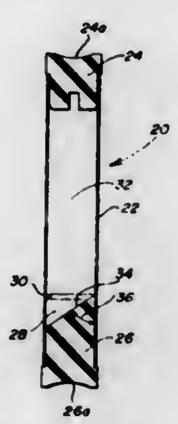
Gordon L. Dorn, Dallas, Tex., assignor to J. K. and Susie L. Wadley Research Institute and Blood Bank, Dallas, Tex.

Filed Nov. 5, 1976, Ser. No. 739,274
Int. Cl.² C12K *1/04*
U.S. Cl. 195—103.5 M **41 Claims**

1. In a method of detecting the presence of microbial pathogens within a sample fluid suspected of containing microbial pathogens wherein the sample fluid is placed within a confined sterile centrifugation zone and subjected to centrifugation to thereby force said sample fluid against a liquid medium which is nontoxic to the microbial pathogens and has a density greater than the said sample fluid to cause said microbial patho-

gens to be forced from said sample fluid and received by said medium and thereafter separating said liquid medium and said microbial pathogens from said centrifugation zone and analyzing same for said microbial pathogens the improvement comprising:

forcing said sample fluid by centrifugation against a liquid cushioning agent which is nontoxic to said microbial

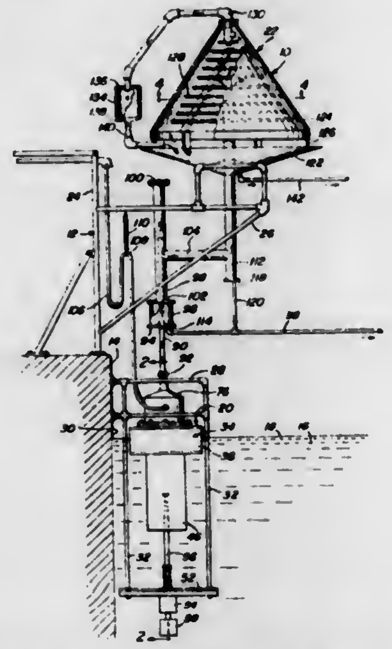


pathogens, hydrophobic, water immiscible and having a density greater than said sample fluid and thereby able to support said sample fluid but allow substantially none of said microbial pathogens to pass therethrough to thereby cause substantially all of said microbial pathogens to pass from said sample fluid and collect adjacent the interface of said sample fluid and said cushioning agent.

4,131,513

SEAWATER DISTILLATION APPARATUS

Harry S. Green, Rte. 1, Box 253, Wilmington, Ill. 60481
Filed Apr. 13, 1977, Ser. No. 787,302
Int. Cl.^{2} B01D *3/02*
U.S. Cl. 202—185 B **3 Claims**

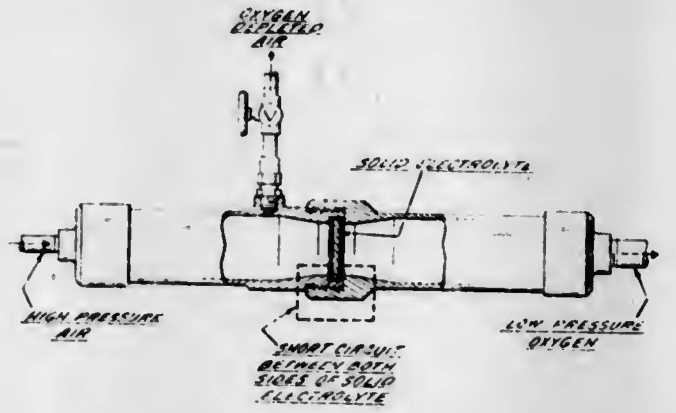


1. An apparatus for purifying liquids, said apparatus including a float member defining a hollow chamber therein extending downwardly below the liquid level on the exterior of said float member, vertically elongated conduit means stationarily supported relative to said float member, including an open lower end projecting downwardly below said liquid level and including an upper portion projecting upwardly into said hollow chamber to a level above said liquid level, said conduit means establishing direct communication between the liquid exteriorly of the float member, below said liquid level, and the interior of said chamber above said level, whereby liquid upon which said apparatus is floated by said float member may rise through said conduit means within the latter to said liquid level below the upper end of said conduit means, heating means in said chamber exteriorly of, spaced about and in good heat transfer relation with the exterior of said upper portion below said liquid level, condenser means for condensing liquid vapors, and conveying means communicating the interior of said conduit means above said level with said condenser means for conveying hot liquid vapors from said chamber into said condenser means for condensing therein, said apparatus including a stationary support, said float member being mounted on said support for vertical shifting therealong in response to increases and decreases in the level of liquid in which said float member is floated relative to said stationary support, said stationary support including an upwardly projecting mount aligned with and disposed below the lower end of said conduit means when said float member is in an upper shifted position relative to said stationary support and projecting upwardly into the lower end of said conduit means when said float member is in a lower shifted position relative to said stationary support, the upper end portion of said mount includes scraper means for scraping accumulated scale and the like from the interior of said conduit means in response to shifting of said float member relative to said stationary support.

4,131,514

OXYGEN SEPARATION WITH MEMBRANES

Victor M. Chong, Media, and Walter H. Seitzer, West Chester, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.
Filed Jun. 29, 1977, Ser. No. 811,212
Int. Cl.^{2} C25B *1/02*
U.S. Cl. 204—129 **6 Claims**



1. A process for separating oxygen from its admixture with other gases which consists of pressuring at a temperature of from about 400° to about 650° C a first side of a solid electrolyte membrane selected from the group of molybdates of bismuth, zinc and silver in which ionic transport of oxygen can occur with said oxygen-containing gas, said membrane being provided with means for electron flow from said first side to the other second side, and separating essentially pure oxygen from the second side of said membrane at a total pressure which is lower than the partial pressure of oxygen on said first side.

4,131,515

METHOD FOR MAKING POSITIVE ELECTRODE FOR LEAD-SULFURIC ACID STORAGE BATTERY

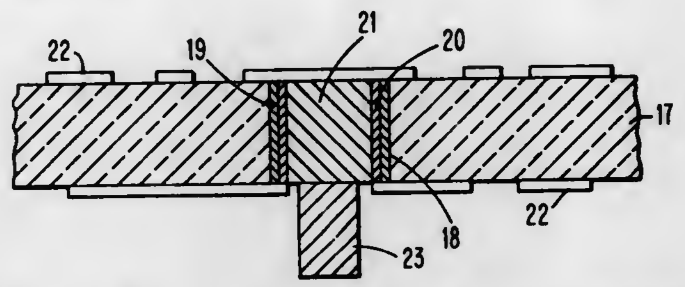
Samuel Ruben, 52 Seacord Rd., New Rochelle, N.Y. 10804
Filed Aug. 26, 1977, Ser. No. 828,882
Int. Cl.^{2} H01M *10/44*
U.S. Cl. 204—2.1 **7 Claims**

1. The process of producing a positive electrode for lead-sulfuric acid electric current producing cells which comprises coating a metal grid having a lead surface with lower oxides of lead selected from the group consisting of Pbo, Pb_2O_3 and Pb_3O_4 cathodically reducing said oxides to lead in situ and thereafter anodically converting said lead in situ to lead peroxide.

4,131,516

METHOD OF MAKING METAL FILLED VIA HOLES IN CERAMIC CIRCUIT BOARDS

Peter Bakos, and John Rasile, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 21, 1977, Ser. No. 817,756
Int. Cl.^{2} C25D *5/02, 7/04*
U.S. Cl. 204—15 **5 Claims**



1. A method of making conductive connections in via holes in printed circuit boards which comprises;

depositing in the via holes a thin film of palladium metal;

depositing a primer coat of a thin film of iron on said palladium film; and

completely filling the primed via holes with copper to provide conductive connections between opposite surfaces of a printed circuit board.

4,131,517

SURFACE TREATING PROCESS FOR COPPER FOIL FOR USE IN PRINTED CIRCUIT

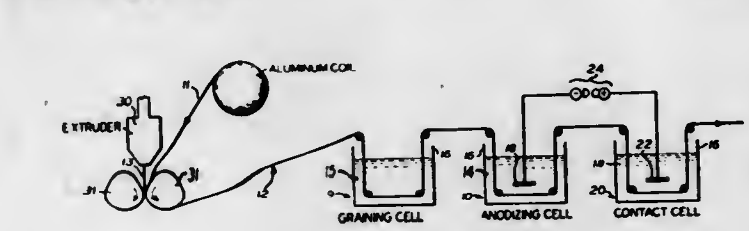
Takahashi Mitsuo, Tokyo, and Kawasumi Yoshio, Urawa, both of Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan
Filed Jun. 3, 1977, Ser. No. 803,275
Int. Cl.^{2} C25D *7/06, 5/48, 5/10*
U.S. Cl. 204—27 **7 Claims**

1. A surface treating process for a copper foil for use in a printed circuit, comprising the step of subjecting a copper foil to a cathodic treatment in an electrolytic bath comprising a sulfuric acid aqueous solution containing nickel and copper ions, with said copper foil being used as a cathode, and thereby forming an electro-deposited layer on the surface of said copper foil, the color of said layer being dark brown, and said layer affording a metallic gloss.

4,131,518

PROCESS FOR ANODIZING ALUMINUM

Howard A. Fromson, 15 Rogues Ridge Rd., Weston, Conn. 06880
Division of Ser. No. 651,018, Jan. 21, 1976, Pat. No. 4,065,364. This application Jul. 19, 1977, Ser. No. 817,463
Int. Cl.^{2} C25D *11/04, 11/16*
U.S. Cl. 204—38 A **8 Claims**



1. Laminate comprising an aluminum foil bonded on one side to a second member having a smaller area than the aluminum foil, a coating over said bonded side of a polymeric material which is inert to anodizing conditions to encapsulate the second member between the coating and the aluminum foil and an anodically oxidized layer on the other side of the aluminum foil with the encapsulated second member.

4,131,519

CATHODE ELECTROCATALYST

Aleksandrs Martinsons, Wadsworth, and Marilyn Crenshaw, Copley, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 711,759, Aug. 4, 1976. This application Sep. 12, 1977, Ser. No. 832,718
Int. Cl.^{2} C25D *5/36*
U.S. Cl. 204—38 B **1 Claim**

1. A method of forming an electroconductive surface on a ferrous substrate comprising:

inserting the ferrous substrate into an electroless plating solution comprising
- a. a tungsten salt;
- b. salts chosen from the group consisting of cobalt salts, nickel salts, and mixtures thereof;
- c. a phosphorous containing reducing agent;
- d. an acid complexing agent; and
- e. a buffering agent;

electrolessly depositing a coating from said solution onto said substrate; and

subsequently electrolytically depositing a coating of at least 3×10^{-5} equivalent of metal per square centimeter of substrate from said solution onto said substrate as a cathode whereby to provide a surface on said ferrous substrate comprising tungsten, phosphorous, and a metal chosen from the group consisting of cobalt, nickel, and mixtures thereof.

4,131,520

TWO-STAGE ANODIZATION OF CAPACITOR ELECTRODES

Walter J. Bernard, Williamstown, and Stanley P. Szpak, Cheshire, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.
Filed Nov. 10, 1977, Ser. No. 850,117
Int. Cl.^{2} C25B *11/10;* C25D *11/34*
U.S. Cl. 204—42 **10 Claims**

1. A process for forming an electrolytic capacitor electrode from a sintered valve-metal pellet including the steps of anodizing the pellet in a conventional formation electrolyte in a first-stage to a predetermined voltage and thereafter forming a thicker oxide layer on the outer surface of said pellet than in the center of said pellet by anodization in a second-stage at a higher voltage, said second-stage anodization being in an electrolyte different from that in the first-stage and containing a salt of a water-soluble weak acid having a dissociation constant of less than 1.0×10^{-4} and then rinsing the pellet free of second-stage electrolyte with water.

4,131,521

ELECTROCHEMICAL SYNTHESIS OF ORGANIC CARBONATES

Divna Cipris, and Irving L. Mador, both of Morristown, N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.
Filed Nov. 7, 1977, Ser. No. 848,976
Int. Cl.^{2} C25B *3/02*
U.S. Cl. 204—59 R **18 Claims**

1. A process for preparing non-polymeric organic carbonates comprising passing a direct electric current between an anode and cathode immersed in a liquid medium consisting essentially of a non-fluoride halide-containing electrolyte, carbon monoxide and a paraffinic monohydric or 1,2-dihydric alcohol, or mixture thereof, at a temperature below the boiling point of the liquid medium, and under an atmosphere consisting essentially of carbon monoxide.

4,131,522

PROCESS FOR ELECTROLYTICALLY PRODUCING MAGNESIUM AND CHLORINE FROM FUSED SALT BATH

Konstantin D. Muzhzhavlev, ulitsa Zheleznovodskaya, 48, kv. 30, Leningrad; Vladimir D. Yazev, ulitsa Jubileinaya, 64-56, Berezniki Permskoi oblasti; Vladimir I. Schegolev, ulitsa Korablestroitelei, 29, korpus 4, kv. 252; Andrei B. Ivanov, prospekt Smirnova, 59, kv. 151, both of Leningrad; Alexei V. Vasiliev, ulitsa Bogdana Khmelnitskogo, 66, kv. 57; Oleg N. Romanenko, ulitsa Sevastopolskaya, 6, kv. 46, both of Kalush Ivano-Frankovskoi oblasti; Sergei P. Kosarev, Nalichnaya ulitsa, 39-1, kv. 20, Leningrad, and Vladimir G. Ovcharenko, ulitsa Bogdana Khmelnitskogo, 17, kv. 45, Kalush Ivano-Frankovskoi oblasti, all of U.S.S.R.

Filed Sep. 29, 1977, Ser. No. 837,857

Int. Cl.^{2} C25B *1/00;* C25C *3/04*

U.S. Cl. 204—60 6 Claims

1. A process for producing magnesium and chlorine in an electrolytic cell from a mixture of anhydrous magnesium, potassium and sodium chlorides, wherein the molar ratio of potassium chloride to magnesium chloride ranges from 0.9 to 5.0, comprising the following steps:

preparing an electrolyte in the electrolytic cell, comprising magnesium, potassium and sodium chlorides, wherein the molar ratio of potassium chloride to sodium chloride ranges from 1.2 to 2.7 and the content of sodium chloride in the melt ranges from 19 to 38% by weight;

maintaining the electrolyte temperature within the range of from 670° to 690° C.;

passing direct current through the electrolyte so as to recover magnesium and chlorine;

removing magnesium regularly from the electrolyte surface and withdrawing chlorine continuously from above the electrolytic cell bath; and

replenishing the electrolyte with a mixture of chlorides comprising, by weight, 38 to 48% $MgCl_2$, 35 to 43% KCl, 12 to 24% NaCl, and 0.2 to 0.5% MgO and impurities of not more than 1%, as magnesium and chlorine are removed from the electrolytic cell.

4,131,523

METHOD OF ELECTROCHEMICALLY PROCESSING METALLIC SURFACES

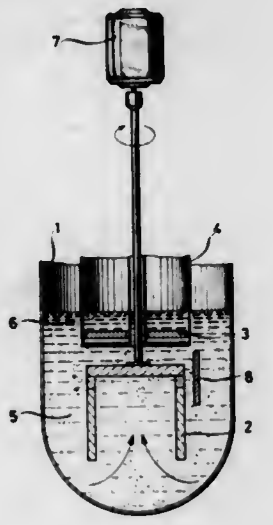
Wolfgang Faul, Julich, and Bertel Kastening, Hamburg, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschraänkter Haftung, Julich, Fed. Rep. of Germany

Filed Dec. 5, 1977, Ser. No. 857,570

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1976, 2655137

Int. Cl.^{2} C25F *3/02, 3/14*

U.S. Cl. 204—129.1 5 Claims



1. A method of electrochemically processing metallic surfaces of workpieces with an electrolysis cell having two electrodes, which includes in combination the steps of:

adding an electrolyte to said electrolysis cell;

adding to and suspending in said electrolyte specially treated particles of activated carbon powder heated at a temperature above 700° C in an inert atmosphere and providing a high storage capacity for electrical charges;

bringing said workpiece into contact with said electrolyte in such a way that said workpiece does not contact said electrodes;

charging said particles of activated carbon powder on one of said electrodes so that said particles conduct an electrical charge to said workpiece; and

shielding the other of said electrodes so that said charged particles of activated carbon powder cannot discharge thereon.

4,131,524

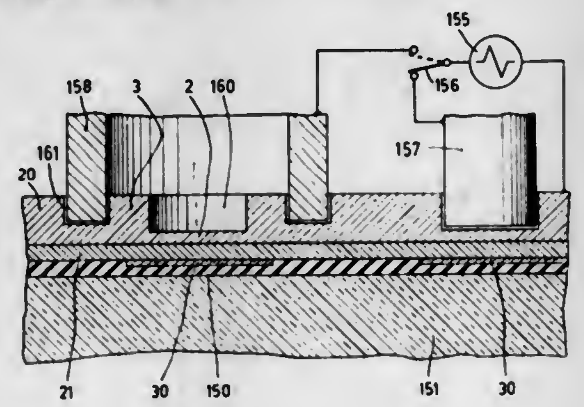
MANUFACTURE OF SEMICONDUCTOR DEVICES

Antonous C. M. Gieles, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 879,171, Nov. 24, 1969, abandoned. This application Jul. 29, 1971, Ser. No. 167,504

Int. Cl.^{2} C25F *3/12*

U.S. Cl. 204—129.3 1 Claim



1. A method of manufacturing a semiconductor device comprising the steps of providing a plate-shaped semiconductor body of one conductivity type, forming a substantially continuous layer of semiconductor material of opposite conductivity type on a flat side of said body, forming at least one circuit element in said layer, providing electrical contacts to said circuit element, removing by spark erosion a first portion of the semiconductor body opposite said layer and short of said layer and then using a selective etching process to remove a second portion of the semiconductor body down to said layer.

4,131,525

METHOD OF MANUFACTURING A BODY HAVING A GOLD PATTERN AND BODY MANUFACTURED ACCORDING TO THE METHOD

Rudolf P. Tijburg, and Teunis van Dongen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 29, 1977, Ser. No. 828,480

Claims priority, application Netherlands, Mar. 9, 1976, 7609816

Int. Cl.^{2} C25F *3/14*

U.S. Cl. 204—129.65 3 Claims

1. A method of manufacturing a semiconductor body having a patterned gold layer, which comprises the steps of:

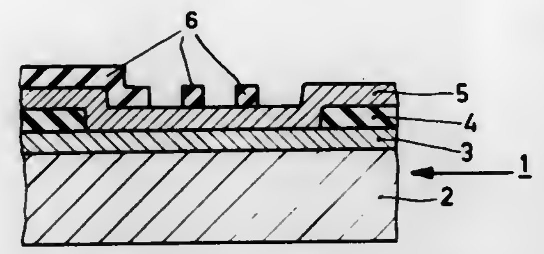
providing a semiconductor body;

providing a gold layer on a surface of said semiconductor body;

locally providing an etchant-resistant and electrically insulating patterned masking layer on the surface of said gold layer;

subjecting the masked gold layer to a chemical etching treatment at a selected rate in an etching bath to form the patterned gold layer;

applying a potential to said gold layer with respect to an electrode in the etching bath during the etching treatment; and



selecting the magnitude of the applied potential to be such that the etch rate is maintained at a rate no higher than said selected rate of the chemical etching treatment in the absence of an applied voltage.

4,131,526

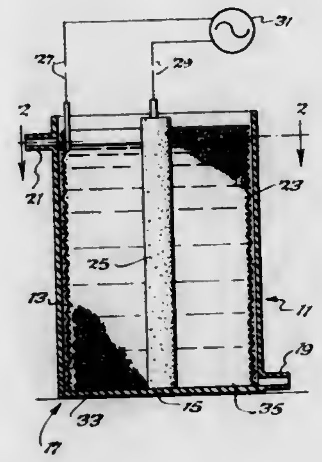
PROCESS AND APPARATUS FOR REMOVAL OF CONTAMINANTS FROM WATER

Karl Moeglich, Williamsville, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 573,577, Apr. 30, 1975, abandoned. This application Sep. 21, 1977, Ser. No. 835,377

Int. Cl.^{2} C02B *1/82;* C25B *3/02*

U.S. Cl. 204—149 20 Claims



1. A process for the removal of oxidizable contaminants from an aqueous medium comprising:

providing a container;

providing a packed bed of particulate material within said container, each of said particles comprising a carrier having an oxide coating, said coating comprising an oxide of a metal selected from the group consisting of Groups IVa, Va, VIb, and VIIb, metals;

providing a pair of parallel, elongated electrodes extending substantially through said bed coupled to a source of alternating current having a frequency of 0.5 to 800 Hz; and

directing said aqueous medium into said container and through said bed in a direction parallel to the longitudinal axis of said electrodes while said current is applied across said electrodes to oxidize at least a portion of the contaminants therein.

4,131,527

METHOD FOR SELECTIVELY REDUCING PLUTONIUM VALUES BY A PHOTOCHEMICAL PROCESS

Horace A. Friedman; Louis M. Toth, both of Oak Ridge, and Jimmy T. Bell, Kingston, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 30, 1977, Ser. No. 782,873

Int. Cl.^{2} C01G *56/00;* B01J *1/10*

U.S. Cl. 204—157.1 R 12 Claims

1. A method for enhancing the rate of reduction of Pu(IV) to Pu(III) in an aqueous nitric acid solution having dissolved therein hydrazine, Pu(IV) values, and U(VI) values, said method comprising exposing said solution to a source of 200–500 nm electromagnetic radiation of sufficient intensity to cause Pu(IV) and U(VI) values in said solution to absorb at least 100 watts per mole per hour of Pu(IV) reduced.

4,131,528

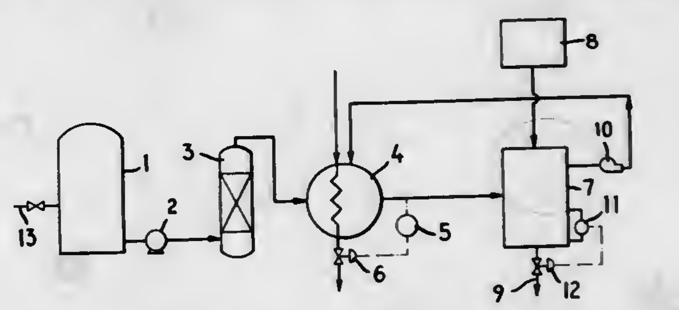
PROCESS FOR THE MASS PRODUCTION OF OZONE

Minoru Tsujimoto, Fujiiderashi; Minoru Okada, Ikedashi; Yuji Suzuki, Takatsukishi, and Toshihiro Hirai, Nishino Sakaishi, all of Japan, assignors to Daido Sanso Kabushiki Kaisha, Osaka, Japan

Filed Dec. 23, 1976, Ser. No. 754,029

Int. Cl.^{2} B01J *1/10;* C01B *13/11*

U.S. Cl. 204—157.1 R 8 Claims



1. 7. A process for the mass production of ozone, comprising warming a liquid oxygen to a temperature not higher than the boiling point of ozone by means of a heat exchanger, thereby obtaining a gasified oxygen; introducing said gasified oxygen to a reaction chamber; impinging ozoning radiations selected from the group consisting of laser beams, and plasma discharges upon said gasified oxygen, hereby generating ozone; and collecting said ozone in its liquid state separated from said gaseous oxygen under said thermal atmosphere having a temperature not higher than the boiling point of ozone and wherein unreacted oxygen is recycled to the heat exchanger for reuse in the process.

4,131,529

PHOTOINITIATORS FOR PHOTOPOLYMERIZABLE COATING COMPOSITIONS

Rolf Osterloh, Ludwigshafen; Manfred Jacobi, Frankenthal, and Werner Kuesters, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

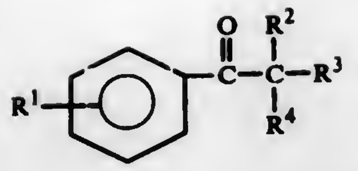
Filed May 13, 1977, Ser. No. 796,546

Int. Cl.^{2} C08F *2/46, 4/00*

U.S. Cl. 204—159.14 12 Claims

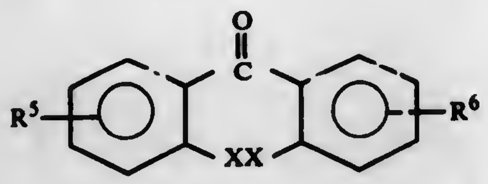
1. A photopolymerizable coating composition which contains, as the binder, an olefinically unsaturated compound of boiling point above 50° C., together with from 0.5 to 15 percent by weight of a photoinitiator, based on the binder, the photoinitiator comprising a mixture of:

(A) an aromatic carbonyl compound of the formula



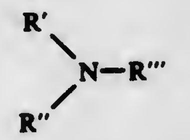
(I),

(B) an aromatic carbonyl compound of the formula



(II)

and (C) an amine of the formula



(III)

wherein in formulae I, II and III,

R^1 is H, Cl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or alkoxyalkyl of 2 to 4 carbon atoms, R^2 is H, Cl or R^1-phenyl, and if (a) R^2 is H or Cl, R^3 and R^4 are H, Cl, alkyl of 1 to 4 carbon atoms or R^1-phenyl, while (b) if R^2 is R^1-phenyl, R^3 is alkoxy of 1 to 7 carbon atoms and R^4 is R^3, H, alkyl of 1 to 4 carbon atoms or CH_2OH, or R^3 and R^4 conjointly are a $O—C_n—H_{2n}—O$ bridge, where n is an integer from 2 to 8,

R^5 and R^6 are H, alkyl of 1 to 5 carbon atoms, alkoxy of 2 to 5 carbon atoms, COOH, $COOR^7$ or $COON(R^7)_2$ (where R^7 is alkyl of 1 to 7 carbon atoms), Cl or chloroalkyl of 1 to 3 carbon atoms, X is H, a direct bond or an O, CO, S, NH or NR^8 bridge (where R^8 is alkyl of 1 to 5 carbon atoms), and

R′, R″ and R‴ are H, alkyl of 1 to 10 carbon atoms, cycloalkyl of 3 to 10 carbon atoms, aryl, hydroxyalkyl of 1 to 8 carbon atoms or alkoxyalkyl of 2 to 4 carbon atoms, with the proviso that at most 2 substituents are H and at most 2 substituents are aromatic.

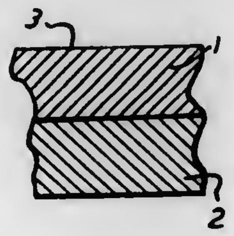
4,131,530
SPUTTERED CHROMIUM-ALLOY COATING FOR PLASTIC

Peter Blum, North Plainfield, N.J., and Richard A. Lucariello, Walnut Creek, Calif., assignors to Airco, Inc., Montvale, N.J.

Filed Jul. 5, 1977, Ser. No. 812,962

Int. Cl.² C23C *15/00;* B32B *15/04*

U.S. Cl. 204—192 C **18 Claims**



1. An article comprising a plastic base and a crack-resistant metal coating deposited by sputtering a target consisting essentially of 5 to 30% by weight iron, 0 to 5% by weight of scavenger elements, balance chromium.

10. A method of depositing a crack-resistant metal coating onto a plastic substrate comprising:

placing the substrate in a chamber containing a sputtering gas; and

sputtering a target consisting essentially of 5 to 30% by weight iron, 0 to 5% by weight of scavenger elements, balance chromium to deposit a coating on the substrate.

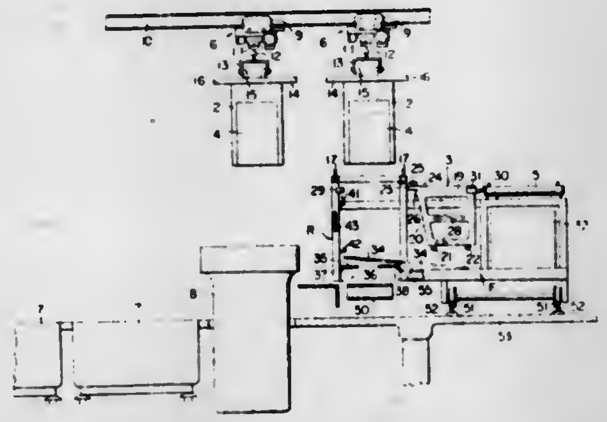
4,131,531
APPARATUS FOR STRIPPING ELECTRODEPOSITED METAL FROM CATHODE SHEETS

Koichi Kaneko; Kiyotaka Abe, and Masakazu Miura, all of Akita, Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1977, Ser. No. 811,447

Int. Cl.² C25C *7/08*

U.S. Cl. 204—208 **17 Claims**



1. Apparatus for stripping from cathode sheets high-purity metal layers deposited on the opposite faces of the sheets by electrolysis, comprising:

rack means for holding therein the cathode sheets with said metal layers deposited thereon in side-by-side relationship with predetermined spacings therebetween, said rack means having at least one open side;

a plurality of stripper assemblies each comprising a pair of stripper plates disposed in face-to-face arrangement with respect to each other and substantially in coplanar relationship to a respective one of the cathode sheets held in positions within said rack means, said stripper assemblies being movable along the planes of the respective cathode sheets between a first position confronting said open side of said rack means and a second position within said rack means; and

means for moving said stripper assemblies between said first and said second positions,

whereby upon movement of said stripper assemblies from said first to said second position, the metal layers are peeled off the opposite faces of each cathode sheet as the latter slides relative to the associated stripper assembly between the pair of stripper plates thereof.

4,131,532
ELECTROCHEMICAL OXYGEN PRODUCTION DEVICE

Nicole Chillier-Duchatel, Sevres, and Bernard Verger, Chevreuse, both of France, assignors to Societe Generale de Constructions Electriques et Mecaniques "Alsthom et Cie", Paris, France

Division of Ser. No. 731,696, Oct. 12, 1976. This application Oct. 3, 1977, Ser. No. 838,959

Claims priority, application France, Oct. 29, 1975, 75 33082

Int. Cl.² C25B *9/00*

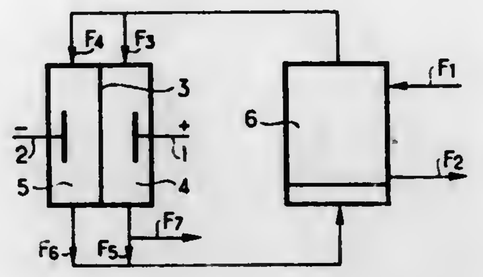
U.S. Cl. 204—256 **4 Claims**

1. Apparatus for producing oxygen at an anode comprising

an oxidation reactor chamber where air oxidizes the reduced form of a compound to form a peroxide capable of spontaneously decomposing into a mixture of water and into the oxidized form of said compound;

an electrolyzer having an anode and a cathode separated by a semi-permeable membrane defining an anodic compartment and a cathodic compartment, each of which is disposed to receive a portion of said mixture leaving said reactor chamber, said anodic compartment being adapted to electrochemically oxidize the water so that oxygen is liberated, said cathodic compartment being adapted to electrochemically reduce said oxidized form of the compound so that said reduced form is regenerated;

means connecting said reactor to said anodic compartment and to said cathodic compartment for receiving a portion of said mixture from said reactor chamber;



second means connecting said anodic compartment and said cathodic compartment for recycling the respective products of each of said compartments to said reactor chamber; and

means for recovering oxygen from said anodic compartment.

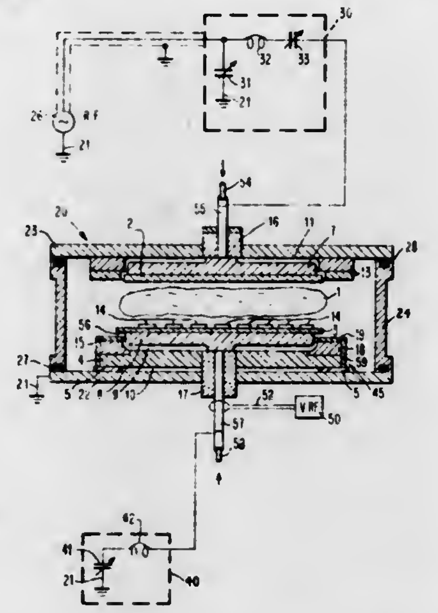
4,131,533
RF SPUTTERING APPARATUS HAVING FLOATING ANODE SHIELD

Joseph A. Bialko, and John S. Lechaton, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1977, Ser. No. 865,812

Int. Cl.² C23C *15/00*

U.S. Cl. 204—298 **16 Claims**



1. In apparatus for the radio frequency sputtering of target material onto substrates including:

a low-pressure ionization chamber connected to a reference potential,

a source of radio frequency power for producing a plasma across a target electrode and a substrate electrode in said chamber,

impedance means electrically connected directly between said substrate electrode and said reference potential,

further including a substrate electrode shield partially enclosing said substrate electrode for protecting said substrate electrode from unwanted sputtering,

the improvement wherein:

said shield is insulated from said reference potential.

4,131,534
PREPARATION OF CARRIER AMPHOLYTE MIXTURES

Wilhelm Just, Frankfurt am Main, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Foederung der Wissenschaften e.V., Munich, Fed. Rep. of Germany

Filed Dec. 14, 1977, Ser. No. 860,615

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656801

Int. Cl.² G01N *27/26*

U.S. Cl. 204—299 R **19 Claims**

1. A process for the synthesis of a carrier ampholyte mixture which comprises first reacting at least one organic compound substituted with at least two amino or imino groups and at least one unsaturated carboxylic acid ester containing an activated double bond in an anhydrous organic solvent at a temperature of from about 0° C to 50° C to produce a mixture of amino-carboxylic acid esters and thereafter hydrolyzing the esters to produce a mixture of amino-carboxylic acids; the carboxylic acid moiety of the unsaturated carboxylic acid ester being aliphatic and containing up to 12 carbon atoms; the ester moiety being aliphatic and containing up to 6 carbon atoms.

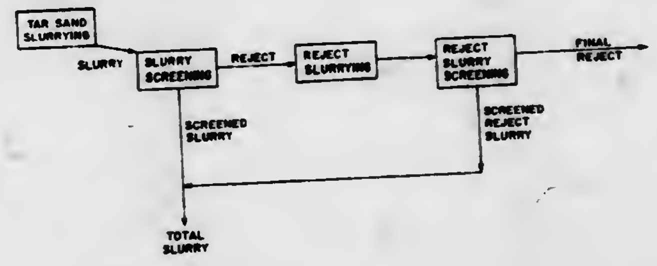
4,131,535
TREATMENT OF TUMBLER REJECT

Kenneth Porteous, Edmonton, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of Energy, Mines and Resources, Ottawa, Canada; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity, Edmonton, Canada; Ontario Energy Corporation, Toronto, Canada; Imperial Oil Limited, Toronto, Canada; Canada-Cities Service, Ltd., Calgary, Canada and Gulf Oil Canada Limited, Toronto, Canada

Filed Feb. 14, 1977, Ser. No. 768,358

Int. Cl.² C10G *1/04*

U.S. Cl. 208—11 LE **1 Claim**



1. A process for producing a flooded slurry of tar sand containing bitumen which comprises:

mixing tar sand with hot water in a rotating conditioning vessel to produce a first slurry containing rocks and lumps of tar sand;

screening the first slurry to remove a reject portion mainly comprising said rocks and lumps, both associated with bitumen;

mixing said reject portion with hot water in another rotating conditioning vessel to disperse associated bitumen and produce a second slurry containing rocks and some remaining lumps of tar sand; and

screening rocks and lumps from said second slurry and combining the screened second slurry with the screened first slurry to form a flooded slurry capable of being pumped to a separation vessel.

4,131,536

HYDROCARBON CONVERSION WITH A SELECTIVELY SULFIDED ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

Frank H. Adams, La Grange Park, and H. Peter G. Knapik, Brookfield, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 804,136, Jun. 6, 1977. This application Nov. 25, 1977, Ser. No. 855,097

Int. Cl.^{2} C10G *35/08*

U.S. Cl. 208—139 **19 Claims**

1. A process for converting a hydrocarbon which comprises contacting the hydrocarbon in a reaction zone maintained at hydrocarbon conversion conditions with a selectively sulfided acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.1 to about 5 wt. % nickel, about 0.01 to about 5 wt. % tin and about 0.1 to about 3.5 wt. % halogen; wherein the platinum group metal, catalytically available nickel, and tin are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum group metal is present in the elemental metallic state; wherein substantially all of the tin is present in the form of tin oxide; and wherein substantially all of the catalytically available nickel is present in a sulfided state.

4,131,537

NAPHTHA HYDROFINING PROCESS

William E. Winter, Baton Rouge, La., and Mamerto G. Luzarraga, Summit, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 4, 1977, Ser. No. 839,161

Int. Cl.^{2} C10G *23/02;* **B01J** *23/88*

U.S. Cl. 208—216 **19 Claims**

1. A process fior hydrofining an olefinic naphtha hydrocarbon feed which comprises contacting said feed in vapor phase, and hydrogen, with a fixed bed of particulate catalyst comprised of a composite of a Group VIB or Group VIII metal, or both, and an inorganic oxide support, of average size below about 1/20 inch diameter at pressure ranging from about 60 psig to about 300 psig.

4,131,538

METHOD OF SEPARATING A PREDETERMINED FRACTION FROM PETROLEUM OIL USING MULTISTAGE EVAPORATORS

Charles D. Rose, and Frederick W. Gilbert, both of Shreveport, La., assignors to Riley-Beaird, Inc., Shreveport, La.

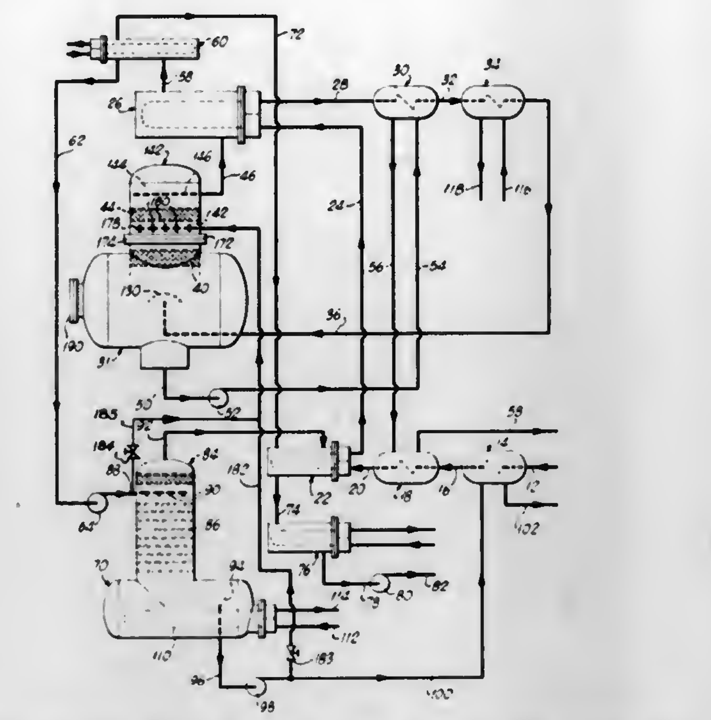
Continuation of Ser. No. 674,223, Apr. 6, 1976, abandoned. This application Oct. 20, 1977, Ser. No. 843,831

Int. Cl.^{2} C10G *7/00*

U.S. Cl. 208—352 **26 Claims**

1. A method of separating a predetermined fraction from petroleum oil comprising:

- preheating the petroleum oil to form preheated petroeum oil;
- vaporizing a portion of the preheated petroleum oil to form a first vapor fraction and a first residual liquid;
- separating the first vapor from the first residual liquid in a means for separating gas from liquid and removing the first residual liquid such that said first residual liquid does not form part of said predetermined fraction;
- condensing at least a portion of said first vapor fraction to form a first condensate;
- feeding a petroleum fraction consisting essentially of said first condensate as essentially a sole feed stock into an evaporator, said evaporator being at a temperature of operation above the temperature of condensation of said first vapor fraction; vaporizing at least a portion of said first condensate in said evaporator to form a second vapor fraction and a predetermined liquid fraction;
- inimmately contacting said first condensate with said second vapor fraction while transferring a portion of said second vapor fraction to said first condensate and transferring a portion of said first condensate to said second vapor fraction;



- removing said second vapor fraction from said evaporator after mass transfer of said second vapor fraction with said first condensate; and
- collecting said predetermined liquid fraction.

4,131,539

REMOVING RUTILE FROM ZIRCON ELECTROSTATICALLY

Kozo Ojiri, Kamakura, and Kohzo Sakai, Tokyo, both of Japan, assignors to Asahi Glass Company Limited, Tokyo, Japan

Filed Feb. 25, 1977, Ser. No. 772,141

Claims priority, application Japan, Mar. 5, 1976, 51/23140

Int. Cl.^{2} B03C *7/00*

U.S. Cl. 209—127 A **6 Claims**

1. A method for removing rutile from zircon sand containing titanium dioxide on the order of one percent, said titanium dioxide being present in the sand at least in part as rutile, which comprises heat treating said zircon sand in a non-oxidizing atmosphere so as to change the electrostatic property of the rutile and removing the rutile from said heat treated sand by an electrostatic separation in an amount sufficient to reduce the titanium dioxide content of the sand to not more than about 0.1 wt.% TiO_2, said heat treatment being at a temperature greater than 400° C.

4,131,540

COLOR SORTING SYSTEM

Robert G. Husome, Jerome, Id.; Ron J. Fleming, San Jose, and Ron E. Swanson, Sunnyvale, both of Calif., assignors to Johnson Farm Machinery Co. Inc., Woodland and Acurex Corporation, Mountain View, both of, Calif.

Filed May 4, 1977, Ser. No. 793,679

Int. Cl.^{2} B07C *5/344*

U.S. Cl. 209—582 **5 Claims**

1. Tomato sorting apparatus comprising in combination:

(a) means for serially moving tomatoes in a row past an inspection station along a predetermined path;

(b) illumination means at the inspection station for illuminating the passing tomatoes;

(c) a translucent, light diffusing plate positioned at the inspection station, and having a viewing side facing away from the tomatoes at the inspection station;

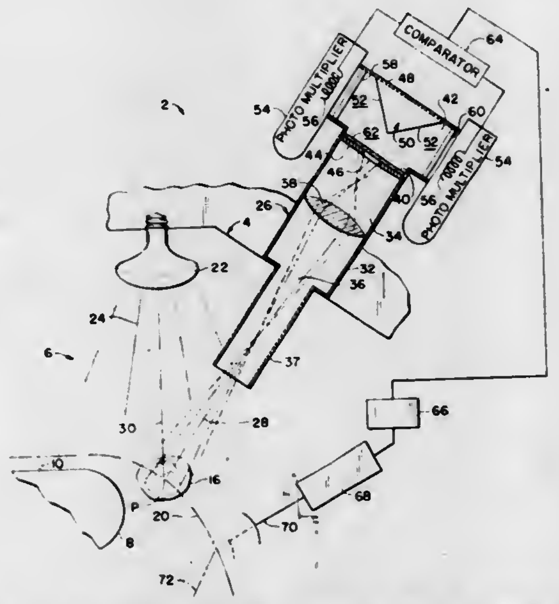
(d) a lens disposed between tomatoes passing the inspection station and the plate for forming on the viewing side of the plate a focused image of each tomato passing the station; whereby diffused light generated by image radiates away from the viewing side;

(e) field stop means defining a light aperture disposed between the lens and the plate for limiting the size of the image formed on the plate so that images of tomatoes of substantially the smallest acceptable diameter substantially fully cover the aperture;

(f) a beam splitter positioned to receive the diffused light directing diffused light beams in different directions;

(g) filter means positioned to intercept the light beams and remove from the beams all but relatively narrow green and red light bands including light of a wavelength of about 550 and about 640 nanometers, respectively;

(h) first and second photo-multipliers positioned to receive the green and red light bands for generating a green light signal and a red light signal, respectively, as a function of green light and red light, respectively, present in the image of the tomatoes projected onto the viewing side;



(i) means for forming a reject signal from the signals of the photo-multipliers when the magnitude of the green signal has a predetermined magnitude relative to the red signal;

(j) a reciprocating member positioned to contact tomatoes to be removed and responsive to the reject signal for removing such tomatoes from the tomato flow past the inspection station; and

(k) an elongated light tube having a length exceeding its width disposed between the lens and tomatoes passing the inspection station for preventing fluids from tomatoes being removed by the reciprocating member from the flow from contacting the lens.

4,131,541

REMOVING COAGULABLE SUBSTANCES FROM AN AQUEOUS MEDIUM

Warner J. de Putter, Hardenberg, Netherlands, assignor to Wafilin B.V., Zwolle, Netherlands

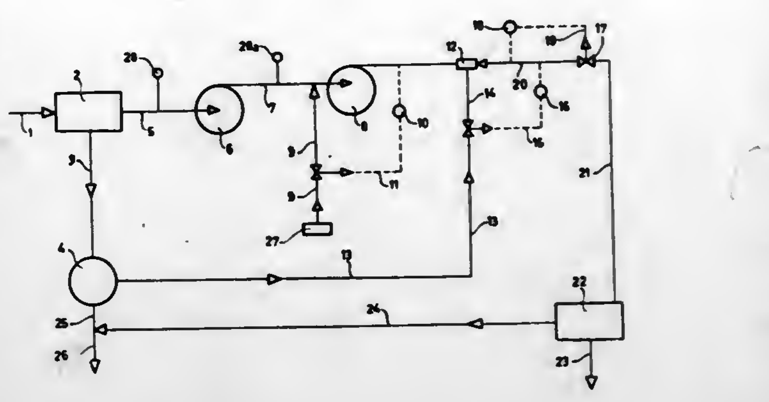
Filed Jul. 30, 1975, Ser. No. 600,427

Claims priority, application Netherlands, Jul. 31, 1974, 7410323

Int. Cl.^{2} B01D *13/00*

U.S. Cl. 210—23 F **2 Claims**

1. A process for removing quantities of heat coagulable substances from an aqueous medium containing waste fruit water produced in processing potatoes the coagulation of which is effected by rapidly heating to a temperature of at least 80° C. and preferably ranging from 100° to 120° C., subjecting the aqueous medium to an ultrafiltration effected with membranes having a flux of more than 3 cm3/cm2/h and preferably 4cm3/cm2/h with a pressure ranging from 5-15 atmospheres prior to heating to increase portein concentration to a value of at least 4%.



4,131,542

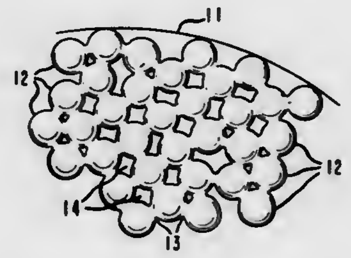
SPRAY DRIED SILICA FOR CHROMATOGRAPHY

Horacio E. Bergna, and Joseph J. Kirkland, both of Wilmington, Del., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Jul. 19, 1977, Ser. No. 817,060

Int. Cl.^{2} B01D *15/08*

U.S. Cl. 210—31 C **11 Claims**



10. A process of separating by chromatography comprising passing a material to be separated through a separation column packed with a hereinbelow described class of amorphous spheroidal silica porous micrograins having a packed density of from 30% to 40% of the theoretical density of amorphous silica prepared by the steps of:

(a) spray drying with flowing air at a temperature of from 130° C. to 400° C. a silica sol containing from 5 to 60 weight percent essentially non-aggregated amorphous spherical silica particles of uniform size wherein at least 75% of the particles have a diameter of from 0.5D to 2D where D is the weight average diameter and D is from 5 to 80 nanometers to form porous micrograins from 3 to 100 micrometers in diameter, containing at least 55 volume percent silica,

(b) sintering the porous micrograins to reduce the surface area thereof from 5% to 20%, and

(c) classifying the porous micrograins so that at least 90% of the porous micrograins in a class have a diameter in the range of 0.5 to 1.5X where X is the weight average diameter of the porous micrograins in a class and X is from 3 to 100 micrometers and separating the material into components.

4,131,543
METHOD OF ABSORBING LIQUIDS USING A PREPARATION OF EXPANDED SILICATE-BASED AGGREGATES

Theodore F. Carosello, Painesville, Ohio, assignor to Progressive Research Products, Inc., Painesville, Ohio

Continuation-in-part of Ser. No. 751,260, Dec. 17, 1976, abandoned, and a continuation-in-part of Ser. No. 796,970, May 16, 1977, abandoned. This application Sep. 12, 1977, Ser. No. 832,422

Int. Cl.² C02B *9/02*

U.S. Cl. 210—36 **5 Claims**

1. A method of absorbing a spill on land of hazardous, liquid materials chosen from the group consisting of nitric acid, hydrochloric acid, methyl ethyl ketone, other ketones, xylene, polychlorinated bis phenol, known as PCB, slurries thereof in gel form, crude petroleum oils, bunker fuel oil, gasoline, fuel oils, common solvents, and similar hazardous materials, consisting of taking an expanded insoluble light weight aggregate material formed by:

- (A) mixing, at a temperature less than boiling, an aqueous alkali metal silicate having an alkali metal oxide: silicon dioxide weight ratio of from about 1:3.0–7.0 with an essentially anhydrous alkali metal silicate within the same weight ratio range, the amount of anhydrous added being that quantity sufficient to give, in combination with the aqueous, a total alkali metal silicate solids content of from 80–40% by weight and the amount of alkali metal silicate solids being 40–90% by weight, dry basis, of the total resultant aggregate;
- (B) admixing, prior to the time when the anhydrous alkali metal silicate becomes substantially hydrated, two insolubilizing compounds as follows:
  - (1) a primary insolubilizer capable of reacting with the alkali portion of the alkali metal silicate at temperatures less than boiling, the amount used being that sufficient to reduce hygroscopicity of the silicate to the point where caking of the composition prior to expansion but subsequent to grinding is prevented and
  - (2) a secondary insolubilizer capable of reacting with the silicate portion of the alkali metal silicate at temperatures used in expanding same, the amount used being that sufficient to render the expanded aggregate water-insoluble, the total amount of insolubilizers used being less than the stoichiometric amount required for total reaction with the alkali metal silicate present;
- (C) continuing mixing until the components will not separate on standing at temperatures up to boiling;
- (D) curing the mixed composition at temperatures up to boiling until the anhydrous alkali metal silicate has become substantially hydrated and the primary insolubilizer reacted;
- (E) cooling the composition to a grindable solid;
- (F) grinding the composition into discrete nonadherent particles suitable for expansion and
- (G) rapidly expanding the particles and causing the secondary solubilizer to react by exposure to temperatures of from about 900°–1800° F., to provide an insoluble light weight aggregate which is free flowing in small clusters, having an average density in loose bulk of 2.5 to 3.5 pounds per cubic foot, and having a water absorption of 1.5 gallons per cubic foot, said insoluble light weight aggregate being sized at substantially 10 meshes per inch, then spread this light weight aggregate material over said spill thick enough to absorb said hazardous material.

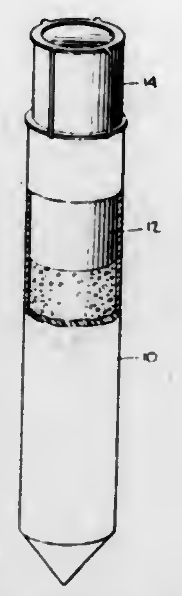
4,131,544
MACROENCAPSULATED SORBENT ELEMENT AND PROCESS FOR USING THE SAME

Nasik Elahi, 41-77 Frame Pl., Flushing, N.Y. 11355

Filed Aug. 3, 1976, Ser. No. 711,293

Int. Cl.² B01D *15/00, 53/02*

U.S. Cl. 210—40 **14 Claims**



1. A sorbent element for sorbing matter from a gaseous or liquid medium which matter can be substantially quantitatively desorbed from said element, said element consisting essentially of particulate sorbent material loosely encapsulated and confined within a rigid porous filter membrane having pore sizes less than the particle size of said sorbent, said element being of a substantially fixed, pre-determined volume such that the volume of the element is at least about 25% greater than the volume of said particulate sorbent both before and after sorption of matter by said sorbent, whereby said particulate sorbent agitates freely within said element both before and after its sorption of matter to facilitate the sorption and subsequent desorption of matter therefrom.

4,131,545
WATER TREATMENT

William H. Redmayne, Widnes, and David Berry, Hyde, both of England, assignors to Laporte Industries Limited, London, England

Continuation of Ser. No. 668,832, Mar. 22, 1976, abandoned. This application May 2, 1977, Ser. No. 792,573

Claims priority, application United Kingdom, Apr. 5, 1975, 14038/75

Int. Cl.² C02B *1/20*

U.S. Cl. 210—47 **8 Claims**

1. A process for the production of solutions of phosphate-containing basic aluminum compounds, comprising the steps of refluxing aluminum sulphate solution with phosphoric acid at elevated temperature above 50° C. to 90° C., introducing chloride by the addition of hydrochloric acid or calcium chloride, basifying by the addition of calcium oxide, hydroxide or carbonate in order to effect preferential precipitation of calcium sulphate and in an amount sufficient to produce a basicity of from 33 to 80% said phosphoric acid and said calcium compounds being introduced in such amounts that the molar ratio of phosphate and sulphate aluminum in said basic aluminum compounds falls within the range of from 0.05:1 to 0.30:1 and thereafter causing or permitting the solution to cool quickly to below 60° C.

4,131,546
METHOD AND APPARATUS FOR REMOVING FILTERABLE SUBSTANCES FROM A LIQUID

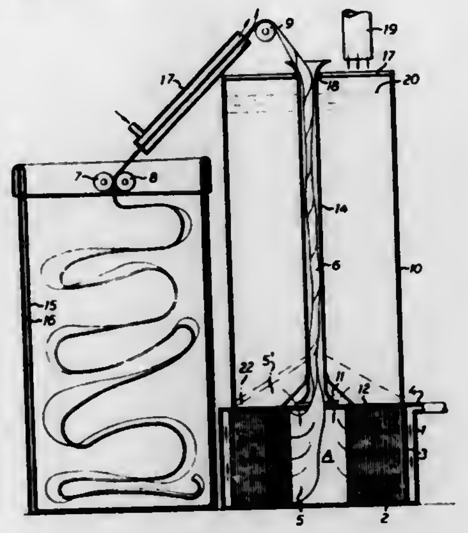
Knut Å. G. Olsson, Lund; Karl P. E. Åström, Staffanstorp, and Johan C. Johansson, Lund, all of Sweden, assignors to Ifo Sanitar AB, Bromolla, Sweden

Filed May 20, 1977, Ser. No. 799,038

Claims priority, application Sweden, May 24, 1976, 7605850

Int. Cl.² B01D *33/00*

U.S. Cl. 210—77 **12 Claims**



1. Method for removing filterable substances from a liquid, for example, sludge, or fibers in slurries in a liquid or oil in an emulsion of oil and water, in which method the liquid is continuously or intermittently led through a fiber material, wherein the liquid is caused to pass radially through a cylindrical roll of web-like, wet-strength fiber material at the same time as the fiber web which forms the roll is continuously drawn out at a sufficiently low speed from the roll in a spiral tube which retains said substances therewithin, while continuously renewing the filtration surface of said roll.

11. Apparatus for filtering a liquid, comprising a chamber with a roll mounted in the chamber, the roll consisting of a web of wet-strength fiber material with filtering properties and having a central cavity means which is defined by the innermost fiber web turn of the roll, means for conducting liquid to be filtered to the one circumferential side of the roll, means for conveying off liquid from the vessel at the other circumferential side of the roll, means for guided withdrawal of the fiber web from said one circumferential side of the roll to form a filter which retains filterable web spiral tube means substances removed from said liquid therewithin, and means for collecting the fiber web withdrawn from the roll.

4,131,547
REFILLABLE COLUMN FOR CHROMATOGRAPHY AT ELEVATED PRESSURE

Karl H. Michel, Indianapolis, and Robert F. Miller, Danville, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

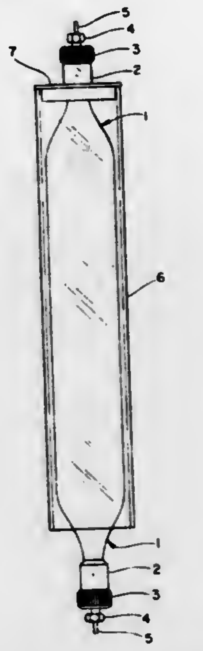
Filed Nov. 2, 1977, Ser. No. 847,872

Int. Cl.² B01D *15/08*

U.S. Cl. 210—198 C **8 Claims**

1. A refillable column for chromatography at elevated pressure comprised of:

- (a) a cylinder having a first and a second end with a length exceeding the diameter by a factor of 2 or more, said cylinder being connected at each end to a coupling having internal threads of an inside diameter greater than the inside diameter of said cylinder at the point of connection between said coupling and said cylinder and an annular shoulder disposed at the internal terminus of said thread;
- (b) a resilient plug having external threads adapted to mate with said internal threads of said coupling disposed therein, said plug having an inwardly tapered extension depending from said threads adapted to contact and cooperate with the annular shoulder of said coupling forming a seal therewith, said extension also having an inwardly and upwardly tapered bottom, said plug also having an axial bore with internal threads disposed in the end opposite said extension and an axially disposed hole communicating between the bottom of said bore and the bottom of said extension of said plug; and



- (c) a bushing having external threads adapted to engage the internal threads of said bore and disposed therein, said bushing also having an axial hole communicating between the top thereof and the axial hole in said plug with a tubular extension from the top of said hole adapted to receive a flexible tube connection therewith.

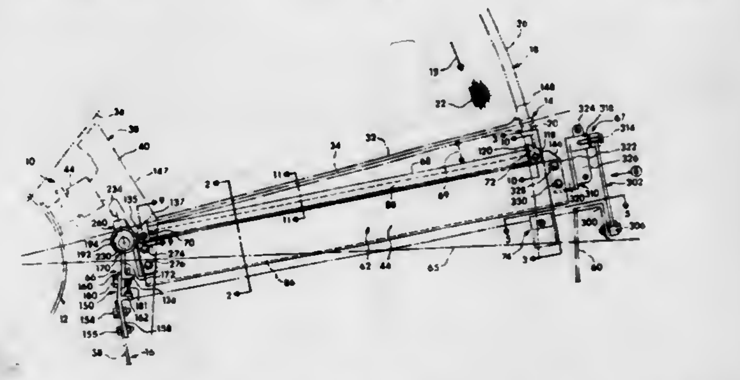
4,131,548
ROTARY DISC FILTER SCRAPER APPARATUS

C. Lynn Peterson, Salt Lake City, Utah, assignor to Peterson Filters Corporation, Salt Lake City, Utah

Filed Oct. 31, 1977, Ser. No. 847,071

Int. Cl.² B01D *33/36*

U.S. Cl. 210—331 **31 Claims**



1. In a rotary disc filter machine comprising a rotatable center shaft means continuously rotatable in one direction and a plurality of axially spaced filter disc units mounted on and rotatable with the center shaft means, each filter disc unit comprising a plurality of filter disc segments having radially and circumferentially extending axially spaced oppositely facing parallel filter media side surfaces on which filter cake is deposited and radially innermost and radially outermost circumferentially extending axially spaced oppositely facing parallel support surfaces circumjacent the filter media side surfaces; the invention of scraper blade apparatus sequentially associated with each filter media side surface of each filter disc segment of each filter disc unit comprising:

main scraper blade means mounted in axially spaced juxtaposition to and extending generally radially across an associated filter disc unit for sequentially removing filter cake from the axially adjacent filter media side surfaces of each filter disc segment during each revolution of the associated filter disc unit;

a radially innermost main scraper blade mounting bracket means being mounted in fixed axial relationship to and being located radially inwardly adjacent the associated filter disc unit for supporting the radially innermost end portion of the main scraper blade means in sequential uniform closely axially spaced juxtaposition to the axially adjacent filter media side surface of each of the filter disc segments of the filter disc unit during each revolution of the filter disc unit;

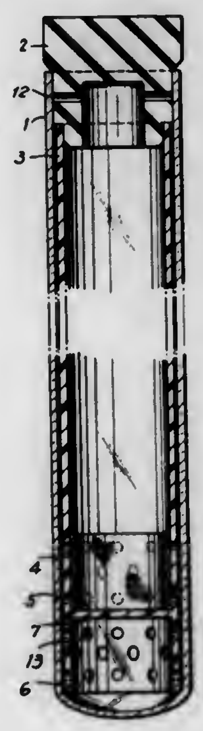
a second radially outermost main scraper blade mounting bracket means being mounted in fixed axial relationship relative to and being located radially outwardly adjacent the associated filter disc unit for supporting the radially outermost end portion of the main scraper blade means in sequential uniformly axially spaced juxtaposition to the axially adjacent filter media side surface of each of the filter disc segments of the filter disc unit during each revolution of the filter disc unit; and

cake scraping and blade supporting shoe means mounted on the radially innermost and the radially outermost end portions of the main scraper blade means for continuous sequential sliding abutting engagement with the radially innermost and radially outermost circumferentially extending supporting surfaces of each filter disc segment of the associated filter disc unit to locate said main scraper blade means in predetermined axially spaced relationship to the adjacent filter media side surface and for removing filter cake from the support surfaces to maintain the predetermined axial spacing of said main scraper blade means relative to the adjacent filter media side surface.

4,131,549

SERUM SEPARATION DEVICE

Louis T. Ferrara, 2988-Ave. T, Brooklyn, N.Y. 11229
Filed May 16, 1977, Ser. No. 797,357
Int. Cl.^{2} B01D *33/00;* A61B *5/14*
U.S. Cl. 210—359 2 Claims



1. A serum separation device comprising, in combination:

a first elongated tubular vessel closed at the bottom or lower end and open at the top or upper end;

a resilient stopper with air vents being permanently affixed to said top end, said air vents being above the connection between the stopper and the first vessel top end to allow the first vessel interior to be vented;

a filter means being contained within the first vessel lower end and communicating with the exterior of said first vessel through the sidewall thereof, said filter means being of a size so that only serum can pass therethrough;

a second elongated tubular vessel closed at the bottom or lower end and open at the top or upper end and being substantially longer in length and larger in diameter than said first vessel; and,

said first vessel being telescopingly receivable by said second vessel so that a space is formed between the two vessels, said resilient stopper including means to intermittently seal the second vessel upper end and being adapted to receive a cannula intermittently so that blood from a subject can be directed into said first vessel;

whereby, said blood is allowed to clot and may be separated by centrifugal means to cause said serum to pass through the filter means and be stored in said space while clot and cellular material remain within the first vessel.

4,131,550

POLYESTER TEXTILE MATERIALS HAVING IMPROVED DURABLE SOIL RELEASE CHARACTERISTICS AND PROCESS FOR PRODUCING SAME

Francis W. Marco, Pauline, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.
Filed Jul. 13, 1977, Ser. No. 815,124
Int. Cl.^{2} D06M *13/20*
U.S. Cl. 252—8.6 9 Claims

1. A process for imparting durable soil release characteristics to a textile material formed of polyester fibers which comprises padding a textile material with an effective amount of an aqueous emulsion consisting essentially of from about 0.15 to about 4 weight percent of a synthetic acid emulsion polymer, said polymer having at least about 20 weight percent acid calculated as acrylic acid, and from about 0.05 to about 0.4 weight percent of a water-soluble salt wherein the cation moiety of said salt is a polyvalent metal ion selected from the group consisting of Mg^{++}, Ba^{++}, and Ca^{++} and the anion moiety of said salt is selected from the group consisting of halogen and the anion moiety of an organic acid in which the pK value of said organic acid is from about 3 to about 5 so as to provide a resulting wet textile material containing from about 0.25 to about 5 weight percent solids, said solids being a combination of said polymer and said salt; drying said resulting wet textile material for a period of time sufficient to remove substantially all of the water therefrom; and, heating the dry textile material to a temperature of from about 280° F. to about 450° F. for a time sufficient to cure said polymer containing said salt.

4,131,551

RAILWAY LUBRICATING OIL

Jerry L. Thompson, Wheaton, Ill.; Sigmund S. Deluga, Munster; James W. Harnach, Chesterton, both of Ind., and Eliahu Shamah, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.
Filed Aug. 15, 1977, Ser. No. 824,263
Int. Cl.^{2} C10M *1/40, 3/34, 5/22, 7/38*
U.S. Cl. 252—33 14 Claims

1. An improved lubricant composition comprising:
(a) from about 90 to about 83 weight percent of a lubricant mineral base oil,
(b) from about 1.9 to about 3.4 weight percent of an alkyl phenol Mannich condensation product comprising the reaction product with formaldehyde and a polyamine,
(c) from about 1.0 to about 3.0 weight percent of alkaline earth metal salt of the Mannich condensation reaction product comprising an alkyl phenol Mannich condensation product with formaldehyde and a polyamine,
(d) 2.0 to about 6.0 weight percent of an overbased alkaline earth metal alkyl benzene sulfonate having a TBN of at least 1,
(e) from about 2.5 to about 7.0 weight percent of an overbased alkaline earth salt of the bis-alkyl phenol sulfide,

(f) about 0.15 to 2.0 weight percent of a chlorinated paraffin, and
(g) about 1 to about 25 parts per million based on the lube oil composition of a polydimethyl siloxane.

4,131,552

HIGH TEMPERATURE RELEASE AND LUBRICATING COMPOSITIONS FOR GLASS MOLDS

Arnold F. Marcantonio, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.
Continuation of Ser. No. 579,350, May 21, 1975, abandoned, which is a continuation-in-part of Ser. No. 445,756, Feb. 25, 1974, abandoned. This application Oct. 13, 1977, Ser. No. 841,795
Int. Cl.^{2} C10M *1/10, 3/02, 5/02, 7/04*
U.S. Cl. 252—29 10 Claims

1. A release and lubricating composition comprising a dispersion of about 0.5 to about 20 weight percent polyphenylene sulfide, about 0.2 to about 60 weight percent graphite and about 20 to about 99 weight percent of a carrier having a boiling point of about 350° F or greater, said carrier being selected from the group consisting of polyalkylene oxide, epoxidized glyceride and a polyhydric alcohol selected from the group consisting of ethylene glycol, glycerin, sorbitol and mixtures thereof.

9. A release and lubricating composition comprising about 10 weight percent polyphenylene sulfide, about 5 weight percent graphite, about 42 weight percent ethylene glycol, about 42 weight percent water and about 1 weight percent octylphenoxy polyethoxy ethanol.

4,131,553

ALKYLBENZENE SULFONIC ACID MODIFIED MANNICH REACTION PRODUCTS FROM OXIDIZED POLYMERS

C. Thomas West, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.
Filed Feb. 15, 1978, Ser. No. 877,874
Int. Cl.^{2} C10M *1/40, 3/34, 5/22;* C08G *12/04*
U.S. Cl. 252—33 5 Claims

1. A process of producing a dispersant-viscosity index improver which comprises reacting:

a high molecular weight oxidized amorphous addition polymer with a formaldehyde yielding reagent, an amine selected from the group consisting of aliphatic primary and secondary amines having from about 2 to 12 carbon atoms, an aliphatic amine of the general formula $NH_2[CH_2)_zNH)]_xH$ wherein z is an integer from about 2 to about 6 and x is an integer from about 1 to about 10, and about 0.01 to 40.0% by weight of an oil soluble sulfonic acid based on the copolymer, wherein the sulfonic acid is contacted with the oxidized polymer after the amine.

5. A lubricant oil containing an effective amount of the product of the process of claim 1.

4,131,554

OVERBASED BRIDGED PHENOL METAL SALT/HALO CARBOXYLIC ACID CONDENSATE ADDITIVES FOR LUBRICANTS

Thomas F. Steckel, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
Continuation-in-part of Ser. No. 608,380, Aug. 27, 1975, Pat. No. 4,067,698. This application Dec. 5, 1977, Ser. No. 857,839
The portion of the term of this patent subsequent to Dec. 5, 1995, has been disclaimed.
Int. Cl.^{2} C10M *1/54, 3/48, 5/28, 7/52*
U.S. Cl. 252—33.6 21 Claims

1. An overbased metal carboxylate made by reacting at least one basically reacting metal compound in the presence of a promoter and an acidic reagent with at least one composition made by reacting (I) at least one phenoxide metal salt of a bridged phenol having (a) at least 2 and up to about 20 phenolic moieties or thiophenol analogs thereof and (b) at least 1 and up to about 19 bridging linkages independently selected from the group consisting of covalent carbon-to-carbon single bonds, ether linkages, sulfide linkages, polysulfide linkages of two to six sulfur atoms, sulfinyl linkages, sulfonyl linkages, methylene linkages, alkylene linkages, di(lower alkyl)methylene linkages, lower alkylene ether linkages, lower alkylene sulfide linkages, lower alkylene polysulfide linkages of two to six sulfur atoms, amino linkages, polyamino linkages and mixtures of said divalent bridging linkages with (II) at least one carboxylic acid reagent having 1 to about 3 carboxyl-based groups and a halogen-substituted hydrocarbon-based aliphatic or alicyclic group containing a halogen atom.

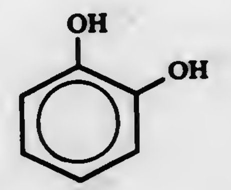
11. A lubricant composition comprising a major amount of at least one oil of lubricating oil viscosity and a minor amount of the composition claimed in claim 1.

4,131,555

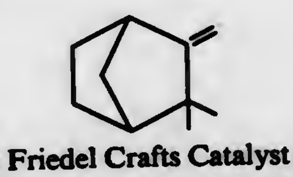
DETERGENT COMPOSITION

John B. Hall, Rumson, and Wilhelmus J. Weigers, Red Bank, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.
Continuation-in-part of Ser. No. 753,618, Dec. 22, 1976, Pat. No. 4,061,686, which is a continuation-in-part of Ser. No. 662,818, Mar. 1, 1976, Pat. No. 4,014,944. This application Oct. 31, 1977, Ser. No. 847,209
The portion of the term of this patent subsequent to Dec. 26, 1995, has been disclaimed.
Int. Cl.^{2} C11D *3/50*
U.S. Cl. 252—89 R 2 Claims

1. A process for producing a perfumed detergent composition comprising the step of intimately admixing with a solid or liquid detergent base from 1% up to 3% of a product produced by the process which comprises reacting catechol having the structure:



with camphene having the structure:



in the presence of a Friedel Crafts Catalyst to form a catechol-camphene alkylation product, recovering said alkylation product at a temperature in the range of from 186 up to 236° C. and at a pressure of from 2.3 up to 3.8 mm Hg, hydrogenating the said catechol-camphene alkylation product in the presence of a hydrogenation catalyst to form a hydrogenated catechol-camphene addition product and recovering the said hydrogenated catechol-camphene addition product at a temperature in the range of from 150° C. up to 172° C. and a pressure of about 2.5 mm Hg, the Friedel Crafts Catalyst being selected from the group consisting of boron trifluoride etherate, sulfuric acid, acid clay, aluminum trichloride, boron trifluoride, boron trifluoride-acetic acid, boron trifluoride-phosphoric acid, zinc chloride, aluminosilicate molecular sieve, and ferric chloride, the reaction between catechol and camphene being carried out at a temperature in the range of from about 120° C. up to 175° C. and the mole ratio of catechol to camphene being in the range of from about 0.5:1 up to about 4:1, the hydrogenation reaction being carried out within a temperature range of 100° C. up to 300° C., the latter portion of the reaction time being at from 200° up to 300° C.

4,131,556
METHOD FOR MANUFACTURING BROMINE AND BROMINE-IODINE DETERGENTS AND DISINFECTANTS

Alojzy Klopotek; Jerzy Uminski, both of Nowy Dwor Mazowiecki, and Gabriela Dziala, Legionowo, all of Poland, assignors to Instytut Chemii Przemyslowej, Warsaw, Poland

Continuation of Ser. No. 676,972, Apr. 14, 1976, which is a continuation-in-part of Ser. No. 439,755, Feb. 5, 1974, abandoned. This application Nov. 14, 1977, Ser. No. 851,616

Claims priority, application Poland, Feb. 7, 1973, 160631; Feb. 14, 1973, 160732

Int. Cl.² C11D *3/48, 1/72*

U.S. Cl. 252—106 **13 Claims**

1. A method for manufacturing a bromine complex of non-ionic detergent the formula of the complex being

$$R—(OC_nH_{2n})_x—OH \ldots Br—Br \ldots HO(C_nH_{2n}O)_x—R$$

wherein R represents an alkyl, alkylamido, aryl or alkyaryl group having 6 to 32 carbon atoms, each x is an integer from 2 to 50 and represents the number of oxyalkylene groups and n is an integer from 2 to 4, comprising the step of reacting a solution containing $[IBr_2]^-$ ions with a non-ionic surfactant having the formula $R(OC_nH_{2n})_x—OH$, in which R, n and x are as defined above, in a proportion not exceeding 1 mole of $[IBr_2]^-$ ions per each 2 moles of non-ionic surfactant at a temperature in the range of 0°-60° C. under anhydrous or substantially anhydrous conditions to form the bromine complex of the non-ionic detergent.

4,131,557
SOAP COMPOSITION

John B. Hall, Rumson, and Wilhelmus J. Wiegers, Red Bank, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

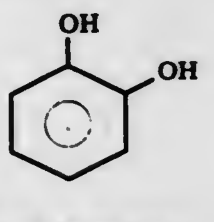
Continuation-in-part of Ser. No. 753,618, Dec. 22, 1976, Pat. No. 4,061,686, which is a continuation-in-part of Ser. No. 662,818, Mar. 1, 1976, Pat. No. 4,014,944. This application Oct. 31, 1977, Ser. No. 847,210

The portion of the term of this patent subsequent to Dec. 26, 1995, has been disclaimed.

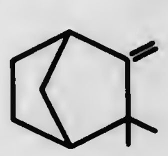
Int. Cl.² C11D *9/44*

U.S. Cl. 252—132 **2 Claims**

1. A process for preparing a perfumed soap comprising the step of admixing soap chips with from 1% up to 3% of a product produced by the process which comprises reacting catechol having the structure:



with camphene having the structure:



in the presence of a Friedel Crafts Catalyst to form a catechol-camphene alkylation product, recovering said alkylation product at a temperature in the range of from 186 up to 236° C. and at a pressure of from 2.3 up to 3.8 mm Hg, hydrogenating the said catechol-camphene alkylation product in the presence of a hydrogenation catalyst to form a hydrogenated catechol-camphene addition product and recovering the said hydrogenated catechol-camphene addition product at a temperature in the range of from 150° C. up to 172° C. and a pressure of about 2.5 mm Hg, the Friedel Crafts Catalyst being selected from the group consisting of boron trifluoride etherate, sulfuric acid, acid clay, aluminum trichloride, boron trifluoride, boron trifluoride-acetic acid, boron trifluoride-phosphoric acid, zinc chloride, aluminosilicate molecular sieve, and ferric chloride, the reaction between catechol and camphene being carried out at a temperature in the range of from about 120° C. up to 175° C. and the mole ratio of catechol to camphene being in the range of from about 0.5:1 up to about 4:1, the hydrogenation reaction being carried out within a temperature range of 100° C. up to 300° C., the latter portion of the reaction time being at from 200 up to 300° C.

4,131,558
PROCESS FOR PREPARING AN ORTHOPHOSPHATE-SILICATE DETERGENT PRODUCT

John Bailey, Ryton; Michael J. Randell, and Paul R. Sherrington, both of Newcastle upon Tyne, all of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 12, 1976, Ser. No. 657,656

Claims priority, application United Kingdom, Feb. 14, 1975, 6358/75; Jun. 16, 1975, 25645/75

Int. Cl.² C11D *3/065, 7/54*

U.S. Cl. 252—135 **16 Claims**

1. A process for forming a detergent composition consisting essentially of the steps of:

(1) forming an aqueous slurry comprising
  (a) from about 1% to about 30% on a dry weight basis of an alkali metal silicate having the formula $SiO_2:M_2O$, wherein the $SiO_2:M_2O$ molar ratio is from about 1.6:1 to about 4:1, and M is an alkali metal or mixtures thereof;
  (b) from about 0% to about 60% on a dry weight basis of an alkali metal orthophosphate having the formula $M_xH_y(PO_4)$ and the sum of x + y are integers equal to 3; M is an alkali metal or mixtures thereof;
  (c) from 0% to about 80% on a dry weight basis of a diluent selected from the group consisting of alkali metal carbonates, bicarbonates, sesquicarbonates, chlorides, borates, perborates, sulfates, bisulfates and aluminates, calcium carbonate, montmorillonite, hectorite, saponite, volchonskoite, nontronite, and sauconite and mixtures thereof;
  (d) from about 1% to about 50% on a dry weight basis of an anionic, nonionic, zwitterionic, or ampholytic, detergent and mixtures thereof; then,
(2) drying the slurry of (1) to an $SiO_2:H_2O$ molar ratio of greater than about 0.5; and,
(3) admixing from about 0% to about 60% on a dry weight basis of the material described in (1) (b) to give a detergent composition containing from about 5% to about 60% by weight $M_3(PO_4)$ wherein M is an alkali metal, the amount of tripolyphosphate in said composition being less than 20% by weight of the amount of orthophosphate.

4,131,559
AZEOTROPIC COMPOSITIONS

Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 780,194, Mar. 22, 1977, Pat. No. 4,092,262, which is a division of Ser. No. 609,115, Aug. 29, 1975, Pat. No. 4,035,258, which is a division of Ser. No. 391,663, Aug. 27, 1973, Pat. No. 3,936,387, which is a continuation-in-part of Ser. No. 223,779, Feb. 4, 1972, abandoned. This application Dec. 23, 1977, Ser. No. 864,057

Int. Cl.² C11D *7/50, 7/30;* **C23G** *5/02*

U.S. Cl. 252—171 **6 Claims**

1. The azeotrope which at substantially atmospheric pressure is characterized as about 95 weight percent 1,2-dichloro-1,2-difluoroethane and about 5 weight percent ethanol.

4. The azeotrope which at substantially atmospheric pressure is characterized as about 98.7 weight percent 1,2-dichloro-1,2-difluoroethane and 1.3 weight percent isopropanol.

4,131,560
AZEOTROPIC COMPOSITIONS

Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 780,194, Mar. 22, 1977, Pat. No. 4,092,262, which is a division of Ser. No. 609,115, Aug. 29, 1975, Pat. No. 4,035,258, which is a division of Ser. No. 391,663, Aug. 27, 1973, Pat. No. 3,936,387, which is a continuation-in-part of Ser. No. 223,779, Feb. 4, 1972, abandoned. This application Dec. 23, 1977, Ser. No. 863,977

Int. Cl.² C11D *7/50, 7/30;* **C23G** *5/02*

U.S. Cl. 252—171 **3 Claims**

1. The azeotrope which at substantially atmospheric pressure is characterized as about 45.9 weight percent 1,2-dichloro-1,2-difluoroethane and about 54.1 weight percent tetrahydrofuran.

4,131,561
AZEOTROPIC COMPOSITIONS

Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 780,194, Mar. 22, 1977, Pat. No. 4,092,262, which is a division of Ser. No. 609,115, Aug. 29, 1975, Pat. No. 4,035,258, which is a division of Ser. No. 391,663, Aug. 27, 1973, Pat. No. 3,936,387, which is a continuation-in-part of Ser. No. 223,779, Feb. 4, 1972, abandoned. This application Dec. 23, 1977, Ser. No. 863,978

Int. Cl.² C11D *7/50, 7/30;* **C23G** *5/02*

U.S. Cl. 252—171 **6 Claims**

1. The azeotrope which at substantially atmospheric pressure is characterized as about 39.8 weight per cent 1,2-dichloro-1,2-difluoroethane and about 60.2 weight per cent methyl ethyl ketone.

4. The azeotrope which at substantially atmospheric pressure is characterized as about 72.3 weight per cent 1,2-dichloro-1,2-difluoroethane and about 27.7 weight per cent acetone.

4,131,562
STABILIZED PARTICULATE PEROXYGEN COMPOUNDS

Charles W. Lutz, Princeton, and Leon E. Cohen, Somerset, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jun. 17, 1977, Ser. No. 807,629

Int. Cl.² C01B *15/10;* **C11D** *3/39, 7/18, 7/54*

U.S. Cl. 252—186 **4 Claims**

1. A particulate peroxygen compound selected from the group consisting of sodium carbonate peroxide, sodium perborate and mixtures thereof coated with from about 0.1 to about 3.0 weight percent of an ethylene oxide-derivative stabilizing material selected from the group consisting of:

(a) polyethoxy alcohols having the general formula:

$$RO(CH_2CH_2O)_nH$$

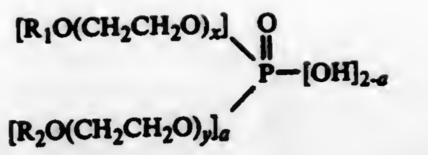
wherein n is an integer of from 4 to 25 and R is selected from primary and secondary linear alkyl and alkenyl radicals having from 10 to 18 carbon atoms and alkylphenyl radicals in which the alkyl moiety is linear, having from 8 to 18 carbon atoms;

(b) polyethoxy thioethers having the general formula:

$$RS(CH_2CH_2O)_nH$$

wherein n is an integer of from 4 to 20, and R is a linear alkyl or alkenyl radical having from 10 to 18 carbon atoms;

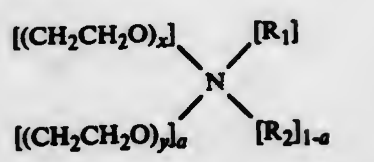
(c) polyethoxy phosphoric acid esters having the general formula:



$$\begin{array}{l} [R_1O(CH_2CH_2O)_x] \diagdown \overset{O}{\underset{}{\|}} \\ \qquad\qquad\qquad\qquad P—[OH]_{2-a} \\ [R_2O(CH_2CH_2O)_y]_a \diagup \end{array}$$

wherein a is either 0 or 1; and for a=1, x and y are the same or different integers of from 2 to 10, and R_1 and R_2 are the same or different and are selected from linear alkyl radicals having from 8 to 18 carbon atoms and alkylphenyl radicals in which the alkyl moiety is linear, having from 8 to 18 carbon atoms; and for a=0, x is an integer of from 4 to 20 and R_1 is selected from linear alkyl radicals having from 8 to 18 carbon atoms and alkylphenyl radicals in which the alkyl moiety is linear, having from 8 to 18 carbon atoms;

(d) polyethoxy fatty acid tertiary amines and quaternary ammonium salts thereof wherein the tertiary amines have the general formula:



$$\begin{array}{ccc} [(CH_2CH_2O)_x] & & [R_1] \\ & N & \\ [(CH_2CH_2O)_y]_a & & [R_2]_{1-a} \end{array}$$

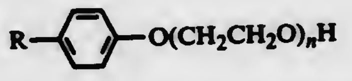
wherein a is either 0 or 1; and for a=1, x and y are the same or different integers of from 1 to 30, and R_1 is a linear alkyl or alkenyl radical having from 10 to 18 carbon atoms; and for a=0, x is an integer of from 1 to 60 and R_1 and R_2 are the same or different linear alkyl or alkenyl radicals having from 10 to 18 carbon atoms;

(e) ethoxy propoxy block copolymeric alcohols having the general formula:

$$RO(CH(CH_3)CH_2O)_m(CH_2CH_2O)_nH$$

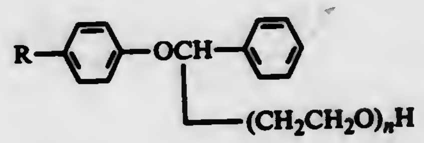
wherein m and n are the same or different integers of from 4 to 100 such that the weight percent of the ethylene oxide exceeds 20%, up to about 80%, of the molecular weight and R is $HOCH(CH_3)CH_2—$ or $HOCH_2CH_2—$;

(f) alkylphenoxy polyethoxy alcohols having the general formula:



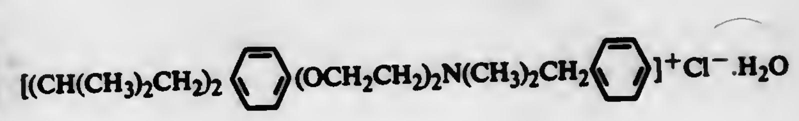
wherein n is an integer of from 8 to 40 and R is a branched alkyl radical containing from 8 to 9 carbon atoms;

(g) α-phenoxy-α-benzylpolyethoxy alcohols having the general formula:



wherein n is an integer of from 8 to 40 and R is a branched alkyl radical containing from 8 to 9 carbon atoms;

(h) diisobutylphenoxyethoxyethyl dimethylbenzyl ammonium chloride monohydrate having the general formula:



4,131,563

PROCESS OF PREPARING SUBSTANTIALLY SOLID WASTE CONTAINING RADIOACTIVE OR TOXIC SUBSTANCES FOR SAFE, NON-POLLUTIVE HANDLING, TRANSPORTATION AND PERMANENT STORAGE

Werner Bähr, Speyer; Stefan Drobnik, Blankenloch; Werner Hild, Hochstetten; Reinhard Kroebel, Leopoldshafen; Alfred Meyer, Cologne, and Günter Naumann, Leverkusen, all of Germany, assignors to Steag Kernenergie G.m.b.H., Essen, Germany

Continuation of Ser. No. 534,773, Dec. 20, 1974, abandoned.
This application Aug. 25, 1976, Ser. No. 717,552
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1973, 2363475
Int. Cl.^{2} G21F *9/34*
U.S. Cl. 252—301.1 W **11 Claims**

1. In the process of preparing substantially solid wastes containing radioactive or toxic substances for safe, non-pollutive handling, transportation and permanent storage, by bringing the solid wastes into contact with hardening materials and hardening the same into solid masses, the improvement wherein the solid wastes are mixed with polymerizable mixtures consisting essentially of styrene selected from the group consisting of divinyl benzene and trivinyl benzene, and polymerization catalysts, and the resulting mixtures are converted by polymerization into solid blocks, the solid wastes being used in quantities of from 2% to 75% by weight, based on the total weight of the wastes + polymerization mixture, the styrene being used in quantities of from 70% to 99.5% by weight, based on the weight of the monomers, the polyvinyl compounds being used in quantities of from 1.0% to 30% by weight, based on the weight of monomers, and the polymerization catalysts being used in quantities of from 0.1% to 6% by weight, based on the weight of the monomers.

4,131,564

LIGNIN-CONTAINING DYE DISPERSING COMPOSITION

Peter Dilling, Isle of Palms, S.C., assignor to Westvaco Corporation, New York, N.Y.

Continuation of Ser. No. 716,511, Aug. 23, 1976, abandoned.
This application May 24, 1978, Ser. No. 909,122
Int. Cl.^{2} B01F *17/12*
U.S. Cl. 252—353 **2 Claims**

1. A low viscosity, heat stable dye dispersant composition having reduced tendency to stain fibers consisting of,

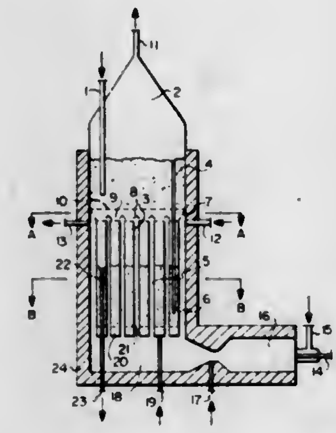
(a) from 97% to 10% by weight of said composition of a sulfonated kraft lignin, and
(b) from 3% to 90% by weight of said composition of a formaldehyde condensed naphthalene sulfonate.

4,131,565

PROCESS FOR REACTIVATING SPENT ACTIVATED-CARBON

Masakazu Komori, 1591-47 Hiratocho, Totsuka-ku, Yokohama-shi, Kanagawa; Kazuyuki Shiga, 6-12-23, Minamishinagawa, Shinagawa-ku, Tokyo; Hajime Kitazato, 205, Sasanodai, Asahi-ku, Yokohama-shi, Kanagawa; Hiroaki Okajima, 3-20-4, Jujonakahara, Kita-ku, Tokyo; Yoshiharu Tanaka, 225-7 Oogami, Ayase-cho, Kouza-gun, Kanagawa; Shoiti Nojima, 1-15-16, Sakurajosui, Setagaya-ku, Tokyo; Masashige Fukamachi, 1024-413, Shimonagaya, Konan-ku, Yokohama-shi, Kanagawa, and Akinori Kurima, 2-181 Iwamacho, Hodogaya-ku, Yokohama-shi, Kanagawa, all of Japan

Continuation-in-part of Ser. No. 326,170, Jan. 24, 1973, abandoned. This application Apr. 7, 1975, Ser. No. 565,782
Claims priority, application Japan, Jan. 24, 1972, 47-8917; Jun. 28, 1972, 47-64678; Jan. 24, 1972, 47-8918; Sep. 6, 1972, 47-88738
Int. Cl.^{2} B01D *15/06*
U.S. Cl. 252—417 **6 Claims**



1. A process for the reactivation of spent activated-carbon, which comprises the steps of introducing spent activated carbon into a first devolatilization zone, fluidizing and directly heating said spent carbon in said first zone at a temperature between 100° and 700° C. with a gas from a second activation zone to remove volatiles from said spent carbon, transferring the carbon so treated to the second activation zone, indirectly heating said carbon in said second zone at a temperature between 500° to 1000° C. with a hot combustion gas while fluidizing said carbon in the substantial absence of oxygen with steam or a steam-containing inert gas to reactivate said carbon, the off gas from said indirect heating in said second zone being combined with the off gas from said reactivation in said second zone and used for fluidizing and heating said spent carbon in said first zone, and recovering the reactivated carbon from said second zone.

4,131,566

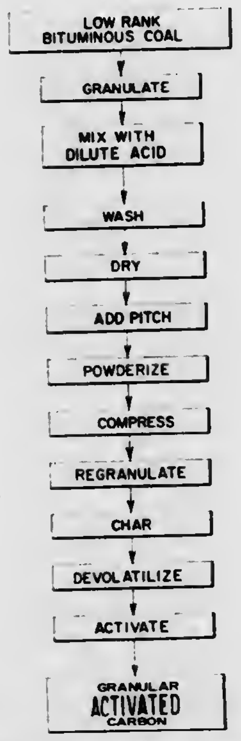
GRANULAR ACTIVATED CARBON MANUFACTURE FROM LOW RANK AGGLOMERATING BUT NOT GOOD COKING BITUMINOUS COAL TREATED WITH DILUTE INORGANIC ACID

Hari N. Murty, Grand Island, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 587,754, Jun. 17, 1975, abandoned. This application Jul. 25, 1977, Ser. No. 818,699
Int. Cl.^{2} C01B *31/10, 31/08;* **B01J** *21/18*
U.S. Cl. 252—423 **16 Claims**

1. A process for making hard granular activated carbon having an abrasion number of not less than about 70 comprising:

forming granules from low rank agglomerating but not good coking bituminous coal;
treating the granules with a dilute aqueous solution of inorganic acid to prevent fusion of the granules during subsequent devolatilization comprising: mixing the granules with the acid for a time and at a temperature, acid concentration and solution to coal ratio sufficient to prevent said fusion, washing off the acid, drying the granules thoroughly, and thereafter mixing the granules with a carbonaceous binder;
reducing the treated granules to form fine powder;
compressing the powder to form shapes;
reducing the shapes to reform granules;
charring the reformed granules by heating to and at a charring temperature in an oxygen containing atmosphere;
devolatilizing the charred granules by heating to and at a devolatilizing temperature higher than the charring temperature in an oxygen-free atmosphere; and
activating the devolatilized granules by heating to and at an activating temperature higher than the devolatilizing temperature in an atmosphere containing a gaseous activating agent.



2. Hard granular activated carbon made by the process of claim 1.

10. The process of claim 1 wherein the reformed granules are charred by heating to a temperature of about 250° C at a rate of about 150° C/hour in an atmosphere of air and nitrogen and by maintaining the charring temperature for a time of about 4 to about 5 hours.

11. The process of claim 1 wherein the charred granules are devolatilized by heating to a temperature of about 450° C at a rate of about 300° C/hour in an atmosphere of N_2 and the volatilie and by maintaining the devolatilizing temperature for a time of about 1 hour.

12. The process of claim 1 wherein the devolatilized granules are activated by heating to a temperature of about 800 to about 900° C in an atmosphere of N_2 and steam and by maintaining the activating temperature for a time of about 4 to about 5 hours.

4,131,567

CATALYST FOR CATIONIC POLYMERIZATION PROCESS

Ronald T. Wojcik, Stamford, Conn., assignor to Arizona Chemical Company, New York, N.Y.

Division of Ser. No. 775,503, Mar. 8, 1977, Pat. No. 4,098,982.
This application Oct. 27, 1977, Ser. No. 845,992
Int. Cl.^{2} B01J *27/16*
U.S. Cl. 252—435 **4 Claims**

1. A polymerization catalyst system adopted for use in the polymerization of piperylene which consists essentially of: (a) a major amount ranging from about 70%, to 85%, by weight, of aluminum chloride, aluminum bromide or mixtures of the same and (b) a minor amount ranging from about 15% to 30%, by weight, of an inorganic phosphorus acid selected from the class consisting of phosphoric acid, meta-phosphoric acid, and phosphorous acid.

4,131,568

CATALYTIC SYNTHESIS OF LOW MOLECULAR WEIGHT HYDROCARBONS

Charles M. Bartish, Bethlehem, Pa., assignor to Air Product and Chemicals, Inc., Allentown, Pa.

Filed Aug. 14, 1975, Ser. No. 604,633
Int. Cl.^{2} B01J *29/06;* **C07C** *27/06*
U.S. Cl. 252—455 Z **4 Claims**

1. A cataylst composition comprising from about 100 to 1 parts iron per part copper carried on a support containing at least 5%–50% zeolite.

4,131,569

OXIDIC CATALYST FOR THE CONVERSION OF WATER GAS

Alfred Michel; Hans-Joachim Henkel; Christian Koch, all of Erlangen, and Hana Kostka, Grossgründlach, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 23, 1977, Ser. No. 836,222
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1976, 2643916
Int. Cl.^{2} B01J *23/10, 23/76, 21/04*
U.S. Cl. 252—462 **8 Claims**

1. An oxidic catalyst for the conversion of water gas consisting of oxides of the metals aluminum, lanthanum, cobalt, nickel and uranium, the aluminum oxide being present predominantly as α-Al_2O_3, said aluminum oxide acting as a carrier for the oxides of the metals lanthanum, cobalt, nickel and uranium, and with a lanthanum and cobalt content of 5 to 30% by weight, a nickel content of 0.1 to 4% by weight, and a uranium content of 0.1 to 2% by weight, always related to the total weight of the catalyst.

4,131,570

METHOD FOR THE MANUFACTURE OF A SILVER CATALYST FOR ELECTROCHEMICAL CELLS AND THE CATALYST PREPARED BY THE METHOD

Karl Höhne, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 23, 1978, Ser. No. 880,341
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1977, 2713855
Int. Cl.^{2} B01J *23/68, 23/80;* **B01S** *23/84*
U.S. Cl. 252—473 **6 Claims**

1. In a method for preparing a silver catalyst suitable for use as electrode material for electrochemical cells wherein a silver salt is reduced to precipitate metallic silver on a commingled mixture of hydroxides of bismuth, nickel and titanium, the content of said hydroxides being from about 0.5 to 5% by weight based upon the amount of silver present in the finished catalyst, the improvement comprising simultaneously reducing a mercury salt along with the silver salt to precipitate a metallic silver-mercury alloy on said mixture of hydroxides, the mercury content of the finished catalyst being between about 10 to about 17% by weight based upon the total weight of the catalyst.

4,131,571

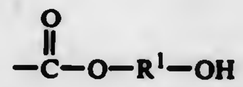
POLYURETHANE METALLIC ENAMEL

Keenan L. Crawley, Hope, Ark., and Lester I. Miller, Troy, Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 645,216, Dec. 29, 1975, abandoned. This application Oct. 19, 1977, Ser. No. 844,107
Int. Cl.^{2} C08L *1/14*
U.S. Cl. 260—17 R **9 Claims**

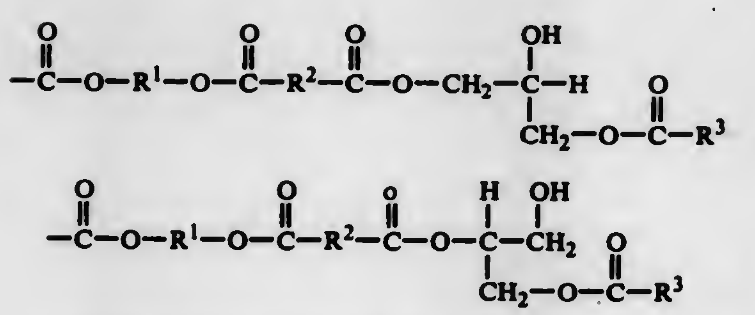
1. A coating composition having a solids content of 5–60% by weight in an organic liquid; wherein the solids consist essentially of

(1) 50–95% by weight of an acrylic polymer having a backbone consisting essentially of polymerized monomers of the group of methyl methacrylate, styrene or mixtures thereof and polymerized ethylenically unsaturated ester monomers that form ester groups pending from the carbon atoms of the polymer backbone and comprise about 10 to 75% of the total weight of the polymer and consisting essentially of ester group (A)



$$-\overset{O}{\overset{\|}{C}}-O-R^{1}-OH$$

and ester group (B) selected from the group consisting of



or mixtures thereof, wherein the molar ratio of ester group (A) to ester (B) is from about 1:1.5 to 1:2.5; and wherein

R^1 is a saturated hydrocarbon group having 2–4 carbon atoms,

R^2 is phenylene,

R^3 is a tertiary hydrocarbon group having 8 through 10 carbon atoms;

(2) 1–15% by weight of cellulose acetate butyrate having a butyryl content of about 50–60% by weight, a hydroxyl content of about 1.0–3.0% by weight, and a viscosity of 0.02–0.5 seconds measured at 25° C. according to ASTM D-1343-56;

(3) 0.05–1.0% by weight of an alkyl acid phosphate having 1–12 carbon atoms in the alkyl group;

(4) 0.2–20% by weight of aluminum flake pigment;

(5) 0.01–5% by weight of an ultraviolet light absorbing agent from the group of a substituted benzotriazole, a substituted benzophenone or a mixture thereof;

(6) 0.01–0.10% by weight of an alkyl tin laurate catalyst; and

(7) 3.73–48.73% by weight of a polyisocyanate of the biuret of an alkylene diisocyanate having 1–6 carbon atoms in the alkylene group.

4,131,572

POWDER COATINGS CONTAINING COPOLYMER CONTAINING ISOBORNYL METHACRYLATE AS MELT FLOW MODIFIER

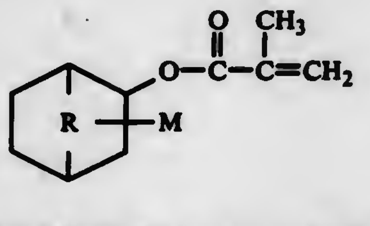
William H. Brendley, Jr., Hatboro, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 108,996, Jan. 22, 1971, abandoned. This application May 16, 1975, Ser. No. 578,441

Int. Cl.² C08L *1/10*

U.S. Cl. 260—17 R **12 Claims**

1. A fluidizable powder coating composition, the particles of which are from about 10 to about 500 microns in diameter, a mixture of (A) about 3 to 10 parts by weight of a melt flow-modifying copolymer of about 40 percent to 60 percent by weight of a compound of the formula:



where R is selected from the group consisting of —CH_2—, —$CH(CH_3)$—, and —$C(CH_3)_2$—, and M is selected from the group consisting of a hydrogen atom and at least one methyl group, and 40 percent to 60 percent by weight of styrene, vinyl toluene, or at least one ester of acrylic acid or methacrylic acid and an aromatic, monocyclic aliphatic, or open chain aliphatic alcohol or alkoxy alcohol having from 1 to about 18 carbon atoms, or combinations thereof, said copolymer having an average molecular weight of from 1,000 to 8,500, and (B) 90 to 97 parts by weight of a thermoplastic coating resin selected from the group consisting of cellulose esters, polyvinylhalides, and acrylics.

4,131,573

PROCESS FOR MAKING LIGNIN GELS IN BEAD FORM

Wynford Brown, Uppsala, Sweden, assignor to Westvaco Corporation, New York, N.Y.

Filed Feb. 4, 1977, Ser. No. 765,683

Int. Cl.² C08H *5/02*

U.S. Cl. 260—17.5 **13 Claims**

1. A process for making high molecular weight cross-linked lignin gel beads which comprises:

(a) providing an aqueous solution containing a lignin from the group consisting of alkali lignin and desulfonated sulfite waste liquor lignin;

(b) agitating said aqueous lignin solution with a water-immiscible organic solvent to form an emulsion comprising aqueous droplets containing said lignin within the continuous phase of said organic solvent;

(c) reacting with said lignin a cross-linking agent capable of reacting with the hydroxyl groups of said lignin with the formation of ether bridges, said cross-linking agent being selected from the group consisting of epichlorohydrin, dichlorohydrin, 1,2,3,4-diepoxy-butane, bis-epoxy propyl ether, ethylene glycol-bis-epoxy propyl ether and 1,4-buta-diol-bis-epoxy propyl ether;

(d) said reaction being catalyzed in the presence of alkali;

(e) said droplets being maintained until gel formation has taken place as the result of the reaction of said lignin with said cross-linking agent in the presence of said alkali; and

(f) recovering the gel beads of the cross-linked lignin from said reaction.

4,131,574

STARCH

Harold Isherwood, Bewdley, and John T. Shaw, Brierley Hill, both of England, assignors to British Industrial Plastics Ltd., Manchester, England

Filed Jul. 7, 1977, Ser. No. 813,556

Claims priority, application United Kingdom, Jul. 9, 1976, 28588/76

Int. Cl.² C08L *3/02, 3/10*

U.S. Cl. 260—17.3 **4 Claims**

1. In a process for the manufacture of starch solution which comprises forming a slurry of substantially raw starch in water; adding to the slurry a conventional starch oxidising agent; and subjecting the slurry, in the presence of the oxidising agent, to mechanical shear at elevated temperature in the range of about 110° to about 180° C., the improvement which consists in adding to the slurry, before the slurry is subjected to mechanical shear at elevated temperature, an amino-formaldehyde resin in an amount forming from about 2 to about 30% by weight of the total weight of dry starch in the slurry.

4,131,575

THERMOPLASTIC POLYCARBONATE MOLDING MATERIALS WITH IMPROVED MOLD RELEASE

Siegfried Adelmann; Dieter Margotte; Hugo Vernaleken, and Werner Nouvertné, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Germany

Continuation-in-part of Ser. No. 656,233, Feb. 9, 1976, abandoned. This application Feb. 17, 1977, Ser. No. 769,725

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1975, 2507748; Jan. 18, 1977, 2701725

Int. Cl.² C08L *69/00*

U.S. Cl. 260—17.4 R **14 Claims**

1. Thermoplastic molding materials comprising high molecular weight, thermoplastic, aromatic polycarbonates based on aromatic dihydroxy compounds and containing from about 0.01 to 0.1% by weight of esters of saturated aliphatic carboxylic acids with 10 to 20 C atoms and aliphatic 4-hydric to 6-hydric alcohols.

4,131,576

PROCESS FOR THE PREPARATION OF GRAFT COPOLYMERS OF A WATER SOLUBLE MONOMER AND POLYSACCHARIDE EMPLOYING A TWO-PHASE REACTION SYSTEM

Carmine P. Iovine, and Dilip K. Ray-Chandhuri, both of Bridgewater, N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Dec. 15, 1977, Ser. No. 860,951

Int. Cl.² C08L *51/02*

U.S. Cl. 260—17.4 GC **11 Claims**

1. A process for the production of a graft copolymer of a polysaccharide and water-soluble monomer comprising the steps of:

(a) suspending the polysaccharide in an organic solvent, which solvent has a boiling point at or above the temperature of the polymerization reaction, is immiscible with water and does not dissolve the polysaccharide, monomer or graft copolymer;

(b) adding thereto an aqueous solution of the monomer thereby forming a suspension of discrete aqueous spheres in the organic solvent phase;

(c) deoxygenating and heating the reaction mixture in the presence of a free radical polymerization catalyst to a temperature of 40 to 100° C. to initiate polymerization;

(d) continuing the polymerization for from 0.5 to 6 hours; and

(e) isolating the resultant graft copolymer from the reaction mixture in the form of solid beads; wherein it is required that either the aqueous solution or the polysaccharide suspension or both contain a cationic, anionic or nonionic surfactant, that the solids content of the aqueous polymerization mixture is greater than 50% by weight, and that the polysaccharide be present in the final graft copolymer in an amount of from 10 to 90% by weight.

4,131,577

REINFORCED PLASTIC COMPOSITIONS CONTAINING GRAFT COPOLYMERS

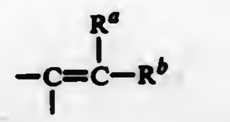
Donald R. Lachowicz, Fishkill, and Charles B. Holder, Wappinger Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 526,200, Nov. 22, 1974, Pat. No. 4,065,521, which is a continuation-in-part of Ser. No. 335,858, Feb. 26, 1973, abandoned, and Ser. No. 335,587, Feb. 26, 1973, abandoned. This application Mar. 4, 1977, Ser. No. 774,571

Int. Cl.² C08L *9/00, 23/00*

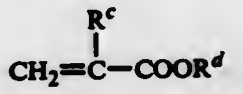
U.S. Cl. 260—17.4 CL **4 Claims**

1. A reinforced thermoplastic composition comprising from about 60 to about 90 percent by weight of of a polyolefin and uniformly dispersed throughout the said polyolefin polymer from 10 to about 40 percent by weight of a reinforcing material selected from the group consisting of alpha-cellulose and a siliceous reinforcing agent, the said reinforcing material being coated with a graft copolymer comprising a backbone polymer having a hydrocarbon chain portion and a plurality of pendant hydrocarbon groups each containing a moiety of the formula:



$$-\underset{|}{C}=\overset{R^{a}}{\overset{|}{C}}-R^{b}$$

wherein R^a and R^b are independently selected from the group consisting of hydrogen and alkyl of from 1 to 16 inclusive carbon atoms, having grafted thereon an acrylate of the formula:



$$CH_2=\overset{R^{c}}{\overset{|}{C}}-COOR^{d}$$

wherein R^c is selected from the group consisting of hydrogen and alkyl of from 1 to 3 inclusive carbon atoms and R^d is alkyl of from 1 to 30 inclusive carbon atoms, to form a graft copolymer, wherein the said backbone polymer is 1,2-polybutadiene and wherein about 5 to about 80 percent by weight of the graft copolymer is 1,2-polybutadiene with the balance being the said acrylate.

4,131,578

AQUEOUS HYDRAULIC CEMENT SLURRY

Oliver W. Crinkelmeyer, Kilgore, Tex., and Earl F. Morris, Wagoner, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 546,845, Feb. 3, 1975, abandoned. This application Aug. 12, 1977, Ser. No. 824,022

Int. Cl.² C04B *7/02, 7/354*

U.S. Cl. 260—17.5 **13 Claims**

1. A hydraulic cement slurry composition which comprises:

(a) hydraulic cement, and the following expressed as parts by weight per 100 parts of said hydraulic cement;

(b) water, from about 25 to about 100 parts;

(c) from about 1 to about 5 parts of a compound selected from the group consisting of a lignosulfonate, a lignoamine or a mixture thereof;

(d) from about 0.5 to about 8 parts of a polyamine compound having an average molecular weight of at least about 1400, provided that when said polyamine compound is predominately a polyalkylenepolyamine, said range is from about 2 to about 8 parts; and

(e) a composition selected from the group consisting of a water soluble carbonate, bicarbonate, or mixture thereof, in an amount from that which is effective to enhance the fluid loss property of said slurry up to about 3 parts.

4,131,579

LOW-VISCOSITY AIR-DRYING ALKYD RESINS

Hans-Dieter Mummenthey, Wiesbaden, and Hannes Fischer, Taunusstein, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 24, 1977, Ser. No. 827,143

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1976, 2637955

Int. Cl.² C09D *3/64*

U.S. Cl. 260—22 EP **11 Claims**

1. An air-drying alkyd resin, based on A) a dicarboxylic acid; B) a non-drying monocarboxylic acid; C) a drying fatty acid; and D) at least one compound selected from the group consisting of D1) polyhydric, at least trihydric alcohol, and D2) mixtures of D1) with up to 20% by weight, based on the total weight of the alkyd resin, of at least one dihydric alcohol; modified by an additional reaction with at least one monofunctional monomeric oxirane compound and having a viscosity of

not more than 450 mPa.s (measured in a 60% xylene solution at 20° C.) and having an acid number of not more than 15.

4,131,580

WATER-BASED COATING COMPOSITIONS COMPRISING A VINYL ADDITION POLYMER AND AN ACRYLIC ESTER OF DICYCLOPENTADIENE

William D. Emmons, Huntingdon Valley; Kayson Nyi, Sellersville, and Peter R. Sperry, Doylestown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 664,597, Mar. 8, 1976, abandoned. This application Nov. 14, 1977, Ser. No. 851,325

The portion of the term of this patent subsequent to Jan. 31, 1995, has been disclaimed.

Int. Cl.^{2} C08L *33/08, 33/12*

U.S. Cl. 260—29.6 RW **22 Claims**

1. A composition adapted to coat and/or impregnate a substrate consisting essentially of an aqueous dispersion of (a) a vinyl addition polymer, (b) at least one of dicyclopentenyl acrylate or dicyclopentenyl methacrylate, the proportion of the latter being from about 1% to 200% by weight, based on the weight of the polymer, and (c) an effective amount of a polyvalent metal-containing complex or salt that catalyzes the oxidative curing of (a) and (b).

4,131,581

ADHESIVE COMPOSITIONS CONSISTING ESSENTIALLY OF A VINYL ALCOHOL POLYMER, A CRYSTALLINE SOLVENT AND A VISCOSITY REDUCING DILUENT

James N. Coker, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 749,986, Dec. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 640,782, Dec. 15, 1975, abandoned. This application Mar. 14, 1977, Ser. No. 777,321

Int. Cl.^{2} C08L *29/04*

U.S. Cl. 260—29.1 R **45 Claims**

1. An adhesive composition consisting essentially of (1) about 2 to 35 percent by weight of a polymer selected from the group consisting of polyvinyl alcohol and ethylene/vinyl alcohol copolymers containing at least 50 mol percent vinyl alcohol, (2) about 10 to 80 percent by weight of at least one solvent for said polymer, which solvent is crystalline at 40° C. and is selected from the group consisting of urea, solid alkyl substituted ureas containing a total of up to 9 carbon atoms, thiourea, biuret, ϵ-caprolactam, solid aliphatic amides containing up to 6 carbon atoms, solid polyhydric compounds and ammonium carboxylate salts, (3) about 5 to 80 percent by weight of at least one viscosity reducing diluent selected from the group consisting of water, liquid polyhydric compounds, liquid alkyl substituted ureas having up to 9 carbon atoms in the alkyl group, liquid aliphatic amides containing up to 6 carbon atoms, and dimethyl sulfoxide, and (4) 0 to about 60 percent by weight extender selected from the group consisting of starch, dextrin, clay, silica, carbon black, talc, calcium carbonate, barium sulfate and vinyl polymer latices, provided that when said adhesive composition is a suspension the polymer is polyvinyl alcohol which has a cold water solubles content of less than 10 percent by weight at 25° C. while being soluble in 80° C.–100° C. water.

4,131,582

METHOD FOR PREPARING STABLE AQUEOUS EMULSION OF PHENOLIC RESIN

Yuji Kako, Shizuoka; Toyoji Kiguga, and Tetsuo Sanuki, both of Fujieda, all of Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 341,625, Mar. 15, 1973. This application Jun. 24, 1977, Ser. No. 809,949

Claims priority, application Japan, Mar. 14, 1972, 47/25299

Int. Cl.^{2} C08L *61/06*

U.S. Cl. 260—29.3 **6 Claims**

1. A process for producing an aqueous emulsion which remains stable at room temperature during long term storage consists essentially of the steps of preparing a phenolic resin by commencing the reaction by heating (1) about 5 to about 100 parts by weight of an phenol and 0 to about 95 parts by weight of a modifier reactive with an aldehyde, and (2) a methylene donor compound in a proportion of more than 0.4 mole per mole of the total amount of said phenol and said modifier, in the presence of a catalyst; introducing a polyacrylamide into the reaction mixture, and then continuing the reaction under the same conditions to produce the stable aqueous emulsion, wherein said polyacrylamide is present in a proportion of about 0.5 to about 60 weight percent of polyacrylamide based on the weight of solids present in the stable emulsion.

4,131,583

CORROSION INHIBITING COMPOSITIONS

Fred P. Boerwinkle, St. Paul, Minn., assignor to Northern Instruments Corporation, Lino Lakes, Minn.

Filed Dec. 1, 1977, Ser. No. 856,410

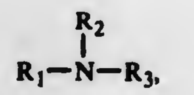
Int. Cl.^{2} C23F *11/14*

U.S. Cl. 260—29.6 HN **21 Claims**

10. An aqueous coating composition comprising, in an aqueous medium;

(a) an effective amount of a salt of a carboxylic acid and an organic amine, wherein said acid has 11 to 20 carbon atoms and wherein said amine is selected from the group consisting of:

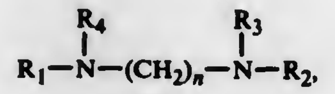
(i)



$$R_1-\underset{}{\overset{R_2}{\overset{|}{N}}}-R_3,$$

where R_1 is alkyl or alkenyl of 11 to 20 carbons, R_2 and R_3 are —H, —CH_3 or —CH_2CH_2OH; and

(ii)

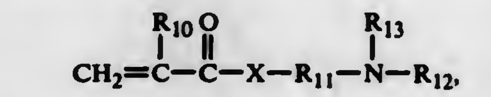


$$R_1-\overset{R_4}{\overset{|}{N}}-(CH_2)_n-\overset{R_3}{\overset{|}{N}}-R_2,$$

where n is an integer of 2 to 4, R_4 is —H, —CH_3 or —CH_2CH_2OH; and

(b) a water dispersible polymer derived from the free-radical-initiated addition polymerication of the following monomers in the mol percentages given:

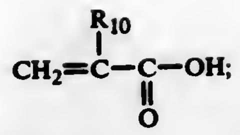
(i) an amine monomer of the formula:



$$CH_2=\overset{R_{10}}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}-X-R_{11}-\overset{R_{13}}{\overset{|}{N}}-R_{12},$$

where R_{10} is —H, —CH_3 or —CH_2CH_3, R_{11} is —CH_2CH_2— or —$CH_2CH_2CH_2$—, R_{12} and R_{13} are H or alkyl of 1 to 4 carbons, X is —0—, —NH— or —S—; present in an amount of about 40 to 100 mol percent;

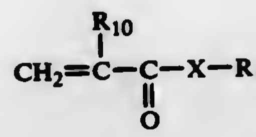
(ii) an acidic monomer of the formula:



$$CH_2=\overset{R_{10}}{\overset{|}{C}}-\underset{\underset{O}{\|}}{C}-OH;$$

present in a amount ranging from 0 to about 50 mol percent; and

(iii)



$$CH_2=\overset{R_{10}}{\overset{|}{C}}-\underset{\underset{O}{\|}}{C}-X-R_{14},$$

where R_{14} is hydrogen or alkyl of 1 to 4 carbons; present in an amount ranging from 0 to about 20 mol percent;

wherein the total mol percent of acidic monomer in said polymer is not greater than the mol percent of said amine monomer.

4,131,584

ELASTOMER LATEX COMPOSITION

Oliver W. Burke, Jr., Fort Lauderdale, and Barbara P. Hunt, Pompano Beach, both of Fla., assignors to Marion Darrah and Joseph Y. Houghton, Co-trustees, Pompano Beach, Fla.

Division of Ser. No. 422,777, Dec. 7, 1973, Pat. No. 4,012,350, which is a division of Ser. No. 219,173, Jan. 19, 1972, Pat. No. 3,922,468. This application Dec. 29, 1976, Ser. No. 754,182

Int. Cl.^{2} C08L *23/16*

U.S. Cl. 260—29.6 N **5 Claims**

1. An elastomer latex composition which consists essentially, dry basis by weight, of

(a) 15 parts elastomer latex, and

(b) from 0.2 to 15 parts m-aminophenol,

(c) the elastomer of said latex being selected from the class consisting essentially of the natural rubbers, homopolymers and copolymers of conjugated diene monomers, copolymers of conjugated diene and vinyl monomers, copolymers of ethylene and propylene, terpolymers of ethylene, propylene and nonconjugated diene, and the flurocarbon elastomers, and

(d) said m-aminophenol being selected from the class consisting of m-hydroxyaniline and salts thereof formed with acids having an appreciable water solubility.

4,131,585

LEVELING AGENT FOR FLOOR POLISHES

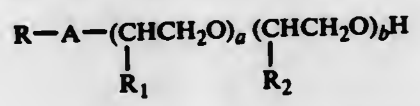
Robert Feigin, West Orange, N.J., assignor to Sybron Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 741,544, Nov. 15, 1976, abandoned. This application Apr. 21, 1978, Ser. No. 898,859

Int. Cl.^{2} C09G *1/16*

U.S. Cl. 260—29.6 MQ **3 Claims**

1. A high gloss non-streaking floor polish in emulsion form comprising a polymer selected from a group consisting of homopolymers and copolymers of styrene, acrylic homopolymers and lesser proportions of at least a second polymer and 2.5 to 15% by weight of the total dry polymers a leveling agent having the following formula:



$$R-A-(\underset{\underset{R_1}{|}}{C}HCH_2O)_a(\underset{\underset{R_2}{|}}{C}HCH_2O)_bH$$

where R = a non-linear aliphatic hydrocarbon or mixture of hydrocarbons containing 8 to 15 carbon atoms in the alkyl chain or an alkylbenzene moiety containing 8 to 12 carbon atoms in the alkyl chain,

A = O, S

R_1 = H, CH_3

R_2 = H, CH_3

a + b = 7 or less so that the solubility of the compounds is less than about 0.4% in water at room or application temperature but when R is an alkylbenzene moiety, A is oxygen atom only and R_1 and R_2 are hydrogen atoms.

4,131,586

POLYMERIC HYDROXYALKYL SULFONATES

Henry S. Makowski, Scotch Plains, and Charles P. O'Farrell, Clark, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

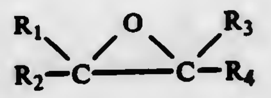
Filed Nov. 29, 1977, Ser. No. 855,763

Int. Cl.^{2} C08K *5/10*

U.S. Cl. 260—31.2 R **35 Claims**

1. A process for preparing a solid, gel-free ionomer which consists essentially of:

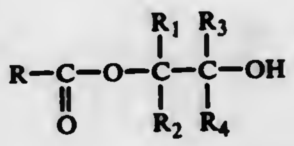
(a) reacting a polymer having one or more sulfonic acid groups covalently bonded to one or more carbon atoms in one or more molecules with an oxirane to form a polymeric hydroxyalkyl sulfonate said oxirane having the general formula:



wherein R_1, R_2, R_3 and R_4 are independently selected from the group consisting of hydrogen and C_1 to C_{18} straight and branched chain acyclic, alicyclic, aryl, alkylaryl, arylalkyl radicals and functional derivatives thereof;

(b) mixing said polymeric hydroxyalkyl sulfonate with a metallic salt of a fatty acid having a lower K_a than an ionomer sulfonic acid groups, wherein said metallic salt is selected from the group consisting of antimony, hydroxyalkyl lead, aluminum and Groups I-A, I-B, II-A and II-B of the Periodic Table of Elements and mixtures thereof;

(c) heating the mixture of the polymeric hydroxyalkyl sulfonate and said metallic salt to a reaction temperature to form a mixture of anionomer and a hydroxyalkyl carboxylate ester, said ionomer being a metal neutralized sulfonated polymer and said hydroxyl carboxylate ester having the formula:



$$R-\underset{\underset{O}{\|}}{C}-O-\overset{R_1}{\overset{|}{\underset{\underset{R_2}{|}}{C}}}-\overset{R_3}{\overset{|}{\underset{\underset{R_4}{|}}{C}}}-OH$$

wherein said R, R_1, R_2, R_3, and R_4 are independently selected from the group consisting of hydrogen, C_1 to C_{18} straight and branched chain acyclic, alicyclic, aryl, alkylaryl, and arylalkyl groups and functional derivatives thereof and mixtures thereof; and

(d) recovering said mixture of said ionomer and said hydroxyalkyl carboxylate ester from said heated mixture.

4,131,587

PLASTICIZATION OF NEUTRALIZED SULFONATED ELASTOMERIC POLYMER

Douglas Brenner, Livingston, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 29, 1977, Ser. No. 855,547

Int. Cl.^{2} C08K *5/18*

U.S. Cl. 260—32.6 A **9 Claims**

1. An elastomeric composition including:

(a) a neutralized sulfonated elastomeric polymer having about 15 to 60 meq metal sulfonate groups per 100 grams of said sulfonated elastomeric polymer; and

(b) at least about 10 parts by weight of an organic amine based on 100 parts of said neutralized sulfonated elastomeric polymer, wherein said amine is selected from the group consisting of mono and di-substituted amino naphthalene compounds, amino alkyl naphthalene compounds, and saturated n-alkyl amines and mixtures thereof, wherein the alkyl groups of said n-alkylamine has at least about 20 carbon atoms.

4,131,588

LOW VAPOR TRANSMISSION RATE SILICONE COMPOSITION

Alfred H. Smith, Jr., Jonesville, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Dec. 13, 1976, Ser. No. 750,061

Int. Cl.² C08L *83/04*

U.S. Cl. 260—37 SB **12 Claims**

1. A low vapor transmission rate room temperature vulcanizable silicone composition comprising (a) 100 parts by weight of a diorganopolysiloxane polymer having a viscosity varying from 100 to 500,000 centipoise at 25° C wherein said organo groups are selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals; (b) from 75 to 150 parts by weight of a vapor barrier filler which is mica; (c) 0 to 30 parts by weight of a reinforcing or extending filler; (d) from 1 to 15 parts by weight of a cross-linking agent selected from the class consisting of $R_aSi(OR')_{4-a}$ and partial hydrolyzed products thereof where R and R' are selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, a is 0 or 1 and a resinous copolymer of $R_3{}^2SiO_{0.5}$ units and SiO_2 units in a weight ratio of 0.5:1 to 1:1 when R^2 is selected from monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals and mixtures thereof; and (e) from 0.01 to 5 parts by weight of metal salt of a carboxylic acid as a catalyst where the metal varies from lead to manganese in the Periodic Table.

4,131,589

LOW TEMPERATURE TRANSMISSION ROOM TEMPERATURE VULCANIZABLE SILICONE COMPOSITIONS

Alfred H. Smith, Jr., Jonesville, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Dec. 13, 1976, Ser. No. 750,062

Int. Cl.² C08L *83/04*

U.S. Cl. 260—37 SB **16 Claims**

1. A low vapor transmission rate room temperature vulcanizable silicone rubber composition comprising (a) 100 parts by weight of a silanol-terminated diorganopolysiloxane having a viscosity varying from 100 to 500,000 centipoise at 25° C where the organo groups are selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals; (b) from 75 to 150 parts by weight of vapor barrier filler which is mica; (c) from 1 to 15 parts by weight of a silane and siloxane having functionality selected from the class consisting of alkoxy functionality, acyloxy functionality, amine functionality, amide functionality, ketoximino functionality, and tert-alkoxy functional silanes and (d) from 0.01 to 5 parts by weight of a catalyst.

4,131,590

EPOXY-RUBBER BASED FRICTION MATERIAL

Michael P. DeFrank, Crawfordsville, Ind., assignor to Raybestos-Manhattan, Inc., Trumbull, Conn.

Filed Aug. 18, 1977, Ser. No. 825,685

Int. Cl.² C08L *63/00*

U.S. Cl. 260—37 EP **9 Claims**

1. A friction material comprising a flexible solid binder matrix composed of a cured blend of epoxy resin and rubber, said material containing from about 5 to about 30 percent epoxy resin, from about 5 to about 30 percent rubber, and from about 60 to about 90 percent friction fillers comprising fibrous and powdered friction modifying materials, said friction material having a dynamic coefficient of friction in oil of from about 0.060 to about 0.150 and a static coefficient of friction in oil of from about 0.100 to about 0.300.

4,131,591

MINERAL-FILLED NYLON MOLDING COMPOSITIONS EXHIBITING LOW CREEP

Robert MacFarlane, Jr., Fanwood, N.J., assignor to Allied Chemical Corporation, Morristown, N.J.

Continuation-in-part of Ser. No. 717,851, Aug. 26, 1976, abandoned. This application Aug. 29, 1977, Ser. No. 828,356

Int. Cl.² C08L *77/02*

U.S. Cl. 260—37 N **40 Claims**

1. A polyamide molding composition comprising:

(a) polyamide resin;

(b) about 5 to 40 weight percent, based on the total weight of the composition, of substantially asbestos free talc in the form of platy fine particles having a surface area of at least about 7 m^2/g;

(c) about 2 to 40 weight percent, based on the total weight of the composition, of wollastonite; and

(d) about 5 to 25 weight percent, based on the total weight of the composition, of fiber glass; wherein the ingredients in the composition, are present in proportion to one another such that the composition after molding, has a creep slope of less than about 0.17 percent strain per log time.

4,131,592

FLAME RETARDANT RUBBER FLOORING COMPOSITION

Fred R. Davis, Kent, Ohio, assignor to The R.C.A. Rubber Company, Akron, Ohio

Continuation of Ser. No. 737,040, Oct. 29, 1976, abandoned. This application Mar. 20, 1978, Ser. No. 888,286

Int. Cl.² C08L *91/00*

U.S. Cl. 260—23.7 R **6 Claims**

1. A flame retardant synthetic rubber composition for flooring material having a syntehtic rubber hot emulsion polymer combined with a high bound styrene resin, compounding agents, curing agents, and pigments, the improvement to the composition comprising,

the flame retardant materials of antimony oxide, a chlorinated paraffin hydrocarbon, hydrated alumina, asbestos and a high flash point naphthenic oil,

where about 6 to 10 parts of antimony oxide, about 25 to 40 parts of chlorinated paraffin hydrocarbon, about 150 to 450 parts of hydrated alumina, about 50 parts of asbestos, and about 10 to 40 parts of naphthenic oil are present per 100 parts of said rubber polymer for providing a flame spread index for the composition of less than or equal to 25.

4,131,593

LOW INFRARED EMISSIVITY PAINTS COMPRISING AN OXIME CURED SILICONE BINDER

Henry Y. B. Mar, Arden Hills, and Paul B. Zimmer, New Brighton, both of Minn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 706,047, Jul. 19, 1976, abandoned. This application Oct. 13, 1977, Ser. No. 841,777

Int. Cl.² C08L *83/04*

U.S. Cl. 260—37 SB **2 Claims**

1. A low infrared emissivity coating composition particularly adapted to provide nuclear flash protection which comprises a mixture in equal amounts of (a) a pigment material selected from the group consisting of Ta_2O_5, $BaTiO_3$, CdS, Sb_2S_3. $CoTiO_3$, CdSe and mixtures thereof; and (b) an oxime cured silicone binder material.

4,131,594

FIRE-RESISTANT THERMOPLASTIC POLYESTER RESIN COMPOSITIONS AND PROCESS FOR RENDERING POLYESTERS FIRE-RESISTANT

Yoshitsugu Nakamura; Takeo Kawamura; Noritsugu Saiki, and Michiyuki Tokashiki, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 20, 1975, Ser. No. 579,064

Claims priority, application Japan, May 25, 1974, 49-58415; Jun. 3, 1974, 49-61784

Int. Cl.² C08L *67/06*

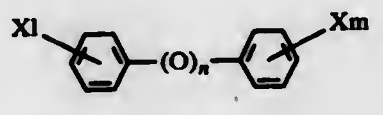
U.S. Cl. 260—40 R **8 Claims**

1. A fire-resistant thermoplastic polyester resin composition which consists essentially of

(A) an aromatic polyester resin selected from the group consisting of polyethylene terephthalate, polytrimethylene terephthalate, polytetramethylene terephthalate, polyhexamethylene terephthalate and mixtures thereof.

(B) a graft copolymer derived from a butadiene polymer having at least 50 mol% of butadiene units and a graft monomer selected from the group consisting of methacrylic acid esters, aromatic monovinyl compounds, vinyl cyanide compounds, and mixtures thereof present in an amount of at least 0.5 parts by weight but less than 25 parts by weight per 100 parts by weight of said polyester resin (A),

(C) a fire retardant selected from the group consisting of a compound of the formula



in which

X represents a halogen atom,

n respresents an integer of 1 or 0, and

l and m each represents an integer of 1–5, a halogen-substituted cyclopentadiene dimer; an oligomeric polycarbonate of tetrabromobisphenol A, and a combination thereof with antimony oxide, in an amount of from 0.5 to 35 parts by weight per 100 parts by weight of said polyester resin (A),

(D) a glass fiber present in an amount less than 120 parts by weight per 100 parts by weight of said polyester resin (A), and

(E) at least one additive, in an amount of 0 to 10 parts by weight per 100 parts by weight of said polyester resin (A), selected from the group consisting of stabilizers, coloring agents, mold releasing agents, nucleating agents, lubricants, and inorganic fillers other than said glass fiber.

4,131,595

THERMOPLASTIC MOULDING COMPOSITIONS

Franz Breitenfellner and Holger Andreas, both of Bensheim, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 16, 1977, Ser. No. 769,357

Claims priority, application Switzerland, Feb. 26, 1976, 2399/76

Int. Cl.² C08K *3/40*

U.S. Cl. 260—40 R **15 Claims**

1. A moulding compound based on polyester mixtures consisting of a polyalkylene terephthalate and a further thermoplastic polyester, said moulding compound containing

a. 95 to 60% by weight, referred to the polyester mixture, of poly(1,4-butylene terephthalate), and

b. 5 to 40% by weight of a copolyester of terephthalic acid, 1,4-butanediol and aliphatic dicarboxylic acid of the formula I

$$HOOC—R—COOH \qquad (I)$$

wherein R represents a divalent aliphatic hydrocarbon group having not more than 34 carbon atoms

and wherein the acid of formula I is from 5 to 30 molar percent of the copolyester.

4,131,596

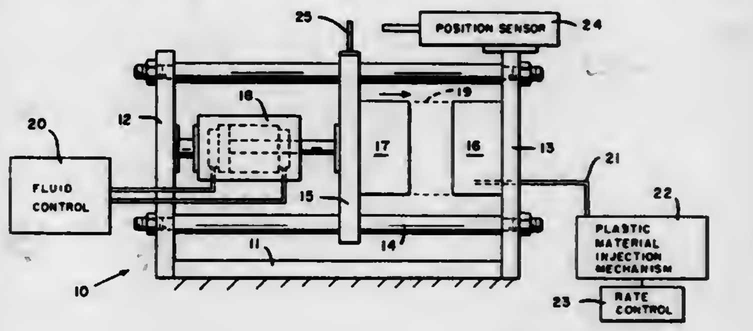
SENSING SYSTEM AND METHOD FOR PLASTIC INJECTION MOLDING

Paul E. Allen, Newtown, Conn., assignor to Logic Devices, Inc., Sandy Hook, Conn.

Filed Aug. 22, 1977, Ser. No. 826,494

Int. Cl.² B29F *1/06*

U.S. Cl. 264—40.5 **5 Claims**



1. The method of providing a control signal in an injection molding cycle for influencing an operation in the cycle comprising the steps of urging a pair of mold dies to a closed position by either a higher or a lower closing force, injecting plastic material under pressure into the closed mold dies while the dies are urged closed by the higher closing force, measuring the extent of the separation of the mold dies caused by the plastic material injection, determining the extent of separation of the dies that enables plastic material to flow between the separated mold dies to form flash, shifting from the higher to the lower closing force if the determined extent of separation is achieved and holding said lower closing force for the remainder of the cycle that the mold dies have a closing force exerted thereon to thereby reduce flash causing deterioration of the mold dies.

4,131,597

BIOACTIVE COMPOSITE MATERIAL PROCESS OF PRODUCING AND METHOD OF USING SAME

Waldemar Blüethgen, Braunsfels; Heinz Bröemer, Hermannstein, and Klaus K. Deutscher, Wetzlar, all of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Filed Jan. 12, 1976, Ser. No. 648,505

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1975, 2501683

Int. Cl.² C08K *7/14*

U.S. Cl. 260—42.18 **23 Claims**

1. A composite material for prosthetic purposes, said material consisting of a polymerizable plastic matrix and between about 10 and about 70% by volume of inorganic bioactive and biocompatible material.

2. The composite material of claim 1, in which the bioactive material is a bioactive glass ceramic material having an apatite crystal phase and being of the following composition, in weight percent:

between about 20.0% and about 60.0% of silicon dioxide SiO_2,
between about 5.0% and about 40.0% of phosphorus pentoxide P_2O_5,
between about 2.7% and about 20.0% of sodium oxide Na_2O,
between about 0.4% and about 20.0% of potassium oxide K_2O,
between about 2.0% and about 30.0% of magnesium oxide MgO, and
between about 5.0% and about 40.0% of calcium oxide CaO.

4,131,598
POLYPHENYLENE ETHER COMPOSITION

Visvaldis Abolins, Delmar, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Mar. 29, 1976, Ser. No. 671,341
Int. Cl.^{2} C08K *7/14;* C08L *71/04*
U.S. Cl. 260—42.18 **29 Claims**

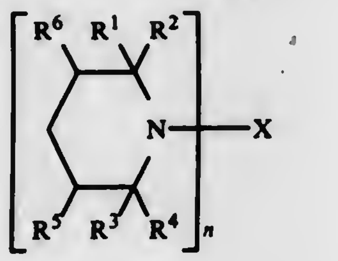
1. A thermoplastic composition comprising:
(a) a polyphenylene ether resin; and
(b) a copolymer of a vinyl aromatic compound and an α,β-unsaturated cyclic anhydride.

4,131,599
STABILIZATION OF POLY(MONO-OLEFINS)

Heimo Brunetti, Reinach; Jean Rody, Basel, both of Switzerland; Nobuo Soma, and Tomoyuki Kurumada, both of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan and Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 19, 1976, Ser. No. 687,823
Claims priority, application United Kingdom, May 28, 1975, 23352/75
Int. Cl.^{2} C08K *5/34;* C07D *211/06*
U.S. Cl. 260—45.8 N **12 Claims**

5. A composition consisting of an polymono-olefins normally subject to ultraviolet deterioration and 0.01 to 5% by weight of a stabilizer of formula I



wherein
R^1 is alkyl having 2–6 C-atoms,
R^2 is alkyl having 1–6 C-atoms,
R^3 is alkyl having 1–9 C-atoms, phenyl, benzyl or phenylethyl,
R^4 is alkyl having 1–6 C-atoms or
R^3 and R^4 together with the C-atom to which they are attached represent a cyclopentyl or cyclohexyl group,
R^5 is alkyl having 1–5 C-atoms, alkenyl or alkinyl having 3–4 C-atoms or aralkyl having 7–8 C-atoms,
R^6 is hydrogen, alkyl having 1–5 C-atoms, alkenyl or alkinyl having 3–4 C-atoms, aralkyl having 7–8 C-atoms, and R^5 and R^6 are interchangeable,
n is 1 or 2, and if n is 1,
X is hydrogen, the oxyl radical, alkyl having 1–8 C-atoms, alkenyl having 3–6 C-atoms, alkinyl having 3 or 4 C-atoms, alkoxyalkyl having 2–21 C-atoms, aralkyl having 7–8 C-atoms, the 2,3-epoxypropyl group, an aliphatic acyl group having 1–12 C-atoms, or one of the groups $-CH_2COOR^7$, $-CH_2-CH(R^8)-OR^9$ or $-COOR^{10}$ wherein
R^7 is alkyl having 1–12 C-atoms, alkenyl having 3–6 C-atoms, phenyl, aralkyl having 7–8 C-atoms or cyclohexyl,
R^8 is H, CH_3 or phenyl,
R^9 is H or an aliphatic, aromatic, alicyclic or araliphatic acyl group having up to 18 C-atoms, which may optionally be substituted in its aryl moiety with chlorine, alkyl having 1–4 C-atoms, alkoxy having 1–8 C-atoms or hydroxy and combinations thereof, and
R^{10} is alkyl having 1–12 C-atoms, benzyl, cyclohexyl or phenyl and if n is 2,
X is alkylene having 4–8 C-atoms, 2-butenylene-1,4, a group $-CH_2CH(R^8)-O-R^{11}-O-CH(R^8)-CH_2-$ wherein R^{11} is an aliphatic or aromatic diacyl group having up to 12 C-atoms or X is a group $-CH_2-COO-R^{12}-OOC-CH_2-$, wherein R^{12} is alkylene having 2-8 C-atoms or xylylene or a mixture of isomers thereof or an acid addition salt thereof.

4,131,600
HOT-HARDENING REACTION RESIN MIXTURE FOR IMPREGNATING THE INSULATION OF ELECTRICAL EQUIPMENT AND FOR THE MANUFACTURE OF MOLDED MATERIALS WITH OR WITHOUT INSERTS

Walter Ihlein, Berlin; Wolfgang Kleeberg, Erlangen; Helmuth Markert, Nuremberg, and Willi Mertens, Berlin, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 1, 1977, Ser. No. 856,490
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1976, 2655367
Int. Cl.^{2} C08G *18/18, 59/18*
U.S. Cl. 528—53 **9 Claims**

1. In a heat curing resin mixture, said mixture for impregnating the insulation of electrical equipment formed of sleeves made of insulating materials in foil or tape form with a heat resistance which corresponds to at least Class H of electrical conductors, particularly of winding bars or coils of electric machines, and for manufacturing molded materials with or without inserts, including a mixture of purified polyisocyanate and polyepoxy resin compounds which contain an accelerator system (catalyst), the improvement comprising:
said accelerator system being formed by addition complexes of tertiary amines and boron trichloride of the general formula $BCl_3 \cdot NR_1R_2R_3$, where in R_1, R_2 and R_3 are like or different aliphatic, aromatic, heterocyclic or arylaliphatic radicals and wherein R_1, R_2 and R_3 belong to heterocyclic rings jointly or in pairs.

4,131,601
PROCESS FOR THE PREPARATION OF POLYESTERS

Satoshi Hashimoto, Matsuyama; Nobuya Okumura, Ehime, and Kiyoshi Kazama, Matsuyama, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Oct. 4, 1977, Ser. No. 839,464
Claims priority, application Japan, Oct. 5, 1976, 51-119007
Int. Cl.^{2} C08G *63/14*
U.S. Cl. 528—279 **5 Claims**

1. In a process for the preparation of substantially linear, highly polymerized polyesters by polycondensing a glycol ester of an aromatic dicarboxylic acid and/or a low molecular weight condensate thereof while removing glycol therefrom in the presence of a polycondensation catalyst, the improvement which comprises using as the polycondensation catalyst a preformed titanate compound obtained by reacting a titanic acid ester represented by the formula $Ti(OR)_4$, where R is an alkyl group having from 1 to 5 carbon atoms, with an aromatic acid selected from the group consisting of trimellitic acid, trimellitic anhydride, hemimellitic acid, hemimellitic anhydride or a mixture of one or more thereof at a molar ratio of from about 0.5 to about 2.5 mols of the aromatic acid per 1 mol of the titanic acid ester.

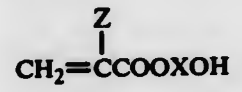
4,131,602
RADIATION CURABLE ACRYLATED POLYURETHANE

Leonard E. Hodakowski, St. Albans, and Charles H. Carder, Amma, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sep. 29, 1977, Ser. No. 837,974
Int. Cl.^{2} C08G *18/67, 18/42, 18/12*
U.S. Cl. 528—49 **11 Claims**

1. An acrylated or methacrylated polyurethane produced by the process which comprises the steps of:
(A) producing an isocyanate-terminated urethane intermediate by reacting
(i) an organic diisocyanate;
(ii) an organic tri/tetraol chosen from the group consisting of polyester tri/tetraols and polyether tri/tetraols; and

(iii) an organic diol chosen from the group consisting of polyester diols and polyether diols, said organic diisocyanate being employed in equivalent excess to said organic tri/tetraol and organic diol; the ratio of organic diol to organic tri/tetraol employed being from about 1:1 to about 7:1; and provided that when the organic tri/tetraol is a polyester tri/tetraol the organic diol is a polyether diol, and when the organic tri/tetraol is a polyether tri/tetraol the organic diol is polyester diol; then
(B) reacting the isocyanate-terminated urethane produced in step (A) with a sufficient amount of an hydroxyacrylate or hydroxymethacrylate to react at least 80% of the isocyanate groups of the intermediate, said hydroxyacrylate or hydroxymethacrylate having the formula



$$CH_2{=}\overset{\overset{Z}{|}}{C}COOXOH$$

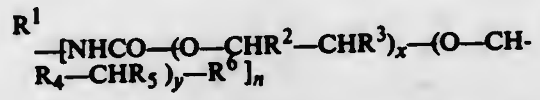
wherein Z is hydrogen or methyl and X is linear or branched divalent alkylene of 1 to 10 carbon atoms, cycloalkylene of 5 to 12 carbon atoms, or arylene of 6 to 12 carbon atoms.

4,131,603
HEAT SENSITIZING MIXTURE COMPRISING AN AMIDE AND A HEAT SENSITIZING AGENT WHICH IS A POLY(ALKYLENE OXIDE) CONTAINING URETHANE GROUPS

Hermann Perrey, Krefeld; Martin Matner, Odenthal, and Gustav Sinn, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Division of Ser. No. 676,486, Apr. 13, 1976. This application Nov. 28, 1977, Ser. No. 855,225
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1975, 2516979
Int. Cl.^{2} C08G *18/30*
U.S. Cl. 528—45 **3 Claims**

1. A heat sensitizing mixture comprising (a) a water-soluble amide of an acid selected from the group consisting of carbonic acid, thiocarbonic acid, carboxylic acid and thiocarboxylic acid which amide may be unsubstituted at the nitrogen atom or substituted with at least one alkyl having 1–4 carbon atoms; (b) a member selected from the group consisting of boric acid and an oxalkylated polysiloxane; and (c) a heat sensitizing agent of the formula



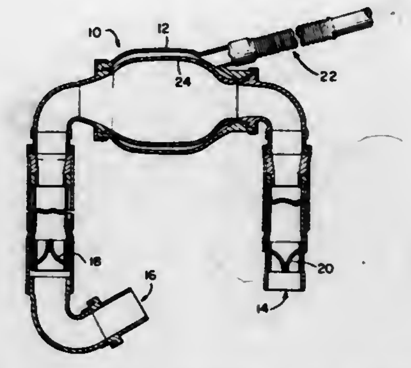
$$R^1\text{—}[NHCO\text{—}(O\text{—}CHR^2\text{—}CHR^3)_x\text{—}(O\text{—}CHR_4\text{—}CHR_5)_y\text{—}R^6]_n$$

wherein R^1 is a member selected from the group consisting of saturated aliphatic hydrocarbon moiety having 1–18 carbon atoms and a valency equal to n, a saturated cycloaliphatic hydrocarbon having 5 to 6 carbon atoms and a valency equal to n, an aromatic hydrocarbon radical having 6–10 carbon atoms and a valency equal to n, said cycloaliphatic radical substituted by chlorine or alkyl having 1–4 carbon atoms and said aromatic radical substituted by chlorine or alkyl having 1–4 carbon atoms;
n is a number from 1 to 20;
R^2, R^3, R^4 and R^5 are independently of one another members selected from the group consisting of hydrogen, alkyl having 1–4 carbon atoms, chloromethyl and phenyl;
x is a numer from 1 to 100;
y is a number from 0 to 50; and
R^6 is a member selected from the group consistin of aryloxy, aralkoxy, alkaryloxy, alkanoyloxy, aroyloxy, alkylamidok, alkylsulfonamido and alkoxy.

4,131,604
POLYURETHANE ELASTOMER FOR HEART ASSIST DEVICES

Michael Szycher, Peabody, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Nov. 23, 1977, Ser. No. 854,274
Int. Cl.^{2} C08G *18/48*
U.S. Cl. 528—79 **22 Claims**



1. A bladder for devices intended for implantation in a human said bladder being characterized in that it is formed from an aliphatic polyurethane elastomer said polyurethane elastomer being the reaction product of:
(1) dicyclohexyl methane diisocyanate;
(2) poly tetra methylene ether glycol having a molecular weight between the range of 500–5,000;
(3) a low molecular weight glycol selected from the group consisting of propylene glycol, dipropylene glycol ethylene glycol, diethylene glycol, neopentyl glycol and cyclohexane dimethanol, and
(4) a trihydric alcohol crosslinker, said trihydric alcohol being selected from the group consisting of glycerol, pentaerythritol, trimethylolethane, trimethylolpropane, and mannitol said polyurethane elastomer having a molecular weight within the range of 80–120 thousand molecular weight units.

4,131,605
POLY(ETHER)URETHANE CURABLE AT AMBIENT TEMPERATURE USING BUTYLSTANNOIC ACID CATALYST

Vernon G. Ammons, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 3, 1978, Ser. No. 866,437
Int. Cl.^{2} C08G *18/24*
U.S. Cl. 528—77 **15 Claims**

1. An ambient temperature curable polyurethane composition prepared by the reaction of:
a. an aliphatic diisocyanate;
b. a polyalkylene ether glycol;
c. a compound comprising three hydroxyl groups capable of reacting with isocyanato groups; and
d. butyl stannoic acid catalyst.

4,131,606
POLY(LACTONE)URETHANE CURABLE AT [CASTABLE] AMBIENT TEMPERATURE [CURABLE POLYURETHANE INTERLAYER] USING BUTYLSTANNOIC ACID CATALYST

Vernon G. Ammons, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 3, 1978, Ser. No. 866,438
Int. Cl.^{2} C08G *18/24*
U.S. Cl. 528—58 **12 Claims**

1. A polyurethane composition curable at ambient temperatures prepared by the reaction of:
a. an aliphatic diisocyanate;
b. a polylactone polyol comprising polylactone triol; and
c. butyl stannoic acid catalyst.

4,131,607
PROCESS FOR OBTAINING PURIFIED PROTEIN ISOLATES

Lëon Petit, Sceaux; Andrë Davin, La Chapelle sur Erdre, and Jacques Guëguen, Cachan, all of France, assignors to Institut National de la Recherche Agronomique, Paris, France

Filed Oct. 23, 1975, Ser. No. 625,036

Claims priority, application France, Oct. 23, 1974, 74 35594

Int. Cl.² A23J *1/14*

U.S. Cl. 260—123.5 **26 Claims**

1. A process for obtaining purified protein isolates from protein substances containing compounds having a mucilaginous consistency which comprises:

(a) making a suspension of cake of such protein substance with a solution of a calcium salt and a magnesium salt of volume in 1. of 10 to 15 times the weight in Kg. of press cake which solution further contains sodium sulphite,

(b) adding thereto a concentrated solution of alkali in amount sufficient to solubilize the proteins in said press cake,

(c) separating the protein extract from the insoluble residue,

(d) acidifying the protein extract obtained with an acid solution at a pH between 4.5 and 5.5 to precipitate the proteins,

(e) separating the protein precipitate from the mother liquor,

(f) washing the protein precipitate and recovering the protein isolate.

4,131,608
THIOETHERS

Ludwig Zirngibl, Zofingen; Johanna Fischer, Reiden, and Kurt Thiele, Zofingen, all of Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

Filed May 9, 1977, Ser. No. 795,224

Claims priority, application Switzerland, May 12, 1976, 5930/76

Int. Cl.² C07D *263/58*

U.S. Cl. 260—307 D **1 Claim**

1. 1-[β-(2-benzoxazolylthio)-2,4-dichlorophenethyl]-imidazole and the acid addition salts thereof.

4,131,609
SILICON-PHTHALOCYANINE-SILOXY MONOMERS

Kenneth J. Wynne, Falls Church, Va., and John B. Davison, Amherst, N.Y., assignors to The United States of America as represented by the Secretary of the Navy

Filed Feb. 23, 1978, Ser. No. 880,515

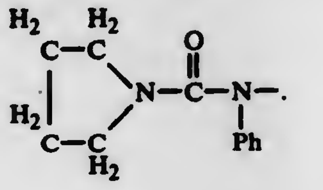
Int. Cl.² C09B *47/04*

U.S. Cl. 260—314.5 **6 Claims**

1. A silicon-phthalocyanine-siloxy monomer having the formula:

$PcSi(OSiR'Ph(OSiR_2'')_rX)_2$

wherein R' and R" are alkyl groups having from 1 to 8 carbon atoms, r is an integer from 1 to 4, and x is a hydroxyl group or an ureido group having the formula:



4,131,610
IMINODIIMIDES OF 3,3',4,4'-BENZOPHENONETETRACARBOXYLIC DIANHYDRIDE AND COMPOSITIONS THEREOF

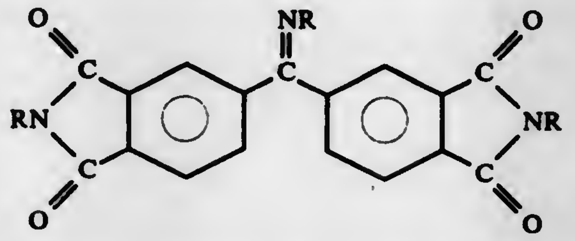
Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 29, 1977, Ser. No. 828,379

Int. Cl.² C07D *403/06;* **C10M** *1/32, 1/36*

U.S. Cl. 260—326 N **3 Claims**

1. A compound having the following general structure:



where R is H, alkyl having from 1 to 36 carbon atoms.

4,131,611
AZABICYCLOHEXANES

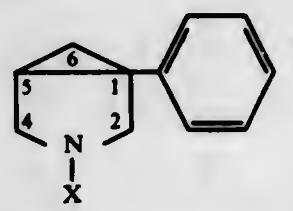
William J. Fanshawe, Pearl River; Joseph W. Epstein, Monroe; Lantz S. Crawley, Spring Valley, all of N.Y.; Corris M. Hofmann, Ho-Ho-Kus, and Sidney R. Safir, River Edge, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 723,402, Sep. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 601,128, Jul. 31, 1975, abandoned. This application Jun. 23, 1977, Ser. No. 809,339

Int. Cl.² A01N *31/40;* **C07D** *209/52*

U.S. Cl. 260—326.8 **69 Claims**

1. An optically active compound of the formula:



wherein the phenyl moiety is unsubstituted or mono- or di-substituted from the group consisting of halogen, straight chain and mono-branched C_1–C_6 alkyl, trifluoromethyl, and nitro; X is selected from the group consisting of hydrogen, straight chain C_1–C_8 alkyl, and a moiety of the formula $C_nH_{2n}R_1$, wherein n is an integer from 1 to 3 and R_1 is phenyl; the racemic mixture thereof; the mirror image thereof; and the nontoxic pharmaceutically acceptable salts thereof.

34. The compound 3-[4,4-bis(p-Fluorophenyl)butyl]-1-phenyl-3-azabicyclo[3.1.0]hexane Fumarate.

35. The compound 3-[4,4-bis(p-Fluorophenyl)butyl]-1-(p-chlorophenyl)-3-azabicyclo[3.1.0]hexane.

4,131,612
PROCESS FOR PURIFYING CRUDE DIBENZYLIDENE SORBITOL

Hiroshi Uchiyama, Hirakata, Japan, assignor to E. C. Chemical Ind. Co., Ltd. and C. Itoh & Co., both of, Japan

Filed May 9, 1977, Ser. No. 795,185

Claims priority, application Japan, Jul. 1, 1976, 51-77128

Int. Cl.² C07D *319/04, 317/10*

U.S. Cl. 260—340.7 **2 Claims**

1. A process for purifying crude dibenzylidene sorbitol, which comprises mixing 1 part by weight of crude dibenzylidene sorbitol obtained by reacting 1 mole of d-sorbitol with 2 moles of benzaldehyde and containing not more than about 7% by weight of by-product monobenzylidene sorbitol, tribenzylidene sorbitol, or both as impurities, with 5 to 15 parts by weight of at least one lower aliphatic alcohol at a temperature of at least 50° C. but below the boiling point of the lower aliphatic alcohol, thereby to dissolve the impurities in the aliphatic alcohol, and then separating and recovering the purified dibenzylidene sorbitol from the resulting solution.

4,131,613
ISOIMIDYL-PHTHALIC ANHYDRIDES

Vratislav Kvita, Muttenz; Roland Darms, Therwil, and Gerd Greber, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

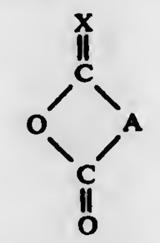
Division of Ser. No. 531,030, Dec. 9, 1974, Pat. No. 3,979,393. This application Jul. 22, 1976, Ser. No. 707,923

Claims priority, application Switzerland, Dec. 20, 1973, 017903/73

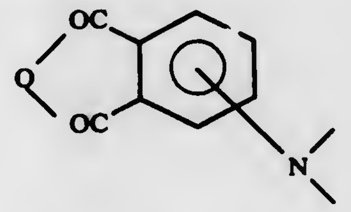
Int. Cl.² C07D *307/90, 307/66*

U.S. Cl. 260—343.3 R **1 Claim**

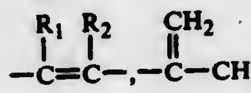
1. An isoimidyl-phthalic anhydride of the formula



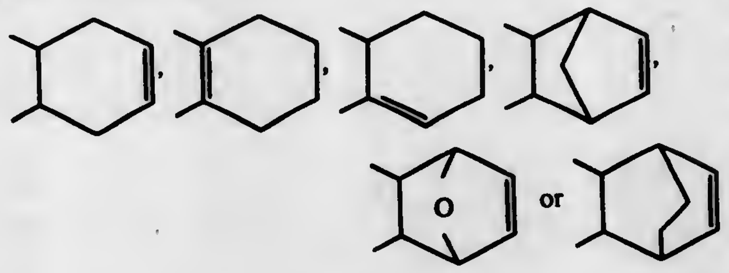
wherein X represents the divalent radical



and A represents a divalent radical selected from the group consisting of



$-\overset{R_1}{\overset{|}{C}}=\overset{R_2}{\overset{|}{C}}-,\ -\overset{CH_2}{\overset{\|}{C}}-CH_2-,$



where R_1 and R_2 independently of one another denote hydrogen, chlorine, bromine or methyl.

4,131,614
PROCESS FOR PREPARING CIS-HEXAHYDRODIBENZOPYRANONES

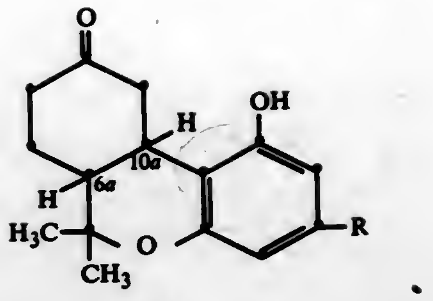
Charles W. Ryan, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 702,806, Jul. 6, 1976, abandoned. This application Sep. 8, 1977, Ser. No. 831,458

Int. Cl.² C07D *311/78*

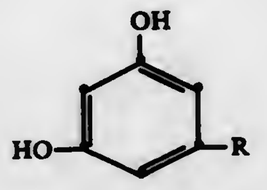
U.S. Cl. 260—345.3 **9 Claims**

1. In a process for preparing a cis-hexahydrodibenzopyranone of the formula

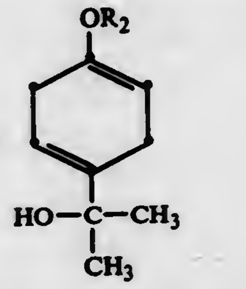


wherein:

R is C_5–C_{10} alkyl, C_5–C_{10} alkenyl, C_5–C_8 cycloalkyl or C_5–C_8 cycloalkenyl, and wherein the hydrogen atoms attached at the 6a and 10a positions are oriented cis to one another, which includes reacting a 5-substituted resorcinol of the formula



wherein R has the above-defined meaning, with a 1-alkoxy-4-(1-hydroxy-1-methylethyl)-1,4-cyclohexadiene of the formula



wherein R_2 is C_1–C_4 alkyl, in the presence of a catalyst selected from boron tribromide, boron trifluoride, and stannic chloride, in an unreactive organic solvent, the improvement comprising adding about an equimolar quantity of water to the reaction mixture.

4,131,615
FURAN DERIVATIVE FOR USE AS PHARMACEUTICAL PRODUCT PARTICULARLY FOR THE TREATMENT OF RHEUMATIC ILLNESSES

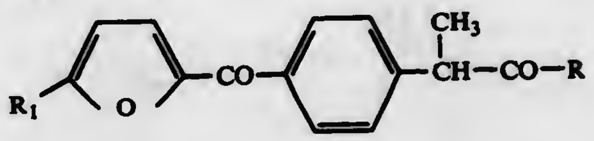
Giorgio D'Aló, Milan, Italy, assignor to A. Wasserman S.p.A., Milan, Italy

Filed Aug. 8, 1977, Ser. No. 822,863

Int. Cl.² C07D *307/54*

U.S. Cl. 260—347.3 **3 Claims**

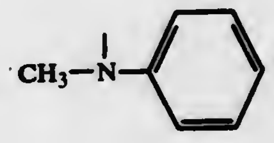
1. A derivate of 4-(furan-2-carbonyl) phenylacetic acid having formula



in which:

R_1 is a hydrogen or bromine atom,

R is —OH, —OCH_3, or



4,131,616
METHANATION CATALYST

Alvin B. Stiles, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jun. 24, 1974, Ser. No. 482,574
Int. Cl.² C07C *27/06*
U.S. Cl. 260—449.6 M **2 Claims**

1. A process for methanating carbon oxides contained in a gaseous mixture of 3-25% by volume carbon oxides and hydrogen comprising the sequential steps of

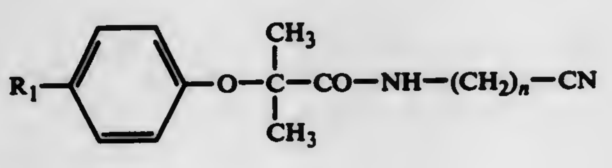
a. contacting the mixture with a first stage methanation catalyst at a temperature between the threshold and deactivation temperatures of the catalyst by which a partially methanated reaction product is produced having a temperature of 600-900° C.;
b. cooling the first stage reaction product to 250-450° C.;
c. contacting the cooled first stage reaction product containing a reduced amount of carbon oxides with at least one intermediate stage methanation catalyst at a temperature between the threshold and deactivation temperature of the catalyst by which further methanated reaction product is produced having a temperature of 450-750° C.;
d. cooling the intermediate stage reaction product to 200-400° C.; and
e. contacting the cooled intermediate stage reaction product containing a further reduced amount of carbon oxides with a final stage methanation catalyst at a temperature between the threshold and deactivation temperatures of the catalyst by which an essentially carbon oxide-free reaction product is produced having a temperature of 375-600° C. the process being further characterized in that the temperature of the reaction product from any catalyst stage is higher than for any succeeding stage and at least the final stage methanation catalyst was prepared by the steps

(1) preparing an aqueous solution of compounds of the metals nickel and chromium in which solution the mol ratio of nickel to chromium is from about 0.5 to about 5.0;
(2) adjusting the pH of the aqueous so ution by which the metals are coprecipitated and separated from solution in finely divided solid form;
(3) calcining and particulating the coprecipitated solids by which they are converted to an incipient crystalline compound containing a minor amount of hexavalent chromium ions; and
(4) reducing the hexavalent chromium contained in the incipient crystalline compound to trivalent form while maintaining the nickel in an unreduced oxide form.

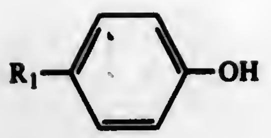
4,131,617
PREPARATION OF NEW ISOBUTYLRAMIDE DERIVATIVES

André Esanu, Paris, France, assignor to Societe d'Etudes de Produits Chimiques, Paris, France
Filed Mar. 17, 1977, Ser. No. 778,724
Claims priority, application United Kingdom, Mar. 17, 1976, 10634/76
Int. Cl.² C07C *121/78*
U.S. Cl. 260—465 D **2 Claims**

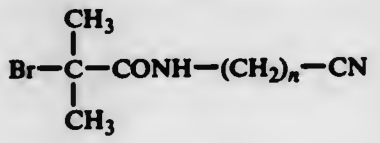
1. A process for the preparation of an isobutyramide of the formula



wherein:
R$_1$ is a halogen; and
n is an integer from 2 to 6 said process comprising:
(a) forming a sodium phenolate by reacting in ethanol sodium with a phenol of the formula



wherein R$_1$ is a halogen;
(b) adding an excess of toluene to the ethanol solution of sodium phenolate of step (a) whereby an ethanol/toluene azeotrope is formed;
(c) removing the azeotrope of step (b) by distillation;
(d) forming a reaction mixture by adding to the solution of sodium phenolate in toluene remaining from step (c) an N-cyanoalkyl α -bromo-isobutyramide of the formula:



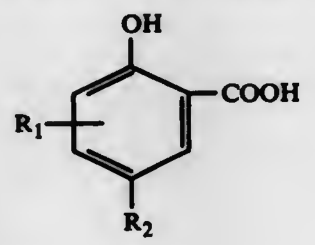
$$\mathrm{Br{-}\underset{CH_3}{\overset{CH_3}{C}}{-}CONH{-}(CH_2)_{\mathit{n}}{-}CN}$$

wherein n is an integer from 2 to 6;
(e) refluxing the reaction mixture of step (d) for a period of from 6 to 15 hours;
(f) adding water to the refluxed reaction mixture whereby a precipitate is formed in the reaction mixture; and
(g) separating the precipitate of step (f) from the reaction mixture.

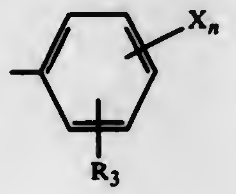
4,131,618
PREPARATION OF SALICYLIC ACID AND DERIVATIVES

Leonard M. Weinstock, Bellemead; Arthur S. Wildman, Martinsville, and Dennis M. Mulvey, Milford, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Dec. 29, 1977, Ser. No. 865,563
Int. Cl.² C07C *65/14*
U.S. Cl. 562—469 **12 Claims**

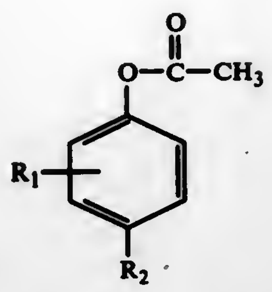
1. A method of preparing compounds of the formula:



wherein:
R$_1$ is selected from the group consisting of hydrogen, C$_{1\text{-}4}$ alkyl, C$_{1\text{-}4}$ alkoxy, benzyl, C$_{1\text{-}4}$ alkenyl and halo; and
R$_2$ is hydrogen or



where n is 1 to 5,
X is halogen, and
R$_3$ is selected from the group consisting of C$_{1\text{-}4}$ alkyl and C$_{1\text{-}4}$ alkoxy;
comprising the step of fusing a starting material selected from compounds of the formula:



wherein R$_1$ and R$_2$ are as defined above; with a substantially anhydrous compound of the formula:

M_2CO_3

where M is potassium or sodium; under substantially anhydrous conditions and in the presence of carbon dioxide, at a pressure of from atmospheric to 500 p.s.i.g., and at a temperature of from 150° to 250° C.

4,131,619
PREPARATION OF 2-CHLORO-4-TOLUENESULFONYL CHLORIDE

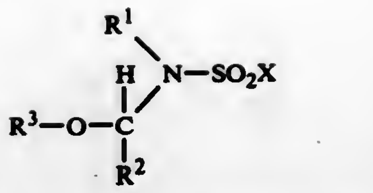
R. Garth Pews, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Mar. 22, 1978, Ser. No. 888,887
Int. Cl.² C07C *143/28, 143/40*
U.S. Cl. 260—543 R **4 Claims**

1. In a process for the preparation of 2-chloro-4-toluenesulfonyl chloride by sulfonation of toluene to form toluenesulfonic acid, the nuclear chlorination of toluenesulfonic acid to form chlorotoluenesulfonic acid and the conversion of the chlorotoluenesulfonic acid to the chlorotoluenesulfonyl chloride, the improvement wherein the process comprises the steps of:
(a) reacting by contacting toluene with sulfur trioxide in an anhydrous, chlorinated hydrocarbon medium to produce in the medium toluenesulfonic acid consisting essentially of the 4-toluenesulfonic acid isomer;
(b) reacting by contacting the toluenesulfonic acid in the chlorinated hydrocarbon medium from step (a) with gaseous chlorine in the presence of an accelerating amount of an iodine catalyst to produce in the medium chlorotoluenesulfonic acid consisting essentially of the 2-chloro-4-toluene sulfonic acid isomer; and
(c) reacting by contacting the chlorotoluenesulfonic acid in the chlorinated hydrocarbon medium from step (b) with chlorosulfonic acid to produce in the medium chlorotoluenesulfonyl chloride consisting essentially of the 2-chloro-4-toluenesulfonyl chloride isomer.

4,131,620
SULFAMIC ACID HALIDES AND THEIR MANUFACTURE

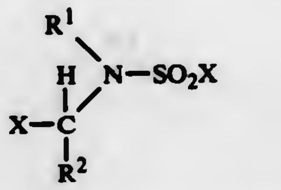
Gerhard Hamprecht, Mannheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Jun. 16, 1977, Ser. No. 807,064
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1976, 2634485
Int. Cl.² C07C *155/00, 51/58, 161/00*
U.S. Cl. 260—543 R **9 Claims**

1. A process for the manufacture of sulfamic acid halides of the formula



I

where R^1 is an aliphatic or cycloaliphatic radical, R^2 is hydrogen or an aliphatic radical, R^3 is an aliphatic, cycloaliphatic or araliphatic radical and X is halogen, which comprises: reacting N-(α-haloalkyl)sulfamic acid halides of the formula



II

where R^1, R^2 and X have the above meanings, with an alcohol of the formula

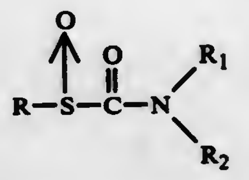
$R^3{-}OH$ III

where R^3 has the above meanings.

4,131,621
ADDUCTS OF CARBAMOYL SULPHOXIDES

Franco Gozzo, S. Donato Milanese, (Milan); Marcella Masoero, Milan; Ernesto Signorini, Malnate (Varese), and Riccardo Fabbrini, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy
Continuation of Ser. No. 608,976, Aug. 29, 1976, Pat. No. 4,008,071, which is a continuation-in-part of Ser. No. 584,352, Jun. 6, 1975, Pat. No. 3,975,180. This application Sep. 3, 1976, Ser. No. 720,215
Claims priority, application Italy, Jun. 7, 1974, 23725 A/74; Sep. 3, 1974, 26861 A/74
Int. Cl.² A01N *9/14;* C07C *125/08*
U.S. Cl. 260—551 C **6 Claims**

1. An adduct of
(a) one or two moles of a carbamoyl sulphoxide of the formula:



wherein R is a C$_1$ to C$_4$ alkyl group or a benzyl group, and R$_1$ and R$_2$ are each a C$_3$ to C$_4$ alkyl group, and
(b) one, two or three moles of a compound selected from the class consisting of phenylurea, biuret, thiourea, dicyanodiamide and dichloralurea.

4,131,622
PURIFICATION OF N,N'-DISUBSTITUTED p-PHENYLENEDIAMINE ANTIOZONANTS AND OIL STABILIZERS

Ivan C. Popoff, Ambler, and Paul G. Haines, Lafayette Hill, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.
Continuation of Ser. No. 343,778, Mar. 22, 1973, abandoned. This application May 18, 1977, Ser. No. 798,186
Int. Cl.² C07C *85/26*
U.S. Cl. 260—576 **3 Claims**

1. A process for purifying soft, mushy, crude N-(1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine prepared by reductive alkylation of N-phenyl-p-phenylenediamine with an excess

of a 4-methyl-2-pentanone, and stripping off water, excess 4-methyl-2-pentanone and 4-methyl-2-pentanol; wherein the purification consists of (a) subjecting the crude reaction product to superheated steam stripping until a portion of the reaction product is removed such that the stripped residue comprises flakable N-(1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine, and (b) recovering the stripped residue as the final product.

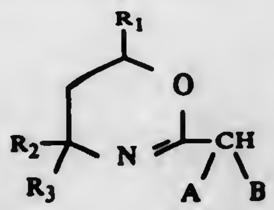
4,131,623
SYNTHESIS OF ALDEHYDES AND PRODUCTS OF SUCH SYNTHESIS

Albert I. Meyers, New Orleans, La., assignor to Board of Supervisors of Louisiana State University and Agricultural & Mechanical College, Baton Rouge, La.

Filed Jul. 8, 1969, Ser. No. 840,062
Int. Cl.² C07C *47/02*

U.S. Cl. 260—601 R **8 Claims**

1. A process of making aldehydes which comprises reacting a dihydro-1,3-oxazine of the formula



in which R_1, R_2 and R_3 are individually selected from the group consisting of hydrogen, methyl, ethyl and propyl and in which A and B are individually selected from the group consisting of hydrogen, phenyl, cyano, methoxy and carboalkoxy with an alkali metal-alkyl compound below 50° C. to produce an oxazine anion, reacting the anion with an electrophile below −50° C. in an anhydrous organic solvent to produce a dihydrooxazine, treating the dihydrooxazine with an alkali metal borohydride solution at about neutral pH and at subzero temperature to obtain a tetrahydrooxazine, converting the tetrahydrooxazine to the aldehyde by steam distillation or hydrolysis and recovering the aldehyde thus produced.

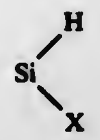
4,131,624
REDUCTION OF PHOSPHINE OXIDES

William R. Davis, South Plainfield, and Michael D. Gordon, Clark, both of N.J., assignors to M&T Chemicals Inc., Stamford, Conn.

Filed Jul. 5, 1977, Ser. No. 812,761
Int. Cl.² C07F *9/50*

U.S. Cl. 260—606.5 P **8 Claims**

1. In an improved method for converting a tertiary phosphine oxide to the corresponding tertiary phosphine by reacting the phosphine oxide with a silicon compound containing the structure



wherein X is halogen, in the presence of a stoichiometric amount of an amine, the improvement which consists of selecting the amine from the group consisting of monofunctional and polyfunctional primary and secondary amines.

4,131,625
4,4'-BIS(3-ETHYNYLPHENOXY)DIPHENYLSULFONE

Fred E. Arnold, Centerville; Gerard A. Loughran, Kettering, both of Ohio, and Anthony Wereta, Jr., Sunnyvale, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 736,287, Oct. 28, 1976. This application Jan. 19, 1978, Ser. No. 870,706
Int. Cl.² C07C *147/06*

U.S. Cl. 260—607 AR **1 Claim**

1. 4,4'-Bis(3-ethynylphenoxy)diphenylsulfone.

4,131,626
PROCESS FOR PRODUCING BROMINE

Lakshmi P. Sharma, Manlius, and Bruce E. Kurtz, Marcellus, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, County of Morris, N.J.

Filed Dec. 21, 1976, Ser. No. 753,169
Int. Cl.² C07C *17/00*

U.S. Cl. 260—658 R **22 Claims**

1. A process for producing bromine from bromide salts which comprises heating a solid bromide salt at a temperature of about 500° to 1000° C in the presence of an oxygen-containing gas, silicon dioxide and an oxidation catalyst comprising a mixture of B_2O_3 and CaO.

4,131,627
CONTINUOUS HYDROGENATION OF CYCLOPENTADIENE TO CYCLOPENTENE USING A RANEY NICKEL CATALYST SATURATED WITH AMMONIA

Lawson G. Wideman, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 11, 1977, Ser. No. 850,578
Int. Cl.² C07C *5/02*

U.S. Cl. 260—666 A **2 Claims**

1. A process for the preparation of cyclopentene which comprises selectively hydrogenating cyclopentadiene in a liquid phase by continuously passing a mixture of cyclopentadiene and hydrogen through a fixed bed catalyst comprising a highly dispersed form of nickel selected from the group comprising Raney nickel or modified Raney nickel which has been treated or saturated with ammonia or ammonium hydroxide.

4,131,628
HYDROCARBON DEHYDROGENATION USING NONACIDIC MULTIMETALLIC CATALYST

George J. Antos, Arlington Heights; John C. Hayes, Palatine, and Ernest L. Pollitzer, Skokie, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 771,127, Feb. 22, 1977, Pat. No. 4,085,154, which is a continuation-in-part of Ser. No. 681,007, May 18, 1976, Pat. No. 4,013,735, which is a continuation-in-part of Ser. No. 564,386, Apr. 2, 1975, Pat. No. 3,960,711. This application Jan. 6, 1978, Ser. No. 867,639
Int. Cl.² C07C *5/40, 15/04, 11/00*

U.S. Cl. 260—666 A **8 Claims**

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon with the nonacidic catalytic composite consisting essentially of, on an elemental basis, about 0.01 to about 2 wt, % platinum group metal, 0.01 to about 2 wt. % rhenium, about 0.05 to about 5 wt. % cobalt, about 0.01 to about 5 wt. % tin, and about 0.1 to about 5 wt. % alkali metal or alkaline earth metal uniformly dispersed throughout the porous carrier material, wherein the average crystallite size of the tin and catalytically available cobalt is less than 100 Angstroms in maximum dimension; wherein substantially all of the platinum group metal is present in the elemental metallic state; wherein substantially all of the rhenium and catalytically available cobalt are present in the elemental metallic state or in a state which is reducible to the elemental metallic state under dehydrogenation conditions or in a mixture of these states; and wherein substantially all of the tin and alkali metal or alkaline earth metal are present in an oxidation state above that of the elemental metal, at dehydrogenation conditions.

4,131,629
SELECTIVE HYDROGENATION OF CYCLOPENTADIENE TO CYCLOPENTENE USING RANEY NICKEL CATALYST AND WATER IN THE REACTION MIXTURE

Lawson G. Wideman, Akron, and Eilert A. Ofstead, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 11, 1977, Ser. No. 850,580
Int. Cl.² C07C *5/02*

U.S. Cl. 260—666 A **5 Claims**

1. The process for the preparation of cyclopentene which comprises selectively hydrogenating cyclopentadiene in the liquid phase by contacting cyclopentadiene with hydrogen in the presence of a hydrogenation catalyst comprising a highly dispersed form of nickel selected from the group comprising Raney nickel or modified Raney nickel in which water is employed in the reaction mixture wherein the volume ratio of the water to the cyclopentadiene ranges from 1/1 to 4/1.

4,131,630
ISOMERIZATION PROCESS

William B. Hughes, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 714,932, Aug. 16, 1976, Pat. No. 4,087,472. This application Feb. 13, 1978, Ser. No. 877,582
Int. Cl.² C07C *5/24, 13/28*

U.S. Cl. 260—666 PY **9 Claims**

1. A process for isomerizing an isomerizable olefinic hydrocarbon which comprises contacting said hydrocarbon in the liquid phase under isomerization conditions with a catalyst consisting essentially of a mixture of a nickel complex represented by the formula

$(R_3P)_2NiX_2$

wherein X is a halogen selected from the group consisting of chlorine, bromine and iodine, and R is a hydrocarbon radical having from 1 to 10 carbon atoms, and an alkali metal borohydride represented by the formula

MBH_3Z

wherein M is an alkali metal selected from the group consisting of lithium, sodium and potassium, and Z is —H or —CN and in which the isomerizable olefinic hydrocarbon has from 4 to 20 carbon atoms per molecule and from 1 to 3 ethylenic bonds per molecule.

4,131,631
DEHYDROGENATION OF PARAFFINS

Harley F. Hardman, Lyndhurst, Ohio, assignor to Standard Oil Company, Cleveland, Ohio

Filed Dec. 22, 1975, Ser. No. 643,464
Int. Cl.² C07C *3/28*

U.S. Cl. 260—683.3 **15 Claims**

1. The process for the dehydrogenation of paraffinic hydrocarbons containing from 3 to 6 carbon atoms to the corresponding monoolefins comprising contacting said paraffinic hydrocarbon with molecular oxygen, at a temperature of from about 400° to 700° C. and a pressure of from about 1 up to about 3 atmospheres, over a catalyst having the composition:

$A_a Co_b Mo_c O_x$

wherein A is one or more of the elements selected from the group consisting of phosphorus and the metals of Groups IA, IIA, VIB and VIII of the Periodic Table, and wherein said catalyst contains at least one element of Group IA or Group IIA;

and wherein a = a number from greater than 0 to 3;
b = a number from 0.1 to 2,
c = a number from 0.1 to 6, and
x is the number of oxygens determined by the valence requirements of the other elements present.

4,131,632
HEAT-RESISTANT RESIN COMPOSITIONS

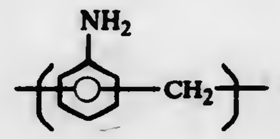
Shuichi Suzuki, Yokohama, and Moriyasu Wada, Kanagawa, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Sep. 27, 1977, Ser. No. 837,203
Claims priority, application Japan, Sep. 28, 1976, 51-115443; Sep. 28, 1976, 51-115444
Int. Cl.² C08G *69/02;* C08L *63/00*

U.S. Cl. 260—834 **17 Claims**

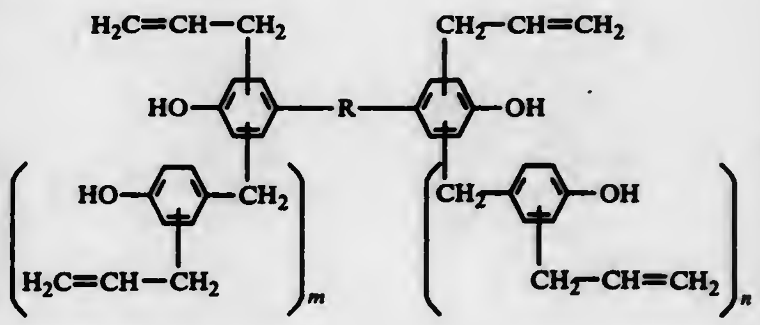
1. A heat-resistant resin composition which comprises

(A) at least one maleimide polymer obtained by reacting maleic anhydride with polyphenyl polyamines containing the repeating units represented by the formula

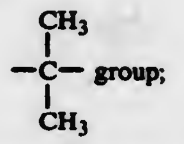


wherein said polyphenyl polyamines have 1 to 5 aniline units and have an amine content of 15 to 16.5% by weight and wherein said polyphenyl polyamines are produced by reaction between aniline and formaldehyde; and wherein in said reaction between maleic anhydride and polyphenyl polyamine, the ratio of amine equivalent to acid equivalent is 1:1 to 1:2;

(B) at least one allylbisphenol compound represented by the formula:

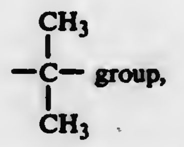


where R is $-CH_2$-radical or



$$-\underset{CH_3}{\overset{CH_3}{C}}- \text{ group;}$$

m and n are each independently zero, or an integer of 1, 2 or 3; each of the allyl groups is positioned ortho to each of the hydroxy groups, and in the case where R is



$$-\underset{CH_3}{\overset{CH_3}{C}}- \text{ group,}$$

group,
m and n respectively denote zero; and (C) at least one epoxy resin.

4,131,633

LATENT CATALYSTS FOR PROMOTING REACTION OF EPOXIDES WITH PHENOLS AND/OR CARBOXYLIC ACIDS

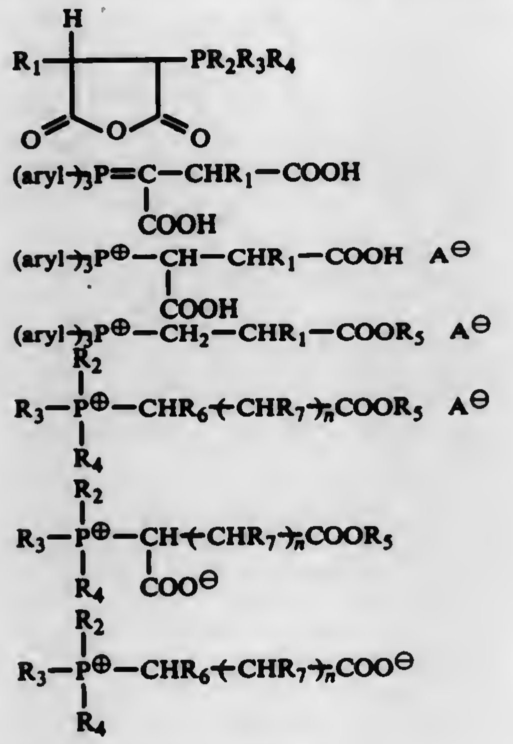
George A. Doorakian, Bedford, Mass.; Dennis L. Schmidt, Houston, Tex., and Martin C. Cornell, III, Sao Paulo, Brazil, assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 650,212, Jan. 19, 1976, Pat. No. 4,048,141, which is a continuation-in-part of Ser. No. 629,345, Nov. 6, 1975, abandoned, which is a continuation of Ser. No. 417,844, Nov. 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 290,891, Sep. 21, 1972, abandoned. This application Apr. 11, 1977, Ser. No. 786,314

Int. Cl.² C08L *63/02, 63/00*

U.S. Cl. 260—837 R **16 Claims**

1. A composition comprising (a) an epoxide bearing at least one vicinal epoxy group per molecule; (b) (1) an organic carboxylic acid or anhydride of said acid or (2) a mixture of a phenol and an organic carboxylic acid or anhydride of said acid, and (c) a small but catalytic amount of phosphorus-containing catalyst corresponding to the formula



I, II, III, IV, V, VI, or VII,

$$(\text{aryl}\!\rightarrow_3 P{=}\underset{\displaystyle COOH}{C}{-}CHR_1{-}COOH$$

$$(\text{aryl}\!\rightarrow_3 P^{\oplus}{-}\underset{\displaystyle COOH}{CH}{-}CHR_1{-}COOH \quad A^{\ominus}$$

$$(\text{aryl}\!\rightarrow_3 P^{\oplus}{-}CH_2{-}CHR_1{-}COOR_5 \quad A^{\ominus}$$

$$R_3{-}\overset{\displaystyle R_2}{\underset{\displaystyle R_4}{P^{\oplus}}}{-}CHR_6(CHR_7)_nCOOR_5 \quad A^{\ominus}$$

$$R_3{-}\overset{\displaystyle R_2}{\underset{\displaystyle R_4}{P^{\oplus}}}{-}\underset{\displaystyle COO^{\ominus}}{CH}(CHR_7)_nCOOR_5$$

$$R_3{-}\overset{\displaystyle R_2}{\underset{\displaystyle R_4}{P^{\oplus}}}{-}CHR_6(CHR_7)_nCOO^{\ominus}$$

or a mixture thereof, wherein:

R_1 is hydrogen or hydrocarbyl,
R_2–R_4 are hydrocarbyl groups, with the proviso that R_2–R_4 are not each aryl in formula VII,
R_5 is hydrogen or alkyl,
R_6 is hydrogen, alkyl, carboxy, or alkoxy carbonyl,
R_7 is hydrogen or hydrocarbyl,
n is from 0 to about 20, and
$A^{\ominus}$ is a compatible anion.

4,131,634

PROCESS FOR THE PREPARATION OF TACKY MIXTURES BASED ON RUBBERY ETHENE COPOLYMERS

Hendrikus J. G. Paulen, Roosteren, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 21, 1976, Ser. No. 678,877

Claims priority, application Netherlands, Apr. 24, 1975, 7504834

Int. Cl.² C08L *9/00, 9/06, 19/00*

U.S. Cl. 260—845 **11 Claims**

1. A tacky rubbery mixture based on a rubbery copolymer of ethylene, at least one other α-alkene, and optionally one or more polyenes, consisting of:

I. 20 to 75 parts by weight of a rubbery copolymer containing 60 to 80% by weight of ethylene, 20 to 40% by weight of another α-alkene, and 0 to 20% by weight of at least one polyene and having, in the unvulcanized state, an elongation at rupture of over 800% and a tensile strength of between 10 and 100 kg/cm²;

II. 80 to 25 parts by weight of at least one polymer having a Mooney viscosity (ML (1 + 4) 125°) of at least 30 and composed of a conjugated diene selected from the group consisting of styrene-butadiene copolymers, polybutadiene and polyisoprene; and

III. a tackifier resin and conventional fillers and additives,

said mixture of I, II and III having an elongation at rupture of at least 800% and a tensile strength of between 1.3 and 50 kg/cm².

4,131,635

THERMOSETTING POLYESTER COMPOSITIONS

Frits M. W. Wilschut, Heenvliet, Netherlands, assignor to Synres International B.V., Hoek van Holland, Netherlands

Filed Jan. 25, 1977, Ser. No. 762,791

Int. Cl.² C08L *67/06;* **C08K** *00/00*

U.S. Cl. 260—862 **9 Claims**

1. In thermosetting molding compositions composed of (a) a thermosetting polyester copolymer containing copolymerized styrene, (b) a shrinkage-reducing agent, and (c) a curing catalyst the improvement wherein said shrinkage-reducing agent is present in an amount of from 10 to 100% by weight based on the weight of said unsaturated polyester copolymer and is a copolymer of (i) 2 to 10% by weight of an olefinically unsaturated monocarboxylic acid containing 3 to 6 carbon atoms (ii) about 15 to 40% by weight of a dialkyl ester of an unsaturated dicarboxylic acid, in which each alkyl moiety contains 1 to 8 carbon atoms and the dicarboxylic acid moiety contains 4 to 9 carbon atoms, and (iii) the balance being styrene or a mixture of styrene with a minor amount of at least one other monomer.

4,131,636

CROSS-LINKABLE VINYL CHLORIDE RESIN COMPOSITION

Yasuhiro Matsumoto, Nara, and Hisanori Eguchi, Izumiohtsu, both of Japan, assignors to Dainippon Ink & Chemicals Inc., Tokyo, Japan

Continuation of Ser. No. 674,167, Apr. 6, 1976, abandoned. This application Dec. 28, 1977, Ser. No. 865,129

Claims priority, application Japan, Apr. 10, 1975, 50-42785

Int. Cl.² C08L *33/04, 23/08, 51/04*

U.S. Cl. 260—875 **19 Claims**

1. A cross-linkable vinyl chloride resin composition comprising as indispensable components 100 parts by weight of a vinyl chloride resin, 5.0 to 80 parts by weight of an organic peroxide-cross-linkable ethylene polymer elastomer selected from chlorinated polyethylene, ethylene-vinyl acetate copolymers, and ethylene-vinyl acetate-vinyl chloride graft copolymers, 0.1 to 5.0 parts by weight of an anti-scorching agent selected from hindered phenolic compounds, non-hindered phenolic compounds, amino compounds, thiourea compounds and benzimidazole compounds, 1 to 4 parts by weight of a polymerizable compound having at least two double bonds selected from triallyl cyanurate, triallyl isocyanurate, diallyl phthalate, divinylbenzene, trimethylolpropane trimethacrylate and diethylene glycol dimethacrylate and 0.05 to 5.0 parts by weight of an organic peroxide.

4,131,637

GRAFTED POLYMERIC MATERIAL AND PROCESS FOR PREPARING

Philip Bernstein, Yardley; James P. Coffey, Hatboro, and Alan E. Varker, Philadelphia, all of Pa., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Mar. 23, 1977, Ser. No. 780,578

Int. Cl.² C08F *255/00*

U.S. Cl. 260—877 **9 Claims**

1. A grafted polymeric composition formed by the process of:

(a) suspending and agitating a quantity of finely divided polymeric material selected from the group consisting of polyethylene, polypropylene, and polyvinylchloride,

wherein the polymeric material is comprised of particles having a particle size of about 15 to 25 microns; and wherein the polymeric material is blended with 0.5–5%, by weight of the polymeric material, silica, and wherein the suspending and agitating is in a fluidized bed at ambient temperature;

(b) introducing ozone into said fluidized bed, at ambient temperature, for activating said material by initiating incipient labile sites in the molecular structure of said material; and

(c) reacting the activating material with an ethylenically unsaturated ionogenic monomer, at an elevated temperature, to graft polymerize the monomer onto said material.

4,131,638

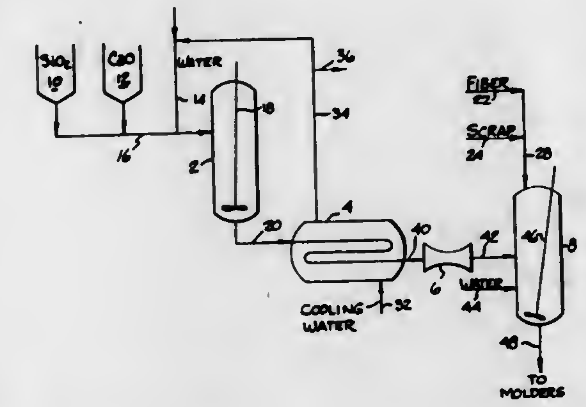
PROCESS FOR THE MANUFACTURE OF CALCIUM SILICATE HYDRATE OBJECTS

Thomas E. Whitaker; Samuel Myles, both of Littleton, Ohio, and Ian P. Gardner, Whitby, Canada, assignors to Johns-Manville Corporation, Denver, Colo.

Filed Jul. 5, 1977, Ser. No. 813,192

Int. Cl.² C04B *1/00*

U.S. Cl. 264—333 **6 Claims**



1. In the process for the formation of shaped calcium silicate hydrate objects which comprises forming an aqueous slurry of a siliceous material and a source of calcium oxide, heating said slurry in a reactor in the presence of saturated steam at a pressure of at least 75 psig for a period of at least 0.5 hour to form hydrated calcium silicate crystals from said siliceous material and said source of calcium oxide, removing from said reactor said hydrated calcium silicate crystals in the form of a slurry of said crystals dispersed in aqueous medium, forming said crystals into shaped objects while simultaneously separating a portion of said aqueous medium from said crystals and then drying said shaped objects, the improvement which comprises:

(a) passing said slurry through a heat exchanger where the temperature of said slurry is substantially reduced; and

(b) thereafter metering the cooled slurry through a venturi wherein the pressure on said slurry is reduced and the flow rate controlled into a receiver, from which receiver said slurry can be subsequently withdrawn for molding into said objects.

4,131,639

SULFURIC ACID EXTRACTION OF URANIUM FROM ITS ORES

James T. Mather, Elliot Lake, Canada, assignor to Rio Algom Limited, Ontario, Canada

Filed Oct. 28, 1976, Ser. No. 736,775

Claims priority, application United Kingdom, Nov. 4, 1975, 45801/75

Int. Cl.² C01G *43/00*

U.S. Cl. 423—20 **8 Claims**

1. A method of extracting uranium values from an ore which contains uranium as a finely-disseminated refractory material, comprising the steps of: wet grinding the ore; dewatering the ground ore; mixing the ground ore with concentrated sulphuric acid; adjusting the sulphuric acid contentration in the moist ore to an initial concentration of less than 4N; curing the moist ore by heating the moist ore to a temperature of from 50° to 100° C. while passing an oxidizing gas through the moist ore; and recovering acid-soluble uranium values from the cured ore by dissolution.

4,131,640

SEPARATING RHODIUM FROM SOLUTION CONTAINING RHODIUM CARBONYL COMPLEXES AND CONVERTING THE SEPARATED RHODIUM INTO SOLUBLE RHODIUM CARBONYL COMPLEXES

Nikolaus von Kutepow, Karlsruhe; Franz J. Mueller, Limburgerhof, and Peter Reuter, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 4, 1973, Ser. No. 320,847

Claims priority, application Austria, Jan. 7, 1972, 127/72

Int. Cl.² C01G *55/00*

U.S. Cl. 423—22 **7 Claims**

1. A process for separating rhodium from solutions containing rhodium carbonyl complexes and products obtained in the carbonylation of alkanols or of olefinically or acetylenically unsaturated compounds with carbon monoxide and water, and converting the rhodium separated into a soluble rhodium carbonyl complex which comprises:

contacting said solutions with hydrogen at a temperature of from 25° to 300° C. and at a pressure of from 1 to 700 atmospheres in the presence of a carrier such as is conventionally used for hydrogenation catalysts to precipitate the rhodium on the carrier; separating the solution devoid of rhodium; and

contacting the rhodium precipitated onto the carrier with carbon monoxide in the presence of an aliphatic, cycloaliphatic or aromatic hydrocarbon, alkanol, ester, ether, ketone, amine or organic nitro compound as a solvent and in the presence of an olefinicably or acetylenically unsaturated hydrocarbon, organic compound of trivalent nitrogen, phosphorus or arsenic, ammonia, ammonium, phosphonium or arsonium salts or free halogen as a compound capable of replacing the carbon monoxide as a ligand at a temperature of from 20° to 300° C. and at a pressure of from 1 to 700 atmospheres whereby rhodium carbonyl complexes are reformed.

4,131,641

NICKEL RECOVERY PROCESS

Milton S. Brown, Deer Park, Tex.; Richard M. Burch, Kenner, La., and Guy M. Warth, Houston, Tex., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 14, 1977, Ser. No. 851,087

Int. Cl.² C01G *53/08*

U.S. Cl. 423—34 **7 Claims**

4. A process for the continuous recovery of nickel-containing waste sludge which comprises the steps:

(a) filtering and washing a nickel-containing waste sludge with water;

(b) slurrying the washed sludge with a portion of the nickel chloride brine solution obtained in step (e);

(c) reacting the slurry by the sequential addition of the following reactants; oxidizing agent solution, a nickel wash solution obtained in step (f) and anhydrous hydrogen chloride to obtain a nickel chloride containing reaction mix;

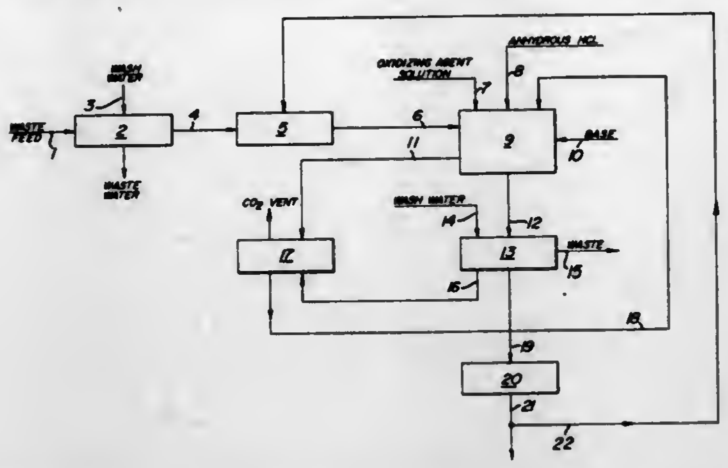
(d) adjusting the pH of the nickel chloride containing reaction mix to 2.5 with a base;

(e) filtering the reaction mix to obtain a nickel chloride brine solution and a filter cake; and

(f) washing the filter cake to obtain a nickel wash solution.

6. The process of claim 4 wherein said sludge also contains

copper and the copper is recovered with nickel and is removed from the nickel chloride brine solution by complexing with an agent selected from the group consisting of sodium oxalate-oxalic acid, sodium oleate-oleic acid, sodium citrate-citric acid and 8-hydroxyquinoline.



4,131,642
TREATMENT OF THE WASTE FROM THE PRODUCTION OF TERTIARY BUTYL AMINE TO RECOVER SODIUM SULFATE AND METHYL OR SODIUM FORMATE

Ralph Miller, Pleasantville, N.Y., and Harry D. Gregg, Jr., Greensboro, N.C., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 724,746, Sep. 10, 1976, abandoned. This application Aug. 12, 1977, Ser. No. 824,306
Int. Cl.² C01D *5/00;* **C07C** *53/02;* **C07B** *21/00*
U.S. Cl. 423—193 **9 Claims**

1. A process for the treatment of waste from the production of tertiary butyl amine by:

reacting isobutylene, hydrogen cyanide and sulfuric acid, with a stoichiometric excess of sulfuric acid, then adding more than one mole of sodium hydroxide for each equivalent of sulfuric acid and hydrogen cyanide employed in the initial reaction, thereby forming a heterogeneous mixture containing water, sodium hydroxide, sodium sulfate, N-tertiary butylformamide and an unknown organic substance,

hydrolyzing said N-tertiary butylformamide with said sodium hydroxide to form a heterogeneous mixture in which water, sodium sulfate, sodium hydroxide, tertiary butyl amine, sodium formate and the unknown organic substance are contained,

heating the aforesaid mixture to vaporize and recover said tertiary butylamine, thereby forming a residual waste mixture,

said process comprising recovering values from said residual waste mixture by the steps of:

(a) adding sufficient concentrated sulfuric acid to said residual mixture to bring its pH below 3.5 and sufficient methanol to said mixture so that the molar ratio of methanol to formate is not less than 2;

(b) refluxing the mixture of step (a) to convert substantially all of the formate to methyl formate;

(c) heating the mixture formed in step (b) to vaporize and recover methyl formate and methyl alcohol and leave a mixture which at a temperature above about 50° C. contains three phases, solid sodium sulfate and two immiscible, separable, liquid phases, the less dense liquid phase being a water insoluble, yellow organic substance and the more dense liquid phase being an acidic aqueous sodium sulfate solution;

(d) maintaining the mixture formed in step (c) above about 50° C. and separating the less liquid dense phase from the other two phases; and

(e) recovering anhydrous, white, crystalline sodium sulfate from the residue of step (d).

4,131,643
CATALYST FOR CONVERTING NITROGEN OXIDES AND METHOD FOR CONVERTING NITROGEN OXIDES IN EXHAUST GASES BY USING SAID CATALYST

Kei Utsunomiya, Kobe; Kazuya Soga, Akashi; Katsunori Shimasaki, Kobe; Yutaka Mito, Kobe; Mamoru Oaki, Kobe; Shigeru Haseba, Kobe; Hiroetu Miki, Akashi, and Michiko Masaki, Kobe, all of Japan, assignors to Kobe Steel Limited, Kobe, Japan

Division of Ser. No. 710,330, Jul. 30, 1976, abandoned. This application Sep. 15, 1977, Ser. No. 833,498
Claims priority, application Japan, Sep. 5, 1975, 50/108179
Int. Cl.² B01D *53/00*
U.S. Cl. 423—239 **19 Claims**

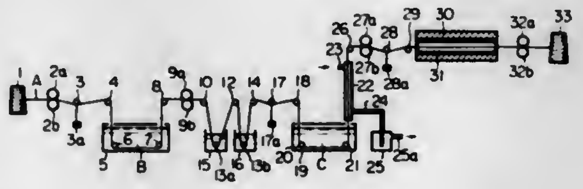
1. A method for converting nitrogen oxides present in exhaust gases to harmless substances, which comprises:

contacting an exhaust containing nitrogen oxides in the presence of ammonia as a reducing agent at a temperature of 200° to 500° C, and a space velocity of 2,000 to 10,000 hr^1 with a catalyst consisting essentially of the oxides of V and Nb.

4,131,644
PROCESS FOR PRODUCING CARBON FIBER

Akira Nagasaka, Chiba; Hidetomo Ashitaka, Ichihara; Yoshihiro Kusuki, Ichihara; Denichi Oda, Ichihara, and Toshimune Yoshinaga, Fukuoka, all of Japan, assignors to Ube Industries, Inc., Ube, Japan

Continuation of Ser. No. 465,131, Apr. 29, 1974, abandoned. This application Mar. 23, 1977, Ser. No. 780,520
Claims priority, application Japan, Mar. 29, 1974, 49-34619
Int. Cl.² C01B *31/07*
U.S. Cl. 423—447.5 **9 Claims**



1. A process for producing carbon fibers comprising the steps of:

(a) preparing, by melt-spinning, polybutadiene fibers consisting essentially of polybutadiene which contains at least 85% of vinyl structure and has a melting point of 140 through 195° C and a reduced viscosity of 0.3 to 1.2 dl/g;

(b) drawing said melt-spun fibers at a draw ratio of about 1.3 to about 6.0;

(c) heat setting said drawn fibers at a temperature 20° C less than the melting point of the polybutadiene and not less than 70° C;

(d) treating said polybutadiene fibers with a solution or suspension of a Lewis acid in an amount of 1 to 100 g per 1000 ml of inert organic liquid at a temperature of 0 through 100° C to such an extent that the treated polybutadiene fibers become insoluble in an eutectic mixture of 1 part by weight of diphenyl and 3 parts by weight of diphenylether at a temperature of 120 to 130° C, but still maintain their tensile strength at a level of at least 30% based on the tensile strength of the original polybutadiene fibers to cyclize and cross-link said polybutadiene, said Lewis acid being selected from the group consisting of fluorides, chlorides and bromides of boron, aluminum, titanium, tin, antimony, iron, berylium, magnesium, zinc and cadmium, compounds of the formula (II):

$$R_nAlY_{3-n} \tag{II}$$

wherein R represents an alkyl radical of 1 to 3 carbon atoms, Y represents a chlorine or bromine atom and n is an integer of 1 or 2, and mixtures of two or more of the above mentioned compounds;

(e) treating said polybutadiene fibers treated in step (d) with a sulphur melt at a temperature of 170 to 300° C under a tensile stress of 4 to 40 kg/cm^2 to such an extent that said treated polybutadiene fibers in this step are rendered to have a ratio (H/C) of the number of hydrogen atoms to carbon atoms in a range of 0.2 to 1.0 to dehydrogenate and aromatize said polybutadiene treated in step (d), and then,

(f) carbonizing said fibers treated in step (e) by heating them to a temperature of 750° to 3000° C, whereby said fibers are converted into carbon fibers.

4,131,645
IODINE RECOVERY PROCESS

Kestutis A. Keblys, Southfield, and John M. McEven, Lake Orion, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 21, 1974, Ser. No. 525,870
Int. Cl.² C01B *7/14*
U.S. Cl. 423—501 **7 Claims**

1. In a process for recovering iodine from brine containing recoverable amounts of iodide, said process comprising repeating cycles of

(1) passing said brine without acidification or oxidation through a basic anion exchange resin to adsorb iodide ion, and

(2) oxidizing adsorbed iodide to adsorbed iodine, said cycles being repeated until said resin becomes substantially loaded with iodine and then recovering said iodine from said resin, the improvement wherein said oxidizing is conducted by passing a separately prepared acidified aqueous iodate oxidizing solution through said resin to convert adsorbed iodide to adsorbed iodine.

4,131,646
PREPARATION OF HYDROGEN PEROXIDE FROM DIHYDROANTHRACENE HYDROPEROXIDES

Lawrence W. Gosser, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 16, 1977, Ser. No. 833,896
Int. Cl.² C01B *15/02, 15/022*
U.S. Cl. 423—591 **10 Claims**

1. An improved process for producing hydrogen peroxide comprising:

(a) hydrogenating a compound containing the anthracene nucleus to the corresponding 9,10-dihydroanthracene compound;

(b) oxidizing the 9,10-dihydroanthracene compound so produced to the corresponding hydroperoxide;

(c) contacting the hydroperoxide so produced with a catalytic amount of an acid catalyst to produce hydrogen peroxide and the starting compound containing the anthracene nucleus;

(d) recycling the anthracene compound so produced to step (a); and

(e) repeating steps (a) through (d) as desired and recovering the hydrogen peroxide.

4,131,647
DEUTERATED METHYLENE CHLORIDE USED AS A SOLVENT TO REDUCE TOXICITY

Leslie P. McCarty, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 11, 1977, Ser. No. 823,575
Int. Cl.² B01F *1/00;* **C23G** *5/02*
U.S. Cl. 424—10 **4 Claims**

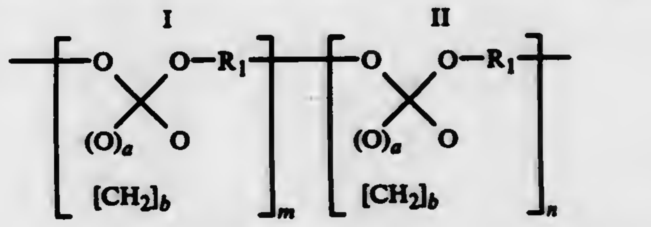
1. In a solvent composition comprising methylene chloride for applications where mammals can be exposed to said methylene chloride in liquid or vapor form, the improvement which comprises replacing at least a portion of said methylene chloride with deuterated methylene chloride.

4,131,648
STRUCTURED ORTHOESTER AND ORTHOCARBONATE DRUG DELIVERY DEVICES

Nam S. Choi, Seoul, Korea, and Jorge Heller, Palo Alto, Calif., assignors to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 544,805, Jan. 28, 1975, Pat. No. 4,093,709. This application Mar. 2, 1978, Ser. No. 882,814
Int. Cl.² A61K *9/22, 9/24, 9/26, 9/32*
U.S. Cl. 424—22 **7 Claims**

1. A drug delivery device for the controlled administration of drug wherein the device comprises: (a) a matrix shaped, sized and adapted for administering drug to an animal and formed of a hydrophobic, bioerodible, drug release rate controlling material, which material is a copolymer comprising mers I and II according to the following formula:



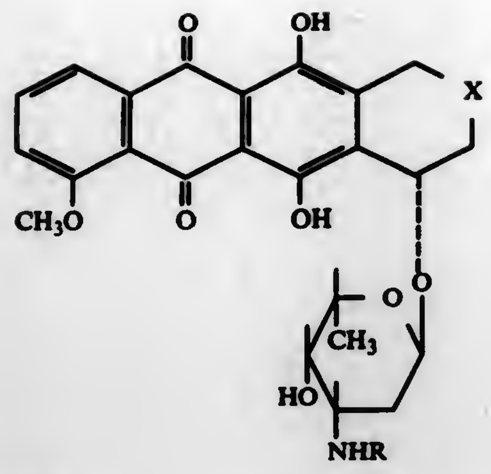
wherein R_1 is a member selected from the group consisting of alkylene of 1 to 10 carbons; alkenylene of 2 to 10 carbons; alkyleneoxy of 2 to 6 carbons; cycloalkylene of 3 to 7 carbons; cycloalkylene of 3 to 7 carbons substituted with a member selected from the group consisting of alkyl of 1 to 7 carbons, an alkoxy of 1 to 7 carbons, an alkylene of 1 to 10 carbons, and an alkenyl of 2 to 7 carbons; cycloalkenylene of 4 to 7 carbons; cycloalkenylene of 4 to 7 carbons substituted with an alkyl of 1 to 7 carbons, an alkoxy of 1 to 7 carbons, an alkylene of 1 to 10 carbons, and an alkenyl of 2 to 7 carbons; arylene; and arylene substituted with an alkyl of 1 to 7 carbons, an alkoxy of 1 to 7 carbons, an alkylene of 1 to 10 carbons, an alkenyl of 2 to 7 carbons; and wherein a is 0 to 1; b is 2 to 6; m is greater than 10; n is greater than 10; and at least one of R_1, a, and b in mer I is different than R_1, a, and b in mer II; a drug present in the matrix; and (c) wherein the device when in operation bioerodes and releases drug at a rate selected from (1) a zero order rate, (2) a continuous rate, and (3) a variable rate, which rate is produced by preselecting the copolymer, the drug, and the geometric shape forming the device to give the desired result.

4,131,649
DAUNORUBICIN DERIVATIVES, THEIR PREPARATION AND THEIR USE

Sergio Penco; Francesco Angelucci, and Federico Arcamone, all of Milan, Italy, assignors to Societa Farmaceutici Italia S.p.A., Milan, Italy

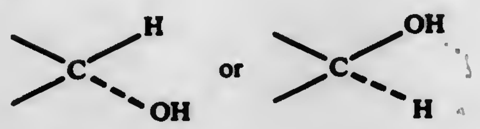
Filed Jun. 27, 1977, Ser. No. 810,077
Claims priority, application United Kingdom, Jul. 13, 1976, 28986/76
Int. Cl.² A61K *31/70;* **C07H** *15/24*
U.S. Cl. 424—180 **8 Claims**

1. A compound of the formula I:



I

wherein X is



and R is —$COCF_3$ or H.

8. A method of inhibiting the growth of P 388 lymphocytic leukemia which comprises intraperitoneally administering to a host afflicted therewith, a compound according to claim 1, wherein R is hydrogen in an amount sufficient to inhibit the growth thereof.

4,131,650
COLLAGEN FOIL FOR COSMETIC APPLICATION

Klaus Brüumer, Weinheim, and Zdenek Eckmayer, Heidelberg, both of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed Apr. 9, 1976, Ser. No. 675,363

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1975, 2517452

Int. Cl.² A61K *9/70;* **A01N** *5/00;* **A61F** *13/00*

U.S. Cl. 424—28 **10 Claims**

1. In the treatment of skin wherein an aqueous cosmetically-active paste is applied to the skin, left in contact therewith for a period of time and thereafter removed, the improvement which comprises placing over the paste a collagen-foil containing at least about 3 percent of water soluble collagen by weight and having a water permeability of more than about 0.1 gram/dm^2/minute, whereby collagen is transported through the paste and is absorbed by the skin.

4,131,651
TREATMENT OF DRY EYE

Dinesh O. Shah, Gainesville, Fla., and Murray J. Sibley, Berkeley, Calif., assignors to Barnes-Hind Pharmaceuticals, Inc., Sunnyvale, Calif.

Filed Oct. 25, 1977, Ser. No. 844,555

Int. Cl.² A61K *31/74*

U.S. Cl. 424—78 **2 Claims**

1. A method for the treatment of dry eye which comprises applying to the eye of a host having dry eye an aqueous solution containing from 0.1 to 10 weight percent of a polymer combination of hydroxyethylcellulose and polyvinyl alcohol of about 80 weight percent and about 20 weight percent respectively and has a viscosity of from 3,000 to 8,000 at a two weight percent aqueous solution, Brookfield viscosity, 25° C. and said polyvinyl alcohol has a viscosity of from about 1 to 20 at a 4% w/v solution, ASTM 882.

4,131,652
MEDICINAL SKIN CREAM FOR PSORIASIS AND METHOD

Charles R. DeLuccia, 2 Maple Ave., Rye, N.H. 03871

Filed Jun. 22, 1977, Ser. No. 808,866

Int. Cl.² A61K *31/58*

U.S. Cl. 424—241 **3 Claims**

1. A medicinal compound administered as a skin cream and comprising a mixture of 1 gram to 10 grams of acetohexamide to 28 grams of 0.01% to 1% steroid hormone cream taken from the group consisting of triamcinolone and triamcinole acetonide.

4,131,653
EPOXIDIZED BLOCK COPOLYMERS

Henry L. Hsieh, and Kishore Udipi, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

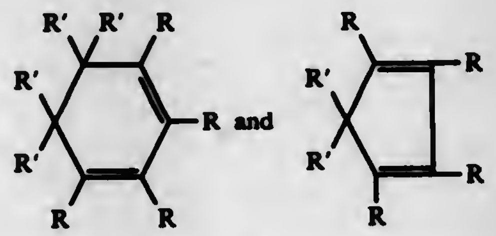
Filed Sep. 9, 1977, Ser. No. 832,121

Int. Cl.² C08F *297/04*

U.S. Cl. 260—880 B **15 Claims**

1. An epoxidized block copolymer comprising:

(a) units of a 1,3-cyclodiene represented by the general formulas



wherein R is selected from the group consisting of hydrogen, methyl, and ethyl radicals, R′ is selected from the group consisting of hydrogen, cycloalkyl, aryl, and linear and branched alkyl radicals such that the maximum number of carbon atoms per R′ radical is about 6 and the total number of carbon atoms per cyclodiene monomer is in the range of from about 5 to 20;

(b) units of at least one acyclic conjugated diene;

(c) optionally, units of a vinyl aromatic compound containing in the range of from about 8 to about 14 carbon atoms per molecule; and wherein the extent of epoxidation of said copolymer, as defined by the ratio of the number of epoxidized groups formed to the number of initial olefinic double bonds, ranges from about 5 to about 80 percent with the further proviso that said block copolymer contains:

(1) blocks of said 1,3-cyclodiene and blocks of said acyclic conjugated diene when said block copolymer does not contain units of said vinyl aromatic compound and

(2) blocks of said 1,3-cyclodiene and blocks containing a random arrangement of said acyclic conjugated diene and said vinyl aromatic compound when said copolymer contains units of vinyl aromatic compound.

4,131,654
THERMOPLASTIC POLYMER BLENDS COMPRISING EPDM, E/EA COPOLYMER AND OPTIONALLY P.E.

Richard M. Herman, Elyria, and Martin Batiuk, Grafton, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Nov. 28, 1977, Ser. No. 855,137

Int. Cl.² C08L *23/16*

U.S. Cl. 260—897 B **12 Claims**

1. A thermoplastic polymer blend comprising

(1) 100 weight parts of at least one EPDM polymer consisting essentially of interpolymerized units of about 63 wt.% to about 85 wt.% ethylene, about 5 wt.% to about 37 wt.% propylene, and about 0.2 wt.% to about 15 wt.% of a diene monomer, and

(2) from about 5 weight parts to 500 weight parts of at least one ethylene-ethyl acrylate (EEA) polymer consisting essentially of interpolymerized units of about 60 wt.% to about 98 wt.% ethylene, and about 2 wt.% to about 40 wt.% ethyl acrylate.

4,131,655
D-HOMOPREGNANES

Leo Alig, Kaiseraugst; Andor Fürst, Basel; Marcel Müller, Frenkendorf, all of Switzerland; Ulrich Kerb, and Rudolf Wiechert, both of Berlin, Germany, assignors to Hoffman-La Roche Inc., Nutley, N.J.

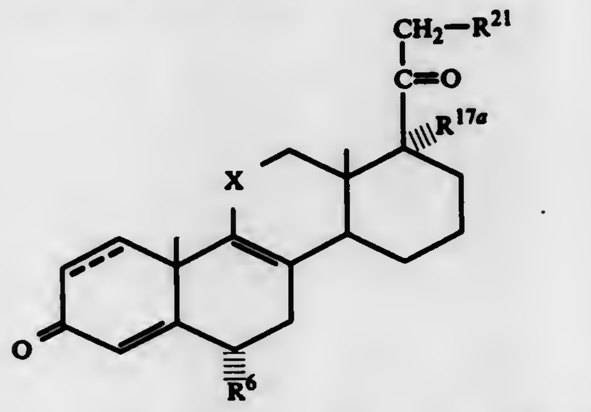
Filed Apr. 20, 1978, Ser. No. 898,070

Claims priority, application Luxembourg, Apr. 21, 1977, 77173; Switzerland, Jan. 6, 1978, 139/78

Int. Cl.² C07F *9/09;* **C07C** *49/44*

U.S. Cl. 260—946 **20 Claims**

1. A compound of the formula



I

wherein R^6 is hydrogen, chloro, fluoro or methyl; X is β-hydroxymethylene or carbonyl; R^{17a} is hydroxy, lower alkanoyloxy or aroyloxy; R^{21} is hydrogen, chloro, fluoro, hydroxy, lower alkanoyloxy, aroyloxy, sulfate or phosphate; and the dotted line in the 1,2-position of the A-ring denotes an additional carbon-carbon bond or a pharmaceutically acceptable salt thereof.

4,131,656
INTERMEDIATES FOR 5-(TERTIARY ALKYL) RESORCINOL PREPARATION

Samuel J. Dominianni, and Charles W. Ryan, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

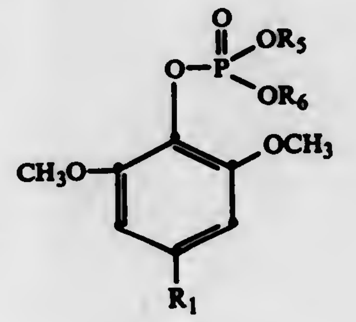
Division of Ser. No. 695,674, Jun. 14, 1976, Pat. No. 4,087,410.

This application Feb. 1, 1978, Ser. No. 874,183

Int. Cl.² C07F *9/02*

U.S. Cl. 260—951 **10 Claims**

1. A compound of the formula



wherein:

R_1 is adamantyl or —$CR_2R_3R_4$, in which:

R_2 and R_3 independently are C_1–C_6 alkyl;

R_4 is C_1–C_6 alkyl, phenyl, cycloalkyl, or adamantyl, and

R_5 and R_6 independently are C_1–C_3 alkyl or phenyl, or taken together are ethylene or proplylene.

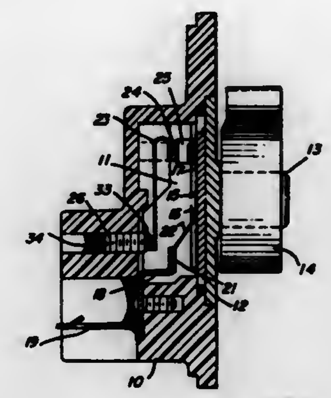
4,131,657
ELECTRIC AUTOMOTIVE CHOKE

George A. Ball, Jr., Cape Elizabeth, and George H. Simpson, Westbrook, both of Me., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Mar. 10, 1977, Ser. No. 776,396

Int. Cl.² F02M *1/12*

U.S. Cl. 261—39 E **9 Claims**



1. An electric choke assembly for the carburetor of an automotive internal combustion engine comprising a housing having a chamber therein a thermistor disc and a thermostat blade disposed in said chamber so that the thermostat blade is proximate the thermistor disc and in heat-transfer relationship therewith, the thermostat blade being open below a predetermined temperature range and closed above said temperature range, the thermistor disc generating heat at one rate when the thermostat blade is open and at a greater rate when the thermostat blade is closed, and means to electrically energize the assembly.

4,131,658
METHOD FOR ATOMIZING OIL AND AN APPARATUS THEREFOR

Masakuni Hirata, Tokyo, and Yukio Matsuzaki, Kawasaki, both of Japan, assignors to Nippon Oil Company Limited, Tokyo, Japan

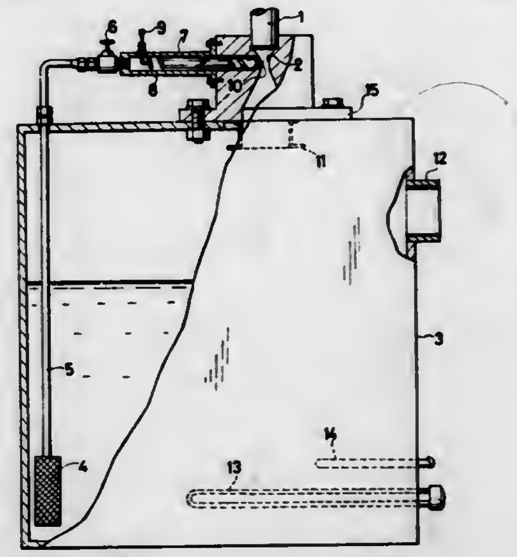
Continuation of Ser. No. 681,192, Apr. 28, 1976, abandoned.

This application Jan. 31, 1978, Ser. No. 873,901

Claims priority, application Japan, Jul. 17, 1975, 50/86661

Int. Cl.² B01F *3/04*

U.S. Cl. 261—142 **10 Claims**



1. A method for atomizing oil which comprises the steps of supplying a highly viscous oil stream from a reservoir to a gas stream from a nozzle having a discharge axis located perpendicular to the direction of the axis of said gas stream, passing said gas stream through a venturi throat located in direct opposition to the nozzle, passing the oil stream to be atomized through a heating chamber located downstream of said reservoir and just prior to discharging the oil from the nozzle,

heating only the oil and only that portion of the oil that is in said heating chamber, passing said heated oil through said nozzle, contacting said heated stream of oil with the gas stream and atomizing the oil.

4. An oil-atomizing apparatus which comprises an oil reservoir provided with a top wall and an opening for discharging an oil mist at a side wall of said reservoir; a venturi tube having a throat therein for a gas to be supplied, said venturi tube extending through said top wall and into said reservoir; a nozzle which opens in a direction perpendicular to the axis and at the throat of said venturi tube, said nozzle being in fluid communication with said oil reservoir by means of a conduit; a heating chamber provided between said conduit and said nozzle and heating means in said heating chamber to heat only the quantity of the oil therein just prior to the discharge thereof into the throat of said venturi tube at a right angle to the direction of gas flow therethrough.

4,131,659

PROCESS FOR PRODUCING LARGE-SIZE, SELF-SUPPORTING PLATES OF SILICON

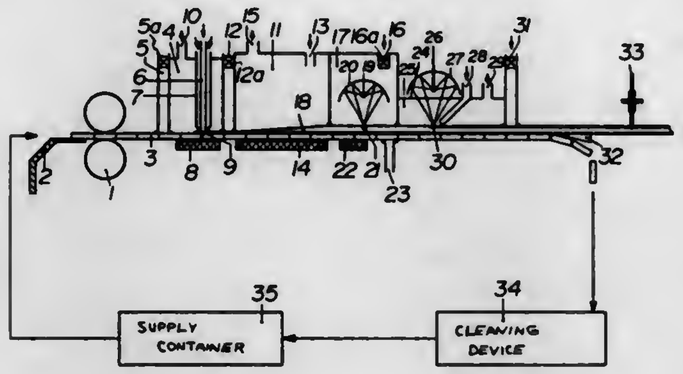
Bernhard Authier; Rudolf Griesshammer, both of Burghausen; Franz Köppl, Altötting; Winfried Lang, Burghausen; Erhard Sirtl, Marktl, Inn, and Heinz-Jörg Rath, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Nov. 19, 1976, Ser. No. 743,268

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1976, 2638270

Int. Cl.^{2} H01L *21/205*

U.S. Cl. 264—25 **10 Claims**



1. A process for producing large-size, self-supporting plates of silicon deposited from the gaseous phase on a substrate body, comprising the steps of:
- heating a graphite substrate to the decomposition temperature of silicon;
- depositing silicon from a gaseous compound to which a dopant of a first conductivity has been added, upon said substrate, in solid form until a layer of about 200 to 600 μm has formed;
- subsequently melting 40–100% of said layer from the free surface downward;
- resolidifying the molten silicon from the substrate body upwardly to the free surface of the molten silicon layer to effect an oriented growth of the resolidifying silicon from the substrate toward the free surface, said resolidifying step being effected by maintaining a vertically directed temperature gradient between the lower surface and the free surface of said molten layer until said molten layer is completely resolidified; and
- finally separating the silicon from said substrate.

4,131,660

METHOD OF EVALUATING SCORCH IN FLEXIBLE POLYURETHANE FOAM

Barry A. Jacobs, Bethel, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 23, 1977, Ser. No. 854,288

Int. Cl.^{2} B29D *27/04*

U.S. Cl. 264—26 **1 Claim**

1. A method of evaluating scorch in flame retarded flexible polyurethane foam comprising heating a flame retarded flexible polyurethane foam sample having an internal temperature from about 120° C. to about 180° C. with microwave radiant energy from about 2.5 to about 7 kilocalories per minute for from about 2 minutes to about 30 minutes, then allowing said sample to cure at room temperature followed by slicing said sample and measuring the color of the sliced surface and finally comparing that color measurement to the measured color of a sliced surface of an identically formulated and cured non-flame retarded flexible polyurethane foam.

4,131,661

WASTE ASBESTOS RECOVERY FROM PRODUCTION OF ASBESTOS PRODUCTS

Edward K. Spitz, Hanahan, and Lawton E. Cox, Johns Island, both of S.C., assignors to Raybestos-Manhattan, Inc., Trumbull, Conn.

Filed Apr. 7, 1977, Ser. No. 785,363

Int. Cl.^{2} B29H *19/00*; D01F *13/00*

U.S. Cl. 264—38 **6 Claims**

1. In connection with a process wherein the asbestos in a dispersion of an asbestos aqueous colloid containing a soluble surfactant is converted into a solid body by reaction with a heavy metal ion to render the surfactant insoluble, a process for recovering asbestos waste containing precipitated surfactant comprising the steps of: acidifying the waste by the addition of a dilute inorganic acid to solubilize the heavy metal ions, washing the waste to remove the heavy metal ions, converting the precipitated insoluble surfactant in said waste into a water soluble surfactant by reaction with an inorganic alkali, and returning the asbestos and soluble surfactant to said dispersion for reprocessing.

4,131,662

TALC-BASED EXTERNAL MOLD RELEASE AGENT FOR POLYURETHANE FOAMS

Mark E. Cekoric, North Versailles; Robert M. Loring, and William A. Ludwico, both of Library, all of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jan. 3, 1978, Ser. No. 866,449

Int. Cl.^{2} C08G *18/14*; B29C *1/04*; C09K *3/00*

U.S. Cl. 264—51 **6 Claims**

1. A mold release composition comprising a stable suspension of
- (A) an oil-in-water emulsion prepared by mixing
  - (i) water
  - (ii) an organic material which is immiscible in water, which contains no groups reactive with isocyanate groups, which is non-reactive with itself or with other components of said suspension, and which has a molecular weight of 200 or less, and
  - (iii) from 3 to 10 percent by weight, based on (i) plus (ii), of an emulsifying agent,

wherein the weight ratio of (i) to (ii) is from 1:1 to 4:1;
- (B) a talc powder, the weight ratio of (B) to (A) being from 1:5 to 3:1;
- (C) an organic solvent which is miscible with said organic material, which is non-reactive with isocyanates, which is non-reactive with itself or with other components of said suspension, and which has a molecular weight of 200 or less, the weight ratio of (C) to (A) + (B) being from 15:1 to 1:1, and
- (D) from 0 to 10 percent by weight based on the total weight of (A) + (B) + (C) of a metallic compound which promotes or catalyzes the reaction between active hydrogen containing materials and isocyanate groups,

with the further proviso that component (B) comprises from 1 to 20 percent by weight of (A) + (B) + (C) + (D).

4. In a method of molding a polyurethane foam in a closed mold comprising applying a release composition to the mold surface, injecting polyurethane forming materials into the mold and thereafter allowing said polyurethane to foam, the improvement wherein the mold release composition comprises a stable suspension of
- (A) an oil-in-water emulsion prepared by mixing
  - (i) water
  - (ii) an organic material which is immiscible in water, which contains no groups reactive with isocyanate groups, which is non-reactive with itself or with other components of said suspension, and which has a molecular weight of 200 or less, and
  - (iii) from 3 to 10 percent by weight, based on (i) plus (ii), of an emulsifying agent,

wherein the weight ratio of (i) to (ii) is from 1:1 to 4:1;
- (B) a talc powder, the weight ratio of (B) to (A) being from 1:5 to 3:1;
- (C) an organic solvent which is miscible with said organic material, which is non-reactive with isocyanates, which is non-reactive with itself or with other components of said suspension, and which has a molecular weight of 200 or less, the weight ratio of (C) to (A) + (B) being from 15:1 to 1:1, and
- (D) from 0 to 10 percent by weight based on the total weight of (A) + (B) + (C) of a metallic compound which promotes or catalyzes the reaction between active hydrogen containing materials and isocyanate groups, with the further proviso that component (B) comprises from 1 to 20 percent by weight of (A) + (B) + (C) + (D).

4,131,663

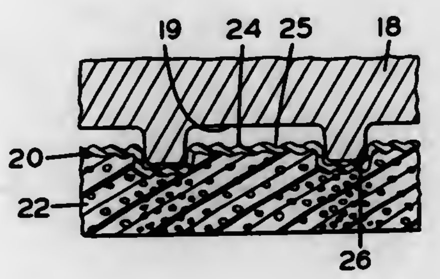
MULTILEVEL EMBOSSING OF SHEET MATERIALS

Walter J. Lewicki, Jr., Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed May 6, 1975, Ser. No. 574,860

Int. Cl.^{2} B31F *1/00*

U.S. Cl. 264—40.2 **2 Claims**



1. A process for embossing a web of material wherein said material is composed of a composite structure having a carrier, a non-foamed embossable wear layer and a foamed layer therebetween, said foamed layer on the surface thereof adjacent the wear layer having a decorative pattern printed thereon, said above composite structure being in the form of a web which is heated to a temperature of about 225° F. to 350° F., the process comprising:
- (a) embossing the embossable wear layer of the web with a first shallow embossing means which embosses a surface texture of about 5 mils to a substantial portion of the embossable wear layer including areas to be further embossed and particularly including areas which will not be subsequently embossed.
- (b) deeply embossing in a pattern the embossable wear layer of the web with a "bottomless" embossing means to emboss deeply to about 15 mils a portion of the web to form depressed area therein while, at the same time, not contacting or embossing the raised areas of the web between the depressed areas of the web,
- (c) carrying out the step of deep embossing without destroying at the point of deep embossing the surface texturing which was previously applied by the first embossing step, and
- (d) laterally guiding the web to the embossing means so as to provide a registry of the embossed pattern with the printed pattern in a direction transverse to the direction of web movement.

4,131,664

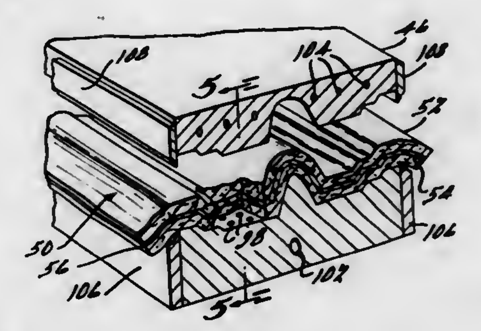
METHOD OF MAKING A MULTIPLE-DENSITY FIBROUS ACOUSTICAL PANEL

Thomas A. Flowers, Royal Oak; Anthony W. Marra, Sterling Heights, and Samuel D. Vinch, Detroit, all of Mich., assignors to Allen Industries, Inc., Troy, Mich.

Filed Sep. 28, 1977, Ser. No. 837,313

Int. Cl.^{2} B29C *17/04*; B32B *1/10*

U.S. Cl. 264—510 **18 Claims**



1. The method of making an acoustical and thermal insulating fibrous panel which comprises the steps of forming a composite fibrous pad comprising a first fibrous layer and a second fibrous layer disposed in overlying relationship each of substantially uniform thickness and density incorporating a binding agent distributed therethrough and a flexible impervious film disposed between the opposed faces of said first layer and said second layer, positioning said pad with said first layer disposed in overlying relationship adjacent to a mold having a preselected contour, applying a pneumatic pressure through said second layer against said film of a magnitude sufficient to effect a compaction of said first layer between said film and said mold to a desired density and in shape-conforming contact with said mold without effecting any appreciable densification of said second layer, setting said binding agent to retain the fibrous layers in the preselected contoured configuration and said first layer in the densified condition, and thereafter releasing said pneumatic pressure and extracting the contoured dual-density trim panel from said mold.

4,131,665

PROCESS FOR MOULD RELEASE OF HOLLOW PLASTIC BODIES MOULDED BY BLOWING BY MEANS OF A NOZZLE

Luc Bodson, Grez-Doiceau; Marc Obsomer, and Edmond Michel, both of Brussels, all of Belgium, assignors to SOLVAY & Cie., Brussels, Belgium

Filed Aug. 16, 1976, Ser. No. 714,822

Claims priority, application France, Aug. 18, 1975, 75 25715

Int. Cl.^{2} B29C *17/07*

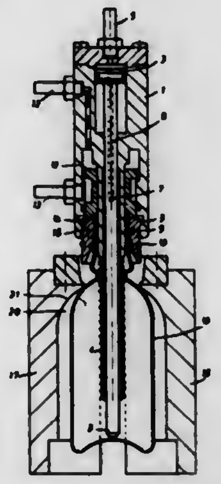
U.S. Cl. 264—572 **7 Claims**

1. Process for mould release of a hollow plastic body which has been subjected to a blow moulding operation by means of a blowing nozzle and a mould having two mould halves and a removable bottom portion, for the purpose of moulding the body from an initial form into the form of a finished article of biaxially oriented material, the initial form being a preform having a closed base and a height which is less than that of the

finished article, and in which, after cooling the hollow body and opening the mould, a fluid under pressure is injected into the hollow body through the nozzle comprising:

opening the mould by removing the removable bottom portion and separating the two mould halves for the body by a distance which, at the top of the mould halves, is les than the maximum diameter of a properly blown moulded hollow body,

thereafter injecting the fluid under pressure into the bottom region of the hollow body with a pressure which normally is sufficient to cause release of a properly blown moulded hollow body from the mould;



after the injection of the fluid under pressure into the hollow body, removing the blowing nozzle from the mould by retraction so that if a moulded hollow body is still on the nozzle during the retraction, the moulded hollow body will be held back during the retraction by the two mould halves resulting in extraction of the nozzle from the neck of the hollow body and release of the moulded hollow body from the mould,

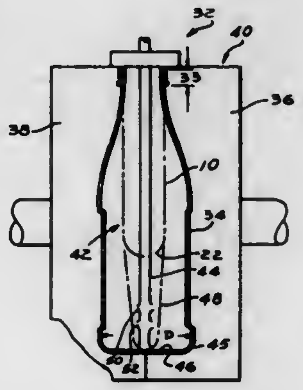
after the removing of the blowing nozzle by retraction, operating an ejector which acts from the outside at the neck position of the hollow body, said ejector releasing the hollow body if the hollow body is incompletely blown and has not as yet been released.

4,131,666
FORMING MOLECULARLY ORIENTED CONTAINERS FROM REHEATED PREFORMS

Purushottam D. Agrawal, Mystic, and John E. Griesing, East Granby, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 25, 1977, Ser. No. 844,652
Int. Cl.² B29C *17/07*

U.S. Cl. 264—521 **7 Claims**



1. A method of forming containers from injection molded preforms of thermoplastic material which comprises:

providing preforms having predetermined dimensional characteristics such that shrinkage during heating to orientation temperature is maintainable within predetermined limits;

heating such preforms to such temperature through temperature programming by exposing the preforms to a plurality of separate heating zones disposed along the length thereof while maintaining shrinkage to between about 4 to 15% of the total initial preform length; and then

axially and radially stretching such heated preforms at least about 30% and about 100% respectively while maintaining total % axial and radial stretch between about 130 to 280 to form the containers, whereby strength is developed and thickness variability minimized.

4,131,667
PREPARATION OF POLYURETHANE COMPOSITE MOLD BY INJECTION MOLDING

John A. Lovell, Monroe Falls; Donald V. Hillegass, Alliance, both of Ohio, and Philip G. Harris, Clemson, S.C., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 508,362, Sep. 23, 1974, abandoned. This application May 7, 1976, Ser. No. 684,132
Int. Cl.² B29C *1/02;* B29G *3/00*

U.S. Cl. 264—571 **2 Claims**

1. A method of preparing a flexible polyurethane mold which, in turn, can be used for preparing molded articles which comprises (A) positioning a master form so that it is a part of a cavity, (B) applying a reduced pressure to said cavity, (C) injecting a polyurethane reaction composite onto said master form in said cavity while maintaining a reduced pressure therein, (D) curing the mixture in said cavity under a pressure greater than atmospheric pressure to form a shaped article and (E) removing said article from said master form; where said composite reaction mixture contains less than about 5 weight percent of a volatile organic solvent and comprises 100 parts by weight of an inorganic water insoluble inert granular material of an average specific gravity of greater than one with a particle size in the range of about 25 to about 500 mesh and about 50 to about 200 parts by weight of a liquid polyurethane reaction mixture characterized by being non-Newtonian and having a sprayability equivalent to a Newtonian fluid having a viscosity in the range of about 2000 to about 1,000,000 centipoises at about 25° C., which consists essentially of (A) an organic polyisocyanate having an isocyanato content of 2 to 3 and (B) a liquid polymeric polyol having a molecular weight in the range of about 700 to about 5,000, so long as it is liquid, selected from at least one of polyester polyols, polyether polyols and hydroxyl terminated polymers of conjugated diene hydrocarbons having an average hydroxyl functionality of from 2 to about 3 and where the ratio isocyanato groups of the polyisocyanate to hydroxyl groups of the liquid polymeric polyol is in the range of from about 0.8/1 to about 2/1.

4,131,668
IRON ORE PELLET PROCESS CONTROL

Minoru Sasaki; Kaoru Ito, both of Yokohama; Katsuhiro Minamida, Kawasaki, and Keiki Fujita, Himeji, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 516,663, Oct. 2, 1974, abandoned. This application Jul. 21, 1976, Ser. No. 707,570
Claims priority, application Japan, Mar. 15, 1974, 49-29721
Int. Cl.² B01J *2/12*

U.S. Cl. 264—40.4 **5 Claims**

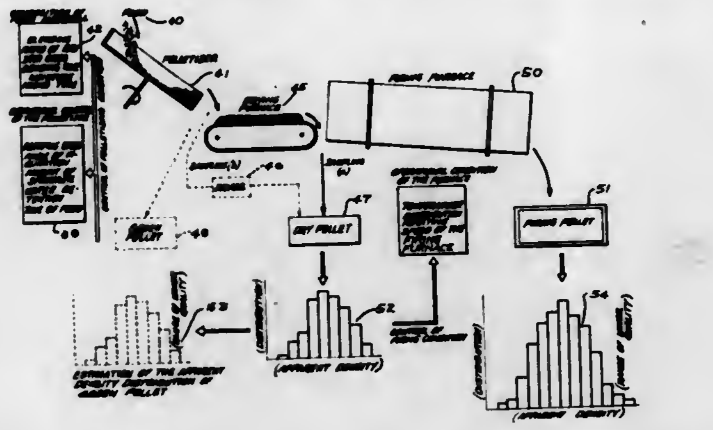
1. In a method of controlling an iron ore pelletizing and pellet processing operation in accordance with an evaluation of the dry and fired pellets sampled from a process stream, having material pretreating, pelletizing, drying and firing steps, said steps having predetermined control parameters associated therewith, the improvement comprising the steps of:

a) periodically cutting a dry pellet sample from the process stream in sequence;

b) measuring the apparent specific gravity of each of the dry pellet samples to find a distribution thereof;

c) comparing the apparent specific gravity distribution of said measured sample with a predetermined apparent specific gravity distribution standard;

d) readjusting the material pretreating, and pelletizing control parameters when the measured apparent specific gravity departs excessively from the predetermined standard, said readjustment for returning the apparent specific gravity of the dried pellets to the predetermined standard;



e) temporarily readjusting said predetermined firing control parameters of the firing furnace so as to compensate for the measured apparent specific gravity of the dry pellet samples to produce a fired pellet having desired apparent specific gravity distribution, said firing control parameters being readjusted until the dried pellet samples return to the predetermined standard; and

f) returning said firing control parameters to the predetermined values.

4,131,669
SOLUTION OF POLYHYDROXY METHYLENE AND PRODUCTS MADE THEREFROM

Walter S. Creasy, Bridgewater, and Herbert K. Reimschuessel, Morristown, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 25, 1977, Ser. No. 854,876
Int. Cl.² D01D *5/08*

U.S. Cl. 264—178 F **14 Claims**

8. A method for making filament of a polymer selected from the group consisting of (a) poly(hydroxymethylene), (b) copolymers thereof with up to about 30 mol percent of ethylenically unsaturated comonomers, and (c) mixtures thereof which comprises introducing a spinning solution comprising a solution of said polymer, in an aqueous solvent mixture of a concentration of between about 20 weight percent to saturation of lithium chloride, bromide or iodide by means of a spinneret into a spinning bath comprising an aqueous lithium chloride-bromide-or iodide-miscible nonsolvent for said polymer to precipitate said polymer in filamentary form from the spinning solution.

4,131,670
METHOD OF MAKING PREFABRICATED BUILDING COMPONENTS OF EXPANDED MATERIAL AND CEMENT

Giorgio Abate, Modena, Italy, assignor to Solai Vignola di Fabiani Orlando e C.-Societa in nome collettivo, Ancona, Italy

Division of Ser. No. 720,749, Sep. 7, 1976. This application May 23, 1977, Ser. No. 799,713

Claims priority, application Italy, Sep. 5, 1975, 40085 A/75; Dec. 18, 1975, 40132 A/76; Dec. 18, 1975, 40133 A/75; Apr. 8, 1976, 40057 A/76

Int. Cl.² B28B *1/16*

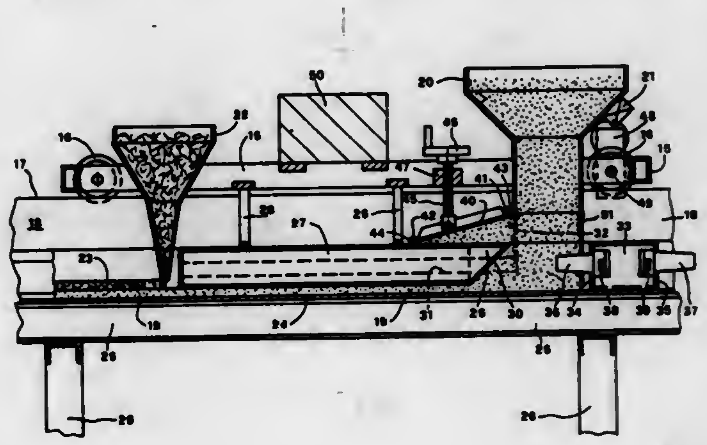
U.S. Cl. 264—256 **3 Claims**

1. A method for making prefabricated building components formed of an insulating concrete mix, comprising:

forming said mix of light-weight material, adhesive and cement;

casting said insulating concrete mix in an elongated mold defining side walls and a bottom wall for the prefabricated building component to be formed from said insulating concrete mix;

providing an elongated shaping hull in said mold, said shaping hull extending below the upper surface of the insulating concrete mix, said shaping hull having an upper level, a bottom molding surface, side molding surfaces extending between said upper level and said bottom molding surface, an upstream end and a downstream end wherein said hull is adapted to form a longitudinal channel in said cast insulating concrete mix, the upstream end of said hull being provided with three triangular faces meeting at an apex located at approximately said upper level, said faces including a lower face sloping downwardly and rearwardly from the apex and two side faces each sloping laterally outwardly and rearwardly from said apex;



moving said casting mix relative to said hull from the upstream end of said hull to the downstream end thereof, and simultaneously causing said hull to penetrate into said insulating concrete mix, to compress said mix laterally and downwardly, and to form a channel of generally rectangular cross section therein; and

inserting into said channel longitudinally extending reinforcing elements, said reinforcing elements including laterally outwardly projecting appendices, and forcing said outwardly projecting appendices into said insulating concrete mix at locations adjacent the bottom of said channel.

4,131,671
METHOD OF TREATMENT

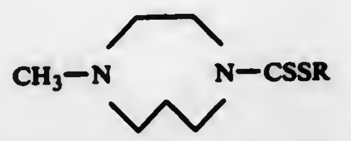
Zalman Amit, Montreal, Canada, and Sven Ö. Ogren, Södertälje, Sweden, assignors to Astra Lakemedel Aktiebolag, Södertälje, Sweden

Filed Jul. 5, 1977, Ser. No. 812,690
Claims priority, application Sweden, Jul. 5, 1976, 7607657
Int. Cl.² A61K *31/35*

U.S. Cl. 424—244 **6 Claims**

1. A method of reducing a preference for alcohol, comprising administering to a host having an acquired preference for

alcohol an amount effective to reduce said preference of the compound defined by the structural formula



wherein R is a pharmacologically acceptable, non-toxic cation.

4,131,672

METHOD FOR TREATING METHICILLIN RESISTANT *STAPHYLOCOCCUS AUREUS*

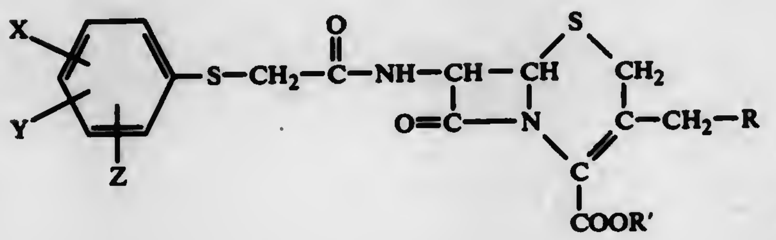
George W. Huffman, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 584,998, Jun. 9, 1975, which is a division of Ser. No. 341,210, Mar. 14, 1973, Pat. No. 3,907,784, which is a continuation-in-part of Ser. No. 288,227, Sep. 11, 1972, abandoned, which is a continuation-in-part of Ser. No. 212,739, Dec. 27, 1971, abandoned. This application Jun. 16, 1977, Ser. No. 807,090

Int. Cl.^{2} A61K *31/545*

U.S. Cl. 424—246 **13 Claims**

1. A method for treating an infection caused by methicillin resistant strains of *Staphylococcus aureus* which comprises administering to a patient having said infection a compound in an amount effective to combat said infection, said compound having the formula



wherein Z is hydrogen or fluorine; and, when Z is hydrogen, each of X and Y is hydrogen or chlorine selected so that the phenyl ring is substituted with 1 or 2 chlorine atoms and so that when one chlorine atom is present said chlorine atom is in the 3-position, and when two chlorine atoms are present said chlorine atoms are in the 3,4-, the 3,5- or the 2,5-positions; and,

when Z is fluorine said fluorine is in the 3- or 4-position of the phenyl ring, and each of X and Y is hydrogen or chlorine selected so that when the phenyl ring is substituted with 1 or 2 chlorine atoms, one of the chlorine atoms is in the 3- or 4-position of the phenyl ring;

R is selected from the group consisting of 5-methyl-1,3,4-thiadiazol-2-ylthio, 1-methyl-1H-tetrazol-5-ylthio, 1H-tetrazol-5-ylthio, 5-phenyl-1,3,4-oxadiazol-2-ylthio, 5-(p-nitrophenyl)-1,3,4-oxadiazol-2-yl thio, and 5-(p-methoxyphenyl)-1,3,4-oxadiazol-2-ylthio; and

R' is hydrogen, dicyclohexylamine, or a pharmaceutically acceptable cation.

4,131,673

N^2-ARYLSULFONYL-L-ARGININAMIDES AND THE PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

Shosuke Okamoto; Akiko Hijikata, both of Kobe; Ryoji Kikumoto, Machida; Yoshikuni Tamao, Yokohama; Kazuo Ohkubo, Machida; Tohru Tezuka, Yokohama, and Shinji Tonomura, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo and Shosuke Okamoto, Hyogo, both of, Japan

Continuation-in-part of Ser. No. 760,745, Jan. 19, 1977, Pat. No. 4,066,773, which is a continuation-in-part of Ser. No. 653,217, Jan. 28, 1976, Pat. No. 4,055,651, which is a continuation-in-part of Ser. No. 713,486, Aug. 11, 1976, Pat. No. 4,073,914, which is a continuation-in-part of Ser. No. 671,436, Mar. 29, 1976, Pat. No. 4,066,758, which is a continuation-in-part of Ser. No. 703,704, Aug. 8, 1976, Pat. No. 4,069,323, Division of Ser. No. 622,390, Oct. 14, 1975, abandoned. This application Jun. 7, 1977, Ser. No. 804,368

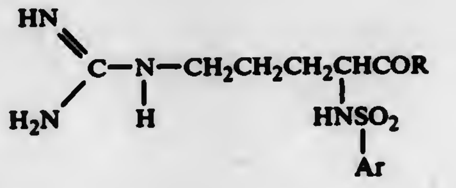
Claims priority, application Japan, Nov. 8, 1974, 49-128774; Nov. 8, 1974, 49-128775; Nov. 29, 1974, 49-136695; Nov. 29, 1974, 49-136697; Feb. 25, 1975, 50-023268; Feb. 26, 1975, 50-023635; Mar. 5, 1975, 50-026768; Mar. 11, 1975, 50-029357; Mar. 11, 1975, 50-029358

The portion of the term of this patent subsequent to Jan. 3, 1995, has been disclaimed.

Int. Cl.^{2} A61K *31/51;* **C07D** *211/16, 117/12*

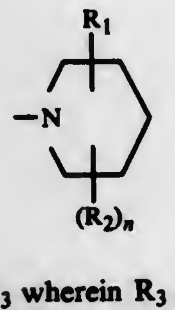
U.S. Cl. 424—247 **5 Claims**

1. An N^2-arylsulfonyl-L-argininamide having the formula (I):



(I)

or a pharmaceutically acceptable salt thereof, wherein R is



wherein R_1 is —$COOR_3$ wherein R_3 *is hydrogen,* $C1$–C_{10} alkyl, C_6–C_{10} aryl, C_7–Chd 12 aralkyl or 5-indanyl; each R_2 independently is hydrogen, C_1–C_{10} alkyl, phenyl, C_1–C_5 alkoxy, C_2–C_6 alkoxycarbonyl, or carboxy; n is an integer of 1 to 4, R_1 is substituted into the piperidine ring at the 2 or 3 position; and R_2 is substituted into the piperidine ring at the 2, 3, 4, 5 or 6 position;

and Ar is naphthyl substituted with at least one substituent selected from the group consisting of halo, nitrom cyano, hydroxy, C_1–C_{10} alkyl and C_2–c_{20} dialkylamino, and at least one substituent selected from the group consisting of C_1–C_{10} alkoxy, sulfoamino, carbamoyl, C_3–C_{10} N,N-dialkylcarbamoyl, amino, C_1–C_{10} alkylamino, mercapto, C_1–C_{10} alkylthio, C_7–C_{10} aralkyl, carboxyl, C_2–C_{10} alkoxycarbonyl, C_2–C_{10} carboxyalkyl, C_1–C_{10} acylamino, C_2–C_{10} alkylcarbonyl, C_1–C_{10} hydroxyalkyl, C_1–C_{10} haloalkyl and phenyl optionally substituted with at least one hydroxy, C_1–C_5 alkoxy, or mixtures thereof; naphthyl substituted with at least one C_1–C_5 alkoxy and at least one substituent selected from the group consisting of sulfoamino, carbamoyl, C_3–C_{10} N,N-dialkylcarbamoyl, amino, C_1–C_{10} alkylamino, mercapto, C_1–C_{10} alkylthio, C_7–C_{12} aralkyl, carboxyl, C_2–C_{10} alkoxycarbonyl, C_2–C_{10} carboxyalkyl, C_1–C_{10} acylamino, C_2–C_{10} alkylcarbonyl, C_1–C_{10} hydroxyalkyl, C_1–C_{10} haloalkyl and phenyl optionally substituted with at least one hydroxy, C_1–C_5 alkoxy or mixtures thereof;

naphthyl substituted with at least one substituent selected from the group consisting of sulfoamino, carbamoyl, C_3–C_{10} N,N-dialkylcarbamoyl, amino, C_1–C_{10} alkylamino, mercapto, C_1–C_{10} alkylthio, C_7–C_{12} aralkyl, carboxyl, C_2–C_{10} alkoxycarbonyl, C_2–C_{10} carboxyalkyl, C_1–C_{10} acylamino, C_2–C_{10} alkylcarbonyl, C_1–C_{10} hydroxyalkyl, C_1–C_{10} haloalkyl and phenyl optionally substituted with at least one hydroxy, C_1–C_5 alkoxy or mixtures thereof;

5,6,7,8-tetrahydronaphthyl substituted with at least one substituent selected from the group consisting of halo, nitro, cyano, hydroxy, C_1–C_{10} alkyl, C_1–C_{10} alkoxy, sulfoamino, carbamoyl, C_3–C_{10} N,N-dialkylcarbamoyl, amino, C_1–C_{10} alkylamino, mercapto, C_1–C_{10} alkylthio, C_7–C_{12} aralkyl, carboxyl, C_2–C_{10} alkoxycarbonyl, C_2–C_{10} carboxyalkyl, C_1–C_{10} acylamino, C_2–C_{10} alkylcarbonyl, C_1–C_{10} hydroxyalkyl, C_1–C_{10} haloalkyl and phenyl optionally substituted with at least one hydroxy, C_1–C_5 alkoxy or mixtures thereof;

a C_9–C_{16} cycloalkylphenyl, C_{10}–C_{18} cycloalkylalkylphenyl, C_9–C_{16} cycloalkoxyphenyl, C_9–C_{16} cycloalkylthiophenyl, C_7–C_{12} aralkyl, 9,10-dihydroanthryl, 5,6,7,8-tetrahydroanthryl, 9,10-dihydrophenanthryl, 1,2,3,4,5,6,7,8-octahydrophenanthryl, indenyl, indanyl, fluorenyl, acenaphthenyl, phenylthiophenyl, 1,2-methylenedioxphenyl, 1,2-ethylenedioxyphenyl, chromanyl, isochromanyl, 2,3-dihydrobenzofuranyl, 1,3-dihydroisobenzofuranyl, 2,3-ethylenedioxynaphthyl, xanthenyl, thioxanthenyl, 1,2-trimethylenedioxyphenyl, 2H-chromenyl, 3,4-dehydro-1-isochromanyl, 4H-chromenyl, indolinyl, isoindolinyl, 1,2,3,4-tetrahydroquinolyl or 1,2,3,4-tetrahydroisoquinolyl group, any of which is unsubstituted or substituted with one or more groups selected from the group consisting of halo, nitro, cyano, hydroxy, C_1–C_{10} alkyl, C_1–C_{10} alkoxy, C_2–C_{20} dialkylamino, sulfoamino, carbamoyl, C_3–C_{10}, N,N-dialkylcarbamoyl, amino, C_1–C_{10} alkylamino, mercapto, C_1–C_{10} alkylthio, C_7–C_{12} aralkyl, carboxyl, C_2–C_{10} alkoxycarbonyl, C_2–C_{10} carboxyalkyl, C_1–C_{10} acylamino, C_2–C_{10} alkylcarbonyl, C_1–C_{10} hydroxyalkyl, C_1–C_{10} haloalkyl, oxo and phenyl optionally substituted with at least one hydroxy, C_1–C_5 alkoxy or mixtures thereof; a naphthoquinonyl, anthryl phenanthryl, pentalenyl, heptalenyl, azulenyl, biphenylenyl, as-indacenyl, s-indacenyl, acenaphthylenyl, phenylcarbonylphenyl, phenoxyphenyl, benzofuranyl, isobenzofuranyl, benzo(b) thienyl, isobenzothienyl, oxanthrenyl, thianthrenyl, dibenzofuranyl, dibenzothienyl, phenoxathiinyl, indolyl, 1H-indazolyl, quinolyl, isoquinolyl, phthalazinyl, 1,8-naphthyridinyl, quinoxalinyl, quinazolinyl, cinnolinyl, carbazolyl, acridinyl, phenazinyl, phenothiazinyl, phenoxazinyl or benzimidazolyl group, any of which is unsubstituted or substituted with one or more groups selected from the group consisting of halo, nitro, cyano, hydroxy, C_1–C_{10} alkyl, C_1–C_{10} alkoxy, C_2–C_{20} dialkylamino, sulfoamino, carbamoyl, C_3–C_{10} N,N-dialkylcarbamoyl, amino, C_1–C_{10} alkylamino, mercapto, C_1–C_{10} alkylthio, C_7–C_{12}aralkyl, carboxyl, C_2–C_{10} alkoxycarbonyl, C_2–C_{10} carboxyalkyl, C_1–C_{10} acylamino, C_2–C_{10} alkylcarbonyl, C_1–C_{10} hydroxyalkyl, C_1–C_{10} haloalkyl and phenyl optionally substituted with at least one hydroxy, C_1–C_5 alkoxy or mixtures thereof, a phenyl which is unsubstituted or substituted with one or more groups selected from the group consisting of halo, nitro, cyano, hydroxy, C_1–C_{10} alkyl, C_1–C_{10} alkoxy, C_2–C_{20} dialkylamino, sulfoamino, carbamoyl, C_3–C_{10} N,N-dialkylcarbamoyl, amino, C_1–C_{10} alkylamino, mercapto, C_1–C_{10} alkylthio, C_7–C_{12} aralkyl, carboxyl, C_2–C_{10} alkoxycarbonyl, C_2–C_{10} carboxylakyl, C_1–C_{10} acylamino, C_2–C_{10} alkylcarbonyl, C_1–C_{10} hydroxyalkyl, C_1–C_{10} haloalkyl and phenyl optionally substituted with at least one hydroxy, C_1–C_5 alkoxy or mixtures thereof.

4. A method of inhibiting activity and suppressing activation of thrombin in vivo which comprises administering to a mammal a pharmaceuticaly effective amount of a compound of claim 1.

4,131,674

NAPHTYRIDINE DERIVATIVES

Claude Cotrel, Paris; Cornel Crisan, Sceaux; Claude Jeanmart, Brunoy, and André Léger, Paris, all of France, assignors to Rhone-Poulenc Industries, Paris, France

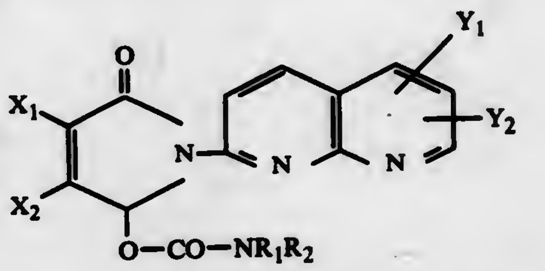
Division of Ser. No. 673,868, Apr. 5, 1976. This application Oct. 19, 1977, Ser. No. 843,369

Claims priority, application France, Apr. 7, 1975, 75 10756; Feb. 11, 1976, 76 03773; Feb. 11, 1976, 76 03774

Int. Cl.^{2} C07D *471/04;* **A61K** *31/535*

U.S. Cl. 424—248.54 **6 Claims**

1. A heterocyclic compound of the formula:



wherein the pyrroline ring and the symbols X_1 and X_2 together form an isoindoline nucleus or an isoindoline nucleus substituted by one or two atoms or radicals selected from halogen, alkyl of 1 through 4 carbon atoms, alkoxy of 1 through 4 carbon atoms, nitro and trifluoromethyl, the symbols Y_1 and Y_2 each represent hydrogen, halogen, alkyl of 1 through 4 carbon atoms, alkoxy of 1 through 4 carbon atoms, or cyano, and the symbols R_1 and R_2 together with the nitrogen atom to which they are attached form a morpholino ring, and when appropriate non-toxic pharmaceutically acceptable acid addition salts thereof.

6. Tranquilliser, hypnotic, anti-convulsant and anti-spasmodic pharmaceutical compositions which comprise, as an active ingredient, an effective amount of a heterocyclic compound as claimed in claim 1, or — when appropriate — a non-toxic pharmaceutically acceptable acid addition salt thereof, in association with a significant amount of a pharmaceutical carrier.

4,131,675

USE OF COMBINATIONS OF L-DOPA WITH TRAZODONE AND L-DOPA WITH ETOPERIDONE IN PARKINSONISM

Bruno Silvestrini, Rome, Italy, assignor to Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A., Rome, Italy

Filed Feb. 9, 1978, Ser. No. 876,383

Int. Cl.^{2} A61K *31/195, 31/495*

U.S. Cl. 424—250 **4 Claims**

1. A method of treatment of Parkinsonism comprising administering to a patient a combination of trazodone with L-DOPA or etoperidone with L-DOPA at a daily oral dose of 100 to 200 mg of trazodone or etoperidone and a daily dose of 2 to 4 g of L-DOPA substantially in a ratio of 1 part of trazodone or etoperidone for 12 to 25 parts of L-DOPA.

4,131,676

2,6-BIS(1-MORPHOLINOALKYLIDENEAMINO)ANTHRAQUINONES AS ANTI-AMEBIC AGENTS

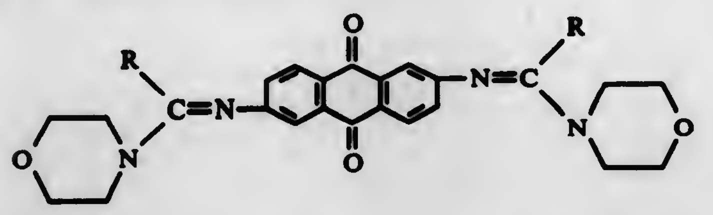
Stanley A. Lang, Jr., Stoney Point; Paul F. Fabio, Pearl River; Yang-I Lin, Nanuet; Keith C Murdock, and Thomas L. Fields, both of Pear River, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 771,880, Feb. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 699,816, Jun. 24, 1976, abandoned, which is a division of Ser. No. 606,805, Aug. 22, 1975, abandoned. This application Feb. 6, 1978, Ser. No. 875,481

Int. Cl.² C07D *295/00;* A61K *31/535*

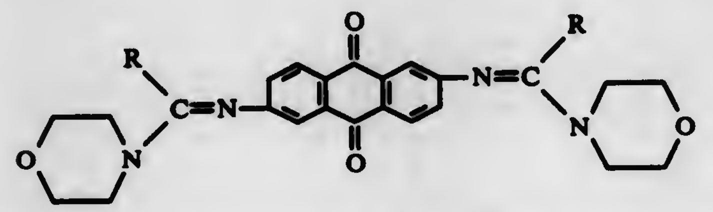
U.S. Cl. 424—248.56 6 Claims

1. A compound of the formula:



wherein R is selected from the group consisting of hydrogen and lower alkyl (C_1–C_2) and pharmaceutically acceptable salts thereof.

4. A method of treating cecal and hepatic amebic infections in warm-blooded animals which comprises administering to said animals an effective amount of a compound of the formula:



wherein R_n is selected from the group consisting of hydrogen and lower alkyl (C_1–C_2) and pharmaceutically acceptable salts thereof.

4,131,677

ANTI-INFLAMMATORY OXAZOLO [5,4-b]PYRIDINES

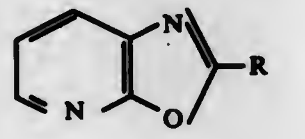
Tsung-Ying Shen, Westfield; Robert L. Clark, Woodbridge; Arsenio A. Pessolano, Colonia; Bruce E. Witzel, Westfield, and Thomas J. Lanza, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 574,173, May 2, 1975, Pat. No. 4,038,396, which is a continuation-in-part of Ser. No. 552,018, Feb. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 409,504, Oct. 25, 1973, abandoned, which is a continuation-in-part of Ser. No. 262,898, Jun. 14, 1972, abandoned. This application Apr. 27, 1977, Ser. No. 791,634

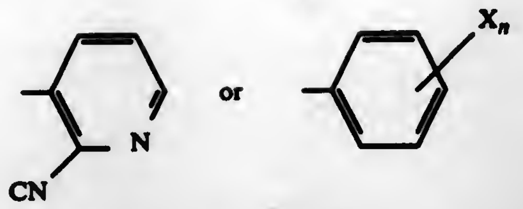
Int. Cl.² A61K *31/44;* C07D *491/02*

U.S. Cl. 424—256 9 Claims

1. A compound of the structural formula:

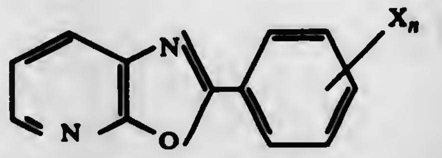


wherein R is



where n is 1–3, and the X substituents are the same or different and are selected from fluoro, nitro, and cyano.

7. A method of treating inflammation, fever or pain in warm blooded animals and humans in need of such treatment which comprises administration of an effective amount of a compound of structural formula:



wherein n is an integer from 1 to 2 and X is the same of different and is halo, trifluoromethyl, lower alkoxy, lower alkyl, nitro or cyano.

4,131,678

URAPIDIL/FUROSEMIDE COMPOUNDS, COMPOSITIONS AND USE

Hermann Amschler, Radolfzell; Kurt Klemm, Allensbach, and Gerhard Ludwig, Constance, all of Germany, assignors to BYK Gulden Lomberg Chemische Fabrik GmbH, Constance, Germany

Filed Feb. 9, 1977, Ser. No. 767,214

Claims priority, application Luxembourg, Feb. 9, 1976, 74319

Int. Cl.² A61K *31/505;* C07D *405/00*

U.S. Cl. 424—251 15 Claims

1. A first component which, in free-base form, is urapidil in combination with a second component which, in free form, is furosemide; the proportion of the second component being sufficient to increase the effectiveness of the first as a hypotensive agent and the combination of the two components being physiologically active and pharmacologically-acceptable.

8. A blood-pressure reducing medicament for subjects afflicted with hypertension and which comprises an effective concentration of a combination according to claim 1 and suitable diluent or excipient.

4,131,679

SUBSTITUTED 4-HYDROXY PYRIDONES

Jeffrey Nadelson, Denville, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

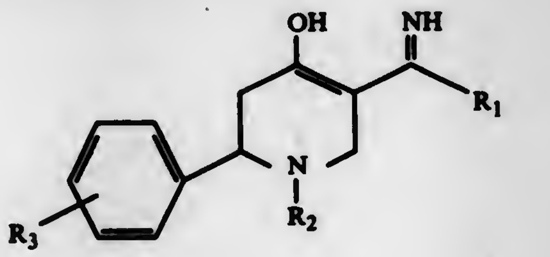
Filed Jul. 26, 1977, Ser. No. 819,006

The portion of the term of this patent subsequent to May 17, 1994, has been disclaimed.

Int. Cl.² A61K *31/44;* C07D *211/74*

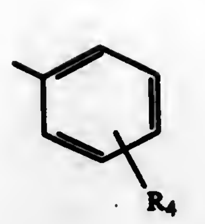
U.S. Cl. 424—263 7 Claims

1. A compound of the formula



where

R_1 is straight chain lower alkyl or



where

R_4 is hydrogen or halo having an atomic weight of about 19 to 36, and

R_2 is straight chain lower alkyl, and

R_3 is hydrogen or halo as defined above,

or a pharmaceutically acceptable salt thereof.

7. A pharmaceutical composition for use in the treatment of muscle spasms which comprises a muscle-relaxant effective amount of a compound of claim 1 and a pharmaceutically acceptable diluent or carrier therefor.

4,131,680

HYPOTENSIVE SULPHONAMIDOPIPERIDYL INDOLES

John L. Archibald, Windsor, and John L. Jackson, Royston, both of England, assignors to John Wyeth & Brother Ltd., Taplow, England

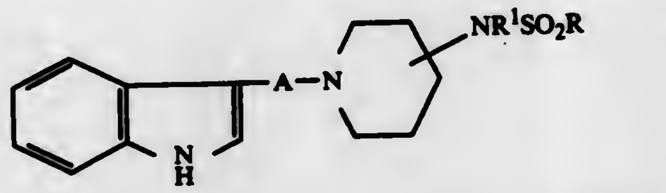
Division of Ser. No. 634,567, Nov. 24, 1975, Pat. No. 4,034,098. This application Sep. 23, 1976, Ser. No. 726,086

Claims priority, application United Kingdom, Dec. 11, 1974, 53643/74

Int. Cl.² A61K *31/445;* C07D *401/06*

U.S. Cl. 424—267 5 Claims

1. A compound having the general formula:



or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof, wherein R represents a phenyl radical which may be substituted by halogen, lower alkyl, lower alkoxy or hydroxy; R^1 represents hydrogen or lower alkyl, and A represents lower alkylene, oxo lower alkylene or hydroxy lower alkylene.

5. A hypotensive composition comprising a therapeutically effective amount of a compound as claimed in claim 1 or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof together with a pharmaceutically acceptable carrier.

4,131,681

ANTIALLERGIC METHOD

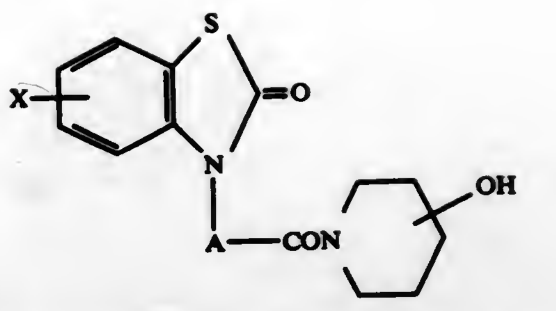
Toshiyuki Takashima, Nagaokakyo, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jul. 27, 1977, Ser. No. 819,555

Int. Cl.² A61K *31/44*

U.S. Cl. 424—267 5 Claims

1. A method for treating allergic diseases in mammals which comprises administering an antiallergic amount of a compound of the formula:



wherein A is lower alkylene and X is halogen, to said mammals.

4,131,682

HETEROARYL KETONE DERIVATIVES

Delme Evans, Chalfont St. Peter; John C. Saunders, Maidenhead, and William R. N. Williamson, Slough, all of England, assignors to Lilly Industries Limited, London, England

Filed Oct. 11, 1977, Ser. No. 840,883

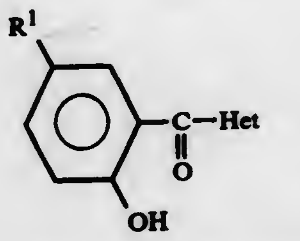
Claims priority, application United Kingdom, Oct. 14, 1976, 42684/76

Int. Cl.² C07D *333/10;* A61K *31/38*

U.S. Cl. 424—275 7 Claims

1. A heteroaryl ketone derivative of formula

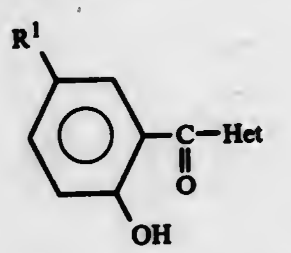
(I)



wherein R^1 is $C_{1\text{-}4}$ alkyl and Het is a heteroaryl group selected from thienyl and thienyl substituted by from one to three groups selected from halogen and $C_{1\text{-}4}$ alkyl, or a pharmaceutically acceptable salt thereof, provided that when Het is 2-thienyl, R^1 is $C_{2\text{-}4}$ alkyl.

6. A pharmaceutical formulation consisting essentially of a therapeutically effectaive amount of an active ingredient being a compound of formula (I)

(I)



where R^1 is $C_{1\text{-}4}$ alkyl and Het is a heteroaryl group selected from thienyl and thienyl substituted by from one to three groups selected from halogen and $C_{1\text{-}4}$ alkyl, or a pharmaceutically acceptable salt thereof; associated with a pharmaceutically acceptable carrier therefor.

4,131,683

ω-(1,3-DITHIOLAN-2-IMINO) SUBSTITUTED ACETIC ACIDS

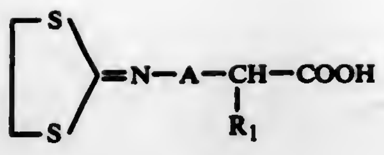
Boyd L. Harrison, and Joseph E. Dolfini, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed May 12, 1978, Ser. No. 905,278

Int. Cl.² A61K *31/385;* C07D *339/06*

U.S. Cl. 424—277 12 Claims

1. An ω-(1,3-dithiolan-2-imino) substituted acetic acid having the formula

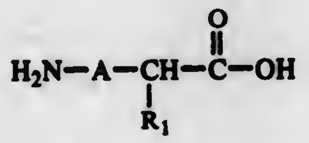


wherein

A is selected from the group consisting of a sigma bond, phenylene and phenylenethio;

R_1 is selected from the group consisting of hydrogen, lower alkyl having 1 to 4 carbon atoms, phenyl, amino, hydroxy, sulfo and carboxy; and the pharmaceutically acceptable salts thereof.

7. A process for preparing a compound of claim 1 which comprises reacting an ω-amino substituted acetic acid having the formula



$$H_2N-A-\underset{R_1}{\underset{|}{CH}}-\overset{O}{\overset{\|}{C}}-OH$$

or a pharmaceutically acceptable salt thereof, with S-methyl 1,3-dithiolane-2-thione iodide, in a solvent selected from the group consisting of water, dimethylformamide, diethyl ether, tetrahydrofuran, acetonitrile, dioxane, methanol and aqueous solutions thereof, at a temperature of from 1° to 50° C. for a period of from 1 to 24 hours, and recovering the resulting ω-(1,3-dithiolan-2-imino) substituted acetic acid therefrom.

4,131,684

COMPLEMENT INHIBITORS

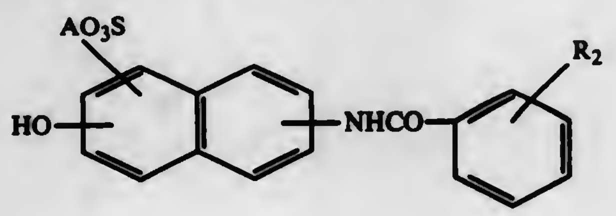
Seymour Bernstein, and Milton D. Heller, both of New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 684,601, May 10, 1976, abandoned. This application Sep. 14, 1977, Ser. No. 833,319

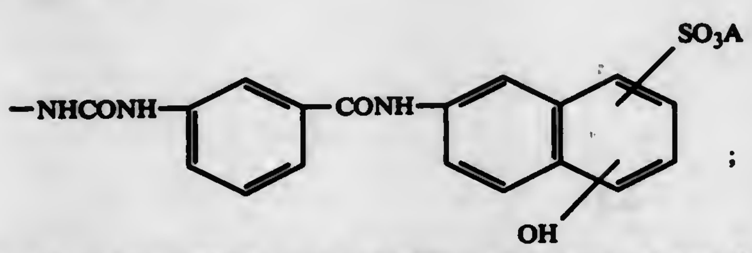
Int. Cl.² A61K *31/185*

U.S. Cl. 424—315 **2 Claims**

1. A method of inhibiting the complement system in a warm-blooded animal which comprises internally administering to said animal an effective complement inhibiting amount of a compound selected from those of the formula:



wherein R_2 is



A is hydrogen, alkali metal or alkaline earth, with the proviso that each A is identical in the same compound.

4,131,685

PHARMACEUTICAL COMPOSITIONS AND USES OF ALKANOLAMINE DERIVATIVES

Leslie H. Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

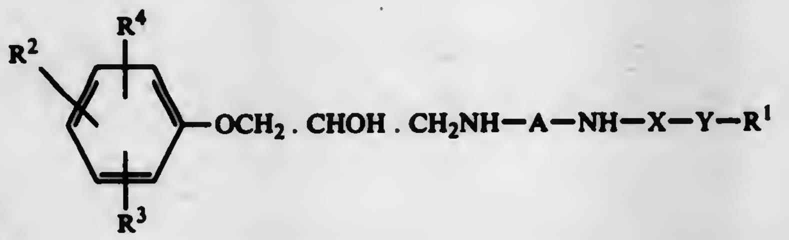
Division of Ser. No. 738,173, Nov. 2, 1976, Pat. No. 4,083,992, which is a division of Ser. No. 607,995, Aug. 26, 1975, Pat. No. 4,010,189, which is a division of Ser. No. 421,669, Dec. 4, 1973, Pat. No. 3,928,412. This application Feb. 23, 1978, Ser. No. 880,495

Claims priority, application United Kingdom, Dec. 15, 1972, 5790/72; Sep. 17, 1973, 43478/73

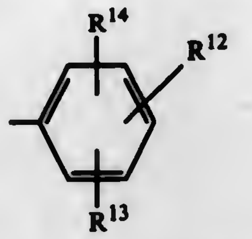
Int. Cl.² A61K *31/17, 31/275*

U.S. Cl. 424—322 **10 Claims**

1. A pharmaceutical composition comprising as active ingredient an effective amount of at least one alkanolamine selected from compounds of the formula:



wherein A is alkylene of from 2 to 12 carbon atoms, wherein R^1 is hydrogen, or alkyl, halogenoalkyl, alkenyl or cycloalkyl each of up to 10 carbon atoms, or aryl of the formula:



wherein R^2, R^3, R^{12} and R^{13}, which may be the same or different, each is hydrogen, halogen, hydroxy, amino, nitro or cyano, alkyl, cycloalkyl, alkenyl, alkynyl, alkoxy, alkylthio, cycloalkoxy, alkenyloxy, alkynyloxy or alkanoyl each of up to 6 carbon atoms, or aryl, aryloxy or aralkoxy each of up to 12 carbon atoms; wherein R^4 is hydrogen, hydroxy or hydroxymethyl or aralkoxy of up to 12 carbon atoms; wherein R^{14} is hydrogen, amino or dialkylamino of up to 12 carbon atoms; wherein X is carbonyl (—CO—) and wherein Y is imino (—NH—), or alkylimino of up to 6 carbon atoms and the acid-addition salts thereof, in association with a pharmaceutically-acceptable diluent or carrier therefor.

4,131,686

NOVEL BENZYLALCOHOL DERIVATIVES AND PROCESSES FOR PREPARING THE SAME

Muneyoshi Ikezaki, Ageo; Yashushi Okazaki, Tokyo; Nobuo Ito, Tokyo; Masao Hoshiyama, Tokyo; Taku Nagao, Ageo, and Hiromichi Nakajima, Yono, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

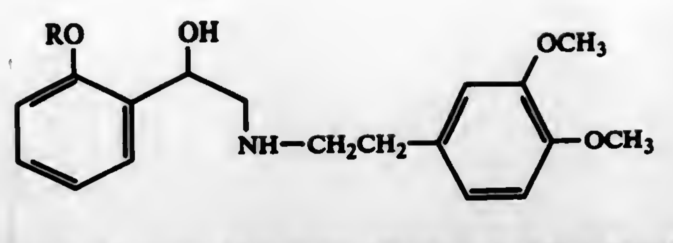
Filed Dec. 6, 1976, Ser. No. 747,898

Claims priority, application Japan, Dec. 11, 1975, 50/148145; Feb. 12, 1976, 51/14668

Int. Cl.² A61K *31/135;* **C07C** *91/34*

U.S. Cl. 424—330 **8 Claims**

1. A compound of the formula:



wherein R is a lower alkyl group having 1–4 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

5. A pharmaceutical composition consisting essentially of a pharmaceutically acceptable excipient and the compound of claim 1, said composition capable of providing a decrease in blood sugar when administered to a warm blooded animal.

4,131,687

FLAVORING WITH TERPENYL ETHERS

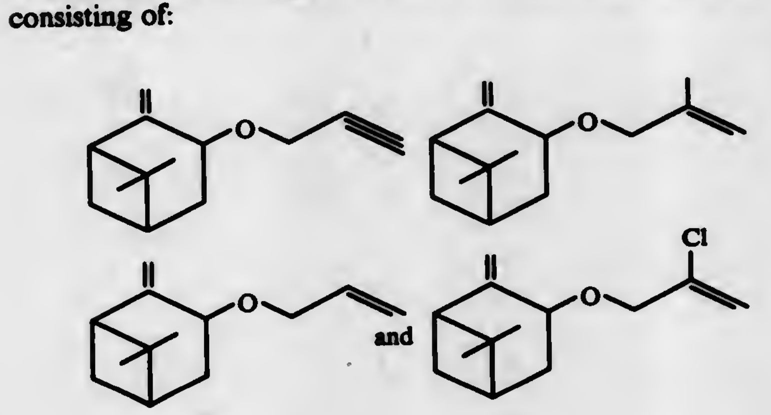
Cynthia J. Mussinan, Bricktown; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust; Frederick L. Schmitt, Holmdel, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; James M. Sanders, Eatontown, N.J.; Bette M. Light, Highlands, N.J., and Edward J. Granda, Englishtown, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jan. 27, 1978, Ser. No. 872,937

Int. Cl.² A23L *1/226, 1/235*

U.S. Cl. 426—3 **10 Claims**

1. A method for augmenting or enhancing the aroma or taste of a foodstuff or chewing gum comprising the step of adding thereto from 0.5 parts per million up to about 100 parts per million based on the total weight of foodstuff or chewing gum of a compound having a structure selected from the group consisting of:



4,131,688

CONTINUOUS MANUFACTURE OF CHEESE

Gérard Grosclaude, Neauphle le Vieux; Jean Regnier, Issy les Moulineaux, and Marcel Cavarroc, Velizy, all of France, assignors to Institut National de la Recherche Agronomique, Paris, France

Filed Oct. 4, 1976, Ser. No. 729,072

Claims priority, application France, Oct. 3, 1975, 75 30362

Int. Cl.² A23C *19/02*

U.S. Cl. 426—40 **8 Claims**

1. A process for the manufacture of cheese comprising the steps of: ultrafiltrating milk or a milk product capable of transformation into cheese until a retentate has been obtained whose solid content is about that of the cheese to be made; adding additional constituents to said retentate to obtain a liquid mixture whose solids content and fat to solids ratio are substantially those of the desired cheese; continuously intimately mixing the mixture with rennet and adjusting the temperature of the resulting mixture so that it is higher than the selected temperature of coagulation; continuously introducing the mixture whose temperature is higher than the selected coagulation temperature into an elongate coagulation cylinder having a smooth-walled interior and an interior cross section having substantially the cross section of the cheese being produced; controlling the rate of flow of the mixture being introduced into said cylinder so that the flow of mixture as it progresses through the cylinder is laminar at all points; causing said mixture to coagulate as it passes through said cylinder in the direction of the longitudinal axis thereof while effecting a substantilly plane coagulation front at right angles to the longitudinal axis of the coagulation cylinder by maintaining the interior wall of the coagulation cylinder at a temperature below that of the selected temperature of coagulation, the temperatures of the incoming mixture and of the coagulation cylinder being such that the portions of the mixture nearer the center of the cylinder coagulate more quickly than the portions adjacent to the interior wall; cutting slices of curd from said coagulate leaving the coagulation cylinder at the outlet of the coagulation cylinder and transferring the slices of curd having substantially the composition and ultimate shape of the cheese produced directly to a ripening station.

4,131,689

PROCESS FOR THE PRODUCTION OF DRIED FOOD PRODUCTS

Gerhard Wilke, Holderlinweg 1, Heidelberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 312,985, Dec. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 55,622, Jul. 16, 1970, abandoned. This application Mar. 24, 1977, Ser. No. 780,914

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1969, 1936465

Int. Cl.² A23L *1/216*

U.S. Cl. 426—242 **14 Claims**

1. A process for the production of dried food products having an irregular, flake-like shape and a thin film of horny, dried-out glued together starch, and which are expandable in water after an initial delay to form a dumpling, said process comprising the steps of:

a. forming individually distinct particles from an ungelatinized base mixture containing material selected from the group consisting of potatoes, and mixtures of starch based products and albumin;

b. adding water to said individually distinct particles and kneading the same for a period of time sufficient to form an inhomogeneous mixture wherein the integrity of said distinct particles is preserved;

c. forming said mixture into a film by subjecting said inhomogeneous mixture to single rollers arranged one behind the other in series and operating at differential speeds, each succeeding roller moving faster than the preceding roller, such that said mixture passes from part of the surface of one of said single rollers to part of the surface of another of said single rollers adjacent thereto thereby pressurizing the surfaces of said film to produce outer layers of greater density than the remainder of said film and imparting greater fibrous characteristics to said remainder of said film than to said outer layers thereof, said differential speeds of the rollers causing a shearing effect on said mixture so that the mass of film remains with an irregular structure;

d. removing said film from the last roller;

e. drying said film to further increase the density of said outer layers; and

f. separating the dried film into flake-like particles.

4,131,690

METHOD OF POWDER COATING AN INSULATED ELECTRICAL CONDUCTOR

John A. Jukes, Pierre Fonds, and Philip A. McGettigan, Montreal, both of Canada, assignors to Northern Electric Company Limited, Montreal, Canada

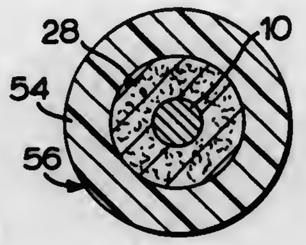
Filed May 5, 1975, Ser. No. 574,608

Int. Cl.² B05D *5/00, 5/12*

U.S. Cl. 427—32 **11 Claims**

1. A method of producing an insulated electrical conductor comprising the steps of:

electrostatically depositing a powdered polymeric material onto a wire conductor coated with an annular sheath of electrically insulating heat resistant fibrous material.



applying heat externally to the conductor to fuse the polymeric material to form an uniform outer layer of polymeric material and

cooling the polymer coated conductor.

4,131,691

COATING A SUBSTRATE BY GLOW DISCHARGE GRAFT POLYMERIZATION

John R. Morley, Oakland, Calif., and Ralph E. Howe, Cold Spring Harbor, N.Y., assignors to Surface Activation Corporation, Syosset, N.Y.

Filed Sep. 22, 1977, Ser. No. 835,657

Int. Cl.^{2} B05D *3/06*

U.S. Cl. 427—41 **5 Claims**

1. A method of graft polymerizing a monomer on a substrate, comprising passing a substrate through a zone of electrical glow discharge plasma in a gaseous medium comprising at least about 25%, by weight, of water vapor, based on the total weight of the gaseous medium, thereby exposing said substrate to said plasma in said zone to generate free radical sites on said substrate, and subsequently exposing the substrate containing said free radical sites to an ethylenically unsaturated monomer to form a graft polymer thereof on said substrate.

4,131,692

METHOD FOR MAKING CERAMIC ELECTRIC RESISTOR

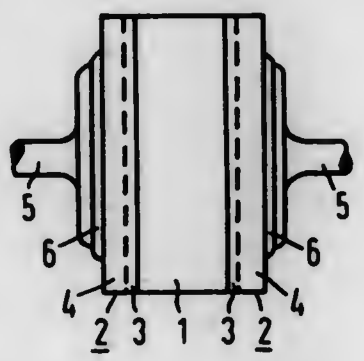
Baerbel Seebacher, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Division of Ser. No. 592,524, Jul. 2, 1975, abandoned. This application Aug. 11, 1976, Ser. No. 713,355

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1974, 2433458

Int. Cl.^{2} C23C *3/02*

U.S. Cl. 427—101 **7 Claims**



1. A process for the production of a ceramic electric resistor comprising:

the steps of obtaining a ceramic body which consists of material having a Peronskite structure with semiconducting doping with alien-lattice ions, applying a palladium (II)-chloride solution to the surface of the ceramic body at points to be contacted, stoving in the palladium (II)-chloride solution at temperatures between 300° to 500° C. after it has been applied to the ceramic body, currentless nickel-plating the resulting palladium (II)-chloride layer to produce a second layer and tempering the resulting resistor.

4,131,693

HARDENABLE POLYESTERURETHANE COMPOSITION FOR PRODUCING A DIRECTLY TINNABLE WIRE

Hartmut Wendt; Horst Von Grüner, both of Hamburg, and Harald Janssen, Reinbek, all of Fed. Rep. of Germany, assignors to Dr. Beck & Co AG, Hamburg, Fed. Rep. of Germany

Filed Jul. 18, 1977, Ser. No. 816,775

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1976, 2632047

Int. Cl.^{2} B05D *5/12, 3/02*

U.S. Cl. 427—117 **8 Claims**

1. A process for producing a coating for directly tinnable wire, comprising the steps of

forming a hardenable polyester urethane having a urethane equivalent (NHCOO-) weight of 150 - 850 by reacting at 100 - 200° C (A) a polyester having an excess of alcohol groups relative to the acid groups so as to provide at least two free hydroxyl groups with an aromatic polyisocyanate containing at least two free isocyanates end groups so as to form a polyurethane through reaction of said hydroxyl groups with said isocyanate end groups,

dissolving the formed polyester urethane in a phenol-free organic solvent so as to make a varnish; and

applying said varnish to a wire and curing it so as to form a coating on said wire whereby the wire can be tinned directly and speedily due to the fact that on immersion of a portion of such wire into a bath of solder the varnish coating on the immersed portion will become removed and the wire exposed for direct tinning.

4,131,694

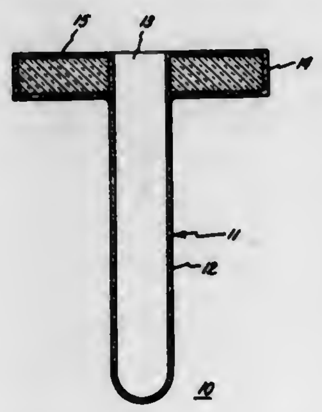
COMPOSITE BODY AND METHOD OF FORMING

Bruce S. Dunn, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 852,242, Nov. 17, 1977. This application Mar. 20, 1978, Ser. No. 890,595

Int. Cl.^{2} B05D *5/12;* **H01M** *6/20*

U.S. Cl. 427—126 **3 Claims**



1. A method of forming a composite body which comprises providing a solid ion-conductive electrolyte material body having a casing portion with one open end and a header portion integral with the casing adjacent its open end, submerging the header portion of the body in a molten bath of a salt containing a divalent substitution ion, and converting the surface portion of only the header portion of the body to an ion-insulating material thereby providing a composite body.

4,131,695

AZO COLOR FORMER CONTAINING HEAT-SENSITIVE RECORDING MATERIAL

Jean C. Petitpierre, Kaiseraugst, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

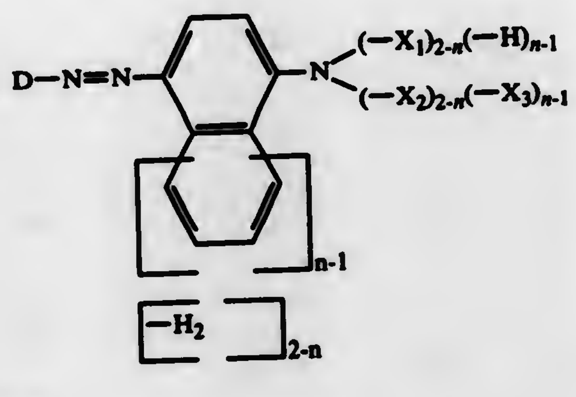
Filed Feb. 23, 1976, Ser. No. 660,596

Claims priority, application Switzerland, Feb. 27, 1975, 2522/75; Aug. 8, 1975, 10378/75

Int. Cl.^{2} B41M *5/18, 5/26;* **C09B** *29/06, 29/08*

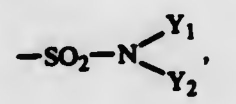
U.S. Cl. 427—148 **11 Claims**

1. In a heat-sensitive recording material which contains in at least one fusible film-forming binder layer on a substrate, at least one color former dispersed or dissolved therein and at least one electron acceptor substance as a color developer, said electron acceptor substance being a solid organic or inorganic Bronsted acid or inorganic acid salt with a pKa value value of 4 or lower than 4, the improvement wherein the color former is an azo compound of the formula .



wherein

D represents a phenyl radical which is unsubstituted or substituted by halogen, alkyl, alkoxy, aryloxy, alkoxycarbonyl, N,N-dialkylaminocarbonyl, acylamino, N-acyl-N-alkylamino or the group



$$-SO_2-N\begin{matrix} Y_1 \\ Y_2 \end{matrix},$$

wherein each of Y_1 and Y_2 independently represents alkyl or aryl,

X_1 represents hydrogen or alkyl,

X_2 represents alkyl, cyanoalkyl or arylmethyl,

X_3 represents alkyl or aryl, and

N is 1 or 2.

4,131,696

CONTACT LENS TREATMENT

William Covington, West Cornwall, Conn., assignor to Burton, Parsons and Company, Inc., Washington, D.C.

Filed Oct. 19, 1977, Ser. No. 843,554

Int. Cl.^{2} G02C *7/04;* **G02B** *1/10*

U.S. Cl. 427—164 **9 Claims**

1. A method for increasing the wearing comfort of hard contact lenses which comprises contacting the lens surfaces with an aqueous colloidal suspension of a physiologically inert inorganic hydrous oxide thereby rendering said lens surfaces wettable by lacrimal fluids, rinsing the lenses to remove any non-adhering colloidal particles and inserting the lenses over the cornea of the eye.

4,131,697

METHOD OF COATING CARBON FILAMENTS WITH SILICON CARBIDE

Jean-Louis R. G. Randon, Brettigny-sur-Orge, and Georges S. Slama, Creteil, both of France, assignors to Association pour la Recherches et le Developpement des Methodes et Processus Industriels, France

Continuation of Ser. No. 479,096, Jun. 13, 1974. This application Sep. 12, 1977, Ser. No. 832,611

Claims priority, application France, Jun. 15, 1973, 73 21814

Int. Cl.^{2} C23C *11/00*

U.S. Cl. 427—249 **3 Claims**

1. A method of coating a carbon filament having a thickness of less than 50 microns with silicon carbide, which comprises passing the carbon filament heated by the Joule effect to a temperature of about 1350° C, into a first reactor containing gaseous silicon tetrachloride and hydrogen, the dwell time of the filament in the first reactor being less than 30 seconds, thereby forming a layer of silicon carbide having a thickness of less than 0.2 micron, and then passing the filament heated to a temperature of at least 1100° C into a second reactor containing methyltrichlorosilane and hydrogen thereby producing a silicon carbide coating on the filament of at least ten microns.

4,131,698

PRETREATMENT OF POLYVINYL CHLORIDE PLASTICS FOR ELECTROLESS DEPOSITION

Cheryl A. Deckert, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 16, 1977, Ser. No. 861,453

Int. Cl.^{2} C23C *3/02*

U.S. Cl. 427—304 **9 Claims**

1. A process for pretreating a polyvinyl chloride plastic prior to electroless metal deposition which comprises immersing the polyvinyl chloride plastic in a solution consisting of an alkali metal hydroxide in a concentration from about 10 grams to about 400 grams per liter of solution, wherein said solution comprises about 5% to about 30% by volume of a water soluble mono-, di-, or polyhydric alcohol and about 70% to about 95% by volume of water.

4,131,699

METHOD OF PREPARATION AND USE OF ELECTROLESS PLATING CATALYSTS

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 625,326, Oct. 23, 1975, Pat. No. 4,048,354. This application Aug. 1, 1977, Ser. No. 820,904

The portion of the term of this patent subsequent to Sep. 13, 1994, has been disclaimed.

Int. Cl.^{2} C23C *3/02*

U.S. Cl. 427—306 **51 Claims**

1. A process for electroless or chemical plating onto a non-conductor substrate comprises the step of contacting said substrate in an activated colloidal dispersion wherein said colloidal dispersion comprises a metal capable of electroless or chemical plating initiation and wherein said activated colloidal dispersion is derived from the admixing of a weakly active colloidal dispersion of said metal or alloy or compound of said metal containing a colloid stabilizer with a reactivity modifier thereby increasing the activity of said weakly active colloidal dispersion and wherein said colloid stabilizer and said reactivity modifier are different materials and further wherein said reactivity modifier is inherently a colloid stabilizer and thus said activated colloidal dispersion comprises of at least two colloidal stabilizers.

4,131,700

COMPOSITION OF MATTER FOR TREATING A CLOSED CELL FOAM SUBSTRATE

Richard J. Guglielmo, Sr., Lambs La., Cresskill, N.J. 07626

Filed Jul. 12, 1976, Ser. No. 704,307

Int. Cl.^{2} B05D *3/00, 3/12*

U.S. Cl. 427—322 **12 Claims**

8. A process for treating a foam material to provide a vinyl film thereon which comprises coating said foam material with a vinyl coating solution formed by admixing a vinyl copolymer and plasticizer therefor in a solvent system having a flash temperature above about 150° F. and including a chlorinated hydrocarbon solvent and a vinyl solvating solvent and thereafter applying said composition of matter to said foam material at a temperature of from 50° to about 140° F.

9. The process as defined in claim 8 and including the step of pretreating said foam material to clean the surface thereof.

4,131,701

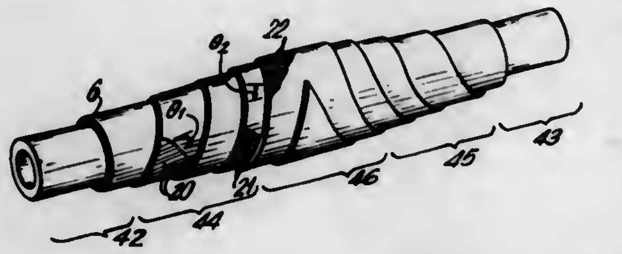
COMPOSITE TUBULAR ELEMENTS

Richard L. VanAuken, Bridgewater, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 801,028, May 27, 1977. This application Dec. 2, 1977, Ser. No. 856,615

Int. Cl.^{2} B32B *5/12;* **F16C** *1/02*

U.S. Cl. 428—36 **8 Claims**



1. A tubular composite structure for transmitting substantial torsion and bending loads comprising:

a tubular metal core;

a layer of structural metal adhesive on the exterior surface of the metal core;

a plurality of superimposed layers of resin-impregnated unidirectional continuous reinforcing fibers circumferentially wrapped around said tubular metal core, each layer of said resin impregnated fibers having the fibers oriented at an angle of between about 5° to 20° with respect to the longitudinal axis of the metal core and in opposite angular orientation with respect to the next preceding layer of said resin-impregnated fibers;

a layer of woven fiberglass cloth interposed between each superimposed layer of said resin-impregnated reinforcing fibers; and

a layer of woven fiberglass cloth interposed between said layer of structural metal adhesive and a said superimposed layer of said resin-impregnated reinforcing fibers;

each of said plurality of superimposed layers of resin-impregnated unidirectional continuous reinforcing fibers and said layers of woven fiberglass cloth being shaped such that when circumferentially wrapped around the said tubular metal core the thickness of said layers wrapped around said core will vary along the length of the tubular structure with the maximum wall thickness being substantially at the mid-section of the tubular structure and the minimum thickness being at the first end and the second end of said tubular structure.

4,131,702

SELF-SUPPORTING MOLDED COMPONENT FOR AUTOMOTIVE VEHICLES

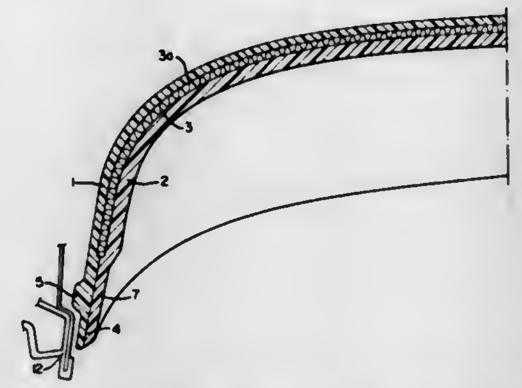
Franz W. Alfter, Siegburg; Hans-Ulrich Breitscheidel, Troisdorf; Günter Mecklenburg, Troisdorf-Spich, and Paul Spielau, Troisdorf, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

Filed Jun. 16, 1977, Ser. No. 807,335

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1976, 7619090[U]

Int. Cl.^{2} B32B *1/04, 3/26, 3/28;* **B62D** *25/06*

U.S. Cl. 428—76 **6 Claims**



1. A self-supporting molded component for lining the inside of automobile roofs, comprising a layered composite arrangement of crosslinked polyethylene foam panels laminated on both sides to at least one reinforcing layer of corrugated cardboard or carton material, said polyethylene foam panels being arranged so that the reinforcing layer is surrounded on all sides by the polyethylene foam panels and is sealed off against the penetration of mositure.

4,131,703

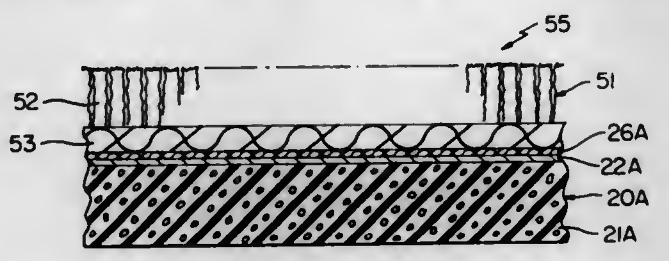
FIRE-RESISTANT CONSTRUCTION, METHOD OF MAKING SAME, AND CARPET CONSTRUCTION EMPLOYING SAME

Harry C. Voet, Cincinnati, Ohio, assignor to Dayco Corporation, Dayton, Ohio

Filed Feb. 17, 1978, Ser. No. 879,024

Int. Cl.^{2} B32B *3/26*

U.S. Cl. 428—95 **24 Claims**



16. In combination: a fire-resistant carpet underlay construction and a carpet disposed on said underlay construction; said carpet having a wear layer and a backing layer with said backing layer adjoining said underlay construction; said underlay construction comprising a cellular layer of compressible resilient elastomeric material and a sheet of metallic foil fixed against said layer; said sheet serving to dissipate heat from any portion of said cellular layer subjected to heat of an ignition source to thereby help provide said construction with its fire-resistant character; said elastomeric material consisting of a foam latex which when subjected to said heat, starts decomposing to initially generate water vapor which helps cool said cellular layer and carpet, releases a flame retardant with further decomposition, and forms a char layer with still further decomposition which helps insulate said cellular layer and carpet from heat while limiting oxygen flow thereto.

4,131,704

NONWOVEN FABRIC COMPRISING NEEDLED AND SELECTIVELY FUSED FINE AND COARSE FILAMENTS HAVING DIFFERING SOFTENING TEMPERATURES WHICH IS USEFUL AS A BACKING IN THE PRODUCTION OF TUFTED MATERIALS

Wayne K. Erickson, and John P. Walters, both of Greenville, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 2, 1976, Ser. No. 646,098

Int. Cl.^{2} B32B *5/06, 5/08, 5/12;* **D04H** *1/48*

U.S. Cl. 428—95 **10 Claims**

1. A tufted pile fabric comprising:

(a) a primary backing of fine staple fibers and coarse staple fibers including:

(1) 75 to 25 percent by weight of said fine staple fibers of polypropylene having a lower softening temperature than that of said coarse fibers, thereby permitting the selective fusing of fine staple fibers in preference to fusing of coarse staple fibers, said fine staple fibers being randomly oriented in the plane of the backing, said fine staple fibers having portions thereof extending in a direction generally transverse to the plane of the backing, overlapping portions of said fine staple fibers being selectively fused together to provide integrity for the fabric.

(2) 25 to 75 percent by weight of coarse staple fibers of polypropylene having a denier at least twice that of the fine fibers, said coarse staple fibers being randomly oriented and intermixed with the fine staple fibers, and coarse staple fibers being in a plane substantially parallel to the plane of the backing and being retained in the interstices of the fine staple fibers by frictional engagement with the fine staple fibers with a major portion of the length of the coarse staple fibers being free of fusion bonding to thereby allow said coarse staple fibers to move within said interstices; and

(b) tufted yarns piercing said primary backing; and

(c) a secondary backing adhered to said tufted primary backing.

3. A nonwoven fabric comprised of a plurality of different types of staple fibers, said fabric including:

(a) 75 to 25 percent by weight of fine staple fiber of synthetic material randomly oriented in the plane of the fabric with said fine staple fibers having portions thereof extending in a direction generally transverse to the plane of the fabric, overlapping portions of said fine staple fibers being selectively fused together to provide integrity for the fabric;

(b) 25 to 75 percent by weight of coarse staple fibers having a denier of at least twice that of the fine staple fibers, of synthetic material having a higher softening temperature than the softening temperature of the fine staple fibers, thereby permitting the selective fusing of fine staple fibers to fine staple fibers in preference to fusing of coarse staple fibers, said coarse staple fibers being randomly oriented in the plane of the fabric and intermixed with the fine staple fibers, said coarse staple fibers being positioned in a plane substantially parallel to the plane of the fabric and being at least partially retained in the interstices of the fine staple fibers by frictional engagement with the fine staple fibers, said coarse staple fibers have a major portion of their length free of fusion bonding to thereby allow said coarse staple fibers to move within said interstices.

8. A method of making a nonwoven fabric, said method including the steps of:

(a) forming a web of intermixed and randomly oriented fibers of which 75 to 25 percent is fine staple fibers of synthetic material and 25 to 75 weight percent is coarse staple fibers of synthetic material having a denier of at least about twice that of the fine fibers, said coarse fibers having a higher softening temperature than that of the fine fibers;

(b) needling said web with needles having a barb size sufficiently small for selectively needling the fine fibers in preferance to the coarse fibers whereby portions of the fine fibers extend in a direction generally transverse to the plane of the fabric and said coarse fibers are generally parallel to the plane of the fabric; and

(c) heating the needled web to a temperature sufficient to selectively bond the fine fibers together at overlapping portions thereof in preference to bonding the coarse fibers, with the majority of the length of the coarse fibers being free of fusion bonding and movable within the interstices of the fine fibers and held therein by friction.

4,131,705

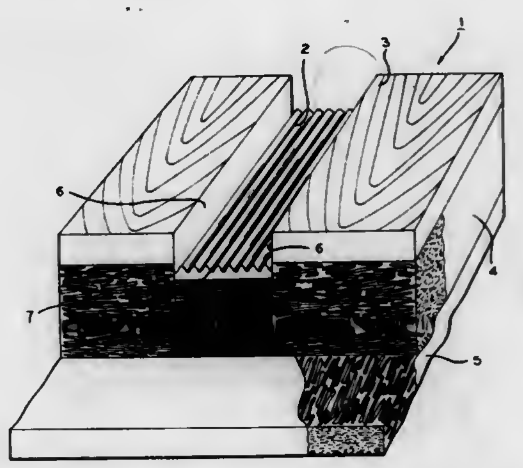
STRUCTURAL LAMINATE

Eugene J. Kubinsky, Shelton, Wash., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 6, 1977, Ser. No. 830,471

Int. Cl.^{2} B32B *5/12, 5/14;* **B29D** *3/02;* **D04H** *1/16*

U.S. Cl. 428—106 **11 Claims**



1. A structural laminate having a pattern impressed therein comprising

an outer wood face veneer, the grain of which is oriented along a given direction and

at least two plies of particle board, said particle board ply nearest the outer face veneer having a particle orientation along a direction perpendicular to the grain of the face veneer, the other of said particle board plies having a particle orientation along the same direction as said face veneer,

said laminate containing at least one groove therein pressed into the outer surface of the laminate along the direction of the grain during the pressing of said plies into a composite laminate.

9. A process of producing a structural laminate having a pattern impressed therein comprising

forming at least two layers of particles oriented in a direction perpendicular to each other, each of said layers comprising said particles and an adhesive therefor,

placing a wood face veneer adjacent one of said layers of particles, the grain of said wood face veneer being oriented along a direction perpendicular to said adjacent particle layer, and

pressing together under heat and pressure into a composite laminate said particle layers and wood face veneer and, during said pressing operation, impressing at least one groove into the outer surface of said laminate.

4,131,706

SUNLIGHT ADMITTING HEAT IMPEDING PANEL

Ronald E. Graf, Rte. 3, Box 520, Crozet, Va. 22932

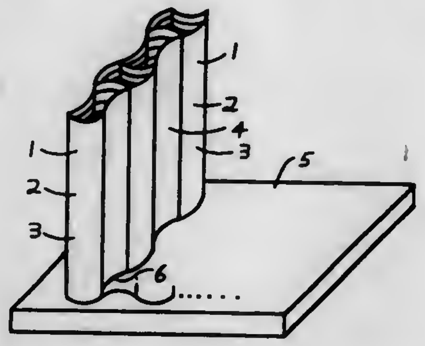
Continuation-in-part of Ser. No. 643,842, Dec. 3, 1975, abandoned. This application Dec. 21, 1976, Ser. No. 752,982

Int. Cl.^{2} B32B *3/12, 3/00*

U.S. Cl. 428—116 **4 Claims**

1. A solid structure with a multiplicity of substantially parallel cells in a honeycomb type of configuration which can

deform to accommodate compression and tensile forces due to temperature gradients within the structure, said structure being comprised of interconnecting walls between juncture lines of the walls, the walls being thin enough to be thought of as geometrical surfaces, each juncture line being substantially straight and parallel to every other juncture line, so that the juncture lines may be thought of as straight and parallel, each wall being curved and oriented with respect to the other walls in a recurring symmetrical pattern, with at most one wall running between any pair of juncture lines, each of said cells being comprised of walls each undulating in and out with respect to the interior of the cell, so that any wall in a cell is substantially represented by a single undulating curve when viewed parallel to any juncture line of two walls, and such that each particular wall in turn going around any cell in one direction is first convex with respect to the cell after leaving a juncture line, and last concave with respect to the cell upon approaching the juncture line between the particular wall and the next wall around the cell, and equivalently such that all walls ending at any and all particular junctures spiral out from the juncture in the same rotation sense if viewed from a good distance along any juncture extended, this configuration thus, in the absence of other rotation factors, causing all the walls to physically rotate in the neighborhood of any juncture in a given rotation sense around the juncture whenever the juncture is under increasing compression, said compression being substantially applied perpendicular to the juncture at all points along the juncture.



4,131,707

STABLE RESIN SOLUTIONS CONTAINING COMPOUNDS HAVING AT LEAST ONE FURYL RADICAL

Abdul-Cader Zahir, Oberwil, and Sigfried Wyler, Dornach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

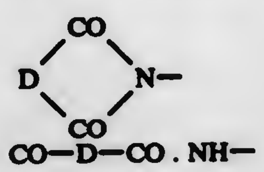
Filed Nov. 8, 1976, Ser. No. 739,877

Claims priority, application Switzerland, Nov. 14, 1975, 14797/75

Int. Cl.² B32B *7/00;* **B05D** *3/02*

U.S. Cl. 428—251 **14 Claims**

1. In a solution which contains a curable mixture of (1) imide or amide-carboxylic acid which contains in the molecule at least one of the radicals of the formulae


(I)

$$HO.CO{-}D{-}CO.NH{-}$$ (II)

in which D denotes a divalent radical containing a carbon-carbon double bond, (2) comonomers of said imide or amide-carboxylic acid selected from the group consisting of polyprimary amine, polyhydric phenol, polyhydric alcohol, poly carboxylic acid, alkenylphenol,alkenylphenol ether, and an azo methine, or a mixture of these substances and, optionally, (3) ionic or free-radical polymerization catalysts, the improvement which comprises adding to said solution a compound which contains at least one furyl radical in an amount such that there are 0.05 to 10 equivalent of said compound per 1 equivalent of imide or amide-carboxylic acid.

10. A method of coating for the manufacture of a crosslinked polymer containing imide groups, wherein a substrate, is impregnated or coated with a solution according to claim 1, the solvent is then evaporated and, finally, curing and crosslinking are carried out, at temperatures of between 100° and 300° C.

4,131,708

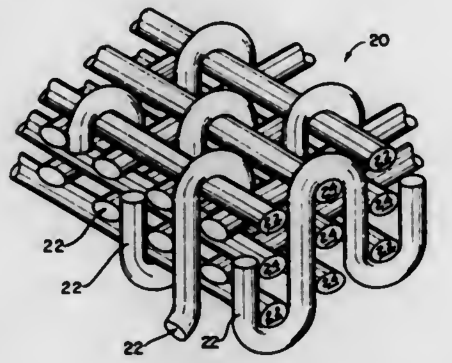
SELECTIVELY MODIFIED CARBON-CARBON COMPOSITES

Peter R. Moores, Sanford, and James E. Shoffner, Kennebunk, both of Me., assignors to Fiber Materials, Inc., Biddeford, Me.

Filed Jul. 27, 1976, Ser. No. 708,929

Int. Cl.² D32B *7/00*

U.S. Cl. 428—257 **7 Claims**



1. An ablative carbon-composite shaped structure for high temperature thermal protection comprising, in combination:

a carbon-carbon composite reinforced body, and

implants in the form of elongate columns of a refractory metal carbide disposed within said body, said refractory metal carbide implants (I) being (a) substantially aligned parallel with one another axially in the direction of expected thermal flux and (b) positioned at predetermined locations of expected thermal flux through said structure, and (II) having (a) a melting point below the sublimation temperature of the surrounding composite and (b) a thermal explansibility having a force below the strength of the surrounding composite.

4,131,709

ADHESIVE COMPOSITIONS

Erich Schunck, Hochheim, Main; Heinz Schmelzer, Rummelsheim, and Richard Sattelmeyer, Schlangenbad, Georgenborn, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 20, 1976, Ser. No. 752,176

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1975, 2558858

Int. Cl.² B22B *7/12*

U.S. Cl. 428—261 **10 Claims**

1. An adhesive composition consisting essentially of

I. 100 parts by weight of a block copolymer with at least two polymer blocks (A) and at least one polymer block (B), wherein the polymer blocks (A) comprise non-elastomeric blocks with an average molecular weight of from 2000 to 125,000 derived from an aromatic hydrocarbon substituted by one of the groups consisting of the members monoalkenyl and monoalkylidene and wherein not more than 25% of the original double bonds are hydrogenated, and polymer block (B) is an elastomeric block with an average molecular weight of from 10,000 to 250,000 derived from a conjugated diene, wherein at least 75% of the aliphatic unsaturated bonds are hydrogenated;

II. 10 to 200 parts by weight of at least one cohesion-increasing resin selected from the group consisting of an alkylphenol aldehyde resin, an arylphenol aldehyde resin, a phenol-colophony-adduct and a rosin-modified phenol aldehyde resin; the components dissolved in at least one solvent.

8. A process of bonding one substrate to another substrate which comprises applying to the surface of either substrate an adhesive composition as claimed in claim 1 and placing the surfaces to be bonded together.

4,131,710

RECORDING MATERIAL CONTAINING ASBESTOS

Güido Dessauer, Dusseldorf-Gerresheim; Kurt Ramlow, Schaffiund; Kurt Riecke, Kempen, and Franz Wirnitzer, Flensburg, all of Fed. Rep. of Germany, assignors to Feldmuhle Aktiengesellschaft, Dusseldorf-Oberkassel, Fed. Rep. of Germany

Filed Jan. 18, 1977, Ser. No. 760,275

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1976, 2601864

Int. Cl.² B32B *5/16, 9/06;* **B41M** *5/16*

U.S. Cl. 428—328 **10 Claims**

1. A recording sheet capable of displaying a colored image when contacted under pressure with a substantially colorless member of the group consisting of crystal violet lactone, malachite green lactone, benzoyl leuco methylene blue, and N-phenylleukauramine, said sheet consisting mainly of paper-forming fibrous material, 3 to 30 percent of the weight of said fibrous material being constituted by asbestos fibers uniformly distributed in said sheet, said sheet carrying a surface coating including an amount of a mixture of γ-alumina and precursors of said γ-alumina uniformly distributed in said coating, the amount of said mixture being sufficient to enhance said displaying of a colored image, said precursors being hydrated forms of aluminum oxide capable of being converted substantially completely to γ-alumina when heated from 300° to 1000° C., said mixture containing 1 to 30 percent water volatile at 1000° C.

4,131,711

COATING PROCESS USING DISPERSIONS OF TETRAFLUOROETHYLENE POLYMERS AND POLYETHERSULPHONES AND ARTICLE

Terence E. Attwood, Kimpton, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 786,938, Apr. 12, 1977, abandoned. This application May 8, 1978, Ser. No. 903,660

Claims priority, application United Kingdom, Jan. 25, 1977, 2954/77; Mar. 30, 1977, 13446/77

Int. Cl.² B32B *9/04*

U.S. Cl. 428—332 **10 Claims**

1. A process for the production of a coated article comprising applying to the article in a single coating step an aqueous dispersion of a tetrafluoroethylene polymer and a thermoplastic aromatic polyethersulphone in which at least 20% of the end groups of the polymer chain are aromatically bound hydroxyl groups and said polyethersulphone having a reduced viscosity below 0.25, as measured at 25° C. on a solution in dimethyl formamide containing 1 g of polymer in 100 cm^3 of solution, drying the coating; and thereafter baking the coated article in the presence of oxygen at a temperature in the range 420 to 450° C. to achieve a single coating of thickness at least 15 μm.

4,131,712

PROCESS FOR PREPARING POLYAMIDE FROM DIACID-RICH COMPONENT AND DIAMINE-RICH COMPONENT

Jerome W. Spraner, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 10, 1977, Ser. No. 823,326

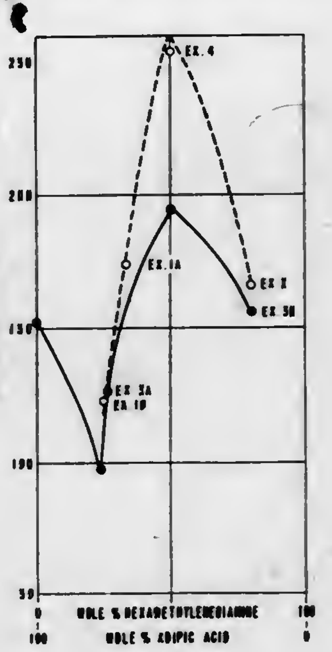
Int. Cl.² C08G *69/28*

U.S. Cl. 528—335 **13 Claims**

1. A process for making a high molecular weight, fiber-forming polyamide, said process comprising the following steps:

(1) providing a diacid-rich component prepared by melting together at least one dicarboxylic acid with at least one diamine or with a physical or chemical combination of at least one dicarboxylic acid with at least one diamine in a total diacid to total diamine mole ratio, whether free or chemically combined, of about 1.5:1 to 9:1;

(2) providing a diamine-rich component selected from the group consisting of at least one diamine and a product obtained by melting together at least one diamine with at least one dicarboxylic acid or with a physical or chemical combination of at least one diamine with at least one dicarboxylic acid in a total diamine to total dicarboxylic acid mole ratio, whether free or chemically combined, of at least 1.5:1;



(3) contacting in a melt the diacid-rich component with the diamine-rich component in such proportions that the mole ratio of the total diamine to the total dicarboxylic acid, whether free or chemically combined, is within the range of 0.95 to 1.05 and at sufficiently high temperature to prevent precipitation of solid material; and

(4) heating together the molten components with good agitation to a sufficiently high temperature to cause polycondensation, with formation of a liquid high molecular weight polyamide;

with a proviso that each of dicarboxylic acid and diamine is a polymethylene compound having 6–12 carbon atoms.

4,131,713

LEATHER YARN PRODUCT AND METHOD OF MANUFACTURE

Leslie P. Barta, Murray, Utah, and William M. Alexander, 1835 Elmwood Dr., Hillsborough, Calif. 94010, assignors to William M. Alexander, Hillsborough, Calif.

Continuation-in-part of Ser. No. 467,887, May 8, 1974, abandoned. This application Jun. 17, 1977, Ser. No. 807,361

Int. Cl.² C14B *9/00;* **D03D** *15/00*

U.S. Cl. 428—364 **13 Claims**

1. A method of manufacturing a leather yarn having a combination of parameters which enable the yarn to be acceptable for and readily worked by garment knitting machine needlework into a knitted fabric having a soft leather hand, said method comprising,

selecting a leather piece having the softness characteristics of fine garment/dress glove leather and having a weight in the range of 3 oz. to 1½ oz. as measured by a standard leather thickness gauge,

temporarily stiffening the soft leather piece to a sufficient extent to enable a narrow width strand to be continuously machine cut from the periphery of the leather piece without bunching of the leather piece at the point of cutting,

machine cutting a long, continuous, untwisted, leather strand of substantially uniform width not greater than about 4/32 in. from the periphery of the leather piece,

manipulating and scraping the cut strand to remove loose fibril material which could clog up the mechanisms of knitting machines,

returning the cut leather strand to the softness of the leather piece existing prior to said temporary stiffening, and

winding the leather yarn on spools for subsequent use in machine knitting operations.

8. A leather yarn made by the method defined in claim 1.

4,131,714
MIXTURES OF LINEAR POLYESTERS USED TO COAT METALLIC STRANDS

Joseph Karkoski; Lionel J. Payette, and John D. Shurboff, all of Fort Wayne, Ind., assignors to Essex International, Inc., Fort Wayne, Ind.

Filed Dec. 22, 1975, Ser. No. 643,568

Int. Cl.^{2} B32B *15/02, 15/08, 15/20;* **C08L** *67/00;* **H01B** *3/42*

U.S. Cl. 428—379 **8 Claims**

1. A bondable magnet wire comprising a magnet wire having coated thereon a bonding composition exhibiting thermally stable bonding properties said bonding composition comprising a mixture of a relatively high molecular weight linear crystalline polyester material and a relatively high molecular weight linear amorphous polyester material.

4,131,715
USE OF CHELATED METAL CATALYSTS FOR ACID/EPOXY POLYMER SYSTEMS

Lawrence S. Frankel, Jenkintown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jan. 20, 1976, Ser. No. 650,819

Int. Cl.^{2} B32B *27/38, 35/00;* **D02G** *3/00*

U.S. Cl. 428—413 **14 Claims**

1. An article of manufacture having adhered thereto a cured composition of a linear addition copolymer, containing carboxylic acid groups derived from a mixture of copolymerizable ethylenically unsaturated monomers containing a dicarboxylic acid anhydride or an α,β-ethylenically unsaturated acid, and a resin-forming epoxy compound containing a plurality of epoxide groups, reacted by means of a catalyst, in the amont of 0.04% to 10.0% by weight based on the weight of the addition copolymer, the catalyst being a transition metal chelate stable at ambient temperatures and which decomposes to release the chelated metal when heated to temperatures of above about 100° C, said composition, before curing, being substantially free of volatile solvent.

4,131,716
ACRYLIC ACID ESTERS OF POLYTHIODIALKANOLS AND RELATED COMPOUNDS

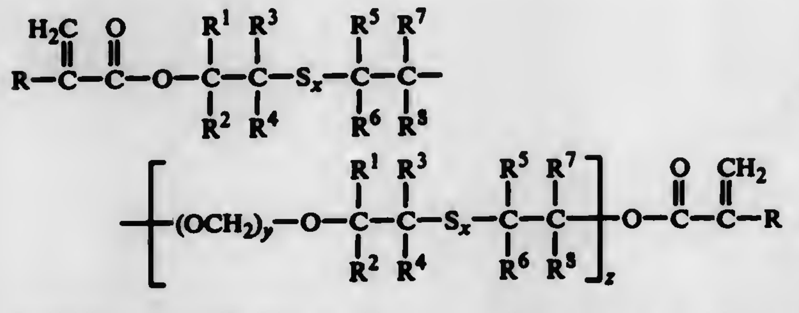
Eugene R. Bertozzi, Yardley, Pa., assignor to Thiokol Corporation, Newtown, Pa.

Filed Apr. 28, 1977, Ser. No. 791,756

Int. Cl.^{2} C08F *2/50, 4/00*

U.S. Cl. 428—425 **3 Claims**

1. A curable composition which comprises an acrylate terminated polyurethane prepolymer, a photosensitizer, and a compound of the formula



$$\mathrm{R{-}\overset{\overset{H_2C}{\|}}{C}{-}\overset{\overset{O}{\|}}{C}{-}O{-}\overset{R^1}{\underset{R^2}{C}}{-}\overset{R^3}{\underset{R^4}{C}}{-}S_x{-}\overset{R^5}{\underset{R^6}{C}}{-}\overset{R^7}{\underset{R^8}{C}}{-}\left[(OCH_2)_y{-}O{-}\overset{R^1}{\underset{R^2}{C}}{-}\overset{R^3}{\underset{R^4}{C}}{-}S_x{-}\overset{R^5}{\underset{R^6}{C}}{-}\overset{R^7}{\underset{R^8}{C}}\right]_z{-}O{-}\overset{\overset{O}{\|}}{C}{-}\overset{\overset{CH_2}{\|}}{C}{-}R}$$

wherein R is hydrogen or methyl, R^1, R^2, R^3, R^4, R^5, R^6, R^7 and R^8 are hydrogen, methyl or ethyl, or each independently is hydrogen, methyl, ethyl, or chloromethyl, x is from about 2 to about 4, y is 0 or an integer of from 1 to 3, and z is 0 or is sufficient to make a molecular weight of about 4000.

4,131,717
MAGNETIC RECORDING MEDIUM

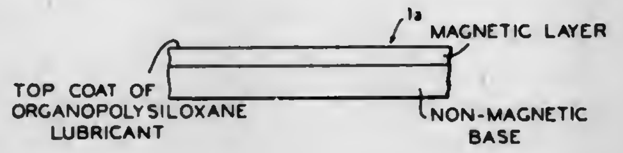
Takayasu Hirano, Tagajyo; Yoshiaki Hisagen, Sendai; Minoru Takamizawa, and Hiroshi Yoshioka, both of Annaka, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 16, 1977, Ser. No. 797,336

Claims priority, application Japan, May 18, 1976, 51-57585

Int. Cl. H01f *10/02*

U.S. Cl. 428—447 **12 Claims**



1. In a magnetic recording medium having a non-magnetic base and a magnetic layer formed thereon containing magnetizable particles dispersed in a resinous binder, the improvement comprising wherein:

said magnetic layer has an organopolysiloxane added into such layer, said organopolysiloxane having an average unit formula:

$$(CH_3)(RO)_n(R'COO)_mSiO_{(3-n-m)/2}$$

wherein R is a monovalent hydrocarbon group having from 1 to 5 carbon atoms, R′ is an aliphatic monovalent hydrocarbon group having from 7 to 17 carbon atoms; n is zero or a positive number; m is a positive number with the proviso that n + m is less than 3 and the number of Si atoms in a molecule of such organopolysiloxane ranges from 2 to 8; said organopolysiloxane being present within said magnetic layer in an amount ranging from about 0.5 to 6 parts by weight per 100 parts by weight of magnetizable particles in said magnetic layer.

7. In a magnetic recording medium having a non-magnetic base and a magnetic layer formed thereon containing magnetizable particles dispersed in a resinous binder, the improvement comprising wherein:

said magnetic layer has an organopolysiloxane coated onto the free surface of such layer, said organopolysiloxane having an average unit formula:

$$(CH_3)(RO)_n(R'COO)_mSiO_{(3-n-m)/2}$$

wherein R is a monovalent hydrocarbon group having from 1 to 5 carbon atoms, R′ is an aliphatic monovalent hydrocarbon group having from 7 to 17 carbon atoms; n is zero or a positive number, m is a positive number with the proviso that n + m is less than 3 and the number of Si atoms in a molecule of such organopolysiloxane ranges from 2 to 8; said organopolysiloxane being coated onto said magnetic layer in an amount ranging from about 30 to 1500 milligrams per square meter of said magnetic layer.

4,131,718
ROTATING ANODE FOR X-RAY TUBE

Bruno Childeric, Grenoble, France, assignor to Eurotungstene, Grenoble, France

Filed Feb. 15, 1978, Ser. No. 877,996

Claims priority, application France, Mar. 29, 1977, 77 10161

Int. Cl.^{2} B22F *7/02*

U.S. Cl. 428—548 **2 Claims**

1. A rotating anode for an x-ray tube, comprising a body of sintered, molybdenum-based alloy coated with a layer of tungsten or tungsten alloy at least in the zone of impact of the electrons, wherein the coated molybdenum-based alloy contains by weight 3 to 10% of tungsten and 0.01 to 0.5% of zirconia.

4,131,719
LOAD-BEARING SURFACE FOR A SOLENOID

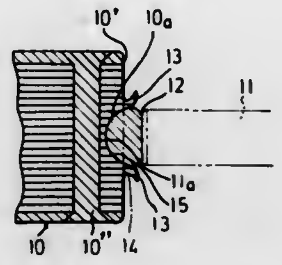
Tikahiro Nonoyama, Aichi, Japan, assignor to Sanmeidenki Kabushikikaisha, Japan

Division of Ser. No. 575,115, May 6, 1975, Pat. No. 4,002,283. This application Oct. 6, 1976, Ser. No. 730,100

Claims priority, application Japan, Jun. 25, 1974, 49-72581

Int. Cl.^{2} H01F *7/06*

U.S. Cl. 428—598 **3 Claims**



1. A plunger assembly, for a solenoid, comprising:

(i) a plunger having a plurality of silicon steel plates secured together to form a laminated body with end edges of said plates exposed at a load-bearing face of said body, said load-bearing face having in it a recess the face of which is shaped as a body of revolution about an axis normal to the load-bearing face and having its greatest radial dimension coinciding with the load-bearing face

(ii) a reinforcing element having an end portion with a convex end face the shape of which is substantially the counterpart of the face of the recess in the plunger, said reinforcing element being positioned with the axis of revolution of its end face normal to the load-bearing face of the plunger and with its end portion disposed in said recess with its end face at a spacing from the face of the recess, said reinforcing element being made of a material which is harder than the material constituting the plunger,

(iii) an intermediate layer of material disposed in the spacing between the face of the recess of the plunger and the end face of the reinforcing element, said intermediate layer being fused to the face of the recess and to the end face of the reinforcing element, said intermediate layer being composed of a fused mixture of the materials constituting respectively the plunger and the reinforcing element.

4,131,720
HEAVY-DUTY HEAT-RESPONSIVE BIMETALLIC MATERIAL

Heinz Spengler, Pforzheim, Germany, assignor to G. Rau, Pforzheim, Germany

Filed Mar. 16, 1977, Ser. No. 778,320

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1976, 2613954

Int. Cl.^{2} B32B *15/18*

U.S. Cl. 428—619 **4 Claims**

1. A heavy-duty heat-responsive bimetallic material which comprises at least one metallic component of a material having a high coefficient of thermal expansion joined to a further metallic component of a material having a relatively low coefficient of thermal expansion, the material having a high coefficient of thermal expansion being a corrosion and heat resisting austenitic chromium-nickel steel consisting essentially of 14–26% by weight of chromium and 6–36% by weight of nickel, the remainder being iron and melt impurities and the material having the relatively low coefficient of thermal expansion being a thermally hardenable iron-nickel-titanium alloy consisting essentially of 30–55% by weight of nickel, 1–5% by weight of free titanium, the remainder being iron and melt impurities.

4,131,721
ELECTROLYTIC CELL HAVING A NOVEL ELECTRODE INCLUDING PLATINUM ON A CARBON SUPPORT ACTIVATED WITH A PHOSPHORUS-OXYGEN-CONTAINING COMPOUND

Shun C. Fung, Edison, and Yen-Chi Pan, Westfield, both of N.J., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 17, 1977, Ser. No. 807,523

Int. Cl.^{2} H01M *8/08*

U.S. Cl. 429—13 **15 Claims**

1. An electrolytic cell comprising an anode electrode and a cathode electrode each being adapted for contact with an electrolyte, at least one of said electrodes including an electrocatalyst comprising platinum on a carbon support, said support including at least 1% by weight of phosphorus.

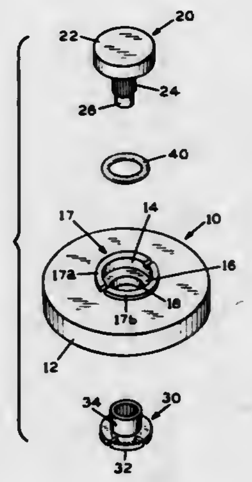
4,131,722
NON-FOULING RESEALABLE VENT

Raymond K. Sugalski, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Apr. 7, 1978, Ser. No. 894,399

Int. Cl.^{2} H01M *2/02, 2/12*

U.S. Cl. 429—55 **10 Claims**



1. A resealable vented container comprising:

(a) a sealed casing having a plastic closure with a vent port in said closure,

(b) a metal grommet in said port, said grommet having a washer-like portion on the pressure container side of said closure extending outwardly from and circumferentially around said vent port and a sleeve portion extending through said port,

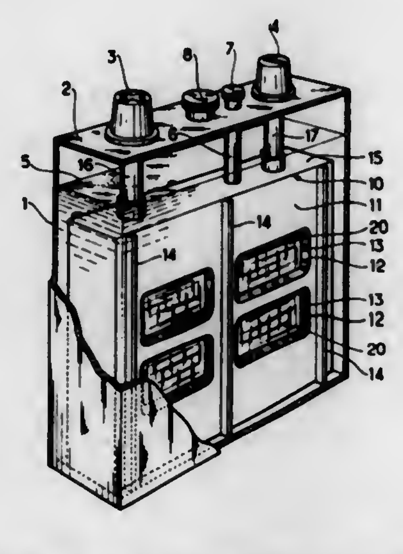
(c) a metal rivet member having a head portion at the outer side of said closure and a stem portion integral with said stem portion and extending through, but spaced from the wall of, said sleeve portion of said metal grommet, the inner end of said stem portion being upset onto the washer-like portion of said grommet and holding said rivet member in said grommet, and

(d) a pressure responsive, resilient member extending around said stem portion of said rivet, between said rivet head portion and the outer side of said closure, said resilient member forming a pressure seal between said rivet head and said outer side of said closure for preventing pressure from escaping from said container past said sleeve portion of said metal grommet and said metal rivet member stem portion when the container pressure increases to allow increased pressure to be vented from said container, past said sleeve and stem portions and past said pressure responsive, resilient means.

4,131,723

LEAD STORAGE BATTERY WITH LIMITED EVOLUTION OF GAS

Gerard Dalibard, Sevres, and Kha M. Pham, Epinay sur Seine, both of France, assignors to Compagnie Europeenne d'Accumulateurs, Paris, France
Filed Jan. 24, 1978, Ser. No. 871,884
Claims priority, application France, Dec. 28, 1977, 77 39467
Int. Cl.^{2} H01M *10/52*
U.S. Cl. 429—81 13 Claims



1. A lead storage battery comprising; a container closed by a lid and containing an acid electrolyte together with a block of positive plates, negative plates and separators, the improvement wherein said block is tightly packed in a case which is immersed in the electrolyte and said case having walls and openings in said walls and said walls at said openings being in close contact with end ones of said plates of said block.

4,131,724

CROSSLINKED ACRYLONITRILE COPOLYMERS

Eduard Radlmann; Ulrich Reinehr, both of Dormagen; Peter Hoffmann, Leverkusen; Dieter Arlt, Cologne, and Gunther Nischk, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed May 18, 1977, Ser. No. 797,818
Claims priority, application Fed. Rep. of Germany, May 21, 1976, 2622920
Int. Cl.^{2} C07D *85/36*; D01D *5/14*
U.S. Cl. 526—16 7 Claims

1. A process for the production of crosslinked acrylonitrile copolymer filaments or fibres, which comprises dissolving an acrylonitrile copolymer containing at least 20 mVal of carboxyl groups per kg of polymer together with at least one polyoxazoline, in a polar organic solvent at a temperature of from 20 to 120° C, the molar ratio of carboxyl groups to oxazoline groups amounting to at least 1:1, then spinning the resulting solution into filaments by a wet or dry spinning process and effecting crosslinking during drying of the filaments at a temperature of from 120 to 190° C.

4,131,725

POLYMER EPOXIDATION PROCESS

Kishore Udipi, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Aug. 8, 1977, Ser. No. 822,780
Int. Cl.^{2} C08F *8/08*
U.S. Cl. 526—56 9 Claims

1. A process for the production of epoxidized polymers substantially free of gel which comprises contacting:
(a) a rubbery polymer of a conjugated diene in
(b) an aliphatic or alicyclic hydrocarbon diluent capable of dissolving said rubbery polymer with
(c) hydrogen peroxide and
(d) a mixture of formic acid and at least one other low molecular weight monocarboxylic acid under epoxidation conditions which produce substantially gel-free epoxidized rubbery polymers of conjugated diene.

4,131,726

PERFLUOROELASTOMERS FROM HYDROFLUOROELASTOMERS

Jon W. Martin, Los Alamitos, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Continuation of Ser. No. 495,490, Aug. 8, 1974, abandoned. This application Feb. 14, 1977, Ser. No. 768,136
Int. Cl.^{2} C08F *8/22*
U.S. Cl. 526—18 2 Claims

1. An improved method of making a perfluoroelastomer of tetrafluoroethylene, perfluoro (alkyl vinyl ether), and a cross-linking component, wherein said perfluoroelastomer is vulcanized by the reaction between the cross-linking component and a difunctional curing agent including carbon to hydrogen bonds that remain intact after vulcanization, the improvement comprising fluorinating the vulcanized perfluoroelastomer to replace the hydrogen atoms of the reacted curing agent with fluorine atoms to a sufficient degree that the fluorinated elastomer is substantially more resistant to oxidation than the non-fluorinated elastomer.

4,131,727

METHOD OF PURIFYING ALCOHOL DEHYDROGENASE AND AFFINITY RESIN THEREFOR

Louis G. Lange, III, and Bert L. Vallee, both of Brookline, Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.
Division of Ser. No. 847,706, Nov. 2, 1977, which is a continuation-in-part of Ser. No. 640,629, Dec. 15, 1975. This application May 10, 1978, Ser. No. 904,319
Int. Cl.^{2} C08F *8/30, 8/32*
U.S. Cl. 526—23 3 Claims

1. An affinity resin for binding alcohol dehydrogenase consisting essentially of an insoluble solid support having covalently bonded thereto pyrazole, said pyrazole being bonded at the 4-position by a connecting arm having a length of at least 12 Angstrom units.

4,131,728

METHOD FOR POLYMERIZING OLEFINICALLY UNSATURATED MONOMERS EMPLOYING A CATALYST COMPOSITION COMPRISING (A) SHOCK-SENSITIVE ORGANIC PEROXIDE AND (B) AN OLEFINIC UNSATURATED NON-HOMOPOLYMERIZABLE MONOMER

Duane B. Priddy, Coleman, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 758,282, Jan. 10, 1977, abandoned. This application Apr. 5, 1978, Ser. No. 893,644
Int. Cl.^{2} C08F *4/34, 222/04, 12/02*
U.S. Cl. 526—204 3 Claims

1. In a method for polymerizing one or more olefinically unsaturated monomer, the method comprising admixing an organic peroxide with olefinically unsaturated polymerizable material maintaining the resultant mixture of monomeric material and a free-radical polymerization initiating peroxide at a polymerizing temperature and converting at least a portion of the monomeric material into polymeric material, the improvement which comprises providing the organic peroxide as an intimate admixture consisting essentially of (a) a shock-sensitive organic peroxide and (b) an olefinically unsaturated monomer, the olefinically unsaturated monomer which does not homopolymerize, (a) being present in a proportion of 10 to 90 parts by weight and (b) being present in a proportion of 90 to 10 parts by weight per 100 parts by weight of (a) and (b).

4,131,729

DENTAL COMPOSITIONS COMPRISING ACRYLIC ESTERS OF TRICYCLO [5.2.1.0^{2,6}] DECANE POLYMERS

Werner Schmitt; Robert Purrmann, both of Starnberg, Obb.; Peter Jochum, and Wolf-Dietrich Zahler, both of Hechendorf, all of Fed. Rep. of Germany, assignors to ESPE Fabrik Pharmazeutischer Präparate GmbH, Fed. Rep. of Germany
Filed Apr. 21, 1978, Ser. No. 898,680
Int. Cl.^{2} C08F *32/08, 132/08, 122/10, 4/34*
U.S. Cl. 526—282 12 Claims

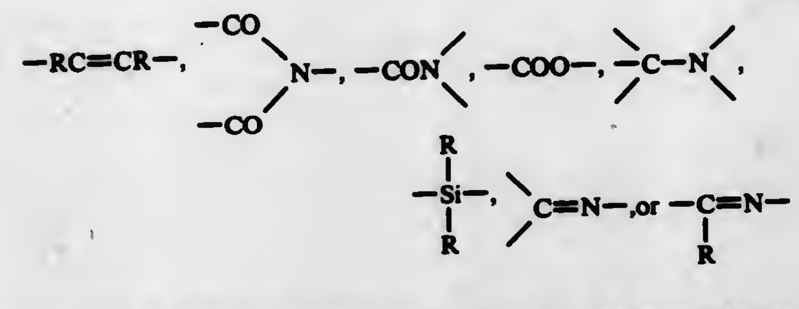
1. A dental composition, especially for tooth fillings and dentures, including at least two components, one component comprising a polymerizable diacrylic acid ester selected from the group consisting of the diacrylic acid ester or dimethacrylic acid ester of bishydroxymethylthricyclo [5.2.1.0^{2,6}]-decane and mixtures thereof, the other component comprising a radical-forming substance.

4,131,730

MODIFIED POLYAMIC ACID FROM AMINOPHTHALIC ACID ANHYDRIDE AND DIANHYDRIDE

Gaetano F. D'Alelio, South Bend, Ind.
Division of Ser. No. 576,469, May 12, 1975, Pat. No. 4,064,113, which is a division of Ser. No. 370,286, Jun. 15, 1973, abandoned. This application Aug. 3, 1977, Ser. No. 821,405
Int. Cl.^{2} C08G *69/12, 69/48*
U.S. Cl. 528—327 15 Claims

1. The process of preparing a modified film-forming polyamic acid which comprises reacting an aminophthalic acid of the formula $H_2NC_6H_nY_{3-n}(CO)_2O$ wherein Y represents a halogen selected from the group consisting of F, Br and Cl, and *n* represents an integer having a value of 0 to 3, in an inert organic solvent in which the polymer is soluble, at a temperature of about 10°-100° C with 0.5 to 0.001 mole, per mole of the aminoanhydride, of a compound having the formula $Ar(CO)_2$ 0_2, in which Ar represents single, fused and heterocyclic aromatic rings, said heterocyclic rings being selected from the class consisting of pyridine quinoline and quinoxaline, and a multiplicity of such rings linked to each other directly or by $-O-$, $-S-$, $-CO-$, $-SO_2-$, $-CR_2-$, $-NR-$,



$$-RC{=}CR-,\quad \begin{matrix}-CO\\ \quad N-,\\ -CO\end{matrix}\quad -CON\!<,\quad -COO-,\quad >\!C-N\!<,\quad -\overset{R}{\underset{R}{Si}}-,\quad >\!C{=}N-,\text{or}\ -\underset{R}{C}{=}N-$$

linkages in which R represents hydrogen or a hydrocarbon group containing one to twelve carbon atoms, and the remaining positions in the Ar groups being occupied by hydrogen and a halogen selected from the class consisting of F, Cl and Br.

4,131,731

PROCESS FOR PREPARING POLYCARBONATES

Kwo-Hrong Lai, Lynnfield, and Harold N. Silvers, Cambridge, both of Mass., assignors to Beatrice Foods Company, Peabody, Mass.
Continuation of Ser. No. 739,456, Nov. 8, 1976, abandoned. This application Jan. 9, 1978, Ser. No. 867,752
Int. Cl.^{2} C08G *63/62, 18/42, 18/14*; C08L *69/00*
U.S. Cl. 528—370 14 Claims

1. A process of preparing linear polycarbonates containing terminal hydroxyl groups, said process comprising,

reacting an alkylene carbonate composed of a 5 to 7 membered ring with a hydroxy compound selected from the group consisting of cycloaliphatic diols and aliphatic diols containing from 4 to 40 carbon atoms, and polyoxyalkylene glycols containing from 2 to 20 alkoxy groups er molecule with each alkoxy group containing from 2 to 4 carbon atoms,

said hydroxy compound having a boiling point greater than 4.9° C over the by-product formed in ester interchange reaction with said alkylene carbonate,

said hydroxy compound and alkylene carbonate being admixed in a molar ratio of 10 to 1, to 1 to 10,

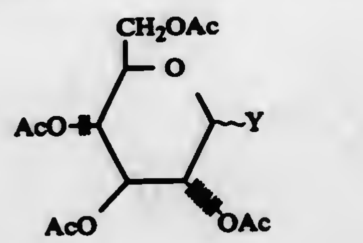
said reaction being carried out at temperatures between 100° C and 300° C and pressures between 0.1 and 300 Hg in a first and second stage wherein low molecular polycarabonate is formed in a first stage at a molecular chain length of from 2 to 10 units while distilling off by-product glycol from the reaction mixture, and then removing unreacted hydroxyl compound and alkylene carbonate and beginning a second stage which comprises condensing the low molecular weight polycarbonate by distilling off all glycol formed at temperatures of from 100 to 300° C to form high molecular weight polycarbonate.

4,131,732

METHOD FOR PREPARING AURANOFIN

David T. Hill, North Wales; Blaine M. Sutton, Hatboro, both of Pa., and Ivan Lantos, Blackwood, N.J., assignors to SmithKline Corporation, Philadelphia, Pa.
Filed Apr. 21, 1977, Ser. No. 789,603
Int. Cl.^{2} C07H *5/10*
U.S. Cl. 536—121 5 Claims

1. The method of preparing auranofin comprising reacting a compound of the structure:



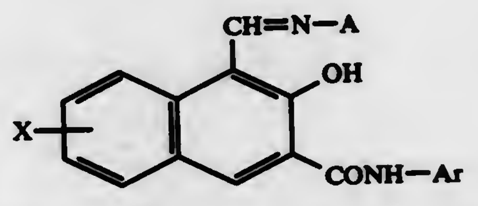
in which Ac is acetyl and Y is bromo, chloro, tosyloxy, brosyloxy, trifluoromethanesulfonyloxy or mesyloxy with sodium or potassium sulfide and triethylphosphinegold(I) chloride, bromide or iodide.

4,131,733

WATER-INSOLUBLE AZOMETHINE COMPOUNDS

Klaus Hunger, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Continuation of Ser. No. 653,119, Jan. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 550,918, Feb. 19, 1975, abandoned. This application Aug. 24, 1977, Ser. No. 827,380
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1974, 2408291
Int. Cl.^{2} C09B *17/04*
U.S. Cl. 542—406 10 Claims

1. A compound of the formula

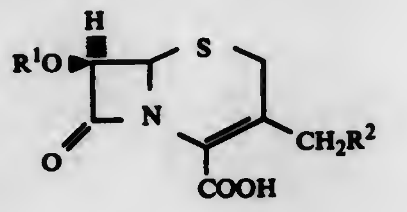


wherein X is hydrogen, chlorine or bromine, Ar is phenyl or naphthyl which are unsubstituted or substituted by 1 to 3 substituents selected from the group consisting of halogen; lower alkyl; lower alkoxy; trifluoromethyl; nitro; cyano; carboxy; lower carbo-alkoxy; lower alkyl sulfonyl; carbamoyl; sulfamoyl; carboxylic or sulfonic acid mono- or di-(lower alkyl)amide; carboxylic or sulfonic acid anilide which are unsubstituted in the phenyl nucleus or substituted by halogen, lower alkyl, lower alkoxy, cyano, carbamoyl or sulfamoyl; lower alkanoyl amino; phenyl sulfonyl or benzoyl amino which are unsubstituted in the phenyl nucleus or substituted by halogen, lower alkyl, lower alkoxy, cyano or nitro; or two substituents on Ar being phenyl together stand for a fused saturated 5- or 6-membered ring consisting of two adjacent carbon atoms of the phenyl nucleus and further ring members selected from the group consisting of —CO—, —NH—, —O— and —S—; and A is benzimidazolonyl-(2) which is unsubstituted or substituted by chlorine, methyl, methoxy, ethoxy, or nitro.

4,131,734
7β-ACYLOXY-3-HETEROCYCLICTHIOMETHYL CEPHALOSPORINS

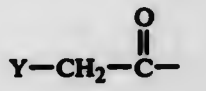
John G. Gleason, Delran, N.J., assignor to SmithKline Corporation, Philadelphia, Pa.
Division of Ser. No. 588,096, Jun. 18, 1975, Pat. No. 4,020,057. This application Dec. 1, 1976, Ser. No. 746,287
Int. Cl.² C07D *501/60*
U.S. Cl. 544—26 **4 Claims**

1. A compound of the formula:



in which:

R^1 is an acyl group of the formula:



$$Y-CH_2-\overset{O}{\overset{\|}{C}}-$$

where:

Y is cyano, sydnone or aminomethylphenyl;

and R^2 is SHet where Het is selected from the group consisting of 1,2,3,-triazolyl, 1,2,4-triazolyl, tetrazolyl, oxazolyl, thiazolyl, 1,3,4-oxadiazolyl, 1,3,4-thiadiazolyl, 1,2,4-thiadiazolyl, pyridyl, pyrimidyl and pyrazinyl, each such heterocyclic ring being unsubstituted or substituted with from one to two groups selected from lower alkyl, alkoxyalkyl and trifluoromethyl, each alkyl or alkoxy group having from one to four carbon atoms, or a non-toxic pharmaceutically acceptable salt thereof.

4,131,735
PREPARATION OF α-ACYLACETAMIDES USING TETRAMETHYL GUANIDINE CONDENSING AGENT

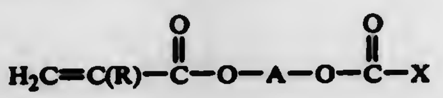
Raphäel K. Van Poucke, Berchem; Freddy C. Baeyens, Wommelgem, and Paul A. Mortelmans, Wilrijk, all of Belgium, assignors to AGFA-GEVAERT, N.V., Mortsel, Belgium
Filed Nov. 25, 1975, Ser. No. 635,063
Int. Cl.² C07D *235/00, 239/72, 253/06, 253/04*
U.S. Cl. 544—267 **7 Claims**

1. Method for the preparation of an α-substituted-α-acylacetamide by reaction of an α-acyl-α-halo-acetamide with an organic compound with an acid strength in terms of pKa between 7 and 12 in a medium of an aprotic solvent, characterised in that the reaction occurs in the presence of a tetramethyl guanidine as basic condensing agent.

4,131,736
POLYMERS OF SULFONIC ACID MONOMERS

William D. Emmons, Huntingdon Valley, and Graham Swift, Ambler, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
Division of Ser. No. 134,905, Apr. 16, 1971, Pat. No. 3,770,801. This application Aug. 7, 1972, Ser. No. 273,886
Int. Cl.² C07C *143/52*
U.S. Cl. 560—14 **5 Claims**

1. As a composition of matter, a polymer of a compound and salts thereof, of the formula:



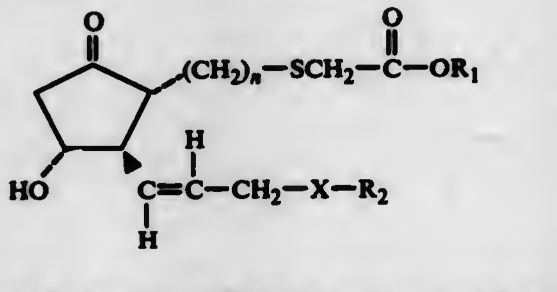
$$H_2C{=}C(R)-\overset{O}{\overset{\|}{C}}-O-A-O-\overset{O}{\overset{\|}{C}}-X \qquad (I)$$

wherein R is hydrogen or methyl, A is an alkylene group having 2 to 10 carbon atoms, at least 2 of which extend in a chain between the adjoined oxygen atoms, and X is a benzene ring substituted by at least one sulfonic acid group and at least one carboxylic group, said polymer being an addition polymer.

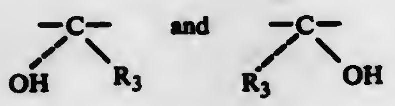
4,131,737
15-DEOXY-16-HYDROXY-16-SUBSTITUTED-3-THIA-PROSTANOIC ACIDS

Middleton B. Floyd, Jr., Suffern, N.Y.; Martin J. Weiss, Oradell, N.J.; Charles V. Grudzinskas, Nyack, N.Y., and Sow-mei C. Chen, Park Ridge, N.J., assignors to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of Ser. No. 706,343, Jul. 19, 1976, Pat. No. 4,061,670. This application Mar. 30, 1977, Ser. No. 782,858
Int. Cl.² C07C *177/00*
U.S. Cl. 560—121 **54 Claims**

1. A compound of the formula



wherein R_1 is selected from the group consisting of hydrogen and C_1–C_6 alkyl; R_2 is selected from the group consisting of C_3–C_7 alkyl; N is a divalent moiety selected from the group consisting of those of the formulae:

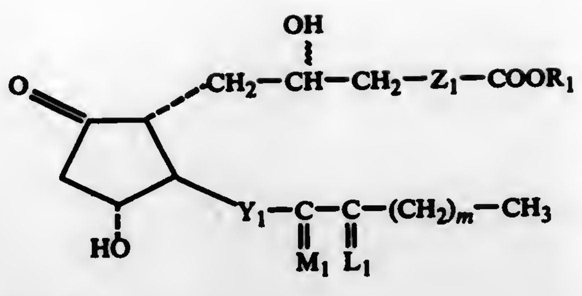


wherein R_3 is selected from the group consisting of vinyl and cyclopropyl; n is an integer from 3 to 5, inclusive; and when R_1 is hydrogen, the pharmacologically acceptable cation salts thereof.

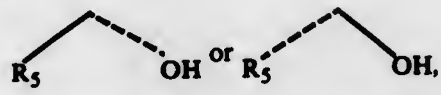
4,131,738
6-HYDROXY-PGE₁ COMPOUNDS

Herman W. Smith, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Filed Jul. 5, 1977, Ser. No. 812,794
Int. Cl.² C07L *177/00*
U.S. Cl. 560—121 **36 Claims**

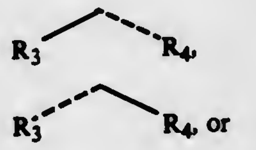
1. A prostacyclin analog of the formula



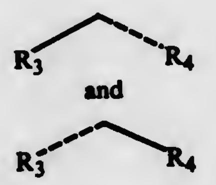
wherein Z_1 is
(1) $-(CH_2)_g-CH_2-CH_2-$,
(2) $-(CH_2)_g-CH_2-CF_2-$, or
(3) trans-$(CH_2)_g-CH{=}CH-$,
wherein g is the integer one, 2, or 3;
wherein Y_1 is
(1) trans-$CH{=}CH-$,
(2) cis-$CH{=}CH-$,
(3) $-CH_2CH_2-$,
(4) trans-$CH{=}C(Hal)-$, or
(5) $-C{\equiv}C-$
wherein Hal is chloro or bromo;
wherein M_1 is



wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive;
wherein L_1 is

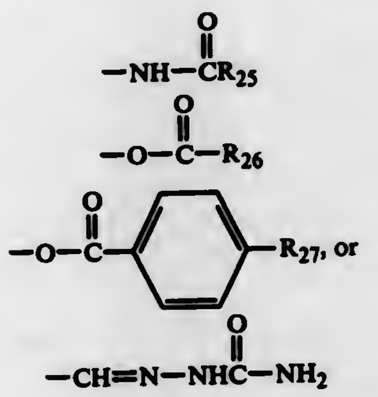


a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein R_1 is hydrogen; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive; phenyl; phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms; phenyl substituted in the para position by



$$-NH-\overset{O}{\overset{\|}{C}}R_{25}$$

$$-O-\overset{O}{\overset{\|}{C}}-R_{26}$$

$$-CH{=}N-NH\overset{O}{\overset{\|}{C}}-NH_2$$

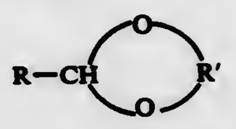
wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or $-NH_2$; R_{26} is methyl, phenyl, $-NH_2$, or methoxy; and R_{27} is hydrogen or acetamido, inclusive; or a pharmacologically acceptable cation;

wherein m is the integer one to 5, inclusive.

4,131,739
CATALYTIC REARRANGEMENT OF CYCLIC ACETALS TO CARBOXYLIC ESTERS

Don L. Morris, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 11, 1977, Ser. No. 814,562
Int. Cl.² C07C *69/66*
U.S. Cl. 560—179 **9 Claims**

1. A catalyzed method for the rearrangement of a cyclic acetal having the formula

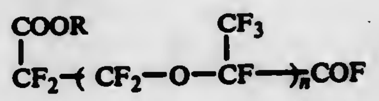


to an isomeric carboxylic acid ester wherein R is an alkyl, alkenyl, phenyl or alkyl substituted phenyl moiety containing 1 to 12 carbon atoms, and R' is alkyl or alkenyl moiety containing 1 to 12 carbon atoms, whereby the cyclic acetal is contacted with a catalytically effective amount of a metal selected from the group Ru, Rh, Pd, Os, Ir or Pt supported on carbon at a temperature of from about 200° C. to about 400° C.

4,131,740
ALKYL PERFLUORO-ω-FLUOROFORMYL ESTERS AND THEIR PREPARATION

David C. England, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 20, 1977, Ser. No. 789,724
Int. Cl.² C07C *69/34, 69/63*
U.S. Cl. 560—180 **5 Claims**

1. A compound of the formula:



$$\underset{\displaystyle CF_2}{\overset{\displaystyle COOR}{|}}\!\!-\!\!\left(CF_2-O-\underset{\displaystyle CF}{\overset{\displaystyle CF_3}{|}}\right)_{\!n}\!COF$$

wherein R is alkyl of 1–6 carbon atoms, and n is 1–6.

4,131,741
COBALT-CATALYZED OXIDATION OF C_3 TO C_7 SATURATED ALIPHATIC HYDROCARBONS TO OXYGENATED PRODUCTS

John S. Bartlett, Hull, and Barry Hudson, Beverley, both of England, assignors to BP Chemicals Limited, London, England
Division of Ser. No. 706,197, Jul. 16, 1976, Pat. No. 4,086,267. This application Dec. 29, 1976, Ser. No. 755,148
Claims priority, application United Kingdom, Jul. 21, 1975, 30389/75; Sep. 17, 1975, 38180/75
Int. Cl.² C07C *45/02, 51/20, 67/00*
U.S. Cl. 560—241 **10 Claims**

(a) 1. A process for the production of oxygen-containing or-
ganic compounds including a substantial proportion of acetic
(b) acid by the oxidation of a saturated aliphatic hydrocarbon
containing from 3 to 7 carbon atoms or a mixture thereof
which process consists of contacting the hydrocarbon or mix-
(c) ture thereof in a reaction zone with a molecular oxygen-con-
taining gas in the presence of an essentially inert reaction
medium and a soluble cobalt catalyst in an amount, calculated
as cobalt, within the range from 0.1 to 10% by weight based on
(d) the weight of reaction medium, at a temperature in the range
from 70 to 150° C and a pressure sufficient to maintain said
reactants in the liquid phase, not less than 5 and not more than
90 percent of said cobalt catalyst being introduced into said
reaction zone in the +3 oxidation state in a continuous process
and not less than 11 and not more than 90% of said cobalt

catalyst being introduced into said reaction zone in the +3 oxidation state in a batch process, to form a liquid product consisting of a mixture of oxygen-containing organic compounds containing a substantial proportion of acetic acid and water, feeding said liquid product to a distillation zone wherein a catalyst solution fraction consisting of inert reaction medium and cobalt, of which from 5 to 90 percent is in the +3 oxidation state for continuous operation and from 11 to 90% is in the +3 oxidation state for batch operation, is separated as a base product from a distillate fraction consisting of oxygen-containing organic compounds, the residence time of said catalyst solution in said distillation zone being so adjusted that it is the minimum consistent with substantially complete separation of said fractions so as to minimize the reduction of cobalt in the +3 oxidation state to cobalt in the +2 oxidation state to maintain the proportion of cobalt in the +3 oxidation state as hereinbefore defined, and thereafter recycling said catalyst solution to said oxidation zone.

4,131,742
COBALT-CATALYZED OXIDATION OF HYDROCARBONS

Barry Hudson, Beverley, England, assignor to BP Chemicals Limited, London, England

Filed Nov. 3, 1976, Ser. No. 738,534

Claims priority, application United Kingdom, Nov. 3, 1975, 45650/75

Int. Cl.² C07C *27/12, 45/02, 51/20, 67/00*

U.S. Cl. 560—241 **22 Claims**

1. In a continuous process for the production of oxygen-containing organic compounds including a substantial proportion of acetic acid by the oxidation of a saturated aliphatic hydrocarbon containing from 3 to 7 carbon atoms or a mixture thereof in a reaction zone with a molecular oxygen-containing gas in the presence of an essentially inert reaction medium comprising a lower aliphatic carboxylic acid having from 2 to 4 carbon atoms and a soluble cobalt catalyst other than a cobalt halide in the amount, calculated as cobalt, within the range from 0.1 to 10% by weight based on the weight of the reaction medium, at a temperature in the range from 70 to 150° C. and a pressure sufficient to maintain the reactants in the liquid phase, in which a substantially gas-free liquid is withdrawn from the base of said reaction zone and separated into a fraction containing the bulk of said oxygen-containing organic compounds and a fraction consisting of said essentially inert reaction medium with said cobalt catalyst dissolved therein, said latter function being recycled to said oxidation zone, the improvement which comprises carrying out the reaction in a reaction vessel either fabricated in or lined, on at least that part of the internal surface thereof in contact with the liquid reaction medium, with a substantially chromium-free material so as to maintain the concentration of chromium in the reaction medium at a level not greater than 400 ppm.

4,131,743
PROCESS FOR PREPARING UNSATURATED DIESTERS

Yoshinori Yoshida, Yokohama; Tutomu Kobayashi, Ibaraki; Hironobu Shinohara, Yokohama, and Izumi Hanari, Tokyo, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

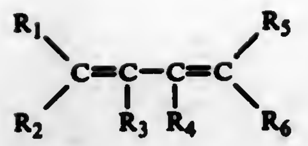
Filed Jul. 6, 1976, Ser. No. 702,935

Claims priority, application Japan, Jul. 17, 1975, 50/86657; Dec. 11, 1975, 50/146902

Int. Cl.² C07C *67/05*

U.S. Cl. 560—244 **25 Claims**

1. A process for producing unsaturated glycol diesters which comprises reacting in a flowing gaseous phase, a gaseous mixture comprising a conjugated diene of the formula:



wherein, each of the R_1-R_6 groups is independently hydrogen or a hydrocarbon group of 1 to 6 carbon atoms, or wherein two of such groups are joined so that said formula includes cyclopentadiene and cyclohexadiene;

and aliphatic, alicyclic or aromatic carboxylic acid; and molecular oxygen at a temperature of 100° C. to 300° C. in the presence of a catalyst carrier, and a catalyst consisting essentially of:

(a) palladium in the proportion of 0.1 to 10% by weight based on the weight of the carrier;

(b) vanadium in the amount of 0.01 to 20 gram atoms per gram atom of palladium;

(c) antimony in an amount of 0.01 to 20 grams per gram atom of palladium, the ratio of antimony to vanadium being 0.1 to 10 in terms of gram atoms, and

(d) at least one alkali metal carboxylate in the proportion of 0.01 to 40 m mole per gram of carrier.

4,131,744
4,5-DISUBSTITUTED-1-AMINOALKYL CYCLOHEXENES

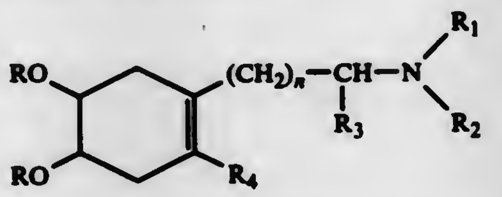
Joseph E. Sundeen, Yardley, Pa., and Frederic P. Hauck, Somerville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 25, 1977, Ser. No. 790,784

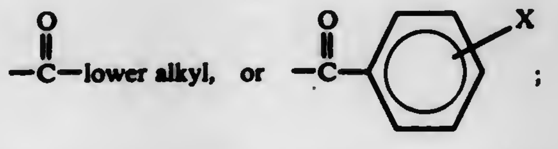
Int. Cl.² C07C *93/24, 91/24*

U.S. Cl. 560—252 **17 Claims**

1. A compound of the formula:



including its stereoisomers wherein R is hydrogen



R_1 and R_2 are independently selected from the group consisting of hydrogen, lower alkyl, and cycloalkyl of 3 to 7 carbons; R_3 and R_4 are independently selected from the group consisting of hydrogen and lower alkyl; *n* is 0 or an integer from 1 to 3; X is hydrogen, halogen, lower alkyl, lower alkoxy, or nitro; and a pharmaceutically acceptable acid addition salt thereof.

4,131,745
ARYLOXY AMINOBUTANOLS, THEIR PREPARATION AND USE THEREOF

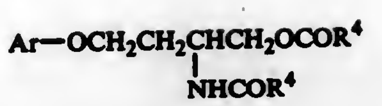
Jean-Marie Ferland, St. Laurent; Real Laliberte, Chomeday; Wilbur Lippman, Montreal, and Thomas A. Pugsley, Kirkland, all of Canada, assignors to Ayerst, McKenna & Harrison, Ltd., Montreal, Canada

Division of Ser. No. 687,852, May 19, 1976, Pat. No. 4,071,552. This application Nov. 18, 1977, Ser. No. 852,656

Int. Cl.² C07C *103/38*

U.S. Cl. 560—252 **8 Claims**

1. A compound of formula 3



$$\mathrm{Ar{-}OCH_2CH_2\underset{\displaystyle NHCOR^4}{\underset{|}{C}}HCH_2OCOR^4} \qquad 3$$

in which Ar is phenyl or 1-naphthyl and R^4 is hydrogen or lower alkyl containing from one to five carbon atoms.

4,131,746
(DL)-13-SUBSTITUTED SULFINYL-PROSTAGLANDIN-LIKE COMPOUNDS AND METHODS OF MAKING

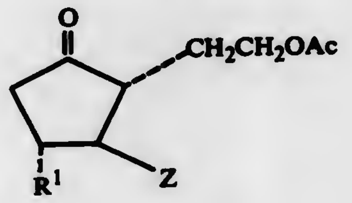
Karl G. Untch, Los Altos, Calif., and Gilbert J. Stork, New York, N.Y., assignors to Syntex (USA) Inc., Palo Alto, Calif.

Division of Ser. No. 673,846, Apr. 5, 1976, Pat. No. 4,049,697, which is a division of Ser. No. 476,362, Jun. 5, 1974, Pat. No. 3,970,685. This application Jan. 7, 1977, Ser. No. 757,540

Int. Cl.² C07C *147/14*

U.S. Cl. 560—255 **3 Claims**

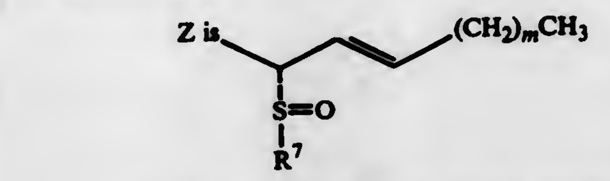
1. The (dl) compounds of the formula:



(C)

wherein Ac is acetyl;

R^1 is hydrogen or OR^6, in which R^6 is hydrogen;



wherein R^7 is alkyl containing from one through six carbon atoms, cycloalkyl containing from five through seven carbon atoms, chloromethyl, trichloromethyl, trifluoromethyl, chlorodifluoromethyl, dichlorofluoromethyl, β-chloroethyl, α-chloroethyl, α-chloro-β-trichloroethyl, phenyl, p-tolyl, p-chlorophenyl, p-fluorophenyl, 2,4-dichlorophenyl, or 2,5-dichlorophenyl, and m is a whole integer from two through eight; and

the wavy line (ϵ) represents the α or β configuration or mixtures thereof.

4,131,747
PROCESS FOR PREPARING α-SUBSTITUTED PHENYLALKANECARBOXYLIC ACID

Masayasu Kurono; Masaaki Toda, both of Osaka; Haruki Niwa, Kyoto; Syunji Kosuge, Takatsuji; Takahumi Iida, Nishinomiya, and Kenichi Narita, Takastsuki, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

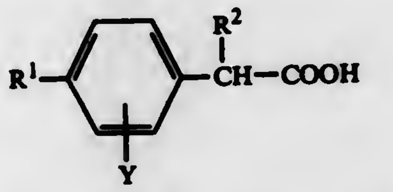
Filed Nov. 19, 1976, Ser. No. 743,258

Claims priority, application Japan, Nov. 19, 1975, 50-138041

Int. Cl.² C07C *63/52, 63/33, 65/02*

U.S. Cl. 562—469 **5 Claims**

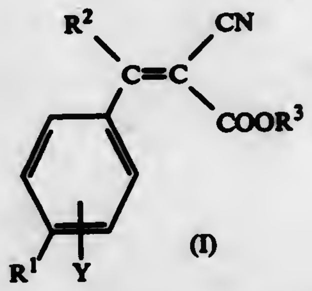
1. A process for preparing an α-substituted phenylalkanecarboxylic acid represented by the following general formula (IV)



(IV)

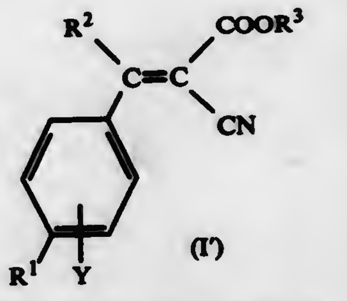
wherein R^1 represents a straight or branched alkyl group having 1 to 4 carbon atoms, a straight or branched alkoxy group having 1 to 4 carbon atoms, a cyclohexyl group, an unsubstituted phenyl group or a phenyl group substituted with a straight or branched alkyl group having 1 to 4 carbon atoms, a straight or branched alkoxy group having 1 to 4 carbon atoms or a halogen atom, an unsubstituted phenoxy group or a phenoxy group substituted with a halogen atom, or a benzyl group; R^2 represents a hydrogen atom or a straight or branched alkyl group having 1 to 4 carbon atoms; and Y represents a hydrogen atom or a halogen atom; which comprises:

(i) treating a compound represented by the following general formula (I) and/or (I'):



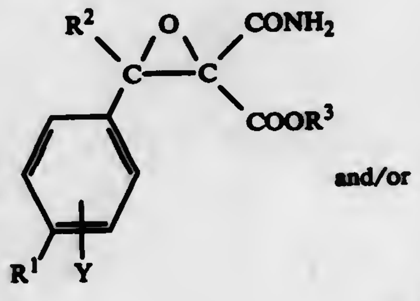
(I)

and/or



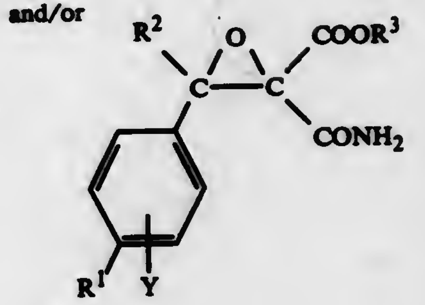
(I')

wherein R^1, R^2 and Y are the same as defined above; and R^3 represents a hydrogen atom or an alkyl group; with a peroxide in the presence of a solvent at a temperature ranging from about 0° C to about the boiling point of the solvent and under weakly alkaline conditions of a pH of about 8 to about 10 and using about 3 to about 5 molar equivalents of said peroxide to the total of said compound of the general formula (I) and/or (I') to prepare a compound represented by the following general formula (II) and/or (II'):



(II)

and/or

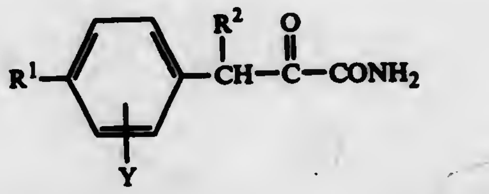


(II')

wherein R^1, R^2, R^3 and Y are the same as defined above;

(ii) hydrolyzing the compound represented by the general formula (II) and/or (II')) wherein said hydrolysis is in the presence of a solvent under alkaline conditions at a temperature of from about 0° C to about the boiling point of the solvent, and then causing a decarboxylation by heating to a temperature of about 70° to about 120° C involving a rearrangement to produce a compound represented by the following general formula (III):

(III)



wherein R^1, R^2, and Y are the same as defined above; and

(iii) oxidizing the compound represented by the general formula (III) in the presence of a solvent and at a temperature of about −10° C to about room temperature with an oxidant employed in an amount of about 1.1 to about 1.5

mol equivalents to said compound represented by the general formula (III) to obtain the compound represented by the general formula (IV).

4,131,748

p-TERPHENYLENE-DICARBOXYLIC ACIDS AND THEIR SYNTHESIS

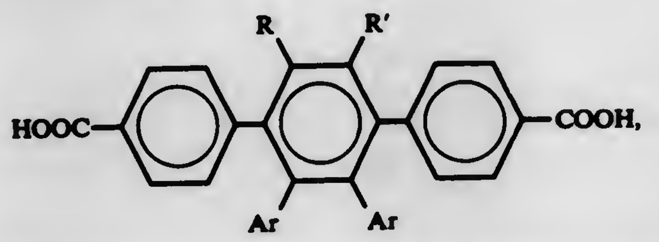
Fred E. Arnold, Centerville, Ohio, and James F. Wolfe, Menlo Park, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 29, 1977, Ser. No. 811,346

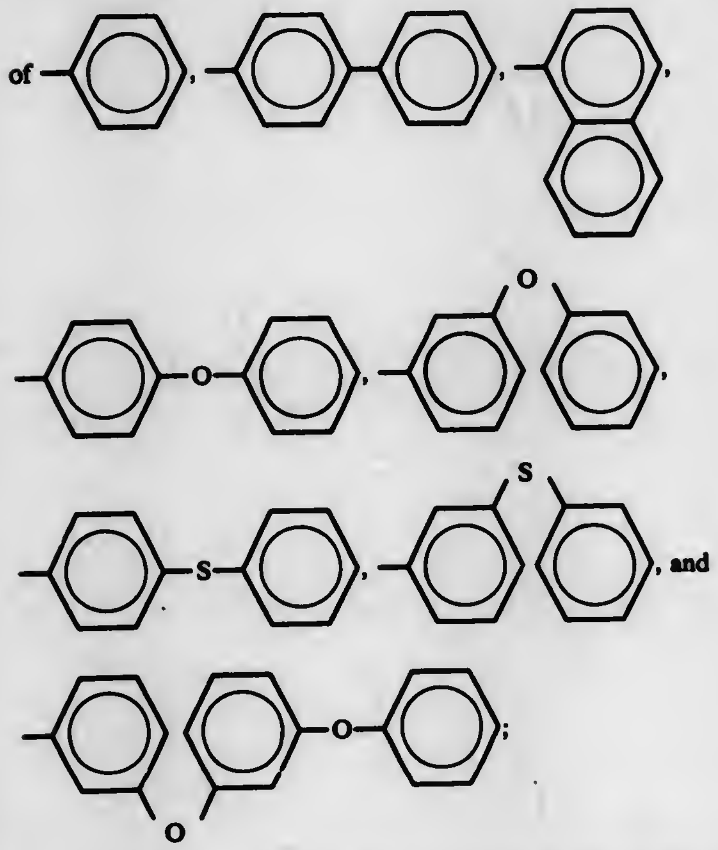
Int. Cl.^{2} C07C *63/33;* C08F *18/14*

U.S. Cl. 562—488 **7 Claims**

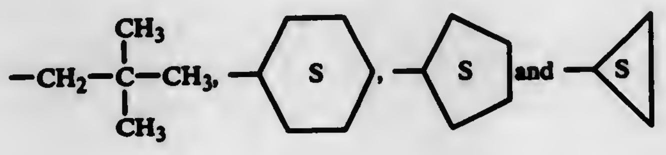
1. A p-terphenylene-dicarboxylic acid having the following structural formula:



wherein Ar is a monovalent aromatic radical selected from the group consisting of



and R and R′ are individually selected from the group consisting of hydrogen, a monovalent aromatic radical as listed above, $-CH_2-CH_3$, $-CH_2-CH_2-CH_3$, $-CH_2-CH_2-CH_2-CH_3$,



4,131,749

METHOD FOR WASTE RECOVERY FROM A PROCESS OF THE PRODUCTION OF DIPHENYLOLPROPANE

Maciej Kiedik, Gliwice; Edward Grzywa, Warsaw; Jozef Kolt, Zabrze; Kazimierz Terelak, Kedzierzyn-Kozle; Jerzy Czyz, Kedzierzyn-Kozle, and Anna Niezgoda, Kedzierzyn-Kozle, all of Poland, assignors to Instytut Ciezkiej Syntezy Organicznej "Blachownia", Kedzierzyn-Kozla, Poland

Filed Aug. 25, 1977, Ser. No. 827,780

Claims priority, application Poland, Sep. 12, 1976, 192402

Int. Cl.^{2} C07C *39/06*

U.S. Cl. 568—781 **1 Claim**

1. A method for processing the waste products obtained in the production of diphenylolpropane by condensation of acetone with phenol in the presence of acid catalysts, which comprises catalytic pyrolysis of said waste products in the presence of sodium hypophosphite as catalyst in the amount of 0.01% to 0.5% by weight, at a temperature of 150° to 250° C. and under reduced pressure in the range of 5.50 mm Hg and recovering the resulting phenol, o-, and p- isopropenylphenol.

4,131,750

PROCESS FOR THE PRODUCTION OF FATTY ALCOHOLS

Khabib M. Minachev, Leninsky prospekt, 57, kv. 15; Evgeny S. Mortikov, Leninsky prospekt, 61/1, kv. 34, both of, Moscow; Alexandr S. Leontiev, ulitsa Gagarina, 13, kv. 13, Bashkirskaya ASSR, Salavat; Anatoly G. Smirnov, Leningradsky prospekt, 78, korpus 5, kv. 110, Moscow; Nikolai F. Kononov, ulitsa Garibaldi, 13/54, kv. 4, Moscow; Alexei A. Masloboev-Shvedov, Nagatinskaya naberezhnaya, 16, kv. 75, Moscow; Alexandr K. Zhomov, ulitsa Tajurjupy, 16, korpus 2, kv. 70, Moscow, and Nikolai I. Kholdyakov, ulitsa Marshala Birjuzova, 2, kv. 23, Moscow, all of U.S.S.R.

Filed Jul. 12, 1974, Ser. No. 488,183

Int. Cl.^{2} C07C *29/04*

U.S. Cl. 568—901 **11 Claims**

1. A process for the production of fatty alcohols containing from 2 to 5 carbon atoms, comprising reacting an olefin containing from 2 to 5 carbon atoms with water at a temperature of from 150° C. to 280° C. and a pressure of from 10 to 70 atmospheres in the presence of a catalyst of an aluminosilicate Y-type zeolite containing a calcium cation and chromium oxide.

4,131,751

DIURETHANES

Karl-Heinz Koenig, Frankenthal; Ulrich Schirmer, Heidelberg; Bruno Wuerzer, and Kurt Fett, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

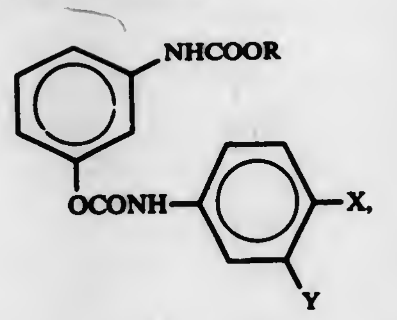
Filed Jul. 25, 1977, Ser. No. 818,523

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1976, 2638897; Jun. 3, 1977, 2725074

Int. Cl.^{2} C07C *125/04;* A01N *9/20*

U.S. Cl. 560—29 **7 Claims**

1. Diurethanes of the formula



where R denotes lower alkyl, and X/Y denote the combination fluorine/fluorine, fluorine/chlorine or chlorine/fluorine.

ELECTRICAL

4,131,752

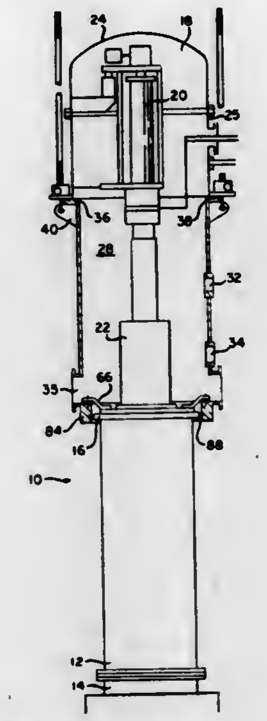
CURRENT CONDUCTING ATMOSPHERE CONTROL SLEEVE FOR ELECTROSLAG FURNACE

Patrick J. Wooding, Moorestown, N.J., assignor to Wooding Corporation, Moorestown, N.J.

Continuation-in-part of Ser. No. 773,334, Mar. 1, 1977, and a continuation-in-part of Ser. No. 616,365, Sep. 24, 1975, Pat. No. 4,032,705. This application May 5, 1977, Ser. No. 794,043

Int. Cl.^{2} H05B *3/60;* F27B *14/12*

U.S. Cl. 13—9 ES **11 Claims**



1. In an electroslag melting furnace comprising a crucible means and a furnace head spaced from the top of said crucible means, said furnace head being adapted to suspend a consumable electrode within said crucible means, the improvement comprising: means for making the space between said crucible means and said furnace head air tight, said means including a sleeve member and means for moving said sleeve member between an inoperative position and an operative position wherein said sleeve member substantially surrounds said space and means allowing for the control of the atmosphere within said space; said sleeve member having a first end adapted to be electrically connected to said crucible means and a second end adapted to be electrically connected to said furnace head whereby said sleeve member, when in said operative position, is adapted to function as part of the return conductor path between said crucible means and the power supply for said furnace.

4,131,753

MULTIPLE ELECTRON-BEAM VAPOR SOURCE ASSEMBLY

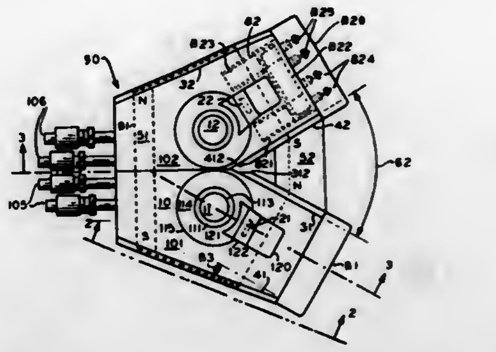
Kazumi N. Tsujimoto, Moraga, and Paul S. McLeod, Berkeley, both of Calif., assignors to Airco, Inc., Montvale, N.J.

Filed May 18, 1977, Ser. No. 797,965

Int. Cl.^{2} H01J *37/305*

U.S. Cl. 13—31 EB **10 Claims**

1. A vapor source assembly comprising:
- a first crucible for containing a first material to be vaporized;
- a second crucible positioned near the first crucible for containing a second material to be vaporized;
- a first electron-beam gun for producing a first electron beam;
- a second electron-beam gun for producing a second electron beam; and
- a deflecting means for producing a magnetic field to deflect the first electron beam through an arcuate path from the first electron-beam gun to the first crucible, and to deflect the second electron beam through an arcuate path from the second electron-beam gun to the second crucible, said deflecting means including
- a first north pole piece and a first south pole piece positioned on opposite sides of the first electron-beam gun,
- a second north pole piece and a second south pole piece positioned on opposite sides of the second electron-beam gun,



- a first magnetic means comprising a first magnet for interconnecting the first south pole piece and the second north pole piece, and
- a second magnetic means comprising a second magnet for interconnecting the second south pole piece and the first north pole piece.

4,131,754

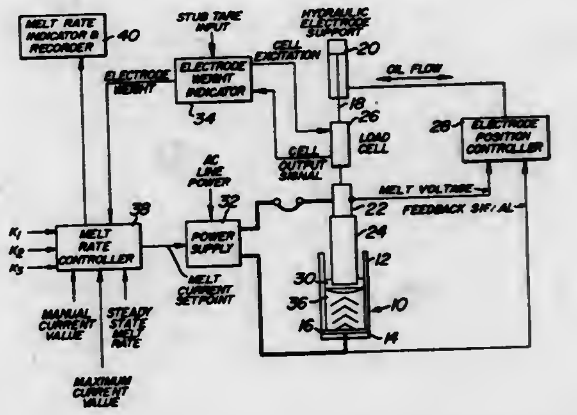
AUTOMATIC MELT RATE CONTROL SYSTEM FOR CONSUMABLE ELECTRODE REMELTING

Raymond J. Roberts, West Berlin, N.J., assignor to Consarc Corporation, Rancocas, N.J.

Filed May 2, 1977, Ser. No. 793,005

Int. Cl.^{2} H05B *7/148*

U.S. Cl. 13—34 **11 Claims**



10. A method of melting a consumable electrode at an increased melt rate in a fluid cooled electroslag remelting furnace using a closed loop control system, including:
- establishing the initial melting conditions in the control system to cause the melt rate to initially exceed the control system melt rate set point;
- then causing the melt rate to return to the melt rate set point over a period of time while the first portion of the ingot ingot being formed;
- said melt rate being caused to exceed the control system melt rate set point by establishing the initial electrical power at a value which is in excess of that required to bring the melt rate from start up conditions to the melt rate set point;
- causing the melt rate to return to said set point by reducing the electrical power below the initial value when the melt rate has exceeded the melt rate set point;
- controlling the electrical power through a power supply having a regulatable output melting current by using the closed loop melt rate control system to vary the output melting current of the power supply; and
- regulating the output melting current in accordance with the following equations:

$$I\text{ Melt} = I\text{ Manual} - \Delta I \qquad (1)$$

where:
I Melt is the value of the melting current; and
I Manual is the initial current value fixed by the furnace operator

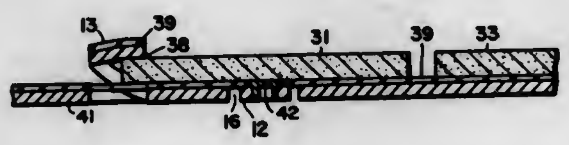
$$\Delta I = K_1 e + K_2 \int e \cdot dt + K_3\, de/dt \tag{2}$$

where:
e is the instantaneous difference between actual melt rate set point;
K_1 is a proportional constant;
K_2 is an integral constant; and
K_3 is a rate constant.

4,131,755
INTERCONNECTION FOR PHOTOVOLTAIC DEVICE ARRAY

Michael C. Keeling, Tempe; William L. Bailey, Scottsdale; Michael G. Coleman, Tempe; Israel A. Lesk, Scottsdale, and Robert A. Pryor, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 17, 1977, Ser. No. 807,462
Int. Cl.^{2} H01L *31/04*
U.S. Cl. 136—89 P **9 Claims**



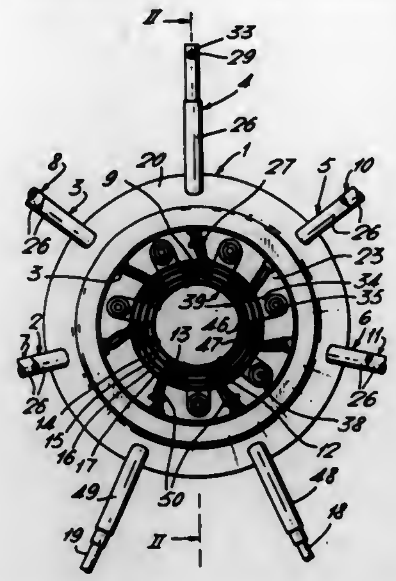
1. A photovoltaic solar module for converting radiant energy to electric current and having an interconnection sheet comprising: a plurality of photovoltaic devices arranged in an array, the photovoltaic devices each having a first and a second side, the first side having contacts for providing current of a first polarity and the second side having at least one contact for providing current of a second polarity; a sheet of dielectric material positioned adjacent to and in contact with the second sides of the plurality of photovoltaic devices, the sheet of dielectric material having a plurality of voids therein; a sheet of electrically conductive material bonded to the sheet of dielectric material, the sheet of electrically conductive material having a plurality of patterns etched therein and a plurality of tabs punched from the patterns, the tabs shaped to have an acute angle in the plane of the patterns and having one end attached to the pattern, the acute angled tabs protruding through the sheet of dielectric material so that a portion of the acute angled tabs can make contact with the contacts on the first side of the photovoltaic device and each pattern of the sheet of electrically conductive material making contact with the second side of one of the photovoltaic devices through one of the plurality of voids in the sheet of dielectric material.

4,131,756
SENSOR-ASSEMBLIES FOR ENGINES

Edric R. Smith, Bookham, England, assignor to Smiths Industries Limited, London, England

Filed Sep. 29, 1977, Ser. No. 837,792
Claims priority, application United Kingdom, Sep. 30, 1976, 40698/76
Int. Cl.^{2} H01L *35/02*
U.S. Cl. 136—230 **9 Claims**

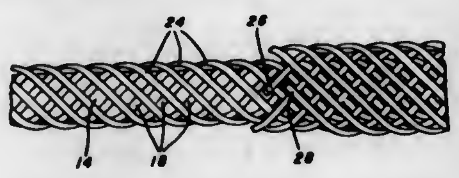
1. A sensor-assembly for use in an engine, comprising a hub, a plurality of sensors, electrical conductors connected with said sensors, means mounting the said sensors about the said hub, a plurality of electrically-conductive rings, means mounting said rings concentrically with one another within said hub, and means for securing said conductors to said rings to electrically connect said sensors with one another.

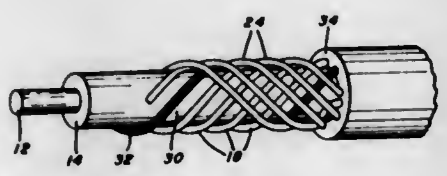


4,131,757
HELICALLY WOUND RETAINING MEMBER FOR A DOUBLE CAGED ARMORED ELECTROMECHANICAL CABLE

Edward M. Felkel, Worcester, Mass., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1977, Ser. No. 823,250
Int. Cl.^{2} H01B *7/18, 9/02*
U.S. Cl. 174—107 **10 Claims**



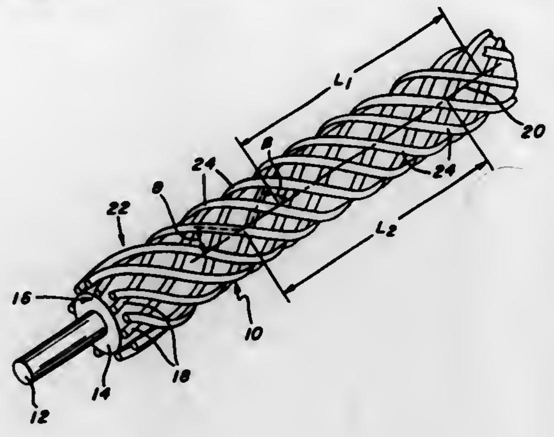


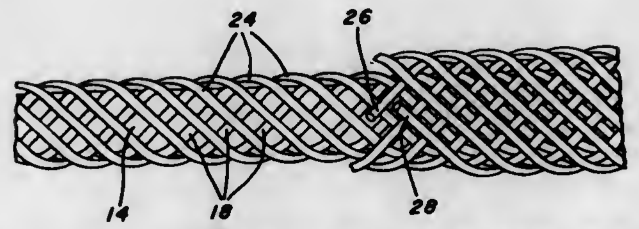
1. A multiple caged armored cable of a given length, said cable comprising:
a core;
means covering said core for protecting the same;
a plurality of armored layers of wires located about said covering means, each armored layer being formed from a plurality of wires successively helically wound directly about the preceding layer, the first layer being wound directly over said core;
means for insulatively jacketing the multiple caged armored cable for protecting the cable; and
means, formed as a portion of at least one of said inner layers, for retaining each of the individual wires in the next successive layers wound thereupon, said retaining means being generally similar to the wires making up the layer in which said retaining means is located, said retaining means being helically wound along with the wires in the layer in which it is located and being formed having a generally impressionable outer surface which is configured to partially accept wires in the next successive layer for statically retaining the same.

4,131,758
DOUBLE CAGED ARMORED ELECTROMECHANICAL CABLE

Edward M. Felkel, Worcester, Mass., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1977, Ser. No. 823,251
Int. Cl.^{2} H01B *7/18, 9/02*
U.S. Cl. 174—107 **12 Claims**





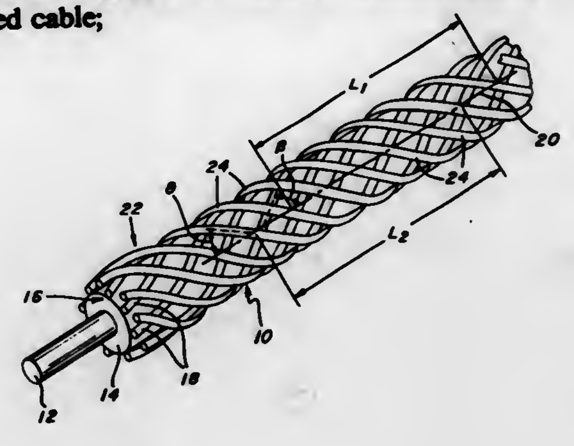
1. A multiple caged tapered strength armored cable of a given length, said cable comprising:
a core;
means covering said core for protecting the same;
a plurality of armored and caged layers of wires located about said covering means, each armored layer being formed from a plurality of wires successively helically wound directly about the preceeding layer, the first layer being wound directly over said core, each of said plurality of wires in each layer being spaced from the adjacent two wires to form a radial space between all of said wires;
said pluralities of wires each being of given numerical quantities for a given sublength of said given cable length, said given numerical quantities being changed together progressively for progressive other given sublengths of said given cable length for producing a tapered strength caged armored cable; and
means for insulatively jacketing the multiple caged armored cable for protecting the cable, said jacketing means also filling the radial spaces located between the wires of said layers and preventing movement of one wire in any of said pluralities from appreciably moving with respect to any other wire in the same plurality of wires.

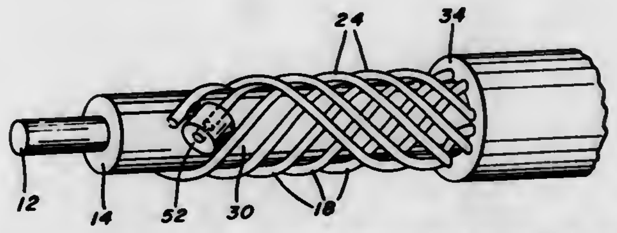
4,131,759
SLIP SLEEVE MECHANISM FOR A STRENGTH TAPERED CAGED ARMORED ELECTROMECHANICAL CABLE

Edward M. Felkel, Worcester, Mass., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1977, Ser. No. 823,252
Int. Cl.^{2} H01B *17/22*
U.S. Cl. 174—107 **10 Claims**

1. A multiple caged tapered strength armored electrical cable of a given length, said cable comprising:
a core;
means covering said core for protecting the same;
a plurality of armored layers of wires located about said covering means, each armored layer being formed from a plurality of wires successively helically wound about the preceeding layer, the first layer being wound directly over said core, each of said plurality of wires in each layer being spaced from the adjacent two wires to form a radial space between all of said wires;
said pluralities of wires each being of given numerical quantities for a given sublength of said given cable length, said given numerical quantities being changed together progressively for progressive other given sublengths of said given cable length for producing a tapered strength caged armored cable;



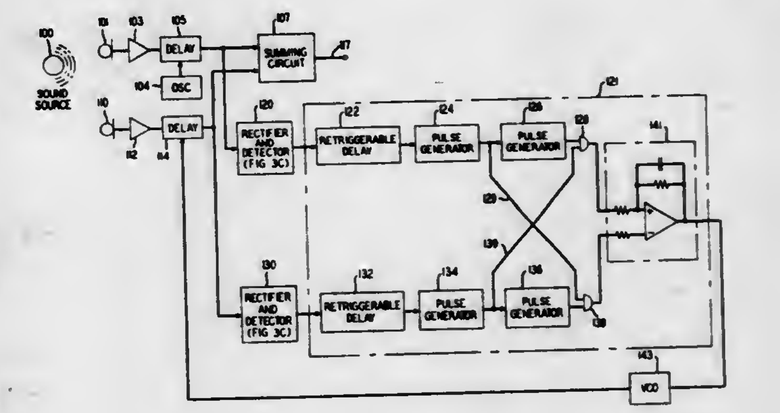


means, within which loose ends of said wires in said armored layers are placed, for retaining said loose ends while permitting their movement within said retaining means and for preventing said loose ends from migrating from the armored layer in which they are initially located; and
means for insulatively jacketing the multiple caged armored cable for protecting the cable, said jacketing means also filling the radial spaces located between the wires of said layers and preventing movement of one wire in any of said pluralities from appreciably moving with respect to any other wire in the same plurality of wires.

4,131,760
MULTIPLE MICROPHONE DEREVERBERATION SYSTEM

Susan W. Christensen, Tuxedo Park, N.Y., and Cecil H. Coker, Chatham, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 7, 1977, Ser. No. 858,418
Int. Cl.^{2} H04B *15/00*
U.S. Cl. 179—1 P **22 Claims**



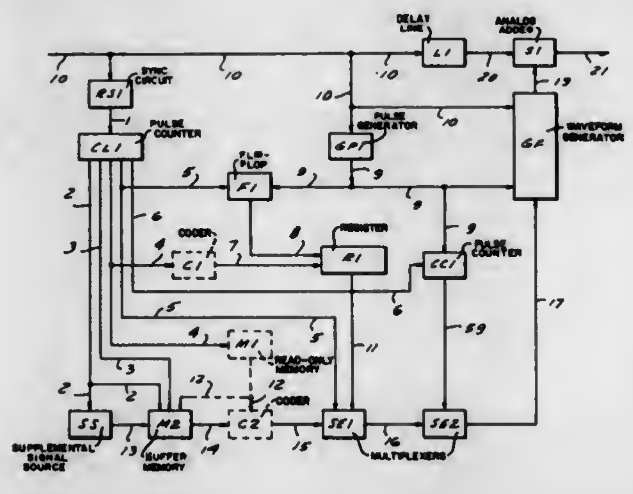
1. A dereverberation circuit comprising an audio source,

first and second sound detecting devices responsive to sounds from said source for producing first and second audio signals, respectively; means responsive to said first audio signal for generating a first pulse corresponding to an energy burst in said sounds; means responsive to said first pulse for inhibiting said first pulse generating means for a predetermined period following said generated first pulse; means responsive to said second audio signal for generating a second pulse corresponding to said energy burst in said sounds; means responsive to said second pulse for inhibiting said second pulse generating means for a predetermined period following said generated second pulse; and means jointly responsive to said first and second pulses for phase aligning said first and second audio signals.

4,131,761

METHOD OF AND MEANS FOR CONVEYING AND RECOVERING SUPPLEMENTARY MESSAGE SIGNALS SUPERIMPOSED UPON A MULTILEVEL SIGNAL STREAM IN A DIGITAL TRANSMISSION SYSTEM

Pietro P. Giusto, Turin, Italy, assignor to CSELT - Centro Studi e Laboratori Telecomunicazioni, Turin, Italy
Filed Apr. 22, 1977, Ser. No. 790,071
Claims priority, application Italy, Apr. 22, 1976, 67961 A/76
Int. Cl.^{2} H04J *7/00*
U.S. Cl. 179—15 BY **10 Claims**

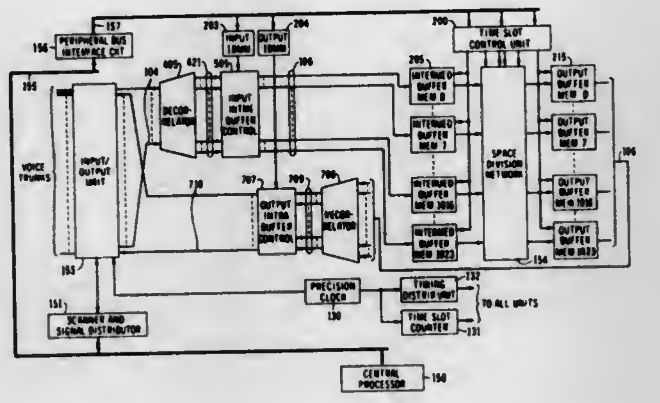


1. A method of conveying and recovering supplementary message signals superimposed upon a multilevel signal stream in a digital transmission system, comprising the steps of:
generating, at a transmitting end, a main signal stream consisting of waveforms occurring during consecutive clock cycles and carrying information in the form of amplitude variations among a plurality of levels including two limiting levels and at least one intermediate level;
monitoring said main signal stream to find modulable waveforms with amplitudes on at least one of said limiting levels;
converting supplementary message symbols into modification pulses coinciding with selected modulable waveforms;
modulating the selected modulable waveforms with respective modification pulses by extending the waveform amplitudes beyond their limiting level, thereby producing a composite signal stream to be transmitted to a receiving end;
detecting, at the receiving end, the modulated waveforms of said composite signal stream by comparing their amplitudes with at least one predetermined threshold; and
reconstituting said supplementary message symbols from demodulation pulses derived from the detected modulated waveforms.

4,131,762

BUFFER STORAGE ASSIGNMENT ARRANGEMENT FOR TIME-DIVISION SWITCHING SYSTEMS

Anthony Reid, Chicago, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 16, 1977, Ser. No. 796,971
Int. Cl.^{2} H04J *3/02*
U.S. Cl. 179—15 AQ **12 Claims**

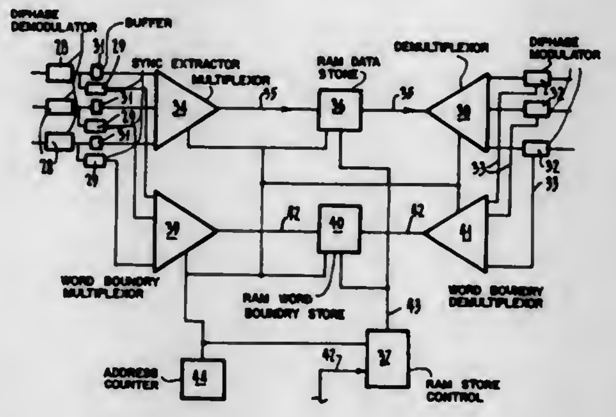


1. In combination:
a plurality of data word sources;
a switching network, comprising a plurality of input terminals and a plurality of output terminals, for completing communication paths therebetween;
a plurality of buffer memories, each uniquely associated with one of said input terminals, for storing data words from said data word sources;
means for generating control signals defining two data word sources which are to intercommunicate; and
memory assignment means responsive to said control signals for storing data words from the two data word sources defined by said control signals in different ones of said buffer memories when data words from both of said data word sources would, in the absence of said control signals, be stored in the same one of said buffer memories.

4,131,763

BIT SWITCHING OF WORD SYNCHRONIZED DATA

Ludwik Herschtal, North Balwyn, Australia, assignor to L M Ericsson Pty. Ltd., Broadmeadows, Australia
Filed Sep. 16, 1977, Ser. No. 833,892
Int. Cl.^{2} H04J *3/06*
U.S. Cl. 179—15 BS **5 Claims**

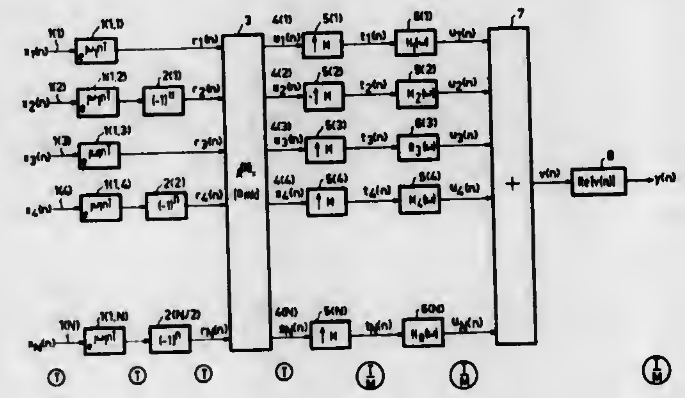


1. A method for serially bit-switching word synchronized digital data whereby the synchronization information is separated from its associated data word prior to switching, each data word is serially bit switched via a single data path to a required outlet and information relevant to said sychronization information is switched simultaneously with said associated data word, via a switch by-path, to said outlet to provide for appropriate re-combination of synchronization information with said related data word at said outlet, said word synchronized data being bi-polar or diphase modulated data and said synchronization information being in-band and being a violation of said modulation, said synchronization information being separated from its associated data word by demodulating said data to provide nonreturn-to-zero data prior to switching.

4,131,764

ARRANGEMENT FOR CONVERTING DISCRETE SIGNALS INTO A DISCRETE SINGLE-SIDEBAND FREQUENCY DIVISION-MULTIPLEX-SIGNAL AND VICE VERSA

Theodoor A. C. M. Claasen, and Wolfgang F. G. Mecklenbrauker, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 4, 1977, Ser. No. 821,652
Claims priority, application Netherlands, Apr. 4, 1977, 7703633
Int. Cl.^{2} H04J *1/00*
U.S. Cl. 179—15 FS **14 Claims**



1. An arrangement for converting N discrete baseband signals $\{x_k(n)\}$, (k = 1, 2, 3, . . . N) having associated therewith a sampling rate 1/T and a frequency spectrum $X_k(\omega)$, into a discrete baseband single-sideband frequency division-multiplex signal {y(n)}, (n = . . . −2, −1, 0, +1, +2, . .) having associated therewith a sampling rate 1/T which is at least equal to N/T and having associated therewith a frequency spectrum $Y(\omega)$, wherein

$$Y\left[\omega_o + (k-1)\frac{\pi}{T}\right] = X_k(\omega_o) \cdot \psi_k(\omega_o)$$

wherein the arrangement comprises:
means for receiving said baseband signals $\{x_k(n)\}$;
means for selectively modulating the received signals $\{x_k(n)\}$ for generating baseband signals $\{r_k(n)\}$;
a transformation device means for processing said baseband signals $\{r_k(n)\}$ for generating a plurality of discrete conversion signals $\{s_m(n)\}$, (m = 1, 2, 3, . . . N), said transformation device having associated therewith a transformer matrix A comprising the elements a_{mk} of a constant value, and which transformer matrix is unequal to the discrete Fourier transformer matrix, and wherein the relation between the components $s_m(n)$ and the components $r_k(n)$ is given by

$$s_m(n) = \sum_{k=1}^{N} a_{mk}\, r_k(n);$$

a plurality of signal channels to each of which one of the conversion signals is applied, and which each include discrete filtering means and sampling rate increasing means for generating discrete signals $\{u_m(n)\}$, the transfer function of the signal channel which is determined by said discrete filtering means being equal to $H_m(\omega)$;
means for forming a discrete sum signal

$$\sum_{m=1}^{N} u_m(n), \text{ wherein}$$

$$y(n) = \sum_{m=1}^{N} u_m(n);$$

wherein for each signal channel the relationship between its transfer function $H_m(\omega)$ and the matrix elements a_{mk} is given by FDM-condition

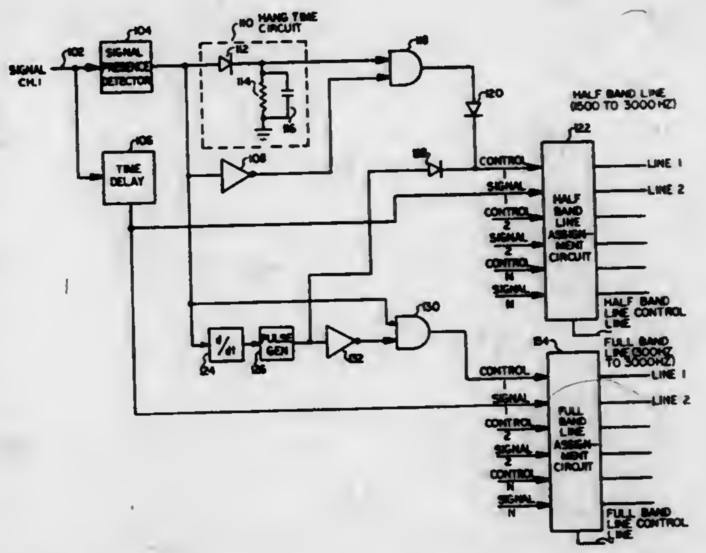
$$\frac{1}{2}\sum_{m=1}^{N}\left\{a_{mk}H_m\left[\omega_o + (i-1)\frac{\pi}{T}\right] + a^*_{mk}H^*_m\left[\frac{2\pi}{T_y} - \left\{\omega_o + (i-1)\frac{\pi}{T}\right\}\right]\right\} = \delta_{ki}\psi_i(\omega_o)$$

wherein:
m represents the number of the relevant signal channel;
ω_o represents a frequency in the range $0 \leqq \omega_o < \pi/T$;
$a_{mk}{}^*$ represents the complex conjugate of a_{mk}; $H_m{}^*(\omega)$ represents the complex conjugate of $H_m(\omega)$;
i = 1, 2, 3, . . . N;
$\delta_{ki} = 0$ for $k \neq i$
$\delta_{ki} = 1$ for $k = i$;
$\psi_i(\omega_o)$ represents an arbitrary function of ω_o.

4,131,765

METHOD AND MEANS FOR IMPROVING THE SPECTRUM UTILIZATION OF COMMUNICATIONS CHANNELS

Leonard R. Kahn, 137 E. 36 St., New York, N.Y. 10016
Continuation-in-part of Ser. No. 713,046, Aug. 9, 1976, abandoned. This application Jul. 18, 1977, Ser. No. 816,661
Int. Cl.^{2} H04B *1/66*
U.S. Cl. 179—15.55 R **12 Claims**


SIGNAL CH.1
SIGNAL PRESENCE DETECTOR
HANG TIME CIRCUIT
TIME DELAY
HALF BAND LINE (1500 TO 3000 HZ)
HALF BAND LINE ASSIGNMENT CIRCUIT
HALF BAND LINE CONTROL LINE
FULL BAND LINE (300 TO 3000 HZ)
FULL BAND LINE ASSIGNMENT CIRCUIT
FULL BAND LINE CONTROL LINE
CONTROL
SIGNAL
LINE 1
LINE 2
PULSE GEN
102
104
106
108
110
112
114
116
118
120
122

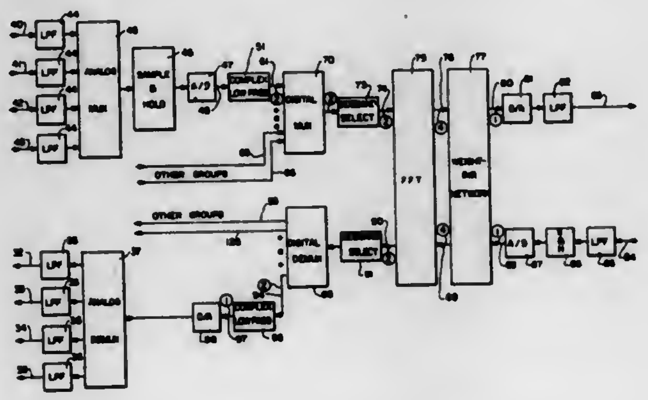
1. In a system for transmitting two or more voice signals, incorporating means for sensing the presence of speech and wherein the voice signals are momentarily disconnected from transmission circuits during pauses in speech, the improvement comprising:
(a) hang time means connected to the speech presence indication means, the hang time means in turn connected to and controlling switching circuitry that provides a sub-

stantially frequency limited transmission channel for transmission of unsensed consonant speech sounds that appear at ends of speech bursts; and,

(b) means for delaying the speech waves for a period of time sufficient for a listener to hear initial unsensed consonant sounds, said delay means connected so that the speech waves are not delayed in reaching the (a) speech presence determination means but are delayed in reaching said switching circuitry.

4,131,766
DIGITAL FILTER BANK

Madihally J. Narasimha, Mountain View, Calif., assignor to Granger Associates, Menlo Park, Calif.
Filed Jul. 11, 1977, Ser. No. 814,303
Int. Cl.² H04J *1/00*
U.S. Cl. 179—15 FD **20 Claims**

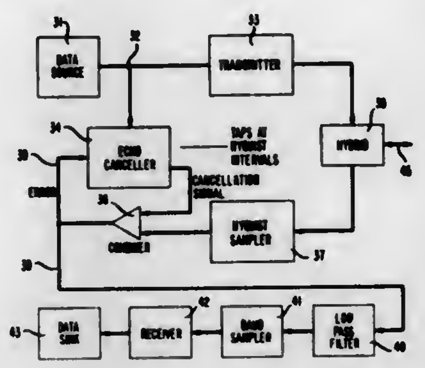


1. A digital filter for use in a voice multiplexing system for modulating a series of data samples representing a number of voice channels in time division multiplexed format into a series of data samples representing said voice channels in frequency division multiplexed format comprising:
  complex low pass filter means connected to receive said series of time division multiplexed data samples for converting said samples to an analytic signal for each of said voice channels,
  Fourier transform processor means connected to receive each of said analytic signals for transforming said analytic signals into a frequency division multiplexed signal having frequency components corresponding to different ones of said voice channels and
  weighting means connected to receive said frequency multiplexed signal for weighting said frequency components with weighting coefficients having predetermined passband characteristics.

4,131,767
ECHO CANCELLATION IN TWO-WIRE, TWO-WAY DATA TRANSMISSION SYSTEMS

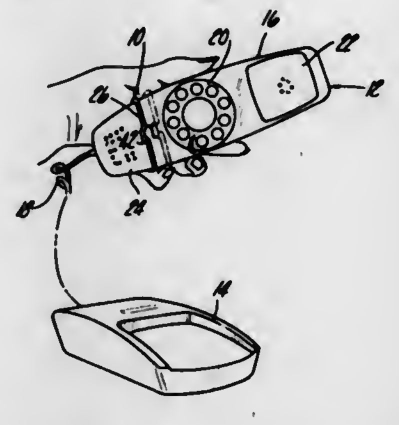
Stephen B. Weinstein, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of Ser. No. 721,032, Sep. 7, 1976, abandoned. This application Feb. 22, 1978, Ser. No. 880,293
Int. Cl.² H04B *3/20*
U.S. Cl. 179—170.2 **10 Claims**

1. An echo cancellation arrangement for a baud-synchronous digital data transmission system having both a transmitter section and a receiver section for simultaneous two-way signaling at full bandwidth over a common signal path comprising at each such terminal,
  means for sampling incoming received signals at a rate substantially equal to twice the highest frequency employed in said signal path,
  an adjustable signal processor for compensating for echoes of signals being transmitted by said transmitter section into said receiver section having an input connected to a data source in said transmitter section and an output combined in subtractive relationship with the output signal from said sampling means to form a subtractive output having an error component, said signal processor storing consecutive discrete-level samples from said data source at baud intervals and shifting such samples through a sequence of storage locations at intervals no greater than the reciprocal of twice the highest frequency employed in said signal path and such that an integral number of such shifting intervals occur in each baud interval,
  means within said signal processor for computing the product of said consecutive samples with the error component of said subtractive output, and
  means for recovering digital data from the subtractive output of said signal processor,



4,131,768
TELEPHONE SWITCH CONTROL CLIP

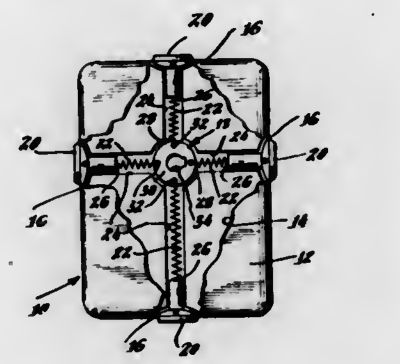
Reggie D. Wood, Pontiac, Mich., assignor to Richard A. Campbell, Bloomfield Hills, Mich., a part interest
Filed Oct. 4, 1976, Ser. No. 728,921
Int. Cl.² H01H *9/22;* H04M *1/03*
U.S. Cl. 179—178 **1 Claim**



1. A telephone switch control clip for attachment to a telephone instrument of the type having a hand-held telephone receiver unit including a push button for opening and closing the telephone circuit, the push button being in a normally extended position to close the telephone circuit, a cradle for receiving said hand-held telephone receiver unit and engaging said push button to move the same into a retracted position to open said telephone circuit, and a telephone wire connecting said hand-held receiver unit to said cradle; said clip consisting only of a one-piece member having a circular contour closely following the peripheral shape of a selected portion of said receiver and slidably movable along the longitudinal length of said receiver between a first position engaging the push button to open said circuit and a second position disengaged from said push button to close said circuit;
  said clip having an inward projection formed on a portion thereof adjacent said push button when said clip is attached to said receiver unit, said projection engaging said push button when said clip is moved along said receiver to a position above said push button, said clip having a base member, a portion of which includes said inward projection for engaging said push button of said hand-held receiver unit; said clip further comprising a pair of curved legs adapted to engage the outer peripheral surface of said hand-held receiver unit, said legs ending in opposing portions which are spaced apart a sufficient distance to permit said telephone connecting wire to pass between said opposing ends, said spaced apart portions being diametrically opposite said inward projection.

4,131,769
TELEPHONE LOCK

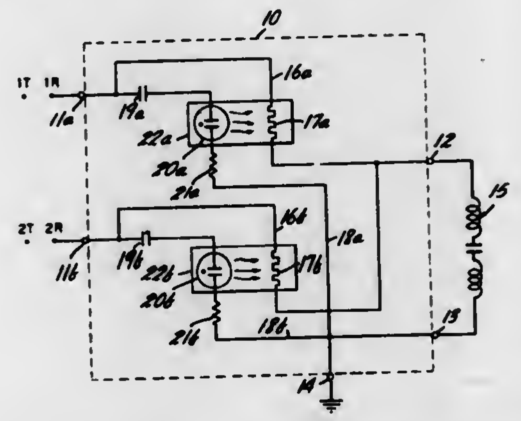
Sylvia Davis, 2100 First Ave., New York, N.Y. 10029
Filed Sep. 1, 1977, Ser. No. 829,629
Int. Cl.² H04M *1/66*
U.S. Cl. 179—189 D **4 Claims**



1. In combination with a telephone having a dialing apparatus surrounded on the perimeter thereof by a notch delineating a window, a telephone lock comprising:
  a housing adapted to cover said dailing apparatus and forming a chamber therein, said housing separably registering with said window and having a plurality of slots disposed in the edges thereof and a central aperture disposed therethrough;
  a plurality of engaging elements disposed within said chamber and selectively extendable and retractable through said slots and spring urged to extended positions, said engaging elements when in an extended position engaging said slot and when in a retracted position, disengaging said notch and
  lock means disposed within said central aperture for urging said engaging elements into said retracted position when operated by a key.

4,131,770
COMMON BELL RINGING APPARATUS FOR MULTIPLE BUTTON KEY TELEPHONE SET

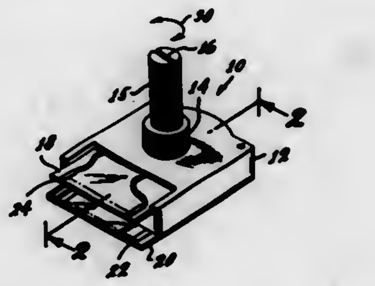
William J. Dick, 188-20A 69th Ave., Flushing, N.Y. 11365
Filed Jun. 29, 1977, Ser. No. 811,173
Int. Cl.² H04M *1/26*
U.S. Cl. 179—84 L **6 Claims**

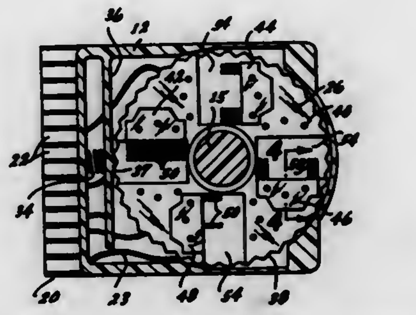


1. An apparatus for selectively controlling the energization of an output circuit with an electrical signal of given character from one of a plurality of input circuits, comprising:
  a plurality of input terminals adapted to be connected to said input circuits, respectively,
  an output terminal adapted to be connected to said output circuit,
  a common terminal for said input and output circuits,
  a first plurality of circuit means connected between said common terminal and said input terminals, respectively, each responsive only to an electrical signal of said given character and each having current responsive radiant energy emitting means therein, and
  a second plurality of circuit means connected between said output terminal and said input terminals, respectively, and each having radiant energy responsive current controlling means therein,
  each of said radiant energy responsive controlling means having electrical conductivity adapted to change from a given value to a different value responsive, respectively, to radiant energy from a corresponding current responsive radiant energy emitting means in said first plurality of circuit means, whereby the application of electrical signals of said given character selectively to said input circuits is effective to change the electrical conductivity of the corresponding radiant energy responsive current controlling means from said given value to said different value for controlling the energization of the output circuit.

4,131,771
ROTARY SWITCH WITH SPACED CIRCUIT BOARDS AND DISCRETE CONTACTS ON ROTOR OPPOSITE FACES ELECTRICALLY INSULATED FROM FURTHERMOST BOARD

Richard W. Erickson, Glendora; James Pallaske, Covina, and Stephen Talbert, Pasadena, all of Calif., assignors to Becton, Dickinson Electronics Company, Pasadena, Calif., by said Richard Erickson and James Pallaske
Filed Apr. 6, 1977, Ser. No. 785,076
Int. Cl.² H01H *19/58*
U.S. Cl. 200—11 DA **8 Claims**





1. A multiple position rotary switch in a housing having an area defined in two mutually orthogonal directions, said switch comprising:
  switch contact means for selectively closing electrical circuits upon contact, said means including an electrically insulating rotatable wheel extending substantially across said area substantially dividing said housing into a first section and a second section having first and second sides and having mounting means on both said first and second sides for selectively attaching a plurality of contact brush sets electrically isolated from each other;

a first printed circuit board positioned stationary relative to the wheel in said first housing section, said first board having electrical conductors positioned thereon facing the said first wheel side, the said circuits of said board being adapted to be closed selectively upon contact of said conductors with the brush sets on said wheel; and

a second printed circuit board positioned stationary relative to the wheel in said second housing section, said second board having electrical conductors positioned thereon facing the said second wheel side, said circuits of said second board being adapted to be closed selectively upon contact of said conductors with the brush sets on said wheels;

wherein said first wheel side substantially covers said electrical conductors positioned on said first printed circuit board, and said second wheel side substantially covers said electrical conductors positioned on said second printed circuit board to isolate any electrical connection of said first board from brushes on said second wheel side, and to isolate any electrical connection of said second board from brushes on said first wheel side.

4,131,772
SWITCHBOX AND CONTROL UNIT ASSEMBLY FOR AUTOMOTIVE VEHICLES

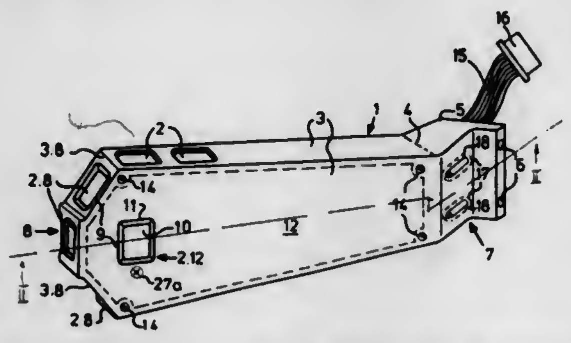
Albert Weckenmann, Ahrensburg; Rolf Bräuticam, and Lothar Haas, both of Nüremberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 28, 1977, Ser. No. 772,521

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1976, 2613525

Int. Cl.^{2} H01H *9/00;* B60K *35/00*

U.S. Cl. 200—61.54 **33 Claims**



1. Switchbox and control unit assembly for positioning operating switches of a motor vehicle comprising

an elongated, multi-faceted cantilevered hollow body structure (1) of essentially polygonal cross section adapted for freely projecting, cantilevered mounting in the motor vehicle;

attachment means (7) secured at the end of said free standing, cantilevered body for attachment of said body to the motor vehicle and to locate said body spaced from the dashboard of the motor vehicle;

a plurality of switches adapted for tactile operation (2, 2.12) located in the surfaces defined by the facets of the body and formed with touching surfaces (10);

surface supported circuits (13) located in the space defined interiorly of the hollow body (1) connected to at least some of said switches;

and a connection cable (15) passing out of the hollow body in the region of the attachment means, the connection cable being connected interiorly of the body to at least some of the surface supported circuits;

a printed circuit board (22) within the interior space defined by the hollow body, the printed circuit board being electrically connected to said connecting cable (15) and providing for electrical interconnection of the surface supported circuits (13) and of the switches (2) to said connecting cable;

and a separable multi-terminal connector (16) electrically and mechanically secured to the connecting cable (15) and forming the electrical output terminal for the switches and the surface supported circuits in the hollow body.

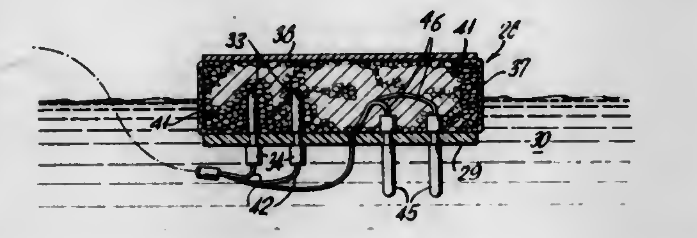
4,131,773
APPARATUS FOR DETECTING PRESENCE OF OIL IN A BODY OF WATER

Robert M. Maham, Beaumont, Tex., and Matthew D. Beasley, Plainsboro, N.J., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 669,776, Mar. 24, 1976, abandoned. This application May 25, 1977, Ser. No. 800,368

Int. Cl.^{2} H01H *29/00*

U.S. Cl. 200—61.05 **5 Claims**



5. Apparatus for detecting presence of oil in a body of water, comprising in combination

a housing having an electrically insulating material base and a first pair of electrodes mounted on said base and extending into the interior of said housing,

a pervious exterior on said housing for permitting free passage of said water therethrough,

said housing interior containing a plurality of oleophilic beads covering and contacting all of the exposed surfaces of said first pair of electrodes,

a second pair of electrodes mounted on said base and extending outside of said housing into said body of water, and

a pair of insulated flexible electric conductors connected to each of said pairs of electrodes for making electrical circuit connections therewith,

said apparatus combination being lighter than water and being designed for floating with said pervious exterior at least partially submerged.

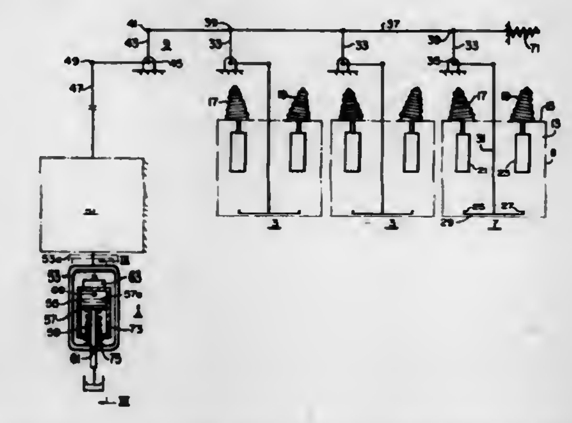
4,131,774
CIRCUIT INTERRUPTER OPERATING MECHANISM

Ronald W. Crookston, Trafford, and Thomas N. Meyer, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 9, 1977, Ser. No. 831,722

Int. Cl.^{2} H01H *35/38*

U.S. Cl. 200—82 B **1 Claim**



1. An electric circuit interrupter comprising a pair of separable contacts, operating means for opening and closing the contacts and comprising a longitudinally movable link operatively connected to the contacts, drive mechanism for driving the operating means and comprising a cylinder and piston, the piston having a piston rod extending from the cylinder on a side opposite the operating means, generator means for generating a sudden expulsion of gaseous medium into the cylinder and against the piston, the piston being actuable by the gaseous medium to drive the operating means between open and closed positions of the contacts, the piston rod being substancially in movable planar alignment with the movable link and being movable longitudinally from the end of the cylinder opposite said movable link, a connecting link directly connected at one end to the piston rod and indirectly connected to the movable link at the other end, and the connecting link extending around the cylinder.

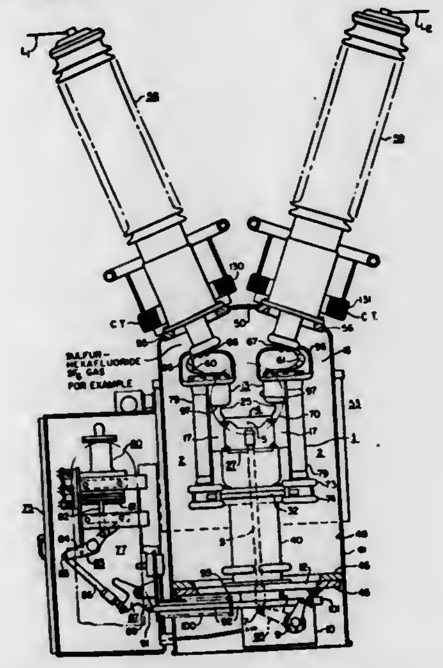
4,131,775
COMPRESSED-GAS CIRCUIT-INTERRUPTERS OF THE PUFFER-TYPE HAVING IMPROVED SUPPORTING, SHIELDING AND ASSEMBLY FEATURES

Jeffry R. Meyer, Penn Hills, and Robert L. Hess, North Versailles, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 4, 1976, Ser. No. 738,803

Int. Cl.^{2} H01H *33/02, 33/24, 33/88*

U.S. Cl. 200—148 R **22 Claims**



1. A compressed-gas, puffer-type, circuit-interrupting assemblage comprising a pair of laterally-disposed modular-type puffer interrupting units, each puffer interrupting unit comprising a relatively-stationary contact structure and a separable movable contact structure, means defining a side-insulating baffle-plate for each puffer-type interrupting unit for fixedly supporting the stationary and movable contact structures in a predetermined vertically, spaced-apart relationship, means defining a relatively-heavy lower metallic supporting plate, means securing each of said side insulating baffle-plates to said relatively-stationary lower-disposed metallic supporting plate, a relatively-stationary piston structure for each puffer unit, each respective relatively-stationary piston structure being upstandingly supported by said lower-disposed relatively-heavy metallic supporting plate, each puffer interrupting unit including, additionally, a movable operating cylinder carrying said movable contact structure and sliding over said relatively-stationary piston structure for compression of gas therebetween, line-terminal connection means, means for electrically connecting the relatively-stationary contact structure to said line-terminal connecting means for each puffer-type interrupting unit, a generally horizontially-extending cross-bar structure mechanically and electrically connecting the two movable operating cylinders, a vertically-movable insulating operating rod pivotally connected by a spherical bearing to said horizontally-extending cross-bar structure, whereby compensation is obtained for manufacturing inaccuracies and for providing proper alignment of vertical motion of the two laterally-spaced operating cylinders.

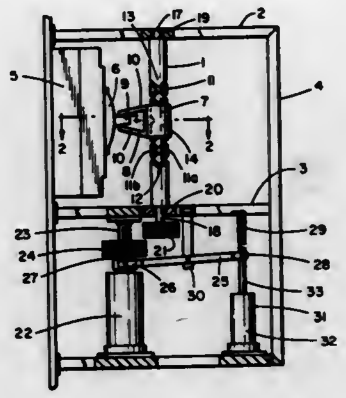
4,131,776
MOTORIZED DRIVE ASSEMBLY FOR A CIRCUIT BREAKER OPERATOR

Frank T. Ehrenberger, Iowa City, Iowa, assignor to Square D Company, Park Ridge, Ill.

Filed Oct. 14, 1976, Ser. No. 732,242

Int. Cl.^{2} H01B *3/40*

U.S. Cl. 200—158 **5 Claims**



1. A motor driven assembly in combination with a circuit breaker adapted to interrupt a circuit in response to a fault condition in said circuit and having an operator handle with opposing faces pivotable in one direction about one axis from an ON position to a TRIP position in response to a fault condition and pivotable in said one direction from said Trip position to a Reset position whereafter said operator is pivotable in the opposite direction from said Reset position to said ON position to enable restoration of said circuit, comprising:

a motor having a motor shaft rotatable in only one direction about a second axis transverse to said one axis,

a follower shaft rotatable independently of said motor shaft about a third axis parallel to said second axis and having a pair of oppositely wound axially extending intersecting helical grooves formed in the surface of said follower shaft with said grooves having a reversing juncture at opposite ends of each groove,

follower means rotatably mounted on said follower shaft and coupled with one of said grooves to move in a respective axial direction of said third axis in response to rotation of said follower shaft in one direction and thereafter coupled with the other groove at one housing juncture to move in the opposite axial direction of said third axis in response to rotation of said follower shaft in said one direction whereafter said follower means is coupled with said one groove by the other reversing juncture,

means extending from said follower means radially of said first axis and transversely to the axis of said follower shaft engaging each face of said operator handle to move said follower in said one direction for rotating said follower shaft in response to pivoting of said operator handle from said ON position to said TRIP position and thereafter operable to pivot said operator handle from said TRIP position to said RESET position in response to movement of said follower means in said respective axial direction of said third axis and to thereafter pivot said operator handle from said RESET position to said ON position in response to movement of said follower means in the opposite axial direction of said third axis with said operator handle moving radially relative said third axis,

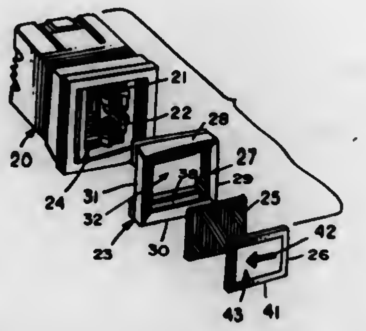
a first gear rotatable with one of said shafts and movable axially of said one shaft in selected directions, a second gear rotatable with the other of said shafts and adapted to engage said first gear to rotate with said first gear in response to a selected axial movement of said first gear to engage said second gear,

and electrically operable means to move said first gear axially of said one shaft to engage said gears for moving said follower and operator handle in response to rotation of said motor shaft.

4,131,777
PUSHBUTTON ELECTRICAL SWITCHES AND PUSHBUTTONS THEREFOR

James R. Bailey, Chicago, and Vernon W. Lavigne, Rolling Meadows, both of Ill., assignors to Switchcraft, Inc., Chicago, Ill.

Filed Feb. 18, 1977, Ser. No. 769,894
Int. Cl.^{2} H01H *9/00*
U.S. Cl. 200—311 **3 Claims**



1. An illuminated pushbutton electrical switch comprising:
(a) an electrical switch,
(b) a source of illumination disposed forwardly of said switch of (a);
(c) a pushbutton which can be pushed to actuate said switch of (a) and which is disposed forwardly of said source of illumination of (b), said pushbutton comprising a hollow housing with an open front face and sides extending inwardly from said face to an open rear end, said face constituting a frame adapted to receive and retain one or more separate flat sheet-like inserts, and
(d) one or more separate transparent or translucent, resilient flat sheet-like inserts mounted in said frame so as to be illuminated by said source of illumination of (b), said frame in said face of said pushbutton of (c) being rectangular, two opposing sides of said housing being undercut to form lips adjacent said face and the other two opposing sides of said housing containing inwardly extending supports for said inserts, said supports being opposite one another and spaced inwardly from said lips so as to retain said inserts between the inner sides of said lips and the upper sides of said supports, whereby said inserts can be inserted or changed through said front face by flexing them between said lips.

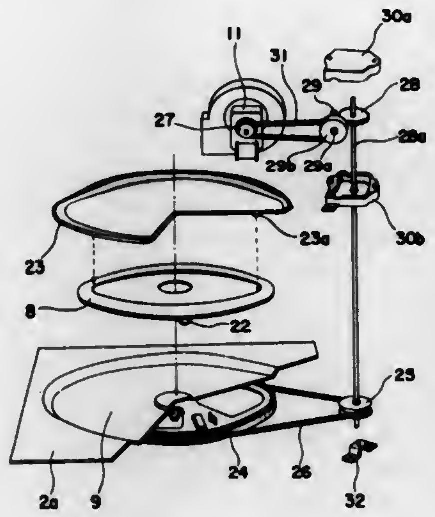
4,131,778
MICROWAVE OVEN

Junzo Tanaka, Fujiidera, and Toshio Kai, Yamatokoriyama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 28, 1977, Ser. No. 773,118
Claims priority, application Japan, Mar. 4, 1976, 51-24472; Apr. 15, 1976, 51-43109; Mar. 22, 1976, 51-34801[U]; Sep. 1, 1976, 51-105323
Int. Cl.^{2} H05B *9/06*
U.S. Cl. 219—10.55 F **9 Claims**

1. A microwave oven which comprises;
(a) an oven defining structure,
(b) a heating cavity defined by walls within said oven defining structure,
(c) door means adapted to selectively open and close an access opening defined at one side of said heating cavity,
(d) means for supplying microwave energy into said heating cavity,
(e) rotary table means rotatably disposed on the upper surface of a bottom wall of said heating cavity for holding an object to be heated thereon and adapted to rotate about a rotational axis,
(f) a rotary member rotatably disposed adjacent to a lower surface of the bottom wall of said heating cavity and said rotary table means,
(g) means for magnetically coupling said rotary table means with said rotary member,
(h) a driving motor and reduction gear means associated with said rotary member for driving said rotary member, said driving motor has a starting torque τ_M according to the formula:

$$\tau_T < \tau_M \times 1/X \times \eta$$

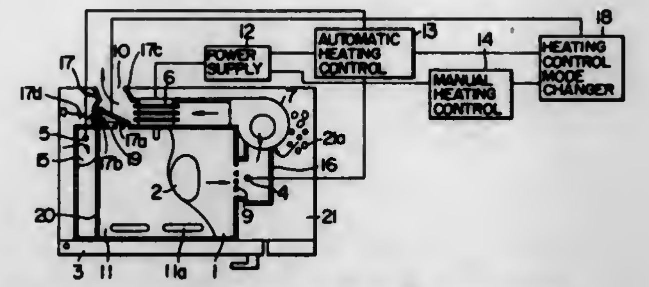


where τ_T is the transmitting torque of said magnetic coupling means, η is the driving transmitting efficiency from said driving motor to said magnetic coupling means, and X is the gear ratio of said reduction gear means, whereby when the rotary table means is blocked against rotation, said driving motor will run.

4,131,779
HIGH-FREQUENCY HEATING APPARATUS

Osami Tatsukawa, Matsudo; Osamu Sakurai, Ibaraki, and Hisayuki Serizawa, Tsuchiura, all of Japan, assignors to Hitachi Heating Appliances Co., Ltd., Japan

Filed Jul. 6, 1977, Ser. No. 813,418
Claims priority, application Japan, Jul. 7, 1976, 51-80627; Jul. 21, 1976, 51-86884[U]; Jul. 21, 1976, 51-97038
Int. Cl.^{2} H05B *9/06*
U.S. Cl. 219—10.55 R **21 Claims**

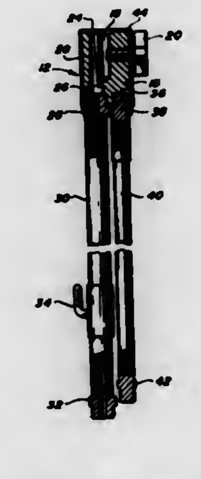


1. A high-frequency heating apparatus comprising:
a housing;
a heating chamber formed in said housing for accommodating an object to be heated, said heating chamber being defined by walls which surround said heating chamber and are formed with a first opening for taking in and out the object;
a door supported by said housing openably and closably and sealing said first opening against high-frequency energy when closed;
means for generating high-frequency energy to feed it into said heating chamber;
means connected to said high-frequency energy generating and feeding means to control the generation of the high-frequency energy and the amount of supply of the same;
first heating time controlling means including means for detecting temperature of the object which is accommodated in said heating chamber and is being heated and actuating said high frequency energy supply controlling means when a detected signal of temperature reaches a predetermined value whereby the heating time is automatically controlled;
second heating time controlling means for manually controlling the heating time by actuating the high-frequency energy supply controlling means;
heating control mode changing means for selectively actuating one of said first and second heating time controlling means;
means for generating heat disposed inside said housing but outside said heating chamber;
a first ventilating path for ventilating said heating chamber including at one end a second opening provided at a part of at least one of said door and said housing, at the other end a third opening provided at a part of said housing and communicating with said second opening, and a space of said heating chamber between said second and third openings, said heat generating means being disposed at a part of said first ventilating path;
a second ventilating path for ventilating said heating chamber including at one end a fourth opening provided at a part of said housing, at the other end said second opening communicating with said fourth opening, and the space of said heating chamber between said second and fourth openings, said heat generating means being disposed at a part of said second ventilating path;
means for forcibly flowing air along selected one of said first and second ventilating paths; and
ventilating path changing means for selecting one of said first and second ventilating paths such that when said first ventilating path is selected by said changing means, atmospheric air is drawn by said air forcibly circulating means from said second opening, passed through said heating chamber and then through said heat generating means and driven out of said third opening and when said second ventilating path is selected, atmospheric air is drawn by said air forcibly circulating means, passed through said heat generating means and then through said heating chamber and driven out of said second opening.

4,131,780
UNDERWATER CUTTING AND GOUGING TORCH

Harold J. Trabbold, and Jerry R. Hummel, both of Lancaster, Ohio, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 687,940, May 19, 1976, abandoned. This application Nov. 11, 1977, Ser. No. 850,750
Int. Cl.^{2} B23K *9/14*
U.S. Cl. 219—70 **4 Claims**



1. An underwater electric-arc cutting and gouging torch for use in the water-carbon arc cutting and gouging process comprising in combination:
an electrically insulating handle having an outer surface adapted to facilitate gripping by the hand of a user;
an electrically conductive torch head mounted on said handle said torch head including a recess so constructed and arranged to receive and clamp an elongated solid copper coated graphite cutting and gouging electrode which has its outer surface projecting beyond said clamp covered with a waterproof coating, and a passage in said head terminating in at least one nozzle-like aperture adjacent said recess each of said recess and said passage being elongated and having parallel longitudinal axes;
an insulating coating on all outwardly exposed surfaces of said head to prevent electrical shock to the user;
means for bringing electrical current from a source of such current to an electrode held in said recess; and
means for bringing water under pressure greater than that in the environment where the torch is used to said passage whereby when said torch is used for cutting said water exits from said nozzle-like aperture at high pressure in a direction along one side of the length of and toward the projecting end of the electrode disposed in said recess and to an arc struck between said electrode and said workpiece.

4,131,781
SUBMERGED ARC WELDING PROCESS FOR NICKEL CONTAINING STEEL

Yoshinori Ito, and Mutsuo Nakanishi, both of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 18, 1977, Ser. No. 778,973
Int. Cl.^{2} B23K *9/18*
U.S. Cl. 219—73 **11 Claims**

1. A submerged arc welding process for welding nickel containing steel with a welding electrode in the presence of a flux, said welding process being characterized in that;
A. said welding electrode is a cored wire consisting of a mild steel and core material, the core material including, on the basis of weight to the total weight of the welding electrode, 5 to 25 percent of CaF_2, 2.5 to 5.5 percent of nickel, 0 to 0.5 percent of Mo, 0 to 0.5 percent of Ti, and
B. said flux is a bond type flux having a composition of, by weight percent, 10 to 30 percent of SiO_2, 8 to 20 percent Al_2O_3, 25 to 45 percent of MgO, 10 to 30 percent of CaO, 7 to 20 percent of CaF_2, and at least one member selected from the group consisting of metallic Si, Fe-Si, and Fe-Si-Mn in an amount of 0 to 0.6 percent calculated in term of metallic Si, and having a basicity B higher than 1.5, the basicity being defined on the basis of weight by the following equation;

$$B = (CaO + MgO)/(SiO_2 + Al_2O_3)$$

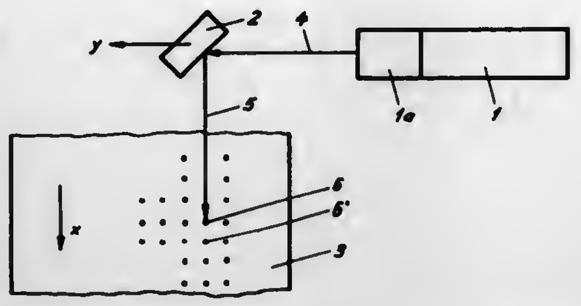
4,131,782
METHOD OF AND APPARATUS FOR MACHINING LARGE NUMBERS OF HOLES OF PRECISELY CONTROLLED SIZE BY COHERENT RADIATION

Bernard C. Einstein, Bern, and Peter Spring, Thun, both of Switzerland, assignors to Lasag AG, Thun, Switzerland

Filed May 3, 1976, Ser. No. 682,409
Int. Cl.^{2} H01S *3/09*
U.S. Cl. 219—121 LM **17 Claims**

1. A method of machining a plurality of cells on a continuously moving intaglio printing form thereby forming a pattern on said intaglio printing form wherein each cell machined defines a cell volume and the volume of the cells varies on said intaglio printing form, said method comprising:
pulse modulating a coherent radiation source according to the pattern; and
directing the modulated coherent radiation from said source successively onto said intaglio printing form for machin-

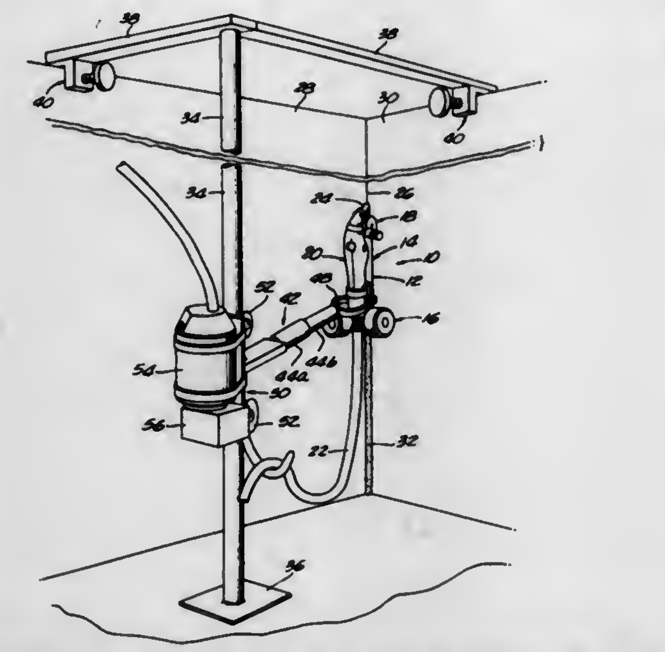
ing the plurality of cells while maintaining a zero velocity between the continuously moving intaglio printing form and the coherent radiation during machining of each of the plurality of cells.



4,131,783
WELDING APPARATUS

Milo M. Kensrue, 56 Linda Isle, Newport Beach, Calif. 92660, and Donald L. Martin, 12132 Woodlawn Ave., Santa Ana, Calif. 92705

Filed Jan. 31, 1977, Ser. No. 763,812
Int. Cl.^{2} B23K *9/12*
U.S. Cl. 219—124.31 **23 Claims**

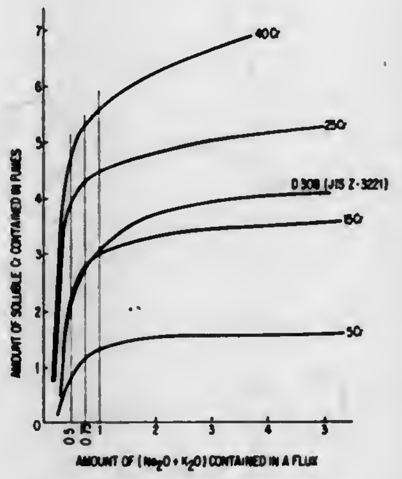


1. Welding apparatus in which a self-propelled carriage supports a welding gun of the hand-held type having a welding tip and self-contained control means for controlling feed of a welding wire to said welding tip, comprising:
   (a) an elongated rigid chassis frame structure comprising an elongate rubber tubular member having supporting wheel assemblies at its opposite ends respectively mounting a pair of wheels adapted to be positioned on opposite sides of a weld line;
   (b) power means including a motor mounted within said tubular member, said motor having a drive shaft extending longitudinally of said tubular member and a driving connection with one of said wheel assemblies to propel said carriage along said weld line;
   (c) a welding gun of the self-contained hand-held type and means contacting said welding gun at spaced locations on said gun for releasably supporting said hand-held welding gun as a unit in a position extending generally above and longitudinally of said tubular member, said hand-held gun serving as a hand-grip for holding the apparatus in an operative position and moving the apparatus during a manual welding operation, said hand-held gun being supported for lateral swinging movement with its welding tip in an operating position relative to said line of weld, said means supporting the welding gun comprising a cradle pivotally mounted on said chassis frame structure for lateral swinging movements;
   (d) means including the other of said wheel assemblies for guiding the carriage movement with respect to said weld line, the other one of said wheel assemblies being located beneath said tip of said welding gun and having the wheels thereof closely adjacent both sides of said weld line for accurately aligning said welding gun tip on said weld line, so that said wheel assemblies stabilize said welding gun; and
   (e) a driving connection between said power means and said cradle for swinging said cradle and to impact oscillatory movement of said welding tip transversely of said weld line during propelled movement of the carriage by said power means.

4,131,784
COATED WELDING ELECTRODE CONTAINING CHROMIUM

Shinji Kimura, Kamakura; Tomokazu Godai, Fujisawa; Shoji Minato, Fujisawa; Minoru Kobayashi, Fujisawa; Makoto Yamaga, Fujisawa; Shingo Maki, Fujisawa; Yoshizo Hashimoto, Fujisawa; Tetsuo Suga, Fujisawa, and Hiroshi Saita, Fujisawa, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Mar. 23, 1977, Ser. No. 780,495
Claims priority, application Japan, Mar. 23, 1976, 51/32337
Int. Cl.^{2} B23K *9/24, 35/00*
U.S. Cl. 219—137 WM **8 Claims**



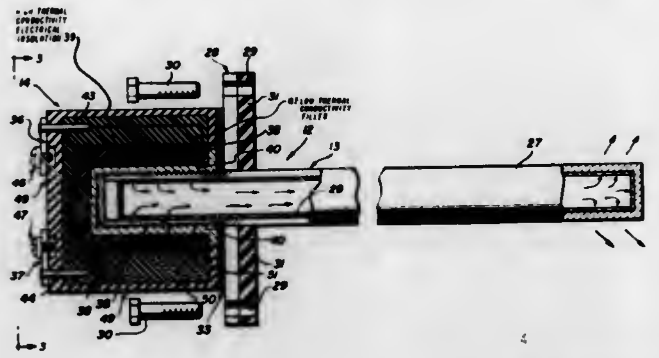
1. A chromium-containing coated welding electrode, characterized in that the amounts of fumes generated at the welding step, especially the amount of toxic soluble Cr, are suppressed and minimized, comprising a metal core and a coating flux composition, and containing at least 0.5% of metallic Cr based on the total weight of said welding electrode and less than 1% of Na and K calculated as ($Na_2O + K_2O$) based on the total weight of said coating flux composition.

2. A chromium-containing coated welding electrode, characterized in that the amounts of fumes generated at the welding step, especially the amount of toxic soluble Cr, are suppressed and minimized, comprising a metal core and a coating flux composition and containing at least 0.5% of metallic chromium based on the total weight of said welding electrode in at least one of said metal core and said coating flux composition, wherein said coating flux composition contains less than 1% of Na and K calculated as ($Na_2O + K_2O$) based on the total weight of said coating flux composition, and wherein said coating flux composition is formed using a colloidal solution in which a dispersed phase containing at least one member selected from the group consisting of oxides of Si, Al, Zr, B, P, Ti, Mg, Ca, Th and Fe occupies 1 to 90% by weight of the total solution as a binder, and application of the coating is followed by a drying step to form said coating flux composition.

4,131,785
ELECTRICALLY HEATED LIQUID TANK EMPLOYING HEAT PIPE HEAT TRANSFER MEANS

James R. Shutt, Reston, Va., assignor to Electro-Therm, Inc., Laurel, Md.

Filed Feb. 18, 1976, Ser. No. 659,071
Int. Cl.^{2} H05B *3/82;* **F24H** *1/20;* **F28D** *13/00*
U.S. Cl. 219—326 **24 Claims**

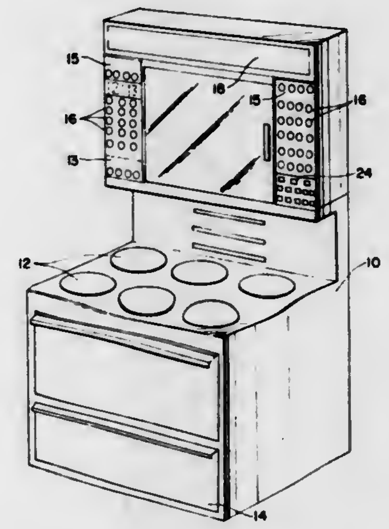


1. A heating apparatus for applying heat to the interior of a substantially closed container containing a liquid therein to be heated, comprising: a modular, removable heat transfer member having a heat absorbing end and a heat transmitting end and having high conductivity with a low temperature differential between the ends thereof, mounting means for removably mounting said heat transfer member on the exterior wall surface of a container with said heat absorbing end positioned exterior of the container and said heat transmitting end positioned to apply heat to the liquid within the container, and modular, removable, electrical heat producing means including an electric heating coil positioned about and removably secured to said heat absorbing end of said heat transfer member exterior of the container, whereby said heat transfer member and said heat producing means can be removed from the container and replaced, said electric heating coil being embedded in a high thermal conductivity, low electrical conductivity filler material which is surrounded by a low conductivity insulating jacket and which is received around a metal core member which is removably secured to said heat absorbing end of said heat transfer member.

4,131,786
REMOTELY CONTROLLABLE ELECTRIC OVEN

James Cooper, 2802 Hollywood Rd., Falls Church, Va. 22043

Filed Sep. 8, 1976, Ser. No. 721,399
Int. Cl.^{2} H05B *1/02*
U.S. Cl. 219—487 **3 Claims**



1. In a system for controlling and monitoring an electric oven having a plurality of heating locations within a substantially common housing for controllably heating foodstuff thereat for selected durations comprising:

a. first control panel means mounted within said common housing including,
   1. temperature selection means for selecting the heating temperature at each of said heating locations,
   2. timing means for setting the heating duration at each of said heating locations, and
   3. display means for illustrating the selected heating duration of each of said respective heating locations set by said timing means and the time remaining of each of said selected heating durations;

b. second control panel means separate and apart from said common housing and said first control panel means and movable with respect thereto, said second control panel means including,
   1. timing means for setting the heating duration at each of said heating locations, and
   2. display means for illustrating the heating duration selected either by said timing means in said first control panel means or said timing means in said second control panel means and the time remaining of each of said selected heating durations;

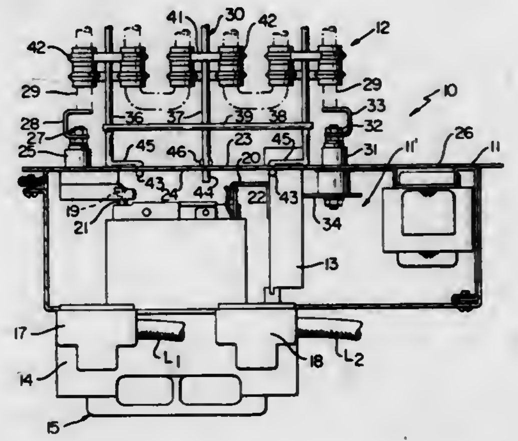
switching means for selectively turning said respective heating locations ON and OFF in response to signals from either of said timing means; and

communication means between said first and second control panel means for transmitting data from said timing means of said second control panel means to said electric oven and transmitting data from said first control panel means to the display means of said second control panel means.

4,131,787
ELECTRICAL HEATER CONSTRUCTION

Hugh J. Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

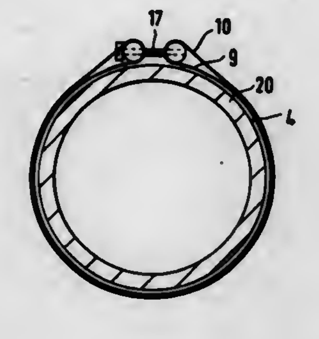
Filed Jun. 15, 1977, Ser. No. 806,846
Int. Cl.^{2} H05B *3/06*
U.S. Cl. 219—532 **10 Claims**



1. In an electrical heater construction having a substantially closed housing means containing control means therein and having bracket means carrying electrical heater means externally thereof, said housing means having connection means detachably interconnected to said heater means externally to said housing means and electrically interconnecting said electrical heater means to said control means to be operated thereby, the improvement wherein said housing means has externally accessible detachable means and said bracket means has detachable means detachably interconnected to said detachable means of said housing means in a manner that is accessible externally to said housing means whereby said detachable means of said bracket means can be detached from said detachable means of said housing means without access to the interior of said housing means so that said heater means can be detached from said housing means without requiring the opening of said housing means.

4,131,788
ELECTRIC HEATER

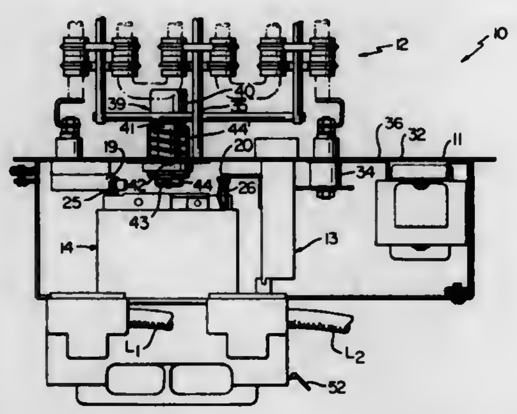
William J. Fulbrook, Chingbord, England, assignor to Hedin Limited, London, England
Filed Apr. 21, 1977, Ser. No. 789,704
Claims priority, application United Kingdom, Apr. 28, 1976, 17309/76
Int. Cl.² H05B *5/38*
U.S. Cl. 219—535 **4 Claims**



1. An electric heater comprising a sheet-like elongate heating element having first and second mutually opposite major surfaces; a metallic housing member covering the first major surface of the element; a continuous closed loop band of flexible metal strip the majority of the length of which comprises two parallel confronting substantially equal length portions, the remainder comprising two rounded portions interconnecting the parallel portions, the band being situated on the opposite side of the element to the housing member and one of the parallel portions covering the second major surface of the element and being slidably attached to the housing member; and means located at the rounded portions of the band to urge the rounded portions together when the heater is positioned, in use, round a body to be heated, the housing member then being in thermal contact with the body.

4,131,789
ELECTRICAL HEATER CONSTRUCTION

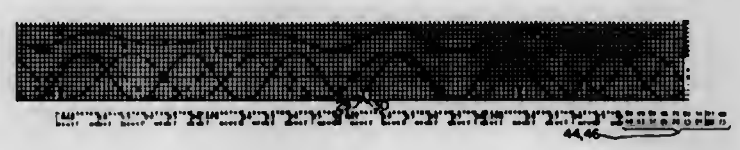
Hugh J. Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Jun. 20, 1977, Ser. No. 808,269
Int. Cl.² H05B *3/06*
U.S. Cl. 219—541 **10 Claims**



1. In an electrical heater construction having electrical heater means carried by frame means and having a lead unit movably carried by said frame means and having lead means directly and electrically interconnected to terminal means of said heater means when said unit is in one position relative to said frame means, said frame means having terminal means for electrically interconnecting said lead means to said unit to power source leads so that said power source leads will be directly and electrically interconnected to said terminal means of said heater means by said lead means when said unit is in said one position thereof, the improvement comprising movable latch means carried by said frame means and being operatively associated with said unit to latch said unit in an out position thereof when said unit is moved out of said one position thereof to said out position to disconnect said lead means from said terminal means of said heater means whereby said unit cannot be moved in any direction from said out position thereof until said unit is unlatched from said latch means by said latch means being manually moved to an unlatching position thereof.

4,131,790
BIORHYTHM INDICATOR

Donald L. Rebsch, 14016 Shippers La., Rockville, Md. 20853
Filed Apr. 18, 1977, Ser. No. 788,435
Int. Cl.² G06C *3/00*
U.S. Cl. 235—89 R **11 Claims**



1. A device for use in indicating the three basic biorhythm cycles, of a physical cycle having a first fixed repeat pattern cycle starting from birth, a sensitive cycle having a second different fixed repeat pattern cycle starting from birth and an intellectual cycle having a third different fixed repeat pattern cycle starting from birth, all in correlation with a daily calendar for a specific birth date, comprising:

a first sheet of material having printed on only one surface a planar graph having a plurality of parallel vertical day lines with equal spaces therebetween representing a fixed multiple of a day, and a horizontal line representing average. biorhythmic tendencies;

a first curve fixed directly on said one surface starting from said horizontal line, extending above said horizontal line, returning to said horizontal line, extending below said horizontal line, and returning to said horizontal line in a fixed pattern of 23 days and thereafter serially repeating said pattern at regular intervals of 23 days of said vertical day lines to represent the physical biorhythmic cycle;

a second curve fixed directly on said one surface starting from said horizontal line, extending above said horizontal line, returning to said horizontal line, extending below said horizontal line, and returning to said horizontal line in a fixed pattern of 28 days and thereafter serially repeating said pattern at regular intervals of 28 days of said vertical lines to represent the sensitive biorhythmic cycle;

a third curve fixed directly on said one surface starting from said horizontal line, extending above said horizontal line, returning to said horizontal line, extending below said horizontal line, and returning to said horizontal line in a fixed pattern of 33 days and thereafter serially repeating said pattern at regular intervals of 33 days of said vertical lines to represent the intellectual biorhythmic cycle;

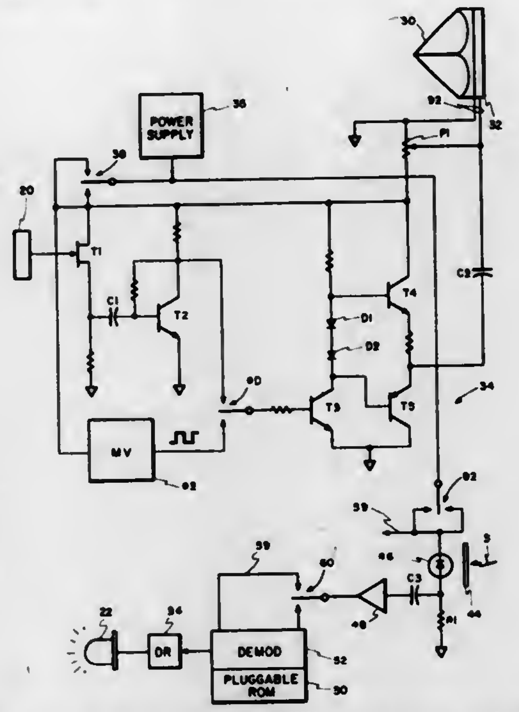
a plurality of birthday year markings fixed directly on said one surface, with said vertical lines and being numbered at year intervals of said vertical lines in order;

said birthday year markings, first curve, second curve and third curve all being fixed in a phase relationship such that if extended they would all start at the horizontal line and move upwardly at a common start vertical line representing birth; and

a second sheet of material having printed on only one surface, a table of numbered days at a spacing corresponding to the spacing of said vertical lines and consecutively arranged and labeled according to the months of the calendar year, so that the table may be vertically aligned with the graph adjacent the curves in a position such that a birthdate represented by a day and month indication of the table may be vertically aligned with the corresponding birthday year marking on said graph vertically spaced adjacent the curves.

4,131,791
SEARCH AND LOCATE SYSTEM

Louis J. Lego, Jr., Sauquoit, N.Y., assignor to General Electric Company, Utica, N.Y.
Filed Dec. 8, 1975, Ser. No. 638,565
Int. Cl.² H04B *9/00*
U.S. Cl. 250—199 **1 Claim**



1. In a search and locate system wherein a search station transmits radiation from a search beacon having a large beamwidth which is modulated in accordance with a predetermined pulse code, locator means for identifying the position of an operator to be located comprising, in combination:

detector means for sensing the radiation of said search beacon and for producing a detection output in respnse thereto;

means for demodulating said detection output to reproduce said pulse code;

means for storing a predetermined pulse code;

means for comparing said stored code with said reproduced code and for generating a comparison output in response to a match condition;

means responsive to said comparison output for generating an indication signal to indicate to said operator that said locator means is positioned in the path of the radiation of said search beacon;

a corner cube prism for reflecting a portion of the radiation of said search beacon back to said search station;

data input means manually operable by said operator for generating a data input signal; and

modulation means for modulating the amount of radiation reflected back to said search station by said corner cube prism in accordance with said data input signal whereby said locator means is adapted to send a data message to said search station via said reflected radiation,

said modulation means further including:

a microphone having a first terminal,

a first field effect transistor having a gate terminal, a first terminal and a second terminal, said gate terminal being connected to said first terminal of said microphone;

a first resistor having a first and a second end, said first end being connected to said first terminal of said first field effect transistor, and said second end being connected to ground;

a first capacitor having a first and a second end, said first end being connected to said first end of said first resistor;

a second resistor having a first and a second end, said first end being connected to said second end of said first capacitor;

a first transistor having a base, collector and an emitter terminal, said base terminal being connected to said first end of said second resistor, said emitter terminal being connected to ground;

a third resistor having a first and a second end, said first end being connected to said collector terminal of said first transistor and said second end being connected to aid second terminal of said first field effect transistor;

a first single pole double throw switch having a first, a second and a third terminal, said first terminal being connected to said first end of said third resistor;

a fourth resistor having a first and a second end, said first end being connected to said second terminal of said first single pole double throw switch,

a second transistor having a base, collector and emitter terminal, said base terminal being connected to said second end of said fourth resistor, and said emitter terminal being connected to ground;

a third transistor having a base, collector, and emitter terminal, said base terminal being connected to said collector terminal of said second transistor, and said collector terminal being connected to ground;

a second capacitor having a first and a second end, said first end being connected to said emitter terminal of said third transistor,

a fifth resistor having a first and a second end, said first end being connected to said emitter termminal of said third transistor,

a fourth transistor having a base, collector and emitter terminal, said emitter terminal being connected to said second end of said fifth resistor;

a first diode having an anode and a cathode end, said anode end being connected to said base terminal of said fourth transistor,

a second diode having an anode and a cathode end, said anode end being connected to said cathode end of said first diode, and said cathode end of said second diode being connected to said collector terminal of said second transistor;

a sixth resistor having a first and a second end, said first end being connected to said anode end of said first diode and said second end being connected to said second end of said third resistor; said second end of said sixth resistor also being connected to said collector terminal of said fouth transistor;

a first variable resistor having a first end, a second end and a middle terminal, said first end being connected to said collector terminal of said fourth transistor, said middle terminal being connected to said second end of said second capacitor, and said second end being connected to ground;

a shutter means positioned adjacent to said corner cube prism having a first and a second terminal, said first terminal being connected to said second end of said second capacitor and said second terminal being connected to ground;

a multivibrator means having an input terminal and an output terminal, said input terminal being connected to said second terminal of said first field effect transistor, said output terminal being connected to said third terminal of said first single pole double throw switch;

a power supply having a first and a second terminal, said first terminal being connected to ground; and

a second single pole double throw switch having a first, a second and a third terminal, said first terminal being connected to said input terminal of said multivibrator means, said second terminal being connected to said second terminal of said power supply and said third terminal being connected to said second terminal of said first field effect transistor; and

reflector means controllable by said operator for reflecting a portion of the radiation of said search beacon back to said search station.

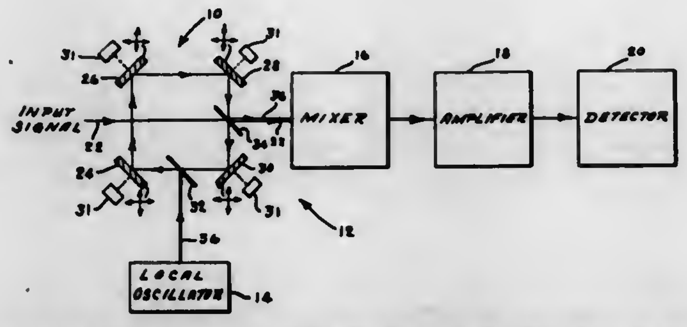
4,131,792
FABRY-PEROT DIPLEXER

Howard Schlossberg, Lexington, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 24, 1978, Ser. No. 871,864

Int. Cl.² H04B ***9/00***

U.S. Cl. 250—199 **16 Claims**



1. In a heterodyne receiver having a local oscillator, a mixer, and a detector, the improvement therein residing in a Fabry-Perot diplexer operably interposed between means for providing an input signal, said local oscillator and said mixer, said Fabry-Perot diplexer comprising a plurality of reflective elements optically aligned with one another and forming an optical path therebetween, first means located within said optical path for receiving and directing a signal emitted by said local oscillator into said optical path, second means located within said optical path for receiving said input signal and said local oscillator signal and directing said input signal and said local oscillator signal in a parallel and overlapping relationship to said mixer and the total length of said optical path of said diplexer being defined for non-resonance at the frequencies of said input signal and resonance at the frequency of said local oscillator signal whereby said input signal and said local oscillator signal directed to said mixer are substantially without loss.

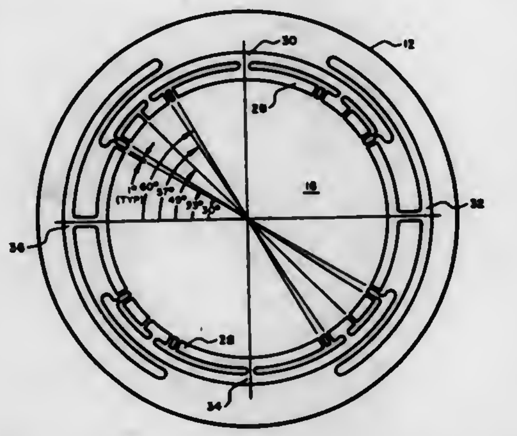
4,131,793
LATERAL PHOTODETECTORS

Ronald G. Stoutmeyer, and William O. Alltop, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washingtoon, D.C.

Filed Aug. 10, 1976, Ser. No. 713,570

Int. Cl.² H01L ***31/02***

U.S. Cl. 250—211 J **12 Claims**



10. In a lateral photodetector having a front surface capable of receiving a point source of radiation as an input and an opposite rear surface capable of outputting a plurality of electrical currents representative of the point said radiation is inputted into said front surface, the method of improving the correspondence of said currents to the input point of said radiation comprising the steps of:

- providing an annular boundary ring on said photodetector rear surface;
- segmenting said annular boundary ring into a plurality of segments defined by the equation; $N_T = 4\ (2I\text{-}1)$, where $N_T =$ the number of segments, $I =$ any integer greater than one (1);
- enclosing said segmented annular boundary ring with a plurality of collector electrodes placed adjacent to one another; and
- electrically connecting alternate segments to said adjacent collector electrodes.

4,131,794
FLUORESCENT X-RAY SPECTROMETER

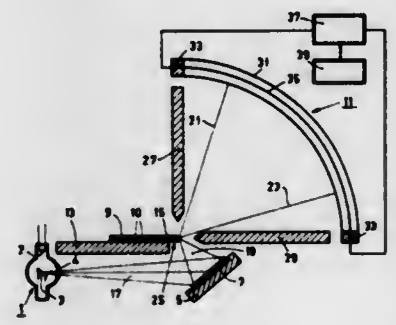
Edward Bruninx, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 22, 1976, Ser. No. 743,648

Claims priority, application Netherlands, Nov. 25, 1975, 7513716

Int. Cl.² G01N ***23/20***

U.S. Cl. 250—272 **7 Claims**



1. A fluorescent X-ray spectrometer for analyzing a specimen, comprising an X-ray source, a radiation detector and an analyzing crystal which comprises side faces and end faces, said analyzing crystal being arranged so that wavelength dispersion occurs and X-radiation of a given wavelength coincides at least substantially with a line transversely to the dispersion direction of the detector, said radiation detector being rigidly arranged in the spectrometer and being readable in a location-dependent and on-line manner, said X-ray source being located so as to direct X-rays to said specimen to produce fluorescent radiation and said analyzing crystal being located so that at least a said end face is exposed to and diffracts said fluorescent radiation, said radiation detector receiving said radiation from said analyzing crystal.

4,131,795
INSTANT RADIATION IMAGE DISPLAY ELEMENT

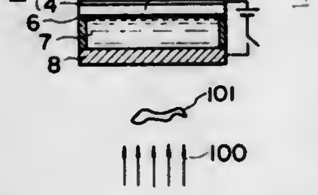
Mutsuo Takenouchi, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1977, Ser. No. 776,809

Claims priority, application Japan, Mar. 13, 1976, 51-27303

Int. Cl.² G03G ***13/00;*** **H01J** ***31/49***

U.S. Cl. 250—315 A **8 Claims**



1. A generally laminar radiation image display element comprising, in ordered sequence:

- (a) an optically transparent, electrically conductive base plate,
- (b) a deformable elastomer layer,
- (c) a flexible, electrically insulating, optically reflecting layer,
- (d) a radiation absorptive, ionizable liquid layer, and
- (e) a radiation permeable, electrically conductive plate.

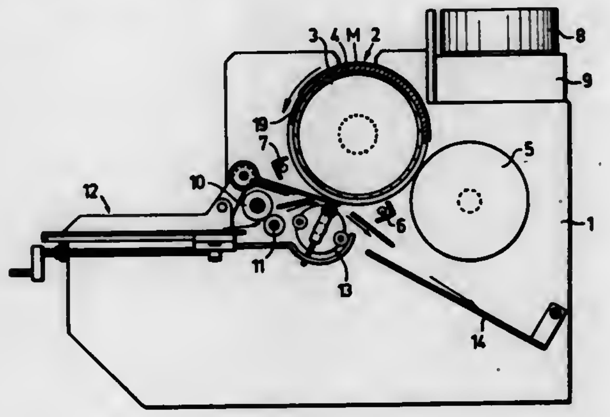
4,131,796
APPARATUS FOR THERMOGRAPHIC DUPLICATION OF INFORMATION

Sven B. Kvarnegård, Enebyberg, Sweden, assignor to AB Carl Lamm, Stockholm, Sweden

Filed Sep. 8, 1976, Ser. No. 721,235

Int. Cl.² G03C ***5/16***

U.S. Cl. 250—319 **11 Claims**



1. An apparatus for copying information from an original or master (M) provided with information comprising a rotatable drum, to which the master (M) with applied information is attached, and the master (M) during the rotation of the drum is exposed to directed heat radiation from one or more heat radiation sources outside said drum spaced from said master and is supplied with a dye carrier, the dye of which thereby adheres to the master (M) in accordance with the information applied thereon, whereafter unprepared copy receiving sheets are brought into contact with the master (M) and thereafter removed therefrom, characterized in that the drum comprised two portions separated and movable relative to each other, of which the first portion is a cooled cylinder, and the second portion is a segment of a cylindric shell concentric with said cylinder and closely abutting but movable about the surface of the cylinder, means for attachment of said master (M) to said segment and wherein said segment of a cylindric shell is only a part of a cylinder and does not extend about the entire circumference of the cylinder whereby said cylinder is directly subjected to said directed heat radiation during a portion of a complete revolution of the said segment.

4,131,797
X-RAY DIAGNOSTIC INSTALLATION FOR FLUOROSCOPY AND PHOTOGRAPHY

Kurt Franke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Dec. 1, 1977, Ser. No. 856,318

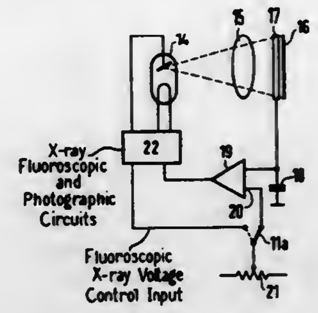
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1976, 2656047

Int. Cl.² H05G ***1/58***

U.S. Cl. 250—322 **1 Claim**

1. An x-ray diagnostic installation for fluoroscopy and photography, comprising

- a fluoroscopic voltage adjustment means for adjusting fluoroscopic x-ray voltage,
- radiation measuring means for sensing the dose rate during photography,
- an automatic exposure timer for determining photographic time, connected with the radiation measuring means, and operable for switching off the x-ray energy upon attaining a predetermined dose, and
- a switch for switching over from fluoroscopy to photography, characterized in that a common adjustable set point slement is connected with the fluoroscopic voltage adjusting means for controlling the fluoroscopic voltage while the switch is conditioned for fluoroscopy, and is connectable to the automatic exposure timer for adjustment of the switch-off dose during transition to photography in response to actuation of said switch to switch over to photography.


15
17
16
14
X-ray Fluoroscopic and Photographic Circuits
22
19
18
20
11a
Fluoroscopic X-ray Voltage Control Input
21

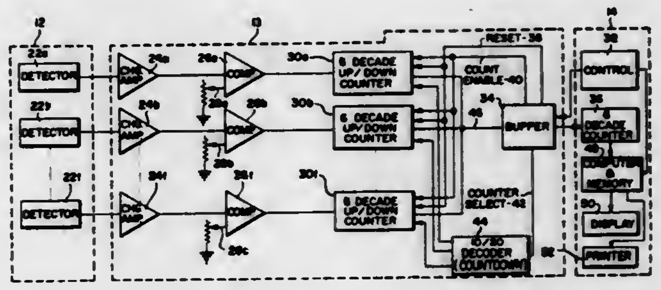
4,131,798
ARRAY GAMMA COUNTER

Reddy R. V. Reddy, Deerfield, and Michael E. Jolley, Round Lake, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 5, 1977, Ser. No. 784,900

Int. Cl.² G01T ***1/00***

U.S. Cl. 250—328 **10 Claims**

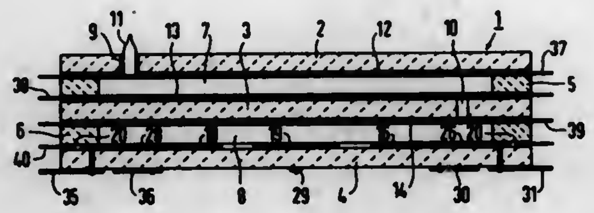


1. Apparatus for detecting and counting radioactive particles eminating for discrete samples in a plurality thereof comprising:

- a plurality of detectors each immediately adjacent a respective discrete sample directly converting the respective number of radioactive particles eminating from a discrete sample to a corresponding electrical signal;
- a plurality of counters each coupled to a respective detector for simultaneously providing a sample count in each counter responsive to the respective electrical signal;
- control means coupled to each of said counters for enabling the accumulation of said sample count in each counter during repetitive, predetermined counting time intervals, said control means including count enable means and count disable means,
- said count enable means providing an enable signal to each of said counters for initiating said respective sample count and said disable means thereafter providing a disable signal at the end of each of said repetitive, predetermined counting time intervals to each of said counters for stopping the respective sample count; and
- read-out means responsive to said control means for periodically, sequentially reading out the accumulated sample count in each of said counters at the end of each of said predetermined counting time intervals.

4,131,799
IONIZATION CHAMBER

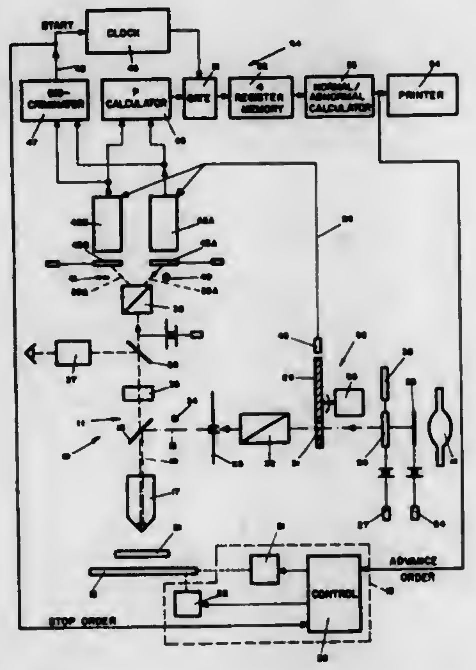
Volker A. W. Stieber, Lafayette, Calif., assignor to Applied Radiation Corporation, Walnut Creek, Calif.
Filed Apr. 1, 1977, Ser. No. 783,630
Int. Cl.^{2} H01J *39/285*
U.S. Cl. 250—385 **21 Claims**



1. An ionization chamber for use with particle accelerators, comprising:
- a) two measuring chambers formed by three mutually parallel walls which are spaced by spacer rings;
- b) two of the three walls each having a single electrode mounted thereto;
- c) a third one of said three walls which forms an outer wall for one of said two measuring chambers having means for measuring substantially all inhomogeneities of a radiation intensity distribution pattern of a cone of rays, said means including a plurality of mutually insulated electrodes applied on a side of the third wall within the measuring chamber; and
- d) the mutually insulated electrodes being connected to outer contact lugs.

4,131,800
METHOD OF AND APPARATUS FOR DIFFERENTIATING BETWEEN NORMAL AND MALIGNANT CELLS

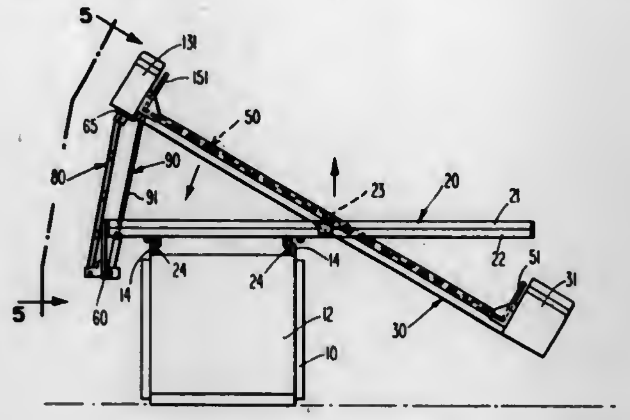
Abraham Bruck, Haifa, and Michael Inbar, Rehovot, both of Israel, assignors to Elscint Ltd., Haifa, Israel
Filed Mar. 3, 1977, Ser. No. 774,215
Claims priority, application Israel, Jun. 13, 1976, 48776
Int. Cl.^{2} G01N *21/38*
U.S. Cl. 250—461 B **17 Claims**



1. A method for determining the normality of a biological cell that has been labeled with a lipid soluble fluorescent dye and excited with polarized light by utilizing the stability of the state of polarization of fluorescence emitted by the cell as a function of excitation time.

4,131,801
X-RAY CRADLE TOP WITH TILTING MECHANISM

William F. Hogan, Woodbury, N.J., assignor to Spectrum X-Ray Corporation, Westville, N.J.
Filed Sep. 1, 1977, Ser. No. 829,665
Int. Cl.^{2} A47F *5/12;* **F16F** *15/00*
U.S. Cl. 250—439 R **4 Claims**



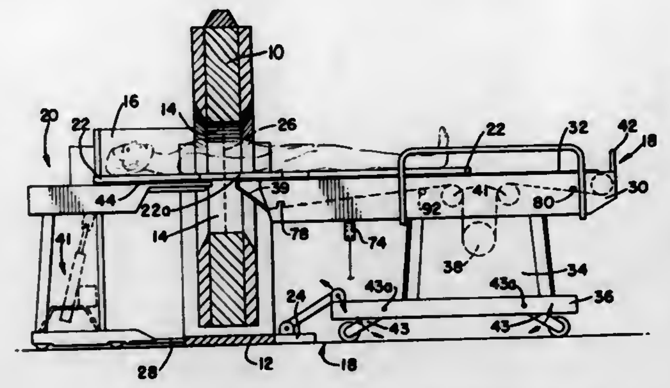
1. Apparatus for supporting a tiltable load, said apparatus comprising;
- a. a non-tiltable frame;
- b. a tiltable load member;
- c. pivotal means for mounting said load member on said frame for tilting movement about the transverse axis of said load member;
- d. a scissors-linkage mechanism for tilting said load member;
- e. means mounting one end of said scissors-linkage mechanism at one end of said non-tiltable frame;
- f. means connecting the other end of said scissors-linkage mechanism to one end of said tiltable load member;
- g. drive means for extending and retracting said scissors-linkage mechanism to raise and lower said one end of said load member; and
- h. damping means for preventing oscillation of said load member during extension and retraction of the scissor-linkage mechanism, said damping means comprising;
  - h-1 an elongated threaded rod;
  - h-2 means pivotally connecting the upper end of said threaded rod to said one end of said tiltable load member;
  - h-3 ball nut means on a lower portion of said threaded rod;
  - h-4 bearing means mounting said ball nut means at said one end of said non-tiltable frame, wherein when said scissors-like mechanism is moved toward its extended position, said rod is pulled toward an extended position causing said ball nut means to rotate on said rod, and wherein when said scissor-like mechanism is moved toward its retracted position, said rod is pulled downwardly, causing said ball nut means to rotate in the opposite direction on said rod.

4,131,802
AUTOMATIC PATIENT TABLE HAVING MEANS FOR TRANSPORTING PATIENT ALONG A TABLE

Arthur B. Braden, Mentor; Thomas R. McBride, Chardon; Donald J. Styblo, Northfield Center; Samuel K. Taylor, Chardon, and Joseph B. Richey, Shaker Heights, all of Ohio, assignors to Ohio-Nuclear, Inc., Solon, Ohio
Continuation of Ser. No. 700,539, Jun. 28, 1976, abandoned. This application Jun. 22, 1977, Ser. No. 808,821
Int. Cl.^{2} A61B *6/02;* **G01N** *23/08;* **G03B** *41/16*
U.S. Cl. 250—445 T **18 Claims**

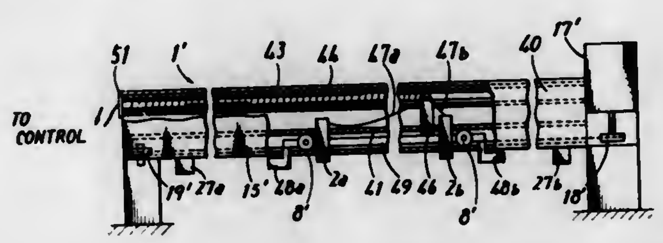
1. A patient support system for locating a desired part of the body in a predetermined planar area with minimal intersection of said area by said support system, comprising:
- movable front and rear tables;
- means for aligning said tables on either side of said planar area at a predetermined spacing;
- a patient pallet resting on the top of at least said front table;

- drive means located on said front table for propelling said patient pallet in either axial direction along the top of said tables; and
- failsafe bar switch means located at the end of at least one of said tables away from said planar area and positioned to be tripped by a patient's feet, means responsive to the tripping of said failsafe switch means for stopping said drive means in order to prevent the drive means from propelling said patient pallet with said patient to a position where said patient is not adequately supported.



4,131,803
APPARATUS FOR DETECTING DEFECTS IN SHEET MATERIAL

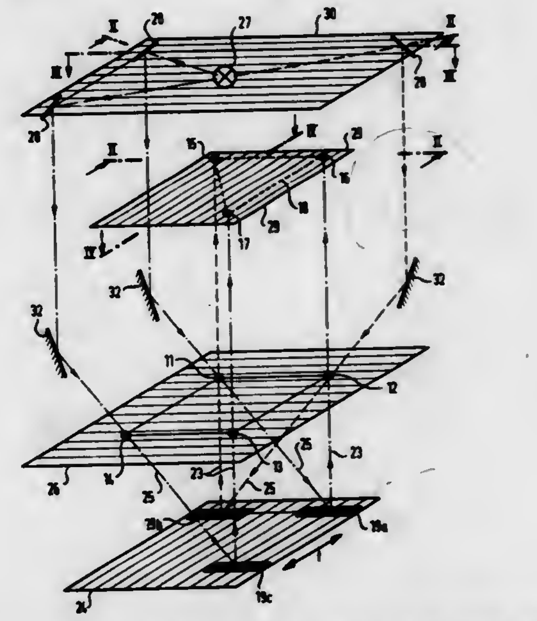
Shigeru Takematsu; Tohji Yoshida; Yukio Ikushima; Kunio Takeuchi, all of Takatsuki; Arao Kakinaka, Nishinomiya; Koichi Matsunaga, Neyagawa; Mamoru Shimakura, Takatsuki, and Yoji Komura, Takatsuki, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha and Kasuga Denki Co., Ltd., both of, Japan
Filed Nov. 2, 1976, Ser. No. 738,151
Claims priority, application Japan, Nov. 5, 1975, 50/133423; Jul. 24, 1976, 51/99148; Jul. 24, 1976, 51/99149
Int. Cl.^{2} G01N *21/32*
U.S. Cl. 250—563 **8 Claims**



1. An apparatus for detecting a defect in a sheet like material, comprising;
- means provided opposite to the surface of said sheet like material for detecting a defect on said sheet like material,
- means for causing relative movement of said defect detecting means with respect to said sheet like material in a given direction of said sheet like material for scanning said sheet like material by said defect detecting means throughout a first relatively large distance in said given direction,
- means responsive to a defect detected output from said defect detecting means for controlling said relative movement causing means for scanning said screen like material by said defect detecting means throughout a second relatively small distance in said given direction including the detected defect,
- said relative movement causing means comprises guide means provided in said given direction of said sheet like material for slidably supporting said defect detecting means for movement in said given direction of said sheet like material,
- means for driving said defect detecting means along said guide means,
- said relative movement causing means comprises a flexible electric wire provided in said guide means for electrical connection to said defect detecting means,
- wire cover means in said guide means for covering said flexible electric wire, and
- said electric wire comprises a flexible spiral coil wire.

4,131,804
ELECTROOPTICAL SCANNING DEVICE

Erwin Sick, Icking; Arthur Walter, Waldkirch, and Günter Fetzer, Gundelfingen, all of Germany, assignors to Erwin Sick Gesellschaft m.b.H. Optik-Elektronik, Waldkirch, Germany
Filed Jun. 16, 1977, Ser. No. 807,085
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1976, 2630209
Int. Cl.^{2} G06K *7/10*
U.S. Cl. 250—566 **12 Claims**



1. An electrooptical scanning device for detecting the relative locations of register marks arranged on a moving web one behind the other along a first track only, the first track extending in the direction of movement of the web, and also of register marks arranged in side-by-side, neighboring first and second, tracks extending in the direction of web movement, the electrooptical scanning device comprising: a light source; optical illuminating means for directing light from the light source at an oblique angle with respect to the web onto at least three positions along the first and second tracks for illuminating such positions; a photo-electric detector for each of said positions arranged for receiving light from the source and scattered generally perpendicularly from the associated illuminated positions, the detectors generating output signals which are responsive to the scattered light received by them; whereby the passage of a register mark past one of the positions and its relative location with respect thereto can be detected by analyzing the output signals.

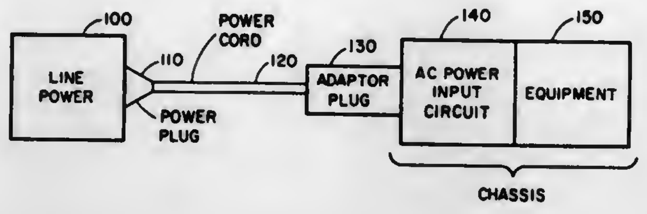
4,131,805
LINE POWER CORD ADAPTOR

James Austin, Shrewsbury, and Daniel Clemson, Weston, both of Mass., assignors to Data General Corporation, Westboro, Mass.
Filed Aug. 26, 1977, Ser. No. 827,920
Int. Cl.^{2} H01R *13/50*
U.S. Cl. 307—147 **9 Claims**

1. In an improved electrical equipment system energized by AC line power having a magnitude selected from at least three predetermined magnitudes, said power being received at a first end of a power cord by way of a power plug attached thereto and flowing therethrough to a second end of said cord, said cord containing no more than three mutually insulated conductors, said system including an AC power input circuit and

electrical equipment powered by output from said circuit, the improvement comprising:

adaptor plug means connected between said second end of said power cord and input of said circuit for adapting said circuit to operate with said selected magnitude of line power without requiring any physical changes within said circuit.



4,131,806
I.I.L. WITH INJECTOR BASE RESISTOR AND SCHOTTKY CLAMP

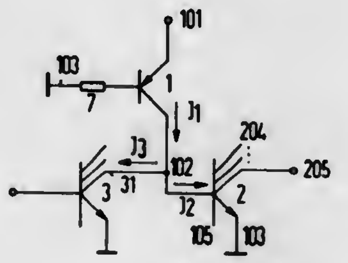
Nikolaus Kirschner, Johannesburg, South Africa, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jun. 28, 1976, Ser. No. 700,534

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1975, 2530288

Int. Cl.^{2} H01L *27/04*

U.S. Cl. 307—215 **3 Claims**



1. An inverter comprising a lateral bipolar transistor and a vertical bipolar transistor, said vertical transistor having at least one collector, the collector of said lateral transistor being connected to the base of said vertical transistor, the emitter of said vertical transistor being connected to one terminal of a supply voltage source, the emitter of said lateral transistor being connected to the other terminal of said supply voltage source, and a resistor connecting said one terminal of the supply voltage source to the base of said lateral transistor, in which a first doped layer of a first conductivity type is deposited epitaxially upon a doped substrate of the opposite conductivity type, said emitter and said collector of said lateral transistor being first and second diffused regions in the upper surface of said epitaxial layer which provide, respectively, the emitter and collector of said lateral transistor and which are separated from one another by a portion of said epitaxial layer which provides the base of said lateral transistor, first and second doped regions being provided in the upper surface of said second diffused region, said two doped regions being the collectors of said vertical transistor, a highly doped buried layer of the first conductivity type being provided in said epitaxial layer below said vertical transistor with the exception of part of said vertical transistor being adjacent to the base of said lateral transistor which, by means of a doped terminal region provides a conductive path to said emitter region of said vertical transistor from said one terminal of said supply voltage source, said buried layer and said terminal region also providing a conductive path to said base region of said lateral transistor from said one terminal of said supply voltage source through a portion of said epitaxial layer which provides a resistance element inserted serially between said base region of said lateral transistor and said one terminal of said supply voltage source.

4,131,807
SAWTOOTH GENERATOR

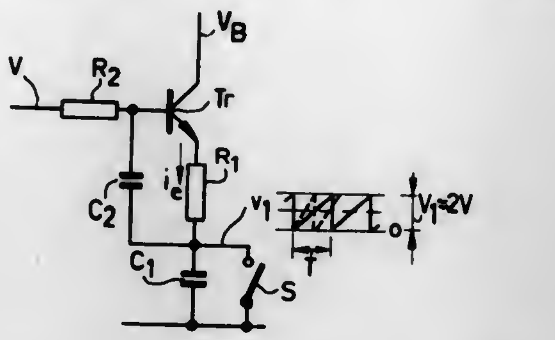
Jan A. C. Korver, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 17, 1977, Ser. No. 797,674

Claims priority, application Netherlands, May 20, 1976, 7605373

Int. Cl.^{2} H03K *4/56*

U.S. Cl. 307—228 **13 Claims**



1. A circuit for generating a sawtooth voltage across a first capacitor which is periodically charged by a charging current from a power supply source, said circuit comprising an amplifying element having an input electrode and a first and a second output electrode, a resistor having a first end coupled to the first output electrode of the amplifying element and a second end coupled to a first end of the first capacitor, the other end of said capacitor being coupled to a first terminal of the power supply source, the second output electrode of the amplifying element being coupled to the second terminal of the power supply source, a second capacitor coupled between the input electrode of the amplifying element and the junction of the first capacitor and the resistor, a switch means coupled in parallel with the first capacitor for periodically discharging said first capacitor, a direct current voltage source coupled to said input electrode and having an internal resistance, and a network comprising the second capacitor and said internal resistance and having a time constant which is large relative to the charging time of the first capacitor.

4,131,808
TTL TO MOS DRIVER CIRCUIT

James R. Kuo, Cupertino, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Aug. 4, 1977, Ser. No. 821,673

Int. Cl.^{2} H03K *17/00*

U.S. Cl. 307—270 **9 Claims**

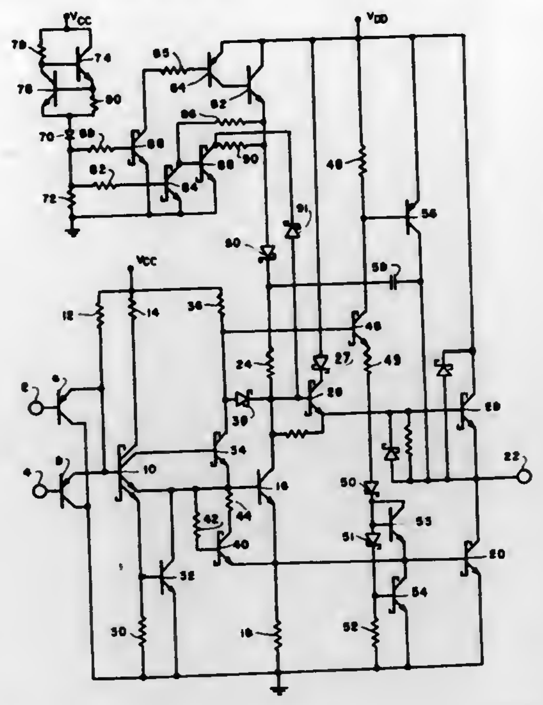
1. A TTL to MOS driver circuit comprising:

input circuitry including an input buffer transistor coupled between a TTL power source and ground reference for generating buffer output signals in response to applied binary input signals;

a phase splitter transistor coupled between a MOS power source and ground and to the emitter of said input buffer transistor, said phase splitter transistor being switched between conductive and nonconductive states in response to said buffer transistor output signals;

an output stage including first and second output transistors in series between said MOS power source and ground and coupled to said phase splitter transistor, said first output transistor being enabled when said phase splitter transistor is conductive, said second output transistor being enabled when said phase splitter transistor is nonconductive, the interconnection of said first and second output transistors providing the output terminal of said driver; and

current control circuitry responsive to a predetermined drop in voltage of said TTL power source for switching off all MOS power in the conductor to said phase splitter transistor and to said output stage, and for instantaneously grounding stored charges in said conductor.



4,131,809
SYMMETRICAL ARRANGEMENT FOR FORMING A VARIABLE ALTERNATING-CURRENT RESISTANCE

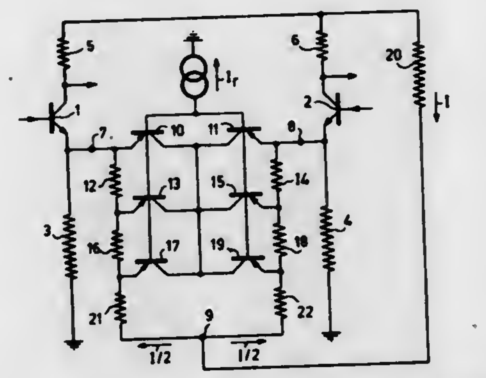
Nicolaas J. Baars, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 586,052, Jun. 11, 1975. This application Oct. 31, 1977, Ser. No. 847,221

Claims priority, application Netherlands, Jun. 17, 1974, 7408034

Int. Cl.^{2} H03K *1/14*

U.S. Cl. 307—303 **11 Claims**



4. A symmetrical circuit arrangement device for forming a variable alternating-current resistance between a first and a second terminal, comprising:

(a) a semiconductor body including first and second regions of opposite conductivity types and forming an elongated p,n junction therebetween to provide a diode;

(b) said first and second terminals disposed at said first region of said semiconductor body;

(c) a third terminal being located on said first region along said p,n junction and substantially midway between said first and second terminals;

(d) a bias current source and means for conducting the current of said bias current source through said third terminal to said first region; and

(e) a control current source connected to said second region, the controllable current of said control current source having a polarity to pass the pn-junction between said first and second regions.

4,131,810
OPTO-ELECTRONIC SENSOR

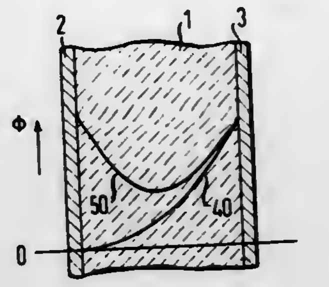
Karl Knauer, Gauting, and Hans-Joerg Pfleiderer, Zorneding, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jun. 10, 1976, Ser. No. 694,836

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1975, 2527657

Int. Cl.^{2} H03K *3/42;* **G11C** *19/28;* **H01L** *29/78, 27/14*

U.S. Cl. 307—311 **6 Claims**



1. An opto-electronic sensor comprising: a thin layer of doped semiconductor material having a front surface and a rear surface and at least one electrical connection contact carried by said layer of doped semiconductor material; a first light-permeable, electrically insulating layer carried on said front surface of said thin layer of doped semiconductor material; at least one row of electrodes separated from one another by gaps and carried on said first insulating layer to form a charge-coupled transmission device; a thin second light-permeable, electrically insulating layer of constant thickness covering the entire rear surface of said thin layer of doped semiconductor material; and a light-permeable, electrically conductive electrode covering said second insulating layer; light incident on said thin layer which produces minority charge carriers; a potential applied to said thin layer and to at least a first electrode of said row of electrodes; a potential of one polarity applied to said electrically conductive electrode such that a depletion zone extends from said rear surface beneath said electrically conductive electrode to said front surface beneath said first electrode; a potential of said one polarity applied to at least a second electrode of said row of electrodes such that a potential well is formed in a depletion zone at said front surface beneath said second electrode in which said minority charge carriers are accumulated, the depletion zone beneath said second electrode extending to the depletion zone beneath said electrically conductive electrode.

4,131,811
TRACTION MEANS WITH ELECTRODYNAMIC VEHICLE SUSPENSION FOR HIGH-SPEED LAND TRANSPORT

Voldemar V. Apsit; Zigurd K. Sika, and Ivan I. Kurkalov, all of Riga, U.S.S.R., assignors to Fiziko-Energetichesky Institut Akademii Nauk Latviiskoi SSR, Riga, U.S.S.R.

Filed Jun. 28, 1977, Ser. No. 810,883

Claims priority, application U.S.S.R., Jul. 12, 1976, 2384764

Int. Cl.^{2} H02K *41/02*

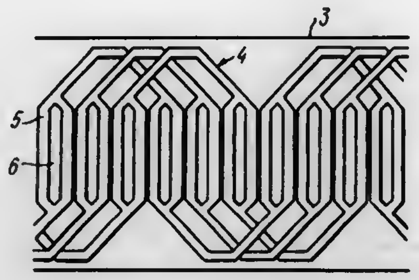
U.S. Cl. 310—12 **2 Claims**

1. A traction means with electrodynamic suspension of a vehicle for high-speed land transport, comprising:

a synchronous linear motor;

an exciting winding of said synchronous linear motor, mounted on said vehicle and also serving as the exciting winding for electrodynamic suspension of said vehicle;

a three-phase armature winding of said synchronous linear motor, horizontally extending along the track, said armature winding being a single-layer winding with one turn for the pole and phase, its conductors in the active area being made as strips extending in parallel with the plane of the track and having a width of up to one third of the pole pitch, said exciting winding inducing eddy currents in said

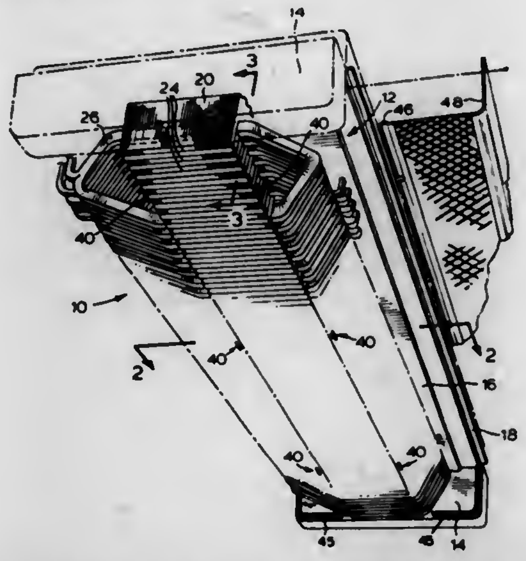


strips on the side of said vehicle, which eddy currents ensure electrodynamic suspension of said vehicle.

4,131,812
ATTACHMENT OF SIDE COVERS TO LINEAR INDUCTION MOTOR

Christopher D. English, Toronto, Canada, assignor to Spar Aerospace Producs Ltd., Toronto, Canada

Filed Jun. 13, 1977, Ser. No. 805,767
Int. Cl.^{2} H02K *41/02*
U.S. Cl. 310—13 **2 Claims**

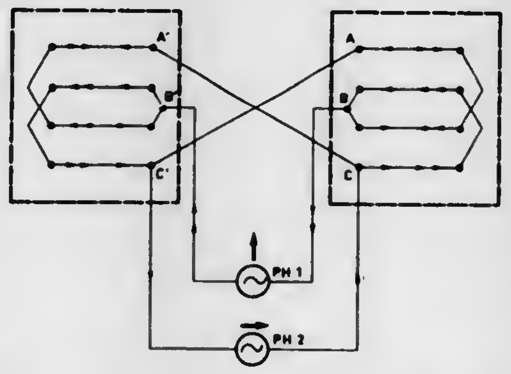


1. In a primary member of a single-sided linear induction motor having, a frame, a core member having a plurality of coil assemblies mounted in the coil slots thereof and secured therein by means of a plurality of wedge members, each of the wedge members having an upper face directed towards a coil assembly and a lower face disposed below the core member, the coil assemblies having nose portions projecting laterally from opposite sides of the core member, a pair of side covers adapted to extend over the nose portions of the coils, each side cover member having inner and outer longitudinally extending side edges, the outer side edge of each side cover member being secured to the frame outwardly from the coil noses on opposite sides of the core a substantial distance above the lower face of the wedge members, the improvement of; a plurality of cover mounting brackets located at longitudinally spaced intervals along the length of said core, each of said cover mounting brackets comprising a main body portion and a head portion at one end of the main body portion, the head portion projecting laterally from the main body portion, the other end of the main body portion being located within a coil slot of the core and secured therein between a wedge member and a coil assembly with the head portion thereof disposed above the lower face of the wedge member and spaced below the lower face of its associated coil, the inner edges of each of said side covers being downwardly curved and notched at longitudinally spaced intervals corresponding to the longitudinal spacing of the mounting brackets so as to extend inwardly and downwardly over the laterally extending head portions of the mounting brackets on opposite sides of the main body portions to be supported by the head portion in a plane above the plane of the lower face of the wedge members.

4,131,813
ELECTROMAGNETIC APPARATUS GENERATING A GLIDING MAGNETIC FIELD

Jean Delassus, Montmorency, France, assignor to Institut de Recherches de la Siderurgie Francaise (Irsid), St. Germain-en-Laye and Compagnie Electromecanique, Paris, both of, France

Filed Jul. 11, 1977, Ser. No. 814,423
Claims priority, application France, Jul. 12, 1976, 7621372
Int. Cl.^{2} H02K *41/02*
U.S. Cl. 310—13 **3 Claims**

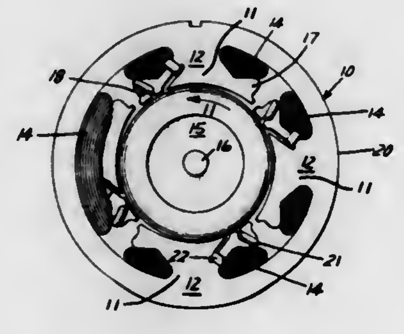


1. An electromagnetic apparatus comprising two inductors adapted to generate a gliding magnetic field, each of the inductors having a respective plane active face, the plane faces of the inductors defining therebetween a substantially parallelepiped space, for receiving an electrically conductive body to constitute an armature between the inductors, a plurality of pairs of recti-linear electrical conductors including an input conductor and an output conductor at each of the active faces of the inductors, the pairs of conductors being associated to form two-phase imbricated windings and connected in series at the middle of each of the inductors, the input conductor of each of the inductors being connected to the output conductor of the other inductor to form a single closed winding connected as a Wheatstone bridge, and a two-phase generator feeding electric energy to the input conductors, one of the phases of the generator being connected between the points of junction of the two-phase windings of each of the inductors and the other phase of the generator being connected between the points of junction of the two inductors.

4,131,814
CONCENTRATED WINDING SALIENT-POLE SHADED POLE MOTORS HAVING MULTIPLE SHORT CIRCUITED SHADING COILS FOR EACH POLE AND METHODS OF MAKING SAME

Joe T. Donahoo, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 293,802, Oct. 2, 1972, Pat. No. 3,959,678. This application May 20, 1976, Ser. No. 688,251
Int. Cl.^{2} H02K *17/00*
U.S. Cl. 310—172 **10 Claims**



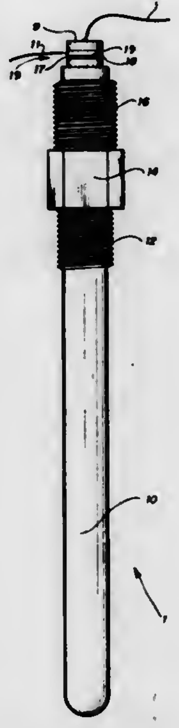
1. A shaded pole motor comprising a stator assembly having

at least one excitable winding, a rotor assembly including a short circuited squirrel cage winding, and means for supporting the rotor assembly in spaced apart air gap defining relation with the stator assembly and for permitting rotation of the rotor assembly relative to the stator assembly during excitation of said winding; said stator assembly including a magnetizeable core having circumferentially spaced apart pole pieces; at least one of the pole pieces having a leading pole tip configured to establish a relatively high magnetic reluctance therealong, as compared to another region of such pole piece; said at least one of the pole peices also having at least two short circuited shading coils disposed along the trailing pole tip thereof at a first large span and a second short span, respectively; and said pole pieces being spaced apart magnetically so that the leading pole tip of each pole piece is magnetically spaced from the trailing pole tip of the pole piece adjacent thereto; said leading pole tip having a high magnetic reluctance characteristic on a stepped construction basis generally corresponding to the high magnetic reluctance characteristic of a stepped pole piece having a step of a preselected span in a predetermined range, and said first large span comprising a span in the range of from about 50 percent to about 82 percent of the preselected span.

4,131,815
SOLID PIEZOELECTRIC SAND DETECTION PROBES

Paul A. Boatright, College Station, Tex., assignor to Oceanography International Corporation, College Station, Tex.

Filed Feb. 23, 1977, Ser. No. 771,102
Int. Cl.^{2} H01L *41/10*
U.S. Cl. 310—323 **13 Claims**



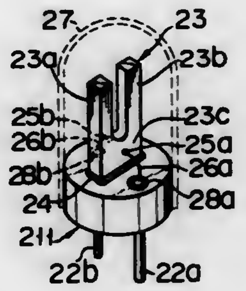
1. An apparatus for detecting the presence of particulate matter in a fluid stream flowing through a conduit, said apparatus comprising:

- an acoustical probe means for detecting the presence of particulate matter in a moving fluid stream, said probe means responsive to the presence of particulate matter in the fluid stream and relatively unresponsive to the movement of said fluid, said probe means having,
- a solid probe adapted to be inserted into a conduit and to be in contact with said fluid stream;
- an acoustical transducer disposed adjacent said probe in mechanical contact therewith, responsive to acoustical energy imparted by the collision of particulate matter with said probe, said transducer generating an electrical signal corresponding to the influx of acoustical energy from the collision of the particulate matter with said probe; and
- means for maintaining said transducer in constant mechanical contact with said probe for transmitting acoustical energy from said probe to said transducer.

4,131,816
MECHANISM AND METHOD FOR SUPPORTING A TUNING FORK-TYPE QUARTZ CRYSTAL ELEMENT

Hozumi Nakata, Iruma, Japan, assignor to Nihon Dempa Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 534,146, Dec. 18, 1974, abandoned. This application Oct. 4, 1976, Ser. No. 729,179
Claims priority, application Japan, Dec. 22, 1973, 48-3032; Aug. 30, 1974, 49-103980
Int. Cl.^{2} H01L *41/10*
U.S. Cl. 310—348 **15 Claims**



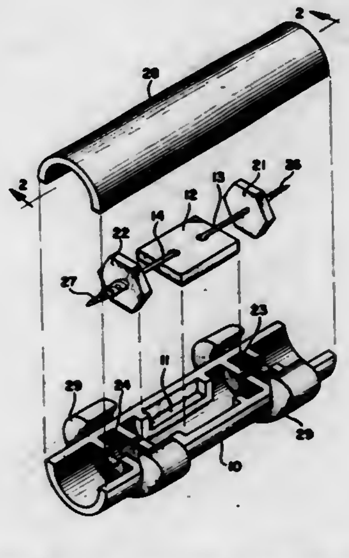
1. A tuning fork-type quartz crystal device, comprising:

- a quartz crystal element comprising a pair of arms having substantially the same dimensions and a common connecting section connecting the corresponding ends of said paired arms, said common connecting section having no uncoupling recesses, or the like, therein;
- holding means having a surface for receiving said quartz crystal element, means for substantially stationarily mounting said receiving surface and a pair of embedded external electrodes; and
- an adhesive interposed between said common connecting section of said quartz crystal element and said receiving surface of said holding means for firmly and substantially non-resiliently fixing in face-to-face relationship only the bottom surface of said common connecting section of said quartz crystal element to said holding means for supporting said crystal element, said adhesive agent being applied such that the side surfaces of said common connecting section are substantially free of restraining forces against vibration.

4,131,817
SPARK PLUG POWER ENHANCER

Nassir Najibi, 2827 W. Jerome St., Chicago, Ill. 60645

Filed Aug. 1, 1977, Ser. No. 820,422
Int. Cl.^{2} H01T *13/46*
U.S. Cl. 313—124 **4 Claims**



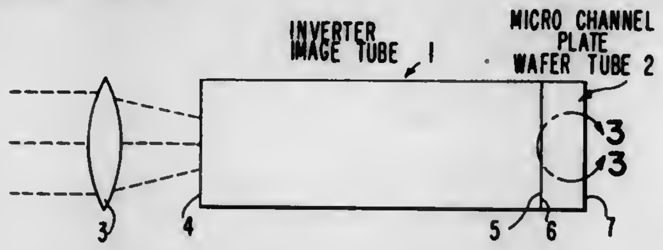
1. A spark enhancer for internal combustion engines comprising:

- a first electrode adapted to be electrically connected to the ignition coil of a spark ignition system;
- a second electrode spaced from the first electrode and adapted to be electrically connected to the firing gap of a spark plug;
- a spark modifying separation element in contact with both of said first and second electrodes and holding said electrodes in a spaced relationship, said element including provision for an air gap between said electrodes;
- said spark modifying element being formed of a natural material comprising a marine shell.

4,131,818
NIGHT VISION SYSTEM

Marshall Wilder, deceased, late of Portola Valley, Calif. (by Virginia H. Wilder, executrix), assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Oct. 12, 1967, Ser. No. 675,279
Int. Cl.² H01J *39/14*
U.S. Cl. 313—95 3 Claims



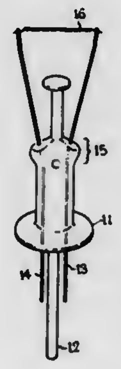
1. A night vision system for image intensification having high luminous gain and high resolution with low noise deterioration comprising:

- an inverter image tube having an input window, means coupled to said input window for converting light photons to free electrons, means for accelerating and focusing said electrons, means for converting said accelerated electrons into a new set of light photons, and an output window;
- an electron multiplying image tube having an input window and an output window;
- means coupling said input window of said electron multiplying image tube to said output window of said inverter image tube; and
- optical means focusing an inverted image of available light onto said input window of said inverter image tube.

4,131,819
LEAD WIRES FOR INCANDESCENT LAMP

James A. Graves, Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 15, 1978, Ser. No. 879,323
Int. Cl.² H01J *5/50*
U.S. Cl. 313—331 5 Claims



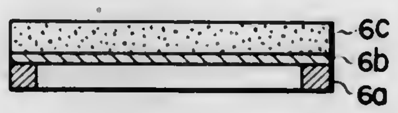
1. In an electric lamp comprising a vitreous envelope, at least two lead wires extending into the interior of said envelope, and a light source connected to the inner ends of said lead wires, the improvement comprising:

the inner portions of said lead wires being characterized by a stiffness of approximately 300–500 and said inner portions vibrating approximately in unison when said lamp is subjected to shock.

4,131,820
SECONDARY ELECTRON MULTIPLICATION TARGET

Hiroshi Washida, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 669,741, Mar. 24, 1976, abandoned. This application Mar. 9, 1977, Ser. No. 775,939
Int. Cl.² H01J *31/00, 31/26, 31/48;* B32B *5/16*
U.S. Cl. 313—377 5 Claims

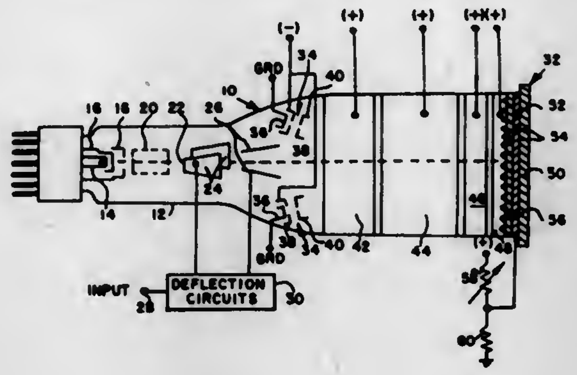


1. A secondary electron multiplication target for a secondary electron conducting type vidicon comprising an electrically conductive support layer and a secondary electron emitting layer provided on that side of said support layer which faces a cathode emitting scanning electrons, wherein said secondary electron emitting layer is a porous layer consisting of an agglomeration of primary particles of at least one compound selected from the group consisting of CaF_2, MgF_2 ,and SrF_2; said porous layer being formed by evaporating said compound from an evaporating source and said primary particles being those unagglomerated particles which are just emitted from said evaporating source and each have an average particle size ranging from scores of angstroms to 100 angstroms.

4,131,821
AGING RESISTANT MIXTURES IN BISTABLE STORAGE TUBES

Ralph A. Mossman, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 6, 1977, Ser. No. 831,019
Int. Cl.² H01J *29/39*
U.S. Cl. 313—398 17 Claims



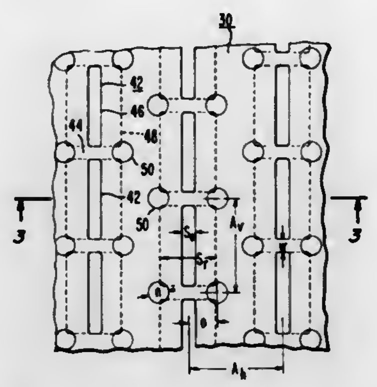
1. A storage target for storing an electron image, comprising:

- a nonconducting support member of electrical insulative material;
- collector electrode means provided on one surface of said support member; and
- a storage dielectric layer extending along said collector electrode means and containing a mixture including phosphor material having metal oxide material adhered at random locations over the surface of said phosphor material and rare earth material selected from the group consisting of a rare earth oxide, a rare earth oxysulfide and a rare earth activated rare earth oxide or oxysulfide, said metal oxide material being about nine percent by weight of said phosphor material.

4,131,822
CATHODE RAY TUBE WITH STRESS-RELIEVED SLOT-APERTURE SHADOW MASK

Tom W. Branton, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 20, 1977, Ser. No. 799,078
Int. Cl.² H01J *29/07*
U.S. Cl. 313—403 4 Claims



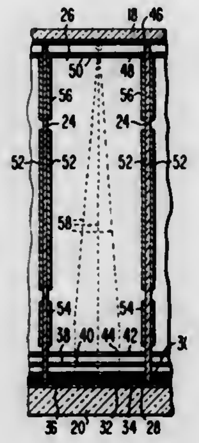
1. A shadow mask color cathode ray tube including an apertured electrode comprising a formed metal sheet having

- (a) an array of elongated apertures therein, each of said apertures having a relatively small generally rectangular surface opening in one side of said sheet and a relatively large generally rectangular surface opening in the other side of said sheet, said apertures being disposed in a plurality of substantially parallel rows with the apertures being elongated in the direction of said rows and being spaced apart by webs, and
- (b) an array of surface cavities disposed in said one side of said sheet, each of said cavities being laterally spaced from the center line of a given row of apertures and adjacent to and substantially opposite a web in said given row; each of said cavities partially overlying the relatively large surface openings in said other side of said sheet of the two apertures which are in the same row and adjacent to the web disposed opposite said cavity, to form a thinned region of said mask at the outer region of said web and the corners of said adjacent apertures.

4,131,823
MODULAR FLAT DISPLAY DEVICE WITH BEAM CONVERGENCE

Thomas L. Credelle, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 3, 1977, Ser. No. 838,658
Int. Cl.² H01J *29/72*
U.S. Cl. 313—422 8 Claims



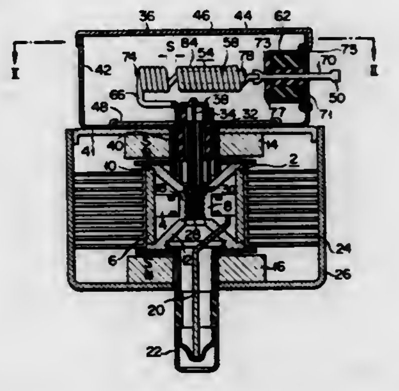
1. In a display device which comprises an evacuated envelope having substantially flat, parallel spaced front and back walls and spaced, substantially parallel support walls extending between and substantially perpendicular to said front and back walls, said support walls dividing said envelope into a plurality of channels, means at one end of each of said channels for generating electrons and directing the electrons as beams into said channels with three beams being directed into each channel, beam guides along each of said channels for confining the electrons in the beam as the beams travel longitudinally along the channel and for selectively deflecting the beams toward a phosphor screen on the front wall of the envelope at selected points along the channels, and means in each channel between the beam guides and the phosphor screen for deflecting the beams transversely across the channel so that the beams scan the phosphor screen, the improvement comprising

- means in each channel for forming an electrostatic field transversely across the channel which acts as an electron lens for converging the three beams at a point adjacent to but spaced from the phosphor screen.

4,131,824
FILTER DEVICE FOR HIGH FREQUENCY GENERATING DEVICE

Kaichiro Nakai, and Hisao Saito, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 17, 1977, Ser. No. 778,745
Claims priority, application Japan, Sep. 20, 1976, 51-111809
Int. Cl.² H01J *25/50*
U.S. Cl. 315—39.51 12 Claims



1. A high frequency generating device comprising:

- a high frequency generating source;
- a shield box mounted to said high frequency generating source in which undesirable high frequency energy generated from said high frequency generating source is confined;
- power supply conductors connected electrically to said high frequency generating device and extending to the exterior through the inside of said shield box; and
- a choke element which is connected to said power supply conductor with in said shield box for damping said undesirable high frequency energy generated in said high frequency generating source, including a core type inductor with a high frequency absorptive member as its core and a coreless type inductor with no core of high frequency absorptive member, said inductors being connected in series.

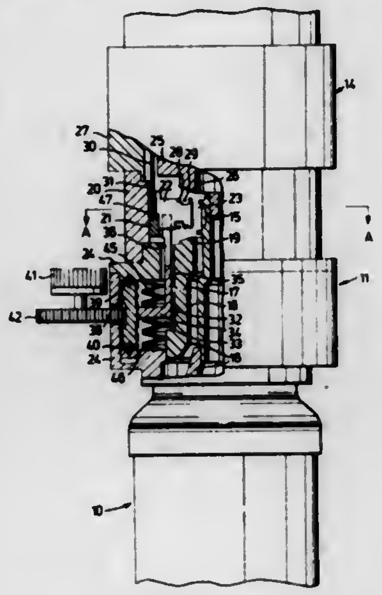
4,131,825
DITHERABLE AND TUNABLE MAGNETRON COMPRISING AXIALLY TUNING AND ROTATIONAL TUNING MEMBERS

Lennart P. J. Mattsson, Järfälla, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 19, 1977, Ser. No. 798,317
Claims priority, application Sweden, May 21, 1976, 7605765
Int. Cl.² H01J *25/50*
U.S. Cl. 315—39.61 9 Claims

1. A tunable magnetron comprising a cathode, an anode including an annular member disposed about and spaced from said cathode and a plurality of anode plates spaced about the inner wall of said annular member and extending radially therefrom toward said cathode, each pair of adjacent anode

plates defining a resonant cavity therebetween, the inner ends of said anode plates adjacent said cathode being spaced from and defining with said cathode an interaction spaced therebetween, said anode plates each defining an axial slot, the slots defined by said anode plates forming an annular groove extending about the axis of said annular member, means for producing an axial magnetic field in said interaction space, a first tuning member rotatable about an axis generally parallel to the axis of said annular member and having an end portion extending into said groove, said end portion of said first tuning



member having a circumferentially varying quantity of electrically conductive material so that a periodic rapid variation in the frequency of the magnetron is produced upon movement of said end portion in said groove during rotation of said first tuning member, and a second axially displaceable tuning member disposed on the side of said anode plates opposite said groove, said second tuning member having at least one electrically conductive axial projection extending into at least one of said resonant cavities for varying the frequency of the magnetron upon axial displacement of said second tuning member.

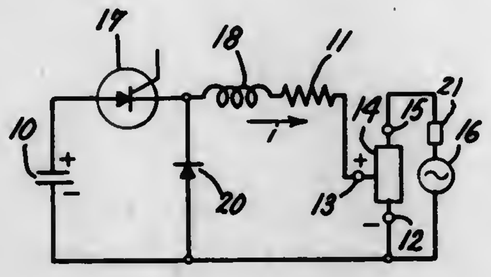
4,131,826
TRIGGERING CIRCUIT FOR TRIGGERED VACUUM GAPS

Lawson P. Harris, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 3, 1977, Ser. No. 821,555

Int. Cl.^{2} H02M *1/02*

U.S. Cl. 315—234 5 Claims



1. Circuit means for controlling conduction of a vacuum gap device having a trigger electrode and having a pair of primary gap electrodes energized by a power source, said circuit means energizing said trigger electrode at a predetermined, controllable time, and comprising:
capacitive energy storage means;
switching means coupled in series with said capacitive energy storage means;
unidirectional conducting means coupled in parallel with the series-coupled capacitive energy storage means and switching means; and
inductance means coupling said switching means to said trigger electrode.

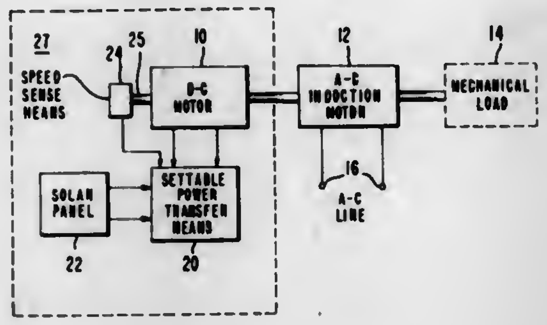
4,131,827
POWER TRANSFER APPARATUS

Robert D. Larrabee, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 4, 1977, Ser. No. 821,801

Int. Cl.^{2} H02P *7/80*

U.S. Cl. 318—46 10 Claims



1. The combination of:
a source of DC power which may vary;
connections for a source of AC power;
a DC motor having an armature and a field winding;
power transfer means coupling said source to said motor for supplying current to the armature of said motor and for also supplying a voltage across the field winding of said motor, said power transfer means including means for adjusting the value of voltage;
an AC motor-generator connected to said connections for said source of AC power for receiving operating power therefrom, said motor-generator being mechanically coupled to said DC motor and being driven thereby; and
means responsive to a parameter indicative of the power supplied to said DC motor for controlling said means for adjusting in a sense to maximize said parameter.

4,131,828
APPARATUS FOR ROTATIVELY DRIVING A TURN TABLE

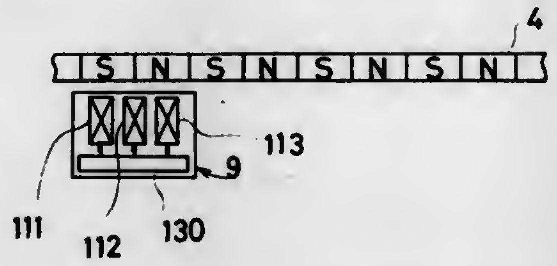
Teruo Houshi, Oota, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi and Toyko Sanyo Electric Co., Ltd., Oora, Gunma, both of, Japan

Filed Dec. 9, 1977, Ser. No. 859,264

Claims priority, application Japan, Dec. 14, 1976, 51-153883; Dec. 14, 1976, 51-153884; Jan. 31, 1977, 52-10420

Int. Cl.^{2} H02K *29/00*

U.S. Cl. 318—138 10 Claims



1. An apparatus for rotatively driving a turn table, comprising:
a motor having a rotor including an arrangement of a plurality of magnetic poles such that the north and south poles are alternately disposed in a circle on said turn table and a stator provided opposite to said arrangement of the magnetic poles and including first, second and third stator pole means for electromagnetically driving said motor,
means for generating three alternating current drive signals having a phase difference of substantially 120° from each other,

means responsive to said drive signal generating means for amplifying said three alternating current drive signals for supplying the three amplified alternating current drive signals to said three stator pole means of said stator of said motor,
said amplifying means comprising first, second and third amplifiers for amplifying said three alternating current drive signals, respectively, for supplying the amplified three alternating current drive signals to one end of the corresponding one of said first, second and third pole means of said stator, respectively, and
first, second and third feedback resistors, one end of each of said first, second and third feedback resistors being coupled to the other end of each of said first, second and third pole means of said stator, respectively,
said first, second and third feedback resistors being commonly connected at the other end, whereby at least the component of the same level and the same phase included in said alternating current drive signals is removed.

4,131,829
ELECTRIC POWER CONVERTING APPARATUS FOR USE IN BATTERY CARS

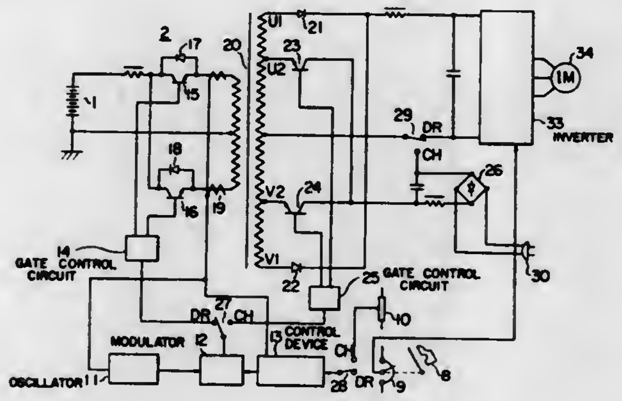
Choichi Gocho, Tokyo, Japan, assignor to Tokyo Shibaura Denki K.K., Japan

Filed Oct. 18, 1976, Ser. No. 733,308

Claims priority, application Japan, Oct. 13, 1975, 50-122563; Oct. 13, 1975, 50-122564; Oct. 23, 1975, 50-127823

Int. Cl.^{2} H02P *1/00*

U.S. Cl. 318—139 7 Claims



1. In an electric power converting apparatus for use in a battery car of the type comprising a storage battery, a first inverter including first switching elements for converting the DC voltage of said storage battery into an AC voltage, a step up transformer including primary and secondary windings for stepping up the output AC voltage of said first inverter, a first rectifier for rectifying the secondary voltage of said step up transformer, a second rectifier for rectifying the alternating voltage of an external source of commercial supply, a third inverter including second switching elements connected between the secondary winding of said step up transformer and the output of said second rectifier for converting the output of said second rectifier into an AC voltage for energizing the secondary winding of said step up transformer, and a switching circuit for switching the operations of said first and second inverters, the improvement which comprises rectifier diodes respectively connected directly in parallel opposition with said first switching elements of said first inverter for charging said storage battery and wherein said third inverter is connected to the same secondary winding of said transformer as said first rectifier, said rectifier diodes being connected to the same primary winding of said transformer as said first inverter.

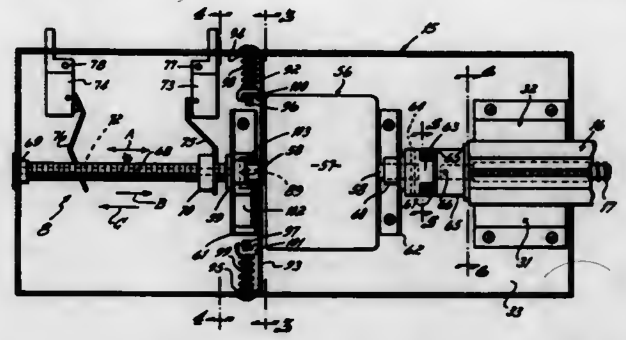
4,131,830
POSITION CONTROL AND OBSTRUCTION DETECTOR APPARATUS FOR A MOTOR-DRIVEN DOOR OPERATOR

Maw H. Lee, and Barry V. Prehodka, both of Cincinnati, Ohio, assignors to Clopay Corporation, Cincinnati, Ohio

Filed Feb. 8, 1978, Ser. No. 876,004

Int. Cl.^{2} H02P *1/00, 3/00*

U.S. Cl. 318—266 28 Claims



1. In an operator for driving a load, said operator including a drive means connectable to said load for moving said load between a first position and a second position, a selectively energizable motor having a motor shaft coupled at one end to said drive means for actuating said drive means to move said load, and position control means for controlling energization of said motor for moving said load between said first and second positions, the improvement in said position control means comprising:
a control screw means rotatably mounted coaxially with said motor shaft at an end opposite said one end and directly rotated by said motor shaft when said motor is energized;
a travel nut threadedly engaged with said control screw means for reciprocably moving along said control screw means as said control screw means rotates;
means for constraining said travel nut against sympathetic rotary motion with said control screw means as said control screw means rotates while allowing reciprocal movement in a linear path therealong;
a first position detection means proximate said control screw means and actuable by said travel nut for de-energizing said motor when actuated by said travel nut as said operator drives said load to said first position; and
a second position detection means proximate said control screw means and actuable by said travel nut for de-energizing said motor when actuated by said travel nut as said operator drives said load to said second position.

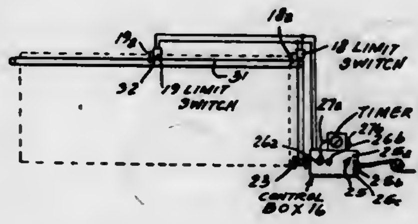
4,131,831
DRAPERY OPENING AND CLOSING SYSTEM

Michael S. Bochenek, 7714 S. Meade, Burbank, Ill. 60459, and Bradley X. Boyer, Chicago, Ill., assignors to Michael S. Bochenek, Burbank, Ill.

Filed Jun. 13, 1977, Ser. No. 805,639

Int. Cl.^{2} H01H *43/20*

U.S. Cl. 318—282 3 Claims



1. A drapery opening and closing system for draw drapes movable over a traverse means between an open and closed position by use of a drape drive system, comprising:
(a) drape traverse means;
(b) a drape cord pully system connecting to the traverse

means and extending downwardly with respect to the traverse means;

(c) a first limit switch means positioned to be activated when said drapes are opened;

(d) a second limit switch means positioned to be activated when said drapes are substantially closed;

(e) a power source;

(f) a timer means connected to the power source for applying and disconnecting power from the power source at predetermined times;

(g) a control circuit means positioned at a lower end of the pulley system, comprising:

  (i) a reversible motor electrically connected to the power source and mechanically connected by a drive pulley to the lower end of the pulley system and having power input terminals for clockwise rotation and counterclockwise rotation;

  (ii) an automatic switching means activated by power from the timer means;

  (iii) a manual switching means and said first and second limit switch means each forming a series circuit with the automatic switching means, said series circuit being connected between the power source and the clockwise and counterclockwise power input terminals of the reversible motor; and

(h) said control circuit means automatically opening and closing the draw drapes at predetermined times as set by the timer means, said control circuit means turning off the system or opening and closing the drapes independent of of the times set on the timer means when the manual switching means is operated, and said control circuit means turning off the system automatically when said first and second limit switch means are activated when the drapes are respectively fully opened and substantially closed.

4,131,832

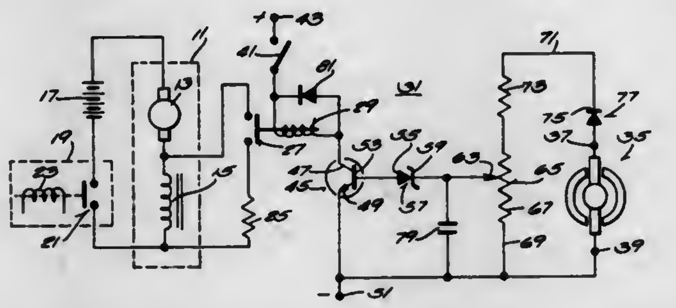
SPEED SENSITIVE FIELD WEAKENING CONTROL FOR TRACTION MOTORS

David T. Cavil, Menomonee Falls, Wis.; Gerald N. McAuliffe, Lincoln, Nebr., and Russell J. Van Rens, Waukesha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 14, 1977, Ser. No. 787,426

Int. Cl.^{2} H02P *7/00*

U.S. Cl. 318—358 **41 Claims**



1. A control comprising a direct current motor including a field winding and a field weakening resistor, a field weakening solenoid switch connected to said field weakening resistor and including a solenoid coil, switch means connected to said coil for selectively connecting said coil to a source of direct current and thereby operate said solenoid switch to connect said field weakening resistor in parallel with said field winding, and means responsive solely to motor speed for operating said switch means.

4,131,833

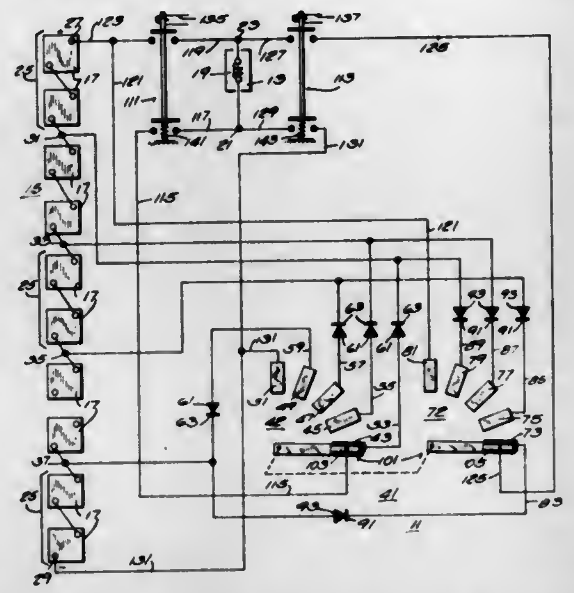
ARRANGEMENT FOR TAPPING BATTERY BANK ALTERNATELY FROM OPPOSITE ENDS

Gerald N. McAuliffe, and Eldon W. Wooters, both of Lincoln, Nebr., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 25, 1977, Ser. No. 790,534

Int. Cl.^{2} H02M *1/08*

U.S. Cl. 318—440 **28 Claims**



1. A direct current motor energizing circuit comprising a direct current motor, a bank of series connected batteries, said bank including opposite ends, and switch means for electrically disconnecting and connecting said bank to said motor, said switch means including means operable so that successive energizations of said motor are alternately from said opposite ends of said battery bank.

4,131,834

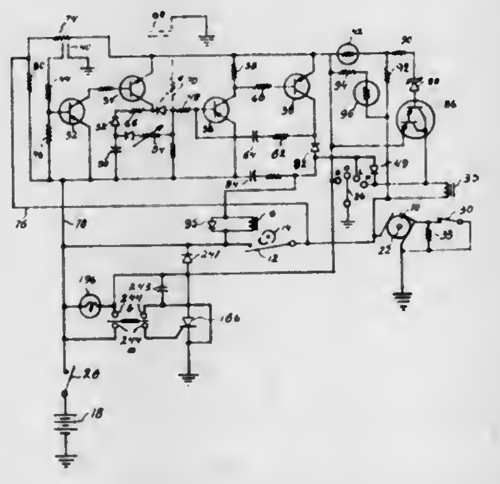
WINDSHIELD WIPER CONTROL SYSTEM

Henry Blaszkowski, P.O. Box 114, Southfield, Mich. 48075

Continuation of Ser. No. 549,810, Feb. 13, 1975, abandoned, which is a continuation-in-part of Ser. No. 302,940, Nov. 1, 1972, abandoned, which is a continuation-in-part of Ser. No. 19,443, Mar. 13, 1970, abandoned, which is a continuation-in-part of Ser. No. 776,487, Nov. 18, 1968, abandoned. This application Feb. 3, 1977, Ser. No. 765,123

Int. Cl.^{2} H02P *3/00*

U.S. Cl. 318—483 **48 Claims**



1. An automatic control system for a windshield wiper mechanism driven by an electric motor comprising: sensing means adapted to be activated by the presence of moisture and de-activated by the absence of moisture; capacitance means; a first electronic control means adapted to charge the capacitance means upon each activation of the sensing means; second electronic control means driven by the capacitance means and

adapted to successively energize and de-energize the wiper motor following de-activation of the sensing means to produce an intermittent operation of the wiper motor which is sustained until the capacitance means are discharged, said first electronic control means also being adapted to energize the wiper motor continuously whenever and as long as said sensing means are or remain activated.

4,131,835

MICROPROGRAMMABLE CONTROL UNIT

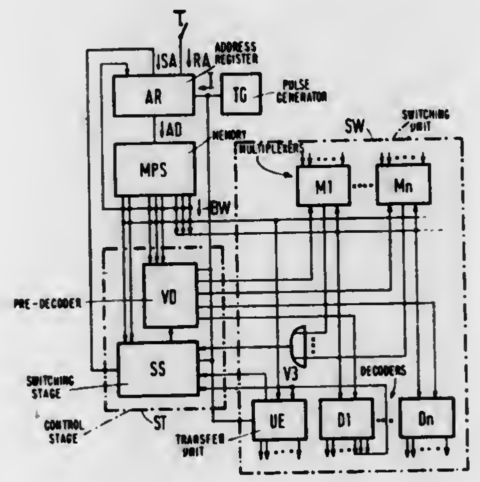
Heinrich Lange, Neubaldham, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 16, 1977, Ser. No. 797,341

Claims priority, application Fed. Rep. of Germany, May 21, 1976, 2622974

Int. Cl.^{2} G05B *11/32, 19/28*

U.S. Cl. 318—562 **11 Claims**



1. A microprogrammable control unit for controlling a switching unit comprising:

- a memory storing a microprogram of a plurality of command words, each of said command words including a predetermined number of binary characters;
- an address register connected to said memory and storing the addresses of the command words;
- a plurality of decoders for producing control signals for controlling the switching unit;
- a plurality of multiplexers for connection to and interrogating conditions of the switching unit; and
- a control stage connected to said memory for receiving command words, said control stage connected to said address register to said decoders and to said multiplexers, said control stage including means operable to switch through a plurality of binary characters of a command word to said decoders in response to a given first binary character of the command word having a first binary value, means operable to switch through said plurality of binary characters of the command word to said multiplexers in response to said given first binary character having a second binary value, and means operable to switch through the command word to said address register in response to a given second binary character of the preceding command word having a predetermined binary value.

4,131,836

INTERFERENCE PREVENTION SYSTEM FOR MACHINE TOOL MOVABLE MEMBERS

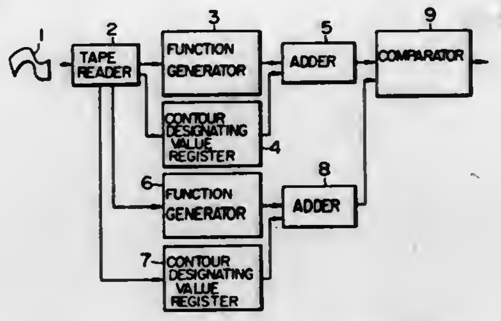
Shiro Noda, Nagoya, Japan, assignor to Okuma Machinery Works Ltd., Nagoya, Japan

Filed Aug. 31, 1977, Ser. No. 829,519

Claims priority, application Japan, Sep. 10, 1976, 51-109036

Int. Cl.^{2} G05B *23/02*

U.S. Cl. 318—565 **3 Claims**



1. In a machine tool including a plurality of movable members controlled to move independently and parallelly, a movable-member interference prevention system comprising a function generator for producing a signal representing an instantaneous position of a predetermined reference point on each of said movable members, contour designating-value setting means for setting contour designating value of each of said movable members, an adder for adding the output information of said function generator to the output information of said contour designating-value setting means, said function generator, said contour designating-value setting means and said adder being provided for each of said movable members, and means for determining whether said movable members interfere with each other by comparing and calculating the output information produced from said adders.

4,131,837

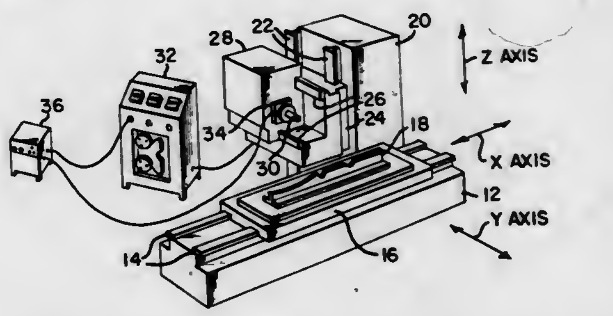
MACHINE TOOL MONITORING SYSTEM

William J. Whetham, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 740,627, Nov. 10, 1976, abandoned, which is a continuation-in-part of Ser. No. 596,709, Jul. 17, 1975, abandoned. This application Jul. 13, 1977, Ser. No. 815,150

Int. Cl.^{2} G05B *13/00*

U.S. Cl. 318—571 **7 Claims**



1. In a numerical control machine tool comprising:

(a) first means for supporting a workpiece relative to a machine reference position such that the position of the workpiece can be ascertained;

(b) second means for supporting a cutting tool means relative to said machine reference position such that the undeflected position of the cutting tool means can be ascertained;

(c) cutting tool means operable to remove material from the workpiece when the machine tool is in operation, said cutting tool means deflecting from a rest position during removal of material from the workpiece;

(d) means for moving said first and second supporting means such that the workpiece and the cutting tool move relative to each other;

(e) means for controlling the movement of the first and second supporting means in accordance with programmed instructions, so as to produce a product of selected configuration and size;

the improvement comprising:

(a) means for determining the position of said first and second supporting means relative to the machine reference position at a given point in time;

(b) means for determining the deflection of said cutting tool means from said rest position during operation of said machine tool at said given point in time;

(c) means for combining the position data and the deflection data in such a manner as to produce a resultant which is representative of the actual position of the cutting tool means relative to the workpiece at said given point in time; and

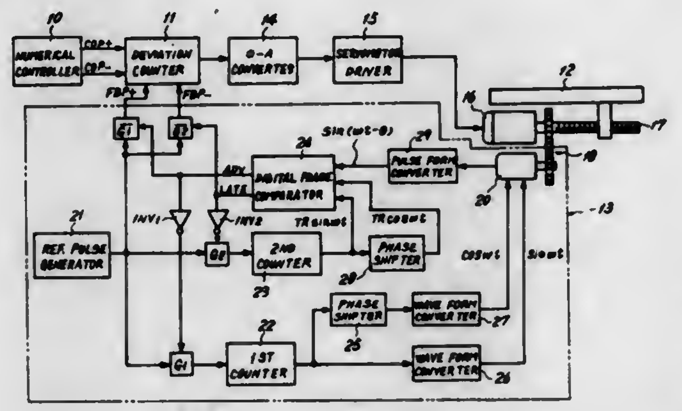
(d) means responsive to (1) said resultant, (2) reference data representative of the desired position of the cutting tool means relative to the workpiece at said given point in time, and (3) a preestablished tolerance value to alter the operation of said machine tool, when the difference between said resultant and said reference data reaches a predetermined fraction of said tolerance value, in such a manner as to insure that said product will be within the preestablished tolerance.

4,131,838

DISPLACEMENT AMOUNT DETECTING DEVICE

Kunihiko Etoh, Toyota, and Katsumi Sugiura, Takahama, both of Japan, assignors to Toyoda-Koki Kabushiki-Kaisha, Aichi, Japan

Filed Aug. 9, 1977, Ser. No. 823,023
Claims priority, application Japan, Sep. 28, 1976, 51-116713
Int. Cl.^{2} G05B *19/28*
U.S. Cl. 318—603 7 Claims



1. A displacement amount detecting device for detecting the displacement amount of a movable member by a feed device, comprising in combination:

a reference pulse generator for gnerating a train of reference pulses at a predetermined frequency,

first counting means for counting said reference pulses from said reference pulse generator so as to output carrier signals,

second counting means for counting said reference pulses from said reference pulse generator so as to output a dummy wave,

a transducer connected with said first counting means for receiving said carrier signals and for generating a phase modulated signal proportional to the displacement of said movable member,

a phase comparator connected with said second counting means and said transducer for comparing said modulation signal with said dummy wave and adapted to output a first gate signal while the phase of said phase modulated signal leads the phase of said dummy wave and to output a second gate signal while the phase of said phase modulated signal lags the phase of said dummy wave,

output gate means connected with said reference pulse generator and said phase comparator for applying said reference pulses as output feedback pulses while receiving any one of said first and second gate signals, and

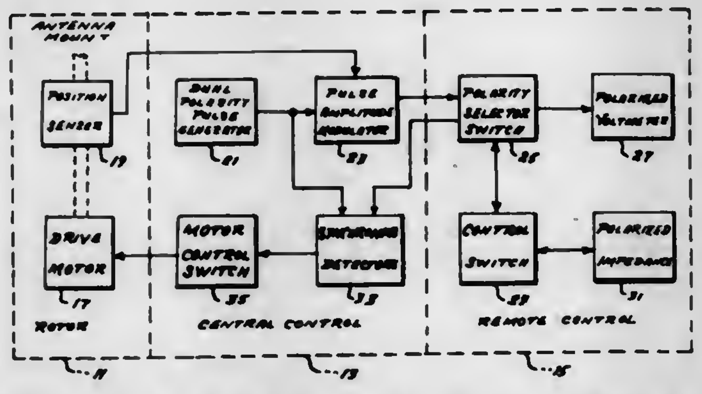
input gate means connected with said reference pulse generator and said first and second counting means for interrupting transmission of said reference pulses to said first counting means while receiving said first gate signal and for interrupting transmission of said reference pulses to said second counting means while receiving said second gate signal.

4,131,839

SYSTEM FOR MULTISTATION REMOTE POSITION INDICATION AND CONTROL

Barry R. Springer, 10301 Margarita Ave., Fountain Valley, Calif. 92708

Filed Aug. 19, 1977, Ser. No. 826,227
Int. Cl.^{2} G05B *11/01*
U.S. Cl. 318—675 2 Claims



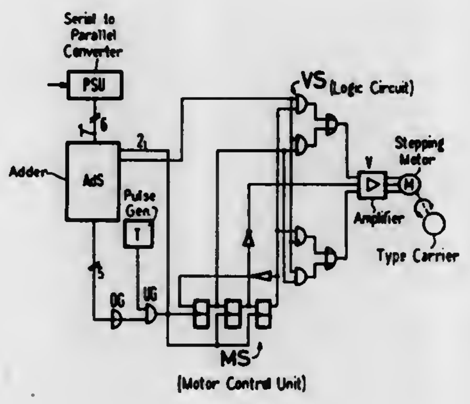
1. A system for multistation remote position indication and control comprised of a position sensor connected to a rotatable antenna mount for movement of an associated antenna, a drive motor connected to said position sensor, control means including a generator of symmetrical alternating polarity pulse train, pulse amplitude modulator means included in said control means, said pulse train being amplitude modulated in said modulator means according to the output of said position sensor, a remote sensor including a polarity selector switch having an input and selecting either the positive or negative pulse and also selects the opposing polarity pulse from the amplitude modulated pulse train, a polarized voltmeter receiving said positive or negative pulse for indication thereupon, a polarized impedance in said remote sensor, a control switch in said remote sensor receiving said opposing polarity pulse for selectively placing said polarized impedance across said input of said polarity selector switch to command the rotation of the associated antenna, a synchronous detector in said control means receiving said symmetrical alternating polarity pulse train and a polarized current pulse train significantly larger in magnitude than that generated by said polarized voltmeter, a motor control switch in said control means driven by said synchronous detector to rotate said associated antenna by rotation of said drive motor, the polarity of the current pulse train detected by said synchronous detector determining the direction of commanded rotation.

4,131,840

CIRCUIT ARRANGEMENT FOR SETTING A ROTATABLE TYPE CARRIER OVER THE SHORTEST PATH OF ROTATION

Wolfgang Wiesner, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 1, 1977, Ser. No. 820,795
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1976, 2641760
Int. Cl.^{2} G05B *19/40*
U.S. Cl. 318—685 6 Claims



1. A circuit arrangement for setting a rotatable type carrier, having character types carried on the periphery thereof, from one setting position by the shortest path of rotation to a new setting position, via a stepping motor, in response to pulse train elements derived from information characters input in binary coded form including new setting position and present setting position characters, comprising:

a first comparison means for receiving the new and present position setting characters and emitting a first evaluation signal which is dependent upon the values of said characters relative to one another, including first means for forming the sum of the binary value of the low-value character and the inverted binary value of the higher-value binary character, and second means for forming a binary value corresponding to half the number of possible setting positions of the type carrier;

a second comparison means connected to said first and second means and responsive to the binary values formed thereby to emit a second evaluation signal;

switching means connected to said first and second comparison means and operable in response to said second evaluation signal to switch through the determined binary spacing quantity as a drive value when the same is equal to or less than half the attainable type carrier setting positions and to switch through the difference quantity between half the number of attainable type carrier setting positions and the determined binary spacing quantity as a drive value when the determined binary spacing quantity is greater than half the number of attainable type carrier spacing positions;

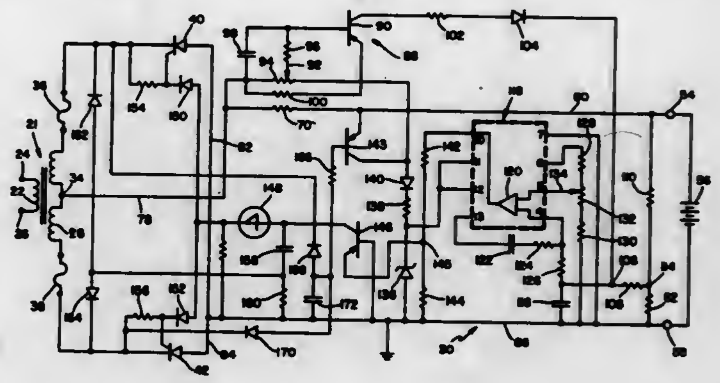
EXCLUSIVE-OR logic means connected to said first and second comparison means and responsive to said first and second evaluation signals emits a control command to produce an oppositely directed rotation of the drive motor, in the presence of a new setting position character, when the new position character is greater than the present position character or when the determined spacing is greater than half the attainable setting positions.

4,131,841

BATTERY CHARGER WITH AUTOMATIC CHANGE FROM CURRENT TO VOLTAGE MODE CONTROL

David H. Bennefeld, Anoka, Minn., assignor to Introl Corp., Minneapolis, Minn.

Continuation-in-part of Ser. No. 577,175, May 14, 1975, Pat. No. 4,019,111. This application Aug. 19, 1976, Ser. No. 715,718
Int. Cl.^{2} H02J *7/04*
U.S. Cl. 320—23 7 Claims



1. A battery charger for connection to a source of AC power comprising:

rectifier means for supplying charging current to a battery;

a magnetically decoupled transformer having a primary coil connected to the source of AC power, a secondary coil connected to said rectifier means, and a magnetic shunt path for a portion of the magnetic flux generated by said primary coil for limiting said charging current to a predetermined maximum value;

a resistor in series with said rectifier means and having a voltage drop thereacross generated by the flow of charging current therethrough;

circuit means responsive to said voltage drop for providing a first voltage signal representative of the amount of charging current being supplied to the battery by said rectifier means;

a voltage divider in parallel with the battery, said voltage divider providing a second voltage signal representative of the battery voltage;

means for controlling said rectifier means in accordance with said first and said second voltage signals to increase the flow of charging current when the battery voltage is below a threshold value and to decrease the flow of charging current when the battery voltage reaches said threshold value, said controlling means further comprising:

means for providing a summing point for algebraically summing said first and said second voltage signals that are representative of the amount of charging current and battery voltage, respectively.

4,131,842

AUTOMATIC SPRING-POWERED BATTERY CHARGING DEVICE

James Smith, 2503 Prospect, Kansas City, Mo. 64127

Filed May 25, 1977, Ser. No. 800,415
Int. Cl.^{2} H02J *7/00*; F03G *1/00*
U.S. Cl. 320—61 5 Claims

1. A mechanism for applying charging current to a battery, said mechanism comprising:

a frame;

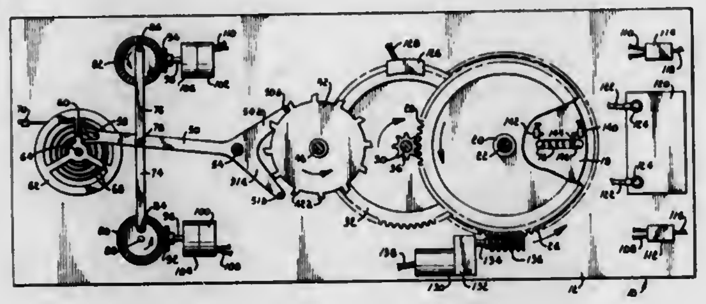
a coil spring mounted on said frame for coiling and uncoiling movement, said spring presenting a plurality of convolutions coiled about a center of the spring;

a drive gear mounted for rotation on said frame and coupled with said coil spring in a manner to rotate in response to uncoiling of said spring;

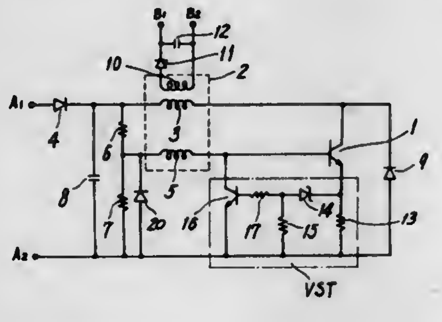
a mechanical linkage coupled with and driven by said drive gear;

battery charging means driven by said linkage and operable to apply charging current to the battery;

power means for winding up said coil spring;
a switch actuator carried on one of the convolutions of said coil spring in projection therefrom, said switch actuator moving with said one convolution along a generally linear path toward and away from the center of said spring as said spring coils and uncoils;
first and second switches for said power means mounted on said frame at spaced locations along said path and operable when engaged by said switch actuator to respectively energize and deenergize said power means, said first switch being located to be engaged by said actuator when said spring has uncoiled below a first preselected tension level and said second switch being located to be engaged by said actuator when said spring has been wound up above a second preselected tension level greater than said first level, whereby said spring is maintained between said first and second tension levels.

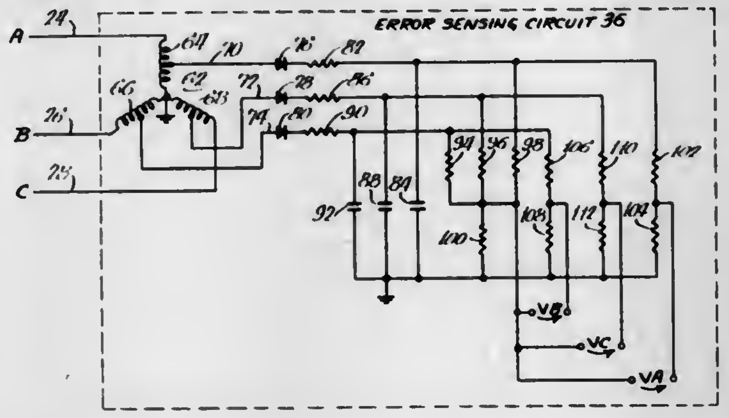


4,131,843
HIGH TENSION VOLTAGE SOURCE
Masateru Koyama, Suita, and Kazuo Arakawa, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Dec. 2, 1976, Ser. No. 746,749
Claims priority, application Japan, Dec. 9, 1975, 50-147219; Dec. 18, 1975, 50-171768
Int. Cl.² G05F *1/58;* H02P *13/24*
U.S. Cl. 323—9 **8 Claims**



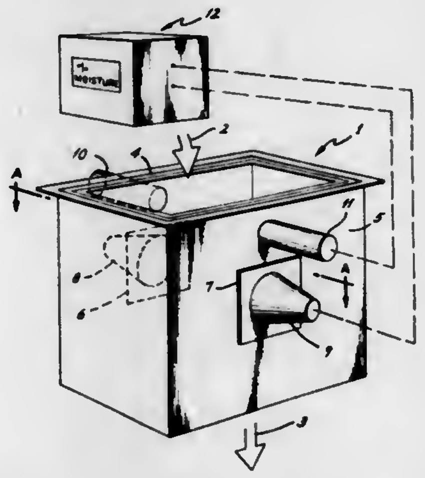
1. A high tension voltage source comprising:
a step-up transformer having a plurality of coupled windings including a primary power input winding adapted to be connected to a power source, a secondary winding, and a feedback winding;
an electronically controlled switch connected to said power input winding, said switch having a controlling terminal connected to said feedback winding for controlling the conduction of said switch;
control circuit means connected to said controlling terminal for limiting the peak current through said power input winding including an impedance element connected to said switch in a manner that said power input winding, said switch and said impedance element are connected in series across said power source and a zener diode connected to said impedance element to make said switch non-conductive when the voltage across said impedance element exceeds a predetermined value, causing said zener diode to become conductive;
a high tension rectifying element connected to said secondary winding; and
a diode connected to said feedback winding and said impedance element so that the current generated in said feedback winding flows in a circuit comprising said feedback winding said controlling terminal of said switch, a switching terminal of said switch, said impedance element and said diode.

4,131,844
STATIC VOLTAGE BALANCER
David J. Hucker, Rockford, Ill., and Norbert L. Schmitz, Middleton, Wis., assignors to Sundstrand Corporation, Rockford, Ill.
Filed May 19, 1977, Ser. No. 798,602
Int. Cl.² G05F *1/30*
U.S. Cl. 323—45 **15 Claims**



1. A voltage balancing circuit for a polyphase generating system having n voltage outputs comprising:
means coupled to the n voltage outputs for establishing an average voltage representative of the average amplitude of the voltages from the n outputs;
means for establishing n error signals, one for each of the n voltage outputs, said n error signals representative of any difference between the average voltage and each of the voltages from the n outputs;
means responsive to the n error signals for providing n trim voltages, one for each of the n voltage outputs; and
means for summing the n trim voltages with the n voltage outputs so that the amplitude of each of the n voltage outputs equals the average value of the amplitude of the voltage from the n outputs.

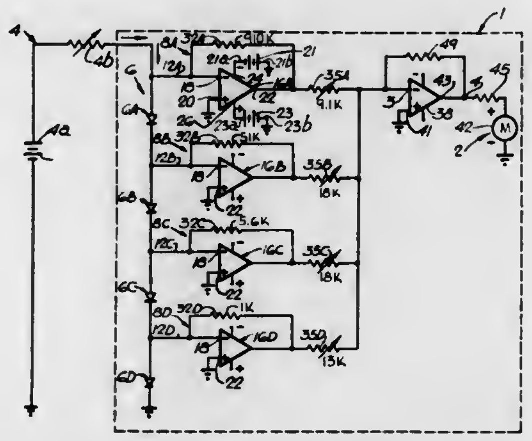
4,131,845
MICROWAVE MOISTURE SENSOR CHUTE
Ivars E. Pakulis, Norridge, Ill., assignor to Kay-Ray, Inc., Arlington Heights, Ill.
Filed Oct. 3, 1977, Ser. No. 838,505
Int. Cl.² G01R *27/04*
U.S. Cl. 324—58.5 A **24 Claims**



1. Moisture measuring apparatus comprising,

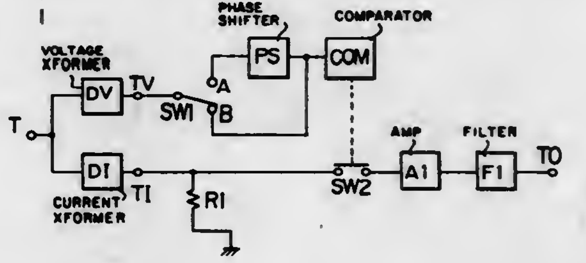
chute means of a given length for receiving moisture containing material, said chute means having walls with window opening means through which microwaves are transmitted,
transmitter means aligned with first of said window opening means for transmitting microwaves into said material such that said microwaves are attenuated by the moisture contained in said material, and
receiver means aligned with second of said window opening means for receiving at least part of said microwaves transmitted by said transmitter means,
wherein the walls of said chute means are all lined along an inside surface thereof with microwave absorbent material to reduce microwave reflections in the inside area of the chute means,
wherein said microwave absorbent material is lined along its inside surface with protective liner to prevent direct contact between the microwave absorbent material and moisture containing material travelling through the chute,
wherein each of said microwave window opening means is provided with flat microwave window means, and
wherein said walls are mutually parallel in the axial direction of said chute means.

4,131,846
METER CONTROL CIRCUIT
Dennis C. Stone, Roselle, Ill., assignor to Dynascan Corporation, Chicago, Ill.
Filed Jun. 13, 1977, Ser. No. 805,722
Int. Cl.² G01R *15/10;* G06G *7/26*
U.S. Cl. 324—132 **3 Claims**



1. In combination with a meter movement having a pointer movable over a variable value indicating scale having numbered variable value indicating marks forming respective scale segments having substantially different compression or expansion ratios and representing progressively increasing variable values over the entire extent of said segments, a meter control circuit for feeding current to said meter movement to provide meter indications of an electrical variable which may have a value within a range from a relatively low minimum value to a relatively large maximum value as indicated by the movement of said pointer over said scale segments, said meter control circuit comprising: respective amplifier circuits for controlling the variation of pointer movement over said respective segments of said scale, each of said amplifier circuits being capable of producing an output which reaches a maximum possible output level when the signal fed to the input thereof is of a value which is to move the pointer of said meter movement to the uppermost point of the associated scale segment, said amplifier circuits including operational amplifiers each having an output terminal, a positive input terminal, a negative input terminal and positive and negative supply terminals, and a feedback resistor connected between each output terminal and a corresponding input terminal so that input current flows through said feedback resistor into the output terminal of the operational amplifier, the other input terminal of each operational amplifier being at the same reference potential, each feedback resistor being of a value so that the flow of the total increment of current to be handled by the amplifier involved results in a voltage drop which saturates the operational amplifier; means for summing the outputs of said respective amplifier circuits and feeding the same to said meter movement; an input circuit for carrying electrical current which varies over a range of values from a relatively low minimum value to a relatively large maximum value which will cause the meter movement pointer to span all of said segments of said scale; and signal directing means for respectively directing to said amplifier circuits signals resulting from the flow of respective incremental ranges of current values in said input circuit to cause said meter movement pointer to traverse said respective segments of said scale, said signal directing means including a series of similarly oriented series connected rectifiers arranged to pass the input current, the opposite terminals of said series of connected rectifiers being connected between the corresponding input terminals of the amplifiers which are to amplify successive incremental portions of the input current, each of said operational amplifier circuits maintaining said corresponding input terminal to which the feedback resistor is connected at said reference potential until the operational amplifier has become saturated, whereupon the voltage at said later input terminal will increase to enable conduction of the next increment of the input signal through the rectifier connected thereto which directs the current to the corresponding input terminal of the operational amplifier to handle the next incremental portion of the input signal.

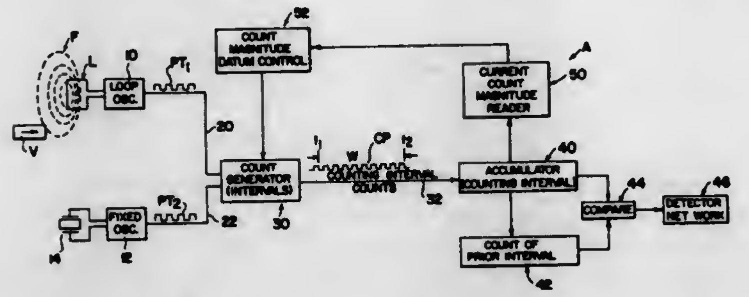
4,131,847
DEVICE FOR MEASURING ACTIVE AND/OR REACTIVE COMPONENT OF AC CURRENT OR AC POWER
Masayuki Kohga, Tokyo, and Katsuto Ishii, Tama, both of Japan, assignors to Shoei Electric Co., Ltd., Tokyo, Japan
Filed Jun. 30, 1977, Ser. No. 811,990
Claims priority, application Japan, Jul. 3, 1976, 51-79287
Int. Cl.² G01R *7/00*
U.S. Cl. 324—141 **14 Claims**



1. A device for measuring active and/or reactive component of AC current comprising:
first means for detecting an AC voltage of an AC circuit;
second means for detecting an AC current flowing through the AC circuit;
third means for generating a pulse signal lasting over a selected one-half cycle of the two opposite half cycles constituting one AC cycle of the AC output voltage of said first means;
fourth means connected to said second and third means for controlling transmission of the output AC signal of said second means in response to said pulse signal; and
fifth means connected to said fourth means for delivering the signal corresponding to the signal controlled by said fourth means as an output signal.

4,131,848
DIGITAL LOOP DETECTOR WITH AUTOMATIC TUNING

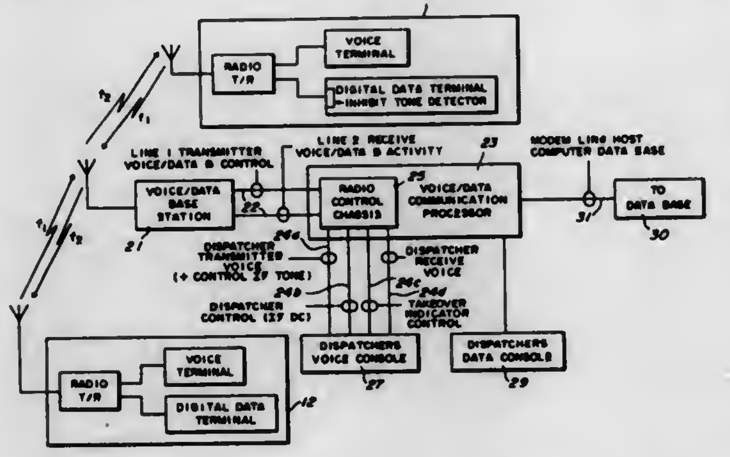
Francis L. Battle, Austin, Tex., assignor to Gulf & Western Industries, Inc., New York, N.Y.
Filed Dec. 3, 1976, Ser. No. 747,171
Int. Cl.^{2} G01R *33/12;* G08G *1/01*
U.S. Cl. 324—236 **25 Claims**



1. In a digital device for detecting a metal object in the field of influence of a detector loop controlling an oscillator, said digital device including means for creating a series of counting intervals; pulse counting means for counting pulses during a current counting interval, with the magnitude of the pulse count during an interval being indicative of metal detected by said loop; means for storing a pulse count of a prior counting interval; and means for indicating a detection when said pulse count of a current interval differs from said stored pulse count by at least a selected amount, the improvement comprising: reading means for creating a signal when said pulse count of a counting interval differs in a selected numerical direction from a selected count magnitude, and shifting means responsive to said signal for shifting the length of subsequent counting intervals toward a length producing a pulse count including said selected count magnitude.

4,131,849
TWO-WAY MOBILE RADIO VOICE/DATA SHARED COMMUNICATIONS SYSTEM

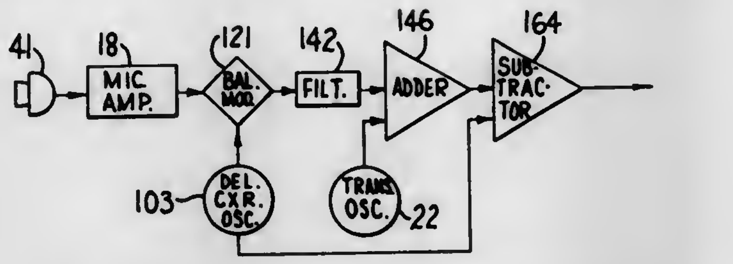
Thomas A. Freeburg, Arlington Heights; Manohar A. Joglekar, Elk Grove Village, and Lawrence R. Pajakowski, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 21, 1976, Ser. No. 734,493
Int. Cl.^{2} H04B *7/00*
U.S. Cl. 325—54 **5 Claims**


11
RADIO T/R
VOICE TERMINAL
DIGITAL DATA TERMINAL
INHIBIT TONE DETECTOR
f2
f1
LINE 1 TRANSMITTER VOICE/DATA & CONTROL
LINE 2 RECEIVE VOICE/DATA & ACTIVITY
23
MODEM LINE HOST COMPUTER DATA BASE
VOICE/DATA BASE STATION
22
21
RADIO CONTROL CHASSIS
25
VOICE/DATA COMMUNICATION PROCESSOR
31
TO DATA BASE
30
DISPATCHER TRANSMITTED VOICE (+ CONTROL 27 TONE)
24a
24b
DISPATCHER CONTROL (27 DC)
DISPATCHER RECEIVE VOICE
24c
24d
TAKEOVER INDICATOR CONTROL
DISPATCHERS VOICE CONSOLE
27
DISPATCHERS DATA CONSOLE
29
RADIO T/R
VOICE TERMINAL
DIGITAL DATA TERMINAL
12

1. A control circuitry for a two-way mobile radio voice/data shared communications system including a plurality of mobile stations with data and voice terminals, a base station, a dispatching station for voice and data, a voice/data processor interposed between the voice/data dispatching station and the base station, said control circuitry including:
- means for enabling the base station to receive the inbound voice signal from a mobile station and rebroadcast the inbound voice signal to the other mobile stations,
- means responsive to the inbound voice signal for inhibiting transmission of digital data signal from any of the mobile terminals to the base station, and
- means for independently transmitting outbound digital data or voice signal from the dispatching station.

4,131,850
SINGLE SIDE BAND RADIO APPARATUS

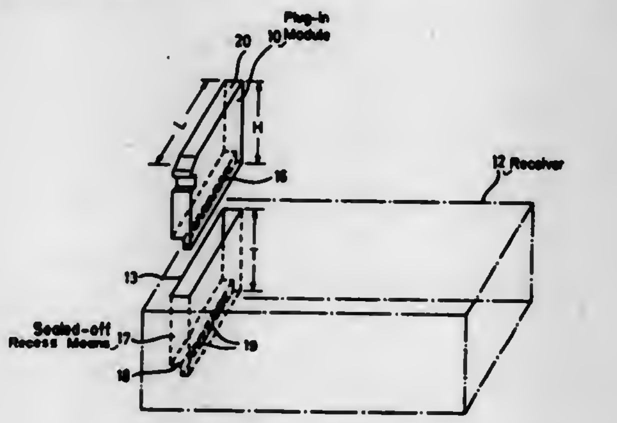
Glade Wilcox, 1407 Knollwood Ave., Kalamazoo, Mich. 49007
Filed Feb. 18, 1977, Ser. No. 769,899
Int. Cl.^{2} H04B *1/66*
U.S. Cl. 325—137 **15 Claims**



1. A single side band radio transmitter, comprising:
- a first radio frequency signal source means for supplying a first radio frequency carrier signal;
- modulating signal means for supplying an audio frequency modulating signal;
- means including a balanced modulator means for modulating said first radio frequency carrier signal with said modulating signal and therefrom providing a first side band signal;
- second radio frequency signal source means for supplying a second radio frequency signal;
- add mixer means for adding said first side band signal and said second radio frequency signal for providing a higher frequency second side band signal;
- subtract mixer means responsive to said higher frequency second side band signal and to said first radio frequency carrier signal for deleting the latter from the former to produce a third single side band signal substantially at said second radio frequency;
- transmitter output means for providing a transmitter output in response to said third side band signal.

4,131,851
RADIO-SIGNAL RECEIVER WITH PLUG-IN MODULES

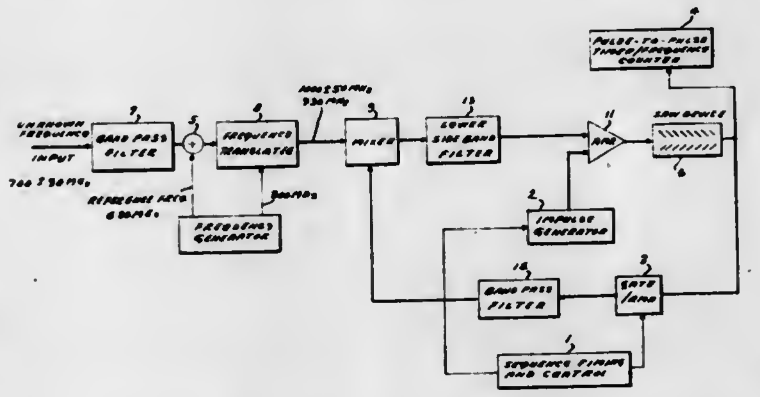
Wolfgang Martiny, Lampertheim, Fed. Rep. of Germany, and Donald H. MacGillavry, Reithoven, Belgium, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Aug. 24, 1976, Ser. No. 717,409
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1976, 2608359
Int. Cl.^{2} H04B *1/08*
U.S. Cl. 325—355 **13 Claims**



1. A radio-signal receiver comprising a radio-frequency portion and also an audio-frequency portion including a basic audio-frequency unit, said radio-frequency portion and said basic audio-frequency unit being mounted in the interior of a common housing,
- said housing being provided with recess means accessible from the outside of the housing, said recess means, being sealed off from the interior of the housing and receiving at least one modular plug-in unit having the components of one or more auxiliary circuit modules enclosed therein, and said modular unit having thereon a plurality of contacts cooperating with a plurality of mating contacts in said recess means of the housing which are connected to circuit points in said audio-frequency portion, the circuit through at least predetermined ones of said circuit points being normally interrupted and at least one of said enclosed modular plug-in units being provided with linking connections for bridging said predetermined circuit points when said modular unit is inserted into said recess means of said housing,
- such that said modular unit, upon being plugged in, effectively supplements said basic audio-frequency unit, circuitwise, with said auxiliary circuit module.

4,131,852
SINGLE DISPERSIVE DELAY LINE COMPRESSIVE RECEIVER

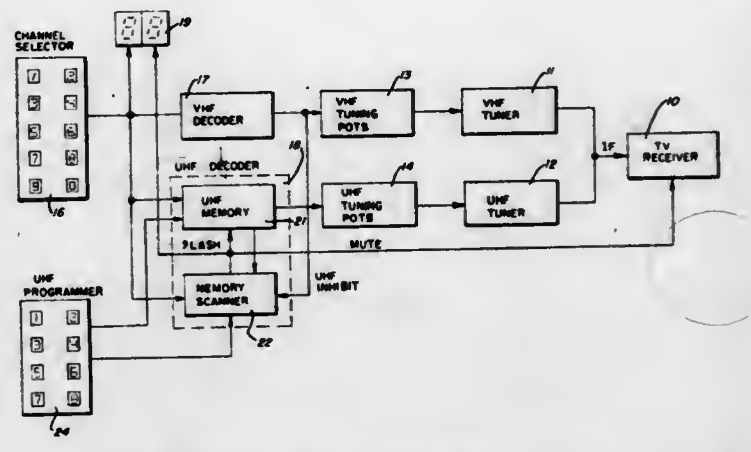
Ervin K. Holland-Moritz, Ann Arbor, Mich., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Sep. 28, 1977, Ser. No. 837,135
Int. Cl.^{2} H04B *17/00*
U.S. Cl. 325—363 **2 Claims**



1. A compressive receiver for determining the frequency of a received signal occurring within a prescribed acceptance band, comprising:
- (a) a surface acoustic wave dispersive delay line having a frequency band wider than said acceptance band;
- (b) means for applying a short impulse to the input of said delay line for producing at its output a downchirp signal of the same bandwidth as the line;
- (c) means providing a reference frequency lying just outside said acceptance band;
- (d) means for translating said acceptance band and said reference frequency by a fixed amount such that the difference between the center frequency of the translated band and the center frequency of said downchirp is at or near the center frequency of said delay line band;
- (e) means for deriving the difference between any frequency in said translated band and said downchirp, and the difference between said reference frequency and said downchirp, said difference in each case constituting an upchirp of the same bandwidth as said downchirp;
- (f) means for applying said upchirps to the input of said delay line whereby a pair of pulses appears at the delay line output due to compression of said upchirps; and
- (g) means for measuring the interval between the pulses of said pair, said interval being a measure of the frequency of said received signal.

4,131,853
ELECTRONIC MULTIPLE CHANNEL TUNER

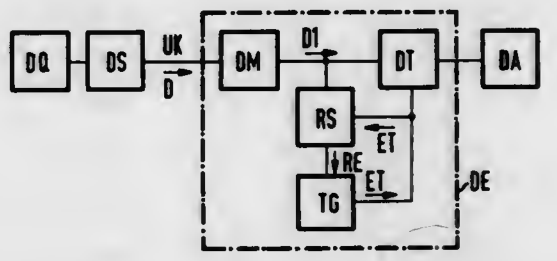
Erwin J. Dreiske, Athens, Tex., assignor to Curtis Mathes Manufacturing Co., Athens, Tex.
Filed Dec. 22, 1976, Ser. No. 753,601
Int. Cl.^{2} H04B *1/26*
U.S. Cl. 325—464 **15 Claims**



1. A multiple channel tuner, comprising:
- means for tuning each of a plurality of signal channels;
- a memory with plural channel indicia stored at discrete addresses, the tuning means for each channel being operatively associated with the respective memory address;
- means for selecting a desired signal channel and for generating channel representing indicia corresponding thereto;
- means for comparing the selected channel representing indicia with channel indicia stored at various addresses in said memory; and
- means operative if the selected channel representing indicia corresponds with stored channel indicia, and responsive to said comparing means for actuating the tuning means for the selected channel.

4,131,854
SWITCHING CIRCUIT FOR REGULATING THE REPETITION RATE OF CLOCK PULSES

Gero Schollmeier, Gauting, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Fed. Rep. of Germany
Filed Jul. 15, 1977, Ser. No. 816,081
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1976, 2632165
Int. Cl.^{2} H03B *3/04*
U.S. Cl. 328—63 **3 Claims**



1. A switching circuit for regulating the repetition rate of clock pulses generated by a clock pulse generator, said generator determining the sampling instants at which a data signal transmitted from a data transmitter to a data receiver is sampled comprising:
- a threshold means coupled to said data signal for producing a desired value signal which represents the desired value of said data signal;
- a first switching means, receiving said data signal and said desired value signal, for producing a first switching output signal which represents the sign of the difference between

said desired value signal and said data signal at said sampling instants;

a second switching means, receiving said desired value signal, for producing a second switching output signal which represents the sign of said desired value signal;

a delayed circuit means, receiving said second switching output signal and said clock pulses, for producing a delayed output signal which represents said second switching output signal delayed by a period of said clock pulses; and

a multiplier circuit means, receiving said first switching output signal and said delayed output signal, for multiplying said first switching output signal by said delayed output signal to produce an output control signal which regulates said generator.

4,131,855

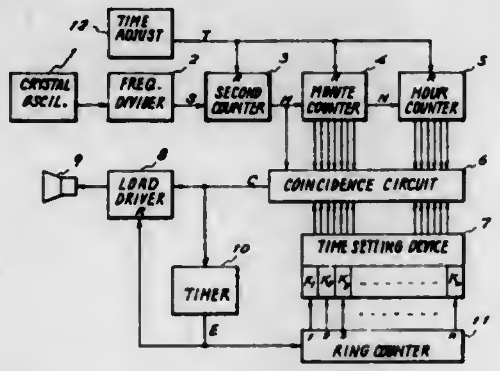
DIGITAL TIME SIGNALLING DEVICE

Hiroshi Hamagawa, Himeji, Japan, assignor to Toyo Jihoki Manufacturing Co., Ltd., Japan

Filed Aug. 3, 1977, Ser. No. 821,482

Int. Cl.² H03K *5/13*

U.S. Cl. 328—129 **6 Claims**



1. A digital time signalling device comprising a pulse generating circuit for generating clock pulses of one Hertz frequency, a first counter for counting said clock pulses to produce output pulses at intervals of sixty (60) counts, a second counter for counting the output pulses of said first counter to produce a coded count output every count and also produce output pulses at intervals of sixty (60) counts and being reset in response to said output pulses, a third counter for counting the output pulses of said second counter to produce a coded count output every count and being reset at intervals of twenty-four (24) counts, a time setting device for storing a time to be signalled and producing a coded output representing said time, a coincidence circuit for comparing the coded count outputs of said second and third counters with the coded output of said time setting device for all bits at the same time and producing a coincidence signal when coincidence is obtained therebetween, and a load driving device energized by said coincidence signal to drive a utilization device.

4,131,856

ELECTRICAL SYNCHRONIZING CIRCUITS

Robert A. Chapman, Newbury, England, assignor to Racal Group Services Limited, Bracknell, England

Filed Aug. 22, 1977, Ser. No. 826,838

Claims priority, application United Kingdom, Sep. 1, 1976, 36129/76

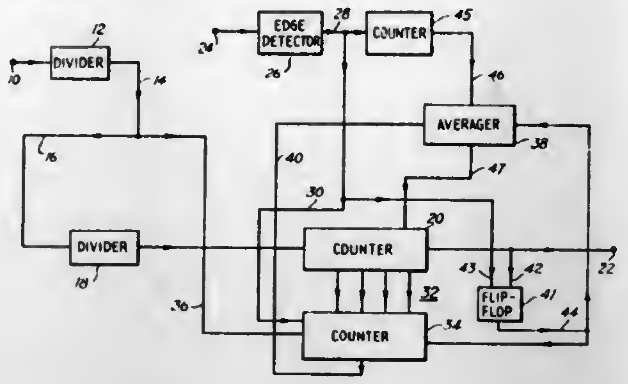
Int. Cl.² H03B *3/04*

U.S. Cl. 328—155 **15 Claims**

1. An electrical circuit arrangement for phase-synchronising a first pulse train with a second pulse train, comprising

phase difference measuring means connected to respond to both said pulse trains and operative during each of a predetermined number of periods of one of the pulse trains to measure the algebraic phase difference between the pulses of the two pulse trains,

averaging means connected to the phase difference measuring means for determining the algebraic average of the phase differences over the said predetermined number of periods, and



phase adjusting means operative to adjust the absolute phase of the pulses of the first pulse train in correspondence with the said algebraic average of the phase differences so as to bring the two pulse trains closer into phase equality.

4,131,857

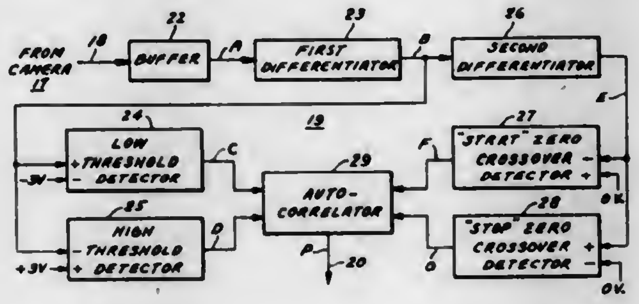
AUTOCORRELATED PULSE PROCESSOR

John C. Clymer, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Mar. 17, 1977, Ser. No. 778,511

Int. Cl.² H03K *1/02, 1/10*

U.S. Cl. 328—163 **6 Claims**



1. In gaging apparatus for generating a gaging signal having a variablewidth dimension pulse modified by a noise component, a pulse processor comprising:

(a) first circuit means receiving the gaging signal for producing start signals responsive to detecting a leading edge of the dimensional pulse,

(b) second circuit means associated with the first circuit means for producing stop signals responsive to detecting a trailing edge of the dimensional pulse,

(c) either the timing or waveform, or both, of each said dimensional pulse edges being modifiable by noise, and

(d) autocorrelator means connected to the first and second circuit means for removing noise therefrom, and including separate start and stop circuit means responsive to the start and stop signals for producing a variable-width output pulse having precisely occurring leading and trailing edges unaffected by noise and which accurately define a gaging dimension.

4,131,858

BEAM LEAD DUAL PARAMETRIC AMPLIFIER

Edward C. Niehenke, and Gerald I. Klein, both of Baltimore, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 30, 1977, Ser. No. 856,052

Int. Cl.² H03F *7/04*

U.S. Cl. 330—4.9 **18 Claims**

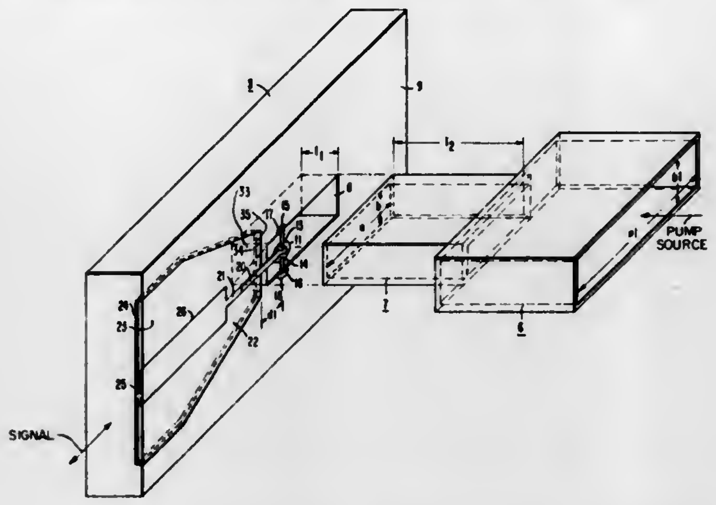
1. A balanced parametric amplifier, comprising:

a plate for providing a conductive path for electrical currents, said plate having a first surface and a second adjoining surface forming an angle with said first surface;

a microwave waveguide cavity formed in said first surface and communicating with said second surface;

a microwave transmission line to provide a microwave signal circuit, said line extending to a position adjacent to the cavity at the second surface of the plate;

a pumping circuit assembly coupled to said microwave waveguide cavity and said first plate surface; and



an assembly including a pair of balanced Schottky beam lead varactor diodes fabricated on a single semiconductor chip with a common cathode connection, each having a beam lead anode extending outwardly therefrom, said diodes being joined by the outer ends of said beam leads to said first plate surface to bridge the microwave waveguide cavity, said common cathode connection being joined by a beam lead to said microwave transmission line adjacent to the microwave waveguide cavity.

4,131,859

METHOD OF COMPENSATION OF INTERMODULATION NOISE AND DEVICES FOR THE IMPLEMENTING THEREOF

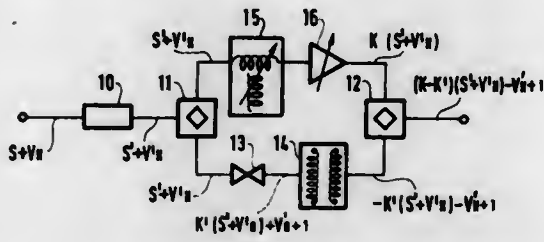
Pierre D. Valle, Colombes, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Oct. 4, 1977, Ser. No. 839,170

Claims priority, application France, Oct. 13, 1976, 76 30741

Int. Cl.² H03F *1/26, 3/68*

U.S. Cl. 330—124 R **7 Claims**



1. A method of reducing the intermodulation noise in an analog transmission system of the type that includes a plurality of cascaded repeaters, which comprises the steps of:

(a) applying the output signal from said transmission system to a phase-correcting network to at least partially compensate for the phase-distortion and phase-discontinuities caused by said cascaded repeaters;

(b) applying the output of said phase-correcting network to the input of a source of a compensating, intermodulation noise signal; and

(c) combining the output signal from said compensating source with a gain-modified version of the output signal from said phase-correcting network in such a way that the intermodulation noise components of significance are cancelled.

4,131,860

POWER AMPLIFIER ARRANGEMENT AUTOMATICALLY MATCHED TO SERVICE CONDITIONS

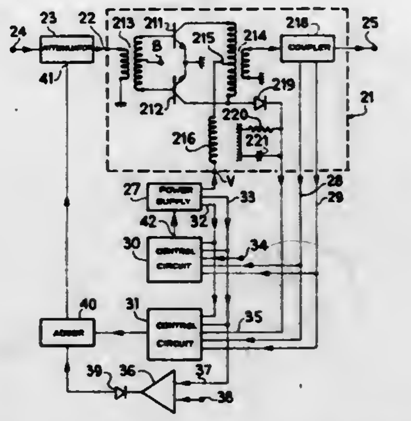
Jean-Jacques Fyot, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 27, 1977, Ser. No. 864,720

Claims priority, application France, Dec. 31, 1976, 76 39716

Int. Cl.² H03G *3/30*

U.S. Cl. 330—279 **4 Claims**



1. A linear power amplifier arrangement having a signal input and a signal output, and comprising : a power amplifier stage having an input, and an output connected to said signal output; a power supply for delivering a d.c. voltage V for feeding said amplifier stage, having an electrical control input of said value V; an attenuator having an electrical control input for control of its attenuation value and connecting said amplifier arrangement input to said amplifier stage input; a first control circuit for keeping said voltage V permanently equal to an optimal value V_o corresponding to a power dissipated by said amplifier stage, irrespective of said value of attenuation, below a limit fixed in dependence upon predetermined reliability conditions; and a second control circuit for adjusting said attenuation value in order to ensure (i) to said output signal, a maximal peak voltage compatible with predetermined minimal linearity conditions of said amplifier arrangement (ii) to the average current I supplied by said power supply, a level below a predetermined value.

4,131,861

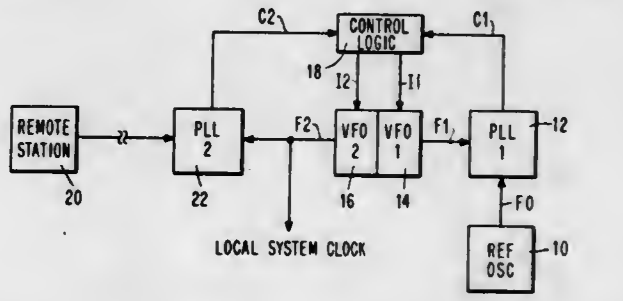
VARIABLE FREQUENCY OSCILLATOR SYSTEM INCLUDING TWO MATCHED OSCILLATORS CONTROLLED BY A PHASE LOCKED LOOP

Shashi D. Malaviya, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1977, Ser. No. 865,809

Int. Cl.² H03B *3/04;* H03C *3/00;* H03D *3/18*

U.S. Cl. 331—2 **9 Claims**



1. A variable frequency oscillator system with highly stable center frequency output signal comprising;

a stable reference frequency generating element providing a highly stable reference frequency output signal to a first phase locked loop;

first and second variable frequency oscillators having substantially matched characteristics, said first variable fre-

quency oscillator providing a second input to said first phase locked loop;
input means for providing a control signal to said second variable frequency oscillator;
said first phase locked loop providing a correction signal to both said first and second variable frequency oscillators whereby said second variable frequency oscillator provides a highly stable output signal at a frequency closely approximating said reference frequency and variable in accordance with the input signal provided by said input means.

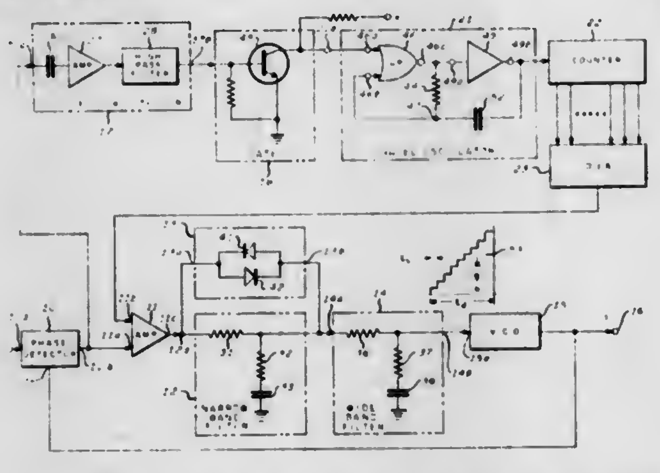
4,131,862
PHASE LOCK LOOP WITH NARROW BAND LOCK-IN AND WIDEBAND ACQUISITION CHARACTERISTICS

Stanley H. Black, and Jon A. Schneider, both of Phoenix, Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 13, 1977, Ser. No. 841,871

Int. Cl.² H03B *3/04*

U.S. Cl. 331—4 **9 Claims**



1. A phase lock loop with an acquisition bandwidth that is greater than the lock-in bandwidth comprising:
a differential amplifier having a first input terminal, a second input terminal, and an output terminal at which a signal is coupled that is representative of the difference between the signal coupled to said first and second input terminals;
oscillator means having an input terminal coupled to said output terminal of said differential amplifier for providing a signal at an output terminal thereof that is controlled in frequency by said signal at said output terminal of said differential amplifier;
a phase detector having a first input terminal coupled to receive an external signal having a predetermined frequency, a second input terminal coupled to said output terminal of said controlled oscillator means, and an output terminal coupled to said first input terminal of said differential amplifier at which a signal is coupled that is representative of the difference in frequency between signals coupled to said first and second input terminals of said phase detector;
a first filter, having an input terminal and an output terminal, serially coupled between said differential amplifier and said controlled oscillator means for passing signals having frequencies within a predetermined frequency band;
a second filter coupled between said differential amplifier and said oscillator means in serial relationship with said first filter for passing signals having frequencies within a pre-specified frequency band that is wider than said predetermined frequency band of said first filter;
means coupled between said input terminal and said output terminal of said first filter for switchably providing a direct path therebetween whenever said signal at said output terminal of said differential amplifier possesses a frequency that exceeds a specified bound; and
means coupled between said output terminal of said phase detector and said second input terminal of said differential amplifier for providing a ramp signal whenever said signal at said output terminal of said phase detector exceeds a predetermined frequency and to hold said ramp signal at a value required to achieve lock-in when said switch means provides said direct path between said input and output terminals of said first filter.

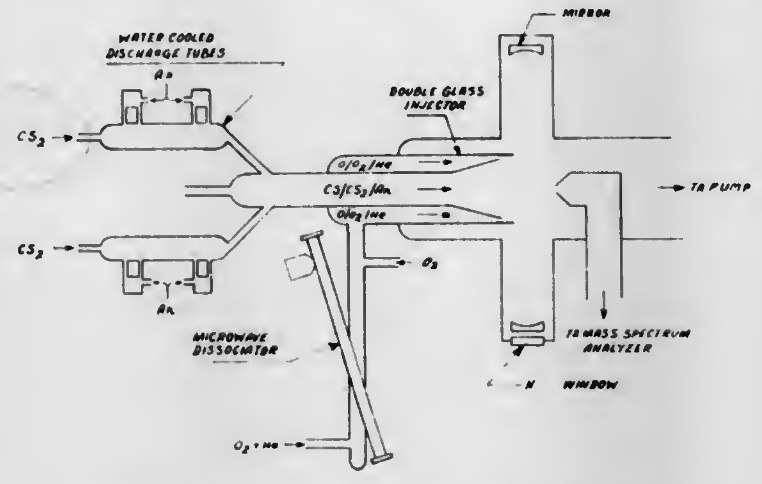
4,131,863
CO CHAIN REACTION CHEMICAL LASER

William Q. Jeffers, Florissant, and Harris Y. Ageno, Manchester, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Feb. 17, 1976, Ser. No. 658,497

Int. Cl.² H01S *3/00*

U.S. Cl. 331—94.5 G **2 Claims**



1. A method of producing a chain reaction CO chemical laser comprising the steps of
(a) mixing a CS-containing fuel in which the ratio of CS/CS_2 exceeds 0.2 with a stream of O_2 oxidizer and O-atom chain initiator such that more than one molecule of vibrationally-excited CO^* is produced from a pumping reaction for each O-atom introduced into the mixture and resulting in an inverted population of CO^*,
(b) passing said mixed stream through a resonant optical cavity to obtain continuous stimulated emission of radiation from the CO^*, and
(c) extracting a coherent laser beam from the optical cavity.

4,131,864
LOW VOLTAGE COMPENSATOR FOR POWER SUPPLY IN A COMPLEMENTARY MOS TRANSISTOR CRYSTAL OSCILLATOR CIRCUIT

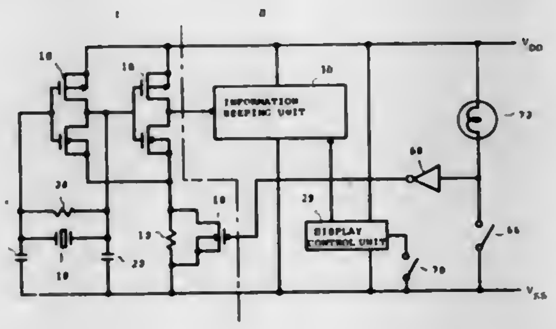
Takatoshi Kuzumoto, Yao; Kiyoshi Kumata, Tenri, and Keizo Yamamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 30, 1977, Ser. No. 811,860

Claims priority, application Japan, Jul. 1, 1976, 51-87656[U]

Int. Cl.² H03B *5/36*

U.S. Cl. 331—116 R **6 Claims**



1. In a complementary MOS transistor crystal oscillator circuit including two power supply terminals, a C-MOS inverter connected across said two power supply terminals, a quartz crystal vibrator connected between an input terminal and an output terminal of the C-MOS inverter, a first source resistor connected between the source of the N-channel transistor of the C-MOS inverter and one of said two power supply terminals, and a second source resistor connected between the source of the P-channel transistor of the C-MOS inverter and the other of said two power supply terminal, the improvement comprising:
a first switching means connected in parallel to the first source resistor;
a second switching means connected in parallel to the second source resistor;
a control means for causing the conduction of said first and second switching means; and
an enabling means for operating the control means.

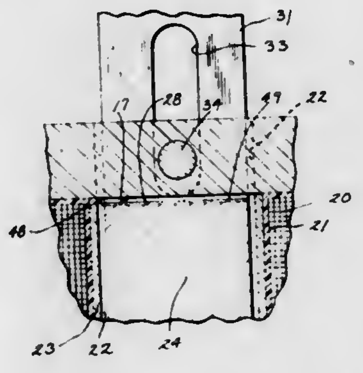
4,131,865
THREE POLE ELECTROMAGNET

John S. Hart, Racine, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Oct. 19, 1977, Ser. No. 843,463

Int. Cl.² H01F *7/08*

U.S. Cl. 335—257 **12 Claims**



1. An electromagnet, which includes:
a housing;
a stationary core of ferromagnetic material disposed within the housing, the core having a base and a pair of legs extending substantially perpendicular from the base, said core having a center pole face and a pole face at the end of each leg;
a movable armature of ferromagnetic material having a center pole face and two end pole faces, the armature being disposed in the housing opposite the core so that each pole face on the core is opposite a pole face on the armature;
an energizing coil associated with said core, so that when the coil is energized a magnetic force is induced which moves the armature from an open position to a closed position in which a three-legged magnetic circuit is formed; and
a coating of non-magnetic material on a center pole face, so that when the coil is energized the end pole faces of the armature and core are in direct contact and the center pole faces are separated by an airgap which includes a non-magnetic coating, said coating being longer wearing then the material making up the end pole faces of the armature and core so that the end pole faces may wear more quickly than the coating on the center pole.

4,131,866
SOLENOID DEVICES

Alan C. Torr, Alvaston, England, assignor to Expert Industrial Controls Limited, Leicestershire, England

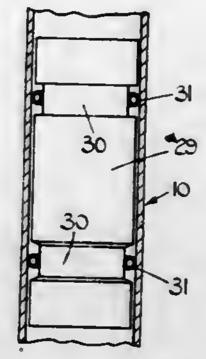
Filed Apr. 19, 1977, Ser. No. 788,894

Claims priority, application United Kingdom, May 1, 1976, 17871/76

Int. Cl.² H01F *7/16*

U.S. Cl. 335—262 **11 Claims**

1. A solenoid device:
comprising a tube of circular cross-section;
an axially movable cylindrical armature mounted within the tube;
an electrical winding, said armature, when the winding is supplied with electric current, moving axially within the tube;
means for defining a circumferential recess with respect to the internal surfaces of the tube or armature; and
a rolling bearing means comprising an elongated resilient member in said recess, said member extending in a generally circumferential direction and having a substantially circular peripheral surface, the dimensions of said recess and said member being such that when the device is assembled the member will be lightly pinched between said tube and said armature but is capable of rolling within said recess during relative axial movement of said tube and said armature.



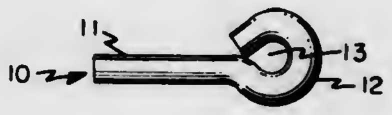
4,131,867
LAMP BALLAST ATTACHMENT DEVICE

Honesto D. Quiogue, Blacksburg, Va., assignor to Harvey Hubbell, Incorporated, Orange, Conn.

Filed Aug. 25, 1977, Ser. No. 827,454

Int. Cl.² H01F *15/02*

U.S. Cl. 336—65 **21 Claims**



1. In a luminaire, the combination of a ballast having a core formed of a plurality of flat plates laminated together with edges thereof substantially coextensive to provide one end portion having a width dimension in a plane at generally right angles to the plane of the plates, internal wall portions of the core defining at least one elongated bore of substantially circular cross-section extending through the core and the opposite outer plates thereof, the bore being oriented with the longitudinal axis thereof substantially perpendicular to the plane of said outer plates, and a ballast support plate having a plurality of spaced-apart support openings in the support plate, each of the support openings being spaced from a respective, outermost core plate and having a major axis substantially at right angles to the longitudinal axis of the bore, wherein the improvement comprises, a plurality of elongated mounting devices located on opposite respective sides of the outermost core plates, each of said devices having a smooth, elongated shank with a substantially uniform cross-sectional dimension slightly less than the corresponding cross-sectional dimension of the bore, the shanks of the devices being slidably and coaxially disposed in a different respective end of the bore to have a free end projecting outwardly from the bore, the free end of each of said devices being spaced from the supporting surface by a predetermined distance, at least a portion of which comprises free unobstructed space, individual fastener means engaged with the free ends of said mounting devices and inserted into different ones of the support openings to urge said free ends toward the support plate, said fastener means having a major axis thereof intersecting the longitudinal axis of the bore for mounting each of the free ends of said mounting devices, the distance between opposite, individual fastener means being greater than

the width dimension of the largest ballast core to be mounted on the luminaire, the shank of each mounting device having a sufficient length for substantial portions of each shank to remain within a bore having a shorter length, corresponding to a ballast core having a smaller width dimension, than that of said largest core, the free end of each device having an aperture formed therein and being attached to said support by individual fastener means passing through each said aperture, whereby ballasts of different width dimensions are held on the luminaire by and between the devices.

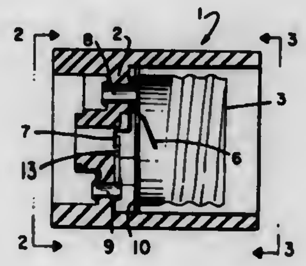
4,131,868
INCANDESCENT LAMP SOCKET HAVING OVERTEMPERATURE PROTECTOR

Joseph A. Dombrowski, Manchester; Clement T. Baxter, Beverly, both of Mass.; Frederick B. Howard, Cape Elizabeth, and George H. Simpson, Westbrook, both of Me., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Mar. 7, 1977, Ser. No. 774,825

Int. Cl.^{2} H01H *61/01*

U.S. Cl. 337—113 **5 Claims**



1. A socket for an electric lamp comprising an insulative housing containing a threaded metal shell for screwing a lamp base thereinto, a spring metal contact within said housing for making contact with the center contact of the lamp base, means for supplying electric current to said threaded metal shell and said spring metal contact, and a thermal protector within said housing to interrupt the electric current when the socket becomes heated above a predetermined temperature, wherein said thermal protector is normally closed at the normal operating temperature of the socket but opens at a predetermined higher temperature.

4,131,869
PLUG-IN FUSE ASSEMBLY CONSTRUCTION

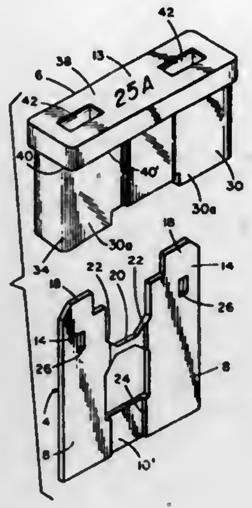
John Schmidt, Jr., Mount Prospect, and Avinash Aryamane, Elk Grove, both of Ill., assignors to Littelfuse, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 698,079, Jun. 21, 1976, Pat. No. 4,023,264. This application Apr. 25, 1977, Ser. No. 790,665

Int. Cl.^{2} H01H *85/22*

U.S. Cl. 337—264 **17 Claims**

1. A high current plug-in fuse assembly comprising: a plug-in fuse element including a pair of laterally spaced generally parallel confronting terminal portions, the terminal portions having current-carrying extensions projecting longitudinally from the inner end portions thereof and which are interconnected by a fuse link made of fuse metal, said fuse link extending between said current-carrying extensions at points much closer to said terminal portions than to the outer ends of said current-carrying extensions, and an insulating body rigidly anchored between said current-carrying extensions and made of a material which has a relatively low melting temperature in comparison to the blowing temperature of the fuse link of said plug-in fuse element, said insulating body being substantially spaced from said fuse link portion of said plug-in fuse element.



4,131,870
SLIDE RESISTOR

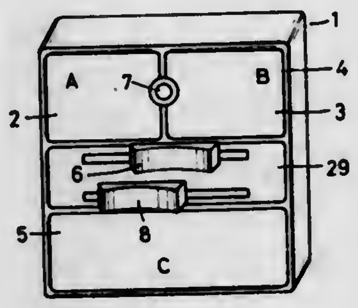
Joachim Hilgendorf, Salz, and Karl-Heinz Funke, Bad Neustadt, both of Fed. Rep. of Germany, assignors to Preh, Elektro-Feinmechanische Werke, Jakob Preh Nachf, Fed. Rep. of Germany

Filed Jun. 24, 1977, Ser. No. 809,868

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1976, 7620297[U]

Int. Cl.^{2} H01C *10/44*

U.S. Cl. 338—183 **12 Claims**



1. A slide resistor comprising
(a) collector means of high electrical conductivity formed as an elongate structure of generally U-shaped cross-section and having a pair of legs and a first slot therebetween.
(b) resistance means including an insulating support mounted on a first one of said pair of legs and carrying a resistance layer facing the second one of said pair of legs, and
(c) slider means guided between said pair of legs and including contact spring means contacting said collector means and said resistance layer, and an actuating member engaging said contact spring means and extending through said first slot for operation from outside said collector means.

4,131,871
ELECTRICAL DEVICE AND METHOD

Donald L. Haag, Sterling, and Lee O. Woods, Morrison, both of Ill., assignors to General Electric Company, Fort Wayne, Ind.

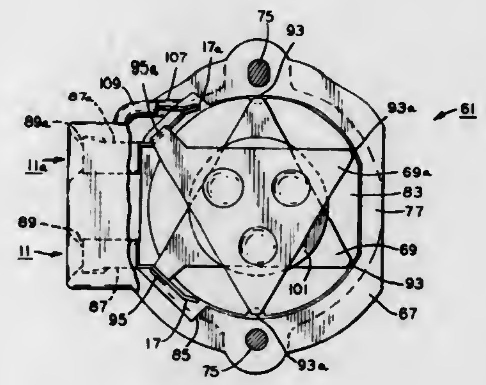
Filed Jan. 24, 1977, Ser. No. 761,584

Int. Cl.^{2} H01C *13/00*

U.S. Cl. 338—220 **27 Claims**

1. An electrical device adapted to be associated in electrical mounting engagement with a pair of stationary male mounting terminals for connection in circuit relation with a winding circuit of a dynamoelectric machine, the electrical device comprising a casing; a plurality of wall means on said casing

defining a chamber therein and including a pair of opposed end walls, and a sidewall interposed between said end walls; a PTCR; a pair of contact plates disposed in electrical and supporting engagement across said PTCR and mounted in said chamber between said end walls; means on said contact plates for positioning engagement with said sidewall, respectively; first and second apertures in said casing and extending through said sidewall so as to communicate with said chamber; said chamber including recess means in said sidewall and intersecting with at least one of said first and second apertures; first and second female terminals of a generally thin metal having good electrical conductive characteristics and respectively including first and second electrical connector sections generally confined in said first and second apertures and adapted for the association in the electrical mounting engagement with the male mounting terminal pair, and first and second supporting sections integral with said first and second electrical connector sections for connection in electrical conductive engagement with said contact plates; a first end portion of said first supporting section disposed in said chamber and connected in the electrical conductive engagement with one of said contact plates; said second electrical connector section including a split sleeve portion in said second aperture and disposed for limited displacement movement therein, an opening in said split sleeve portion generally aligned with said second aperture and in which one of the male mounting terminals may be received upon the association in the electrical mounting engagement of the first and second electrical connector sections with the male mounting terminal pair; said second supporting section being disposed generally in said recess means and including a distal end portion spaced from said split sleeve portion, a first leg integrally formed between said split sleeve portion and said distal end portion, a second leg integrally formed with said distal end portion and extending generally in laterally spaced relation with said first leg, a second end portion on said second leg spaced generally adjacent said split sleeve portion and connected in the electrical conductive and mechanical engagement with the other of said contact plates, and at least one of said first leg and said second leg including a section operable generally to yield in the event of the occurrence of the displacement movement of the split sleeve portion in said second aperture upon the association of said first and second electrical connector sections in the electrical mounting engagement with the male mounting terminal pair so as to at least in part limit the translation of the displacement movement of said split sleeve portion through the second supporting section to said other contact plate.



4,131,872
ULTRASONIC WAVE ECHO-TYPE SWITCH

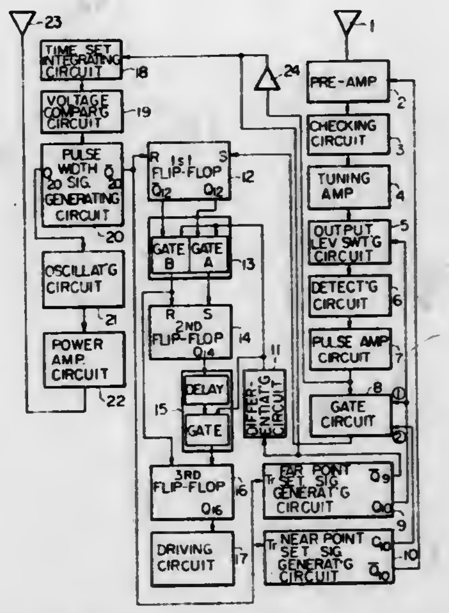
Hiromitsu Inoue, Kyoto; Susumu Katayama, and Hiroshi Ohashi, both of Hirakata, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Dec. 9, 1976, Ser. No. 749,072

Claims priority, application Japan, Dec. 15, 1975, 50-149810; Dec. 15, 1975, 50-149826; Jun. 14, 1976, 51-69520

Int. Cl.^{2} G01S *9/66*

U.S. Cl. 340—1 R **5 Claims**



1. An ultrasonic wave echo-type switch comprising:
an oscillator for generating an ultrasonic wave,
an emitter excited by an output of said oscillator to radiate the ultrasonic wave into air,
a receiver for receiving any reflected ultrasonic wave from an object to be detected,
a wave-receiving timing control section determining a timing period for confirming the reflected wave,
a reflected wave confirming section for confirming whether any reflected wave is received during said timing period,
a received wave confirming section for confirming that the reflected wave is received during at least two successive timing periods,
a reset operating section for reseting the received wave confirming section in the absence of the received wave during the timing period,
an input absence detecting section for detecting that no input to the receiver continues for a fixed time after the timing period and providing a next wave radiation controlling signal in response to such detection, and
a next wave radiation controlling section for controlling the next wave radiation responsive to said signal of the input absence detecting section.

4,131,873
SLANT RANGE AND DIRECTION DETECTOR

William B. Anderson, Silverdale, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 31, 1977, Ser. No. 764,483

Int. Cl.^{2} G01S *3/80*

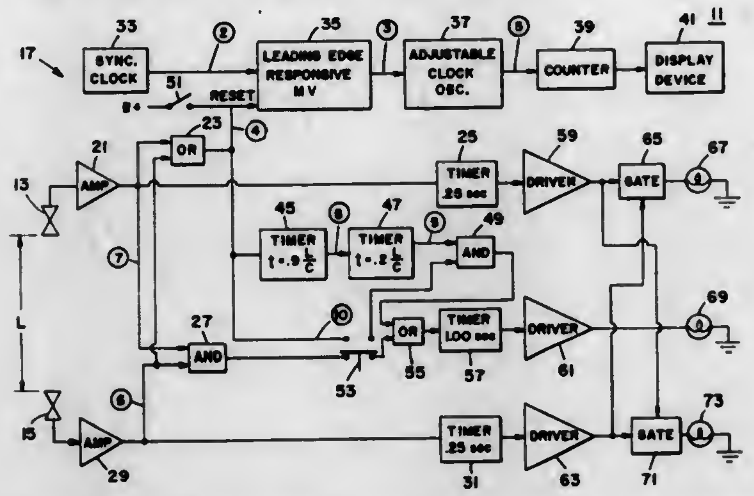
U.S. Cl. 340—6 R **8 Claims**

1. A range and direction detector for determining the range and direction of an underwater object emitting an acoustic signal having a predetermined repetition frequency comprising:
(a) first and second hydrophone receivers;
(b) a synchronous clock for providing an output signal that is synchronized with said acoustic signal;
(c) an OR gate and an AND gate;
(d) the output of said first hydrophone connected to one input of said AND gate and to one input of said OR gate,

the output of said second hydrophone connected to the other input of said AND gate and to the other input of said OR gate;

(e) a range detection means;

(f) a direction detection means including an end fire detection means and a broadside detection means;



(g) the output of said OR gate being connected to a reset input of said range detection means to initiate the range detection means and to the input of said end fire detection means;

(h) the output of said AND gate being connected to said broadfire detection means.

4,131,874

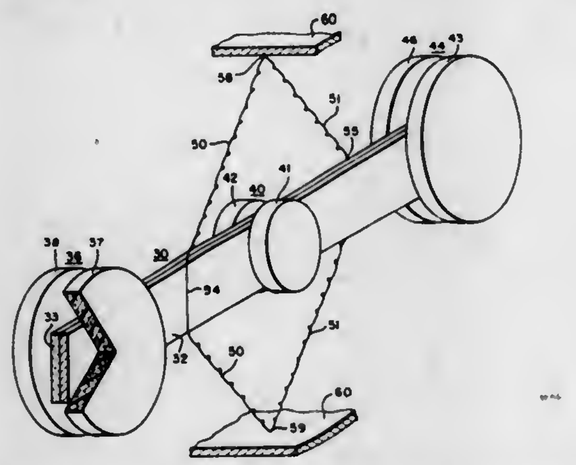
INERTIAL BALANCED DIPOLE HYDROPHONE

Kenneth P. Geohegan, Jr., Catonsville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 12, 1977, Ser. No. 796,243

Int. Cl.² H04B *13/00*

U.S. Cl. 340-10 **20 Claims**



1. An inertia balanced hydrophone for detection of acoustic signals in an underwater environment comprising:

(A) a piezoelectric bender unit having at least one bender node;

(B) means for supporting said bender unit at said node,

(C) electrical leads connected to said bender unit to provide an output signal;

(D) at least first and second masses affixed to said bender unit at spaced apart locations with said node between them;

(E) said first and second masses being of respective sizes, masses and shapes that the acceleration of said masses are different in response to the same acoustic signal but are the same in response to physical movement of said support means whereby the output signal due to support motion is substantially zero.

4,131,875

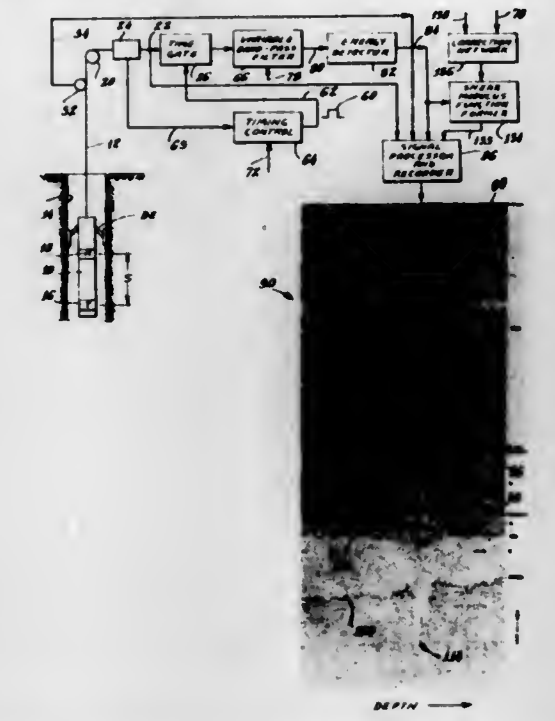
METHOD AND APPARATUS FOR ACOUSTIC LOGGING OF A BOREHOLE

John D. Ingram, Meudon, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 12, 1975, Ser. No. 631,348

Int. Cl.² G01V *1/40*

U.S. Cl. 340—15.5 BH **45 Claims**



1. A method for generating separable early and late arrivals in a waveform representative of a sonic investigation of a borehole, comprising the steps of:

generating acoustic waves for travel to a receiver in a borehole at a preselected distance from a transmitter and forming measurable energies for the early and late arrivals, the frequencies of the generated waves being selected to preferentially enhance, relative to early arrivals, those late arrivals whose wave lengths are substantially larger than the diameter of a borehole;

producing waveforms from the receiver wherein the waveforms include frequency-separable early arrivals and late arrivals wherein the late arrivals have wavelengths substantially larger than the diameter of the borehole.

4,131,876

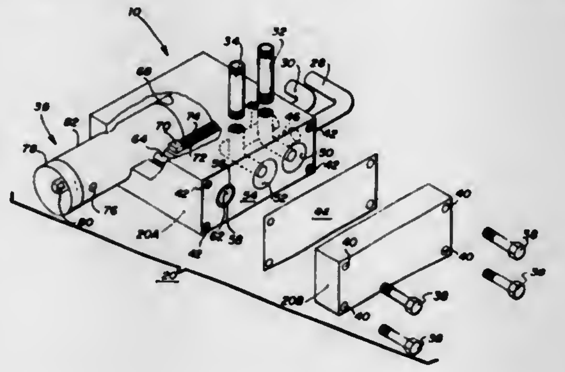
PNEUMATIC TIRE PRESSURE MONITOR

Barry N. Dees, Sr., and Barry N. Dees, Jr., both of Rte. 2, Box 321D, Midlothian, Tex. 76065

Filed May 9, 1977, Ser. No. 795,322

Int. Cl.² B60C *23/04*

U.S. Cl. 340—58 **31 Claims**



1. A monitoring apparatus for detecting a predetermined drop in the pressure of a pneumatic tire mounted on a vehicle comprising:

a housing for being positioned on a tire wheel and including a first chamber for communicating with the interior pressure of the pneumatic tire,

visual signalling means mounted in said housing and movable between a retracted position and an extended position visible to the operator of the vehicle,

actuator means for releasably securing said signalling means within said housing member in said retracted position,

a second chamber formed in said housing for maintaining therein a predetermined reference level of fluid pressure,

diaphragm means responsive to the pressure differentials between said first and second chambers, and

said actuator means responsive to said diaphragm means for releasing said visual signalling means for movement to said extended position to signal a predetermined drop in pressure within the pneumatic tire.

4,131,877

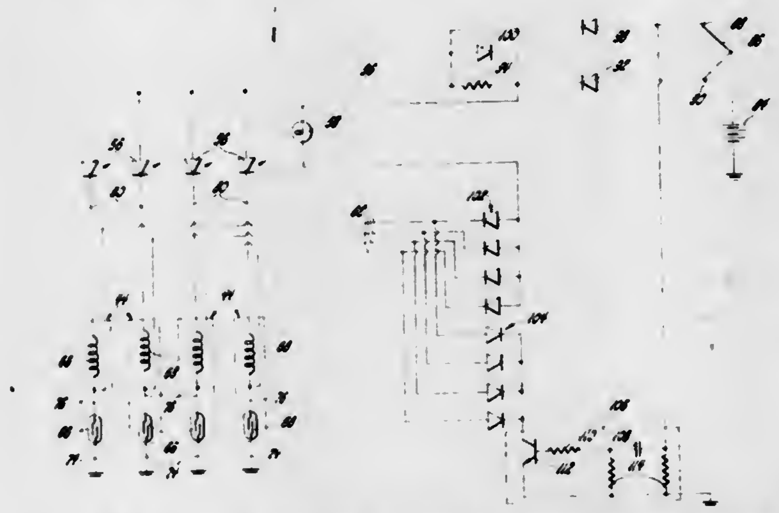
LOW TIRE PRESSURE INDICATOR CIRCUIT

John A. Stewart, Flint, and Wayne C. Nichols, Corunna, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 24, 1977, Ser. No. 809,789

Int. Cl.² B60C *23/02*

U.S. Cl. 340—58 **3 Claims**



1. In a low tire pressure indication system having magnet means for providing a magnetic field when low tire pressure occurs and an indicator circuit having a reed switch responsive to the magnetic field which causes the closure of the reed switch during a low tire pressure condition, the indicator circuit comprising

a power supply,

a coil and an indicator device serially connected with the reed switch and the power supply whereby the indicator device and coil are energized when the reed switch is closed, the magnetic flux of the coil being coupled to the reed switch to close the reed switch if it is open and latch the reed switch closed when the coil is energized,

a control switch connected to said power supply having a first and a second position which in the first position closes the indicator circuit to furnish power to actuate the indicator device when the reed switch is closed in response to the magnetic field when low tire pressure occurs and which in the second position furnishes electrical power to the indicator circuit during circuit testing,

and a pulse developing circuit responsive to movement of the control switch to its said second position including means connected in series with said coil and in shunt with said reed switch for momentarily energizing the coil for a time period sufficiently long to close the reed switch whereby the reed switch is latched closed to energize and thereby test the indicator circuit so long as the control switch is in said second position, the movement of said control switch from said second to said first position being operative to interrupt the supply of power to said coil for a time period sufficient to permit unlatching of said reed switch whereby said system is set to provide low tire pressure indication.

4,131,878

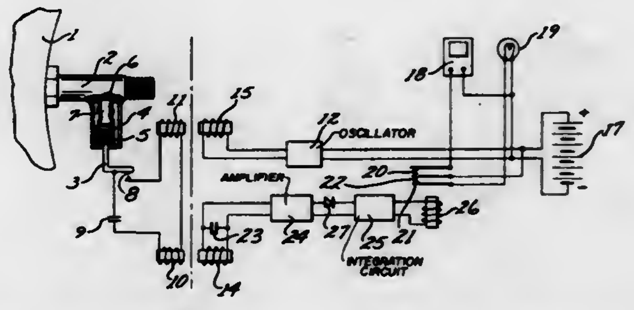
DETECTOR FOR A PNEUMATIC TIRE

Sumi Yasuo, 12-4, 2-chome, Ebisu Minami, Shibuyaku, Tokyo, Japan

Continuation of Ser. No. 314,702, Dec. 13, 1972. This application May 11, 1976, Ser. No. 685,483

Int. Cl.² B60C *23/02*

U.S. Cl. 340—58 **7 Claims**



1. An information detector for detecting a parameter of a vehicle wheel comprising:

an electric circuit including an electromagnetic coupling, a first element of which is mounted for rotation with a wheel of a vehicle and a second element of which is fixed;

said first element comprising a first pair of coils interconnected with one another and said second element comprising a second pair of coils;

said first and second pairs of coils being arranged to come into opposing relationship at least once during a revolution of the wheel to provide electromagnetic coupling therebetween;

an oscillator arranged to supply a continuous oscillating signal of substantially fixed frequency to one of said second pair of coils;

a sensing element arranged to sense a parameter of the wheel connected between the coils and said first pair to control the current flowing between said coils in accordance with said parameter; and,

indicating means responsive to signals induced in the other of said second pair of coils to provide an indication of changes in said parameter,

said oscillating signal provided by said oscillator to said one of said second pair of coils remaining continuous with changes in said parameter.

4,131,879

METHOD AND APPARATUS FOR DETERMINING THE RELATIVE POSITIONS OF CORRESPONDING POINTS OR ZONES OF A SAMPLE AND AN ORGINAL

Kurt Ehrat, Steinmaur, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Apr. 25, 1977, Ser. No. 790,606

Claims priority, application Switzerland, Apr. 30, 1976, 5449/76

Int. Cl.² G06K *9/04*

U.S. Cl. 340—146.3 H **30 Claims**

1. A method of determining the relative positions of corresponding image points of a two-dimensional original and a two-dimensional sample comprising the steps of:

electronically pointwise scanning the original in accordance with a raster which is stationary with respect to the original;

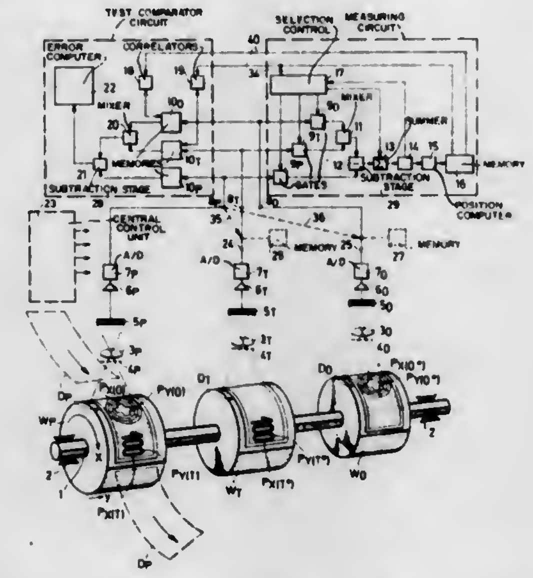
selecting a plurality of individual positioning zones equally from the original and the sample so that corresponding zones of the original and the sample consist of corresponding image points and said zones are comparatively small with respect to the total area of the original and the sample;

fixing the sample with respect to a further scanning raster which has the same geometrical properties as said stationary scanning raster;

electronically pointwise scanning the sample;

electronically processing the scanning data obtained from scanning the original and the sample so as to obtain first position data indicative of the relative position of said individual positioning zones of said sample pattern each with respect to an individual raster zone of said further scanning raster, each individual raster zone being defined by the raster points corresponding to those raster points of the respective individual positioning zone of the original; and

interpolating and extrapolating the first position data so as to obtain second position data which is indicative of the relative position of the image points of the sample each with respect to an individual raster point of said further scanning raster, said individual raster points corresponding to those raster points of the stationary scanning raster which coincide with the respective image points of the original.



4,131,880

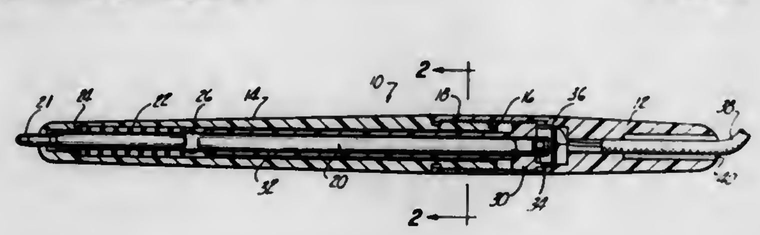
SIGNATURE VERIFICATION PEN

Pepe Siy, Dearborn Heights, and Joseph R. Brown, Riverview, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 26, 1977, Ser. No. 845,642

Int. Cl.^{2} G06K *9/00*

U.S. Cl. 340—146.3 SY **10 Claims**



1. A pressure-sensitive signature verification device for use in a personal identification system wherein handwriting pressure is used as an identifying discriminant, the device comprising:

a stylus housing defined by a hollow, substantially cylindrical body having a longitudinal axis;

a stylus cartridge disposed within the stylus housing along the longitudinal axis thereof, the stylus cartridge terminating at one end in a writing tip adapted for contact with a writing surface, and terminating at another end in a bearing surface for transmitting reactive forces caused by the contact of the writing tip with the writing surface;

capacitive transducer means, mounted in contiguous relation with the bearing surface of the stylus cartridge and responsive to pressure pertubations of the bearing surface thereagainst, for providing an output signal related to the time rate of change of the pressure pertubations; and

integrator circuit means, responsive to the output signal of the capacitive transducer means, for providing an output signal directly related to the pressure pertubations of the stylus cartridge against the capacitive transducer means.

4,131,881

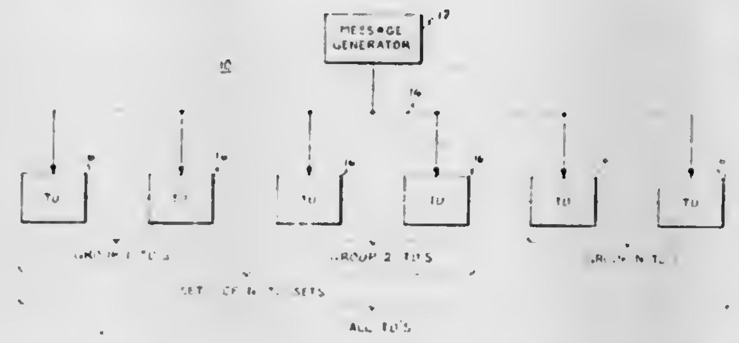
COMMUNICATION SYSTEM INCLUDING ADDRESSING APPARATUS FOR USE IN REMOTELY CONTROLLABLE DEVICES

Paul B. Robinson, Durham, N.H.

Filed Sep. 12, 1977, Ser. No. 832,795

Int. Cl.^{2} H04Q *9/00*

U.S. Cl. 340—167 R **16 Claims**



1. In a data communication system of the type including a plurality of simultaneously addressable remote terminal units in communication with a message generator, each message having an address field of a specified number of binary bits, combinations of which specify terminal unit addresses and a mode field containing at least one binary bit for specifying an address mode, apparatus in each of said remote terminal units for recognizing a plurality of addresses comprising:

(a) storage means for receiving messages from said message generator, said storage means having an address portion and a mode portion for storing the binary bits of the address and mode fields respectively of a received message;

(b) means for generating address signals representative of addresses assigned to the individual remote terminal units, the number of assignable addresses corresponding in number to at least the maximum number specifiable by the address field bits of said messages;

(c) comparator means in communication with the address portion of said storage means and said means for generating address signals, said comparator means selectively generating at least first and second output selection signals when a comparison exists between the contents of the address portion and an assigned address specified by said address signals; and

(d) gating means responsive to specified binary bits of the address field and the mode field bit from said storage means and to said at least first and second output selection signals from said comparator means, said gating means selectively generating a terminal unit address enable signal for use by the respective terminal units in response to,

(i) a first message received by said storage means to simultaneously address all terminal units in accordance with a predetermined combination of the specified binary bits of the address field when the mode field bit is in a first binary state,

(ii) a second message received by said storage means to simultaneously address a first number of terminal units in accordance with a first output selection signal from said comparator means when the mode field bit is in said first binary state,

(iii) a third message received by said storage means to address a second number of terminal units in response to said predetermined combination of said specified binary bits of the address field and a second output selection signal from said comparator means when the mode field bit is in a second binary state, and

(iv) a fourth message received by said storage means to address a single terminal unit in response to the first and second output selection signals from said comparator means when the mode field bit is in said second state.

4,131,882

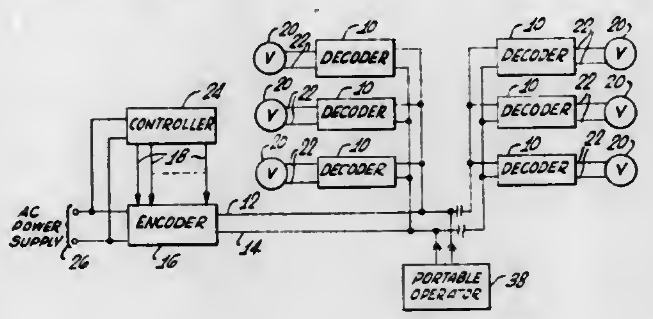
DIGITAL TWO-WIRE IRRIGATION CONTROL SYSTEM WITH FEEDBACK

Michael D. Hollabaugh, San Jose, and Vinod Panday, Pomona, both of Calif., assignors to Clemar Manufacturing Corporation, Glendora, Calif.

Filed Dec. 29, 1975, Ser. No. 644,535

Int. Cl.^{2} H04B *3/00*

U.S. Cl. 340—310 A **35 Claims**



24. A digital irrigation control system in which both power and control signals are transmitted along the same conducting lines to control a plurality of switchable valves, said system comprising:

at least one decoder for decoding control signals, including decoder addresses and on/off codes;

means at said decoder for transmitting feedback signals of a first type indicating that an on/off code addressed to said decoder has been received;

portable control means connectable to the conducting lines to control the switchable valves, said portable control means including

means responsive to control signals transmitted along the lines and addressed to said portable control means, for transmitting feedback signals of the first type, indicating that said portable control means is connected to the lines,

manually operable means for selecting decoder control functions, and

means for transmitting feedback signals of a second type, to convey the selected decoder control functions; and an encoder including

means for detecting and storing feedback signals of said first and second types,

means for selecting for transmission on/off codes from a predetermined sequence of commands, if said portable control means is not connected to the lines,

means for selecting for transmission on/off codes determined by said feedback signals of the second type, if said portable control means is connected to the lines, and

means for encoding the selected on/off codes and decoder addresses onto the lines for transmission to said decoder and said portable control means.

4,131,883

CHARACTER GENERATOR

Jan-Erik Lundstrom, Vasteras, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Jan. 13, 1977, Ser. No. 759,208

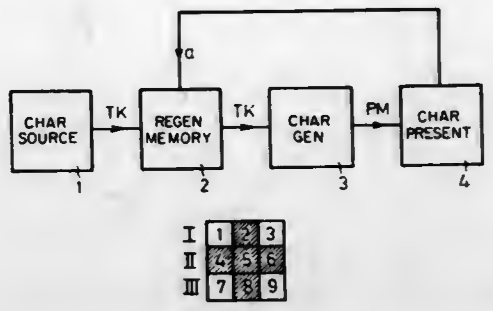
Claims priority, application Sweden, Jan. 20, 1976, 7600544

Int. Cl.^{2} G06K *15/20*

U.S. Cl. 340—324 AD **5 Claims**

1. A character generator for receiving input character data and generating corresponding characters of variable size and shape in the form of dot matrices on a raster scan display, comprising:

a character memory for storing information defining a characteristic dot matrix for each distinguishable character, said information including a plurality of dot matrix data fields, each field having a plurality of link bits associated therewith for defining the position of the field within the dot matrix of a character.



4,131,884

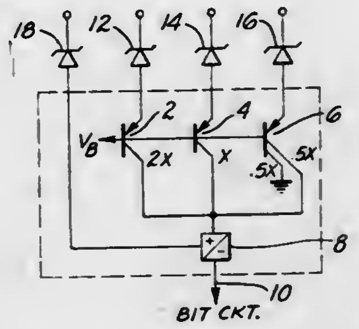
TRIMMING CONTROL CIRCUIT FOR A DIGITAL TO ANALOG CONVERTER

Donald T. Comer, Los Gatos, Calif., assignor to Precision Monolithics, Inc., Santa Clara, Calif.

Filed Feb. 14, 1977, Ser. No. 768,327

Int. Cl.^{2} H03K *13/02*

U.S. Cl. 340—347 CC **17 Claims**



1. In a digital to analog converter having a plurality of bit circuits, and a corresponding plurality of leads for transmitting input digital voltage signals below a predetermined threshold level to said bit circuits, at least some of said bit circuits each having an associated plurality of selectable trimming elements, wherein the improvement comprises:

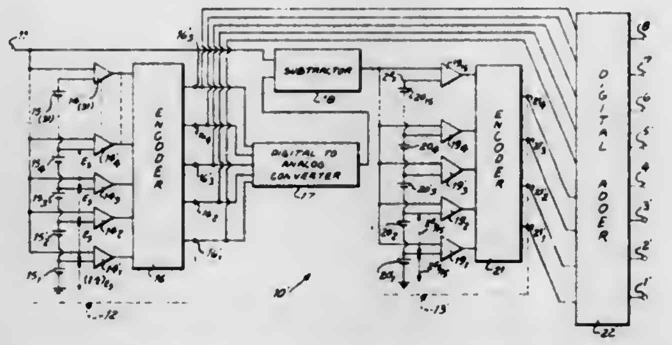
a two-terminal actuating means for each of said elements, each actuating means being operable in response to a pair of gating voltage signals in excess of said threshold level applied to its terminals, and

means connecting the terminals of each actuating means in circuit respectively with a unique pair of leads, said leads providing gating signal paths enabling the selection of a trim signal for each bit circuit by applying gating signals to those lead pairs which are connected to the actuating means for the desired combination of elements, said bit circuits being capable of withstanding gating voltages applied at their respective leads, and

a positive voltage bus connected in circuit with each of said actuating means to supply an actuating signal to said trimming elements when said actuating means are operated, said bus also being connected to supply an operating voltage to said bit circuit.

4,131,885
PARALLEL-SERIAL ANALOG TO DIGITAL CONVERTERS

Takeshi Ninomiya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 29, 1976, Ser. No. 681,507
Claims priority, application Japan, May 1, 1975, 50-52030
Int. Cl.^{2} H03K ***13/175***
U.S. Cl. 340—347 AD **14 Claims**

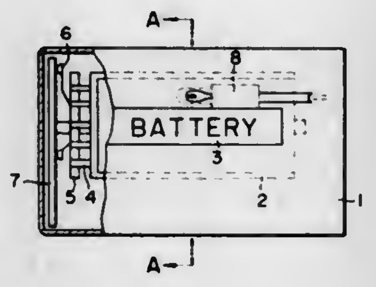


1. An analog to digital converter comprising: a plurality of parallel conversion units in a serial arrangement comprising a preceding parallel conversion unit and a following parallel conversion unit for specifying respective groups of decreasingly significant bits of a digital character, each of said parallel conversion units including a number of comparators having first inputs for receiving an analog signal and second inputs for receiving respective voltage level reference signals, and encoder means receiving the outputs of said comparators for providing an encoded output specifying the most significant group of bits of a digital character corresponding to the analog signal received by said first inputs of the respective comparators; an input terminal for receiving a sampled analog input signal said input terminal being connected to said first inputs of the comparators in said preceding parallel conversion unit to supply said sampled analog signal thereto; means interposed in said serial arrangement of parallel conversion units for reconverting the most significant group of bits to an analog signal and subtracting the reconverted analog signal from said sampled analog input signal to produce an analog difference signal and for applying the analog difference signal to said first inputs of the comparators in the following parallel conversion unit; means for applying to said second inputs of the comparators in each of said parallel conversion units voltage level reference signals of magnitudes which descend in respective voltage steps, with the lowest voltage level reference signal applied to the lowest level comparator of the preceding parallel conversion unit being substantially different from the remaining voltage level reference signals for each of the other comparators in the preceding parallel conversion unit and the range of the voltage level reference signals for said following parallel conversion unit being larger than, and offset in respect to, said steps of the voltage level reference signals for said preceding parallel conversion unit; and digital adding means adding the encoded outputs of all of said parallel conversion units with the least significant bit of the encoded output from said preceding parallel conversion unit and the most significant bit of the encoded output from said following parallel conversion unit being accorded the same weight.

4,131,886
INDICATION SYSTEM

Shuichi Kosuge, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan
Filed Mar. 16, 1977, Ser. No. 778,171
Claims priority, application Japan, Mar. 25, 1976, 51/32947; Apr. 9, 1976, 51/40654
Int. Cl.^{2} G08B ***19/00***
U.S. Cl. 340—378 R **11 Claims**

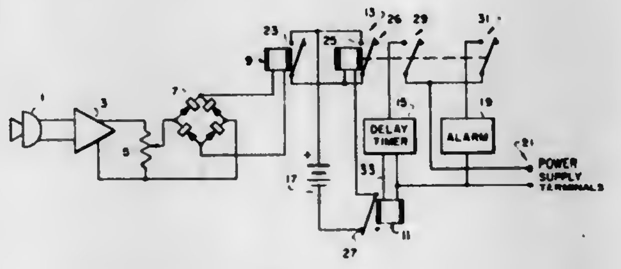
1. An indication system comprising:
- a plurality of on-off switches for respectively generating detection signals indicative of abnormal conditions in response to either on or off conditions thereof;
- a rotary switch having a movable contact and a plurality of stationary contacts being respectively connected to said on-off switches to be supplied with said detection signals;
- an indication drum coupled to said switch for causing said movable contact to slide over said stationary contacts during the rotation thereof, said indication drum being recorded with a plurality of marks thereon corresponding to respective abnormal conditions detected by said on-off switches;



- a manual switch operative manually to generate a command signal;
- first means for generating a first signal in response to either one of said detection signals or said command signal;
- second means for generating a second signal in response to the contact of said movable contact with one of said stationary contacts supplied with corresponding one of said detection signals; and
- actuating means for rotating said indication drum in response to said first signal applied from said first means and stopping said indication drum in response to said second signal applied from said second means.

4,131,887
INTRUSION ALARM SYSTEM UTILIZING THE BARKING OF A WATCHDOG

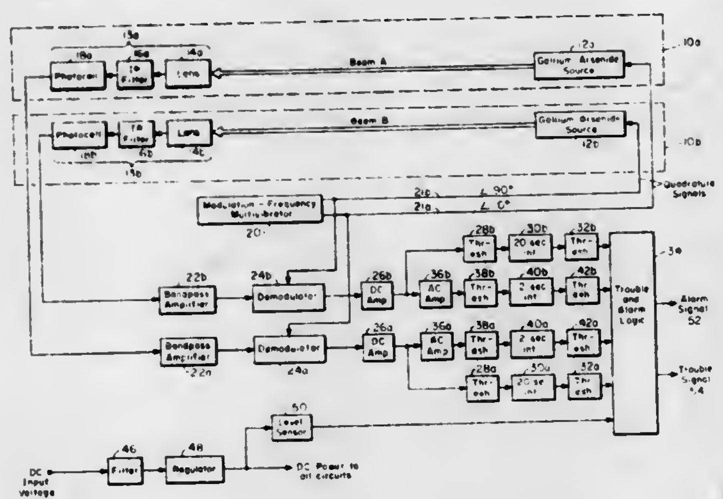
Warren D. Birkenhead, 59-529 Hoalike Rd., Haleiwa, HI. 96712
Filed Feb. 14, 1977, Ser. No. 768,271
Claims priority, application Japan, Aug. 19, 1976, 51-99191
Int. Cl.^{2} G08B ***13/00***
U.S. Cl. 340—566 **5 Claims**



1. An intrusion alarm for detecting the cry of an animal uttered in response to the approach of an intruder, and for actuating an electrically operated intrusion reaction device, comprising: microphone means responsive to audio signals to produce corresponding electrical signals therefrom; audio amplifier means operatively connected to said microphone means to amplify said electrical signals; a first switch means operatively connected to said audio amplifier means and being normally open but closing in response to receipt of said electrical signals; an electrically operated intrusion reaction device; delay means to cause said intrusion reaction device to operate for a selected period of time after said first swithc means has closed, comprising second and third switch means; said second switch means being normally closed and said third switch means being normally open, said third switch means responding to the closing of said first switch means by itself closing to complete an energizing circuit for said intrusion reaction device and to initiate a delay of said selected period of time provided by said delay means, said second switch means being operative to open at the end of said selected period of time to again open said third switch means and, hence, break said energizing circuit for said intrusion reaction device.

4,131,888
DUAL PROJECTED-BEAM SMOKE DETECTOR

Aaron A. Galvin, Lexington, Mass., assignor to American District Telegraph Company, New York, N.Y.
Filed Aug. 18, 1976, Ser. No. 715,405
Int. Cl.^{2} G08B ***17/10***
U.S. Cl. 340—630 **13 Claims**

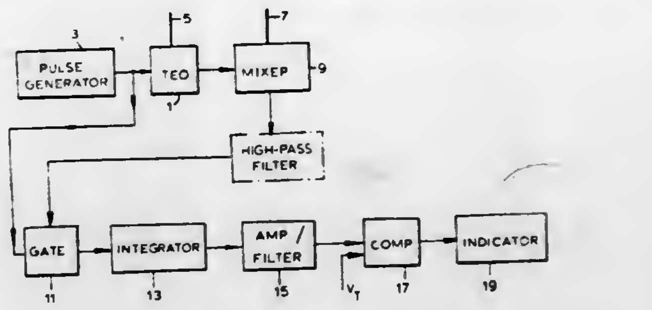


1. Apparatus for detecting the presence of smoke, comprising:
- first and second detector channels, each including:
  - means for transmitting a beam of radiation over a path;
  - means for receiving the transmitted beam of radiation; and
  - means for sensing a level of received radiation and for producing an intermediate signal representative thereof;
- the paths of the beams of radiation in the first and second detector channels being substantially parallel; and
- alarm means to which are applied the intermediate signals from the first and second detector channels for producing an alarm signal in response to values of the intermediate signals indicative of the concurrent presence of smoke in the paths of both the first and second channels;
- the sensing means further including:
  - first threshold means for determining when the level of the received radiation has decreased by a first percentage for a first predetermined duration and for producing an output signal indicative thereof; and
  - second threshold means for determining when the level of the received radiation has decreased by a second percentage, larger than said first percentage, for a second predetermined duration, longer than said first predetermined duration, and for producing an output signal indicative thereof;
- the alarm means further including:
  - means for providing an alarm signal in response to the presence of an output signal from the first threshold means of both first and second channels;
  - means for producing a trouble signal in response to the occurrence of an output signal from the second threshold means of either channel.

4,131,889
MINIATURE DOPPLER RADAR SYSTEMS AND MICROWAVE RECEIVERS SUITABLE THEREFOR

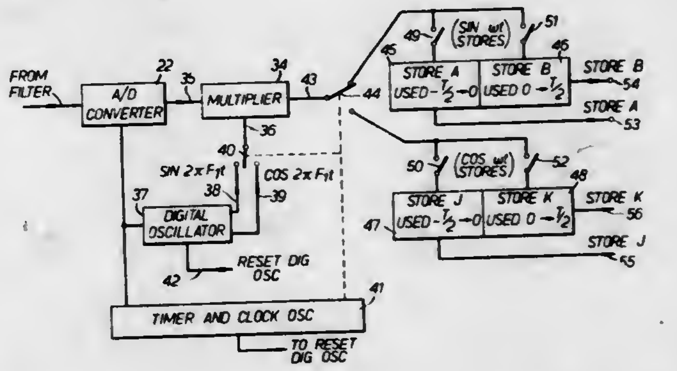
Kenneth W. Gray, Malvern, England, assignor to National Research Development Corporation, London, England
Filed Feb. 8, 1977, Ser. No. 766,789
Int. Cl.^{2} G01S ***9/44***
U.S. Cl. 343—8 **7 Claims**

1. A doppler radar system comprising a solid state microwave source, pulsing means for repetitively pulsing the source on and off, a transmit antenna for transmitting the microwave signal generated by the source, a receive antenna for receiving reflections for a moving object of signals transmitted from the transmit antenna, said source generating a reference signal consisting of pulses of microwave radiation coinciding with at least a proportion of the received signal pulses, a mixer connected to said source via a leakage path for mixing the received and reference signals to produce a pulsed electrical output, an electrical pulse means for providing a doppler signal output from the successive amplitude values of a pulsed input signal, a gate for applying when open the output of the mixer to the providing means, and means for opening the gate in a pulsed manner in coincidence with the mixer output pulses.



4,131,890
SPECTRAL ANALYSIS

John D. Outram, Titchfield, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland
Filed Apr. 7, 1977, Ser. No. 785,695
Claims priority, application United Kingdom, Apr. 8, 1976, 14268/76
Int. Cl.^{2} G01R ***23/02***
U.S. Cl. 343—108 M **6 Claims**



1. A method of frequency identification comprising mixing an unknown frequency signal with first and second quadrature related functions of a known frequency signal alternately for a predetermined period, storing a plurality of samples taken over the whole of the period of the product of the unknown frequency signal and the first function of the known frequency signal, storing a plurality of samples taken over the whole of the period of the product of the unknown frequency signal and the second function of the known signal and processing the samples to solve the equation:

$$G(f_1) = \frac{aT}{2}\left(\frac{e^{j(\theta-\frac{\pi}{2})}\operatorname{Sin}\pi T(fo-f1)}{\pi T\,(fo-f1)} + \frac{e^{-j(\theta-\frac{\pi}{2})}\operatorname{Sin}\pi T(fo+f1)}{\pi T\,(fo+f1)}\right)$$

where fo is the frequency unknown signal, f1 is the frequency of the known signal, T is the said predetermined period and a is the amplitude of fo at T/2.

4,131,891

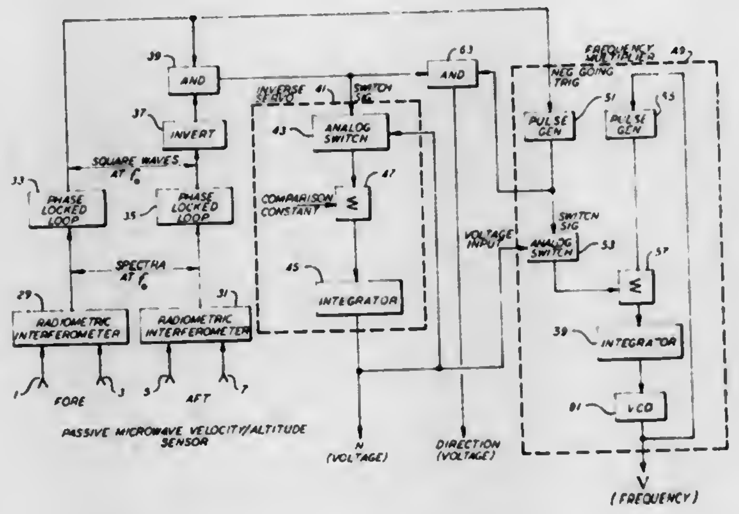
PASSIVE MICROWAVE VELOCITY SENSOR

Gus Stavis, Wayne, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Nov. 17, 1977, Ser. No. 852,405

Int. Cl.^{2} G01S *11/00*

U.S. Cl. 343—112 S **13 Claims**



7. A passive microwave velocity sensor for determining ground velocity by using the natural radiation from terrain received by first and second pairs of receiving antennas spaced apart along the direction in which velocity is to be sensed and with the same separation between antennas in both pairs, comprising:
- a) a first radiometric interferometer having a filter frequency for processing signals received by the first pair of antennas;
- b) a second radiometric interferometer for processing signals received by the second pair of antennas, having a filter frequency identical to the filter frequency of the first radiometric interferometer;
- c) means for generating a phase difference signal with a value proportional to the phase difference between the radiometric interferometer output signals of the first and second radiometric interferometers; and
- d) means for generating a velocity sensor output signal proportional to the ratio of the frequency of the first radiometric interferometer output signal to the value of the phase difference signal, said velocity output signal being proportional to ground velocity and independent of altitude.

4,131,892

STACKED ANTENNA STRUCTURE FOR RADIATION OF ORTHOGONALLY POLARIZED SIGNALS

Robert E. Munson; Gary G. Sanford, both of Boulder, and Lawrence R. Murphy, Longmont, all of Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Apr. 1, 1977, Ser. No. 783,542

Int. Cl.^{2} H01Q *13/10, 1/42, 00/00*

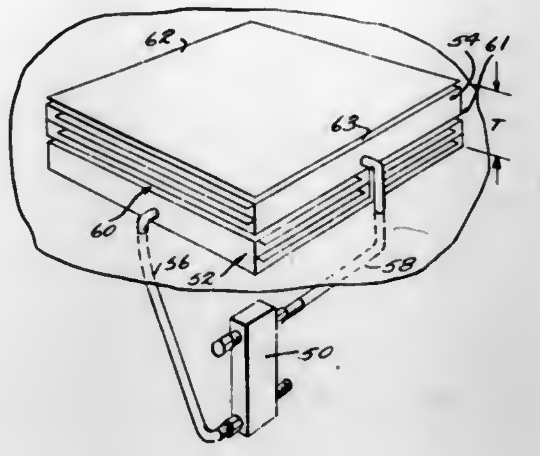
U.S. Cl. 343—700 MS **21 Claims**

13. An antenna structure for radiating two orthogonally polarized signals comprising:

a first interdigitated structure, including first and second sets of interdigitated conductive sheets defining a first resonant cavity therebetween having a least a first radiating aperture;

a second interdigitated structure, including third and fourth sets of interdigitated conductive sheets defining a second resonant cavity therebetween, having at least a second radiating aperture;

said first and second interdigitated structures being relatively disposed in a stacked manner, said first and second apertures being orthogonally disposed with respect to each other; and



means for applying a first signal at a predetermined frequency to said first interdigitated structure and a second signal at said predetermined frequency to said second interdigitated structure, said second signal being 90° out of phase with said first signal.

4,131,893

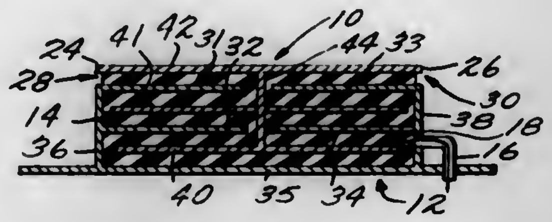
MICROSTRIP RADIATOR WITH FOLDED RESONANT CAVITY

Robert E. Munson, and Gary G. Sanford, both of Boulder, Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Apr. 1, 1977, Ser. No. 783,541

Int. Cl.^{2} H01Q *1/38, 1/48*

U.S. Cl. 343—700 MS **37 Claims**



17. An antenna assembly for operation at a predetermined frequency comprising, in combination:

a first conductive element having a plurality of projecting sections;

a second conductive element having a plurality of projecting sections;

the projecting sections of said first and second conducting elements being disposed in an interdigitated manner, and being interspaced with a dielectric material, said first and second conductive elements defining a resonant cavity between the projecting sections thereof such that said resonant cavity is of a length no longer than approximately one wavelength of a signal at said predetermined frequency in said dielectric material and equal to approximately a predetermined multiple of one-quarter of a wavelength of said signal of said predetermined frequency in said dielectric material.

4,131,894

HIGH EFFICIENCY MICROSTRIP ANTENNA STRUCTURE

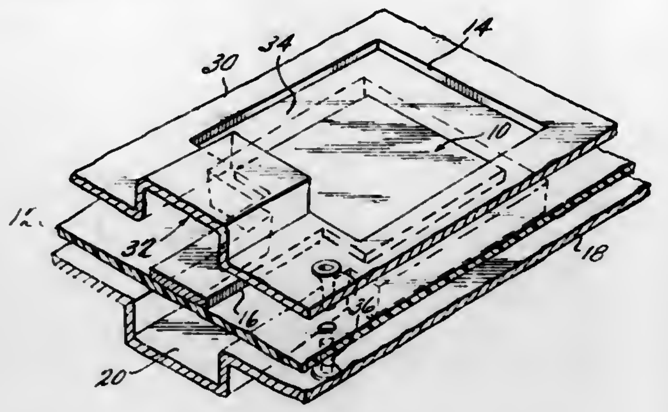
Frank J. Schiavone, Longmont, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Apr. 15, 1977, Ser. No. 788,603

Int. Cl.^{2} H01Q *1/38, 1/42;* H01P *3/00*

U.S. Cl. 343—700 MS **16 Claims**

1. In an apparatus for radiating microwave frequency signals of the type including a first conductive sheet element of predetermined planar configuration, said first conductive sheet element including a feedline portion and a microstrip antenna patch portion and a second conductive sheet element, said first conductive sheet element overlying said second conductive sheet element, and being separated therefrom by a dielectric substance, the improvement wherein:



said second conductive sheet element is indented to a predetermined depth in the vicinity of said first conductive sheet element, to form a channel void underlying both said feedline portion and said microstrip antenna patch portion of said first conductive sheet element.

4,131,895

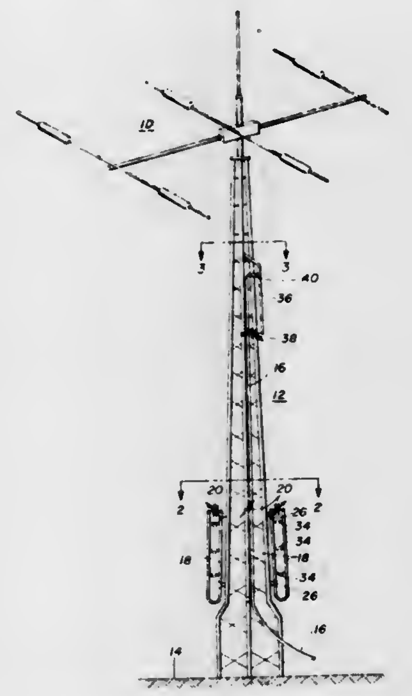
APPARATUS FOR ISOLATING FROM GROUND AND EXCITING A CONDUCTIVE TOWER FOR USE AS A VERTICAL ANTENNA

Ralph O. Robinson, 10206 Julep Ct., Silver Spring, Md. 20902

Filed Sep. 14, 1976, Ser. No. 723,110

Int. Cl.^{2} H01Q *9/34*

U.S. Cl. 343—792 **11 Claims**



1. An antenna in the form of an elongated conductive supporting tower one end of which effectively joins to ground, said tower having isolator means including at least one tunable electrically shortened quarter wave length parallel transmission line section attached to at least one portion of the tower for providing a high impedance at said portion to current at the resonant frequancy thereof, the tower further having exciter means having at least one tunable electrically shortened quarter wavelength parallel transmission line section attached to at least a second portion of the tower for exciting said second portion to cause radiation or reception at a selected frequency, said isolator means and said exciter means both being substantially coincident with and parallel to said antenna.

4,131,896

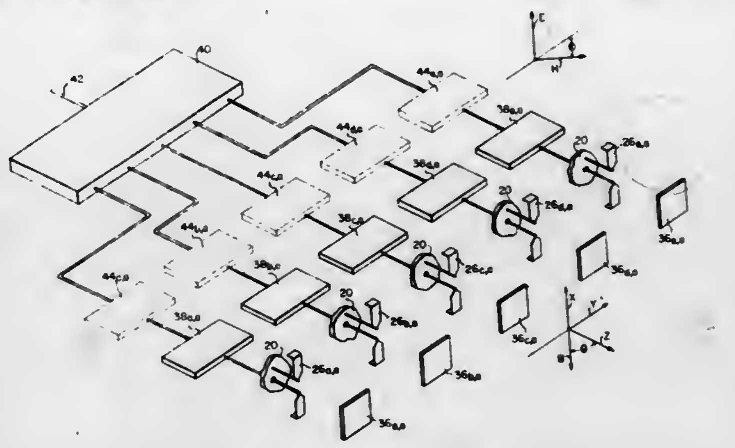
DIPOLE PHASED ARRAY WITH CAPACITANCE PLATE ELEMENTS TO COMPENSATE FOR IMPEDANCE VARIATIONS OVER THE SCAN ANGLE

Coleman J. Miller, Twin Harbors, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 656,913, Feb. 10, 1976, abandoned. This application Aug. 10, 1977, Ser. No. 823,484

Int. Cl.^{2} H01Q *3/26, 19/00*

U.S. Cl. 343—815 **13 Claims**



1. For use in a phase array of dipole-type radiating elements that provide a directive antenna beam electronically scanned in the H-plane over a wide angle, the combination comprising:

conductive means forming a ground plane;

a plurality of dipole-type radiating elements disposed on the beam projecting side of said ground plane and aligned along a linear array axis, each of said dipole-type radiating elements including a pair of opposed half-dipole members which divaricate from a feed point, said feed point being spaced from said ground plane by a distance substantially within the range one-eighth to one-fourth the nominal operating wavelength for the array, each of said dipole-type radiating elements having an effective dipole axis perpendicular to said linear array axis and parallel to said ground plane; and

a plurality of capacitance plates for minimizing the variation in the input impedance of the radiating elements under wide angle H-plane electrical scanning of the radiating elements, said capacitance plates being made of conductive metal and supported by a low R.F. loss material in a reference plane that is parallel to said ground plane and disposed on said beam projecting side of the ground plane, said reference plane being spaced from said ground plane by a distance substantially within the range of one-fourth to one-half the nominal operating wavelength for the array, each of said capacitance plates being disposed in a predetermined pattern with at least some of the capacitance plates being nonaligned with the feed points of the dipole-type radiating elements in a direction perpendicular to the ground plane such that the plurality of capacitance plates are symmetrically located with respect to said feed points and with respect to the effective dipole axis of the dipole-type radiating elements, and having a predetermined shape of finite size which is less than one-fourth the nominal operating wavelength for the array in either its dimension parallel to or its dimension perpendicular to the linear array axis.

4,131,897

TV ANTENNA

Charles J. Gaunt, 15742 Rushmore, Taylor, Mich. 48180

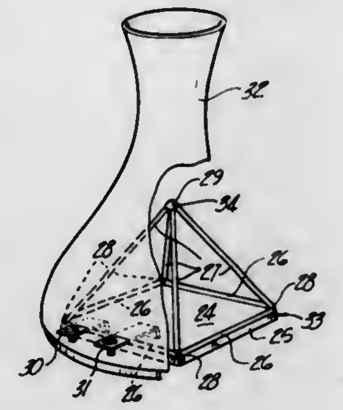
Continuation of Ser. No. 724,329, Sep. 17, 1976, abandoned. This application Mar. 16, 1978, Ser. No. 887,432

Int. Cl.^{2} H01Q *1/30*

U.S. Cl. 343—908 **5 Claims**

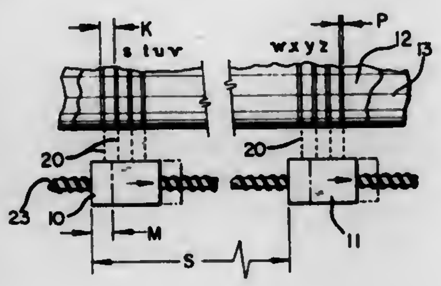
1. An antenna for use in conjunction with and in the immediate proximity of small portable broad band radio wave receivers such as radios and televisions, comprising:

a plurality of conductive elongated members of equal length;
means defining a planar conductive base, said base being composed of an insulative portion and a conductive portion, said insulative portion having a planar surface which is at least in part overlayed by said conductive portion, one end of each of said members being affixed to the conductive portion of said base at spaced points thereon proximate the perimeter thereof to define an enclosed area interior of said members, the other ends of the elongated members converging and being affixed at and forming the apex of an enclosed equilateral rectangular pyramid shaped area;
and first and second terminal means for electrically connecting the antenna to a receiver, said first and second terminal means affixed to said conductive portion and insulative portion respectively of said base.



4,131,898
INTERLACING RECORDER

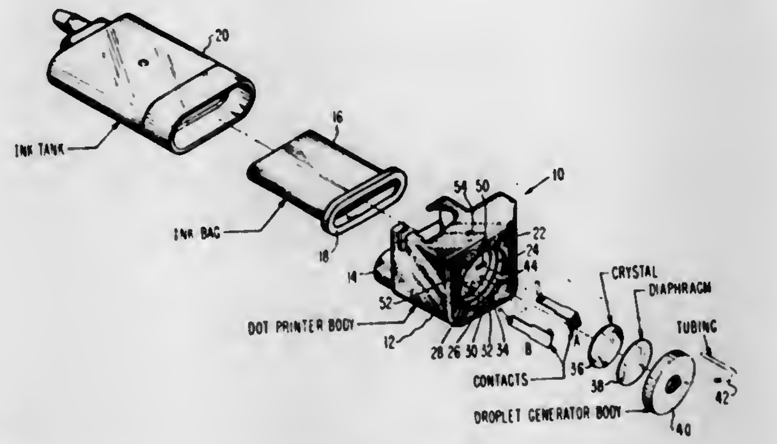
Rodger L. Gamblin, Oakwood, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Sep. 15, 1977, Ser. No. 833,579
Int. Cl.² G01D *15/18*
U.S. Cl. 346—75 **4 Claims**



1. In an ink jet printer apparatus comprising rotary support means, mounting means for mounting a print receiving sheet upon said support means, a plurality of jet drop print heads positioned for directing printing jets toward said sheet, first drive means for rotating said support means about an axis of rotation, second drive means for driving said print heads axially at a common speed and causing said print heads to cover said sheet with printed tracks collectively defining contiguous printed bands; the improvement wherein each of said print heads produces a plurality of jets which are spaced apart by a distance equal to a number of track widths having no factor other than one as a common factor with the number of jets produced by one of said heads and further wherein said print heads are arranged along a common line parallel to said axis of rotation with a spacing between common points of said heads equal to an integral number of advance distances for interlacing of the edges of the printed bands produced by the different heads and during one revolution of said rotary support means advance axially as aforesaid an advance distance equal to a track width multiplied by the total number of jets and divided by the number of print heads.

4,131,899
DROPLET GENERATOR FOR AN INK JET PRINTER

Kyriakos Christou, Livonia, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed Feb. 22, 1977, Ser. No. 770,851
Int. Cl.² G01D *15/18*
U.S. Cl. 346—140 R **13 Claims**

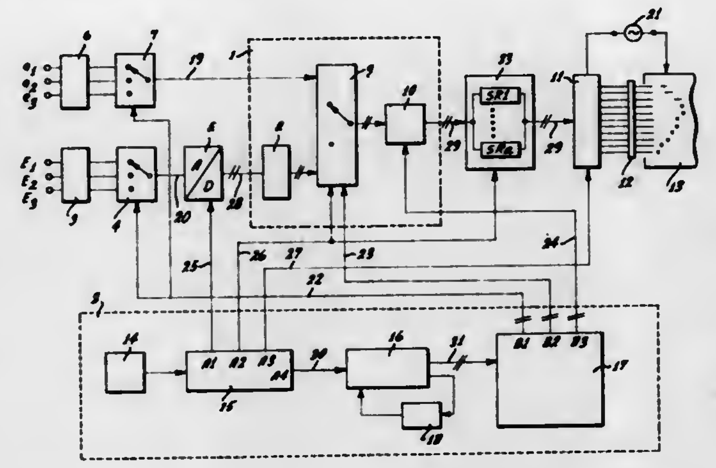


1. An ink jet droplet generator comprising:
a generator body having a front face and a rear face, the rear face having formed within it a central recess of substantially uniform depth to define a capillary chamber;
a nozzle defined by a plurality of continuous aperatures communicating the front face and the capillary chamber of the generator body;
feed means, in fluid communication with the capillary chamber, for feeding ink to the capillary chamber from an ink source; and
a single planar flexure means, mounted on the rear face of the generator body in closed relation to the capillary chamber and having a distance from the nozzle to permit capillary action within the capillary chamber, for flexurally responding to an external excitation to create a pressure perturbation in the capillary chamber to force the flow of ink from the capillary chamber through the nozzle for droplet generation, a single ink dot being created on demand in response to a single flexural response.

4,131,900
PRINTING APPARATUS

Hans Joachim Erb, Gotzenhaim; Jurgen Brandt, Frankfurt am Main, and Peter Kirschbaum, Bad Vilbel, all of Fed. Rep. of Germany, assignors to Hartman & Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Jun. 13, 1977, Ser. No. 805,648
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1976, 2626682
Int. Cl.² G03G *17/00;* G01D *15/08, 7/02*
U.S. Cl. 346—162 **8 Claims**

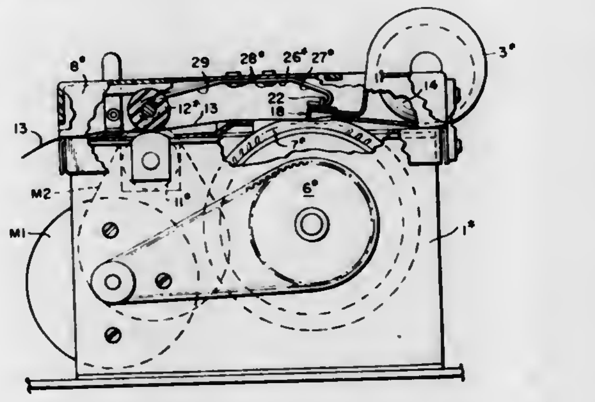
1. Recording device for recording a plurality of different input signals provided in a corresponding plurality of different channels, comprising a multiplexing means for sequentially scanning said input channels to obtain a cyclically repeated acquisition of said input signals;
an analog-to-digital conversion means having its input connected to an output of the multiplexing means for association with all of the channels of the plurality which provide analog signals, to obtain digitization thereof and to provide a train of digital signals;
means for providing signals representing fixed numbers, defining individual zero scale levels for recording the digitized input signals;
an adder connected for receiving the digital signals from the multiplexing means and as digitized and said fixed numbers to obtain an added output;
means connected to multiplexing means and the means for providing, to operate them in synchronism with each other;
a one-out-of-n decoder connected to the adder for receiving the output thereof, n being an integer, the decoder having n output channels accordingly;



a plurality of altogether n- recording means respectively connected to the n output channels of the decoder for being individually operated by the decoder output channels; and
a recording medium moving relative to the recording means to obtain print dots upon operation of the respective recording means.

4,131,901
COVER MOUNTED HOLDDOWN FOR FACSIMILE RECORDER CASSETTE

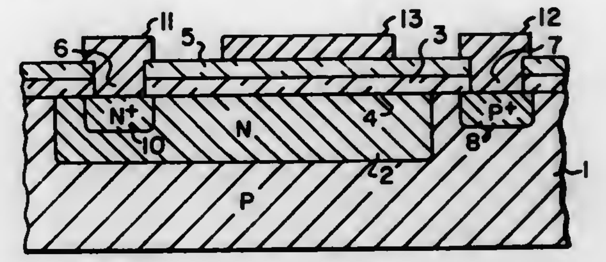
John M. Alden, Needham, and George C. Williams, South Easton, both of Mass., assignors to Alden Research Foundation, Westboro, Mass.
Filed Mar. 9, 1977, Ser. No. 775,891
Int. Cl.² G03G *17/00, 17/02*
U.S. Cl. 346—165 **13 Claims**



1. A graphic recorder of electrical signals on a moving recording web drawn on a path from a detachable cassette past a linear recording electrode disposed on the cassette comprising:
a frame detachably receiving the cassette with its linear electrode adjacent a recording zone transverse of the web path,
scanning electrode means on the frame cooperative with the linear electrode to apply electrical marking signals to the web, and
means attached moveably to the frame carrying a resilient member for engaging the cassette and yieldingly urging the linear electrode toward the web path to insure contact of the linear electrode across the web.

4,131,902
BIPOLAR TRANSISTOR WITH A DUAL-DIELECTRIC TUNNEL EMITTER

Francis J. Kub, Pasadena, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 30, 1977, Ser. No. 838,261
Int. Cl.² H01L *49/02*
U.S. Cl. 357—6 **30 Claims**



1. A transistor device having a dual-dielectric tunnel emitter, comprising:
a collector region of semiconductor material doped with a p-type doping impurity;
a base region of semiconductor material doped with a n-type doping impurity and disposed adjacent to and in physical contact with the collector region to form a n-p, base-collector junction;
a first layer of dielectric material of a predetermined thickness having one surface disposed adjacent to and in physical contact with said base region to form a dielectric-semiconductor interface;
a second layer of dielectric material of a predetermined thickness having one surface disposed adjacent to and in physical contact with the other surface of said first dielectric layer, said first dielectric layer being sandwiched between said base region and said second dielectric layer to form a dual-dielectric emitter-base junction;
means for applying a voltage potential between the other surface of said second dielectric layer and said base region to cause injection of minority carriers across the dielectric-semiconductor interface and into the base region, said minority carrier injection occurring at times when a positive potential of sufficient magnitude is applied to said other dielectric surface of the second layer with respect to said n-type doped base region; and
means for applying a voltage potential across the n-p, base-collector junction to transport said injected minority carriers across said n-p, base-collector junction, said base minority carrier transport mechanism occurring when a negative potential of sufficient magnitude is applied to said collector region with respect to said base region.

4,131,903
CAPACITOR DIELECTRIC WITH INNER BLOCKING LAYERS AND METHOD FOR PRODUCING THE SAME

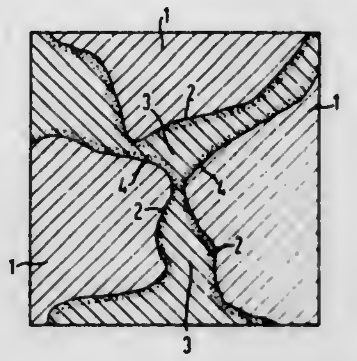
Helmut Schmelz, Prien, and Werner Schwaen, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Jul. 14, 1977, Ser. No. 815,579
Int. Cl.² H01D *29/12*
U.S. Cl. 357—10 **3 Claims**

1. A capacitor dielectric with inner blocking layers, comprising:
(a) a polycrystalline ceramic body made of a material with a perovskite structure on the basis of barium titanate having the general formula

$$(Ba_{1-x}M_x{}^{II})O \cdot z(Ti_{1-y}M_y{}^{IV})O_2$$

with M^{II} selected from the group Ca, Sr, Pb and Mg and M^{IV} = Zr, Sn, with z assuming the values 1.005 to 1.05;
(b) said dielectric containing at least two different doping substances of which one selected from the group anti-

mony, niobium, lanthanum and bismuth is inside crystallites of the crystalline body and causes predominantly n-type conduction, and the other selected from the group copper, cobalt, nickel, iron and manganese in the surface layer of the crystallites causes predominantly p-type conduction, the proportion of the doping substance causing the n-type condution being 1.5 to 2.5 times greater than a maximum doping amount (maximum solid state solubility)



and the proportion of the substance causing the p-type conduction amounting to 0.01 to 0.15% by weight;

(c) a titanate intermediate phase disposed between grains of the crystallites which is rich in titanium dioxide and is at least partially recrystallized and contains the doping substance causing p-type conduction spread inhomogeneously such that this p-type doping substance is highly enriched towards the crystallite grain surfaces.

4,131,904

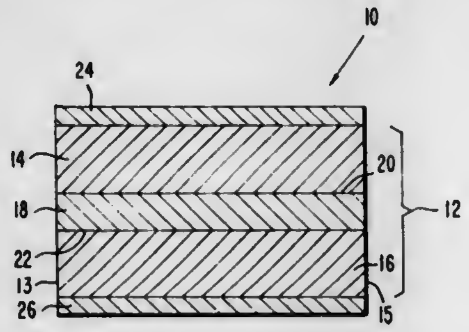
DEGRADATION RESISTANCE OF SEMICONDUCTOR ELECTROLUMINESCENT DEVICES

Ivan Ladany, Stockton, and Henry Kressel, Elizabeth, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 29, 1977, Ser. No. 811,289

Int. Cl.^{2} H01L *33/00*

U.S. Cl. 357—17 **6 Claims**



1. An electroluminescent device having a body of semiconductor material of a group III-V compound or mixed group III-V compound comprising:

a first layer of P type conductivity at one surface of said body, said layer having zinc as a primary conductivity modifier and germanium as a secondary conductivity modifier of a concentration smaller than the concentration of the zinc primary conductivity modifier;

a second layer of N type conductivity at an opposite surface of said body; and

a third layer between and contiguous to said first and second layers being of a material which forms hetero-junctions with said first and second layers, and being the recombination region of the device.

4,131,905

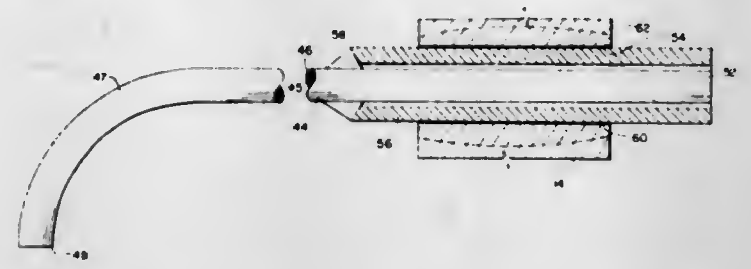
LIGHT-TRIGGERED THYRISTOR AND PACKAGE THEREFORE

Maurice H. Hanes, Murrysville, and Lewis R. Lowry, Greensburg, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 26, 1977, Ser. No. 800,706

Int. Cl.^{2} H01L *27/14, 31/00, 23/02*

U.S. Cl. 357—30 **12 Claims**



1. An hermetically sealed package for a light-triggered semiconductor device for use in power circuits, comprising the combination of an electrical insulating body formed of a ceramic material and having a central cavity, a light-triggered semiconductor device within the cavity, first and second pole pieces positioned within the opposite ends of the body and having respective inner pole faces juxtaposed with and electrically coupled in face-to-face relationahip to opposite sides of the semiconductor device for carrying substantial currents, means forming hermetical seals about the first and second pole pieces and respective ends of the body, means forming an opening in the body, a glass light pipe having an inner end optically coupled with a light-sensitive region of the semiconductor device and an outer end extending through the opening in the body, said outer end adapted to be optically coupled with a light source for triggering the device, a hollow metal sleeve mounted about a portion of the outer end of the light pipe, said sleeve also being mounted through the opening in the body, means for forming an hermetical seal between the light pipe and the sleeve, and means for forming an hermetical seal between the sleeve and the body.

4,131,906

DYNAMIC RANDOM ACCESS MEMORY USING MOS FETS AND METHOD FOR MANUFACTURING SAME

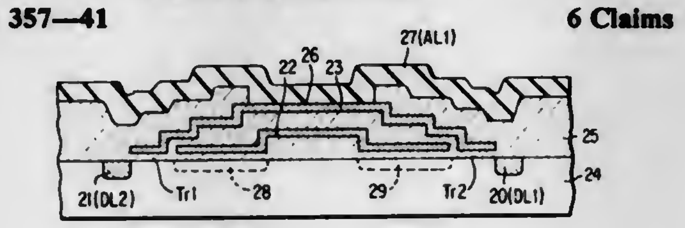
Hiroyuki Kinoshita, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kanagawa, Japan

Filed Feb. 2, 1977, Ser. No. 764,897

Claims priority, application Japan, Feb. 13, 1976, 51-14568

Int. Cl.^{2} H01L *27/02*

U.S. Cl. 357—41 **6 Claims**



1. A dynamic Random Access Memory using MOS FETS comprising:

a semiconductor substrate of one conductivity type;

a pair of data lines each comprising an impurity diffusion layer of an opposite conductivity type and formed in the semiconductor substrate;

a pair of co-linear adjacent memory cells located between the data lines, each cell comprising a capacitor and a MOS FET formed adjacent to the capacitor for reading out and writing in information, said pair of memory cells comprising a first insulating film formed on said substrate, said first film having a pair of thin co-linear end portions separated by a thick portion; a first conductor formed on said first insulating film, said first conductor having a pair of co-linear end portions lying on said thin portions of said first insulating film, each of said end portions of said first conductor serving as one electrode of a capacitor; a second insulating film formed on said first conductor, said second insulating film having a thin portion formed on said end portion of said first conductor; a second conductor formed on said first and second insulating films and bridging said insulated first conductor, said second conductor having co-linear end portions disposed on said thin portion of said first insulating film and serving as the gate electrodes of said pair of adjacent memory cells, said second conductor having a central portion bridging said first conductor and insulated therefrom by said second film; the MOS FET having two current flow electrodes and said gate electrode, one of the current flow electrodes being coupled to one of the pair of data lines; and

an address line formed above the memory cells and connected to the second conductor by a single contact hole, said contact hole located at said central portion of said second conductor between the co-linear adjacent memory cells.

4,131,907

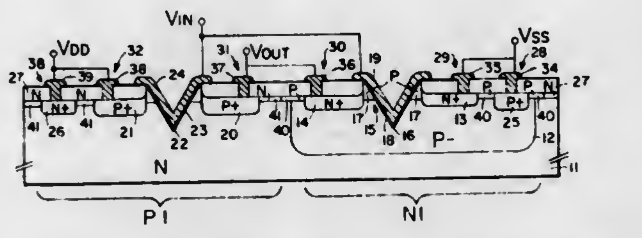
SHORT-CHANNEL V-GROOVE COMPLEMENTARY MOS DEVICE

Paul H. Ouyang, 936 Junesong Way, San Jose, Calif. 95133

Filed Sep. 28, 1977, Ser. No. 837,613

Int. Cl.^{2} H01L *27/02*

U.S. Cl. 357—42 **11 Claims**



1. A complementary metal-oxide-semiconductor field effect device comprising:

a lightly N-doped semiconductor substrate having a first surface and a lightly P-doped tub therein;

a first P-type region lying beneath and extending to said first surface in said semiconductor substrate;

a second P-type region lying beneath and extending to said first surface in said semiconductor substrate;

a first V-groove extending from said first surface into said semiconductor substrate lying between said first and said second P-type regions, said first V-groove having two side surfaces and two end surfaces exposing said first P-type region with a first side surface and exposing said second P-type region with a second side surface;

a first relatively thin insulating layer overlying said first V-groove;

a first N-type layer lying beneath and extending to said first surface in said substrate surrounding said first P-type region, said second P-type region and said first V-groove;

a first N-type region lying beneath and extending to said first surface in said N-doped tub;

a second N-type region lying beneath and extending to said first surface in said N-doped tub;

a second V-groove extending from said first surface into said P-doped tub disposed between said first and said second N-type regions having two side surfaces and two end surfaces;

a first P-type layer lying beneath and adjacent to a portion of said first and said second N-type regions exposed by all four surfaces of said V-groove;

a second P-type layer lying beneath and extending to said first surface in said N-type tub surrounding said first and said second N-type regions and said second V-groove;

a second relatively thin insulating layer overlying said second V-groove;

a relatively thick insulating layer of substantially uniform thickness disposed over said first surface of said semiconductor substrate having openings therein over said first and said second P-type regions, and said first and said second N-type regions;

first, second, third, and fourth electrodes respectively making electrical contact with said first, and said second P-type regions and said first and said second N-type regions; and

fifth and sixth electrodes respectively overlying said first and said second relatively thin insulating layers.

4,131,908

SEMICONDUCTOR PROTECTION DEVICE HAVING A BIPOLAR LATERAL TRANSISTOR

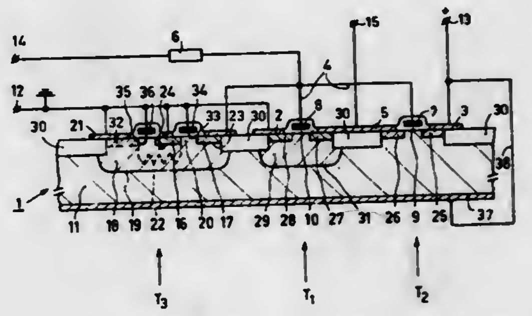
Dirk Daub, and Olof E. H. Klaver, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 10, 1977, Ser. No. 767,569

Claims priority, application Netherlands, Feb. 24, 1976, 7601843

Int. Cl.^{2} H01L *27/02*

U.S. Cl. 357—42 **12 Claims**



1. A semiconductor device having a semiconductor body with a surface-adjoining substrate region of a first conductivity type and comprising an integrated circuit having at least two supply electrodes, an input electrode and an output electrode, in which there is present between a first and a second of the electrodes a protection circuit having a bipolar lateral protection transistor which is formed by emitter and collector zones of said first conductivity type and a surface-adjoining base region of a second conductivity type formed in said substrate region, said emitter and collector zones adjoining a surface of the semiconductor body and being provided in and surrounded by said surface-adjoining base region, which base region comprises a base connection contact so that a resistor formed by a part of the base region is present in the current parth from said base connection contact to the active base zone situated between the emitter and collector zones; the emitter zone, the base connection contact, and said first electrode being connected together electrically and the collector zone being connected electrically to said second electrode, and the base region being surrounded substantially entirely within the semiconductor body by the surface-adjoining substrate region of the first conductivity type which forms a p-n junction with the base region.

4,131,909

SEMICONDUCTOR INTEGRATED CIRCUIT ISOLATED THROUGH DIELECTRIC MATERIAL AND A METHOD FOR MANUFACTURING THE SAME

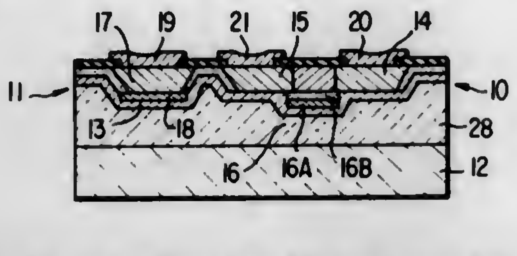
Takashi Matsuda; Kazuo Niwa, and Yasusuke Sumitomo, all of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1976, Ser. No. 735,784

Claims priority, application Japan, Oct. 25, 1975, 50-128773

Int. Cl.² H01L *27/12, 29/78, 27/02, 29/04*

U.S. Cl. 357—49 **6 Claims**



1. A semiconductor integrated circuit comprising:

a support body having a top surface and a first stepped recess in the top surface, the first recess having an upper step and a lower step;

a dielectric layer coated uniformly over the top surface and the first recess;

a first island region of material disposed over the dielectric layer in the first recess, the first island region forming a metal-oxide-semiconductor transistor element having separated source and drain regions on the upper step of the first recess and an insulated gate electrode on the lower step of the first recess.

4,131,910

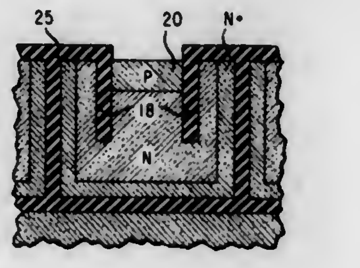
HIGH VOLTAGE SEMICONDUCTOR DEVICES

Adrian R. Hartman, Westfield; James C. North, New Providence; George W. Reutlinger, Florham Park, and Peter W. Shackle, Bridgewater, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 9, 1977, Ser. No. 849,788

Int. Cl.² H01L *27/12*

U.S. Cl. 357—49 **11 Claims**



1. A high voltage semiconductor device comprising

a silicon substrate;

a body of monocrystalline silicon of a first conductivity type with a pair of major surfaces lying in the (110) crystallographic plane and one major surface bonded to the substrate;

a layer of insulating material between the body and substrate;

a first narrow groove with sidewalls lying in the (111) plane extending completely through said body on the periphery of the device and filled with a thermally grown silicon oxide so as to electrically isolate the device from other devices formed in the body;

a region of opposite conductivity type formed within said body so as to form a p-n junction in said body; and

at least one interior narrow groove with sidewalls lying in the (111) plane and filled with thermally grown oxide formed in the surface of said body opposite to said substrate adjacent to a portion of the region of opposite conductivity type, said groove extending a greater distance in said body than the region so that the field between the junction and adjacent portions of the device when the junction is biased is kept below the breakdown level of the body.

4,131,911

HERMETICALLY SEALED OPTO-ELECTRICAL SEMICONDUCTOR DEVICE

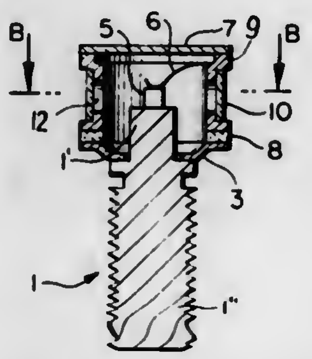
Nobuhiko Fujine, and Masato Nakajima, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Oct. 13, 1976, Ser. No. 732,138

Claims priority, application Japan, Oct. 15, 1975, 50-123905

Int. Cl.² H01L *23/02*

U.S. Cl. 357—74 **13 Claims**



1. A hermetically sealed opto-electrical semiconductor device comprising:

a cylindrical envelope made of metal having first and second ends and a side surface, said side surface having at least two openings disposed to permit the passage of light beams, and at least two grooves, the bottom portions of said grooves comprising flat portions disposed respectively about the periphery of each of said openings;

thin, flat plates of a transparent material having a thickness smaller than the depth of said grooves, each of said plates having one major face attached respectively to one of said flat portions of said grooves so that such plate covers one of said openings to hermetically seal said opening, said plates being placed over said openings in a direction perpendicular to the path of said light beams;

a disk shaped metal cap electrically and hermetically attached to the first end of said envelope;

an insulating ring attached to said second end of said envelope;

a metal ring hermetically sealed to said insulating ring;

a metal body hermetically sealed to said metal ring, said metal body having a first end portion extending through said metal ring into the interior of said envelope and a second end portion disposed outside said envelope and having a threaded exterior surface;

an opto-electrical semiconductor element having a first and second electrode surfaces, said first electrode surface being electrically connected to said first end portion of said metal body; and

means for electrically coupling said second electrode surface of said element to said envelope.

4,131,912

APPARATUS FOR RECORDING AND REPRODUCING VIDEO SIGNALS ON A MAGNETIC TAPE MOVABLE AT DIFFERENT SPEEDS

Jun Hirai, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 5, 1977, Ser. No. 813,187

Claims priority, application Japan, Jul. 6, 1976, 51-80128

Int. Cl.² H04N *5/76*

U.S. Cl. 358—4 **57 Claims**

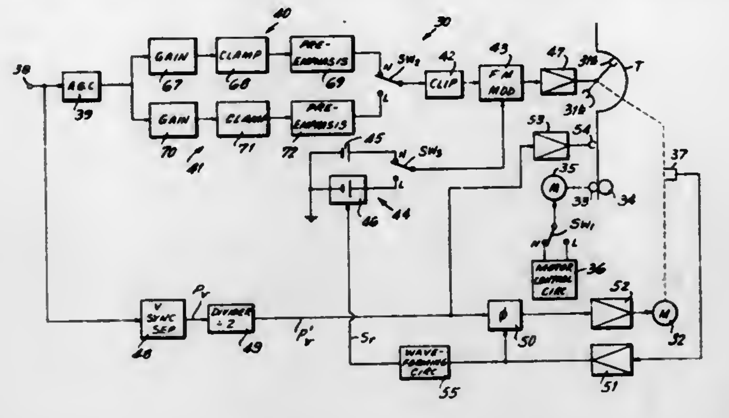
1. Apparatus for recording a video signal on a magnetic tape comprising:

modulating means for frequency modulating a carrier with said video signal to provide a frequency modulated signal;

drive means for selectively driving said tape at a plurality of different tape speeds;

transducer means receiving said frequency modulated signal and repeatedly traversing the tape at a uniform rate so that said transducer means records the frequency modulted signal in successive parallel tracks on the tape with the pitch of said tracks being determined by the tape speed; and

means for changing the frequency deviation of said frequency modulated signal in accordance with the speed at which the tape is selectively driven so that said frequency deviation decreases with decreasing tape speed.



4,131,913

SOLID STATE TELEVISION CAMERA

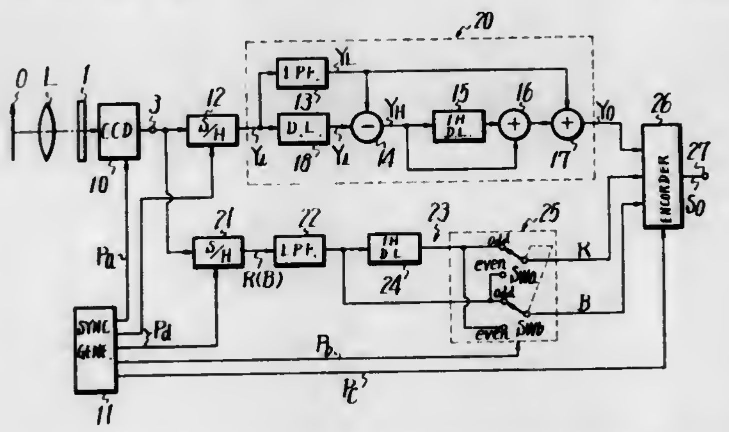
Seisuke Yamanaka, Mitaka; Fumio Nagumo, Yokahama, and Toshimichi Nishimura, Tama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 7, 1977, Ser. No. 831,341

Claims priority, application Japan, Sep. 10, 1976, 51-108539

Int. Cl.² H04N *9/04*

U.S. Cl. 358—44 **6 Claims**



1. A solid state television camera having a solid state image sensing device including a plurality of individual light sensing units arranged in both horizontal and vertical rows comprising:

(a) means for establishing an image path for projecting an image of an object onto said image sensing device;

(b) a plurality of color filter elements arranged in horizontal rows within said light path, one horizontal row including color filter elements of differing transmissivities with certain ones passing light of a first primary color and certain other successive ones passing light representing all colors, an adjacent horizontal row including color filter elements of differing transmissivities with certain ones passing light of a second primary color and certain other successive ones passing light representing all colors, means for developing carriers representing said primary and all color (luminance) light;

(c) means for developing a luminance signal from each of said color filter elements;

(d) means for developing first and second color difference signals from each of said color filter elements in response to portions of respective rows of an image displayed thereon; and

(e) means for processing said first and second color difference signals as a desired simultaneous color video signal to be mixed with said developed luminance signal.

4,131,914

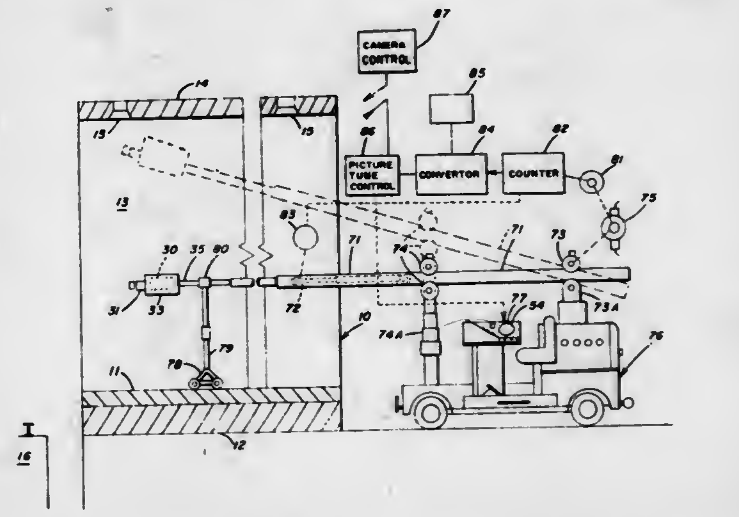
METHOD AND APPARATUS FOR INSPECTING REFRACTORY LINING IN COKE OVEN CHAMBERS AND THE LIKE

Francis H. Bricmont, Pittsburgh, Pa., assignor to Bricmont & Associates, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 615,988, Sep. 23, 1975, abandoned. This application Sep. 2, 1976, Ser. No. 719,858

Int. Cl.² H04N *7/18*

U.S. Cl. 358—100 **24 Claims**



1. An inspection apparatus for inspecting the refractory lining in a high temperature chamber of a coke oven, a pneumatic steel treatment vessel, a reheat furnace for metallic workpieces and the like before and/or after treating the burden therein, said apparatus including the combination of:

a movable member to advance within said chamber in a direction along the refractory lining thereof,

support means externally of said chamber to carry said movable member,

an enclosure including side walls normally forming a substantially closed compartment, said enclosure being supported by said movable member for movement within said chamber, said enclosure including means for maintaining a thermally-protective environment within the compartment thereof,

drive means coupled to said movable member to displace said enclosure along the refractory lining of said chamber,

means carried within the compartment of said enclosure for producing a video signal corresponding to at least a portion of said refractory lining, said means including an optical lens exposed to the refractory lining through an opening in the side wall of said enclosure,

means for cooling said optical lens,

means supported by said movable member to adjustably position said means for producing a video signal, and

receiver means for displaying the video signal produced by the first said means and corresponding to at least a portion of said refractory lining.

4,131,915

FACSIMILE SIGNAL TRANSMISSION SYSTEM

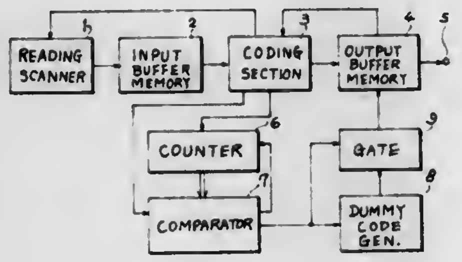
Yukio Nakagome, Yokohama; Hiroichi Teramura, Tokyo; Yasuhiro Yamazaki, Hiratsuka, and Yasushi Wakahara, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Oct. 15, 1976, Ser. No. 732,597

Claims priority, application Japan, Oct. 16, 1975, 50/124716

Int. Cl.² H04N *7/12*

U.S. Cl. 358—260 **2 Claims**



1. A facsimile signal transmission system comprising:

input means for receiving an input facsimile signal; coding means connected to said input means for coding said input facsimile signal for each information block of picture elements on a predetermined number of scanning lines and for developing coded outputs;

counting means connected to said coding means for counting the number of bits of each coded output corresponding to the picture elements of the predetermined number of scanning lines;

dummy code adding means connected to said coding means and said counting means for adding dummy codes to the coded output of said coding means to increase the number of bits of the coded output to be larger than a reference bit number predetermining in consideration of the subscanning time on the receiving side when the count developed by said counting means is smaller than the reference bit number, said dummy code adding means comprising a comparator connected to said counting means for comparing the count of said counting means with said reference bit number provided therein to develop a pulse when the count of said counting means is smaller than the reference bit number, a dummy code generator for generating dummy codes in response to said pulse from said comparator, and an output buffer memory connected to said coding means, said dummy code generator and said output terminal means for adding to the coded output said dummy codes to develop said coded output with said added dummy codes; and

output terminal means connected to said dummy code adding means for sending out the coded output of said coding means with said dummy codes added thereto.

4,131,916

PNEUMATICALLY ACTUATED IMAGE SCANNING READER/WRITER

Robert M. Landsman, Annandale, Va., assignor to LogEtronics, Inc., Springfield, Va.

Filed Dec. 31, 1975, Ser. No. 645,583

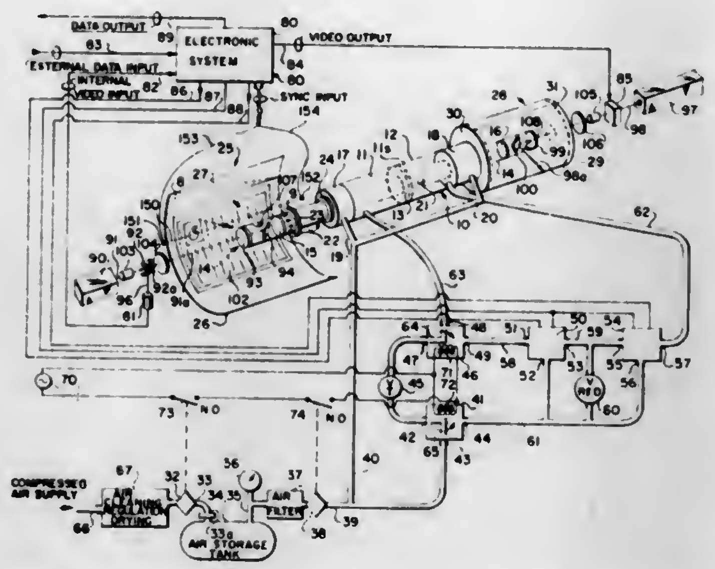
Int. Cl.² H04N *3/00*

U.S. Cl. 358—285 **35 Claims**

1. In a scanning system of the type having means for supporting an element to be scanned and rotary optical scanning means for scanning said element, the improvement comprising means for providing smooth operation of the rotary scanning means, including fluid supply means and:

a. supporting means for supporting said rotary scanning means with fluid from said fluid supply means,

b. motor means operated by fluid from said fluid supply means for rotating said scanning means, and



c. translating means, driven by fluid from said fluid supply means, for translating said scanning means;

said motor means and said translating means cooperating to move said scanning means to perform a scanning operation.

4,131,917

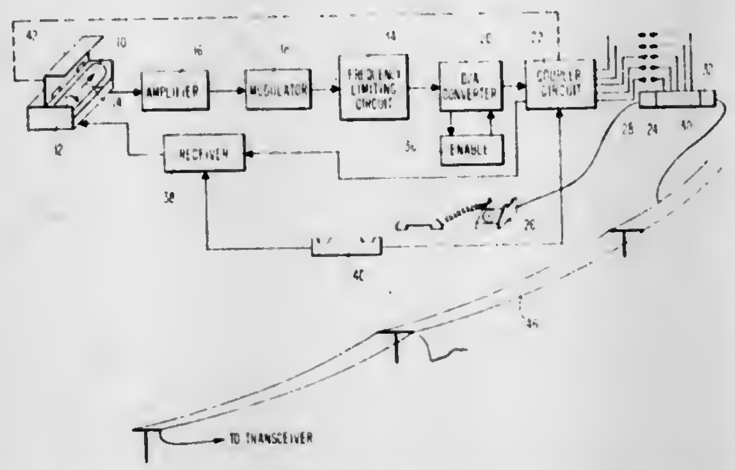
FREQUENCY LIMITER

Jack D. Burton, Orlando, Fla., and John M. Vandling, Pleasantville, N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 21, 1977, Ser. No. 844,296

Int. Cl.² H04N *1/40*

U.S. Cl. 358—281 **10 Claims**



1. A facsimile transmitting apparatus for transmitting signals representing dark and light regions on a document, said apparatus comprising sensor means for sensing dark and light regions on the document and transmitting means for generating frequency modulated transmission signals representing the dark and light regions on the document, said transmitting means including signal generating means for generating a signal having a frequency substantially higher than the modulated transmission signal and converter means for converting the transmission signal from the higher frequency signal such that a light/dark or dark/light variation between the regions produces a change in frequency of the higher frequency signal which in turn produces a change in frequency of the transmission signal in a fraction of the transmission signal cycle, the improvement comprising frequency limiting means coupled between the signal generating means and the converter means for limiting the frequency of the transmission signal by limiting the frequency of the input to the converter means.

4,131,918

PROVIDING CONTROL SIGNALS FOR MACHINE OPERATIONS

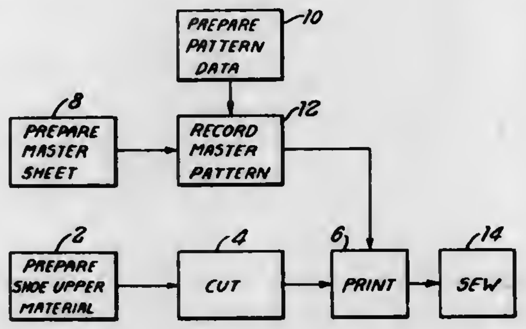
Donald Pettit, Isham, and Stephen G. Abbott, Market Harborough, both of England, assignors to The Shoe and Allied Trades Research Association, Northamptonshire, England

Filed Sep. 16, 1974, Ser. No. 506,297

Claims priority, application United Kingdom, Sep. 19, 1973. 43984/73

Int. Cl.² G11B *25/00*

U.S. Cl. 360—1 **44 Claims**



1. A method of controlling a machine carrying out machine operations on a workpiece along a predetermined path on a surface portion of said workpiece, said workpiece including magnetic material in an area substantially coextensive with said surface portion, said method comprising:

selectively magnetizing said material to record control instructions thereon;

moving said workpiece through said machine so that said machine operations are carried out along said path;

detecting said selective magnetization during said movement to produce control signals; and

utilizing said control signals to control said machine.

4,131,919

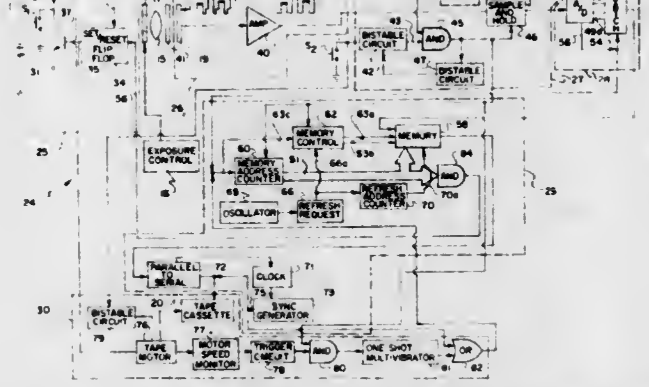
ELECTRONIC STILL CAMERA

Gareth A. Lloyd, and Steven J. Sasson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 20, 1977, Ser. No. 798,956

Int. Cl.² H04N *5/79*

U.S. Cl. 360—9 **8 Claims**



1. In an electronic still camera having a solidstate light-responsive device for producing at a relatively high rate a stream of discrete signals indicative of optical images received by said device during adjacent exposure intervals, the improvement comprising:

(a) means for extracting said discrete signals from said light-responsive device during a time interval which is no greater than the interval during which said optical images are produced;

(b) circuit means for separating said signals from each other;

(c) means for transforming said separated signals into a stream of signals occurring at a rate which is slower than said high rate; and

(d) means for recording in real time on a non-volatile medium said slower rate stream of signals.

4,131,920

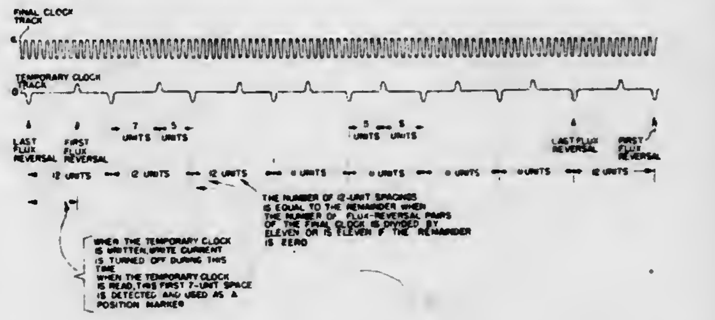
CLOSED-CLOCK WRITING SYSTEM FOR A ROTATING MAGNETIC MEMORY

James K. Berger, Malibu, Calif., assignor to Pioneer Magnetics, Santa Monica, Calif.

Filed Oct. 19, 1977, Ser. No. 843,555

Int. Cl.² G11B *5/09*

U.S. Cl. 360—51 **6 Claims**


FINAL CLOCK TRACK
TEMPORARY CLOCK TRACK
LAST FLUX REVERSAL
FIRST FLUX REVERSAL
7 UNITS
5 UNITS
LAST FLUX REVERSAL
FIRST FLUX REVERSAL
12 UNITS
THE NUMBER OF 12-UNIT SPACINGS IS EQUAL TO THE REMAINDER WHEN THE NUMBER OF FLUX-REVERSAL PAIRS OF THE FINAL CLOCK IS DIVIDED BY ELEVEN OR IS ELEVEN IF THE REMAINDER IS ZERO
WHEN THE TEMPORARY CLOCK IS WRITTEN, WRITE CURRENT IS TURNED OFF DURING THIS TIME
WHEN THE TEMPORARY CLOCK IS READ, THIS FIRST 7-UNIT SPACE IS DETECTED AND USED AS A POSITION MARKER

1. A closed clock writing system for a rotating magnetic memory for recording a selected number of uniformly spaced magnetic flux reversals in a final clock track on the memory, said writing system comprising: a clock generating circuit for recording a plurality of magnetic flux reversals in a temporary clock track on the memory at a selected frequency and density corresponding to a selected sub-multiple of the flux reversals to be recorded in the final clock track, the clock generating circuit including circuitry for causing selected pairs of the flux reversals to be recorded in the temporary track at a certain frequency ratio to the flux reversal pairs in the final track, and to cause the remaining flux reversal pairs to be recorded in the temporary track at a different frequency ratio to the flux reversals in the final track to accommodate the remainder when the number of flux reversals in the final track is divided by a selected number; a clock reading circuit for sensing the flux reversals in the temporary track and for recording flux reversals at a higher frequency and density in the final clock track on the memory, and circuitry included in said clock reading circuit for causing the flux reversals to be recorded in the final track at a constant higher frequency and density than the pulses recorded in the temporary track regardless of the aforesaid frequency ratios.

4,131,921

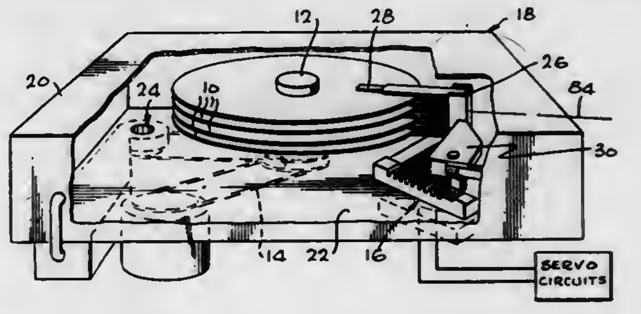
HEAD POSITIONING SYSTEM FOR DISC FILES

Norman P. Gruczelak, Santa Barbara, Calif., assignor to Okidata Corporation, Moorestown, N.J.

Filed Apr. 15, 1977, Ser. No. 787,885

Int. Cl.² G11B *21/00*

U.S. Cl. 360—86 **5 Claims**



1. A positioner mechanism for disc file systems comprising: an arm of relatively small mass extending to a free end from a pivot axis at the opposite end of the arm;

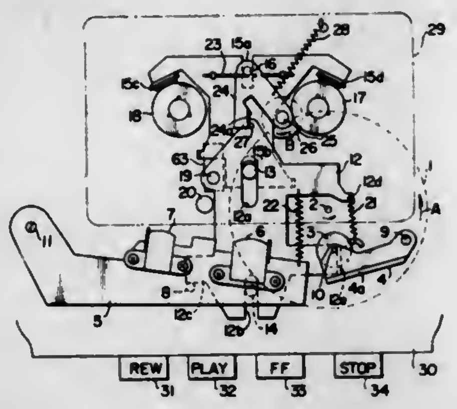
a head mount of relatively small mass and including at least one head pad, the head mount being coupled to the free end of the arm; and

rotatable means coupled to said opposite end of the arm concentric with the pivot axis for driving the arm, the means for driving the arm including a magnetic rotor concentric with and rotatable about the pivot axis, the rotor having a mass substantially greater than the mass of the arm and the mass of the head mount, a magnetic core surrounding and concentric with said rotor, and means coupled to said core for energizing the core and including a coil about said core and proximate said rotor, said rotor comprising a plurality of poles, said coil comprising multiple coil segments, each of which is disposed in facing relation to a different rotor pole, each of said coil segments defining an arc having a length substantially encompassing the combined lengths of the arcs of rotational movement of the facing rotor pole in opposite directions and the arc defined by the length of the pole, said rotor rotating through an angle less than ± 15° and the air gap between the end of each of the rotor poles and the core being less than 0.1 inches.

4,131,922
OPERATION DEVICE OF TAPE RECORDER

Masashi Yoshida, Nakaminato; Yasuo Iino, Katsuta, and Katsuya Sato, Mito, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 27, 1977, Ser. No. 864,263
Claims priority, application Japan, Dec. 27, 1976, 51-156538
Int. Cl.² G11B *15/10, 15/26, 15/32*
U.S. Cl. 360—90 **10 Claims**

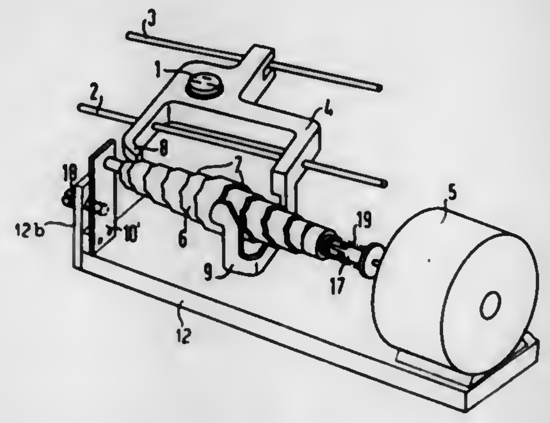


1. An operation device of a tape recorder comprising:
- (a) A tape running driving system including, at least, a capstan adapted to be rotatively driven by a motor, a pinch roller mounted to confront said capstan for a movement to and from the latter, so as to cooperate with said capstan in feeding the tape at a constant speed, and a play plate adapted to control the movement of said pinch roller toward and away from said capstan;
- (b) a manual operating system including a manually operable operation member for constant-speed tape feeding adapted to be displaced from a stopping position to an operation position, and a first locking member adapted to lock said manually operable operation member at said operation position;
- (c) a first rotary body adapted to be rotated in relation with the rotation of the shaft of said motor; and
- (d) and an automatic operation system including a second rotary body having an engageable portion engageable with said first rotary body and a non-engageable portion which cannot engage said first rotary body, said second rotary body being adapted to confront said first rotary body at its non-engageable portion when said operation member is not operated, but to be rotated when an initial torque is imparted thereto by the operation of said operation member, so as to bring said engageable portion to confront said first rotary body, so that it may be driven continuously by said first rotary body in accordance with the rotation of the latter, until said non-engageable portion comes again to confront said first rotary body, an actuating plate adapted to be displaced by the rotation of said second rotary body, so as to displace said play plate, thereby to put said pinch roller into cooperation with said capstan, and a second locking member adapted to lock said play plate at a position to which said play plate has been displaced.

4,131,923
MAGNETIC-HEAD LOCATING ARRANGEMENT FOR FLOPPY-DISK MECHANISMS

Walter Wachs, Krailling, and Heinz Stickel, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 9, 1977, Ser. No. 849,955
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1976, 2651733
Int. Cl.² G11B *5/55, 21/08, 21/14*
U.S. Cl. 360—106 **5 Claims**



1. A device for moving a magnetic head between various tracks on a recording carrier, in which the magnetic head is mounted on a carriage which is displaced utilizing a positioning motor, comprising a spiral cone (6) driven by the positioning motor (5), said spiral cone having a generally conical surface provided with inclined spiral flanks (7) forming a spiral screw of constant pitch on the conical surface, said spiral flanks having a radius which varies in proportion to the associated diameter of the spiral cone (6), and said carriage has at least one projection engaging the spiral flank (7) of the spiral cone (6) with said spiral cone being positioned such that the generatrix of the spiral flank along which the projection moves forms a line parallel to the motion direction of the carriage (4) whereby the magnetic head (1) and the carriage (4) are displaced with each revolution of the spiral cone (6).

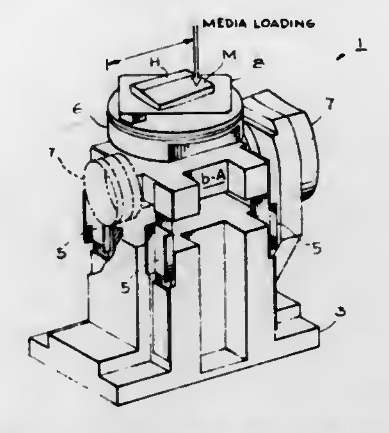
4,131,924
FLEXURE MOUNTED MAGNETIC HEAD POSITIONER FOR HIGH-SPEED TRANSLATION

Michael I. Behr, S. Pasadena; Ko K. Gyi, Thousand Oaks; Wilfred D. Iwan, Sierra Madre, and Joseph C. Palotay, Newbury Park, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 3, 1977, Ser. No. 838,961
Int. Cl.² G11B *5/56, 21/24*
U.S. Cl. 360—106 **13 Claims**

1. In an improved head positioner arrangement for a disk drive apparatus, this arrangement including at least one head block presenting a plurality of multi-track transducer cores for operative disposition with a prescribed magnetic disk recording surface, said block(s) being mounted on first spring means and arranged and adapted to be resiliently reciprocated in a first direction, toward and away from such a surface in transducing relation therewith and further being arranged to be reciprocated, in a second direction, transverse said first direction, from track-to-track, over a prescribed "track-select" excursion distance, radially, across the disk surface; the arrangement also including head support means carrying this head block; the combination therewith comprising:

opposed flexure pivot means, mounting said support means pivotably from said disk drive apparatus, the pivot means being selected and arranged to accommodate said track-select excursion, resiliently in said second direction; and electro-magnet actuator means mounted on said drive apparatus and coupled to said support only electrically — and not mechanically — whereby to selectively pivot the support means over said excursion distance, reciprocatingly and against the return bias of said flexure pivot means;

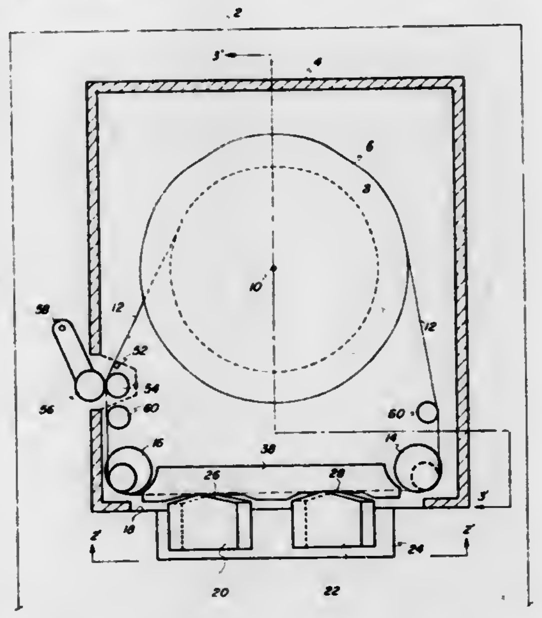


said first spring means being, further, adapted and operated to compensate for any shift of said block in said first direction which may be caused by so pivoting said support means in said second direction.

4,131,925
EDGE GUIDE FOR COOPERATION WITH A COAXIAL REEL CASSETTE

Ronald R. Firth, Fairport, and Jerry R. Horak, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 2, 1977, Ser. No. 821,113
Int. Cl.² G11B *23/04, 15/60*
U.S. Cl. 360—130 **5 Claims**



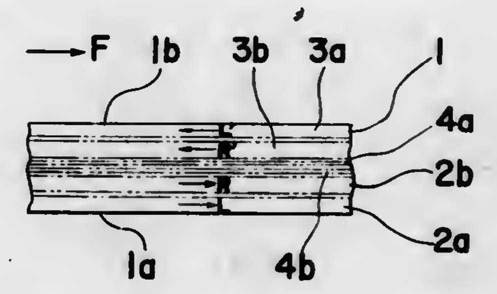
1. Web transport apparatus forming part of a narrow-track, linear-transport, magnetic recording device and cooperative with a coaxial-reel cassette of the type useful with a magnetic recording device, the cassette having supply and takeup reels mounted at separate levels, the reels having a span of web material extending therebetween, the cassette having a window across which the web is adapted to extend and associate with a magnetic head mounted on the recording device, the cassette further having:
- a. a first tapered guide roller mounted within the cassette for guiding the web across the roller surface thereof from the level of the supply reel to a path across the window, said first tapered guide roller being mounted so as to urge the web in a first direction generally in the direction of the width of the tape in response to the web being advanced along said path; and
- b. a second tapered guide roller mounted within the cassette for guiding the web across the roller guide surface thereof from said path across the window to the level of the takeup reel, said second guide roller being mounted so as to urge the web in said first direction in response to the web being advanced along said path,

said web transport apparatus comprising:
- A. edge guiding means mounted on the recording device adjacent the head and extending substantially the full distance between said first and second guide rollers, said edge guiding means cooperating with said first and second tapered guide rollers for guiding a length of the web along an edge thereof past the head and from the level of the supply reel to the level of the takeup reel, said edge of the web being biased against said edge guiding means by the cooperative urging tendency of said first and second tapered guide rollers; and
- B. web drive means disposed to engage the web at a position outside of the span of web material extending between said first and second tapered guide rollers for advancing the web along said path without interfering with the cooperative action of said first and second tapered guide rollers and said edge guide means, thereby providing the critical edge guide requirements for a narrow-track, linear-transport magnetic recording device outside of the cassette.

4,131,926
MAGNETIC TAPE AND RECORDING METHOD THEREFOR

Toshio Morimoto, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 24, 1976, Ser. No. 689,147
Int. Cl.² G11B *5/78*
U.S. Cl. 360—134 **4 Claims**



1. A magnetic tape for use in a recording and reproducing apparatus having means for recording signal information on the magnetic tape and for reproducing the recorded signal information therefrom, said magnetic tape comprising at least two main signal tracks of main information signals and positioned in spaced relation to each other and in positions adjacent to opposite side edges of said magnetic tape with respect to the longitudinal central axis of said magnetic tape, and at least two auxiliary signal tracks of auxiliary control signals positioned in the space between said two main signal tracks, the auxiliary control signals related to the main information signals of one of said main signal tracks being recorded only on the one of said auxiliary signal tracks positioned nearer the other of said main signal tracks, and the auxiliary control signals related to the main information signals of the other of said main signal tracks being recorded only on the auxiliary signal track positioned nearer said one of said main signal tracks.

4,131,927

A.C. POWER SUPPLY CIRCUIT WITH SURGE CURRENT SUPPRESSION

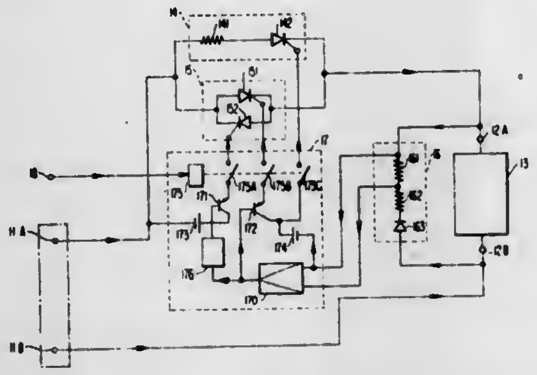
Takuichi Tsuchiya, and Shinichi Shinagawa, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Aug. 2, 1977, Ser. No. 821,102

Claims priority, application Japan, Aug. 3, 1976, 51-93025

Int. Cl.² H02H ***9/00***

U.S. Cl. 361—6 **6 Claims**



1. An A.C. power supply circuit capable of surge current suppression comprising:

a pair of power input terminals for connection to an A.C. power source;

a pair of power output terminals connected to an inductive load;

an auxiliary current path connecting one of said input terminals to one of said output terminals, said auxiliary current path having a current limiting means and first controllable means responsive to a first control signal for passing only half waves of one polarity of an A.C. current supplied at said power input terminals;

means for applying a first control signal to said first controllable means;

a main current path connected in parallel with said auxiliary current path, said main current path having second controllable means responsive to a second control signal for connecting said one power input terminal to said one power output terminal and shunting said auxiliary current path;

a voltage detector means connected across said power output terminals for detecting a voltage of a second polarity opposite to said one polarity developed across said power output terminals in response to said half waves of said one polarity;

means connected to said voltage detector means for providing said second control signal when the output of said voltage detector exceeds a predetermined voltage, thereby to turn on said main current path subsequently to the turning on of the first current path in response to the first control signal.

4,131,928

VOLTAGE CLAMP DEVICE FOR MONOLITHIC CIRCUITS

William F. Davis, and Marc T. Stein, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 24, 1977, Ser. No. 809,600

Int. Cl.² H02H ***3/22***

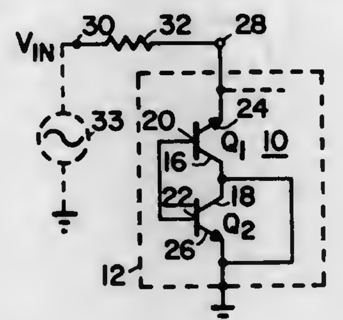
U.S. Cl. 361—56 **5 Claims**

1. A voltage clamp circuit suitable to be integrally fabricated in a monolithic integrated circuit for providing overvoltage protection to the integrated circuit, comprising:

first electron control means having first, second and control electrodes, said first electron control means being responsive to the magnitude of an alternating signal which is applied to an input of the integrated circuit reaching a first predetermined value for establishing a substantially constant voltage between said first and control electrodes thereof;

circuit means for coupling said first electrode of said first electron control means to the input of the integrated circuit; and

second electron control means having first, second and control electrodes, said second electron control means being responsive to the magnitude of the alternating signal reaching a second predetermined value for establishing a substantially constant voltage between the first and control electrodes thereof, said first electrode of said second electron control means being connected to the substrate region of the integrated circuit, said second electrode of said second electron control means being connected to said second electrode of said first electron control means and to said substrate region, said control electrode of said second electron control means being connected to said control electrode of said first electron control means.



4,131,929

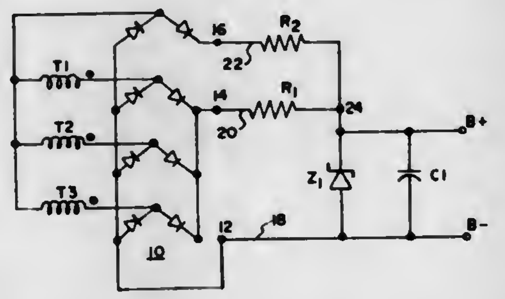
BRIDGE CIRCUITS FOR SENSING CURRENTS IN A THREE-PHASE A.C. CIRCUIT

Richard J. Moran, Milwaukee, Wis., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Mar. 24, 1977, Ser. No. 780,815

Int. Cl.² H02H ***3/08***

U.S. Cl. 361—93 **9 Claims**



1. A current sensing circuit for sensing currents in a three-phase electric power line, which comprises:

three current transformers, each having a secondary winding magnetically coupled to a respective one of the three phase conductors of the power line to produce an A.C. current therethrough proportional to the current in the respective phase conductor;

first, second and third rectifier elements, each connected at a positive end thereof to a negative bridge output and at an opposite negative end thereof to a first end of a respective one of the current transformer secondary windings;

fourth, fifth and sixth rectifier elements, each connected at a positive end therof to the first end of a respective current transformer secondary winding and at an opposite negative end thereof to a positive bridge output;

a seventh rectifier element, connected at a positive end thereof to the negative bridge output and at an opposite negative end thereof to an opposite second end of each of the three current transformer secondary windings;

an eighth rectifier element, connected at a positive end thereof to the second end of each of the current transformer secondary windings and at an opposite negative end thereof to a mutual bridge output;

first, second and third connecting means for respectively connecting the mutual, positive, and negative bridge outputs to a common point, whereby current flowing through the first connecting means is proportional to one polarity of the power line neutral current, current flowing through the second connecting means is proportional to the instantaneous sum of one polarity of the power line phase currents, and current flowing through the third connecting means is proportional to the instantaneous sum of one polarity of the power line phase and neutral currents; and

at least two current sensing means, each disposed in a respective one of the three connecting means, for sensing current therein.

4,131,930

THERMAL TIME-DELAY SWITCH

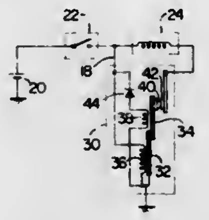
Matsuo Amano; Sigeyuki Kobori, and Toru Sugawara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

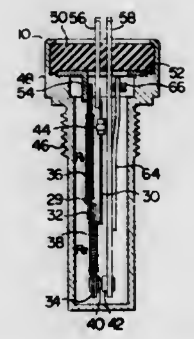
Filed Apr. 13, 1977, Ser. No. 787,102

Claims priority, application Japan, Apr. 22, 1976, 51-46160; Jun. 18, 1976, 51-71189; Jul. 9, 1976, 51-80886; Jul. 14, 1976, 51-82969

Int. Cl.² H01H ***61/02***

U.S. Cl. 361—211 **3 Claims**





1. A thermal time-delay switch comprising:

a pair of opposed contacts connected in series with a load;

at least one heating resistor connected in parallel with the load;

cooperating bimetallic elements which are heated by said heating resistor comprising a first bimetallic element operable to displace with a temperature rise in a direction in which one of the contacts is separated from the other contact, a second bimetallic element operable to displace with the temperature rise a direction in which one of the contacts is engaged with the other contact, wherein one end of said first bimetallic element is coupled with one end of said second bimetallic element, the other end of one of said first and second bimetallic element is integrally secured to a switch body, and the other end of the other of said first and second bimetallic elements is attached with one of said contacts, and wherein the amount of displacement of the contact due to the temperature rise in the first bimetallic element is different from the amount of displacement of the contact due to the temperature rise in the second bimetallic element so that the contacts are switched with a substantially predetermined time delay substantially independent of fluctuations over a wide range of a voltage feeding said heating resistor; and

a contact supporter having one end attached with the other of said contacts and the other end integrally secured to the switch body, said contact supporter including a first strip member integrally secured to the switch body and a second strip member having a free end biased in a direction of said opposing contacts to come into contact with said first strip member, and means disposed in close vicinity of the free end of the second strip member for adjusting the distance between said first and second strip members.

4,131,931

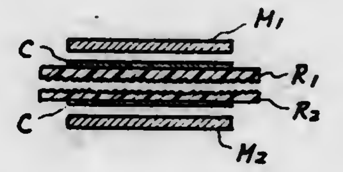
IMPREGNATED CAPACITOR

Shigeyoshi Nishikawa, Koga; Takashi Muroshima, Moriyama; Hirokazu Sakaguchi, Kusatsu; Morihiko Hasebe, Omihachiman; Katsuji Katagiri, Kyoto, and Kazuo Inone, Koga, all of Japan, assignors to Nichicon Capacitor, Ltd., Japan

Continuation-in-part of Ser. No. 716,594, Aug. 23, 1976, abandoned. This application Feb. 14, 1978, Ser. No. 877,611

Int. Cl.² H01G ***4/04***

U.S. Cl. 361—315 **5 Claims**



1. A rolled capacitor, comprising a plurality of metal electrode foils and a plurality of insulator separation films, wherein each of said films consists of a synthetic resin film having one surface roughened and the other surface coated with a metal layer.

4,131,932

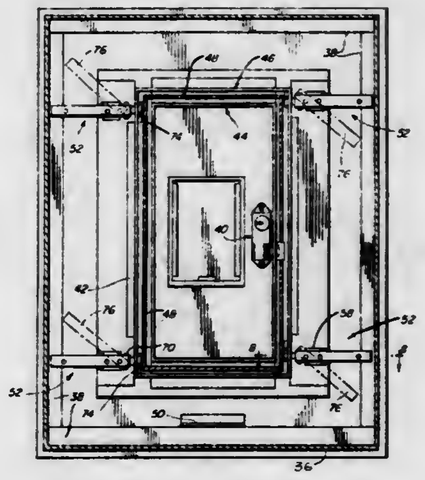
COVER ASSEMBLY FOR PANELBOARD

Walter T. Brumfield, Jr., Nicholasville; Norman M. Newsome, and George E. Schweikle, both of Lexington, all of Ky., assignors to Square D Company, Park Ridge, Ill.

Filed Oct. 17, 1977, Ser. No. 842,429

Int. Cl.² H02B ***1/08***

U.S. Cl. 361—356 **8 Claims**



1. A cover assembly for use in a panelboard having a cabinet supporting an interior assembly for extending a plurality of electrical connections with said cabinet including a back wall having a peripheral wall formed by side walls transverse to said back wall with each side wall having projecting flanges in spaced overlapping relationship to said back wall, the improvement comprising:

a cover adapted to extend past each of said flanges,

a plurality of spaced latch lever assemblies,

first pivot means for each latch lever assembly pivotally supporting a respective one of said latch lever assemblies for rotation about a respective axis located at a respective position spaced intermediate said flanges for engaging a respective one of said flanges, and

second means for each first means for pivotally supporting a respective one of said first pivot means for thereafter rotating each latch lever assembly relative said cover about another respective axis for moving said cover toward said flanges.

4,131,933

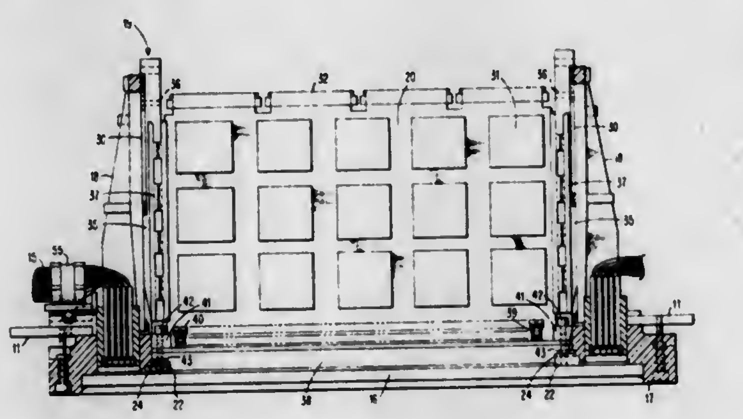
QUICK DISCONNECT CARD-ON-BOARD ELECTRONIC PACKAGE ASSEMBLY

Richard L. Agard; Terrence E. Bocinski, both of Binghamton; Lawrence E. Brearley, Apalachin, and William R. Yaple, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1977, Ser. No. 792,153

Int. Cl.^{2} H02B *1/02*

U.S. Cl. 361—415 **1 Claim**



1. A card-on-board electronic package assembly which comprises:

a printed circuit board having a plurality of spring contacts arranged on a surface thereof;

a board stiffener fastened to said circuit board and having a plurality of channels with each channel provided with a contact housing having holes in alignment with contacts on said board;

a plurality of printed circuit cards each having a plurality of blade contacts along one edge and each card being mounted in a card holder;

a card guide frame having a plurality of grooves across the top and bottom for receiving said card holders and cards and guiding the blade contact edges of inserted cards into said channels and contact housings;

captive fastening means associated with each card comprising a screw mounted at the top and bottom of the card with each screw having a retainer clip attached thereto, said screws being effective when tightened one at a time to secure inserted cards to said board stiffener with their blade contacts in engagement with the board spring contacts and operable when loosened to disconnect secured cards from said board stiffener for removal;

a latching tab provided on the top and bottom edge of each card holder and the top and bottom grooves in the card guide frame each have a recessed portion which coact with said tabs to latch inserted card holders against vertical movement and prevent either the top or bottom edge of the cards from lifting when the opposite edge is tightened.

4,131,934

RECEPTACLE FIXTURE FOR EQUIPMENT UNITS IN ELECTRICAL COMMUNICATION TECHNOLOGY

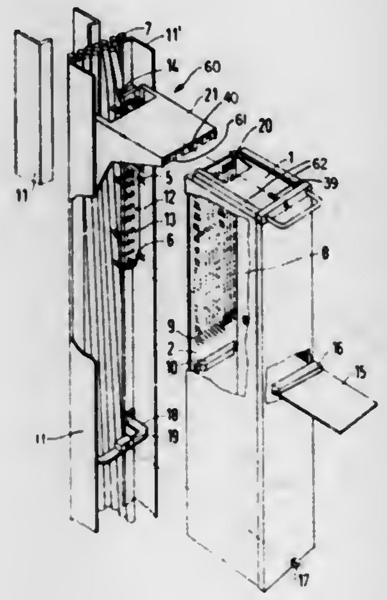
Harry Becker, Wolfratshausen; Karl Doerflinger; Klaus Ey, both of Munich; Georg Reiter, Schliersee; Hermann Rutzmoser, Munich, and Richard Theus, Wolfratshausen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jun. 24, 1977, Ser. No. 809,652

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1976, 2628489

Int. Cl.^{2} H02B *1/00*

U.S. Cl. 361—428 **4 Claims**



1. In a receptable fixture including equipment units in electrical communication technology, each of said equipment units having a housing containing plug-in component assemblies, said fixture comprising a pair of spaced, elongated spars forming a cable chute and having a contact strip supported by at least one of said spars with a first group of wrapping posts protruding from a surface thereof for forming connections with a central office and ring wiring, said fixture having a bracket-like mounting assembly for each of the equipment units spaced and secured along said spars, said mounting assemblies including guiding slides which receive each equipment unit housing and fastening means for attaching the housing to the fixture, each housing having a printed circuit board provided with internal wiring for the equipment unit disposed on a side of the housing adjacent to the spar contact strip, the improvements comprising the printed circuit board of each housing being provided with openings receiving the wrapping posts of the spar contact strip with the wrapping posts protruding through the openings and into the housing, additional contact posts being provided on an inner surface of the printed circuit board and extending therefrom into the interior of the housing, said additional contact posts being electrically connected to printed conductors on each circuit board, and each plug-in component assembly having an elongated spring contact strip forming electrical contact with the wrapping posts of the spar contact strip and the additional contact posts as the plug-in component assembly is plugged into the housing of the equipment unit.

4,131,935

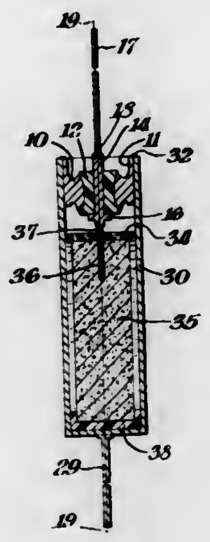
TERMINAL-COVER ASSEMBLY HAVING COINED REGION OF REDUCED CROSS SECTION COMPRESSING RESILIENT BUSHING

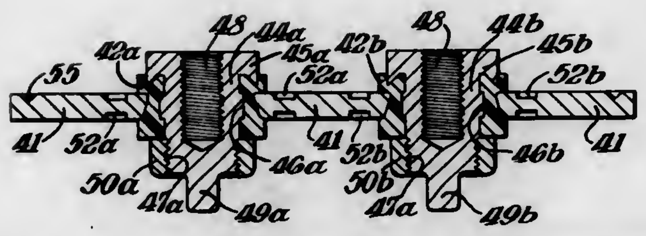
Warren J. Clement, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Continuation of Ser. No. 556,248, Mar. 7, 1975, abandoned. This application Mar. 31, 1977, Ser. No. 783,376

Int. Cl.^{2} H01G *9/00*

U.S. Cl. 361—433 **8 Claims**





1. A terminal-cover assembly for an electrical component package comprising a generally planar surface metal cover member having a hole therein, an insulating bushing of resilient material being mounted in said cover hole, said bushing having a hole therein, a metal terminal being mounted in said bushing hole, the planar surface of said cover member having a coined region of reduced cross section spaced laterally from and surrounding said bushing, and cold-flowed material of said cover member between said coined region and said bushing compressing said bushing so as to form a first seal between said cover and said bushing and a second seal between said terminal and said bushing.

4,131,936

SYMMETRICAL PHASE SHIFTING APPARATUS, DIGITAL DELAYING DEVICE USED THEREIN AND HARMONIC NEUTRALIZED INVERTER SYSTEM USING THE APPARATUS

Robert S. Gemp, Williamsville, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 7, 1977, Ser. No. 774,726

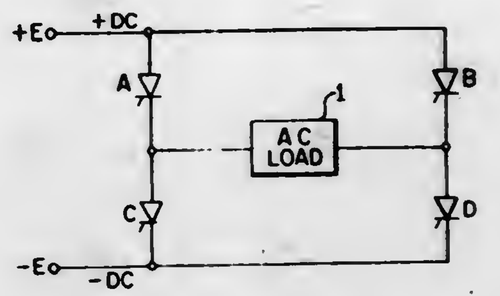
Int. Cl.^{2} H02M *7/155*

U.S. Cl. 363—43 **7 Claims**

1. In an harmonic-neutralized inverter system for the generation of an alternating wave of fundamental frequency and of voltage magnitude adjusted by phase shift modulation technique in relation to a voltage control signal, including N square wave-inverter stages at π/N from one another controlled by conduction control signals spaced by an amount proportional to said voltage magnitude; means responsive to the outputs of said inverter stages for amplifying the same in relation to a cosine function of the stage rank; and means for summing the amplified outputs of said amplifying means to reconstruct said alternating wave of fundamental frequency; the combination of:

first means responsive to one time wave of said fundamental frequency for shifting said one time wave to the left in proportion to said voltage control signal;

second means responsive to said one time wave for shifting said one time wave to the right in proportion to said voltage control signal,



left shift register means responsive to said left shifted time wave for generating a first set of N said conduction control signals shifted to the left by a desired amount;

right shift register means responsive to said right shifted time wave for generating a second set of N said conduction control signals shifted to the right by said desired amount;

each of said N inverter stages being responsive to a corresponding pair of said conduction control signals derived from said first and second sets.

4,131,937

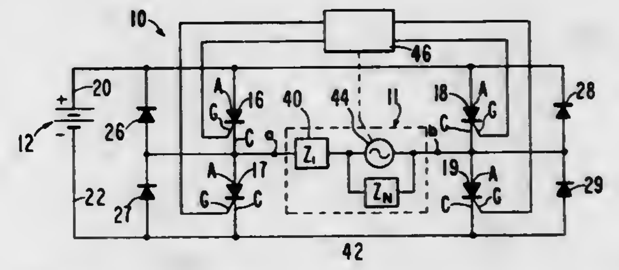
NATURALLY COMMUTATED VOLTAGE-FED CONVERTER FOR LINKING A DC SOURCE TO AN AC SYSTEM

Brian R. Pelly, Lingfield, England, and Peter Wood, Murrysville, Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 14, 1976, Ser. No. 686,422

Int. Cl.^{2} H02M *7/515*

U.S. Cl. 363—96 **14 Claims**



1. A naturally-commutated voltage-fed converter interfacing a relatively low impedance alternating-current (AC) system having first and second complementary terminals and a direct-current (DC) system having first and second complementary terminals for effecting power conversion comprising:

(a) a thyristor bridge means including a first thyristor means coupling said first DC system terminal to said first AC system terminal;

a second thyristor means coupling said second DC system terminal to said second AC system terminal;

a third thyristor means coupling said first DC system terminal to said second AC system terminal;

a fourth thyristor means coupling said second DC system terminal to said first AC system terminal;

diodemeans coupled antiparallel across each said thyristor means; and

(b) means operative to cyclically trigger said thyristor means, including means to sense the current phase in said AC system, for inducing a commutating voltage at said AC system terminals, wherein the fundamental component of current between said DC system and said AC system invariably leads said commutating voltage, providing a reverse current for effecting commutation of each said thyristor means.

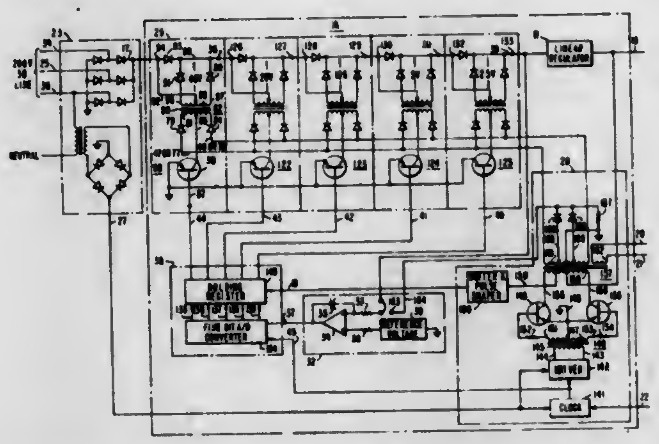
4,131,938
DIGITAL CHOPPER REGULATOR

Walter E. Milberger, Severna Park, and Frederick J. Rowe, Millersville, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 15, 1977, Ser. No. 788,093

Int. Cl.² H02M *3/08*

U.S. Cl. 363—101 **12 Claims**



1. A boost circuit for injecting a voltage from an external voltage source between an input and output terminal in response to a control signal and at other times coupling by means of a conductive path, said input terminal to said output terminal comprising:

a first diode having an anode coupled to said input terminal and a cathode coupled to said output terminal;

a transformer having a first winding with a center tap and a second winding with a center tap, said center tap of said second winding coupled to said input terminal;

a second diode having an anode coupled to one end of said second winding;

a third diode having an anode coupled to the other end of said second winding;

said second and third diodes having a cathode coupled to said output terminal;

a fourth diode having a cathode coupled to one end of said first winding;

a fifth diode having a cathode coupled to the other end of said first winding;

said fourth diode having an anode coupled to a first terminal of said external voltage source;

said fifth diode having an anode coupled to a second terminal of said external voltage source;

a transistor having an emitter, base, and collector;

said emitter coupled to a return path of said external voltage source;

said collector coupled to said center tap of said first winding; and

said base coupled to said control signal.

4,131,939
CONSTANT CURRENT POWER SUPPLY

Ralph D. Day, 117 NW. 94th St., Miami Shores, Fla. 33153

Filed Mar. 30, 1977, Ser. No. 782,913

Int. Cl.² H02M *7/06*

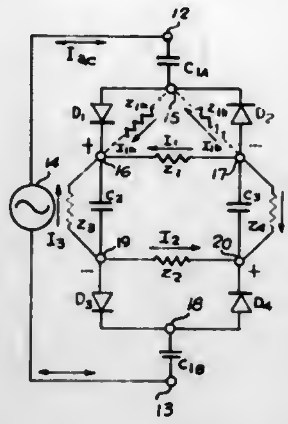
U.S. Cl. 363—126 **8 Claims**

1. A constant current power supply for multiple d.c. loads, comprising

a pair of A.C. input terminals,

an input capacitor connected at one side to one of the input terminals, and means for providing a constant current through a load, said means comprising

a pair of parallel branch circuits each connecting the other side of said input capacitor to the other input terminal, each of said branch circuits being a series circuit including a first diode, a positive D.C. output terminal, a fixed output capacitor, a negative D.C. output terminal, and a second diode,



the diodes of one branch circuit being oppositely poled with respect to the diodes of the other branch circuit, and

the output capacitors having long time constants of charge and discharge.

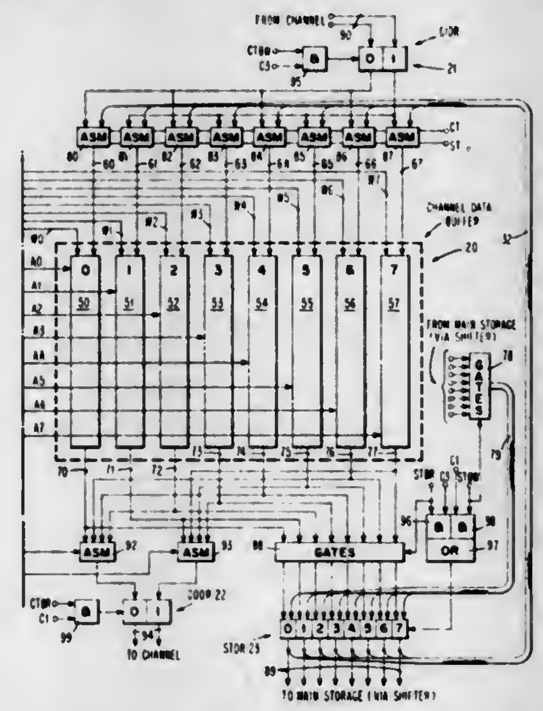
4,131,940
CHANNEL DATA BUFFER APPARATUS FOR A DIGITAL DATA PROCESSING SYSTEM

James T. Moyer, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 25, 1977, Ser. No. 818,797

Int. Cl.² G06F *13/00, 3/00*

U.S. Cl. 364—200 **10 Claims**


FROM CHANNEL
ASM
CHANNEL DATA BUFFER
FROM MAIN STORAGE (VIA SHIFTER)
GATES
OR
TO CHANNEL
STOR 23
TO MAIN STORAGE (VIA SHIFTER)

1. In a data processing system having channel circuitry for sending data to and receiving data from input/output devices and a main storage unit for storing data to be processed, the apparatus comprising:

a data buffer for buffering data being transferred between the channel circuitry and the main storage unit, this data buffer being structured to electrically provide a plurality of columns and rows, each column thereof being comprised of a byte-wide multiple row storage array having its own address mechanism for accessing any desired one of the rows therein, the corresponding rows in the different arrays serving to provide plural-byte rows for the data buffer as a whole;

plural-byte data transfer circuitry for transferring plural-byte data segments between the data buffer and at least one of the channel circuitry and the main storage unit;

and data buffer address circuitry operatively coupled to said main storage unit and said channel circuitry for supplying a plural-bit address obtained therefrom to the address mechanism of each storage array and including circuitry for modifying the address supplied thereby to at least one of the address mechanisms when said plural-bit address requires simultaneous accessing of a plural-byte storage segment located on two different rows of two columns the data buffer.

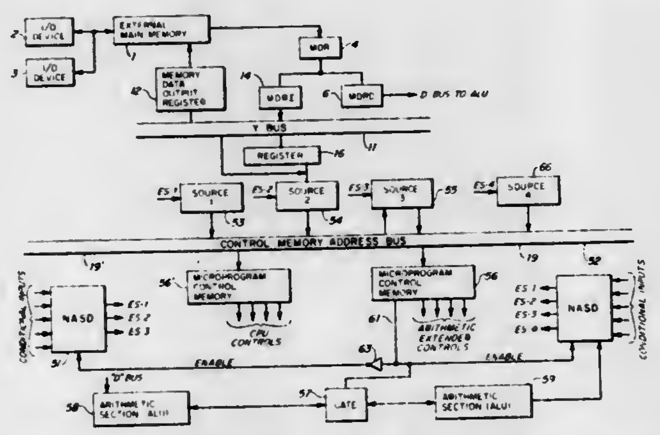
4,131,941
LINKED MICROPROGRAMMED PLURAL PROCESSOR SYSTEM

Harvey L. Siegel; Gerald F. Muething, Jr., both of Pleasanton, and Edward J. Radkowski, Palo Alto, all of Calif., assignors to Itek Corporation, Lexington, Mass.

Filed Aug. 10, 1977, Ser. No. 823,360

Int. Cl.² G06F *15/16, 9/16*

U.S. Cl. 364—200 **24 Claims**



1. A processor network comprising at least first and second microprogrammed digital processors,

1. each of said processors including:
   a. microprogram control means;
   b. control memory address bus for carrying microprogram sequencing information;
   c. an operation code mapping memory for generating an address code for addressing said microprogram control means via said control memory address bus;
   d. an arithmetic logic unit for receiving input data to be processed;
   e. data transfer means coupled between the output circuit of said microprogram control means and an input control circuit of said arithmetic logic unit;
   f. microprogram sequencer source means for sequencing said microprogram control means via the address bus;
   g. next control memory address source designator coupled to said arithmetic logic unit for selectively coupling said microprogram sequencer source means or said operation code mapping memory of one or the other(s) of said processors to said address bus depending upon the nature of the data generated by said arithmetic logic unit and/or other conditional input data transmitted to said memory address source designator;
2. means for coupling said microprogram address busses of said processors together at least part of the time for exchanging microprogram sequencing information between processors; and
3. means coupled between the arithmetic logic unit sections of said processors to provide for the selective flow of data between the arithmetic logic unit sections of said processors.

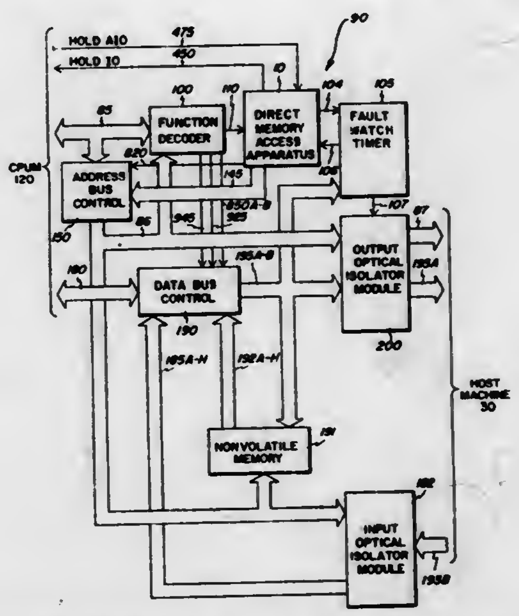
4,131,942
NON-VOLATILE STORAGE MODULE FOR A CONTROLLER

Kenneth Gillett, Redondo Beach, Calif.; Edward L. Steiner, Macedon, N.Y.; Kenton W. Fiske, Fairport, N.Y.; Kenneth A. Davis, Honeoye Falls, N.Y.; William P. Kukucka, Webster, N.Y.; Thomas Criswell, Venice, and Philip Richardson, Pacific Palisades, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 10, 1977, Ser. No. 758,111

Int. Cl.² G06F *13/00*

U.S. Cl. 364—200 **28 Claims**



1. In a controller including a central processor coupled to a system bus having control, data and address lines therein for directing the control registers of a host machine, a non-volatile storage module comprising:

a) data memory means operative to interface with the system bus for storing data, and for input-output of signals on the data lines of the system bus upon command of the central processor;

b) means coupled to said data memory means for distributing a plurality of power signals from the host machine onto critical and noncritical power lines for transmittal thereof to said data memory means, for sourcing power for a power-down condition, and for sensing that signals on the critical power lines from said distributing means are in a power-down condition for activating switching of power from said power sourcing means into the critical power lines to said data memory means and

c) means operative upon indication of a power-down condition from said sensing means for enabling a currently addressed signal on the data lines of the system bus to be processed by said data memory means.

4,131,943
MICROPROGRAMMED COMPUTER EMPLOYING A DECODE READ ONLY MEMORY (DROM) AND A MICROINSTRUCTION READ ONLY MEMORY (ROM)

Yukio Shiraogawa, Fuchu, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1977, Ser. No. 807,499

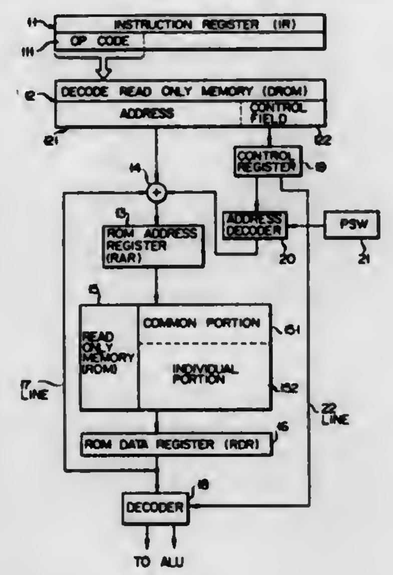
Claims priority, application Japan, Jun. 30, 1976, 51-76418

Int. Cl.² G06F *9/16, 13/00*

U.S. Cl. 364—200 **10 Claims**

1. A microprogrammed computer comprising an instruction register for registering a machine instruction word; a decode read only memory connected to said instruction register for storing the start address data of microprogram routines which correspond to machine instruction words, respectively and the control bit data which correspond to the machine instruction words, respectively, said microprogram routines each consisting of a plurality of microinstructions; a control register for

registering the control bit data, one at a time; a read only memory for storing the microinstructions of the microprogram routines; an address register for registering an address datum based on which a specified microinstruction is read out from the read only memory, said address register connected to the decode read only memory for receiving the start address data from said decode read only memory and also connected to the input of said read only memory; a data register for storing the microinstruction read out from the read only memory; first means for changing the function of the microinstruction stored in the data register in response to a specified control signal from the control register; and second means for feeding a specified address datum to the address register in preference to the start address data sent to the address register from the decode read only memory in response to a specified control signal from the control register, thereby changing the execution sequence to the microprograms in the read only memory.



4,131,944

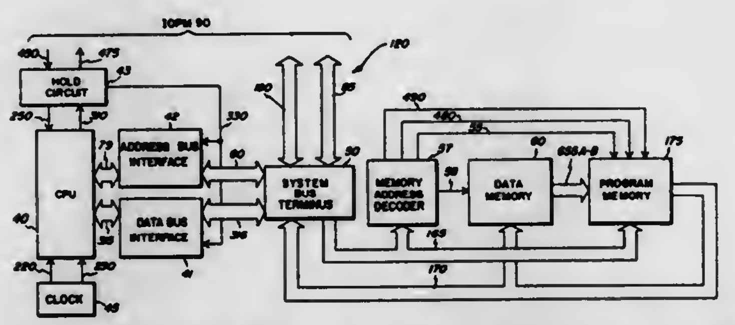
SYSTEM BUS MODULE FOR A CONTROLLER

George E. Mager, Manhattan Beach; Frank M. Nelson, Sherman Oaks, and Warren L. Hall, Palos Verdes, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 12, 1977, Ser. No. 758,892

Int. Cl.² G06F *13/00*

U.S. Cl. 364—200 **37 Claims**



1. In a controller having a microprocessor coupled through a system bus to access a data memory when so programmed, and a direct access apparatus coupled through the system bus to periodically signal request of a hold, at a predetermined rate, of the microprocessor and upon signal acknowledgement for directly accessing the data memory through the system bus for directing the control registers of a host machine, a timed protocol module for supervising data, address and control signals transported on the system bus, comprising:

(a) diriment means coupled to the microprocessor for predeterminably establishing the protocol of timing for receipt of a hold control signal on the system bus from the direct access apparatus for signaling hold thereof and for transmission of the acknowledgement signal as first and second control signals on the system bus from the microprocessor for acknowledgement thereof;

(b) address interface means coupled through the system bus to the microprocessor for disenabling the throughput of address signals therefrom upon receipt of the first control acknowledgement signal on the system bus from said diriment means; and

(c) data interface means coupled through the system bus to the microprocessor for bidirectionally disenabling the throughput of data signals therefrom upon receipt of the second control acknowledgement signal on the system bus from said diriment means.

4,131,945

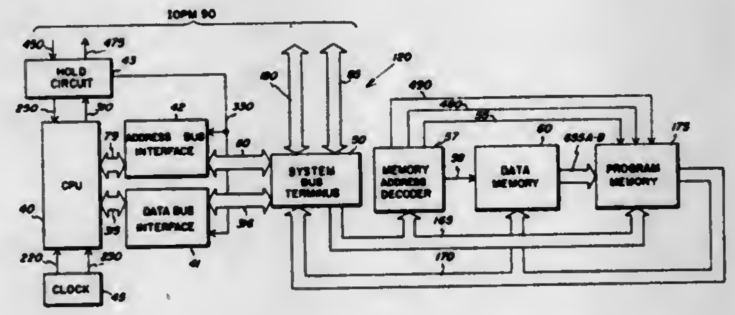
WATCH DOG TIMER MODULE FOR A CONTROLLER

Philip Richardson, Pacific Palisades, Calif.; Edward L. Steiner, Macedon, N.Y.; John W. Daughton; Kenton W. Fiske, both of Fairport, N.Y., and Thomas Criswell, Venice, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 10, 1977, Ser. No. 758,120

Int. Cl.² G06F *9/00, 13/00*

U.S. Cl. 364—200 **18 Claims**



1. A system for directing a host machine comprising:

(a) microprocessor means for manipulating data and for providing address, data and control signals for host machine control;

(b) system bus means operative to dependently, interface with said microprocessor means for bidirectionally carrying the data, address and control signals;

(c) data memory means coupled to said system bus means for storing the data signals, and for read-write interfacing through the address signals received on said system bus means;

(d) direct access means operative to receive a predetermined periodic enabling address signal on said system bus means from said microprocessor means for issuing a hold signal thereto after a predetermined period for operational suspension, and subsequently upon acknowledgement after a predetermined period for control assumption of said system bus means for generating active state control and address signals to said system bus means that will directly access said data memory means for host machine update; and

(e) fault timer means operative to receive the active state control signal from said direct access means for self resetting, and upon non receipt thereof for generating a hold signal after a predetermined period through said direct access means to said microprocessor means and a fault signal for host machine disable.

4,131,946

MAILING SYSTEM

Daniel F. Dlugos, Huntington, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

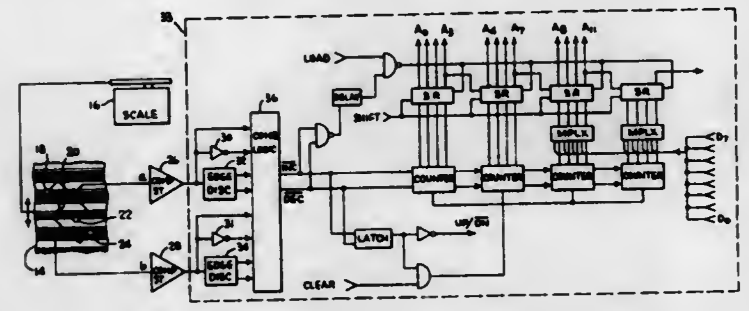
Filed Dec. 14, 1976, Ser. No. 750,534

Int. Cl.² G06F *15/20;* G01G *23/42*

U.S. Cl. 364—466 **7 Claims**

1. A weighing system for weighing an article, the system including a spring scale for measuring the weight of the article as a function of the deflection of a load support for carrying the

article, the scale comprising means for generating an optical cyclic pattern, the generating means including means moving the pattern as a function of the load support deflection, optoelectronic transducer means, the pattern being projected upon the transducer means, the transducer means generating a pair of cyclic waveforms as a function of the deflection of the load support, the system further including an interface and a processing unit, the interface being disposed in the system between the transducer means and the processing unit, the interface including digital wave shaping means, the digital wave shaping means receiving the cyclic waveforms and in response thereto providing a pair of shaped digital waveforms, sensing means, the sensing means receiving the shaped waveforms and sensing movement of the load support and to provide one series of pulses indicative of movement in one direction and another series of pulses indicative of movement in an opposite direction, counting means coupled to the sensing means to receive either one of said series of pulses, and in response thereto in one instance adding the pulses of one series and in another instance subtracting the pulses of the other series to provide counter information indicative of the measure of said load support movement, and register means, the register means receiving the counter information and storing and transferring the counter information to the processing unit, the processing unit receiving the counter information and in response thereto processing said counter information for determining article weight.



4,131,947

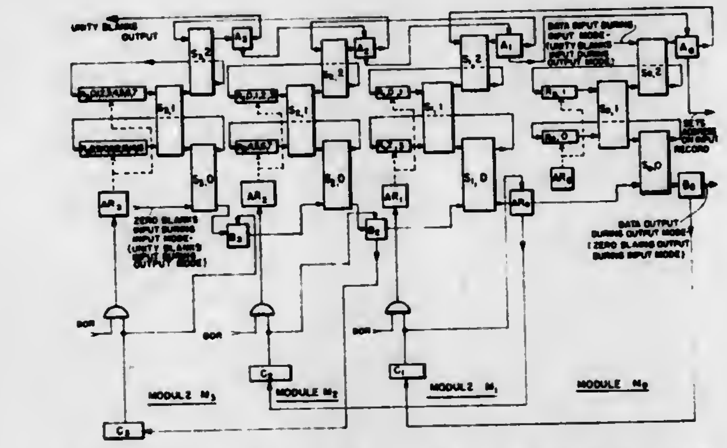
RANDOM ACCESS DIGITAL SORTER

Philip N. Armstrong, 17331 Keegan Way, Santa Ana, Calif. 92705

Continuation of Ser. No. 712,268, Aug. 6, 1976, abandoned. This application Dec. 9, 1977, Ser. No. 859,267

Int. Cl.² G06F *7/06*

U.S. Cl. 364—900 **17 Claims**


UNITY BLANKS OUTPUT
DATA INPUT DURING INPUT MODE - UNITY BLANKS INPUT DURING OUTPUT MODE
MODULE M3
MODULE M2
MODULE M1
MODULE M0

1. A system for sorting a plurality of multi-bit binary records, each record being identified by a multi-bit key, and said records being sorted into an ascending or descending order with respect to the keys of successive records, said system including a plurality of modules intercoupled with one another to represent a plurality of sorting levels, any of said modules including: a pair of random access memories, each of said memories having a predetermined number of memory cells greater than one; address register means coupled to said pairs of random access memories for selectively designating pairs of the memory cells therein; first comparing network means having a first pair of inputs respectively coupled to said pair of random access memories for comparing pairs of records from said random access memories as selected by said address register means and having first and second outputs; second comparing network means having first and second outputs and having a first input connected to the first output of said first comparing network means and having a second input coupled to the first output of the second comparing network means of a first adjacent module, and said second comparing network means of said one of said modules having its second output coupled to one of the pair of random access memories of said one of said modules for introducing records to the memory cells therein designated by said address register means; third comparing network means having a first input connected to the second input of the first comparing network means and having a second input coupled to the second output of the third comparing network means of a second adjacent module, and said third comparing network means of said one of said modules having a first output coupled to the other of said pair of random access memories of said one of said modules for introducing records to the memory cells therein designated by said address register means.

4,131,948

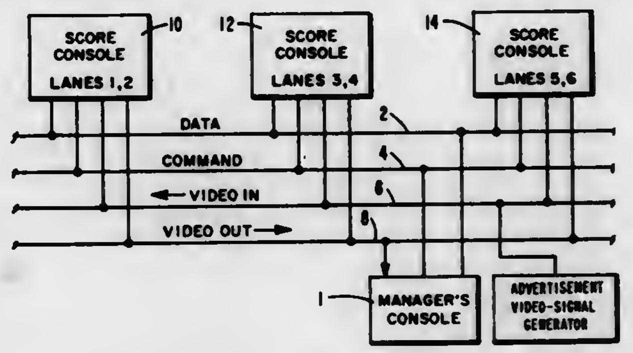
ELECTRONIC BOWLING SCORING SYSTEM WITH BUS COMMUNICATION BETWEEN MANAGER CONSOLE AND LANE SCORE CONSOLES

Reginald A. Kaenel, Weston, Conn., assignor to AMF Incorporated, White Plains, N.Y.

Filed Jan. 31, 1977, Ser. No. 764,431

Int. Cl.² G06F *3/00*

U.S. Cl. 364—900 **9 Claims**



1. A bowling scoring system for a plurality of power on bowling lanes including a manager's console unit comprising a keyboard, in memory means, a processing unit connected to said keyboard and said memory means for developing address and command information for storing into said memory means and a CRT monitor coupled to said character generator for displaying information based on the key depressed on said keyboard,

a plurality of lane score terminals each comprising memory means for storing bowler lane and game score information, a processing unit for processing said information, a CRT monitor responsive to a character generator coupled to said memory means for displaying the output of said processing unit,

a plurality of communication buses for connecting said manager's console and said score terminals in parallel each of said score terminals including in said memory means a plurality of addressable flag registers and a pointer register, said manager's console including means for transmitting the address of said flag registers to said pointer register and for transmitting a command to said processing unit at said lane score terminal in response to key depressions at said keyboard at said manager's console,

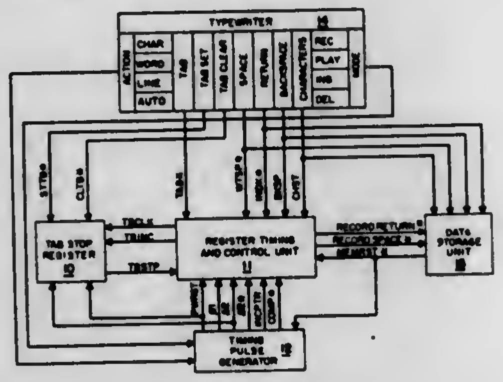
said lane score terminal being responsive to said command from said manager's console to read the register address of one of said plurality of addressable registers stored at said pointer register and to operate on said addressed register as required by said conmand code, whereby the lane score terminal is responsive to said commands from said manager's cosole unit to modify said processing of said information at said lane score terminal.

4,131,949

WORD PROCESSOR APPARATUS HAVING MEANS FOR RECORDING A TAB FUNCTION AS A SIGNAL INDICATIVE OF THE NUMBER OF SPACES TABBED

Steven J. Fletcher, Norristown; Jeffrey L. Wright, Philadelphia, and Richard S. Davis, Blue Bell, all of Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Sep. 10, 1975, Ser. No. 612,165
Int. Cl.^{2} G06F *1/00;* B41J *25/18*
U.S. Cl. 364—900 11 Claims



1. Word processor apparatus comprising:
input means for providing input character signals representative of characters to be written and input format signals for controlling the arrangement of the characters when written,
means for storing the input character and format signals,
output means responsive to the character and format signals stored in said storage means for respectively writing characters and controlling the arrangement thereof, and
tab signal recording means including tab stop signal storage means for storing one or more signals each representative of a respective tab stop position along a writing line, control means for controlling the tab stop signal storage means such that a signal stored therein is representative of the next tab stop position along a line relative to the instant writing position, and means responsive to a tab input format signal supplied from the input means and a signal supplied from the tab stop signal storage means representative of the next tab stop position from the instant writing position at the occurrence of the tab input format signal for generating and storing in said storage means a succession of encoded space format signals corresponding to the number of writing positions to the next tab stop position from the instant writing position.

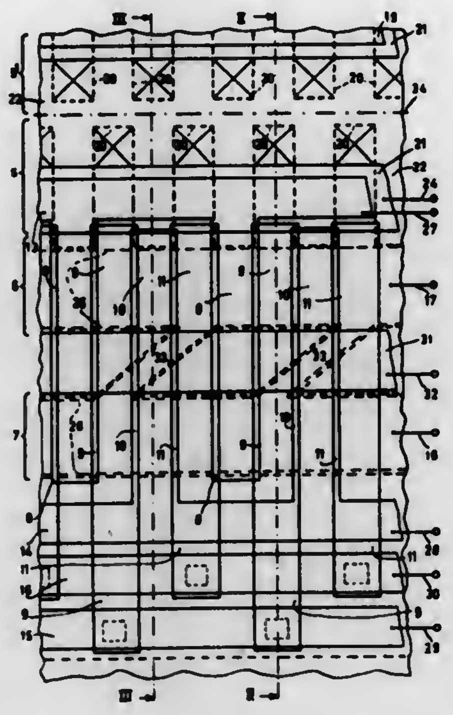
4,131,950

CHARGE TRANSFER DEVICE

Johannes G. van Santen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 10, 1975, Ser. No. 639,278
Claims priority, application Netherlands, Sep. 2, 1975, 7510311
Int. Cl.^{2} G11C *11/40*
U.S. Cl. 365—183 13 Claims

1. A charge transfer device comprising a semiconductor body having a semiconductor layer, barrier means and a row of charge storage sites for storing mutually separated charge packets, read-out means for providing an output from said charge transfer device, a plurality of parallel-arranged juxtaposed charge transfer shift registers, each having an array of electrodes which are separated from said semiconductor layer of the semiconductor body by said barrier means and which form an array of capacitances with the underlying semiconductor material in which charge packets can be stored and be transferred to said read-out means, electrode means between the row of charge storage sites and the adjacent shift register and between adjacent shift registers which are separated from the semiconductor layer by said barrier means, for distributing charge packets stored in the row of charge storage sites between the shift registers, each of the shift registers receiving an equal part of the total number of the charge packets to be distributed, means for distributing to each shift register charge packets originally separated from each other in the row of storage sites by a number of intermediate charge packets equal to one less than the number of registers, the charge packets received by a selected shift register being supplied by said electrode means and with the exception of the first register via the registers present between said selected register and the row of storage sites, and means for shifting the charge packets distributed between the registers to the read-out means.

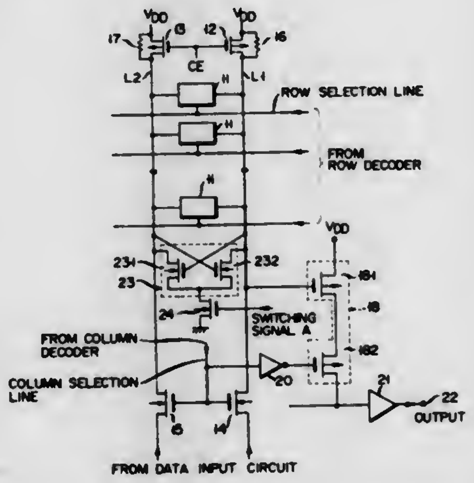


4,131,951

HIGH SPEED COMPLEMENTARY MOS MEMORY

Hiroji Asahi, Zama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed May 17, 1977, Ser. No. 797,816
Int. Cl.^{2} G11C *11/40*
U.S. Cl. 365—203 7 Claims



1. A high speed complementary MOS memory comprising:
first and second data bus lines and row selection lines;
a plurality of memory cells provided between said first and second data bus lines and connected to said row selection lines;

precharge means connected to said first and second bus lines for precharging said bus lines to an initial level every access cycle, said precharge means including resistive means tending to maintain said bus lines at said initial level;
sensing means connected to one of said bus lines for detecting read out data dependent on a change of the signal level on the bus line connected thereto;
data writing means connected to said bus lines for supplying write data to said bus lines to set the voltage level thereon to a predetermined level;
speed-up signal level changing means connected between said first and second bus lines for detecting signal level change in either bus line on the basis of a signal level difference between said bus lines and for rapidly changing the signal level on the bus lines on which a signal level change is detected to a reference signal level potential; and
switching means connected to said speed-up signal level changing means for coupling said signal level changing means to said reference signal level potential.

DESIGNS

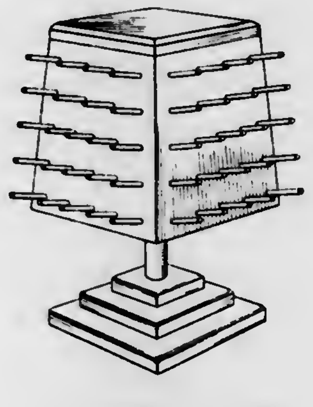
DECEMBER 26, 1978

250,616
SPOOL HOLDER

Harry P. Cofer, 402 Lashley Dr., P.O. Box 141, Bonaire, Ga. 31005

Filed Mar. 28, 1977, Ser. No. 782,167
Term of patent 14 years
Int. Cl. D6—*04*

U.S. Cl. D3—19 D

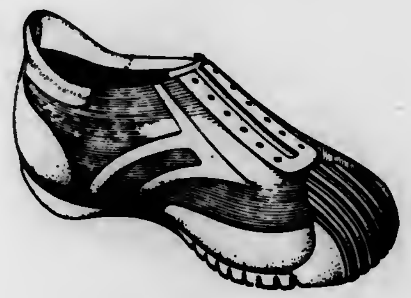


250,617
SKATE BOARD SHOE

Chrespin W. Noches, 514 Howard St., Pasadena, Calif. 91104

Filed May 17, 1977, Ser. No. 797,899
Term of patent 14 years
Int. Cl. D2—*04*

U.S. Cl. D2—309

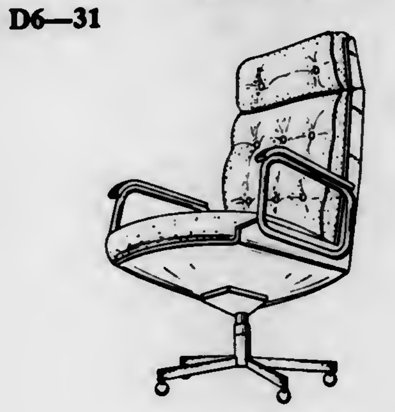


250,618
EXECUTIVE CHAIR

Sam Bivas, and Yoram Leshem, both of Willowdale, Canada, assignors to Galaxy Office Furniture Ltd., Weston, Canada

Filed Jul. 20, 1977, Ser. No. 817,474
Claims priority, application Canada, Jan. 25, 1977, 41760
Term of patent 14 years
Int. Cl. D6—*01*

U.S. Cl. D6—31

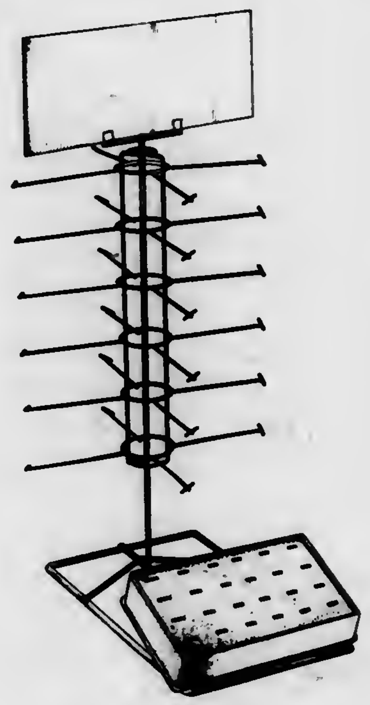


250,619
ROTATABLE FINGER RING DISPLAY STAND

Thomas A. Newman, Cranston, R.I., assignor to McGrath-Hamin, Inc., Providence, R.I.

Filed Dec. 12, 1977, Ser. No. 859,718
Term of patent 14 years
Int. Cl. D20—*02*

U.S. Cl. D6—28

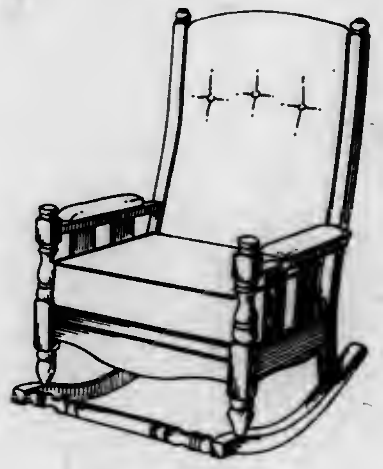


250,620
ROCKING CHAIR

Lester Beall, High Point, N.C., assignor to Trend Line Furniture Corporation, Hickory, N.C.

Filed Mar. 28, 1977, Ser. No. 782,115
Term of patent 14 years
Int. Cl. D6—*01*

U.S. Cl. D6—49



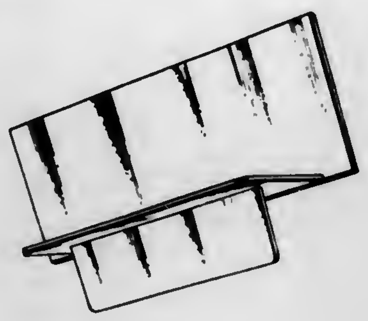
250,621

SUN GLASS HOLDER FOR DISPLAY RACK

Michael C. Blum, Los Angeles, Calif., assignor to Sunday Sunglass Corp., Glendale, Calif.

Filed Sep. 16, 1977, Ser. No. 833,728
Term of patent 14 years
Int. Cl. D20—*02*

U.S. Cl. D6—85



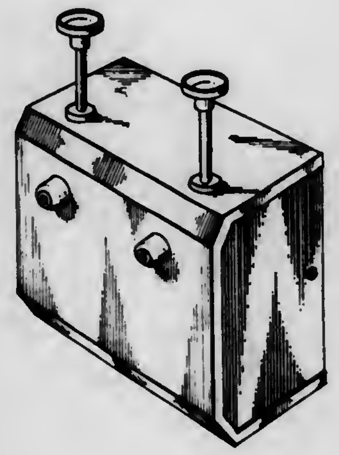
250,622

COLOGNE DISPENSER

Alexander Hunter, 5 Oak Pl., Watertown, Mass. 02172

Filed Feb. 18, 1977, Ser. No. 770,050
Term of patent 14 years
Int. Cl. D23—*02*

U.S. Cl. D6—95



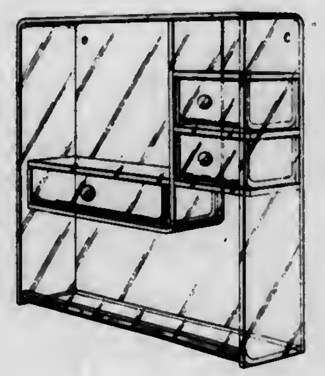
250,623

COMBINED DISPLAY AND STORAGE UNIT

Gladys Albert, 56-40 Oceania St., Bayside, N.Y. 11364, assignor to Gladys Albert

Filed Sep. 16, 1977, Ser. No. 833,659
Term of patent 7 years
Int. Cl. D6—*04*

U.S. Cl. D6—129



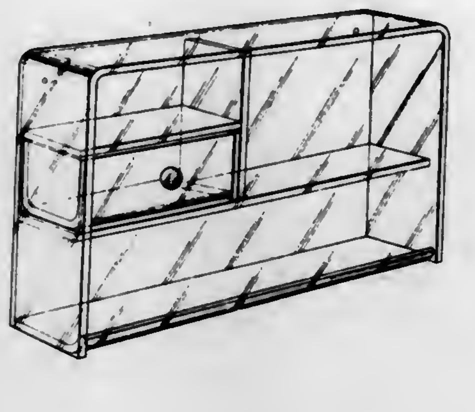
250,624

COMBINED DISPLAY AND STORAGE UNIT

Gladys Albert, 56-40 Oceania St., Bayside, N.Y. 11364, assignor to Gladys Albert

Filed Sep. 16, 1977, Ser. No. 833,660
Term of patent 7 years
Int. Cl. D6—*04*

U.S. Cl. D6—129



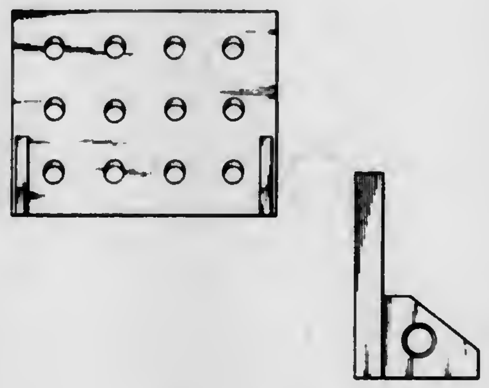
250,625

DISPLAY RACK FOR WINE BOTTLES

Harold A. Leventhal, 405 E. 56 St., New York, N.Y. 10022

Filed Mar. 14, 1977, Ser. No. 776,959
Term of patent 14 years
Int. Cl. D20—*02;* D6—*04*

U.S. Cl. D6—188



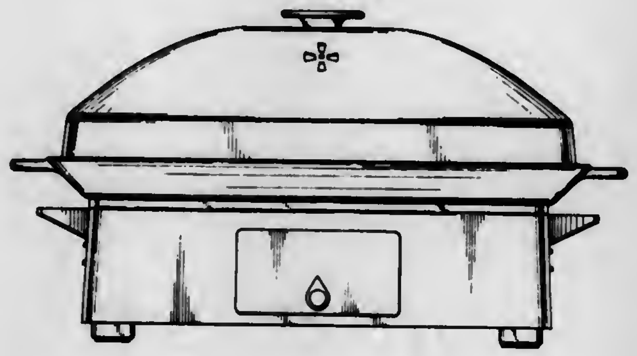
250,626

ELECTRIC COOKING UTENSIL

Robert J. Scott, Blue Springs, Mo., assignor to Rival Manufacturing Company, Kansas City, Mo.

Filed Jul. 9, 1976, Ser. No. 704,091
Term of patent 14 years
Int. Cl. D7—*02*

U.S. Cl. D7—94



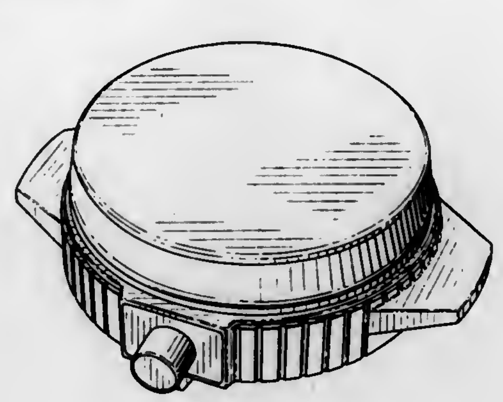
250,627

ELECTRIC HEATING PLATE FOR COOKWARE

Samuel L. McNair, Kansas City, and Robert R. Yeo, Independence, both of Mo., assignors to Dazey Products Co., Industrial Airport, Kans.

Filed Feb. 14, 1977, Ser. No. 768,272
Term of patent 14 years
Int. Cl. D7—*02*

U.S. Cl. D7—123



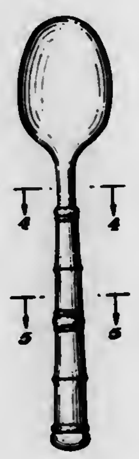
250,628

SPOON OR SIMILAR ARTICLE OF FLATWARE

Ben Seibel, New York, N.Y., assignor to Oxford Hall Silversmiths, Ltd., New York, N.Y.

Filed Aug. 18, 1976, Ser. No. 715,597
Term of patent 14 years
Int. Cl. D7—*03*

U.S. Cl. D7—137



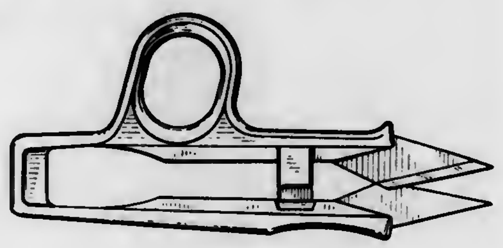
250,629

THREAD NIPPER

Olof F. Bäckström, Tammisaari, and Erkki O. Linden, Billnäs, both of Finland, assignors to Oy Fiskars AB, Helsinki, Finland

Filed Jan. 31, 1977, Ser. No. 764,141
Term of patent 14 years
Int. Cl. D8—*03*

U.S. Cl. D8—57



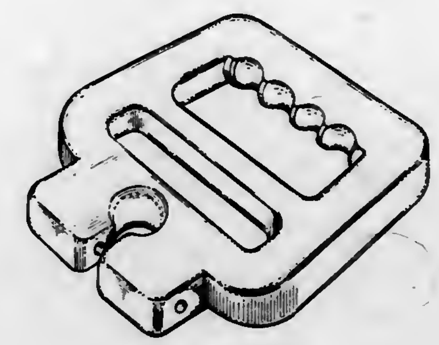
250,630

SIDE HANDLE FOR GRASS TRIMMER

Joseph B. Allegretti, 11645 Seminole Cir., Northridge, Calif. 91326

Filed Mar. 7, 1977, Ser. No. 774,860
Term of patent 14 years
Int. Cl. D12—*16*

U.S. Cl. D8—107



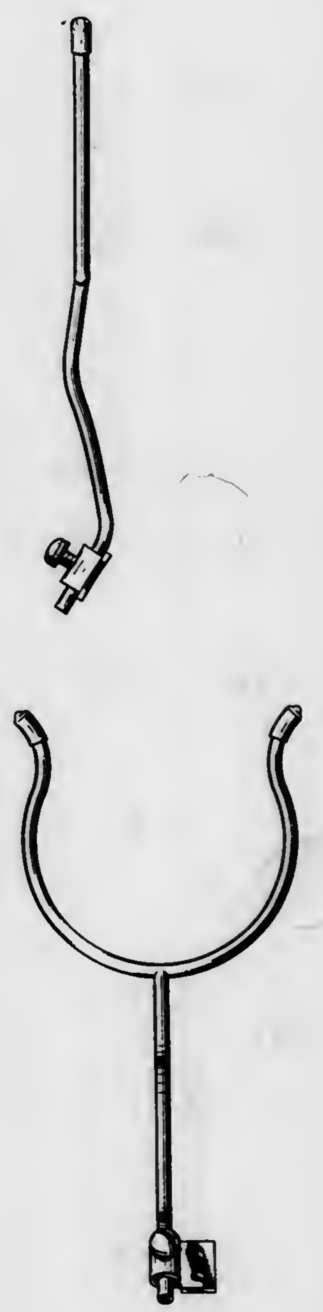
250,631

CUSPIDOR SUPPORT

Harold A. Stephenson, 2223 Ridgewood, Irving, Tex. 75062

Filed Mar. 23, 1977, Ser. No. 780,656
Term of patent 14 years
Int. Cl. D8—*08;* D23—*02*

U.S. Cl. D8—373



250,632
DISPENSING CARTON FOR DEFORMABLE FILM OR THE LIKE

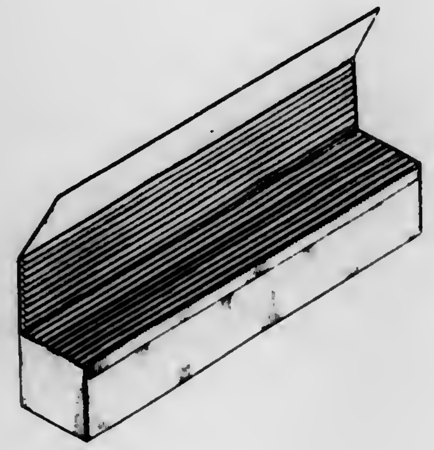
Hiromitsu Takai, 2-22, Katase 4-chome, Fujisawa-shi, Kanagawa-ken, Japan

Filed Dec. 16, 1976, Ser. No. 751,356

Term of patent 14 years

Int. Cl. D9—*03*

U.S. Cl. D9—235



250,633
CLOSURE CAP

Ernest Bouthillier, deceased, late of Montreal, Canada; Guy Bouthillier, heir, Outremont, Canada; Paul Bouthillier, heir, Boucherville, Canada, and Louise Bouthillier, heir, St. Laurent, Canada

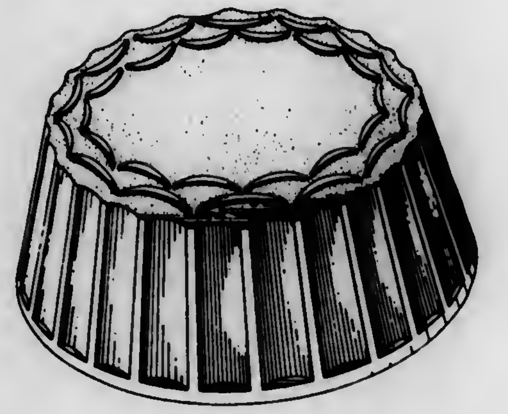
Filed Oct. 20, 1976, Ser. No. 734,305

Claims priority, application Canada, Aug. 18, 1976, 1808764

Term of patent 14 years

Int. Cl. D9—*07*

U.S. Cl. D9—285



250,634
WRIST WATCH

Ferdinand A. Porsche, Zell am See, Austria, assignor to Montres Orfina S.A., Grenchen, Switzerland

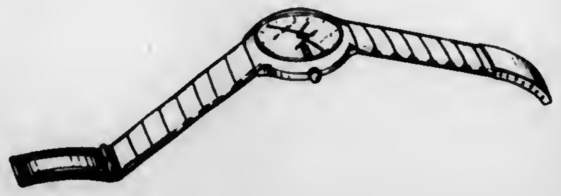
Filed Oct. 15, 1976, Ser. No. 732,879

Claims priority, application Switzerland, Apr. 26, 1976, 62960/76

Term of patent 7 years

Int. Cl. D10—*02*

U.S. Cl. D10—32



250,635
FRYPAN CONTROL OR SIMILAR ARTICLE

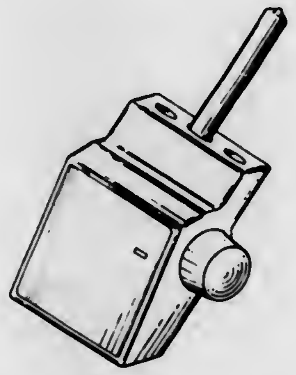
Richard H. Carlson, Cumberland, R.I.; David P. Vieau, Attleboro, Mass., and Arthur J. Schmitt, West Bend, Wis., assignors to Texas Instruments Incorporated, Dallas, Tex. and Dart Industries, Inc., West Bend, Wis.

Filed Feb. 6, 1976, Ser. No. 655,911

Term of patent 14 years

Int. Cl. D10—*04*

U.S. Cl. D10—50



250,636
THERMOREGULATOR

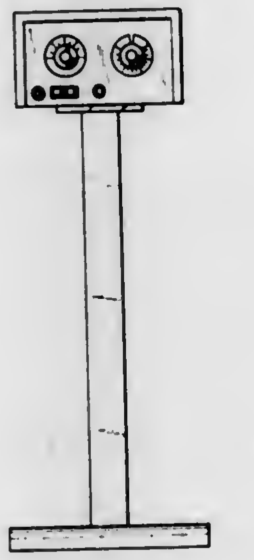
John Sweet, Florence, Ky., assignor to Revion-Realistic Professional Products, Inc., Cincinatti, Ohio

Filed Aug. 17, 1976, Ser. No. 715,186

Term of patent 14 years

Int. Cl. D10—*04*

U.S. Cl. D10—50



250,637
ELECTRONIC SURVEYING INSTRUMENT OR THE LIKE

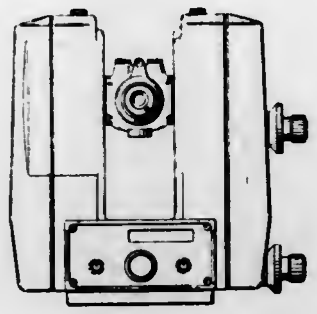
J. Peter E. Kooi, Succasunna, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Mar. 28, 1977, Ser. No. 781,901

Term of patent 14 years

Int. Cl. D10—*04*

U.S. Cl. D10—66



250,638
CHIME HOUSING

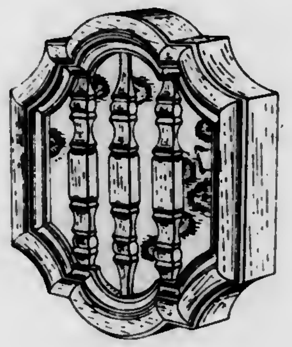
William B. Donnelly, Syracuse, N.Y., assignor to General Electric Company

Filed Dec. 28, 1976, Ser. No. 755,110

Term of patent 14 years

Int. Cl. D10—*06*

U.S. Cl. D10—118



250,639
CHIME HOUSING

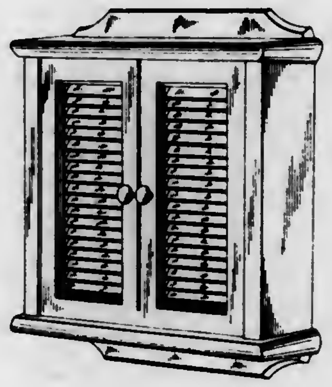
William B. Donnelly, Syracuse, N.Y., assignor to General Electric Company

Filed Dec. 28, 1976, Ser. No. 755,111

Term of patent 14 years

Int. Cl. D10—*06*

U.S. Cl. D10—118



250,640
DIAMOND

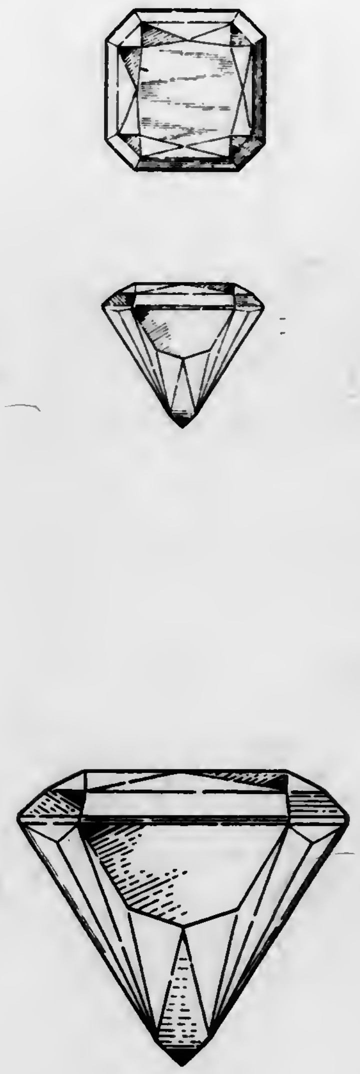
Henry Grossbard, 552 Beach 132 St., Belle Harbor, N.Y. 11694

Filed Nov. 1, 1976, Ser. No. 737,896

Term of patent 14 years

Int. Cl. D11—*01*

U.S. Cl. D11—90



250,641
WHEELCHAIR TIRE

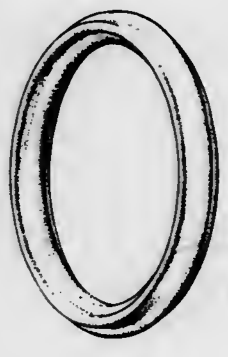
Andrew M. Ferguson, 703 S. 23rd St., Arlington, Va. 22202

Filed Jul. 13, 1977, Ser. No. 815,236

Term of patent 14 years

Int. Cl. D12—*15*

U.S. Cl. D12—134



250,642

TIRE

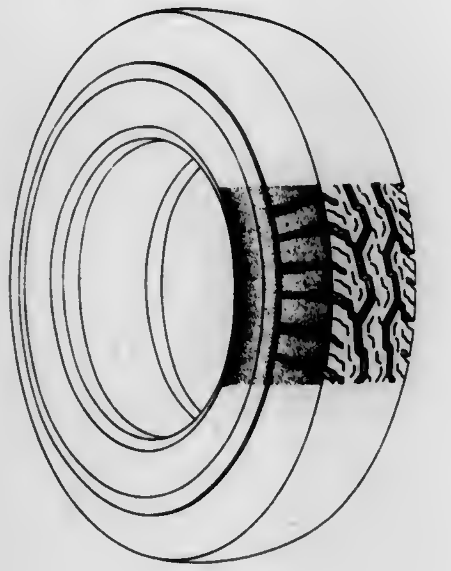
Loran C. Lopp, Wadsworth; Samuel P. Landers, Uniontown, and Philip S. Hammond, Mogadore, all of Ohio, assignors to The Goodyear Tire & Rubber Company

Filed Jun. 22, 1977, Ser. No. 808,852

Term of patent 14 years

Int. Cl. D12—*15*

U.S. Cl. D12—147



250,643

PNEUMATIC TIRE TREAD AND BUTTRESS

Allen D. Turner, Wilbraham, Mass., assignor to Uniroyal, Inc.

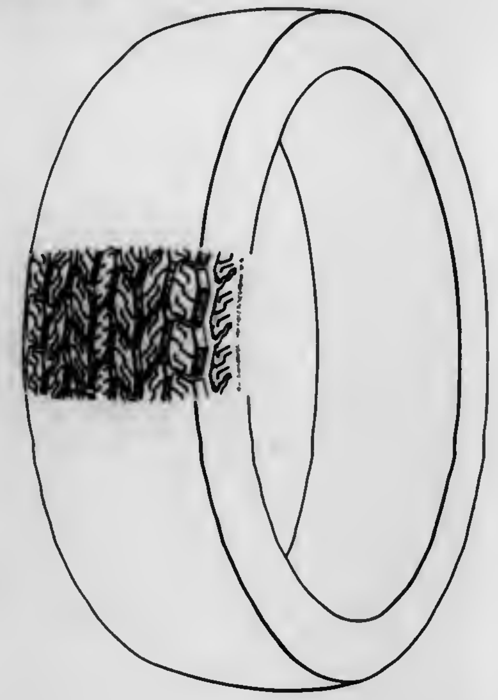
Filed Aug. 15, 1977, Ser. No. 824,887

Claims priority, application Canada, Aug. 2, 1977, 02-08-77-5

Term of patent 14 years

Int. Cl. D12—*15*

U.S. Cl. D12—147



250,644

INSULATOR FOR AN OPEN COIL ELECTRIC HEATING UNIT

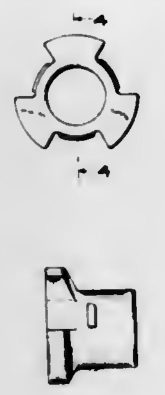
Carlisle Thweatt, Jr., Pulaski, Va., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 12, 1976, Ser. No. 731,328

Term of patent 14 years

Int. Cl. D13—*99*

U.S. Cl. D13—17



250,645

HAND MICROPHONE

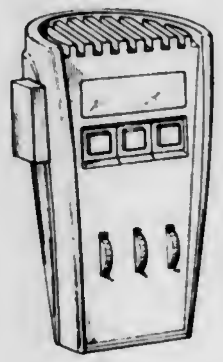
Donald W. Peterson, and Henry J. Cvetko, both of Conneaut, Ohio, assignors to The Astatic Corporation, Conneaut, Ohio

Filed Apr. 6, 1977, Ser. No. 785,042

Term of patent 14 years

Int. Cl. D14—*03, 01*

U.S. Cl. D14—12



250,646

PHONOGRAPH

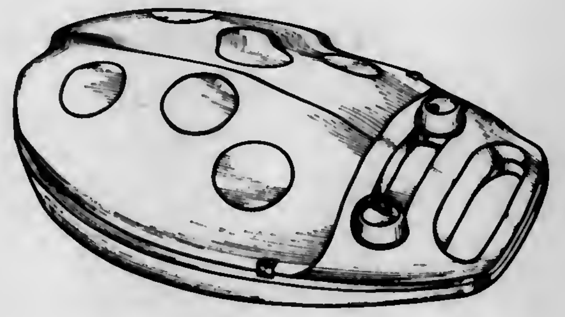
Motohiro Hashimoto; Masahide Akiyama; Haruo Koguchi; Toshiharu Horikoshi, and Tsutomu Sakuma, all of Kawasaki, Japan, assignors to Nippon Columbia Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1976, Ser. No. 675,983

Term of patent 14 years

Int. Cl. D14—*01*

U.S. Cl. D14—16



250,647

TELEPHONE ACCESSORY

Carl-Arne Breger, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

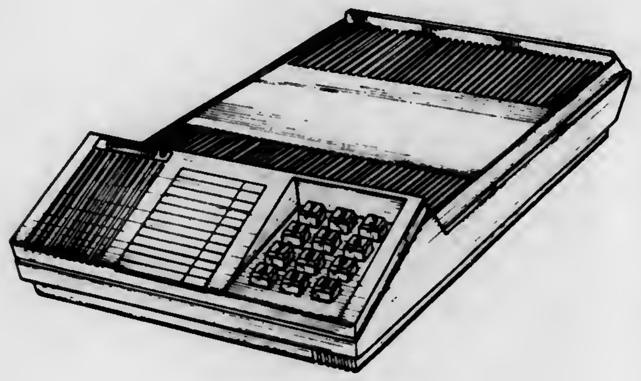
Filed Jan. 24, 1977, Ser. No. 761,711

Claims priority, application Sweden, Aug. 9, 1976, 761557

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—59



250,648

CUTTER PIN FOR MOWER

Joseph E. Scanland, Savannah, Ga., and Gerald C. Fisher, Shelby, Ohio, assignors to Roper Corporation, Kankakee, Ill.

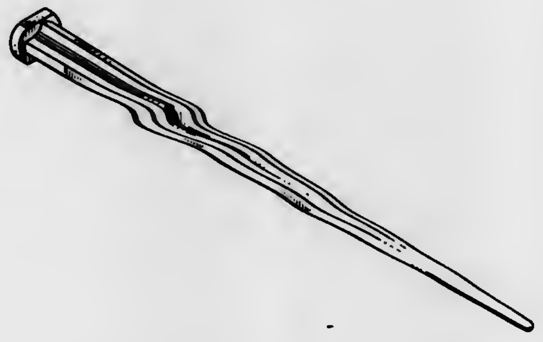
Filed Oct. 29, 1976, Ser. No. 736,707

The portion of the term of this patent subsequent to Sep. 13, 1991, has been disclaimed.

Term of patent 14 years

Int. Cl. D15—*03*

U.S. Cl. D15—17



250,649

SEWING MACHINE

Takuo Hirano, No. 11-14, 2-chome, Meguro, Meguro-ku, Tokyo-to, Japan

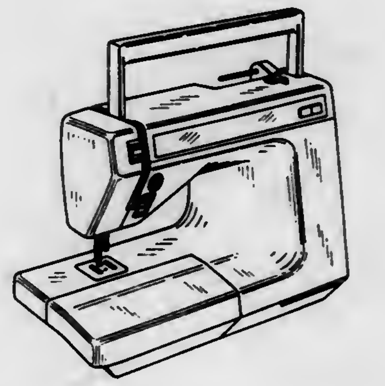
Filed Feb. 9, 1977, Ser. No. 766,979

Claims priority, application Japan, Aug. 31, 1976, 51/34352; Aug. 31, 1976, 51/34353

Term of patent 14 years

Int. Cl. D15—*06*

U.S. Cl. D15—70



250,650

PLANER BIT

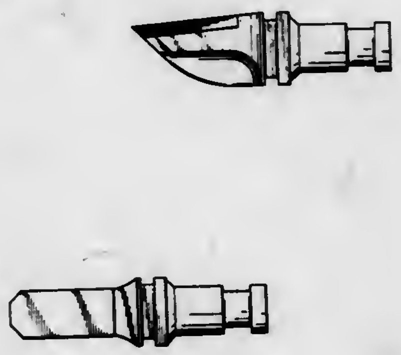
George W. Swisher, Jr., Oklahoma City, Okla., assignor to CMI Corporation

Filed Oct. 18, 1976, Ser. No. 733,454

Term of patent 14 years

Int. Cl. D15—*09*

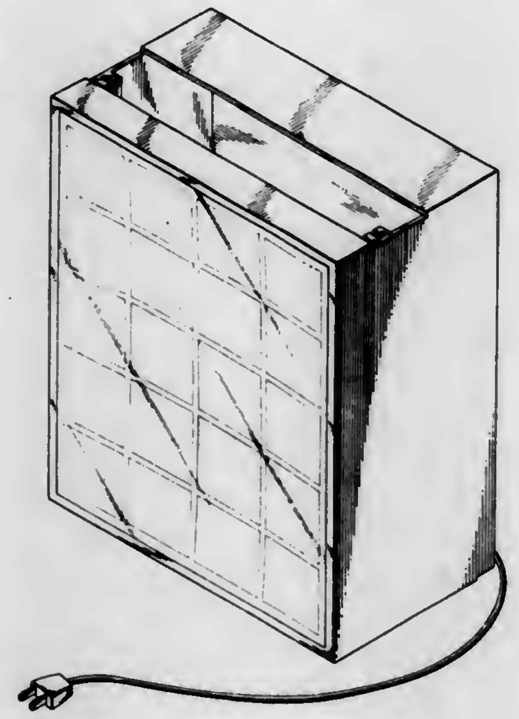
U.S. Cl. D15—139



250,651
TRANSPARENCY VIEWER

Bruce A. Rosenthal, 104 Macdougal St., New York, N.Y. 10012
Continuation-in-part of Ser. No. 543,345, Jan. 23, 1975, abandoned. This application Feb. 7, 1977, Ser. No. 765,958
Term of patent 14 years
Int. Cl. D16—*02*

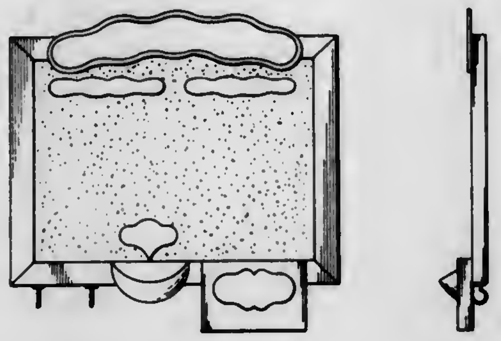
U.S. Cl. D16—04



250,652
BULLETIN BOARD

Sandra Anderson, P.O. Box 345, Perryville, Md. 21903
Filed Nov. 1, 1976, Ser. No. 737,778
Term of patent 14 years
Int. Cl. D19—*07*

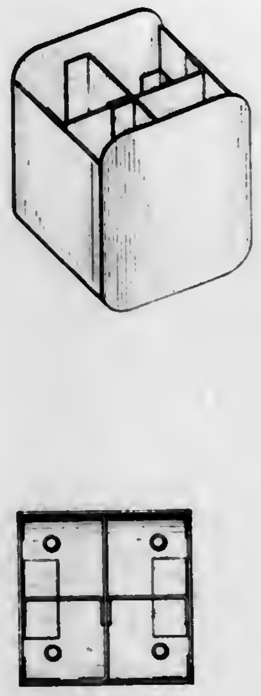
U.S. Cl. D19—52



250,653
PENCIL HOLDER

Robert J. Tiedemann, Stamford, Conn., assignor to Sheller-Globe Corporation, Toledo, Ohio
Filed May 31, 1977, Ser. No. 801,828
Term of patent 14 years
Int. Cl. D19—*02*

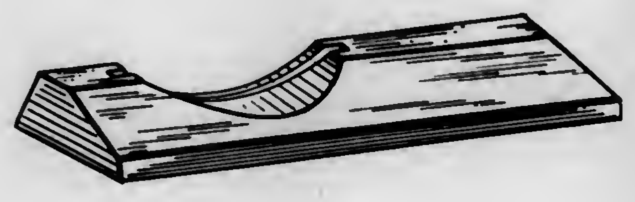
U.S. Cl. D19—85



250,654
DESK PEN SET BASE

William B. Campbell, St. Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Apr. 18, 1977, Ser. No. 788,652
Term of patent 14 years
Int. Cl. D19—*99*

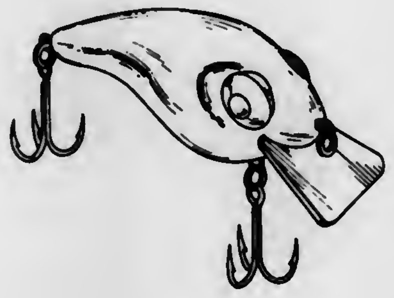
U.S. Cl. D19—99



250,655
FISHING LURE

Douglas W. Parker, 2720 South Waldron Rd., Fort Smith, Ark. 72901
Filed May 9, 1977, Ser. No. 795,110
Term of patent 14 years
Int. Cl. D22—*05*

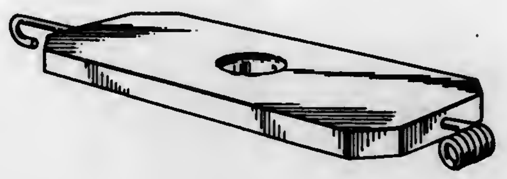
U.S. Cl. D22—28



250,656
FISHING LINE RETAINER

L. Fred Raney, 506 N. Express, Paris, Ark. 72855
Filed May 9, 1977, Ser. No. 795,111
Term of patent 14 years
Int. Cl. D22—*05*

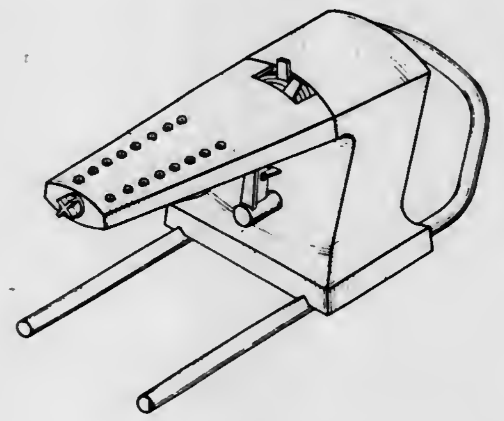
U.S. Cl. D22—30



250,657
SPRINKLER FOR LAWNS AND THE LIKE

Kurt F. Mizen, Wilmette, and Dave Chapman, Chicago, both of Ill., assignors to Burgess Vibrocrafters, Inc., Grayslake, Ill.
Filed Mar. 16, 1977, Ser. No. 778,057
Term of patent 14 years
Int. Cl. D23—*01*

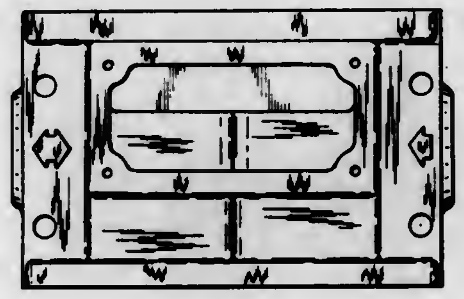
U.S. Cl. D23—8



250,658
VALVE

Harold D. Fetty, Birmingham, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.
Filed May 19, 1976, Ser. No. 687,621
Term of patent 14 years
Int. Cl. D23—*01*

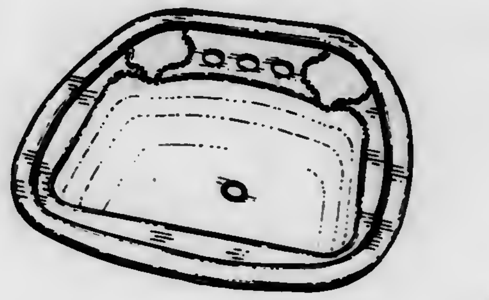
U.S. Cl. D23—19



250,659
LAVATORY BOWL

Earle D. Stevenson, Boardman Township, Mahoning County, and Gary C. Staffeld, Beaver Township, Mahoning County, both of Ohio, assignors to Youngstown Sheet and Tube Company
Filed Aug. 8, 1977, Ser. No. 822,881
Term of patent 14 years
Int. Cl. D23—*02*

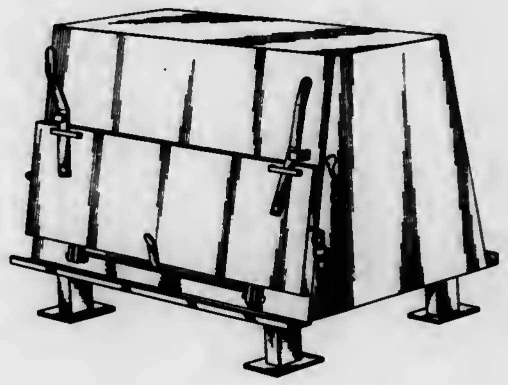
U.S. Cl. D23—58



250,660
STOVE

James R. Choate, Rochester, N.H., assignor to Hydraform Products Corp., Rochester, N.H.
Filed Feb. 16, 1977, Ser. No. 769,198
Term of patent 14 years
Int. Cl. D23—*03*

U.S. Cl. D23—97

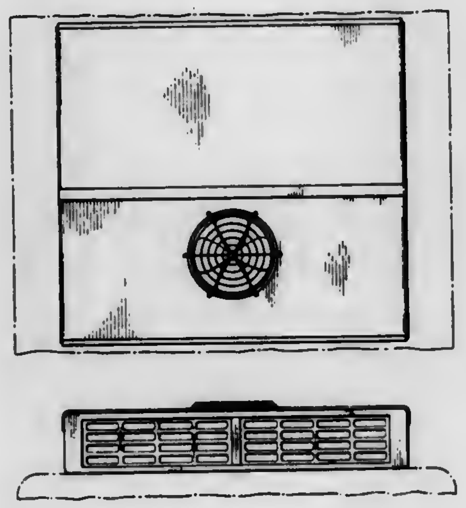


250,661
VEHICLE AIR CONDITIONER UNIT

Lowell M. Anderson, Bloomington; Ronald W. Seipp, Rosemount, both of Minn.; William A. Forsty, Export, Pa., and Rodney H. Volk, Eden Prairie, Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed May 16, 1977, Ser. No. 797,098
Term of patent 14 years
Int. Cl. D23—*04*

U.S. Cl. D23—142

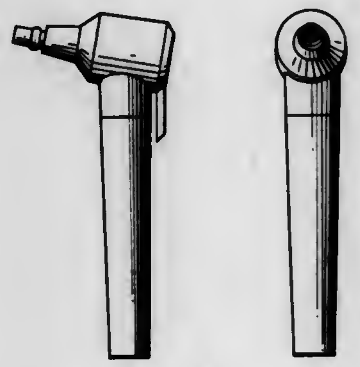


250,662
DENTAL STAIN REMOVER

Robert H. Rieselman, Clearwater, Fla., assignor to Concept, Inc., Clearwater, Fla.

Filed Apr. 18, 1977, Ser. No. 788,700
Term of patent 14 years
Int. Cl. D24—*02*

U.S. Cl. D24—10

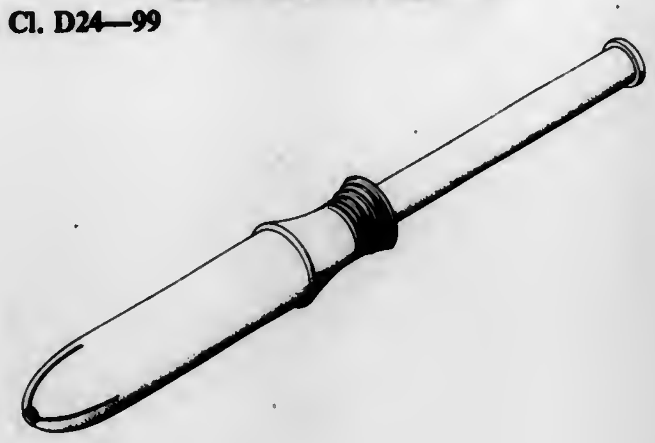


250,663
TAMPON INSERTER

John R. Koch; Mitchell J. Cohen, and Richard T. Powers, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 25, 1977, Ser. No. 790,789
Term of patent 14 years
Int. Cl. D24—*99;* D28—*01*

U.S. Cl. D24—99

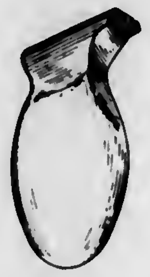


250,664
RAZOR

James B. Kruger, Oxford, and William L. Gamble, Unionville, both of Conn., assignors to Scovill Manufacturing Company, Waterbury, Conn.

Filed Apr. 27, 1977, Ser. No. 791,310
Term of patent 14 years
Int. Cl. D28—*03*

U.S. Cl. D28—46

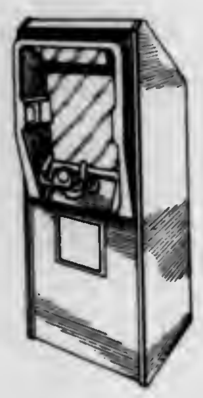


250,665
GAME CABINET

Michael L. Jang, San Jose, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Feb. 16, 1977, Ser. No. 769,236
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—5 L

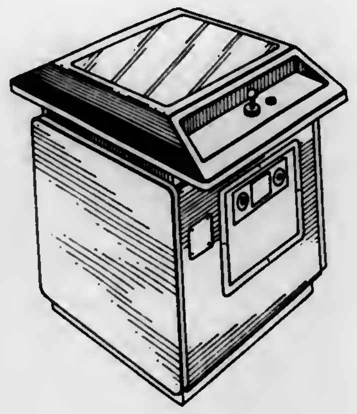


250,666
GAME CABINET

Roger D. Hector, San Jose, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Feb. 16, 1977, Ser. No. 769,237
Term of patent 14 years
Int. Cl. D21—*03*

U.S. Cl. D34—5 J

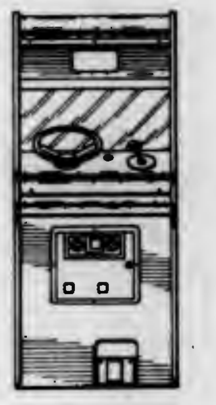


250,667
GAME CABINET

Kenneth W. Sauter, San Jose, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Aug. 29, 1977, Ser. No. 828,521
Term of patent 14 years
Int. Cl. D21—*03*

U.S. Cl. D34—5 L

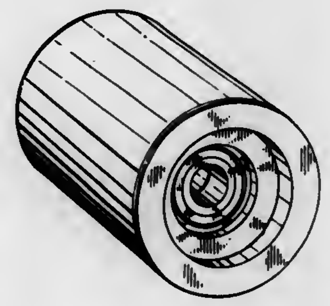


250,668
SKATE BOARD WHEEL

Albert J. Hess, 8837 Brookdale Dr., Garden Grove, Calif. 92644

Filed Oct. 28, 1976, Ser. No. 736,430
Term of patent 14 years
Int. Cl. D21—*02*

U.S. Cl. D34—14 C

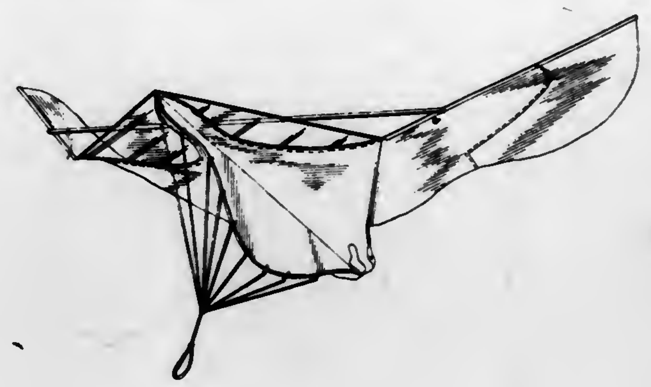


250,669
KITE

Benjamin J. Wilson, P.O. Box 385, Wichita Falls, Tex. 76307

Filed Sep. 27, 1976, Ser. No. 727,376
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—15 AF

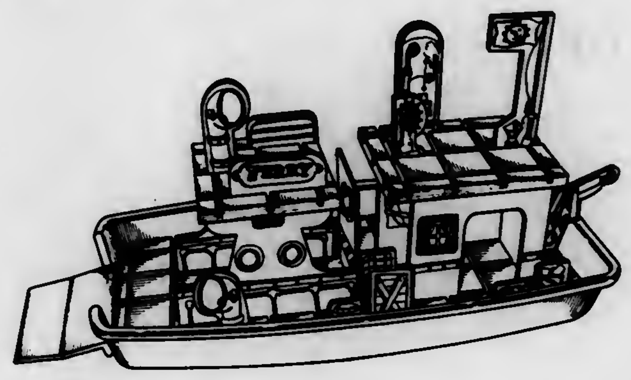


250,670
TOY BOAT

Alex Imatt, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 21, 1977, Ser. No. 761,300
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—15 JJ

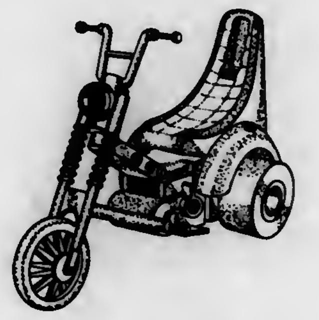


250,671
TOY MOTORCYCLE

Iwakichi Ogawa, Kashiwa, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 694,140, Jun. 9, 1976, abandoned. This application Apr. 21, 1978, Ser. No. 899,020
Term of patent 14 years
Int. Cl. D21—*01*

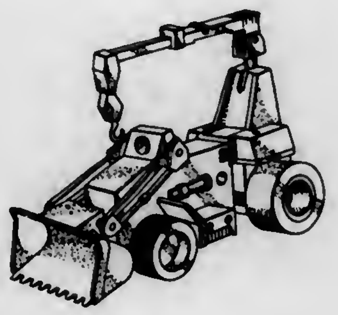
U.S. Cl. D34—15 AJ



250,672
TOY VEHICLE

Iwakichi Ogawa, Kashiwa, Japan, assignor to Takara Co., Ltd.
Continuation-in-part of Ser. No. 694,131, Jun. 9, 1976, abandoned. This application Apr. 21, 1978, Ser. No. 899,021
Term of patent 14 years
Int. Cl. D21—*01*

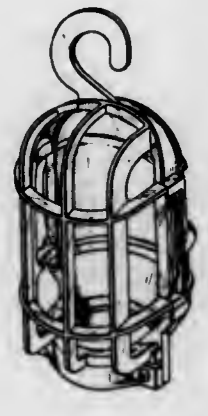
U.S. Cl. D34—15 AJ



250,673
LIGHT GUARD

Kathleen G. Jennings, and John E. Rauch, both of St. Charles, Ill., assignors to Belden Corporation, Geneva, Ill.
Filed Dec. 3, 1976, Ser. No. 747,372
Term of patent 14 years
Int. Cl. D26—*05*

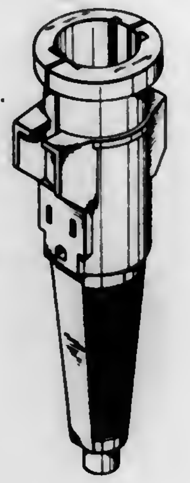
U.S. Cl. D48—16 B



250,674
TROUBLE LIGHT HANDLE

Raymond L. Trueblood, New Carlisle, Ohio, assignor to Trueblood, Inc., Tipp City, Ohio
Filed May 6, 1977, Ser. No. 794,634
Term of patent 14 years
Int. Cl. D26—*02*

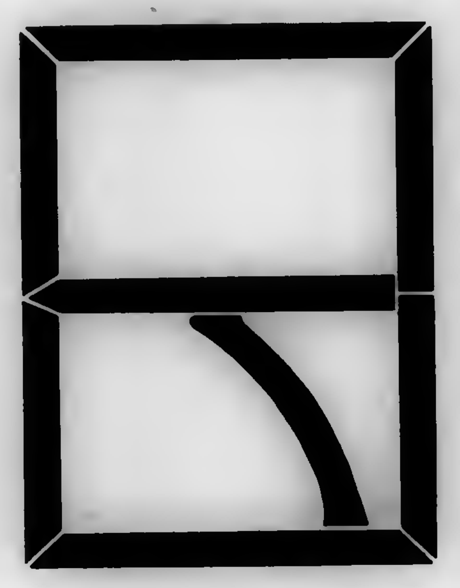
U.S. Cl. D48—24 R



250,675
VIDEO DISPLAY UNIT

James M. Donovan, Box 1923, Newport Beach, Calif. 92663
Filed Jul. 25, 1977, Ser. No. 818,977
Term of patent 14 years
Int. Cl. D18—*03*

U.S. Cl. D64—12 B



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- Back, Walter, to Bopp & Reuther GmbH. Vane type meter. 4,131,017, Cl. 73-229.000.
- Baeyens, Freddy C.: *See—*
  - Van Poucke, Raphael K.; Baeyens, Freddy C.; and Mortelmans, Paul A., 4,131,735, Cl. 544-267.000.
- Bahr, Werner; Drobnik, Stefan; Hild, Werner; Kroebel, Reinhard; Meyer, Alfred; and Naumann, Gunter, to Steag Kernenergie G.m.b.H. Process of preparing substantially solid waste containing radioactive or toxic substances for safe, non-pollutive handling, transportation and permanent storage. 4,131,563, Cl. 252-301.10W.
- Bailey, James R.; and Lavigne, Vernon W., to Switchcraft, Inc. Pushbutton electrical switches and pushbuttons therefor. 4,131,777, Cl. 200-311.000.
- Bailey, John; Randell, Michael J.; and Sherrington, Paul R., to Procter & Gamble Company, The. Process for preparing an orthophosphate-silicate detergent product. 4,131,558, Cl. 252-135.000.
- Bailey, William L.: *See—*
  - Keeling, Michael C.; Bailey, William L.; Coleman, Michael G.; Lesk, Israel A.; and Pryor, Robert A., 4,131,755, Cl. 136-89.00P.
- Bainard, Dean R., to Garlock Inc. Seal and method for attaching seal. 4,131,286, Cl. 277-152.000.
- Bairunas, Robert A.: *See—*
  - Gusmer, Frederick E.; Commette, Denis S.; and Bairunas, Robert A., 4,131,395, Cl. 417-271.000.
- Baker, Charles M.: *See—*
  - Foster, Gene B.; and Baker, Charles M., 4,131,003, Cl. 72-7.000.
- Bakos, Peter; and Rasile, John, to International Business Machines Corporation. Method of making metal filled via holes in ceramic circuit boards. 4,131,516, Cl. 204-15.000.
- Ball Corporation: *See—*
  - Marcantonio, Arnold F., 4,131,552, Cl. 252-29.000.
  - Munson, Robert E.; Sanford, Gary G.; and Murphy, Lawrence R., 4,131,892, Cl. 343-700.0MS.
  - Munson, Robert E.; and Sanford, Gary G., 4,131,893, Cl. 343-700.0MS.
  - Schiavone, Frank J., 4,131,894, Cl. 343-700.0MS.
- Ball, George A., Jr.; and Simpson, George H., to GTE Sylvania Incorporated. Electric automotive choke. 4,131,657, Cl. 261-39.00E.
- Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
  - Dammann, Peter; Schippers, Heinz; Turk, Herbert; and Schiminski, Herbert, 4,130,983, Cl. 57-5.000.
- Barnes-Hind Pharmaceuticals, Inc.: *See—*
  - Shah, Dinesh O.; and Sibley, Murray J., 4,131,651, Cl. 424-78.000.
- Barr, Robert H.; and Eckel, John D., to A. Y. McDonald Mfg. Co. Safety valve for fuel dispensers including vapor recovery systems. 4,131,142, Cl. 141-302.000.
- Barry, Edward J., to International Paper Company. Bottom for bulk bins. 4,131,228, Cl. 229-23.00R.
- Barta, Leslie P.; and Alexander, William M., to Alexander, William M. Leather yarn product and method of manufacture. 4,131,713, Cl. 428-364.000.
- Barth, Douglas A.; and Chester, Richard J., to American Locker Security Systems, Inc. Coin operated lock. 4,131,191, Cl. 194-92.000.
- Bartish, Charles M. Catalytic synthesis of low molecular weight hydrocarbons. 4,131,568, Cl. 252-455.00Z.
- Bartlett, John S.; and Hudson, Barry, to BP Chemicals Limited. Cobalt-catalyzed oxidation of C_3 to C_7 saturated aliphatic hydrocarbons to oxygenated products. 4,131,741, Cl. 560-241.000.
- Bartley, Francis A.: *See—*
  - Goodbary, Edgar R.; and Bartley, Francis A., 4,131,177, Cl. 180-133.000.
- Bartoo, Vance S.: *See—*
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- Barzda, Justin J., to United States of America, Navy. Deployable rotor. 4,131,392, Cl. 416-142.000.
- BASF Aktiengesellschaft: *See—*
  - Blankenmeister, Anton; Peinecke, Ludwig; and Koob, Dieter, 4,131,197, Cl. 206-387.000.
  - Hamprecht, Gerhard, 4,131,620, Cl. 260-543.00R.
  - Koenig, Karl-Heinz; Schirmer, Ulrich; Wuerzer, Bruno; and Fett, Kurt, 4,131,751, Cl. 560-29.000.
  - Martiny, Wolfgang; and MacGillavry, Donald H., 4,131,851, Cl. 325-355.000.
  - Osterloh, Rolf; Jacobi, Manfred; and Kuesters, Werner, 4,131,529, Cl. 204-159.140.
  - von Kutepow, Nikolaus; Mueller, Franz J.; and Reuter, Peter, 4,131,640, Cl. 423-22.000.
- Bass Handler Products Co., Inc.: *See—*
  - Fontenot, Carl E., 4,130,960, Cl. 43-18.00R.
- Bass, Jerry D., to Westinghouse Electric Corp. Speed pattern generator. 4,131,182, Cl. 187-29.00G.
- Batiuk, Martin: *See—*
  - Herman, Richard M.; and Batiuk, Martin, 4,131,654, Cl. 260-897.00B.
- Battle, Francis L., to Gulf & Western Industries, Inc. Digital loop detector with automatic tuning. 4,131,848, Cl. 324-236.000.
- Bauder, Edward M. Andiron for supporting logs. 4,131,108, Cl. 126-298.000.
- Bauer Bros. Co., The: *See—*
  - Skeen, Lawrence, 4,131,061, Cl. 99-521.000.
- Bauer, James J.; Albright, Larry E.; Werner, James L.; Sagaser, Thomas M.; and Hoechst, Lonnie D., to Clark Equipment Company. Method of making a vehicle transmission case. 4,131,225, Cl. 228-161.000.
- Baumgartner, Erich R.; and Doehler, Peter. Pressing or smoothing iron comprising a safety turn-off means located in a heating current circuit. 4,130,955, Cl. 38-82.000.
- Baxter, Clement T.: *See—*
  - Dombrowski, Joseph A.; Baxter, Clement T.; Howard, Frederick B.; and Simpson, George H., 4,131,868, Cl. 337-113.000.
- Baxter Travenol Laboratories, Inc.: *See—*
  - Range, Richard J., 4,131,426, Cl. 141-1.000.
- Bayer Aktiengesellschaft: *See—*
  - Adelmann, Siegfried; Margotte, Dieter; Vernaleken, Hugo; and Nouvertne, Werner, 4,131,575, Cl. 260-17.40R.
  - Perrey, Hermann; Matner, Martin; and Sinn, Gustav, 4,131,603, Cl. 528-45.000.
  - Radlmann, Eduard; Reinehr, Ulrich; Hoffmann, Peter; Arlt, Dieter; and Nischk, Gunther, 4,131,724, Cl. 526-16.000.
- Bayley, Donald S., to Singer Company, The. Fused silica nuclear magnetic resonance and filter cells with stabilized vapor densities. 4,131,443, Cl. 65-17.000.
- Bayliss, John P., to Girling Limited. Electrically controlled fluid brake system. 4,131,325, Cl. 303-93.000.
- Bazzle, Lillian M.; and Staton, Marshall J., to Bazzle, Lillian Mae. Shoe including golf ball position marker. 4,130,950, Cl. 36-127.000.
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  - Bazzle, Lillian M.; and Staton, Marshall J., 4,130,950, Cl. 36-127.000.
- BBC Brown, Boveri & Company, Limited: *See—*
  - Menth, Anton; Nagel, Hartmut; and Spinner, Ulrich, 4,131,495, Cl. 148-31.570.
- Beasley, Matthew D.: *See—*
  - Maham, Robert M.; and Beasley, Matthew D., 4,131,773, Cl. 200-61.050.
- Beatrice Foods Company: *See—*
  - Lai, Kwo-Hrong; and Silvers, Harold N., 4,131,731, Cl. 528-370.000.
- Bechtel International Corporation: *See—*
  - Leonard, Byron H., Jr., 4,131,302, Cl. 285-114.000.
- Becker, Harry; Doerflinger, Karl; Ey, Klaus; Reiter, Georg; Rutzmoser, Hermann; and Theus, Richard, to Siemens Aktiengesellschaft. Receptacle fixture for equipment units in electrical communication technology. 4,131,934, Cl. 361-428.000.
- Beckmann, Karen L.: *See—*
  - Long, Wesley A., 4,131,159, Cl. 165-166.000.
- Becton, Dickinson Electronics Company: *See—*
  - Erickson, Richard W.; Pallaske, James; and Talbert, Stephen (said Richard Erickson and James Pallaske assors. to), 4,131,771, Cl. 200-11.0DA.
- Beerens, Cornelis J. Guide device for sharpening saws. 4,131,038, Cl. 76-25.00A.
- Behr, Michael I.; Gyi, Ko K.; Iwan, Wilfred D.; and Palotay, Joseph C., to Burroughs Corporation. Flexure mounted magnetic head positioner for high-speed translation. 4,131,924, Cl. 360-106.000.
- Beisch, Hans R.; and Hempelmann, Heinrich J., to Norris Industries, Inc. Wheel trim retention. 4,131,322, Cl. 301-37.0PB.
- Bell & Howell Company: *See—*
  - Patton, Donna J.; and Riess, Robert G., 4,131,227, Cl. 229-8.000.
- Bell, Jimmy T.: *See—*
  - Friedman, Horace A.; Toth, Louis M.; and Bell, Jimmy T., 4,131,527, Cl. 204-157.10R.
- Bell Telephone Laboratories, Incorporated: *See—*
  - Christensen, Susan W.; and Coker, Cecil H., 4,131,760, Cl. 179-1.00P.
  - Hartman, Adrian R.; North, James C.; Reutlinger, George W.; and Shackle, Peter W., 4,131,910, Cl. 357-49.000.
  - Reid, Anthony, 4,131,762, Cl. 179-15.0AQ.
  - Weinstein, Stephen B., 4,131,767, Cl. 179-170.200.
- Bendix Corporation, The: *See—*
  - Erwin, Louis R., 4,131,055, Cl. 91-378.000.
  - Reddy, Junuthula N., 4,131,088, Cl. 123-32.0EJ.
- Bengtsson, Ralph; and Larsson, Gunnar, to C J Wennberg AB. Process and an apparatus for the continuous mechanical fabrication of starting sheets for the electrolytic refining of metals, especially copper. 4,130,927, Cl. 29-432.100.
- Bennefeld, David H., to Introl Corp. Battery charger with automatic change from current to voltage mode control. 4,131,841, Cl. 320-23.000.

- Berger, James K., to Pioneer Magnetics. Closed-clock writing system for a rotating magnetic memory. 4,131,920, Cl. 360-51.000.
- Berglund, David B., to E-Systems, Inc. Optical range resolution system. 4,131,248, Cl. 244-3.160.
- Bergna, Horacio E.; and Kirkland, Joseph J., to Du Pont de Nemours, E. I., and Company. Spray dried silica for chromatography. 4,131,542, Cl. 210-31.00C.
- Bernard, Walter J.; and Szpak, Stanley P., to Sprague Electric Company. Two-stage anodization of capacitor electrodes. 4,131,520, Cl. 204-42.000.
- Berney, Jean-Claude: *See*—
  - Scherrer, Igor; Berney, Jean-Claude; and Robert-Grandpierre, Jean-Claude, 4,130,988, Cl. 58-85.500.
- Bernstein, Philip; Coffey, James P.; and Varker, Alan E., to ESB Incorporated. Grafted polymeric material and process for preparing. 4,131,637, Cl. 260-877.000.
- Bernstein, Seymour; and Heller, Milton D., to American Cyanamid Company. Complement inhibitors. 4,131,684, Cl. 424-315.000.
- Berry, David: *See*—
  - Redmayne, William H.; and Berry, David, 4,131,545, Cl. 210-47.000.
- Bertazzoli, Guido; Gironi, Roberto; and Resentini, Angelo, to Industrie Pirelli S.p.A. Pneumatic tire for agricultural and industrial vehicles. 4,131,148, Cl. 152-209.00B.
- BERTIN & Cie: *See*—
  - Volat, Jean-Pierre; and Pichon, Jean-Louis E., 4,131,320, Cl. 302-2.00R.
- Bertone, Antonino: *See*—
  - Amedei, Giuseppe; Rivetti, Enrico; and Bertone, Antonino, 4,130,990, Cl. 60-422.000.
- Bertozzi, Eugene R., to Thiokol Corporation. Acrylic acid esters of polythiodialkanols and related compounds. 4,131,716, Cl. 428-425.000.
- Bethlehem Steel Corporation: *See*—
  - Clymer, John C., 4,131,857, Cl. 328-163.000.
- Bezzerides, Paul A. Stubble eradicating implement. 4,131,163, Cl. 172-145.000.
- Bialko, Joseph A.; and Lechaton, John S., to International Business Machines Corporation. RF sputtering apparatus having floating anode shield. 4,131,533, Cl. 204-298.000.
- Bib Hi-Fi Accessories Limited: *See*—
  - Sheppard, Stewart A.; Arbib, Philip B.; and Pert, Maurice R., 4,130,912, Cl. 15-210.00R.
- Bigelow, John H., to Du Pont de Nemours, E. I., and Company. 4,7-Dihydroxybenzimidazole hydrobromide as antifogger. 4,131,467, Cl. 96-66.300.
- Binckley, Earle T. Helicopter blade ice protection systems. 4,131,250, Cl. 244-134.00R.
- Binger, Bernhard: *See*—
  - Eickhoff, Jurgen; and Binger, Bernhard, 4,131,169, Cl. 180-9.620.
- Birkenhead, Warren D. Intrusion alarm system utilizing the barking of a watchdog. 4,131,887, Cl. 340-566.000.
- Bischeltsrieder, Lorenz, to Stubben GmbH, Riding Equipment. Saddle tree for riding saddles. 4,130,979, Cl. 54-44.000.
- Bitterlich, Eberhard; Thelen, Franz; and Weber, Henning, to Deutsche Babcock Aktiengesellschaft. Arrangement for the storage of energy in power plants. 4,130,992, Cl. 60-652.000.
- BJR Machine & Gear: *See*—
  - Easton, Ray D.; Jakobi, Phil F.; and Zabik, Andrew L., 4,130,967, Cl. 51-5.00D.
- Black, Paul G.: *See*—
  - Johnson, Charles R.; Forlow, John K.; Black, Paul G.; Mitchell, William A.; and Clark, John S., 4,131,054, Cl. 90-11.00D.
- Black, Stanley H.; and Schneider, Jon A., to Sperry Rand Corporation. Phase lock loop with narrow band lock-in and wideband acquisition characteristics. 4,131,862, Cl. 331-4.000.
- Blackburn, Samuel S., Jr.; and Hammer, George P., to Combustion Engineering, Inc. Boiler fan arrangement. 4,131,073, Cl. 110-106.000.
- Blaha, John F.: *See*—
  - Schriber, Louis; and Blaha, John F., 4,131,047, Cl. 83-698.000.
- Blankenmeister, Anton; Peinecke, Ludwig; and Koob, Dieter, to BASF Aktiengesellschaft. Container for a cassette containing a recording tape, particularly for a magnetic-tape cassette. 4,131,197, Cl. 206-387.000.
- Blasutti, Claudine. Ultrasonic cigarette-holder or pipe stem. 4,131,119, Cl. 131-187.000.
- Blaszkowski, Henry. Windshield wiper control system. 4,131,834, Cl. 318-483.000.
- Blaw-Knox Foundry & Mill Machinery, Inc.: *See*—
  - Eibe, Werner W., 4,131,004, Cl. 72-8.000.
- Bleicher, Manfred: *See*—
  - Wanner, Karl; Bleicher, Manfred; and Falchle, Jorg, 4,131,165, Cl. 173-48.000.
- Blodee, Leif: *See*—
  - Knapp, Robert L.; Blodee, Leif; and Van Loo, William R., 4,131,314, Cl. 297-248.000.
- Bluethgen, Waldemar; Broemer, Heinz; and Deutscher, Klaus K., to Ernst Leitz GmbH. Bioactive composite material process of producing and method of using same. 4,131,597, Cl. 260-42.180.
- Blum, Peter; and Lucariello, Richard A., to Airco, Inc. Sputtered chromium-alloy coating for plastic. 4,131,530, Cl. 204-192.00C.
- Board of Supervisors of Louisiana State University and Agricultural & Mechanical College: *See*—
  - Meyers, Albert I., 4,131,623, Cl. 260-601.00R.
- Boatright, Paul A., to Oceanography International Corporation. Solid piezoelectric sand detection probes. 4,131,815, Cl. 310-323.000.
- Bochenek, Michael S.; and Boyer, Bradley X., to Bochenek, Michael S. Drapery opening and closing system. 4,131,831, Cl. 318-282.000.
- Bocinski, Terrence E.: *See*—
  - Agard, Richard L.; Bocinski, Terrence E.; Brearley, Lawrence E.; and Yaple, William R., 4,131,933, Cl. 361-415.000.
- Bock, Harald: *See*—
  - Hultsch, Gunther; and Bock, Harald, 4,130,944, Cl. 34-8.000.
- Bode, Charles H., Jr.; Saggio, Anthony S.; Wagner, George J., Jr.; and Wessel, Richard L., to United States Steel Corporation. Pour tube manipulator for sliding gate valve. 4,131,220, Cl. 222-607.000.
- Bode, Hugo B.: *See*—
  - Mackenroth, Joseph R., III; and Bode, Hugo B., 4,130,902, Cl. 2-7.000.
- Bodson, Luc; Obsomer, Marc; and Michel, Edmond, to SOLVAY & Cie. Process for mould release of hollow plastic bodies moulded by blowing by means of a nozzle. 4,131,665, Cl. 264-572.000.
- Boeing Company, The: *See*—
  - Dean, Roy D.; and Weiland, Richard H., 4,131,252, Cl. 244-212.000.
  - Foster, Gene B.; and Baker, Charles M., 4,131,003, Cl. 72-7.000.
  - Whetham, William J., 4,131,837, Cl. 318-571.000.
  - Zapel, Edwin J., 4,131,253, Cl. 244-219.000.
- Boersma, Richard F., to Fiat-Allis Construction Machinery, Inc. Instrument panel cover for vandalism protection. 4,131,173, Cl. 180-90.000.
- Boerwinkle, Fred P., to Northern Instruments Corporation. Corrosion inhibiting compositions. 4,131,583, Cl. 260-29.6HN.
- Boisvert, Guy. Hand weaving loom. 4,131,138, Cl. 139-29.000.
- Bollmer, Jacob A., to Dayco Corporation. Printing blanket hole forming apparatus and method. 4,131,040, Cl. 83-50.000.
- Bom, Cornelis J. G.: *See*—
  - van der Lely, Ary; and Bom, Cornelis J. G., 4,131,237, Cl. 239-664.000.
- Boorman, Robert W.: *See*—
  - Perrone, George L.; Boorman, Robert W.; Holbrook, Michael R.; and Zanelli, Eugene A., 4,131,389, Cl. 415-211.000.
- Bopp & Reuther GmbH: *See*—
  - Back, Walter, 4,131,017, Cl. 73-229.000.
- Borg-Warner Corporation: *See*—
  - Ivey, John S.; and Miller, Alan L., 4,131,036, Cl. 74-866.000.
  - Smith, Grant H.; and Carlson, Ronald L., 4,131,187, Cl. 192-99.00A.
- Borg-Warner Limited: *See*—
  - Warland, George W.; and Crisp, Norman F., 4,131,032, Cl. 74-449.000.
- Borsuk, Pavel A.: *See*—
  - Kagan, Naum Y.; Bortnik, Vladimir M.; Korenbljum, Isai V.; Razumeev, Jury A.; Lyass, Abram M.; Borsuk, Pavel A.; Usubov, Zokhrab G. O.; and Dmitrieva, Valentina A., 4,131,477, Cl. 106-38.350.
- Bortnik, Vladimir M.: *See*—
  - Kagan, Naum Y.; Bortnik, Vladimir M.; Korenbljum, Isai V.; Razumeev, Jury A.; Lyass, Abram M.; Borsuk, Pavel A.; Usubov, Zokhrab G. O.; and Dmitrieva, Valentina A., 4,131,477, Cl. 106-38.350.
- Bosch-Siemens Hausgerate GmbH: *See*—
  - Rolf, Mayer, 4,131,034, Cl. 74-799.000.
- Boser, Ronald J., to B & W Manufacturing Co., Inc. Method of attaching a slide fastener to an article. 4,131,077, Cl. 112-265.000.
- Bottcher, Hubert; Pfannmuller, Joachim; Kaebernick, Hartmut; Steiniger, Wolfgang; and Preuss, Horst-Dieter, to Hauni-Werke Korber & Co. KG. Method and apparatus for splicing running webs of low tensile strength. 4,131,501, Cl. 156-157.000.
- Bouyoucos, John V., to Hydroacoustics, Inc. Seismic source for use under water. 4,131,178, Cl. 181-120.000.
- Bowers, John W., to Foseco International Limited. Device for retaining hot top lining slabs. 4,131,262, Cl. 249-202.000.
- Boyd, David G.: *See*—
  - Denton, Dennis N.; and Boyd, David G., 4,131,285, Cl. 277-1.000.
- Boyer, Bradley X.: *See*—
  - Bochenek, Michael S.; and Boyer, Bradley X., 4,131,831, Cl. 318-282.000.
- Boyer, Robert C.: *See*—
  - Williams, George J.; and Boyer, Robert C., 4,131,270, Cl. 269-321.00W.
- Boyer, Robin L.; Lazarus, Sonja E.; and Buck, F. O., Jr. Board game apparatus. 4,131,282, Cl. 273-271.000.
- BP Chemicals Limited: *See*—
  - Bartlett, John S.; and Hudson, Barry, 4,131,741, Cl. 560-241.000.
  - Hudson, Barry, 4,131,742, Cl. 560-241.000.
- Brachthauser, Kunibert, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method for the production of fine-grained mixture of mineral solids. 4,130,945, Cl. 34-10.000.
- Braden, Arthur B.; McBride, Thomas R.; Styblo, Donald J.; Taylor, Samuel K.; and Richey, Joseph B., to Ohio-Nuclear, Inc. Automatic patient table having means for transporting patient along a table. 4,131,802, Cl. 250-445.00T.
- Bradley, James B., Jr. Ophthalmic device. 4,131,341, Cl. 351-132.000.
- Bradley, James B., Jr. Ophthalmic mold device. 4,131,401, Cl. 425-2.000.
- Brandhorst, Henry W., Jr., to United States of America, National Aeronautics and Space Administration. Back wall solar cell. 4,131,486, Cl. 136-89.0SJ.
- Brandt, Jurgen: *See*—
  - Erb, Hans Joachim; Brandt, Jurgen; and Kirschbaum, Peter, 4,131,900, Cl. 346-162.000.

- Branton, Tom W., to RCA Corporation. Cathode ray tube with stress-relieved slot-aperture shadow mask. 4,131,822, Cl. 313-403.000.
- Brattrud, Hans. Device for protection of vehicle windows against ice or frost. 4,131,269, Cl. 296-95.00Q.
- Braumer, Klaus; and Eckmayer, Zdenek, to Carl Freudenberg, Firma. Collagen foil for cosmetic application. 4,131,650, Cl. 424-28.000.
- Braunschweigische Maschinenbauanstalt: *See*—
  - Dietzel, Walter, 4,131,482, Cl. 127-19.000.
- Brauticam, Rolf: *See*—
  - Weckenmann, Albert; Brauticam, Rolf; and Haas, Lothar, 4,131,772, Cl. 200-61.540.
- Brearley, Lawrence E.: *See*—
  - Agard, Richard L.; Bocinski, Terrence E.; Brearley, Lawrence E.; and Yaple, William R., 4,131,933, Cl. 361-415.000.
- Bregg, Gary N.: *See*—
  - Coxon, DeWayne; and Bregg, Gary N., 4,131,109, Cl. 126-270.000.
- Breitenfellner, Franz; and Andreas, Holger, to Ciba-Geigy Corporation. Thermoplastic moulding compositions. 4,131,595, Cl. 260-40.00R.
- Breiter, Manfred W.; Chatterji, Debajyoti; King, Randall N.; and Park, Dong-Sil, to Electric Power Research Institute, Inc. Sulfur electrode container construction and method of manufacture. 4,131,226, Cl. 228-198.000.
- Breitscheidel, Hans-Ulrich: *See*—
  - Alfter, Franz W.; Breitscheidel, Hans-Ulrich; Mecklenburg, Gunter; and Spielau, Paul, 4,131,702, Cl. 428-76.000.
- Brendley, William H., Jr., to Rohm and Haas Company. Powder coatings containing copolymer containing isobornyl methacrylate as melt flow modifier. 4,131,572, Cl. 260-17.00R.
- Brenner, Douglas, to Exxon Research & Engineering Co. Plasticization of neutralized sulfonated elastomeric polymer. 4,131,587, Cl. 260-32.60A.
- Bricmont & Associates, Inc.: *See*—
  - Bricmont, Francis H., 4,131,914, Cl. 358-100.000.
- Bricmont, Francis H., to Bricmont & Associates, Inc. Method and apparatus for inspecting refractory lining in coke oven chambers and the like. 4,131,914, Cl. 358-100.000.
- Bridges, John A., to Aladdin Industries, Incorporated. Wall mounted modular units. 4,131,203, Cl. 211-88.000.
- Bridgestone Tire Company Limited: *See*—
  - Hashimoto, Mitsuo; and Koguchi, Mitsuo, 4,131,347, Cl. 353-28.000.
- British Hovercraft Corporation Ltd.: *See*—
  - Wheeler, Raymond L., 4,131,175, Cl. 180-127.000.
- British Hydromechanics Research Association, The: *See*—
  - Saunders, David H., 4,131,236, Cl. 239-589.000.
- British Industrial Plastics Ltd.: *See*—
  - Isherwood, Harold; and Shaw, John T., 4,131,574, Cl. 260-17.300.
- British Petroleum Company Limited, The: *See*—
  - Drake, Paul H.; Humphris, Colin J.; and Preedy, John E., 4,131,481, Cl. 521-91.000.
- Brodell, Robert F., to United Technologies Corporation. Outer air seal. 4,131,388, Cl. 415-138.000.
- Broemer, Heinz: *See*—
  - Bluethgen, Waldemar; Broemer, Heinz; and Deutscher, Klaus K., 4,131,597, Cl. 260-42.180.
- Brooks, C. Robert, to 'Totes', Incorporated. Umbrella structure. 4,131,122, Cl. 135-76.000.
- Brown, Joseph R.: *See*—
  - Siy, Pepe; and Brown, Joseph R., 4,131,880, Cl. 340-146.3SY.
- Brown, Milton S.; Burch, Richard M.; and Warth, Guy M., to Rohm and Haas Company. Nickel recovery process. 4,131,641, Cl. 423-34.000.
- Brown Oil Tools, Inc.: *See*—
  - Cochran, Chudleigh B., 4,131,160, Cl. 166-120.000.
- Brown, Wynford, to Westvaco Corporation. Process for making lignin gels in bead form. 4,131,573, Cl. 260-17.500.
- Bruck, Avraham; and Inbar, Michael, to Elscint Ltd. Method of and apparatus for differentiating between normal and malignant cells. 4,131,800, Cl. 250-461.00B.
- Brumfield, Walter T., Jr.; Newsome, Norman M.; and Schweikle, George E., to Square D Company. Cover assembly for panelboard. 4,131,932, Cl. 361-356.000.
- Brundell och Jonsson AB: *See*—
  - Puna, Erich, 4,131,145, Cl. 144-34.00E.
- Brunetti, Heimo; Rody, Jean; Soma, Nobuo; and Kurumada, Tomoyuki, to Sankyo Company, Limited; and Ciba-Geigy Corporation. Stabilization of poly(mono-olefins). 4,131,599, Cl. 260-45.80N.
- Bruninx, Edward, to U.S. Philips Corporation. Fluorescent X-ray spectrometer. 4,131,794, Cl. 250-272.000.
- Bruno, Anthony T. Snow jack. 4,130,953, Cl. 37-130.000.
- Buck, F. O., Jr.: *See*—
  - Boyer, Robin L.; Lazarus, Sonja E.; and Buck, F. O., Jr., 4,131,282, Cl. 273-271.000.
- Buehler Ltd.: *See*—
  - Keith, Marvin W., Jr., 4,131,403, Cl. 425-127.000.
- Bunda, Tsuchio: *See*—
  - Noguchi, Masaaki; Bunda, Tsuchio; and Tanaka, Taro, 4,131,086, Cl. 123-3.000.
- Bunker Ramo Corporation: *See*—
  - Stupay, Lawrence J., 4,131,330, Cl. 339-125.00R.
- Burch, Richard M.: *See*—
  - Brown, Milton S.; Burch, Richard M.; and Warth, Guy M., 4,131,641, Cl. 423-34.000.
- Burke, Oliver W., Jr.; and Hunt, Barbara P., to Marion Darrah and Joseph Y. Houghton, Co-trustees. Elastomer latex composition. 4,131,584, Cl. 260-29.60N.
- Burroughs Corporation: *See*—
  - Behr, Michael I.; Gyi, Ko K.; Iwan, Wilfred D.; and Palotay, Joseph C., 4,131,924, Cl. 360-106.000.
  - Christou, Kyriakos, 4,131,899, Cl. 346-140.00R.
  - Siy, Pepe; and Brown, Joseph R., 4,131,880, Cl. 340-146.3SY.
- Burton, Jack D.; and Vandling, John M., to Exxon Research & Engineering Co. Frequency limiter. 4,131,917, Cl. 358-281.000.
- Burton, Parsons and Company, Inc.: *See*—
  - Covington, William, 4,131,696, Cl. 427-164.000.
- Busse, Peter, to Heinze, Richard. Fitting for detachable connecting structural parts. 4,131,376, Cl. 403-12.000.
- BYK Gulden Lomberg Chemische Fabrik GmbH: *See*—
  - Amschler, Hermann; Klemm, Kurt; and Ludwig, Gerhard, 4,131,678, Cl. 424-251.000.
- C. Itoh & Co.: *See*—
  - Uchiyama, Hiroshi, 4,131,612, Cl. 260-340.700.
- C J Wennberg AB: *See*—
  - Bengtsson, Ralph; and Larsson, Gunnar, 4,130,927, Cl. 29-432.100.
- C. van der Lely NV: *See*—
  - van der Lely, Ary; and Bom, Cornelis J. G., 4,131,237, Cl. 239-664.000.
- Caballero, Edward A. Apparatus and method for growing legume sprouts. 4,130,964, Cl. 47-16.000.
- Cable, Daniel K., to Angeles Metal Trim Co. Low cost housing wall structure. 4,130,970, Cl. 52-236.300.
- Caine, Merwin A., to Crest Company, The. Self-closing exhaust fan cover. 4,131,060, Cl. 98-116.000.
- California Institute of Technology: *See*—
  - Fender, Derek H.; and Koblasz, Arthur J., 4,131,113, Cl. 128-2.00T.
- Calvet, Gerard, to Rhone-Poulenc Industries. Peristaltic tube pump with means preventing complete occlusion of tube. 4,131,399, Cl. 417-477.000.
- Campbell, Richard A.: *See*—
  - Wood, Reggie D., 4,131,768, Cl. 179-178.000.
- Campbell, Thomas M.; Ringler, William H.; and Lerner, Howard, to Exxon Research & Engineering Co. Process for the continuous multistage degasification of liquid sulfur. 4,131,437, Cl. 55-53.000.
- Canada-Cities Service, Ltd.: *See*—
  - Porteous, Kenneth, 4,131,535, Cl. 208-11.0LE.
- Canada, Her Majesty the Queen in right of, as represented by the Minister of Energy, Mines and Resources: *See*—
  - Porteous, Kenneth, 4,131,535, Cl. 208-11.0LE.
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  - Daws, Lee F., 4,131,378, Cl. 403-93.000.
  - Lloyd, Robert G.; Street, Anthony C.; and Golden, Donald M. G. R., deceased, 4,131,251, Cl. 244-137.00R.
- Canevari, Louis T.: *See*—
  - Hordeski, Edward R.; Canevari, Louis T.; and Macari, Leonard J., 4,131,168, Cl. 177-128.000.
- Canon Kabushiki Kaisha: *See*—
  - Uchiyama, Takashi; Suzuki, Ryoichi; Tsunekawa, Tokuichi; Kawana, Hiroyoshi; Ono, Yusuke; and Matsuda, Mutsuhide, 4,131,350, Cl. 354-31.000.
- Canron, Inc.: *See*—
  - Lund, Raymond R., 4,131,066, Cl. 104-17.00R.
- Canron Railgroup: *See*—
  - Newman, George R.; and Lund, Raymond R., 4,131,067, Cl. 104-17.00R.
- Cantley, George: *See*—
  - Olsen, Roger F.; and Cantley, George, 4,131,037, Cl. 74-876.000.
- Capewell, David R.: *See*—
  - Weitzel, Charles E.; and Capewell, David R., 4,131,496, Cl. 148-175.000.
- Carborundum Company, The: *See*—
  - Murty, Hari N., 4,131,566, Cl. 252-423.000.
- Carder, Charles H.: *See*—
  - Hodakowski, Leonard E.; and Carder, Charles H., 4,131,602, Cl. 528-49.000.
- Carl Freudenberg, Firma: *See*—
  - Braumer, Klaus; and Eckmayer, Zdenek, 4,131,650, Cl. 424-28.000.
  - Krug, Hans-Dietrich, 4,130,948, Cl. 36-44.000.
- Carl Still Recklinghausen, Firma: *See*—
  - Abendroth, Werner, 4,131,421, Cl. 432-247.000.
- Carlson, Ronald L.: *See*—
  - Smith, Grant H.; and Carlson, Ronald L., 4,131,187, Cl. 192-99.00A.
- Carollo, Jerome T., to Singer Company, The. Visible light projection device. 4,131,345, Cl. 352-132.000.
- Carosello, Theodore F., to Progressive Research Products, Inc. Method of absorbing liquids using a preparation of expanded silicate-based aggregates. 4,131,543, Cl. 210-36.000.
- Carpenter Technology Corporation: *See*—
  - Frantz, Earl L., 4,131,457, Cl. 75-134.00M.
- Carpentier, John H.: *See*—
  - Kufrin, Fred W.; and Carpentier, John H., 4,131,273, Cl. 271-4.000.
- Carter, Walter L., to Jackson Machine Products. Adjustable shock absorber. 4,131,266, Cl. 267-34.000.
- Caruso, Robert D.; and Setter, Gerald A., Jr., to Western Electric Company, Inc. Frequency adjusting a piezoelectric device by lasering. 4,131,484, Cl. 134-1.000.
- Cassia, Antonio M., to Steiner American Corporation. Cut-off mechanism for paper towel dispenser. 4,131,044, Cl. 83-205.000.

- Caterpillar Tractor Co.: *See*—
  - Crumrine, Albert W., Jr.; Fones, Theodore H.; Kostas, James M.; and Vanderburg, Raymond M., 4,131,156, Cl. 165-51.000.
  - Fischer, Robert L., 4,131,144, Cl. 144-34.00E.
  - Meisel, Thomas C., Jr., 4,131,201, Cl. 209-661.000.
  - Scott, Ronald K., 4,131,014, Cl. 73-119.00A.
  - Wolfgram, Kenneth C., 4,131,172, Cl. 180-69.00R.
- Cavarroc, Marcel: *See*—
  - Grosclaude, Gerard; Regnier, Jean; and Cavarroc, Marcel, 4,131,688, Cl. 426-40.000.
- Cavil, David T.; McAuliffe, Gerald N.; and Van Rens, Russell J., to Outboard Marine Corporation. Speed sensitive field weakening control for traction motors. 4,131,832, Cl. 318-358.000.
- Ceeco Machinery Manufacturing Limited: *See*—
  - Varga, Joseph A., 4,130,985, Cl. 57-127.500.
- Cekoric, Mark E.; Loring, Robert M.; and Ludwico, William A., to Mobay Chemical Corporation. Talc-based external mold release agent for polyurethane foams. 4,131,662, Cl. 264-51.000.
- Center for Design Research and Development N.V.: *See*—
  - Ambasz, Emilio, 4,131,260, Cl. 248-384.000.
- Ceraver S.A.: *See*—
  - Willem, Michel, 4,130,926, Cl. 29-421.00M.
- CGEE Alsthom: *See*—
  - Courtiol, Bernard, 4,131,012, Cl. 73-167.000.
- Chabot, James V.: *See*—
  - Holka, Thomas C.; Chabot, James V.; and Haddad, Charles, 4,131,308, Cl. 296-1.00S.
- Chalmers, Alexander A.; Gailey, J. Lynn; and Wollam, Carl A., to Alcan Aluminum Corporation. Siding panels and the method of production. 4,130,974, Cl. 52-531.000.
- Chambers, Thomas V.: *See*—
  - Cocoros, George; Chambers, Thomas V.; and Hirshfeld, Julian J., 4,131,424, Cl. 8-172.00R.
- Chambersburg Engineering Company: *See*—
  - Hague, Wilmer W.; and Frame, Charles W., 4,131,164, Cl. 173-1.000.
- Champion International Corporation: *See*—
  - Cottrell, Edward D., 4,130,936, Cl. 29-809.000.
- Chapman, Robert A., to Racal Group Services Limited. Electrical synchronizing circuits. 4,131,856, Cl. 328-155.000.
- Charchian, Loris J., to Dana Corporation. Lubrication arrangement for a coupling device. 4,131,188, Cl. 192-113.00B.
- Chatterji, Debajyoti: *See*—
  - Breiter, Manfred W.; Chatterji, Debajyoti; King, Randall N.; and Park, Dong-Sil, 4,131,226, Cl. 228-198.000.
- Chawla, Jogindar M.; von Bockh, Peter; and Dornemann, Manfred, to Agefko Kohlensaure-Industrie GmbH. Device for measuring mass flow. 4,131,015, Cl. 73-199.000.
- Chen, Sow-mei C.: *See*—
  - Floyd, Middleton B., Jr.; Weiss, Martin J.; Gredeinskas, Charles V.; and Chen, Sow-mei C., 4,131,737, Cl. 560-121.000.
- Chester, Richard J.: *See*—
  - Barth, Douglas A.; and Chester, Richard J., 4,131,191, Cl. 194-92.000.
- Childeric, Bruno, to Eurotungstene. Rotating anode for x-ray tube. 4,131,718, Cl. 428-548.000.
- Chillier-Duchatel, Nicole; and Verger, Bernard, to Societe Generale de Constructions Electriques et Mecaniques "Alsthom et Cie". Electrochemical oxygen production device. 4,131,532, Cl. 204-256.000.
- Choate, James R., to Hydraform Products Corp. Log-burning stove. 4,131,104, Cl. 126-60.000.
- Choi, Nam S.; and Heller, Jorge, to Alza Corporation. Structured orthoester and orthocarbonate drug delivery devices. 4,131,648, Cl. 424-22.000.
- Chong, Victor M.; and Seitzer, Walter H., to Sun Oil Company of Pennsylvania. Oxygen separation with membranes. 4,131,514, Cl. 204-129.000.
- Christensen, Susan W.; and Coker, Cecil H., to Bell Telephone Laboratories, Incorporated. Multiple microphone dereverberation system. 4,131,760, Cl. 179-1.00P.
- Christou, Kyriakos, to Burroughs Corporation. Droplet generator for an ink jet printer. 4,131,899, Cl. 346-140.00R.
- Chromik, Karel, to H. Bieri AG Liebefeld. Mechanical actuating means for hydraulic control valves. 4,131,126, Cl. 137-270.000.
- Chrysler Corporation: *See*—
  - Daniels, Earl E.; and Crall, Frederick W., 4,131,098, Cl. 123-117.00R.
- Ciba-Geigy Corporation: *See*—
  - Breitenfellner, Franz; and Andreas, Holger, 4,131,595, Cl. 260-40.00R.
  - Brunetti, Heimo; Rody, Jean; Soma, Nobuo; and Kurumada, Tomoyuki, 4,131,599, Cl. 260-45.80N.
  - Kvita, Vratislav; Darms, Roland; and Greber, Gerd, 4,131,613, Cl. 260-343.30R.
  - Miller, Ralph; and Gregg, Harry D., Jr., 4,131,642, Cl. 423-193.000.
  - Mitra, Panchanan, 4,131,502, Cl. 156-179.000.
  - Petitpierre, Jean C., 4,131,695, Cl. 427-148.000.
  - Zahir, Abdul-Cader; and Wyler, Sigfried, 4,131,707, Cl. 428-251.000.
- Cipolla, Thomas M., to General Electric Company. Lamp parts feeding device having rotating reference frame. 4,131,192, Cl. 198-469.000.
- Cipris, Divna; and Mador, Irving L., to Allied Chemical Corporation. Electrochemical synthesis of organic carbonates. 4,131,521, Cl. 204-59.00R.
- Claasen, Theodoor A. C. M.; and Mecklenbrauker, Wolfgang F. G., to U.S. Philips Corporation. Arrangement for converting discrete signals into a discrete single-sideband frequency division-multiplex-signal and vice versa. 4,131,764, Cl. 179-15.0FS.
- Clark Equipment Company: *See*—
  - Bauer, James J.; Albright, Larry E.; Werner, James L.; Sagaser, Thomas M.; and Hoechst, Lonnie D., 4,131,225, Cl. 228-161.000.
- Clark, Gaylord J. Street brush. 4,130,911, Cl. 15-179.000.
- Clark, John S.: *See*—
  - Johnson, Charles R.; Forlow, John K.; Black, Paul G.; Mitchell, William A.; and Clark. John S., 4,131,054, Cl. 90-11.00D.
- Clark, Robert L.: *See*—
  - Shen, Tsung-Ying; Clark, Robert L.; Pessolano, Arsenio A.; Witzel, Bruce E.; and Lanza, Thomas J., 4,131,677, Cl. 424-256.000.
- Clary, Roger, to Howard Machinery Limited. Fruit harvesting machine. 4,130,982, Cl. 56-330.000.
- Cleer, Clarence W., Jr., to Ridgway Steel Fabricators, Inc. Fireplace heating system. 4,131,231, Cl. 237-8.00R.
- Clemar Manufacturing Corporation: *See*—
  - Hollabaugh, Michael D.; and Panday, Vinod, 4,131,882, Cl. 340-310.00A.
  - Kendall, Giles A., Jr., 4,131,331, Cl. 339-126.0RS.
- Clement, Warren J., to Sprague Electric Company. Terminal-cover assembly having coined region of reduced cross section compressing resilient bushing. 4,131,935, Cl. 361-433.000.
- Clemson, Daniel: *See*—
  - Austin, James; and Clemson, Daniel, 4,131,805, Cl. 307-147.000.
- Clopay Corporation: *See*—
  - Lee, Maw H.; and Prehodka, Barry V., 4,131,830, Cl. 318-266.000.
- Clymer, John C., to Bethlehem Steel Corporation. Autocorrelated pulse processor. 4,131,857, Cl. 328-163.000.
- Coady, William J. Educational device for motivating, and for developing scribing and reading skills in, the handicapped. 4,130,946, Cl. 35-37.000.
- Cochran, Chudleigh B., to Brown Oil Tools, Inc. Well tool with pressure responsive tightening means. 4,131,160, Cl. 166-120.000.
- Cocoros, George; Chambers, Thomas V.; and Hirshfeld, Julian J., to Milliken Research Corporation. Method of dyeing using the combination of certain halogenated hydrocarbons and aromatic solvents in an aqueous dye admixture. 4,131,424, Cl. 8-172.00R.
- Coffey, James P.: *See*—
  - Bernstein, Philip; Coffey, James P.; and Varker, Alan E., 4,131,637, Cl. 260-877.000.
- Cogan, Jerry A., Jr.: *See*—
  - Thomas, Manuel A.; and Cogan, Jerry A., Jr., 4,131,422, Cl. 8-31.000.
- Cohen, Jules B., to Medical Laboratory Automation, Inc. Method of assembling disposable pipette tips for shipment to users thereof. 4,130,978, Cl. 53-444.000.
- Cohen, Leon E.: *See*—
  - Lutz, Charles W.; and Cohen, Leon E., 4,131,562, Cl. 252-186.000.
- Coker, Cecil H.: *See*—
  - Christensen, Susan W.; and Coker, Cecil H., 4,131,760, Cl. 179-1.00P.
- Coker, James N., to Du Pont de Nemours, E. I., and Company. Adhesive compositions consisting essentially of a vinyl alcohol polymer, a crystalline solvent and a viscosity reducing diluent. 4,131,581, Cl. 260-29.10R.
- Coleman Company, Inc., The: *See*—
  - Curtis, Richard D., 4,131,414, Cl. 431-104.000.
- Coleman, Michael G.: *See*—
  - Keeling, Michael C.; Bailey, William L.; Coleman, Michael G.; Lesk, Israel A.; and Pryor, Robert A., 4,131,755, Cl. 136-89.00P.
- Collin, Per H., to Stora Kopparbergs Bergslags AB. Method for direct manufacture of crude steel. 4,131,452, Cl. 75-60.000.
- Colman, Benjamin W.; and Ferar, Montgomery, to Colman, Benjamin W. Food-slicing device. 4,131,043, Cl. 83-167.000.
- Combustion Engineering, Inc.: *See*—
  - Blackburn, Samuel S., Jr.; and Hammer, George P., 4,131,073, Cl. 110-106.000.
  - Mordarski, Walter J.; and Roth, Jerome, 4,131,511, Cl. 176-68.000.
- Comer, Donald T., to Precision Monolithics, Inc. Trimming control circuit for a digital to analog converter. 4,131,884, Cl. 340-347.0CC.
- Cominco Ltd.: *See*—
  - Krauss, Clifford J., 4,131,019, Cl. 73-453.000.
- Commette, Denis S.: *See*—
  - Gusmer, Frederick E.; Commette, Denis S.; and Bairunas, Robert A., 4,131,395, Cl. 417-271.000.
- Compagnie Electromecanique: *See*—
  - Delassus, Jean, 4,131,813, Cl. 310-13.000.
- Compagnie Europeenne d'Accumulateurs: *See*—
  - Dalibard, Gerard; and Pham, Kha M., 4,131,723, Cl. 429-81.000.
- Compagnie Generale des Etablissements Michelin: *See*—
  - Pflieger, Bernard; Sauvage, Philippe; and Tombrel, Francis, 4,131,151, Cl. 164-89.000.
- Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
  - Valle, Pierre D., 4,131,859, Cl. 330-124.00R.
- Conair, Inc.: *See*—
  - Klos, Daniel J., 4,131,319, Cl. 302-58.000.
- Conaway, William H.: *See*—
  - French, Park; and Conaway, William H., 4,131,367, Cl. 356-405.000.
- Concast AG: *See*—
  - Schmid, Markus, 4,131,153, Cl. 164-442.000.
  - Vial, Raymond; Fastert, Herbert; and Marti, Heinrich, 4,131,154, Cl. 164-448.000.
- Congoleum Corporation: *See*—
  - Toal, Hugh, 4,130,939, Cl. 30-293.000.

- Consarc Corporation: *See*—
  - Roberts, Raymond J., 4,131,754, Cl. 13-34.000.
- Consolidation Coal Company: *See*—
  - Jamison, Will B.; and Fleck, Henry, 4,131,317, Cl. 299-31.000.
- Container Corporation of America: *See*—
  - Vuilleumier, Ralph O., 4,131,208, Cl. 214-8.50F.
- Cooper, James. Remotely controllable electric oven. 4,131,786, Cl. 219-487.000.
- Cooper, Martin H., to United States of America, Energy. Magnetic nuclear core restraint and control. 4,131,510, Cl. 176-50.000.
- Corbic, Yves J., to Societe dite: Gatrun Anstalt. Receptacle made of thermoplastic material. 4,131,211, Cl. 215-2.000.
- Cornell, Martin C., III: *See*—
  - Doorakian, George A.; Schmidt, Dennis L.; and Cornell, Martin C., III, 4,131,633, Cl. 260-837.00R.
- Cotrel, Claude; Crisan, Cornel; Jeanmart, Claude; and Leger, Andre, to Rhone-Poulenc Industries. Naphtyridine derivatives. 4,131,674, Cl. 424-248.540.
- Cotton, Gordon: *See*—
  - Kohl, Harry E.; and Cotton, Gordon, 4,131,006, Cl. 72-67.000.
- Cottrell, Edward D., to Champion International Corporation. Stick handling and inserting method and apparatus. 4,130,936, Cl. 29-809.000.
- Courtiol, Bernard, to CGEE Alsthom. Device for detecting impacts on a target. 4,131,012, Cl. 73-167.000.
- Covington, William, to Burton, Parsons and Company, Inc. Contact lens treatment. 4,131,696, Cl. 427-164.000.
- Cox, Lawton E.: *See*—
  - Spitz, Edward K.; and Cox, Lawton E., 4,131,661, Cl. 264-38.000.
- Coxon, DeWayne; and Bregg, Gary N., to Jordan College. Solar collector. 4,131,109, Cl. 126-270.000.
- Crall, Frederick W.: *See*—
  - Daniels, Earl E.; and Crall, Frederick W., 4,131,098, Cl. 123-117.00R.
- Crawford, Theron L.: *See*—
  - Sehulster, Joseph P.; Halbach, Stephen N.; Haar, Darrell; and Crawford, Theron L., 4,131,408, Cl. 425-410.000.
- Crawley, Keenan L.; and Miller, Lester I., to Du Pont de Nemours, E. I., and Company. Polyurethane metallic enamel. 4,131,571, Cl. 260-17.00R.
- Crawley, Lantz S.: *See*—
  - Fanshawe, William J.; Epstein, Joseph W.; Crawley, Lantz S.; Hofmann, Corris M.; and Safir, Sidney R., 4,131,611, Cl. 260-326.800.
- Creasy, Walter S.; and Reimschuessel, Herbert K., to Allied Chemical Corporation. Solution of polyhydroxy methylene and products made therefrom. 4,131,669, Cl. 264-178.00F.
- Credelle, Thomas L., to RCA Corporation. Modular flat display device with beam convergence. 4,131,823, Cl. 313-422.000.
- Crenshaw, Marilyn: *See*—
  - Martinsons, Aleksandrs; and Crenshaw, Marilyn, 4,131,519, Cl. 204-38.00B.
- Crest Company, The: *See*—
  - Caine, Merwin A., 4,131,060, Cl. 98-116.000.
- Crinkelmeyer, Oliver W.; and Morris, Earl F., to Dow Chemical Company, The. Aqueous hydraulic cement slurry. 4,131,578, Cl. 260-17.500.
- Crisan, Cornel: *See*—
  - Cotrel, Claude; Crisan, Cornel; Jeanmart, Claude; and Leger, Andre, 4,131,674, Cl. 424-248.540.
- Crise, George W. Variable displacement internal combustion engine having automatic piston stroke control. 4,131,094, Cl. 123-48.00B.
- Crisp, Norman F.: *See*—
  - Warland, George W.; and Crisp, Norman F., 4,131,032, Cl. 74-449.000.
- Criswell, Thomas: *See*—
  - Gillett, Kenneth; Steiner, Edward L.; Fiske, Kenton W.; Davis, Kenneth A.; Kukucka, William P.; Criswell, Thomas; and Richardson, Philip, 4,131,942, Cl. 364-200.000.
  - Richardson, Philip; Steiner, Edward L.; Daughton, John W.; Fiske, Kenton W.; and Criswell, Thomas, 4,131,945, Cl. 364-200.000.
- Crookston, Ronald W.; and Meyer, Thomas N., to Westinghouse Electric Corp. Circuit interrupter operating mechanism. 4,131,774, Cl. 200-82.00B.
- Crumrine, Albert W., Jr.; Fones, Theodore H.; Kostas, James M.; and Vanderburg, Raymond M., to Caterpillar Tractor Co. Fan shroud. 4,131,156, Cl. 165-51.000.
- CSELT - Centro Studi e Laboratori Telecomunicazioni: *See*—
  - Giusto, Pietro P., 4,131,761, Cl. 179-15.0BY.
- Csutor, Frank. Ice skate carrying case with exterior end wall skate support. 4,131,196, Cl. 206-278.000.
- Cubic Productron: *See*—
  - Schmidt, Gunter, 4,131,356, Cl. 354-322.000.
- Cudby, Joseph W.: *See*—
  - Hind, Robert D.; Thrower, Anthony; and Cudby, Joseph W., 4,131,219, Cl. 222-603.000.
- Curtis Mathes Manufacturing Co.: *See*—
  - Dreiske, Erwin J., 4,131,853, Cl. 325-464.000.
- Curtis, Richard D., to Coleman Company, Inc., The. Lantern with kerosene preheater. 4,131,414, Cl. 431-104.000.
- Czyz, Jerzy: *See*—
  - Kiedik, Maciej; Grzywa, Edward; Kolt, Jozef; Terelak, Kazimierz; Czyz, Jerzy; and Niezgoda, Anna, 4,131,749, Cl. 568-781.000.
- Daicel Ltd.: *See*—
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- Daido Sanso Kabushiki Kaisha: *See*—
  - Tsujimoto, Minoru; Okada, Minoru; Suzuki, Yuji; and Hirai, Toshihiro, 4,131,528, Cl. 204-157.10R.
- Dainippon Ink & Chemicals Inc.: *See*—
  - Matsumoto, Yasuhiro; and Eguchi, Hisanori, 4,131,636, Cl. 260-875.000.
- D'Alelio, Gaetano F. Modified polyamic acid from aminophthalic acid anhydride and dianhydride. 4,131,730, Cl. 528-327.000.
- Dalibard, Gerard; and Pham, Kha M., to Compagnie Europeenne d'Accumulateurs. Lead storage battery with limited evolution of gas. 4,131,723, Cl. 429-81.000.
- D'Alo, Giorgio, to A. Wasserman S.p.A. Furan derivative for use as pharmaceutical product particularly for the treatment of rheumatic illnesses. 4,131,615, Cl. 260-347.300.
- Dammann, Peter; Schippers, Heinz; Turk, Herbert; and Schiminski, Herbert, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Yarn spinning apparatus and process. 4,130,983, Cl. 57-5.000.
- Dana Corporation: *See*—
  - Charchian, Loris J., 4,131,188, Cl. 192-113.00B.
  - Schall, Myron M., 4,131,185, Cl. 192-53.00B.
- Danberg, Victor. Apparatus for reducing fragmentary stock. 4,131,247, Cl. 241-49.000.
- Daniels, Earl E.; and Crall, Frederick W., to Chrysler Corporation. Engine timing control circuit having a single pick-up for both starting and running. 4,131,098, Cl. 123-117.00R.
- Dannhauser, Friedrich; and Porst, Alfred, to Siemens Aktiengesellschaft. Power diode. 4,131,339, Cl. 357-13.000.
- Darms, Roland: *See*—
  - Kvita, Vratislav; Darms, Roland; and Greber, Gerd, 4,131,613, Cl. 260-343.30R.
- Data General Corporation: *See*—
  - Austin, James; and Clemson, Daniel, 4,131,805, Cl. 307-147.000.
- Daub, Dirk; and Klaver, Olof E. H., to U.S. Philips Corporation. Semiconductor protection device having a bipolar lateral transistor. 4,131,908, Cl. 357-42.000.
- Daughton, John W.: *See*—
  - Richardson, Philip; Steiner, Edward L.; Daughton, John W.; Fiske, Kenton W.; and Criswell, Thomas, 4,131,945, Cl. 364-200.000.
- Davin, Andre: *See*—
  - Petit, Leon; Davin, Andre; and Gueguen, Jacques, 4,131,607, Cl. 260-123.500.
- Davis, Earl K.; and Hansen, Kent W., to Motorola, Inc. Sealing glass compositions and method. 4,131,478, Cl. 106-53.000.
- Davis, Fred R., to R.C.A. Rubber Company, The. Flame retardant rubber flooring composition. 4,131,592, Cl. 260-23.70R.
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  - Gillett, Kenneth; Steiner, Edward L.; Fiske, Kenton W.; Davis, Kenneth A.; Kukucka, William P.; Criswell, Thomas; and Richardson, Philip, 4,131,942, Cl. 364-200.000.
- Davis, Paul H., Jr., to DuKane Corporation. Ultra-sonic horn. 4,131,505, Cl. 156-580.100.
- Davis, Richard S.: *See*—
  - Fletcher, Steven J.; Wright, Jeffrey L.; and Davis, Richard S., 4,131,949, Cl. 364-900.000.
- Davis, Sylvia. Telephone lock. 4,131,769, Cl. 179-189.00D.
- Davis, William F.; and Stein, Marc T., to Motorola, Inc. Voltage clamp device for monolithic circuits. 4,131,928, Cl. 361-56.000.
- Davis, William R.; and Gordon, Michael D., to M&T Chemicals Inc. Reduction of phosphine oxides. 4,131,624, Cl. 260-606.50P.
- Davison, John B.: *See*—
  - Wynne, Kenneth J.; and Davison, John B., 4,131,609, Cl. 260-314.500.
- Daws, Lee F., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Self-locking hinge. 4,131,378, Cl. 403-93.000.
- Day, Ralph D. Constant current power supply. 4,131,939, Cl. 363-126.000.
- Dayco Corporation: *See*—
  - Bollmer, Jacob A., 4,131,040, Cl. 83-50.000.
  - Frisch, Paul P., 4,131,131, Cl. 137-559.000.
  - Voet, Harry C., 4,131,703, Cl. 428-95.000.
  - White, Jack D., Jr., 4,131,030, Cl. 74-232.000.
- Dean, Roy D.; and Weiland, Richard H., to Boeing Company, The. Apparatus for compensating for airflow blockage in aircraft slotted flap assemblies. 4,131,252, Cl. 244-212.000.
- De Bliquy, Michael C. Shaft end coupling means. 4,131,380, Cl. 403-217.000.
- Debrotnic, John S., to United States of America, Air Force. Degasser and liquid seal reservoir. 4,131,438, Cl. 55-204.000.
- Deckert, Cheryl A., to RCA Corporation. Pretreatment of polyvinyl chloride plastics for electroless deposition. 4,131,698, Cl. 427-304.000.
- Deem, Curtis. Vacuum coin collection apparatus. 4,131,318, Cl. 302-2.00R.
- Dees, Barry N., Jr.: *See*—
  - Dees, Barry N., Sr.; and Dees, Barry N., Jr., 4,131,876, Cl. 340-58.000.
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- DeFrank, Michael P., to Raybestos-Manhattan, Inc. Epoxy-rubber based friction material. 4,131,590, Cl. 260-37.0EP.
- Delassus, Jean, to Institut de Recherches de la Siderurgie Francaise (Irsid); and Compagnie Electromecanique. Electromagnetic apparatus generating a gliding magnetic field. 4,131,813, Cl. 310-13.000.
- Della-Vedowa, Richard P.; and Shahryar, Ishaq M., to Solec International, Inc. Solar cell module and method of making same. 4,131,123, Cl. 136-89.00P.

- DeLuccia, Charles R. Medicinal skin cream for psoriasis and method. 4,131,652, Cl. 424-241.000.
- Deluga, Sigmund S.: *See—*
  - Thompson, Jerry L.; Deluga, Sigmund S.; Harnach, James W.; and Shamah, Eliahu, 4,131,551, Cl. 252-33.000.
- DEMAG, Aktiengesellschaft: *See—*
  - Keulertz, Werner; and Wessel, Karl-Heinz, 4,131,240, Cl. 242-72.100.
- Demers, Jean G.: *See—*
  - Nikitits, Edwin; and Demers, Jean G., 4,131,311, Cl. 297-159.000.
- Demrick, Carl J., to Arco Industries Corporation. Forming and coating apparatus. 4,130,933, Cl. 29-564.000.
- den Hertog, Willem C.: *See—*
  - de Putter, Warner J.; and den Hertog, Willem C., 4,131,407, Cl. 425-393.000.
- Denison, Don E.: *See—*
  - Lingl, Hans, Jr.; and Denison, Don E., 4,131,072, Cl. 110-106.000.
- Denney, Jerry W., to American Monitor Corporation. Urea assay. 4,131,425, Cl. 23-230.00B.
- Denney, Jerry W., to American Monitor Corporation. Urea assay. 4,131,429, Cl. 23-230.00B.
- Denney, Jerry W., to American Monitor Corporation. Urea assay. 4,131,430, Cl. 23-230.00B.
- Densmore, Dennis G., to Koehring Company. Boom length sensing and indicating system with self-synchronization. 4,130,940, Cl. 33-139.000.
- Denton, Dennis N.; and Boyd, David G., to Garlock Inc. Bonded TFE lip seal. 4,131,285, Cl. 277-1.000.
- Denu, Francis, to Adidas Fabrique de Chaussures de Sport. Sole for footwear, especially sports footwear. 4,130,947, Cl. 36-30.00R.
- De Pierre, Vincent; and Gurney, Ferdinand J., to United States of America, Air Force. Method and apparatus for use in the extrusion of billets. 4,131,461, Cl. 75-208.0CS.
- de Putter, Warner J.; and den Hertog, Willem C., to Wavin B.V. Device for forming tube with thickened socket end. 4,131,407, Cl. 425-393.000.
- de Putter, Warner J., to Wafilin B.V. Removing coagulable substances from an aqueous medium. 4,131,541, Cl. 210-23.00F.
- De Rossi, Rita. Automatic hooking safety-hook for doors of dwellings and offices. 4,131,307, Cl. 292-268.000.
- Dessauer, Guido; Ramlow, Kurt; Riecke, Kurt; and Wirnitzer, Franz, to Feldmuhle Aktiengesellschaft. Recording material containing asbestos. 4,131,710, Cl. 428-328.000.
- Deters, Elmer M., to Wylain, Inc. Automatic fluid dispensing apparatus. 4,131,140, Cl. 141-206.000.
- Deutsche Babcock Aktiengesellschaft: *See—*
  - Bitterlich, Eberhard; Thelen, Franz; and Weber, Henning, 4,130,992, Cl. 60-652.000.
- Deutscher, Klaus K.: *See—*
  - Bluethgen, Waldemar; Broemer, Heinz; and Deutscher, Klaus K., 4,131,597, Cl. 260-42.180.
- DeVinney, Robert E., to General Motors Corporation. Enclosure spanning drain for engine valley covers and the like. 4,131,101, Cl. 123-195.00C.
- Dick, William J. Common bell ringing apparatus for multiple button key telephone set. 4,131,770, Cl. 179-84.00L.
- Dickes, Roger D. Workpiece and work tool cutting jig. 4,131,048, Cl. 83-745.000.
- Dickinson, George A., to Pilkington Brothers Limited. Method and apparatus for manufacturing flat glass on molten metal. 4,131,446, Cl. 65-99.00A.
- Dieckhoff, Rolf. Projector. 4,131,346, Cl. 353-15.000.
- Dietrich, William J., Sr., to DMI, Inc. Dual wheel assembly for tractors. 4,131,323, Cl. 301-36.00R.
- Dietz, Charles R., to United States of America, Navy. Missile system. 4,131,065, Cl. 102-49.400.
- Dietzel, Walter, to Braunschweigische Maschinenbauanstalt. Continuously operating sugar centrifuge. 4,131,482, Cl. 127-19.000.
- Diggens, Albert A., to Orion Research Incorporated. Method of adjusting pH. 4,131,428, Cl. 23-230.00R.
- Dilling, Peter, to Westvaco Corporation. Lignin-containing dye dispersing composition. 4,131,564, Cl. 252-353.000.
- Dion, Exsior. Plow attachment for roto-tiller. 4,130,952, Cl. 37-41.000.
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  - Marquis, Edgar E.; and Discepolo, Joseph, 4,131,186, Cl. 192-67.00R.
- Disco Kabushiki Kaisha: *See—*
  - Ono, Takatoshi; and Ikeda, Michio, 4,131,267, Cl. 269-21.000.
- Distler, Edward C.: *See—*
  - Kirkpatrick, Harold B.; Distler, Edward C.; and Menzin, Marvin, 4,131,114, Cl. 128-90.000.
- Dlugos, Daniel F., to Pitney-Bowes, Inc. Mailing system. 4,131,946, Cl. 364-466.000.
- DMI, Inc.: *See—*
  - Dietrich, William J., Sr., 4,131,323, Cl. 301-36.00R.
- Dmitrieva, Valentina A.: *See—*
  - Kagan, Naum Y.; Bortnik, Vladimir M.; Korenbljum, Isai V.; Razumeev, Jury A.; Lyass, Abram M.; Borsuk, Pavel A.; Usubov, Zokhrab G. O.; and Dmitrieva, Valentina A., 4,131,477, Cl. 106-38.350.
- Dr. Beck & Co AG: *See—*
  - Wendt, Hartmut; Von Gruner, Horst; and Janssen, Harald, 4,131,693, Cl. 427-117.000.
- Doehler, Peter: *See—*
  - Baumgartner, Erich R.; and Doehler, Peter, 4,130,955, Cl. 38-82.000.
- Doerflinger, Karl: *See—*
  - Becker, Harry; Doerflinger, Karl; Ey, Klaus; Reiter, Georg; Rutzmoser, Hermann; and Theus, Richard, 4,131,934, Cl. 361-428.000.
- Dolfini, Joseph E.: *See—*
  - Harrison, Boyd L.; and Dolfini, Joseph E., 4,131,683, Cl. 424-277.000.
- Dombrowski, Joseph A.; Baxter, Clement T.; Howard, Frederick B.; and Simpson, George H., to GTE Sylvania Incorporated. Incandescent lamp socket having overtemperature protector. 4,131,868, Cl. 337-113.000.
- Dominianni, Samuel J.; and Ryan, Charles W., to Eli Lilly and Company. Intermediates for 5-(tertiary alkyl) resorcinol preparation. 4,131,656, Cl. 260-951.000.
- Donahoo, Joe T., to General Electric Company. Concentrated winding salient-pole shaded pole motors having multiple short circuited shading coils for each pole and methods of making same. 4,131,814, Cl. 310-172.000.
- Doorakian, George A.; Schmidt, Dennis L.; and Cornell, Martin C., III, to Dow Chemical Company, The. Latent catalysts for promoting reaction of epoxides with phenols and/or carboxylic acids. 4,131,633, Cl. 260-837.00R.
- Dorn, Gordon L., to J. K. and Susie L. Wadley Research Institute and Blood Bank. Method for detecting microbial pathogens employing a cushioning agent. 4,131,512, Cl. 195-103.50M.
- Dornemann, Manfred: *See—*
  - Chawla, Jogindar M.; von Bockh, Peter; and Dornemann, Manfred, 4,131,015, Cl. 73-199.000.
- Douglas, Ulysee. Combined arm and leg rest for drivers. 4,131,298, Cl. 280-727.000.
- Dow Chemical Company, The: *See—*
  - Crinkelmeyer, Oliver W.; and Morris, Earl F., 4,131,578, Cl. 260-17.500.
  - Doorakian, George A.; Schmidt, Dennis L.; and Cornell, Martin C., III, 4,131,633, Cl. 260-837.00R.
  - McCarty, Leslie P., 4,131,647, Cl. 424-10.000.
  - Pews, R. Garth, 4,131,619, Cl. 260-543.00R.
  - Priddy, Duane B., 4,131,728, Cl. 526-204.000.
- Drabert Sohne, Firma: *See—*
  - Vogtherr, Burkhard, 4,131,315, Cl. 297-286.000.
- Drake, Paul H.; Humphris, Colin J.; and Preedy, John E., to British Petroleum Company Limited, The. Polymer composition. 4,131,481, Cl. 521-91.000.
- Drefcinski, Earl D.: *See—*
  - Johnson, Robert G.; and Drefcinski, Earl D., 4,131,294, Cl. 280-179.00R.
- Dreiske, Erwin J., to Curtis Mathes Manufacturing Co. Electronic multiple channel tuner. 4,131,853, Cl. 325-464.000.
- Dresser Industries, Inc.: *See—*
  - Gerstenmaier, William J.; and Todd, John A., 4,131,216, Cl. 222-52.000.
- Drobnik, Stefan: *See—*
  - Bahr, Werner; Drobnik, Stefan; Hild, Werner; Kroebel, Reinhard; Meyer, Alfred; and Naumann, Gunter, 4,131,563, Cl. 252-301.10W.
- DSO "Montaji" — Promishleno Montajno Upravlenie: *See—*
  - Ivanov, Ivan B., 4,130,969, Cl. 52-80.000.
- Dubost, Rene; Gauthier, Francis; and Mignien, Georges, to Societe Anonyme Dite: Les Cables de Lyon. Device for the protective covering of optical fibres. 4,131,404, Cl. 425-129.00R.
- Dudley, Leslie P. Stereoscopic optical viewing system. 4,131,342, Cl. 352-43.000.
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  - Piret, Norbert L.; Hopper, Meinolf; and Kudelka, Herbert, 4,131,454, Cl. 75-83.000.
- DuKane Corporation: *See—*
  - Davis, Paul H., Jr., 4,131,505, Cl. 156-580.100.
- Dunn, Bruce S., to General Electric Company. Composite body and method of forming. 4,131,694, Cl. 427-126.000.
- Du Pont de Nemours, E. I., and Company: *See—*
  - Bergna, Horacio E.; and Kirkland, Joseph J., 4,131,542, Cl. 210-31.00C.
  - Bigelow, John H., 4,131,467, Cl. 96-66.300.
  - Coker, James N., 4,131,581, Cl. 260-29.10R.
  - Crawley, Keenan L.; and Miller, Lester I., 4,131,571, Cl. 260-17.00R.
  - England, David C., 4,131,740, Cl. 560-180.000.
  - Gosser, Lawrence W., 4,131,646, Cl. 423-591.000.
  - Sprauer, Jerome W., 4,131,712, Cl. 528-335.000.
  - Stiles, Alvin B., 4,131,616, Cl. 260-449.60M.
  - Tynan, Daniel G., 4,131,371, Cl. 366-301.000.
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  - Riss, Gerhard, 4,131,074, Cl. 112-121.140.
- DURST AG Fabrik Fototechnischer Apparate: *See—*
  - Gandini, Mario, 4,131,362, Cl. 355-71.000.
- Dwight, Donald D., to Aluminum Company of America. Carbon electrode production. 4,131,417, Cl. 432-6.000.
- Dynamit Nobel Aktiengesellschaft: *See—*
  - Alfter, Franz W.; Breitscheidel, Hans-Ulrich; Mecklenburg, Gunter; and Spielau, Paul, 4,131,702, Cl. 428-76.000.
- Dynascan Corporation: *See—*
  - Stone, Dennis C., 4,131,846, Cl. 324-132.000.
- Dziala, Gabriela: *See—*
  - Klopotek, Alojzy; Uminski, Jerzy; and Dziala, Gabriela, 4,131,556, Cl. 252-106.000.
- Dzus Fastener Co., Inc.: *See—*
  - Dzus, Julius F., 4,130,929, Cl. 29-456.000.

- Dzus, Julius F., to Dzus Fastener Co., Inc. Wound spring receptacle. 4,130,929, Cl. 29-456.000.
- E. C. Chemical Ind. Co., Ltd.: *See—*
  - Uchiyama, Hiroshi, 4,131,612, Cl. 260-340.700.
- E. R. Squibb & Sons, Inc.: *See—*
  - Sundeen, Joseph E.; and Hauck, Frederic P., 4,131,744, Cl. 560-252.000.
- E-Systems, Inc.: *See—*
  - Berglund, David B., 4,131,248, Cl. 244-3.160.
  - Eyres, William G., 4,131,010, Cl. 73-11.000.
- Eastman Kodak Company: *See—*
  - Firth, Ronald R.; and Horak, Jerry R., 4,131,925, Cl. 360-130.000.
  - Lloyd, Gareth A.; and Sasson, Steven J., 4,131,919, Cl. 360-9.000.
  - Morris, Don L., 4,131,739, Cl. 560-179.000.
  - Petropoulos, Constantine C., 4,131,465, Cl. 96-35.000.
- Easton, Ray D.; Jakobi, Phil F.; and Zabik, Andrew L., to BJR Machine & Gear. Precision gear crown grinding machine. 4,130,967, Cl. 51-5.00D.
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  - Ramet, Gilbert, 4,130,986, Cl. 58-23.00R.
  - Scherrer, Igor; Berney, Jean-Claude; and Robert-Grandpierre, Jean-Claude, 4,130,988, Cl. 58-85.500.
- Eby Company: *See—*
  - Sterling, Maurice, 4,131,257, Cl. 248-67.500.
- Eck, John C., to Wilputte Corporation. Automatic control apparatus for oil gas machine operation. 4,131,435, Cl. 48-61.000.
- Eckel, John D.: *See—*
  - Barr, Robert H.; and Eckel, John D., 4,131,142, Cl. 141-302.000.
- Eckmayer, Zdenek: *See—*
  - Braumer, Klaus; and Eckmayer, Zdenek, 4,131,650, Cl. 424-28.000.
- Ecolaire Incorporated: *See—*
  - Williams, George J.; and Boyer, Robert C., 4,131,270, Cl. 269-321.00W.
- Ectrice, Ltd.: *See—*
  - Erazo, Julio N., 4,130,993, Cl. 60-721.000.
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- Edgar, Ralph W. Ash tray. 4,131,120, Cl. 131-235.00R.
- Edwards, Lars T.; and Trowbridge, Lyle N., to GAF Corporation. Silver recovery. 4,131,455, Cl. 75-118.00R.
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  - Lakernik, Mark M.; Shabalina, Roza I.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Golovachev, Anatoly I.; and Egorova, Tatyana S., 4,131,451, Cl. 75-14.000.
- Eguchi, Hisanori: *See—*
  - Matsumoto, Yasuhiro; and Eguchi, Hisanori, 4,131,636, Cl. 260-875.000.
- Ehrat, Kurt, to Gretag Aktiengesellschaft. Method and apparatus for determining the relative positions of corresponding points or zones of a sample and an orginal. 4,131,879, Cl. 340-146.30H.
- Ehrenberger, Frank T., to Square D Company. Motorized drive assembly for a circuit breaker operator. 4,131,776, Cl. 200-158.000.
- Eibe, Werner W., to Blaw-Knox Foundry & Mill Machinery, Inc. Rolling mill gauge and flatness calibration system. 4,131,004, Cl. 72-8.000.
- Eickhoff, Jurgen; and Binger, Bernhard, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Mounting for traction member with lateral step-down transmission. 4,131,169, Cl. 180-9.620.
- Einsel, Kenneth D.; and Johnson, Roland W., to Hastings Equity Grain Bin Mfg. Co. Adjustably turnable shaft-guard. 4,130,998, Cl. 64-3.000.
- Einstein, Bernard C.; and Spring, Peter, to Lasag AG. Method of and apparatus for machining large numbers of holes of precisely controlled size by coherent radiation. 4,131,782, Cl. 219-121.0LM.
- Elahi, Nasik. Macroencapsulated sorbent element and process for using the same. 4,131,544, Cl. 210-40.000.
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  - Breiter, Manfred W.; Chatterji, Debajyoti; King, Randall N.; and Park, Dong-Sil, 4,131,226, Cl. 228-198.000.
  - Fung, Shun C.; and Pan, Yen-Chi, 4,131,721, Cl. 429-13.000.
  - Hanes, Maurice H.; and Lowry, Lewis R., 4,131,905, Cl. 357-30.000.
  - Pelly, Brian R.; and Wood, Peter, 4,131,937, Cl. 363-96.000.
- Electro-Therm, Inc.: *See—*
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- Eli Lilly and Company: *See—*
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  - Huffman, George W., 4,131,672, Cl. 424-246.000.
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  - Ryan, Charles W., 4,131,614, Cl. 260-345.300.
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  - Bruck, Avraham; and Inbar, Michael, 4,131,800, Cl. 250-461.00B.
- Emmons, William D.; Nyi, Kayson; and Sperry, Peter R., to Rohm and Haas Company. Water-based coating compositions comprising a vinyl addition polymer and an acrylic ester of dicyclopentadiene. 4,131,580, Cl. 260-29.6RW.
- Emmons, William D.; and Swift, Graham, to Rohm and Haas Company. Polymers of sulfonic acid monomers. 4,131,736, Cl. 560-14.000.
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  - Tarpley, William B., Jr., 4,131,238, Cl. 241-30.000.
- Energy Processing and Equipment Co.: *See—*
  - Stephanoff, Nicholas N., 4,131,239, Cl. 241-39.000.
- Energy Systems, Incorporated: *See—*
  - Hanson, Robert C.; and Hanson, Leon C., 4,131,084, Cl. 122-33.000.
- Engelsmann, Dieter, to AGFA-Gevaert AG. Photographic camera. 4,131,353, Cl. 354-197.000.
- England, David C., to Du Pont de Nemours, E. I., and Company. Alkyl perfluoro-ω-fluoroformyl esters and their preparation. 4,131,740, Cl. 560-180.000.
- English, Christopher D., to Spar Aerospace Producs Ltd. Attachment of side covers to linear induction motor. 4,131,812, Cl. 310-13.000.
- Ennis, Thomas H., to Jack Russell Company, Inc. Superior performance Yo-Yo. 4,130,962, Cl. 46-61.000.
- Entwistle, Ian D., to Shell Oil Company. Propanimidothioic acid derivatives. 4,131,449, Cl. 71-98.000.
- Eocom Corporation: *See—*
  - Harbaugh, Steven K.; and Mitchell, Frank R., 4,131,029, Cl. 74-89.150.
- Epmeier, Robert T., to Arkla Industries, Inc. Method of joining a tube to a plate. 4,130,932, Cl. 29-523.000.
- Epstein, Joseph W.: *See—*
  - Fanshawe, William J.; Epstein, Joseph W.; Crawley, Lantz S.; Hofmann, Corris M.; and Safir, Sidney R., 4,131,611, Cl. 260-326.800.
- Erazo, Julio N., to Ectrice, Ltd. Method and apparatus for converting thermal energy to rotational energy. 4,130,993, Cl. 60-721.000.
- Erb, Hans Joachim; Brandt, Jurgen; and Kirschbaum, Peter, to Hartman & Braun Aktiengesellschaft. Printing apparatus. 4,131,900, Cl. 346-162.000.
- Erickson, Richard W.; Pallaske, James; and Talbert, Stephen, to Becton, Dickinson Electronics Company, by said Richard Erickson and James Pallaske. Rotary switch with spaced circuit boards and discrete contacts on rotor opposite faces electrically insulated from furthermost board. 4,131,771, Cl. 200-11.0DA.
- Erickson, Wayne K.; and Walters, John P., to Phillips Petroleum Company. Nonwoven fabric comprising needled and selectively fused fine and coarse filaments having differing softening temperatures which is useful as a backing in the production of tufted materials. 4,131,704, Cl. 428-95.000.
- Erikson, Keith W.: *See—*
  - Erikson, Kenneth W.; and Erikson, Keith W., 4,131,031, Cl. 74-441.000.
- Erikson, Kenneth W.; and Erikson, Keith W., to Kerk Motion Products, Inc. Anti-backlash nut assembly. 4,131,031, Cl. 74-441.000.
- Ernst Flitsch GmbH U. Co.: *See—*
  - Gotzenberger, Rudibert, 4,131,128, Cl. 137-556.000.
- Ernst Leitz GmbH: *See—*
  - Bluethgen, Waldemar; Broemer, Heinz; and Deutscher, Klaus K., 4,131,597, Cl. 260-42.180.
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- Erwin Sick Gesellschaft m.b.H. Optik-Elektronik: *See—*
  - Sick, Erwin; Walter, Arthur; and Fetzer, Gunter, 4,131,804, Cl. 250-566.000.
- Esanu, Andre, to Societe d'Etudes de Produits Chimiques. Preparation of new isobutylramide derivatives. 4,131,617, Cl. 260-465.00D.
- ESB Incorporated: *See—*
  - Bernstein, Philip; Coffey, James P.; and Varker, Alan E., 4,131,637, Cl. 260-877.000.
- Esenovsky-Lashkov, Jury K.: *See—*
  - Rumyantsev, Leonid A.; Esenovsky-Lashkov, Jury K.; Avershin, Vasily T.; Ilnitsky, Vladimir Y.; and Jurin, Ivan L., 4,131,184, Cl. 192-3.260.
- ESPE Fabrik Pharmazeutischer Praparate GmbH: *See—*
  - Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Zahler, Wolf-Dietrich, 4,131,729, Cl. 526-282.000.
- Essex Group, Inc.: *See—*
  - Sokoly, John; and Roberts, Kenneth N., 4,131,306, Cl. 292-201.000.
- Essex International, Inc.: *See—*
  - Karkoski, Joseph; Payette, Lionel J.; and Shurboff, John D., 4,131,714, Cl. 428-379.000.
- Ethyl Corporation: *See—*
  - Keblys, Kestutis A.; and McEven, John M., 4,131,645, Cl. 423-501.000.
- Etoh, Kunihiko; and Sugiura, Katsumi, to Toyoda-Koki Kabushiki-Kaisha. Displacement amount detecting device. 4,131,838, Cl. 318-603.000.
- Eurotungstene: *See—*
  - Childeric, Bruno, 4,131,718, Cl. 428-548.000.
- Evans, Delme; Saunders, John C.; and Williamson, William R. N., to Lilly Industries Limited. Heteroaryl ketone derivatives. 4,131,682, Cl. 424-275.000.
- Everson, Clifford G. Backhoe jaw attachment. 4,131,210, Cl. 214-147.00G.
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  - Johnson, Charles R.; Forlow, John K.; Black, Paul G.; Mitchell, William A.; and Clark, John S., 4,131,054, Cl. 90-11.00D.
- Expert Industrial Controls Limited: *See—*
  - Torr, Alan C., 4,131,866, Cl. 335-262.000.
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  - Campbell, Thomas M.; Ringler, William H.; and Lerner, Howard, 4,131,437, Cl. 55-53.000.
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  - Winter, William E.; and Luzarraga, Mamerto G., 4,131,537, Cl. 208-216.000.
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  - Becker, Harry; Doerflinger, Karl; Ey, Klaus; Reiter, Georg; Rutzmoser, Hermann; and Theus, Richard, 4,131,934, Cl. 361-428.000.
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  - Gozzo, Franco; Masoero, Marcella; Signorini, Ernesto; and Fabbrini, Riccardo, 4,131,621, Cl. 260-551.00C.
- Fabio, Paul F.: *See—*
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- Faigle, Heinz: *See—*
  - Menia, Manfred, 4,131,255, Cl. 246-430.000.
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  - Kuo, James R., 4,131,808, Cl. 307-270.000.
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  - Wanner, Karl; Bleicher, Manfred; and Falchle, Jorg, 4,131,165, Cl. 173-48.000.
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  - Fischer, Edward F., 4,131,198, Cl. 206-419.000.
- Feigin, Robert, to Sybron Corporation. Leveling agent for floor polishes. 4,131,585, Cl. 260-29.6MQ.
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  - Dessauer, Guido; Ramlow, Kurt; Riecke, Kurt; and Wirnitzer, Franz, 4,131,710, Cl. 428-328.000.
- Feldstein, Nathan. Method of preparation and use of electroless plating catalysts. 4,131,699, Cl. 427-306.000.
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- Feng, Bai-Cwo; and Feng, George C., to International Business Machines Corporation. Method of manufacturing self-aligned semiconductor devices. 4,131,497, Cl. 148-187.000.
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- Ferguson, Wilfred J., to United States of America, Navy. Armor plate. 4,131,053, Cl. 89-36.00A.
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- Ferrara, Louis T. Serum separation device. 4,131,549, Cl. 210-359.000.
- Ferro, Jose V.; Morales, Vincent M.; and Reid, Billy G. Locking valve. 4,131,127, Cl. 137-384.600.
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  - Koenig, Karl-Heinz; Schirmer, Ulrich; Wuerzer, Bruno; and Fett, Kurt, 4,131,751, Cl. 560-29.000.
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  - Boersma, Richard F., 4,131,173, Cl. 180-90.000.
  - Rockwell, Harvey W., 4,131,056, Cl. 91-492.000.
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  - Amedei, Giuseppe; Rivetti, Enrico; and Bertone, Antonino, 4,130,990, Cl. 60-422.000.
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  - Moores, Peter R.; and Shoffner, James E., 4,131,708, Cl. 428-257.000.
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- Fischer, Robert L., to Caterpillar Tractor Co. Tree shear assembly with toggle linkage. 4,131,144, Cl. 144-34.00E.
- Fisher, Leslie G., to Guest, Keen & Nettlefolds, Limited. Splined joints. 4,131,375, Cl. 403-13.000.
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  - Gillett, Kenneth; Steiner, Edward L.; Fiske, Kenton W.; Davis, Kenneth A.; Kukucka, William P.; Criswell, Thomas; and Richardson, Philip, 4,131,942, Cl. 364-200.000.
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  - Apsit, Voldemar V.; Sika, Zigurd K.; and Kurkalov, Ivan I., 4,131,811, Cl. 310-12.000.
- Flanigan, David A., to Thiokol Corporation. Low smoke propellant. 4,131,499, Cl. 149-19.300.
- Flatt, Richard P., to RTE Corporation. Current interchange for a gas actuated bushing. 4,131,329, Cl. 339-111.000.
- Fleck, Henry: *See—*
  - Jamison, Will B.; and Fleck, Henry, 4,131,317, Cl. 299-31.000.
- Flegel, George J.; Mielbeck, Roger L.; and Pizarek, Patrick J., to Josam Manufacturing Co. Squat-type water closet. 4,130,907, Cl. 4-300.000.
- Fleming, Ron J.: *See—*
  - Husome, Robert G.; Fleming, Ron J.; and Swanson, Ron E., 4,131,540, Cl. 209-582.000.
- Fletcher, Steven J.; Wright, Jeffrey L.; and Davis, Richard S., to Sperry Rand Corporation. Word processor apparatus having means for recording a tab function as a signal indicative of the number of spaces tabbed. 4,131,949, Cl. 364-900.000.
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- Flores, Salomon S. Universal winding arbor. 4,131,242, Cl. 242-1.000.
- Flowers, Thomas A.; Marra, Anthony W.; and Vinch, Samuel D., to Allen Industries, Inc. Method of making a multiple-density fibrous acoustical panel. 4,131,664, Cl. 264-510.000.
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  - Joseph, George L., 4,131,491, Cl. 148-12.00B.
  - Lutz, Charles W.; and Cohen, Leon E., 4,131,562, Cl. 252-186.000.
- Fones, Theodore H.: *See—*
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- Fontenot, Carl E., to Bass Handler Products Co., Inc. Fishing rod and handle. 4,130,960, Cl. 43-18.00R.
- Forbes, Richard L., 2nd, to Xerox Corporation. Sequentially activated development system for an electrophotographic printer. 4,131,357, Cl. 355-3.0DD.
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  - Holka, Thomas C.; Chabot, James V.; and Haddad, Charles, 4,131,308, Cl. 296-1.00S.
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- Forss, Magnus R. Direction indicating device. 4,131,366, Cl. 356-140.000.
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  - Bowers, John W., 4,131,262, Cl. 249-202.000.
- Foseco Trading AG: *See—*
  - Ruddle, Ronald W.; and Neat, Frank, 4,131,152, Cl. 164-359.000.
- Fosroc Holdings (U.K.) Limited: *See—*
  - McCurrich, Lawrence H.; and Lammiman, Steven A., 4,131,480, Cl. 106-93.000.
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  - Koehlinger, Allen W.; and Fox, Norman J., 4,131,230, Cl. 229-40.000.

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  - Randall, Everett H., 4,131,441, Cl. 55-385.00R.
- Frame, Charles W.: *See—*
  - Hague, Wilmer W.; and Frame, Charles W., 4,131,164, Cl. 173-1.000.
- Franke, Kurt, to Siemens Aktiengesellschaft. X-ray diagnostic installation for fluoroscopy and photography. 4,131,797, Cl. 250-322.000.
- Frankel, Lawrence S., to Rohm and Haas Company. Use of chelated metal catalysts for acid/epoxy polymer systems. 4,131,715, Cl. 428-413.000.
- Franks, Peter. Swinging cup holder. 4,131,259, Cl. 248-311.10R.
- Frantz, Earl L., to Carpenter Technology Corporation. High-strength, high-expansion manganese alloy. 4,131,457, Cl. 75-134.00M.
- Frantz, Lanier, to Graham-White Sales Corporation. Pneumatic compactor for particulate desiccant. 4,131,442, Cl. 55-387.000.
- Franz, John E., to Monsanto Company. N-Organo-N-phosphonomethylglycine-N-oxides and phytotoxicant compositions containing same. 4,131,448, Cl. 71-86.000.
- Franz, Udo: *See—*
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- Freeburg, Thomas A.; Joglekar, Manohar A.; and Pajakowski, Lawrence R., to Motorola, Inc. Two-way mobile radio voice/data shared communications system. 4,131,849, Cl. 325-54.000.
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- Fresquez, George A. Tools for making impressions in hardenable materials. 4,131,406, Cl. 425-385.000.
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- Frisch, Paul P., to Dayco Corporation. Valve construction. 4,131,131, Cl. 137-559.000.
- Fromson, Howard A. Process for anodizing aluminum. 4,131,518, Cl. 204-38.00A.
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  - Miyazako, Takushi; Sakaguchi, Shinji; Hanai, Sosuke; and Karino, Yukio, 4,131,469, Cl. 96-77.000.
  - Tsuboi, Masayoshi; Suzuki, Yoshiaki; and Tabei, Masatoshi, 4,131,463, Cl. 96-1.00E.
- Fuji Xerox Co., Ltd.: *See—*
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- Fulbrook, William J., to Hedin Limited. Electric heater. 4,131,788, Cl. 219-535.000.
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  - Kramm, Douglass J.; Lawall, Thomas R.; and Talago, Paul, 4,131,418, Cl. 432-80.000.
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  - Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,131,655, Cl. 260-946.000.
- Furutu, Akira, to Japan Bano'K Co., Ltd. Hand labeller. 4,131,504, Cl. 156-384.000.
- Fushimi, Shingi; and Miyata, Takeshi, to Nissan Motor Company, Ltd. Steel article having a nitrided and partly oxidized surface and method for producing same. 4,131,492, Cl. 148-16.600.
- Fyot, Jean-Jacques, to Thomson-CSF. Power amplifier arrangement automatically matched to service conditions. 4,131,860, Cl. 330-279.000.
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  - Spengler, Heinz, 4,131,720, Cl. 428-619.000.
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- Gahler, Siegfried: *See—*
  - Fischer, Gunther; Wenzel, Beate; Scheithauer, Steffen; Franz, Udo; Junge, Karl-Wilhelm; Schroter, Christof; Gahler, Siegfried; and Morgenstern, Johannes, 4,131,470, Cl. 96-107.000.
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  - Chalmers, Alexander A.; Gailey, J. Lynn; and Wollam, Carl A., 4,130,974, Cl. 52-531.000.
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- Gamblin, Rodger L., to Mead Corporation, The. Interlacing recorder. 4,131,898, Cl. 346-75.000.
- Gandini, Mario, to DURST AG Fabrik Fototechnischer Apparate. Light-mixing compartment for a light projector. 4,131,362, Cl. 355-71.000.
- Gandy, Eleanor J.; and Lockhart, Ann H. Arm wrestling device. 4,131,275, Cl. 273-1.00R.
- Garconnet, Michel J. Tightening force limiting device. 4,131,039, Cl. 81-52.40R.
- Gardner, Ian P.: *See—*
  - Whitaker, Thomas E.; Myles, Samuel; and Gardner, Ian P., 4,131,638, Cl. 264-333.000.
- Garlock Inc.: *See—*
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- Garrett Corporation, The: *See—*
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- Gaunt, Charles J. TV Antenna. 4,131,897, Cl. 343-908.000.
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  - Dubost, Rene; Gauthier, Francis; and Mignien, Georges, 4,131,404, Cl. 425-129.00R.
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  - Lakernik, Mark M.; Shabalina, Roza I.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Golovachev, Anatoly I.; and Egorova, Tatyana S., 4,131,451, Cl. 75-14.000.
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  - Kite, George F.; Gellatly, Grant; and Uhl, Richard G., 4,131,117, Cl. 131-140.00C.
- Gemp, Robert S., to Westinghouse Electric Corp. Symmetrical phase shifting apparatus, digital delaying device used therein and harmonic neutralized inverter system using the apparatus. 4,131,936, Cl. 363-43.000.
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  - Cipolla, Thomas M., 4,131,192, Cl. 198-469.000.
  - Donahoo, Joe T., 4,131,814, Cl. 310-172.000.
  - Dunn, Bruce S., 4,131,694, Cl. 427-126.000.
  - Graves, James A., 4,131,819, Cl. 313-331.000.
  - Haag, Donald L.; and Woods, Lee O., 4,131,871, Cl. 338-220.000.
  - Harris, Lawson P., 4,131,826, Cl. 315-234.000.
  - Kazin, Stephen B.; and Matta, Ram K., 4,131,387, Cl. 415-119.000.
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  - Svec, Paul S., 4,131,475, Cl. 106-38.300.
  - Walker, Wendell C., 4,130,954, Cl. 38-77.830.
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  - DeVinney, Robert E., 4,131,101, Cl. 123-195.00C.
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  - Rohland, Gerhard, 4,131,377, Cl. 403-14.000.
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- Gianelo, Angelo. Door latch. 4,131,002, Cl. 70-84.000.
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  - Rose, Charles D.; and Gilbert, Frederick W., 4,131,538, Cl. 208-352.000.
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  - Bayliss, John P., 4,131,325, Cl. 303-93.000.
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- Glassmeyer, John J., to Pullman Incorporated. Cargo transportation device. 4,131,071, Cl. 108-53.100.
- Gleason, John G., to SmithKline Corporation. 7β-Acyloxy-3-heterocyclicthiomethyl cephalosporins. 4,131,734, Cl. 544-26.000.
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- Godai, Tomokazu: *See—*
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- Godbout, Emil E. Device for melting ice at a fish hole in the ice. 4,131,107, Cl. 126-271.20R.
- Golden, Donald M. G. R., deceased: *See—*
  - Lloyd, Robert G.; Street, Anthony C.; and Golden, Donald M. G. R., deceased, 4,131,251, Cl. 244-137.00R.
- Golden, Jean J., executrix: *See—*
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- Goldenberg, Joseph, to Pap-et, Inc. Game racket with semi-resilient impact surfaces and an offset handle. 4,131,278, Cl. 273-67.00R.
- Golovachev, Anatoly I.: *See—*
  - Lakernik, Mark M.; Shabalina, Roza I.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Golovachev, Anatoly I.; and Egorova, Tatyana S., 4,131,451, Cl. 75-14.000.
- Gonzalez, Francisco. Catalytic composition for internal combustion engines, furnaces and boilers. 4,131,434, Cl. 44-62.000.
- Goodbary, Edgar R.; and Bartley, Francis A., to Goodbary Engineering Company. Dual steering system for vehicles. 4,131,177, Cl. 180-133.000.
- Goodbary Engineering Company: *See—*
  - Goodbary, Edgar R.; and Bartley, Francis A., 4,131,177, Cl. 180-133.000.
- Goodyear Tire & Rubber Company, The: *See—*
  - Lovell, John A.; Hillegass, Donald V.; and Harris, Philip G., 4,131,667, Cl. 264-571.000.
  - von der Heyde, Richard C.; and Head, William J., 4,130,928, Cl. 29-450.000.
  - Wideman, Lawson G., 4,131,627, Cl. 260-666.00A.
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- Gordon, Manfred; and Ready, Bernard W. Centrifugal homogenizer. 4,131,369, Cl. 366-146.000.
- Gordon, Michael D.: *See—*
  - Davis, William R.; and Gordon, Michael D., 4,131,624, Cl. 260-606.50P.
- Gordy, Donald G.; and Klosterman, David P., to Orscheln Lever Sales Co. Self-retaining conduit anchoring device. 4,131,379, Cl. 403-197.000.
- Gosser, Lawrence W., to Du Pont de Nemours, E. I., and Company. Preparation of hydrogen peroxide from dihydroanthracene hydroperoxides. 4,131,646, Cl. 423-591.000.
- Gotchel, Joel P.; and Norton, Henry J., to Scott Paper Company. Carding operation for forming a fibrous structure. 4,130,915, Cl. 19-304.000.
- Goto, Kenji: *See—*
  - Sawada, Daisaku; Goto, Kenji; Shigemaut, Takashi; Takeda, Yuji; Hattori, Tadashi; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,131,097, Cl. 123-117.00R.
- Gotto, Raymond J. Method to prevent unauthorized use of cassette tape recorders and a device according to the method. 4,131,001, Cl. 70-14.000.
- Gotzenberger, Rudibert, to Ernst Flitsch GmbH U. Co. Control valve. 4,131,128, Cl. 137-556.000.
- Gozzo, Franco; Masoero, Marcella; Signorini, Ernesto; and Fabbrini, Riccardo, to Montedison S.p.A. Adducts of carbamoyl sulphoxides. 4,131,621, Cl. 260-551.00C.
- Grabmaier, Josef: *See—*
  - Aulich, Hubert; and Grabmaier, Josef, 4,131,447, Cl. 65-325.000.
- Graf, Ronald E. Sunlight admitting heat impeding panel. 4,131,706, Cl. 428-116.000.
- Graham, Robert H., to R. A. Pearson Company. End tab folding mechanism for cartons. 4,131,058, Cl. 93-49.00R.
- Graham-White Sales Corporation: *See—*
  - Frantz, Lanier, 4,131,442, Cl. 55-387.000.
- Granda, Edward J.: *See—*
  - Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,131,687, Cl. 426-3.000.
- Granger Associates: *See—*
  - Narasimha, Madihally J., 4,131,766, Cl. 179-15.0FD.
- Grapes, Eugene F.: *See—*
  - Patterson, William W., III; and Grapes, Eugene F., 4,131,264, Cl. 254-67.000.
- Graves, James A., to General Electric Company. Lead wires for incandescent lamp. 4,131,819, Cl. 313-331.000.
- Gray, Kenneth W., to National Research Development Corporation. Miniature doppler radar systems and microwave receivers suitable therefor. 4,131,889, Cl. 343-8.000.
- Greber, Gerd: *See—*
  - Kvita, Vratislav; Darms, Roland; and Greber, Gerd, 4,131,613, Cl. 260-343.30R.
- Gredeinskas, Charles V.: *See—*
  - Floyd, Middleton B., Jr.; Weiss, Martin J.; Gredeinskas, Charles V.; and Chen, Sow-mei C., 4,131,737, Cl. 560-121.000.
- Green, Harry S. Seawater distillation apparatus. 4,131,513, Cl. 202-185.00B.
- Greene, Shelly M. Mirror cleaning device. 4,130,909, Cl. 15-104.920.
- Gregg, Harry D., Jr.: *See—*
  - Miller, Ralph; and Gregg, Harry D., Jr., 4,131,642, Cl. 423-193.000.
- Gretag Aktiengesellschaft: *See—*
  - Ehrat, Kurt, 4,131,879, Cl. 340-146.30H.
- Grieshaber, Hermann: *See—*
  - Wessel, Wolf; and Grieshaber, Hermann, 4,131,099, Cl. 123-119.00F.
- Griesing, John E.: *See—*
  - Agrawal, Purushottam D.; and Griesing, John E., 4,131,666, Cl. 264-521.000.
- Griesshammer, Rudolf: *See—*
  - Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, 4,131,659, Cl. 264-25.000.
- Grosclaude, Gerard; Regnier, Jean; and Cavarroc, Marcel, to Institut National de la Recherche Agronomique. Continuous manufacture of cheese. 4,131,688, Cl. 426-40.000.
- Gruczelak, Norman P., to Okidata Corporation. Head positioning system for disc files. 4,131,921, Cl. 360-86.000.
- Grzywa, Edward: *See—*
  - Kiedik, Maciej; Grzywa, Edward; Kolt, Jozef; Terelak, Kazimierz; Czyz, Jerzy; and Niezgoda, Anna, 4,131,749, Cl. 568-781.000.
- GTE Sylvania Incorporated: *See—*
  - Ball, George A., Jr.; and Simpson, George H., 4,131,657, Cl. 261-39.00E.
  - Dombrowski, Joseph A.; Baxter, Clement T.; Howard, Frederick B.; and Simpson, George H., 4,131,868, Cl. 337-113.000.
- Gueguen, Jacques: *See—*
  - Petit, Leon; Davin, Andre; and Gueguen, Jacques, 4,131,607, Cl. 260-123.500.
- Guest, Keen & Nettlefolds, Limited: *See—*
  - Fisher, Leslie G., 4,131,375, Cl. 403-13.000.
- Gugel, Georg: *See—*
  - Muller, Otto; Gugel, Georg; and Kastl, Hans, 4,131,018, Cl. 73-432.00R.
- Guglielmo, Richard J., Sr. Composition of matter for treating a closed cell foam substrate. 4,131,700, Cl. 427-322.000.
- Gulf Oil Canada Limited: *See—*
  - Porteous, Kenneth, 4,131,535, Cl. 208-11.0LE.
- Gulf & Western Industries, Inc.: *See—*
  - Battle, Francis L., 4,131,848, Cl. 324-236.000.
- Gunderson, Richard H.; and Ilfrey, William T., to Exxon Production Research Company. Annular seal. 4,131,287, Cl. 277-191.000.
- Gurevich, Samuil M.; Zamkov, Vadim N.; and Prilutsky, Valery P. Flux-cored welding wire. 4,131,493, Cl. 148-23.000.
- Gurney, Ferdinand J.: *See—*
  - De Pierre, Vincent; and Gurney, Ferdinand J., 4,131,461, Cl. 75-208.0CS.
- Gusmer Corporation: *See—*
  - Gusmer, Frederick E.; Commette, Denis S.; and Bairunas, Robert A., 4,131,395, Cl. 417-271.000.
- Gusmer, Frederick E.; Commette, Denis S.; and Bairunas, Robert A., to Gusmer Corporation. Feeder for apparatus for ejecting a mixture of a plurality of liquids. 4,131,395, Cl. 417-271.000.
- Gustavsson, Lennart, to AB Svenska Flaktfabriken. Apparatus for forming and controlling currents of air. 4,131,059, Cl. 98-36.000.
- Gustavsson, Stig O. S., to Ingestrom, Curt Holger. Building block. 4,130,973, Cl. 52-309.170.
- Gutridge, Jack E. Gun sight. 4,130,958, Cl. 42-1.00S.
- Gyi, Ko K.: *See—*
  - Behr, Michael I.; Gyi, Ko K.; Iwan, Wilfred D.; and Palotay, Joseph C., 4,131,924, Cl. 360-106.000.
- H. Bieri AG Liebefeld: *See—*
  - Chromik, Karel, 4,131,126, Cl. 137-270.000.
- H. R. Turner (Willenhall) Limited: *See—*
  - Pallant, Joseph; and Johndrow, John P., 4,131,316, Cl. 297-341.000.
- Haag, Donald L.; and Woods, Lee O., to General Electric Company. Electrical device and method. 4,131,871, Cl. 338-220.000.
- Haar, Darrell: *See—*
  - Sehulster, Joseph P.; Halbach, Stephen N.; Haar, Darrell; and Crawford, Theron L., 4,131,408, Cl. 425-410.000.
- Haas, Lothar: *See—*
  - Weckenmann, Albert; Brauticam, Rolf; and Haas, Lothar, 4,131,772, Cl. 200-61.540.
- Haddad, Charles: *See—*
  - Holka, Thomas C.; Chabot, James V.; and Haddad, Charles, 4,131,308, Cl. 296-1.00S.
- Hagiwara, Teruo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Selective mode angle finder for SLR camera. 4,131,354, Cl. 354-224.000.
- Hague, Wilmer W.; and Frame, Charles W., to Chambersburg Engineering Company. Adaptive valve control system for an impact device. 4,131,164, Cl. 173-1.000.

- Haidlen, Friedrich, to Kraftwerk Union Aktiengesellschaft. Pressure relief device for a nuclear reactor containment building. 4,131,509, Cl. 176-38.000.
- Haines, Paul G.: *See—*
  - Popoff, Ivan C.; and Haines, Paul G., 4,131,622, Cl. 260-576.000.
- Halbach, Stephen N.: *See—*
  - Sehulster, Joseph P.; Halbach, Stephen N.; Haar, Darrell; and Crawford, Theron L., 4,131,408, Cl. 425-410.000.
- Hall, J. James A. Torque lug drive. 4,131,321, Cl. 301-6.00A.
- Hall, John B.; and Weigers, Wilhelmus J., to International Flavors & Fragrances Inc. Detergent composition. 4,131,555, Cl. 252-89.00R.
- Hall, John B.; and Wiegers, Wilhelmus J., to International Flavors & Fragrances Inc. Soap composition. 4,131,557, Cl. 252-132.000.
- Hall, Warren L.: *See—*
  - Mager, George E.; Nelson, Frank M.; and Hall, Warren L., 4,131,944, Cl. 364-200.000.
- Hamagawa, Hiroshi, to Toyo Jihoki Manufacturing Co., Ltd. Digital time signalling device. 4,131,855, Cl. 328-129.000.
- Hammer, George P.: *See—*
  - Blackburn, Samuel S., Jr.; and Hammer, George P., 4,131,073, Cl. 110-106.000.
- Hamprecht, Gerhard, to BASF Aktiengesellschaft. Sulfamic acid halides and their manufacture. 4,131,620, Cl. 260-543.00R.
- Hampton, Marshall D. Theft-proof sign. 4,130,957, Cl. 40-607.000.
- Hanai, Sosuke: *See—*
  - Miyazako, Takushi; Sakaguchi, Shinji; Hanai, Sosuke; and Karino, Yukio, 4,131,469, Cl. 96-77.000.
- Hanari, Izumi: *See—*
  - Yoshida, Yoshinori; Kobayashi, Tutomu; Shinohara, Hironobu; and Hanari, Izumi, 4,131,743, Cl. 560-244.000.
- Handke, Paul C.: *See—*
  - Ryan, Frederick M.; and Handke, Paul C., 4,131,064, Cl. 102-1.00R.
- Hanes Corporation: *See—*
  - Whittaker, Roger L.; and Hewitt, Clyde, 4,130,999, Cl. 66-145.00R.
- Hanes, Maurice H.; and Lowry, Lewis R., to Electric Power Research Institute, Inc. Light-triggered thyristor and package therefore. 4,131,905, Cl. 357-30.000.
- Hansel, William B., to Sun Oil Company of Pennsylvania. Dispenser with additive option. 4,131,215, Cl. 222-26.000.
- Hansen, Kent W.: *See—*
  - Davis, Earl K.; and Hansen, Kent W., 4,131,478, Cl. 106-53.000.
- Hansen, Lyle K. Console gun rack. 4,131,202, Cl. 211-2.000.
- Hanson, Leon C.: *See—*
  - Hanson, Robert C.; and Hanson, Leon C., 4,131,084, Cl. 122-33.000.
- Hanson, Robert C.; and Hanson, Leon C., to Energy Systems, Incorporated. Upright direct fired water bath propane vaporizer. 4,131,084, Cl. 122-33.000.
- Hara, Kunio; and Yoshida, Kohsaku, to Nichi-Ei Bussan Co., Ltd. Apparatus for continuously fixing a plurality of tubular fasteners one by one to a plurality of apertures provided in a support panel. 4,131,009, Cl. 72-391.000.
- Hara, Toshitsugu; Abe, Yoritsune; Ootuka, Katsuji; Kashiwabara, Yasushige; Oshiyama, Hiroichi; Yanadori, Michio; Kato, Eisaku; and Okazaki, Kichizaemon, to Hitachi, Ltd. Refrigerator. 4,130,997, Cl. 62-504.000.
- Harada, Tamotsu: *See—*
  - Oishi, Akiyoshi; Harada, Tamotsu; and Ishikawa, Takashi, 4,131,490, Cl. 148-9.500.
- Harbaugh, Steven K.; and Mitchell, Frank R., to Eocom Corporation. Gimballed coupling for lead screw and nut assembly. 4,131,029, Cl. 74-89.150.
- Hardman, Harley F., to Standard Oil Company. Dehydrogenation of paraffins. 4,131,631, Cl. 260-683.300.
- Hardy, Herbert L., to Polaroid Corporation. Motor control system for automatic processing of photographic film strips. 4,131,344, Cl. 352-130.000.
- Harnach, James W.: *See—*
  - Thompson, Jerry L.; Deluga, Sigmund S.; Harnach, James W.; and Shamah, Eliahu, 4,131,551, Cl. 252-33.000.
- Harris Corporation: *See—*
  - Schriber, Louis; and Blaha, John F., 4,131,047, Cl. 83-698.000.
- Harris, Lawson P., to General Electric Company. Triggering circuit for triggered vacuum gaps. 4,131,826, Cl. 315-234.000.
- Harris, Philip G.: *See—*
  - Lovell, John A.; Hillegass, Donald V.; and Harris, Philip G., 4,131,667, Cl. 264-571.000.
- Harrison, Boyd L.; and Dolfini, Joseph E., to Richardson-Merrell Inc. ω-(1,3-Dithiolan-2-imino) substituted acetic acids. 4,131,683, Cl. 424-277.000.
- Hart, John S., to Allen-Bradley Company. Three pole electromagnet. 4,131,865, Cl. 335-257.000.
- Hartman, Adrian R.; North, James C.; Reutlinger, George W.; and Shackle, Peter W., to Bell Telephone Laboratories, Incorporated. High voltage semiconductor devices. 4,131,910, Cl. 357-49.000.
- Hartman & Braun Aktiengesellschaft: *See—*
  - Erb, Hans Joachim; Brandt, Jurgen; and Kirschbaum, Peter, 4,131,900, Cl. 346-162.000.
- Hartnig, Richard E., to Paper Converting Machine Company. Method and apparatus for separating a continuous stream of connected business forms into exact count zig-zag folded stacks. 4,131,272, Cl. 270-73.000.
- Harvey Hubbell, Incorporated: *See—*
  - Quiogue, Honesto D., 4,131,867, Cl. 336-65.000.
- Haseba, Shigeru: *See—*
  - Utsunomiya, Kei; Soga, Kazuya; Shimasaki, Katsunori; Mito, Yutaka; Oaki, Mamoru; Haseba, Shigeru; Miki, Hiroetu; and Masaki, Michiko, 4,131,643, Cl. 423-239.000.
- Hasebe, Morihiko: *See—*
  - Nishikawa, Shigeyoshi; Muroshima, Takashi; Sakaguchi, Hirokazu; Hasebe, Morihiko; Katagiri, Katsuji; and Inoue, Kazuo, 4,131,931, Cl. 361-315.000.
- Hashimoto, Mitsuo; and Koguchi, Mitsuo, to Bridgestone Tire Company Limited; and Mitsui Miike Seisakusho Engineering Company Limited. Light beam projecting apparatus. 4,131,347, Cl. 353-28.000.
- Hashimoto, Satoshi; Okumura, Nobuya; and Kazama, Kiyoshi, to Teijin Limited. Process for the preparation of polyesters. 4,131,601, Cl. 528-279.000.
- Hashimoto, Yoshizo: *See—*
  - Kimura, Shinji; Godai, Tomokazu; Minato, Shoji; Kobayashi, Minoru; Yamaga, Makoto; Maki, Shingo; Hashimoto, Yoshizo; Suga, Tetsuo; and Saita, Hiroshi, 4,131,784, Cl. 219-137.0WM.
- Hastings Equity Grain Bin Mfg. Co.: *See—*
  - Einsel, Kenneth D.; and Johnson, Roland W., 4,130,998, Cl. 64-3.000.
- Hatchett, Michael R.; and Rigbey, Leonard J., to International Business Machines Corporation. Record disk cartridge. 4,131,199, Cl. 206-444.000.
- Hattori, Tadashi: *See—*
  - Sawada, Daisaku; Goto, Kenji; Shigemaut, Takashi; Takeda, Yuji; Hattori, Tadashi; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,131,097, Cl. 123-117.00R.
- Hauck, Frederic P.: *See—*
  - Sundeen, Joseph E.; and Hauck, Frederic P., 4,131,744, Cl. 560-252.000.
- Hauni-Werke Korber & Co. KG.: *See—*
  - Bottcher, Hubert; Pfannmuller, Joachim; Kaebernick, Hartmut; Steiniger, Wolfgang; and Preuss, Horst-Dieter, 4,131,501, Cl. 156-157.000.
- Havlik, Vaclav. Game apparatus. 4,131,283, Cl. 273-282.000.
- Hayes, John C.: *See—*
  - Antos, George J.; Hayes, John C.; and Pollitzer, Ernest L., 4,131,628, Cl. 260-666.00A.
- Head, William J.: *See—*
  - von der Heyde, Richard C.; and Head, William J., 4,130,928, Cl. 29-450.000.
- Hedin Limited: *See—*
  - Fulbrook, William J., 4,131,788, Cl. 219-535.000.
- Hedrick, John R., to Pevrick Engineering Company, Inc. Rotary bone cutter for shaping sockets. 4,131,116, Cl. 128-305.000.
- Heinze, Richard: *See—*
  - Busse, Peter, 4,131,376, Cl. 403-12.000.
- Heller, Jorge: *See—*
  - Choi, Nam S.; and Heller, Jorge, 4,131,648, Cl. 424-22.000.
- Heller, Milton D.: *See—*
  - Bernstein, Seymour; and Heller, Milton D., 4,131,684, Cl. 424-315.000.
- Hempelmann, Heinrich J.: *See—*
  - Beisch, Hans R.; and Hempelmann, Heinrich J., 4,131,322, Cl. 301-37.0PB.
- Hengelhaupt, Hans, to Triumph Werke Nurnberg A.G. Endless fabric ribbon cassette for typewriters or like machines. 4,131,372, Cl. 400-196.100.
- Henke, Lowell D. Vehicle wind deflector. 4,131,309, Cl. 296-1.00S.
- Henkel, Hans-Joachim: *See—*
  - Michel, Alfred; Henkel, Hans-Joachim; Koch, Christian; and Kostka, Hana, 4,131,569, Cl. 252-462.000.
- Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity: *See—*
  - Porteous, Kenneth, 4,131,535, Cl. 208-11.0LE.
- Herman, Richard M.; and Batiuk, Martin, to B. F. Goodrich Company, The. Thermoplastic polymer blends comprising EPDM, E/EA copolymer and optionally P.E. 4,131,654, Cl. 260-897.00B.
- Herrig, Willi. Set of structural elements for producing cupboard walls and other wall units. 4,130,971, Cl. 52-236.700.
- Herschtal, Ludwik, to L M Ericsson Pty. Ltd. Bit switching of word synchronized data. 4,131,763, Cl. 179-15.0BS.
- Hess, Robert L.: *See—*
  - Meyer, Jeffry R.; and Hess, Robert L., 4,131,775, Cl. 200-148.00R.
- Hewitt, Clyde: *See—*
  - Whittaker, Roger L.; and Hewitt, Clyde, 4,130,999, Cl. 66-145.00R.
- Highberger, Clarence. Quick connect hitch assembly. 4,131,295, Cl. 280-475.000.
- Hijikata, Akiko: *See—*
  - Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,131,673, Cl. 424-247.000.
- Hijikata, Masayuki: *See—*
  - Satoh, Mitsunori; Hijikata, Masayuki; Maeda, Hiroshi; and Morimoto, Ichiro, 4,131,458, Cl. 75-173.00R.
- Hild, Werner: *See—*
  - Bahr, Werner; Drobnik, Stefan; Hild, Werner; Kroebel, Reinhard; Meyer, Alfred; and Naumann, Gunter, 4,131,563, Cl. 252-301.10W.
- Hilgendorf, Joachim; and Funke, Karl-Heinz, to Preh, Elektro-Feinmechanische Werke, Jakob Preh Nachf. Slide resistor. 4,131,870, Cl. 338-183.000.
- Hill, David T.; Sutton, Blaine M.; and Lantos, Ivan, to SmithKline

- Corporation. Method for preparing auranofin. 4,131,732, Cl. 536-121.000.
- Hill, Maynard L.; and Whyte, Theodore R., to Johns Hopkins University, The. Ionic air speed indicator. 4,131,013, Cl. 73-181.000.
- Hillegass, Donald V.: *See—*
  - Lovell, John A.; Hillegass, Donald V.; and Harris, Philip G., 4,131,667, Cl. 264-571.000.
- Hind, Robert D.; Thrower, Anthony; and Cudby, Joseph W., to United States Steel Corporation. Pouring of molten metals. 4,131,219, Cl. 222-603.000.
- Hirabayashi, Yutaka: *See—*
  - Nomura, Masahiro; and Hirabayashi, Yutaka, 4,131,466, Cl. 96-49.000.
- Hirai, Jun, to Sony Corporation. Apparatus for recording and reproducing video signals on a magnetic tape movable at different speeds. 4,131,912, Cl. 358-4.000.
- Hirai, Toshihiro: *See—*
  - Tsujimoto, Minoru; Okada, Minoru; Suzuki, Yuji; and Hirai, Toshihiro, 4,131,528, Cl. 204-157.10R.
- Hiraki, Hideaki: *See—*
  - Ichinose, Noboru; Ookuma, Hideo; Mizutani, Toshiaki; and Hiraki, Hideaki, 4,131,479, Cl. 106-39.500.
- Hirano, Takayasu; Hisagen, Yoshiaki; Takamizawa, Minoru; and Yoshioka, Hiroshi, to Sony Corporation. Magnetic recording medium. 4,131,717, Cl. 428-447.000.
- Hirata, Masakuni; and Matsuzaki, Yukio, to Nippon Oil Company Limited. Method for atomizing oil and an apparatus therefor. 4,131,658, Cl. 261-142.000.
- Hirshfeld, Julian J.: *See—*
  - Cocoros, George; Chambers, Thomas V.; and Hirshfeld, Julian J., 4,131,424, Cl. 8-172.00R.
- Hisagen, Yoshiaki: *See—*
  - Hirano, Takayasu; Hisagen, Yoshiaki; Takamizawa, Minoru; and Yoshioka, Hiroshi, 4,131,717, Cl. 428-447.000.
- Hishinuma, Yukio: *See—*
  - Sato, Isao; Uchiyama, Yoshihiro; Ishibashi, Youji; Tsukahara, Satoshi; Oshima, Ryoichiro; and Hishinuma, Yukio, 4,131,432, Cl. 422-177.000.
- Hitachi Heating Appliances Co., Ltd.: *See—*
  - Tatsukawa, Osami; Sakurai, Osamu; and Serizawa, Hisayuki, 4,131,779, Cl. 219-10.55R.
- Hitachi, Ltd.: *See—*
  - Amano, Matsuo; Kobori, Sigeyuki; and Sugawara, Toru, 4,131,930, Cl. 361-211.000.
  - Hara, Toshitsugu; Abe, Yoritsune; Ootuka, Katsuji; Kashiwabara, Yasushige; Oshiyama, Hiroichi; Yanadori, Michio; Kato, Eisaku; and Okazaki, Kichizaemon, 4,130,997, Cl. 62-504.000.
  - Oyama, Tadao, 4,130,919, Cl. 29-25.190.
  - Sato, Isao; Uchiyama, Yoshihiro; Ishibashi, Youji; Tsukahara, Satoshi; Oshima, Ryoichiro; and Hishinuma, Yukio, 4,131,432, Cl. 422-177.000.
  - Terashima, Isamu, 4,131,081, Cl. 118-646.000.
  - Yoshida, Masashi; Iino, Yasuo; and Sato, Katsuya, 4,131,922, Cl. 360-90.000.
- Hodakowski, Leonard E.; and Carder, Charles H., to Union Carbide Corporation. Radiation curable acrylated polyurethane. 4,131,602, Cl. 528-49.000.
- Hodgkinson, Joseph B., to Pilkington Brothers Limited. Snapping of sheets of glass. 4,131,222, Cl. 225-3.000.
- Hoechst Aktiengesellschaft: *See—*
  - Hunger, Klaus, 4,131,733, Cl. 542-406.000.
  - Moraw, Roland; and Schadlich, Gunther, 4,131,337, Cl. 350-3.860.
  - Mummenthey, Hans-Dieter; and Fischer, Hannes, 4,131,579, Cl. 260-22.0EP.
  - Schunck, Erich; Schmelzer, Heinz; and Sattelmeyer, Richard, 4,131,709, Cl. 428-261.000.
- Hoechst, Lonnie D.: *See—*
  - Bauer, James J.; Albright, Larry E.; Werner, James L.; Sagaser, Thomas M.; and Hoechst, Lonnie D., 4,131,225, Cl. 228-161.000.
- Hoffman-La Roche Inc.: *See—*
  - Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,131,655, Cl. 260-946.000.
- Hoffmann, Peter: *See—*
  - Radlmann, Eduard; Reinehr, Ulrich; Hoffmann, Peter; Arlt, Dieter; and Nischk, Gunther, 4,131,724, Cl. 526-16.000.
- Hofmann, Corris M.: *See—*
  - Fanshawe, William J.; Epstein, Joseph W.; Crawley, Lantz S.; Hofmann, Corris M.; and Safir, Sidney R., 4,131,611, Cl. 260-326.800.
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- Hogan, William F., to Spectrum X-Ray Corporation. X-ray cradle top with tilting mechanism. 4,131,801, Cl. 250-439.00R.
- Hogendobler, Richard S.; and Murray, Robert M., to AMP Incorporated. RF shielded blank for coaxial connector. 4,131,332, Cl. 339-177.00R.
- Hohne, Karl, to Siemens Aktiengesellschaft. Method for the manufacture of a silver catalyst for electrochemical cells and the catalyst prepared by the method. 4,131,570, Cl. 252-473.000.
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  - Perrone, George L.; Boorman, Robert W.; Holbrook, Michael R.; and Zanelli, Eugene A., 4,131,389, Cl. 415-211.000.
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  - Lachowicz, Donald R.; and Holder, Charles B., 4,131,577, Cl. 260-17.4CL.
- Holka, Thomas C.; Chabot, James V.; and Haddad, Charles, to Ford Motor Company. Self-deploying chin spoiler for a vehicle. 4,131,308, Cl. 296-1.00S.
- Hollabaugh, Michael D.; and Panday, Vinod, to Clemar Manufacturing Corporation. Digital two-wire irrigation control system with feedback. 4,131,882, Cl. 340-310.00A.
- Holland-Moritz, Ervin K., to United States of America, Air Force. Single dispersive delay line compressive receiver. 4,131,852, Cl. 325-363.000.
- Holmes, Peter C., to Solon Manufacturing Company, The. Visual load indicator. 4,131,050, Cl. 85-62.000.
- Holter, Heinz. Device for the dedusting of dust-containing gases. 4,131,439, Cl. 55-220.000.
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  - Sato, Yasuhito; Tanaka, Minoru; and Nakamura, Akihisa, 4,131,092, Cl. 123-32.0ST.
- Honda, Ko, to Rank Xerox Limited. Sensitive medium cleaner for use in electrophotographic copying machine. 4,131,359, Cl. 355-15.000.
- Honeywell Inc.: *See—*
  - Lee, Tzuo-Chang; and Lin, Jacob W., 4,131,462, Cl. 96-1.50R.
- Honeywell Information Systems Inc.: *See—*
  - Rich, Dennis E.; and Steigerwald, Conrad J., 4,131,042, Cl. 83-100.000.
- Hopper, Meinolf: *See—*
  - Piret, Norbert L.; Hopper, Meinolf; and Kudelka, Herbert, 4,131,454, Cl. 75-83.000.
- Hopper, Thomas P., to Sunworks, Inc. Solar energy collector. 4,131,111, Cl. 126-271.000.
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  - Firth, Ronald R.; and Horak, Jerry R., 4,131,925, Cl. 360-130.000.
- Hordeski, Edward R.; Canevari, Louis T.; and Macari, Leonard J., to Pitney-Bowes, Inc. Assembly fixtures for mass producible weight measuring system. 4,131,168, Cl. 177-128.000.
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  - Fujishiro, Takeshi; Aono, Shigeo; Hosaka, Akio; Asano, Masaharu; Manaka, Nobuzi; and Ezoe, Mituhiko, 4,131,089, Cl. 123-32.0EE.
- Hoshiyama, Masao: *See—*
  - Ikezaki, Muneyoshi; Okazaki, Yashushi; Ito, Nobuo; Hoshiyama, Masao; Nagao, Taku; and Nakajima, Hiromichi, 4,131,686, Cl. 424-330.000.
- Hougen, Everett D. Arbor for annular hole cutter. 4,131,384, Cl. 408-68.000.
- Houshi, Teruo, to Sanyo Electric Co., Ltd.; and Toyko Sanyo Electric Co., Ltd. Apparatus for rotatively driving a turn table. 4,131,828, Cl. 318-138.000.
- Howard, Frederick B.: *See—*
  - Dombrowski, Joseph A.; Baxter, Clement T.; Howard, Frederick B.; and Simpson, George H., 4,131,868, Cl. 337-113.000.
- Howard Machinery Limited: *See—*
  - Clary, Roger, 4,130,982, Cl. 56-330.000.
- Howe, Ralph E.: *See—*
  - Morley, John R.; and Howe, Ralph E., 4,131,691, Cl. 427-41.000.
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- Hucker, David J.; and Schmitz, Norbert L., to Sundstrand Corporation. Static voltage balancer. 4,131,844, Cl. 323-45.000.
- Hudson, Barry, to BP Chemicals Limited. Cobalt-catalyzed oxidation of hydrocarbons. 4,131,742, Cl. 560-241.000.
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- Huffman, George W., to Eli Lilly and Company. Method for treating methicillin resistant *Staphylococcus aureus*. 4,131,672, Cl. 424-246.000.
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  - Asick, John C.; and Huffnagle, Clifton W., 4,130,934, Cl. 29-628.000.
- Hughes Company, Inc.: *See—*
  - Kumandan, Ramakrishnarao K., 4,131,062, Cl. 99-638.000.
- Hughes, Leroy A. Utensil for making pizzas. 4,131,080, Cl. 118-13.000.
- Hughes, William B., to Phillips Petroleum Company. Isomerization process. 4,131,630, Cl. 260-666.0PY.
- Hugli, Hans W.; and Kubler, John M., to Sundstrand Data Control, Inc. Accelerometer. 4,131,020, Cl. 73-517.00B.
- Hultsch, Gunther; and Bock, Harald, to Krauss-Maffei Aktiengesellschaft. Centrifugal fluidized-bed drying method and apparatus. 4,130,944, Cl. 34-8.000.
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- Humphrey, William E., to Optical Research and Development Corporation. Optical stabilizer having space referenced motion. 4,131,333, Cl. 350-16.000.
- Humphris, Colin J.: *See—*
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- Hurkmans, Gerardus C. A. M.: *See—*
  - van den Berg, Henrikus J.; and Hurkmans, Gerardus C. A. M., 4,130,903, Cl. 2-8.000.
- Husome, Robert G.; Fleming, Ron J.; and Swanson, Ron E., to Johnson Farm Machinery Co. Inc.; and Acurex Corporation. Color sorting system. 4,131,540, Cl. 209-582.000.
- Huwe, Donald D. Adaptor for manual lawn and garden sprinkler valves. 4,131,133, Cl. 137-624.110.

- Hydraform Products Corp.: *See—*
  - Choate, James R., 4,131,104, Cl. 126-60.000.
- Hydroacoustics, Inc.: *See—*
  - Bouyoucos, John V., 4,131,178, Cl. 181-120.000.
- Hymo, Lawrence A. Expansion joints. 4,131,382, Cl. 404-69.000.
- Ichinose, Noboru; Ookuma, Hideo; Mizutani, Toshiaki; and Hiraki, Hideaki, to Tokyo Shibaura Electric Co., Ltd. Transparent ceramics. 4,131,479, Cl. 106-39.500.
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  - Iddon, Michael I., 4,131,368, Cl. 366-81.000.
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  - Olsson, Knut A. G.; Astrom, Karl P. E.; and Johansson, Johan C., 4,131,546, Cl. 210-77.000.
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- Iijima, Masayuki: *See—*
  - Saito, Yuichi; Iijima, Masayuki; and Mayama, Osamu, 4,131,450, Cl. 75-0.5BA.
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  - Yoshida, Masashi; Iino, Yasuo; and Sato, Katsuya, 4,131,922, Cl. 360-90.000.
- Ikeda, Michio: *See—*
  - Ono, Takatoshi; and Ikeda, Michio, 4,131,267, Cl. 269-21.000.
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- Ilfrey, William T.: *See—*
  - Gunderson, Richard H.; and Ilfrey, William T., 4,131,287, Cl. 277-191.000.
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  - Attwood, Terence E., 4,131,711, Cl. 428-332.000.
  - Rennison, Stuart C.; Pope, John A.; and Andrews, Timothy D., 4,131,468, Cl. 96-75.000.
  - Smith, Leslie H., 4,131,685, Cl. 424-322.000.
- Imperial Oil Limited: *See—*
  - Porteous, Kenneth, 4,131,535, Cl. 208-11.0LE.
- Inbar, Michael: *See—*
  - Bruck, Avraham; and Inbar, Michael, 4,131,800, Cl. 250-461.00B.
- Incom International Inc.: *See—*
  - Olsen, Roger F.; and Cantley, George, 4,131,037, Cl. 74-876.000.
- Industrie Pirelli S.p.A.: *See—*
  - Bertazzoli, Guido; Gironi, Roberto; and Resentini, Angelo, 4,131,148, Cl. 152-209.00B.
  - Pirovano, Dante, 4,131,402, Cl. 425-38.000.
- Ingestrom, Curt Holger: *See—*
  - Gustavsson, Stig O. S., 4,130,973, Cl. 52-309.170.
- Ingram, John D., to Schlumberger Technology Corporation. Method and apparatus for acoustic logging of a borehole. 4,131,875, Cl. 340-15.5BH.
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  - Nishikawa, Shigeyoshi; Muroshima, Takashi; Sakaguchi, Hirokazu; Hasebe, Morihiko; Katagiri, Katsuji; and Inoue, Kazuo, 4,131,931, Cl. 361-315.000.
- Inoue, Yoshihiro: *See—*
  - Nagasaki, Katsumi; Tanimura, Koichi; Inoue, Yoshihiro; Yamazaki, Hiroyuki; and Momose, Tetsuo, 4,131,303, Cl. 285-302.000.
- Institut de Recherches de la Siderurgie Francaise (Irsid): *See—*
  - Delassus, Jean, 4,131,813, Cl. 310-13.000.
- Institut fur Kerntechnik und Energiewandlung e.V.: *See—*
  - Abhat, Ashok; and Neuer, Gunther, 4,131,158, Cl. 165-104.00S.
- Institut National de la Recherche Agronomique: *See—*
  - Grosclaude, Gerard; Regnier, Jean; and Cavarroc, Marcel, 4,131,688, Cl. 426-40.000.
  - Petit, Leon; Davin, Andre; and Gueguen, Jacques, 4,131,607, Cl. 260-123.500.
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  - Klopotek, Alojzy; Uminski, Jerzy; and Dziala, Gabriela, 4,131,556, Cl. 252-106.000.
- Instytut Ciezkiej Syntezy Organicznej "Blachownia": *See—*
  - Kiedik, Maciej; Grzywa, Edward; Kolt, Jozef; Terelak, Kazimierz; Czyz, Jerzy; and Niezgoda, Anna, 4,131,749, Cl. 568-781.000.
- International Business Machines Corporation: *See—*
  - Agard, Richard L.; Bocinski, Terrence E.; Brearley, Lawrence E.; and Yaple, William R., 4,131,933, Cl. 361-415.000.
  - Bakos, Peter; and Rasile, John, 4,131,516, Cl. 204-15.000.
  - Bialko, Joseph A.; and Lechaton, John S., 4,131,533, Cl. 204-298.000.
  - Feng, Bai-Cwo; and Feng, George C., 4,131,497, Cl. 148-187.000.
  - Hatchett, Michael R.; and Rigbey, Leonard J., 4,131,199, Cl. 206-444.000.
  - Malaviya, Shashi D., 4,131,861, Cl. 331-2.000.
  - Moyer, James T., 4,131,940, Cl. 364-200.000.
  - Shea, Vincent; and Wojcik, Walter J., 4,131,363, Cl. 355-75.000.
- International Flavors & Fragrances Inc.: *See—*
  - Hall, John B.; and Weigers, Wilhelmus J., 4,131,555, Cl. 252-89.00R.
  - Hall, John B.; and Wiegers, Wilhelmus J., 4,131,557, Cl. 252-132.000.
  - Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,131,687, Cl. 426-3.000.
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  - Fardal, Randolph G.; and Rickerd, Calvin P., 4,130,980, Cl. 56-10.200.
  - Kindle, John J., 4,131,293, Cl. 280-166.000.
- International Paper Company: *See—*
  - Barry, Edward J., 4,131,228, Cl. 229-23.00R.
- International Telephone and Telegraph Corporation: *See—*
  - Kubinsky, Eugene J., 4,131,705, Cl. 428-106.000.
- International Tool Company, The: *See—*
  - Kohl, Harry E.; and Cotton, Gordon, 4,131,006, Cl. 72-67.000.
- Introl Corp.: *See—*
  - Bennefeld, David H., 4,131,841, Cl. 320-23.000.
- Iovine, Carmine P.; and Ray-Chaudhuri, Dilip K., to National Starch and Chemical Corporation. Process for the preparation of graft copolymers of a water soluble monomer and polysaccharide employing a two-phase reaction system. 4,131,576, Cl. 260-17.4GC.
- Irrigation Specialties Company: *See—*
  - Lieding, Calvin A., 4,131,235, Cl. 239-533.150.
- Isaksson, Sven-Erik, to ASEA Aktiebolag. Furnace for the high temperature-high pressure treatment of materials which includes pressure medium circulation channels. 4,131,419, Cl. 432-205.000.
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  - Kato, Hiroshi, 4,131,423, Cl. 8-34.000.
- Isherwood, Harold; and Shaw, John T., to British Industrial Plastics Ltd. Starch. 4,131,574, Cl. 260-17.300.
- Ishibashi, Youji: *See—*
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- Ishii, Katsuto: *See—*
  - Kohga, Masayuki; and Ishii, Katsuto, 4,131,847, Cl. 324-141.000.
- Ishii, Susumu; and Aoki, Tsunetaka, to Yoshida Kogyo K.K. Lock slider for slide fasteners. 4,130,918, Cl. 24-205.14A.
- Ishii, Teizi: *See—*
  - Araki, Masakatsu; Ochi, Shuhei; Kusunoki, Toshio; Ishii, Teizi; and Sakata, Shinichi, 4,131,121, Cl. 132-7.000.
- Ishikawa, Takashi: *See—*
  - Oishi, Akiyoshi; Harada, Tamotsu; and Ishikawa, Takashi, 4,131,490, Cl. 148-9.500.
- Ishizuka, Hiroshi. Apparatus for sawing stone. 4,131,103, Cl. 125-13.00R.
- Itek Corporation: *See—*
  - Siegel, Harvey L.; Muething, Gerald F., Jr.; and Radkowski, Edward J., 4,131,941, Cl. 364-200.000.
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  - Ikezaki, Muneyoshi; Okazaki, Yashushi; Ito, Nobuo; Hoshiyama, Masao; Nagao, Taku; and Nakajima, Hiromichi, 4,131,686, Cl. 424-330.000.
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  - Muzhzhavlev, Konstantin D.; Yazev, Vladimir D.; Schegolev, Vladimir I.; Ivanov, Andrei B.; Vasiliev, Alexei V.; Romanenko, Oleg N.; Kosarev, Sergei P.; and Ovcharenko, Vladimir G., 4,131,522, Cl. 204-60.000.
- Ivanov, Ivan B., to DSO "Montaji" — Promishleno Montajno Upravlenie. Hanging prestressed roof structure. 4,130,969, Cl. 52-80.000.
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- Iwahashi, Shunji; Yamasaki, Masahiro; and Fujita, Takanori, to Sumitomo Chemical Company, Limited. Methods for cleaning articles with upward flowing liquids. 4,131,483, Cl. 134-1.000.
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- Iwata, Hiroshi; and Yamaoka, Tetsuo, to West Electric Co., Ltd. Battery checker for a camera with a flash light unit. 4,131,351, Cl. 354-60.00F.
- J. I. Case Company: *See—*
  - Johnson, Robert G.; and Drefcinski, Earl D., 4,131,294, Cl. 280-179.00R.

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Jacobs, Barry A., to Stauffer Chemical Company. Method of evaluating scorch in flexible polyurethane foam. 4,131,660, Cl. 264-26.000.

Jacobs, James E. Removable storage compartment for auto seats. 4,131,313, Cl. 297-188.000.

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Easton, Ray D.; Jakobi, Phil F.; and Zabik, Andrew L., 4,130,967, Cl. 51-5.00D.

Jamison, Will B.; and Fleck, Henry, to Consolidation Coal Company. Mining machine having advancing mine roof supports. 4,131,317, Cl. 299-31.000.

Jannsen, Klaus-Uwe: *See—*
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Johnson, Charles R.; Forlow, John K.; Black, Paul G.; Mitchell, William A.; and Clark, John S., to Ex-Cell-O Corporation. High speed spindle and draw bar assembly. 4,131,054, Cl. 90-11.00D.

Johnson Controls, Inc.: *See—*
Matthews, Russell B., 4,131,412, Cl. 431-16.000.

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Johnson, Roland W.: *See—*
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Jolley, Michael E.: *See—*
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Jones, J. Paul, Jr. Solar energy absorber. 4,131,110, Cl. 126-271.000.

Jonnet, Albert G., to Koppers Company, Inc. Coke quenching car. 4,131,070, Cl. 105-273.000.

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Joseph, George L., to FMC Corporation. Torsion bar and method of forming the same. 4,131,491, Cl. 148-12.00B.

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Kaebernick, Hartmut: *See—*
Bottcher, Hubert; Pfannmuller, Joachim; Kaebernick, Hartmut; Steiniger, Wolfgang; and Preuss, Horst-Dieter, 4,131,501, Cl. 156-157.000.

Kaenel, Reginald A., to AMF Incorporated. Electronic bowling scoring system with bus communication between manager console and lane score consoles. 4,131,948, Cl. 364-900.000.

Kagan, Naum Y.; Bortnik, Vladimir M.; Korenbljum, Isai V.; Razumeev, Jury A.; Lyass, Abram M.; Borsuk, Pavel A.; Usubov, Zokhrab G. O.; and Dmitrieva, Valentina A. Moulding composition for making foundry moulds and cores. 4,131,477, Cl. 106-38.350.

Kahn, Leonard R. Method and means for improving the spectrum utilization of communications channels. 4,131,765, Cl. 179-15.55R.

Kai, Toshio: *See—*
Tanaka, Junzo; and Kai, Toshio, 4,131,778, Cl. 219-10.55F.

Kaiser, Dieter: *See—*
Ries, Karl; Kaiser, Dieter; and Jannsen, Klaus-Uwe, 4,131,026, Cl. 73-625.000.

Kakinaka, Arao: *See—*
Takematsu, Shigeru; Yoshida, Tohji; Ikushima, Yukio; Takeuchi, Kunio; Kakinaka, Arao; Matsunaga, Koichi; Shimakura, Mamoru; and Komura, Yoji, 4,131,803, Cl. 250-563.000.

Kako, Yuji; Kiguga, Toyoji; and Sanuki, Tetsuo, to Sumitomo Durez Company, Ltd. Method for preparing stable aqueous emulsion of phenolic resin. 4,131,582, Cl. 260-29.300.

Kamyr Inc.: *See—*
Laakso, Oliver A., 4,131,508, Cl. 162-30.00K.

Kaneko, Koichi; Abe, Kiyotaka; and Miura, Masakazu, to Mitsubishi Kinzoku Kabushiki Kaisha. Apparatus for stripping electrodeposited metal from cathode sheets. 4,131,531, Cl. 204-208.000.

Karino, Yukio: *See—*
Miyazako, Takushi; Sakaguchi, Shinji; Hanai, Sosuke; and Karino, Yukio, 4,131,469, Cl. 96-77.000.

Karkoski, Joseph; Payette, Lionel J.; and Shurboff, John D., to Essex International, Inc. Mixtures of linear polyesters used to coat metallic strands. 4,131,714, Cl. 428-379.000.

Karp, Stewart. Chromatography detector. 4,131,427, Cl. 23-230.00R.

Kashiwabara, Yasushige: *See—*
Hara, Toshitsugu; Abe, Yoritsune; Ootuka, Katsuji; Kashiwabara, Yasushige; Oshiyama, Hiroichi; Yanadori, Michio; Kato, Eisaku; and Okazaki, Kichizaemon, 4,130,997, Cl. 62-504.000.

Kastening, Bertel: *See—*
Faul, Wolfgang; and Kastening, Bertel, 4,131,523, Cl. 204-129.100.

Kastl, Hans: *See—*
Muller, Otto; Gugel, Georg; and Kastl, Hans, 4,131,018, Cl. 73-432.00R.

Kasuga Denki Co., Ltd.: *See—*
Takematsu, Shigeru; Yoshida, Tohji; Ikushima, Yukio; Takeuchi, Kunio; Kakinaka, Arao; Matsunaga, Koichi; Shimakura, Mamoru; and Komura, Yoji, 4,131,803, Cl. 250-563.000.

Katagiri, Katsuji: *See—*
Nishikawa, Shigeyoshi; Muroshima, Takashi; Sakaguchi, Hirokazu; Hasebe, Morihiko; Katagiri, Katsuji; and Inoue, Kazuo, 4,131,931, Cl. 361-315.000.

Katayama, Susumu: *See—*
Inoue, Hiromitsu; Katayama, Susumu; and Ohashi, Hiroshi, 4,131,872, Cl. 340-1.00R.

Kato, Eisaku: *See—*
Hara, Toshitsugu; Abe, Yoritsune; Ootuka, Katsuji; Kashiwabara, Yasushige; Oshiyama, Hiroichi; Yanadori, Michio; Kato, Eisaku; and Okazaki, Kichizaemon, 4,130,997, Cl. 62-504.000.

Kato, Hajime: *See—*
Uchikawa, Hiroshi; and Kato, Hajime, 4,131,474, Cl. 106-38.350.

Kato, Hiroshi, to Ise Kagaku Kogyo Kabushiki Kaisha. Process for dyeing cellulose fibers with vat or sulfur dyes and oxyhalogen acid. 4,131,423, Cl. 8-34.000.

Kawada, Tomoshi; and Okamura, Yuichi, to Kabushiki Kaisha Tokyo Seisakusho; and Kabushiki Kaisha Kaneda Kikai Seisakusho. Automatic apparatus for furnishing web in rotary press. 4,131,206, Cl. 214-1.0BB.

Kawamura, Takeo: *See—*
Nakamura, Yoshitsugu; Kawamura, Takeo; Saiki, Noritsugu; and Tokashiki, Michiyuki, 4,131,594, Cl. 260-40.00R.

Kawana, Hiroyoshi: *See—*
Uchiyama, Takashi; Suzuki, Ryoichi; Tsunekawa, Tokuichi; Kawana, Hiroyoshi; Ono, Yusuke; and Matsuda, Mutsuhide, 4,131,350, Cl. 354-31.000.

Kay-Ray, Inc.: *See—*
Pakulis, Ivars E., 4,131,845, Cl. 324-58.50A.

Kazama, Kiyoshi: *See—*
Hashimoto, Satoshi; Okumura, Nobuya; and Kazama, Kiyoshi, 4,131,601, Cl. 528-279.000.

Kazin, Stephen B.; and Matta, Ram K., to General Electric Company. Curved blade turbomachinery noise reduction. 4,131,387, Cl. 415-119.000.

Keblys, Kestutis A.; and McEven, John M., to Ethyl Corporation. Iodine recovery process. 4,131,645, Cl. 423-501.000.

Keeling, Michael C.; Bailey, William L.; Coleman, Michael G.; Lesk, Israel A.; and Pryor, Robert A., to Motorola, Inc. Interconnection for photovoltaic device array. 4,131,755, Cl. 136-89.00P.

Keith, Marvin W., Jr., to Buehler Ltd. Mounting press. 4,131,403, Cl. 425-127.000.

Kelley, Jay R. Insulation panel. 4,130,975, Cl. 52-588.000.

Kendall Company, The: *See—*
Layton, Terry N., 4,131,016, Cl. 73-215.000.

Kendall, Giles A., Jr., to Clemar Mfg. Corp. Waterproof electrical connector. 4,131,331, Cl. 339-126.0RS.

Kennecott Copper Corporation: *See—*
Kim, Jonathan J.; Loose, Thomas A.; and Wang, Chih-Chung, 4,131,453, Cl. 75-72.000.

Kensrue, Milo M.; and Martin, Donald L. Welding apparatus. 4,131,783, Cl. 219-124.310.

Kerb, Ulrich: *See—*
Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,131,655, Cl. 260-946.000.

Kerk Motion Products, Inc.: *See—*
Erikson, Kenneth W.; and Erikson, Keith W., 4,131,031, Cl. 74-441.000.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Faul, Wolfgang; and Kastening, Bertel, 4,131,523, Cl. 204-129.100.

Kesseler, Helmut; Anstadt, Gerd L.; and Kiefer, Hermann, to Gerbruder Kommerling Kunststoffwerke G.m.b.H. Frame for doors, windows and the like. 4,130,976, Cl. 52-656.000.

Keulertz, Werner; and Wessel, Karl-Heinz, to DEMAG, Aktiengesellschaft. Expandable mandrel reel. 4,131,240, Cl. 242-72.100.

Keyes, John H. Low energy consumption vehicle propelled by thermal engine. 4,131,171, Cl. 180-54.00R.

Kholdyakov, Nikolai I.: *See—*
Minachev, Khabib M.; Mortikov, Evgeny S.; Leontiev, Alexandr S.; Smirnov, Anatoly G.; Kononov, Nikolai F.; Masloboev-Shvedov, Alexei A.; Zhomov, Alexandr K.; and Kholdyakov, Nikolai I., 4,131,750, Cl. 568-901.000.

Kiedik, Maciej; Grzywa, Edward; Kolt, Jozef; Terelak, Kazimierz; Czyz, Jerzy; and Niezgoda, Anna, to Instytut Ciezkiej Syntezy Organicznej "Blachownia". Method for waste recovery from a process of the production of diphenylolpropane. 4,131,749, Cl. 568-781.000.

Kiefer, Hermann: *See—*
Kesseler, Helmut; Anstadt, Gerd L.; and Kiefer, Hermann, 4,130,976, Cl. 52-656.000.

Kiguga, Toyoji: *See—*
Kako, Yuji; Kiguga, Toyoji; and Sanuki, Tetsuo, 4,131,582, Cl. 260-29.300.

Kikumoto, Ryoji: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,131,673, Cl. 424-247.000.

Kim, Jonathan J.; Loose, Thomas A.; and Wang, Chih-Chung, to Kennecott Copper Corporation. Pyrometallurgical brass production. 4,131,453, Cl. 75-72.000.

Kim, Young M. Nail clipper. 4,130,937, Cl. 30-28.000.

Kimura, Shinji; Godai, Tomokazu; Minato, Shoji; Kobayashi, Minoru; Yamaga, Makoto; Maki, Shingo; Hashimoto, Yoshizo; Suga, Tetsuo; and Saita, Hiroshi, to Kobe Steel, Ltd. Coated welding electrode containing chromium. 4,131,784, Cl. 219-137.0WM.

Kimura, Tadashi, to Olympus Optical Co., Ltd. Photographic lens system. 4,131,335, Cl. 350-218.000.

Kimura, Tadashi; and Watanabe, Fumitaka, to Olympus Optical Co., Ltd. Finder optical system for single lens reflex photographic cameras. 4,131,355, Cl. 354-225.000.

Kindle, John J., to International Harvester Company. Retractable service ladder. 4,131,293, Cl. 280-166.000.

King, Randall N.: *See—*
Breiter, Manfred W.; Chatterji, Debajyoti; King, Randall N.; and Park, Dong-Sil, 4,131,226, Cl. 228-198.000.

King, Terence P. Belt hook and method of making same. 4,130,916, Cl. 24-186.000.

Kinoshita, Hiroyuki, to Tokyo Shibaura Electric Co., Ltd. Dynamic random access memory using MOS FETs and method for manufacturing same. 4,131,906, Cl. 357-41.000.

Kirkland, Joseph J.: *See—*
Bergna, Horacio E.; and Kirkland, Joseph J., 4,131,542, Cl. 210-31.00C.

Kirkpatrick, Harold B.; Distler, Edward C.; and Menzin, Marvin, to Reichhold Chemicals, Inc. Orthopedic cast. 4,131,114, Cl. 128-90.000.

Kirschbaum, Peter: *See—*
Erb, Hans Joachim; Brandt, Jurgen; and Kirschbaum, Peter, 4,131,900, Cl. 346-162.000.

Kirschner, Nikolaus, to Siemens Aktiengesellschaft. I.I.L. with injector base resistor and schottky clamp. 4,131,806, Cl. 307-215.000.

Kitazato, Hajime: *See—*
Komori, Masakazu; Shiga, Kazuyuki; Kitazato, Hajime; Okajima, Hiroaki; Tanaka, Yoshiharu; Nojima, Shoiti; Fukamachi, Masashige; and Kurima, Akinori, 4,131,565, Cl. 252-417.000.

Kite, George F.; Gellatly, Grant; and Uhl, Richard G., to Philip Morris Incorporated. Method for removal of potassium nitrate from tobacco extracts. 4,131,117, Cl. 131-140.00C.

Klaver, Olof E. H.: *See—*
Daub, Dirk; and Klaver, Olof E. H., 4,131,908, Cl. 357-42.000.

Kleeberg, Wolfgang: *See—*
Ihlein, Walter; Kleeberg, Wolfgang; Markert, Helmuth; and Mertens, Willi, 4,131,600, Cl. 528-53.000.

Klein, Gerald I.: *See—*
Niehenke, Edward C.; and Klein, Gerald I., 4,131,858, Cl. 330-4.900.

Klemm, Kurt: *See—*
Amschler, Hermann; Klemm, Kurt; and Ludwig, Gerhard, 4,131,678, Cl. 424-251.000.

Klockenga, Michael E., to PPG Industries, Inc. Method of selectively heating an edge of a glass sheet during a welding program. 4,131,445, Cl. 65-40.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Brachthauser, Kunibert, 4,130,945, Cl. 34-10.000.

Klopotek, Alojzy; Uminski, Jerzy; and Dziala, Gabriela, to Instytut Chemii Przemyslowej. Method for manufacturing bromine and bromine-iodine detergents and disinfectants. 4,131,556, Cl. 252-106.000.

Klos, Daniel J., to Conair, Inc. Transporting device and method of transporting. 4,131,319, Cl. 302-58.000.

Klosterman, David P.: *See—*
Gordy, Donald G.; and Klosterman, David P., 4,131,379, Cl. 403-197.000.

Knapik, H. Peter G.: *See—*
Adams, Frank H.; and Knapik, H. Peter G., 4,131,536, Cl. 208-139.000.

Knapp, Robert L.; Blodee, Leif; and Van Loo, William R., to American Seating Company. Seating furniture. 4,131,314, Cl. 297-248.000.

Knauer, Karl; and Pfleiderer, Hans-Joerg, to Siemens Aktiengesellschaft. Opto-electronic sensor. 4,131,810, Cl. 307-311.000.

Kobayashi, Minoru: *See—*
Kimura, Shinji; Godai, Tomokazu; Minato, Shoji; Kobayashi, Minoru; Yamaga, Makoto; Maki, Shingo; Hashimoto, Yoshizo; Suga, Tetsuo; and Saita, Hiroshi, 4,131,784, Cl. 219-137.0WM.

Kobayashi, Tutomu: *See—*
Yoshida, Yoshinori; Kobayashi, Tutomu; Shinohara, Hironobu; and Hanari, Izumi, 4,131,743, Cl. 560-244.000.

Kobe Steel, Ltd.: *See—*
Kimura, Shinji; Godai, Tomokazu; Minato, Shoji; Kobayashi, Minoru; Yamaga, Makoto; Maki, Shingo; Hashimoto, Yoshizo; Suga, Tetsuo; and Saita, Hiroshi, 4,131,784, Cl. 219-137.0WM.
Utsunomiya, Kei; Soga, Kazuya; Shimasaki, Katsunori; Mito, Yutaka; Oaki, Mamoru; Haseba, Shigeru; Miki, Hiroetu; and Masaki, Michiko, 4,131,643, Cl. 423-239.000.

Koblasz, Arthur J.: *See—*
Fender, Derek H.; and Koblasz, Arthur J., 4,131,113, Cl. 128-2.00T.

Kobori, Sigeyuki: *See—*
Amano, Matsuo; Kobori, Sigeyuki; and Sugawara, Toru, 4,131,930, Cl. 361-211.000.

Koch, Christian: *See—*
Michel, Alfred; Henkel, Hans-Joachim; Koch, Christian; and Kostka, Hana, 4,131,569, Cl. 252-462.000.

Koch, Peter, to United States of America, Agriculture. Helical flaking head with multiple cutting circle diameters. 4,131,146, Cl. 144-221.000.

Koehlinger, Allen W.; and Fox, Norman J., to R. A. Jones & Co. Inc. Twelve bottle carton. 4,131,230, Cl. 229-40.000.

Koehring Company: *See—*
Densmore, Dennis G., 4,130,940, Cl. 33-139.000.

Koenig, Edwin T.: *See—*
Mezrich, Reuben S.; and Koenig, Edwin T., 4,131,021, Cl. 73-606.000.

Koenig, Karl-Heinz; Schirmer, Ulrich; Wuerzer, Bruno; and Fett, Kurt, to BASF Aktiengesellschaft. Diurethanes. 4,131,751, Cl. 560-29.000.

Koenig, Shulamith. Selectively-controlled pulsating water shower head. 4,131,233, Cl. 239-381.000.

Koett, Albert C., to AKH Inc. Headless riveting system. 4,130,922, Cl. 29-243.530.

Koguchi, Mitsuo: *See—*
Hashimoto, Mitsuo; and Koguchi, Mitsuo, 4,131,347, Cl. 353-28.000.

Kohga, Masayuki; and Ishii, Katsuto, to Shoei Electric Co., Ltd. Device for measuring active and/or reactive component of AC current or AC power. 4,131,847, Cl. 324-141.000.

Kohl, Harry E.; and Cotton, Gordon, to International Tool Company, The. Fixed mechanical feed for a riveting device. 4,131,006, Cl. 72-67.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,131,915, Cl. 358-260.000.

Kolt, Jozef: *See—*
Kiedik, Maciej; Grzywa, Edward; Kolt, Jozef; Terelak, Kazimierz; Czyz, Jerzy; and Niezgoda, Anna, 4,131,749, Cl. 568-781.000.

- Komori, Masakazu; Shiga, Kazuyuki; Kitazato, Hajime; Okajima, Hiroaki; Tanaka, Yoshiharu; Nojima, Shoiti; Fukamachi, Masashige; and Kurima, Akinori. Process for reactivating spent activated-carbon. 4,131,565, Cl. 252-417.000.
- Komura, Yoji: *See—*
  - Takematsu, Shigeru; Yoshida, Tohji; Ikushima, Yukio; Takeuchi, Kunio; Kakinaka, Arao; Matsunaga, Koichi; Shimakura, Mamoru; and Komura, Yoji, 4,131,803, Cl. 250-563.000.
- Kononov, Nikolai F.: *See—*
  - Minachev, Khabib M.; Mortikov, Evgeny S.; Leontiev, Alexandr S.; Smirnov, Anatoly G.; Kononov, Nikolai F.; Masloboev-Shvedov, Alexei A.; Zhomov, Alexandr K.; and Kholdyakov, Nikolai I., 4,131,750, Cl. 568-901.000.
- Koob, Dieter: *See—*
  - Blankenmeister, Anton; Peinecke, Ludwig; and Koob, Dieter, 4,131,197, Cl. 206-387.000.
- Koopmann, Adolf: *See—*
  - Hofmann, Wilfried; Leuder, Guenther; Rauffer, Walter; Krueger, John; and Koopmann, Adolf, 4,131,348, Cl. 353-72.000.
- Kopito, Louis; Schuster, Samuel R.; and Kosasky, Harold, to Ovutime, Inc. Probe for obtaining sample of cervical mucus. 4,131,112, Cl. 128-2.00B.
- Koppers Company, Inc.: *See—*
  - Jonnet, Albert G., 4,131,070, Cl. 105-273.000.
- Koppl, Franz: *See—*
  - Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, 4,131,659, Cl. 264-25.000.
- Korenbljum, Isai V.: *See—*
  - Kagan, Naum Y.; Bortnik, Vladimir M.; Korenbljum, Isai V.; Razumeev, Jury A.; Lyass, Abram M.; Borsuk, Pavel A.; Usubov, Zokhrab G. O.; and Dmitrieva, Valentina A., 4,131,477, Cl. 106-38.350.
- Korver, Jan A. C., to U.S. Philips Corporation. Sawtooth generator. 4,131,807, Cl. 307-228.000.
- Kos, Vladimir: *See—*
  - Kupf, Lubomir; and Kos, Vladimir, 4,131,411, Cl. 425-559.000.
- Kosarev, Sergei P.: *See—*
  - Muzhzhavlev, Konstantin D.; Yazev, Vladimir D.; Schegolev, Vladimir I.; Ivanov, Andrei B.; Vasiliev, Alexei V.; Romanenko, Oleg N.; Kosarev, Sergei P.; and Ovcharenko, Vladimir G., 4,131,522, Cl. 204-60.000.
- Kosasky, Harold: *See—*
  - Kopito, Louis; Schuster, Samuel R.; and Kosasky, Harold, 4,131,112, Cl. 128-2.00B.
- Kostas, James M.: *See—*
  - Crumrine, Albert W., Jr.; Fones, Theodore H.; Kostas, James M.; and Vanderburg, Raymond M., 4,131,156, Cl. 165-51.000.
- Kostka, Hana: *See—*
  - Michel, Alfred; Henkel, Hans-Joachim; Koch, Christian; and Kostka, Hana, 4,131,569, Cl. 252-462.000.
- Kosuge, Shuichi, to Nippondenso Co., Ltd. Indication system. 4,131,886, Cl. 340-378.00R.
- Kosuge, Syunji: *See—*
  - Kurono, Masayasu; Toda, Masaaki; Niwa, Haruki; Kosuge, Syunji; Iida, Takahumi; and Narita, Kenichi, 4,131,747, Cl. 562-469.000.
- Koyama, Masateru; and Arakawa, Kazuo, to Matsushita Electric Industrial Co., Ltd. High tension voltage source. 4,131,843, Cl. 323-9.000.
- Kraftwerk Union Aktiengesellschaft: *See—*
  - Haidlen, Friedrich, 4,131,509, Cl. 176-38.000.
  - Muller, Otto; Gugel, Georg; and Kastl, Hans, 4,131,018, Cl. 73-432.00R.
- Kramm, Douglass J.; Lawall, Thomas R.; and Talago, Paul, to Fuller Company. Tube coolers for rotary kilns. 4,131,418, Cl. 432-80.000.
- Krauer, Otto A., to Otis Elevator Company. Speed dictation apparatus. 4,131,183, Cl. 187-29.00R.
- Krauss, Clifford J., to Cominco Ltd. Method and apparatus for measuring specific gravity of liquids in process streams. 4,131,019, Cl. 73-453.000.
- Krauss-Maffei Aktiengesellschaft: *See—*
  - Hultsch, Gunther; and Bock, Harald, 4,130,944, Cl. 34-8.000.
- Kressel, Henry: *See—*
  - Ladany, Ivan; and Kressel, Henry, 4,131,904, Cl. 357-17.000.
- Kroebel, Reinhard: *See—*
  - Bahr, Werner; Drobnik, Stefan; Hild, Werner; Kroebel, Reinhard; Meyer, Alfred; and Naumann, Gunter, 4,131,563, Cl. 252-301.10W.
- Krueger, John: *See—*
  - Hofmann, Wilfried; Leuder, Guenther; Rauffer, Walter; Krueger, John; and Koopmann, Adolf, 4,131,348, Cl. 353-72.000.
- Krug, Hans-Dietrich, to Carl Freudenberg, Firma. Shoe insert. 4,130,948, Cl. 36-44.000.
- Kub, Francis J., to Westinghouse Electric Corp. Novel bipolar transistor with a dual-dielectric tunnel emitter. 4,131,902, Cl. 357-6.000.
- Kubinsky, Eugene J., to International Telephone and Telegraph Corporation. Structural laminate. 4,131,705, Cl. 428-106.000.
- Kubler, John M.: *See—*
  - Hugli, Hans W.; and Kubler, John M., 4,131,020, Cl. 73-517.00B.
- Kubota, Ltd.: *See—*
  - Nagasaki, Katsumi; Tanimura, Koichi; Inoue, Yoshihiro; Yamazaki, Hiroyuki; and Momose, Tetsuo, 4,131,303, Cl. 285-302.000.
- Kudelka, Herbert: *See—*
  - Piret, Norbert L.; Hopper, Meinolf; and Kudelka, Herbert, 4,131,454, Cl. 75-83.000.
- Kuesters, Werner: *See—*
  - Osterloh, Rolf; Jacobi, Manfred; and Kuesters, Werner, 4,131,529, Cl. 204-159.140.
- Kufrin, Fred W.; and Carpentier, John H., to Oce-Industries Inc. Record card feeding apparatus. 4,131,273, Cl. 271-4.000.
- Kujawa, Anthony, Jr.; and Kujawa, Frank J., to Production Research, Inc. Ventilator hatch assembly. 4,130,966, Cl. 49-141.000.
- Kujawa, Frank J.: *See—*
  - Kujawa, Anthony, Jr.; and Kujawa, Frank J., 4,130,966, Cl. 49-141.000.
- Kukucka, William P.: *See—*
  - Gillett, Kenneth; Steiner, Edward L.; Fiske, Kenton W.; Davis, Kenneth A.; Kukucka, William P.; Criswell, Thomas; and Richardson, Philip, 4,131,942, Cl. 364-200.000.
- Kumagai, Kiyoshi: *See—*
  - Momose, Kenichiro; and Kumagai, Kiyoshi, 4,131,494, Cl. 148-31.570.
- Kumandan, Ramakrishnarao K., to Hughes Company, Inc. Declusterer device. 4,131,062, Cl. 99-638.000.
- Kumata, Kiyoshi: *See—*
  - Kuzumoto, Takatoshi; Kumata, Kiyoshi; and Yamamoto, Keizo, 4,131,864, Cl. 331-116.00R.
- Kuo, James R., to Fairchild Camera and Instrument Corporation. TTL to MOS driver circuit. 4,131,808, Cl. 307-270.000.
- Kupf, Lubomir; and Kos, Vladimir, to Statni vyzkumny ustav materialu. Arrangement for manufacture of voluminous products made of plastics. 4,131,411, Cl. 425-559.000.
- Kurichh, Sham L., to Midland-Ross Corporation. Tractor-trailer air brake system with trailer multi-functional emergency control valve fixture. 4,131,324, Cl. 303-7.000.
- Kurima, Akinori: *See—*
  - Komori, Masakazu; Shiga, Kazuyuki; Kitazato, Hajime; Okajima, Hiroaki; Tanaka, Yoshiharu; Nojima, Shoiti; Fukamachi, Masashige; and Kurima, Akinori, 4,131,565, Cl. 252-417.000.
- Kurkalov, Ivan I.: *See—*
  - Apsit, Voldemar V.; Sika, Zigurd K.; and Kurkalov, Ivan I., 4,131,811, Cl. 310-12.000.
- Kurono, Masayasu; Toda, Masaaki; Niwa, Haruki; Kosuge, Syunji; Iida, Takahumi; and Narita, Kenichi, to Ono Pharmaceutical Co., Ltd. Process for preparing α-substituted phenylalkanecarboxylic acid. 4,131,747, Cl. 562-469.000.
- Kurtz, Bruce E.: *See—*
  - Sharma, Lakshmi P.; and Kurtz, Bruce E., 4,131,626, Cl. 260-658.00R.
- Kurumada, Tomoyuki: *See—*
  - Brunetti, Heimo; Rody, Jean; Soma, Nobuo; and Kurumada, Tomoyuki, 4,131,599, Cl. 260-45.80N.
- Kusuki, Yoshihiro: *See—*
  - Nagasaka, Akira; Ashitaka, Hidetomo; Kusuki, Yoshihiro; Oda, Denichi; and Yoshinaga, Toshimune, 4,131,644, Cl. 423-447.500.
- Kusunoki, Toshio: *See—*
  - Araki, Masakatsu; Ochi, Shuhei; Kusunoki, Toshio; Ishii, Teizi; and Sakata, Shinichi, 4,131,121, Cl. 132-7.000.
- Kuwertz, Erich, to psb-Pfalzstahlbau GmbH. Catch arrangement for towing circulating conveyor with side circuit. 4,131,068, Cl. 104-172.00S.
- Kuzumoto, Takatoshi; Kumata, Kiyoshi; and Yamamoto, Keizo, to Sharp Kabushiki Kaisha. Low voltage compensator for power supply in a complementary MOS transistor crystal oscillator circuit. 4,131,864, Cl. 331-116.00R.
- Kvarnegard, Sven B., to AB Carl Lamm. Apparatus for thermographic duplication of information. 4,131,796, Cl. 250-319.000.
- Kvita, Vratislav; Darms, Roland; and Greber, Gerd, to Ciba-Geigy Corporation. Isoimidyl-phthalic anhydrides. 4,131,613, Cl. 260-343.30R.
- L M Ericsson Pty. Ltd.: *See—*
  - Herschtal, Ludwik, 4,131,763, Cl. 179-15.0BS.
- L. R. Nelson Corporation: *See—*
  - Pescetto, James R., 4,131,234, Cl. 239-457.000.
- Laakso, Oliver A., to Kamyr Inc. Recovery system for oxygen bleaching of pulp. 4,131,508, Cl. 162-30.00K.
- Lachowicz, Donald R.; and Holder, Charles B., to Texaco Inc. Reinforced plastic compositions containing graft copolymers. 4,131,577, Cl. 260-17.4CL.
- Lacquement, Ralph G., to Phillips Petroleum Company. Recovery of dry steam from geothermal brine. 4,131,161, Cl. 166-265.000.
- Ladany, Ivan; and Kressel, Henry, to RCA Corporation. Degradation resistance of semiconductor electroluminescent devices. 4,131,904, Cl. 357-17.000.
- Lai, Kwo-Hrong; and Silvers, Harold N., to Beatrice Foods Company. Process for preparing polycarbonates. 4,131,731, Cl. 528-370.000.
- Laing, Nikolaus. Rotary heat exchangers. 4,131,157, Cl. 165-86.000.
- Laitram Corporation, The: *See—*
  - Lapeyre, James M., 4,130,942, Cl. 33-312.000.
- Lakernik, Mark M.; Shabalina, Roza I.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Golovachev, Anatoly I.; and Egorova, Tatyana S. Method for removing zinc from zinc-containing slags. 4,131,451, Cl. 75-14.000.
- Laliberte, Real: *See—*
  - Ferland, Jean-Marie; Laliberte, Real; Lippman, Wilbur; and Pugsley, Thomas A., 4,131,745, Cl. 560-252.000.
- Lambert Corporation: *See—*
  - Yeager, Robert R., 4,131,221, Cl. 222-624.000.
- Lambert, John W., Jr., to Tuscarora Cotton Mill. Method and apparatus for making novelty yarn. 4,130,984, Cl. 57-12.000.

- Lammiman, Steven A.: *See—*
  - McCurrich, Lawrence H.; and Lammiman, Steven A., 4,131,480, Cl. 106-93.000.
- Landsman, Robert M., to LogEtronics, Inc. Pneumatically actuated image scanning reader/writer. 4,131,916, Cl. 358-285.000.
- Landstingens Inkopscentral, L I C: *See—*
  - Sandegren, Owe, 4,131,217, Cl. 222-82.000.
- Lang, Stanley A., Jr.; Fabio, Paul F.; Lin, Yang-I; Murdock, Keith C; and Fields, Thomas L., to American Cyanamid Company. 2,6-Bis(1-morpholinoalkylideneamino)anthraquinones as anti-amebic agents. 4,131,676, Cl. 424-248.560.
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  - Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, 4,131,659, Cl. 264-25.000.
- Lange, Heinrich, to Siemens Aktiengesellschaft. Microprogrammable control unit. 4,131,835, Cl. 318-562.000.
- Lange, Louis G., III; and Vallee, Bert L., to President and Fellows of Harvard College. Method of purifying alcohol dehydrogenase and affinity resin therefor. 4,131,727, Cl. 526-23.000.
- Lantos, Ivan: *See—*
  - Hill, David T.; Sutton, Blaine M.; and Lantos, Ivan, 4,131,732, Cl. 536-121.000.
- Lanza, Thomas J.: *See—*
  - Shen, Tsung-Ying; Clark, Robert L.; Pessolano, Arsenio A.; Witzel, Bruce E.; and Lanza, Thomas J., 4,131,677, Cl. 424-256.000.
- Lapeyre, James M., to Laitram Corporation, The. Borehole surveying apparatus. 4,130,942, Cl. 33-312.000.
- Laporte Industries Limited: *See—*
  - Redmayne, William H.; and Berry, David, 4,131,545, Cl. 210-47.000.
- Larrabee, Robert D., to RCA Corporation. Power transfer apparatus. 4,131,827, Cl. 318-46.000.
- Larsson, Gunnar: *See—*
  - Bengtsson, Ralph; and Larsson, Gunnar, 4,130,927, Cl. 29-432.100.
- Lasag AG: *See—*
  - Einstein, Bernard C.; and Spring, Peter, 4,131,782, Cl. 219-121.0LM.
- Lather, Dieter: *See—*
  - Terschuren, Wolfgang; Ries, Karl; and Lather, Dieter, 4,131,027, Cl. 73-638.000.
- Latti, Surinder S.: *See—*
  - Lawrence, Noel L. W.; and Latti, Surinder S., 4,131,370, Cl. 366-273.000.
- Laundy, James R., to Tenneco, Inc. Coupling device for connecting a plurality of ports to one pipe-method of making same. 4,131,007, Cl. 72-348.000.
- Lavigne, Vernon W.: *See—*
  - Bailey, James R.; and Lavigne, Vernon W., 4,131,777, Cl. 200-311.000.
- Lawall, Thomas R.: *See—*
  - Kramm, Douglass J.; Lawall, Thomas R.; and Talago, Paul, 4,131,418, Cl. 432-80.000.
- Lawrence, Noel L. W.; and Latti, Surinder S., to Temtron Electronics Ltd. Micro stirrer. 4,131,370, Cl. 366-273.000.
- Layton, Terry N., to Kendall Company, The. Peak flow measuring device. 4,131,016, Cl. 73-215.000.
- Lazarus, Sonja E.: *See—*
  - Boyer, Robin L.; Lazarus, Sonja E.; and Buck, F. O., Jr., 4,131,282, Cl. 273-271.000.
- Lechaton, John S.: *See—*
  - Bialko, Joseph A.; and Lechaton, John S., 4,131,533, Cl. 204-298.000.
- Lee, Gim F., Jr.: *See—*
  - Abolins, Visvaldis; and Lee, Gim F., Jr., 4,131,598, Cl. 260-42.180.
- Lee, Maw H.; and Prehodka, Barry V., to Clopay Corporation. Position control and obstruction detector apparatus for a motor-driven door operator. 4,131,830, Cl. 318-266.000.
- Lee, Tzuo-Chang; and Lin, Jacob W., to Honeywell Inc. Element for thermoplastic recording. 4,131,462, Cl. 96-1.50R.
- Leger, Andre: *See—*
  - Cotrel, Claude; Crisan, Cornel; Jeanmart, Claude; and Leger, Andre, 4,131,674, Cl. 424-248.540.
- Lego, Louis J., Jr., to General Electric Company. Search and locate system. 4,131,791, Cl. 250-199.000.
- Leonard, Byron H., Jr., to Bechtel International Corporation. Clamp-welded pipe joint. 4,131,302, Cl. 285-114.000.
- Leontiev, Alexandr S.: *See—*
  - Minachev, Khabib M.; Mortikov, Evgeny S.; Leontiev, Alexandr S.; Smirnov, Anatoly G.; Kononov, Nikolai F.; Masloboev-Shvedov, Alexei A.; Zhomov, Alexandr K.; and Kholdyakov, Nikolai I., 4,131,750, Cl. 568-901.000.
- Lerner, Howard: *See—*
  - Campbell, Thomas M.; Ringler, William H.; and Lerner, Howard, 4,131,437, Cl. 55-53.000.
- Lesk, Israel A.; and Pryor, Robert A., to Motorola, Inc. Method of semiconductor solar energy device fabrication. 4,131,488, Cl. 148-1.500.
- Lesk, Israel A.: *See—*
  - Keeling, Michael C.; Bailey, William L.; Coleman, Michael G.; Lesk, Israel A.; and Pryor, Robert A., 4,131,755, Cl. 136-89.00P.
- Leuder, Guenther: *See—*
  - Hofmann, Wilfried; Leuder, Guenther; Rauffer, Walter; Krueger, John; and Koopmann, Adolf, 4,131,348, Cl. 353-72.000.
- Lewicki, Walter J., Jr., to Armstrong Cork Company. Multilevel embossing of sheet materials. 4,131,663, Cl. 264-40.200.
- Lewis, Donald J.: *See—*
  - Radke, Donald G.; and Lewis, Donald J., 4,131,300, Cl. 280-737.000.
- Libbey-Owens-Ford Company: *See—*
  - Miller, Alfred H., 4,131,420, Cl. 432-246.000.
- Lieding, Calvin A., to Irrigation Specialties Company. Dual-function valve. 4,131,235, Cl. 239-533.150.
- Light, Bette M.: *See—*
  - Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,131,687, Cl. 426-3.000.
- Lilly Industries Limited: *See—*
  - Evans, Delme; Saunders, John C.; and Williamson, William R. N., 4,131,682, Cl. 424-275.000.
- Lin, Jacob W.: *See—*
  - Lee, Tzuo-Chang; and Lin, Jacob W., 4,131,462, Cl. 96-1.50R.
- Lin, Yang-I: *See—*
  - Lang, Stanley A., Jr.; Fabio, Paul F.; Lin, Yang-I; Murdock, Keith C; and Fields, Thomas L., 4,131,676, Cl. 424-248.560.
- Lindberg, John E., to Owen, Wickersham & Erickson. Fluid flow regulator. 4,131,134, Cl. 137-808.000.
- Ling, Wilfred C., to Abbott Laboratories. Method and device for determining the end point for drying. 4,131,011, Cl. 73-29.000.
- Lingl Corporation: *See—*
  - Lingl, Hans, Jr.; and Denison, Don E., 4,131,072, Cl. 110-106.000.
- Lingl, Hans, Jr.; and Denison, Don E., to Lingl Corporation. Apparatus for individual controlled distribution of powdered solid fuel to plural burning units. 4,131,072, Cl. 110-106.000.
- Lippman, Wilbur: *See—*
  - Ferland, Jean-Marie; Laliberte, Real; Lippman, Wilbur; and Pugsley, Thomas A., 4,131,745, Cl. 560-252.000.
- Liquid Paper Corporation: *See—*
  - Rakow, Donald E., 4,131,373, Cl. 400-208.000.
- List, Harold A., to Railway Engineering Associates, Inc. Articulated railway car trucks. 4,131,069, Cl. 105-168.000.
- Littelfuse, Inc.: *See—*
  - Schmidt, John, Jr.; and Aryamane, Avinash, 4,131,869, Cl. 337-264.000.
- Lloyd, Gareth A.; and Sasson, Steven J., to Eastman Kodak Company. Electronic still camera. 4,131,919, Cl. 360-9.000.
- Lloyd, Robert G.; Street, Anthony C.; and Golden, Donald M. G. R., deceased (by Golden, Jean J., executrix), to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Aerial delivery wedge. 4,131,251, Cl. 244-137.00R.
- Lockhart, Ann H.: *See—*
  - Gandy, Eleanor J.; and Lockhart, Ann H., 4,131,275, Cl. 273-1.00R.
- Logan, David J.: *See—*
  - Gerber, Heinz J.; and Logan, David J., 4,131,224, Cl. 226-8.000.
- LogEtronics, Inc.: *See—*
  - Landsman, Robert M., 4,131,916, Cl. 358-285.000.
- Logic Devices, Inc.: *See—*
  - Allen, Paul E., 4,131,596, Cl. 264-40.500.
- Long, Wesley A., to Beckmann, Karen L. Heat exchanger. 4,131,159, Cl. 165-166.000.
- Loose, Thomas A.: *See—*
  - Kim, Jonathan J.; Loose, Thomas A.; and Wang, Chih-Chung, 4,131,453, Cl. 75-72.000.
- Lopata, Ira. Leader pin. 4,131,305, Cl. 242-74.000.
- Loring, Robert M.: *See—*
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- Loughran, Gerard A.: *See—*
  - Arnold, Fred E.; Loughran, Gerard A.; and Wereta, Anthony, Jr., 4,131,625, Cl. 260-607.0AR.
- Lovell, John A.; Hillegass, Donald V.; and Harris, Philip G., to Goodyear Tire & Rubber Company, The. Preparation of polyurethane composite mold by injection molding. 4,131,667, Cl. 264-571.000.
- Lowry, Lewis R.: *See—*
  - Hanes, Maurice H.; and Lowry, Lewis R., 4,131,905, Cl. 357-30.000.
- Lubrizol Corporation, The: *See—*
  - Steckel, Thomas F., 4,131,554, Cl. 252-33.600.
- Lucariello, Richard A.: *See—*
  - Blum, Peter; and Lucariello, Richard A., 4,131,530, Cl. 204-192.00C.
- Lucas, David J.: *See—*
  - Wilde, Michael A.; and Lucas, David J., 4,131,500, Cl. 156-131.000.
- Lucas Electrical Company Limited, The: *See—*
  - Williams, Malcolm, 4,131,087, Cl. 123-32.0EA.
- Lucas Industries Limited: *See—*
  - Orford, Raymond L., 4,131,460, Cl. 75-204.000.
- Lucy, Carl F., to Teledyne Industries, Inc. Metallic sponge incendiary compositions. 4,131,498, Cl. 149-2.000.
- Ludemann, Heinz; Fengler, Harald; and Schaner, Ferdinand, to AGFA-Gevaert AG. Collector forming an accumulating stack from successively received severed sections of photographic strip. 4,131,041, Cl. 83-94.000.
- Ludwico, William A.: *See—*
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- Ludwig, Gerhard: *See—*
  - Amschler, Hermann; Klemm, Kurt; and Ludwig, Gerhard, 4,131,678, Cl. 424-251.000.
- Lund, Raymond R., to Canron, Inc. Reference mechanism for spike driver. 4,131,066, Cl. 104-17.00R.

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Lustig, Stanley; and Vasudevan, Ganapathy, to Union Carbide Corporation. Composite tubular casing for processed foods and method of fabricating the casing. 4,131,137, Cl. 138-118.100.
Lutz, Charles W.; and Cohen, Leon E., to FMC Corporation. Stabilized particulate peroxygen compounds. 4,131,562, Cl. 252-186.000.
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Mabe, William J., Jr., to Sundstrand Corporation. Sealing system for centrifugal pump. 4,131,386, Cl. 415-98.000.
Macari, Leonard J.: *See—*
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MacDonald, James L., Jr.; and Mink, Richard A., to Align-Rite Corporation. Method for increasing the yield of batch processed microcircuit semiconductor devices. 4,131,472, Cl. 96-38.300.
MacFarlane, Robert, Jr., to Allied Chemical Corporation. Mineral-filled nylon molding compositions exhibiting low creep. 4,131,591, Cl. 260-37.00N.
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Machida, Tetsuo, to Sony Corporation. Tape cassette. 4,131,243, Cl. 242-199.000.
Mackenroth, Joseph R., III; and Bode, Hugo B. Cooling hatband. 4,130,902, Cl. 2-7.000.
Madill, Kenneth D., to Algoma Steel Corporation, Limited, The. Removal and/or installation of top section of steelmaking vessel. 4,130,924, Cl. 29-401.00F.
Mador, Irving L.: *See—*
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Maeda, Hiroshi: *See—*
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Maeda, Yoichi, to Trio Kabushiki Kaisha. Speaker system. 4,131,180, Cl. 181-163.000.
Mager, George E.; Nelson, Frank M.; and Hall, Warren L., to Xerox Corporation. System bus module for a controller. 4,131,944, Cl. 364-200.000.
Magnussen, Haakon T., Jr., to Altex Scientific, Inc. Fluid pump mechanism. 4,131,393, Cl. 417-22.000.
Maham, Robert M.; and Beasley, Matthew D., to Texaco Inc. Apparatus for detecting presence of oil in a body of water. 4,131,773, Cl. 200-61.050.
Maki, Shingo: *See—*
Kimura, Shinji; Godai, Tomokazu; Minato, Shoji; Kobayashi, Minoru; Yamaga, Makoto; Maki, Shingo; Hashimoto, Yoshizo; Suga, Tetsuo; and Saita, Hiroshi, 4,131,784, Cl. 219-137.0WM.
Makowski, Henry S.; and O'Farrell, Charles P., to Exxon Research & Engineering Co. Polymeric hydroxyalkyl sulfonates. 4,131,586, Cl. 260-31.20R.
Malashin, Mikhail M.: *See—*
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Malatto, Renzo, to Selecontrol S.A.S. Device for measuring the bending angles in plate-bending machines. 4,131,008, Cl. 72-389.000.
Malaviya, Shashi D., to International Business Machines Corporation. Variable frequency oscillator system including two matched oscillators controlled by a phase locked loop. 4,131,861, Cl. 331-2.000.
Malecki, Alexander J., to General Home Products Corporation. Clothes-drying rack. 4,131,205, Cl. 211-200.000.
Maller, Karen. Ski equipment carrier. 4,131,289, Cl. 280-11.37K.
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Manning, Donald L. Vehicle entrance ramp. 4,131,209, Cl. 214-85.000.
Mansfield, Wilfred P., to National Research Development Corporation. Internal combustion engines. 4,131,093, Cl. 123-41.850.
Mar, Henry Y. B.; and Zimmer, Paul B., to United States of America, Air Force. Low infrared emissivity paints comprising an oxime cured silicone binder. 4,131,593, Cl. 260-37.0SB.
Marcantonio, Arnold F., to Ball Corporation. High temperature release and lubricating compositions for glass molds. 4,131,552, Cl. 252-29.000.
Marco, Francis W., to Milliken Research Corporation. Polyester textile materials having improved durable soil release characteristics and process for producing same. 4,131,550, Cl. 252-8.600.
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Marshall, Esther L.; and Allen, William B. Portable picnic and camping cabinet table. 4,131,327, Cl. 312-241.000.
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Martin, Donald L.: *See—*
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Martin, Jon W., to TRW Inc. Perfluoroelastomers from hydrofluoroelastomers. 4,131,726, Cl. 526-18.000.
Martin Marietta Corporation: *See—*
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Martinsen, Keith W. Compact camping rig. 4,131,310, Cl. 296-23.00R.
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Martiny, Wolfgang; and MacGillavry, Donald H., to BASF Aktiengesellschaft. Radio-signal receiver with plug-in modules. 4,131,851, Cl. 325-355.000.
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Matsuda, Takashi; Niwa, Kazuo; and Sumitomo, Yasusuke, to Tokyo Shibaura Electric Co., Ltd. Semiconductor integrated circuit isolated through dielectric material and a method for manufacturing the same. 4,131,909, Cl. 357-49.000.
Matsumoto, Yasuhiro; and Eguchi, Hisanori, to Dainippon Ink & Chemicals Inc. Cross-linkable vinyl chloride resin composition. 4,131,636, Cl. 260-875.000.
Matsunaga, Koichi: *See—*
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Matsushita Electric Works, Ltd.: *See—*
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Matthews, Russell B., to Johnson Controls, Inc. Fuel ignition system having interlock protection and electronic valve leak detection. 4,131,412, Cl. 431-16.000.

Mattsson, Lennart P. J., to U.S. Philips Corporation. Ditherable and tunable magnetron comprising axially tuning and rotational tuning members. 4,131,825, Cl. 315-39.610.
Max-Planck-Gesellschaft zur Foederung der Wissenschaften e.V.: *See—*
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Mayama, Osamu: *See—*
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Mayo, George L., to Speed-Saw, Inc. Apparatus for cutting floor truss web components. 4,131,143, Cl. 144-30.000.
McAuliffe, Gerald N.; and Wooters, Eldon W., to Outboard Marine Corporation. Arrangement for tapping battery bank alternately from opposite ends. 4,131,833, Cl. 318-440.000.
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McCarty, Leslie P., to Dow Chemical Company, The. Deuterated methylene chloride used as a solvent to reduce toxicity. 4,131,647, Cl. 424-10.000.
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Meier, Harry F., to Alaskaug, Inc. Strand dispensing device. 4,131,241, Cl. 242-156.200.
Meinel, Aden B.; and Meinel, Walter B., to Motorola, Inc. Solar energy collector and concentrator. 4,131,485, Cl. 136-89.0PC.
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Melcher, Ronald E.; and Schaefer, Frederick W., to Whitehead Brothers Company. Additive for green molding sand. 4,131,476, Cl. 106-38.350.
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Meyers, Albert I., to Board of Supervisors of Louisiana State University and Agricultural & Mechanical College. Synthesis of aldehydes and products of such synthesis. 4,131,623, Cl. 260-601.00R.
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Michel, Karl H.; and Miller, Robert F., to Eli Lilly and Company. Refillable column for chromatography at elevated pressure. 4,131,547, Cl. 210-198.00C.
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Milberger, Walter E.; and Rowe, Frederick J., to Westinghouse Electric Corp. Digital chopper regulator. 4,131,938, Cl. 363-101.000.
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Miller, Coleman J., to Westinghouse Electric Corp. Dipole phased array with capacitance plate elements to compensate for impedance variations over the scan angle. 4,131,896, Cl. 343-815.000.
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Miller, Ralph; and Gregg, Harry D., Jr., to Ciba-Geigy Corporation. Treatment of the waste from the production of tertiary butyl amine to recover sodium sulfate and methyl or sodium formate. 4,131,642, Cl. 423-193.000.
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- Mitra, Panchanan, to Ciba-Geigy Corporation. Method of laminating adhesive to a plurality of spaced fiber strips. 4,131,502, Cl. 156-179.000.
- Mitsubishi Chemical Industries, Limited: *See—*
  - Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,131,673, Cl. 424-247.000.
- Mitsubishi Kinzoku Kabushiki Kaisha: *See—*
  - Kaneko, Koichi; Abe, Kiyotaka; and Miura, Masakazu, 4,131,531, Cl. 204-208.000.
  - Saito, Yuichi; Iijima, Masayuki; and Mayama, Osamu, 4,131,450, Cl. 75-0.5BA.
- Mitsui Miike Seisakusho Engineering Company Limited: *See—*
  - Hashimoto, Mitsuo; and Koguchi, Mitsuo, 4,131,347, Cl. 353-28.000.
- Mitsuo, Takahashi; and Yoshio, Kawasumi, to Nippon Mining Co., Ltd. Surface treating process for copper foil for use in printed circuit. 4,131,517, Cl. 204-27.000.
- Mitter, Mathias. Pattern printing apparatus. 4,131,000, Cl. 68-200.000.
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  - Kaneko, Koichi; Abe, Kiyotaka; and Miura, Masakazu, 4,131,531, Cl. 204-208.000.
- Miyata, Takeshi: *See—*
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- Miyazako, Takushi; Sakaguchi, Shinji; Hanai, Sosuke; and Karino, Yukio, to Fuji Photo Film Co., Ltd. Photographic element with polymeric ammonium mordant. 4,131,469, Cl. 96-77.000.
- Mizuno, Kiyohumi; Maeda, Hiroaki; Takahashi, Shigeo; and Watanabe, Tsukasa, to Aisin Seiki Kabushiki Kaisha. Hydromechanical transmission. 4,131,035, Cl. 74-866.000.
- Mizutani, Toshiaki: *See—*
  - Ichinose, Noboru; Ookuma, Hideo; Mizutani, Toshiaki; and Hiraki, Hideaki, 4,131,479, Cl. 106-39.500.
- Mobay Chemical Corporation: *See—*
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- Mobil Oil Corporation: *See—*
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- Moeglich, Karl, to Westinghouse Electric Corp. Process and apparatus for removal of contaminants from water. 4,131,526, Cl. 204-149.000.
- Momose, Kenichiro; and Kumagai, Kiyoshi, to Tokyo Shibaura Electric Co., Ltd. Corrosion resistant magnetic alloy. 4,131,494, Cl. 148-31.570.
- Momose, Tetsuo: *See—*
  - Nagasaki, Katsumi; Tanimura, Koichi; Inoue, Yoshihiro; Yamazaki, Hiroyuki; and Momose, Tetsuo, 4,131,303, Cl. 285-302.000.
- Moncrieff-Yeates, Alexander J. Heating unit with vortical aerothermodynamic flow control. 4,131,105, Cl. 126-121.000.
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  - Franz, John E., 4,131,448, Cl. 71-86.000.
- Montedison S.p.A.: *See—*
  - Gozzo, Franco; Masoero, Marcella; Signorini, Ernesto; and Fabbrini, Riccardo, 4,131,621, Cl. 260-551.00C.
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  - Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,131,687, Cl. 426-3.000.
- Moore, Richard L. Apparatus for producing structural panels. 4,131,405, Cl. 425-143.000.
- Moores, Peter R.; and Shoffner, James E., to Fiber Materials, Inc. Selectively modified carbon-carbon composites. 4,131,708, Cl. 428-257.000.
- Morales, Adolfo J. Evaporator. 4,131,507, Cl. 159-23.000.
- Morales, Vincent M.: *See—*
  - Ferro, Jose V.; Morales, Vincent M.; and Reid, Billy G., 4,131,127, Cl. 137-384.600.
- Moran, Richard J., to McGraw-Edison Company. Bridge circuits for sensing currents in a three-phase A.C. circuit. 4,131,929, Cl. 361-93.000.
- Moraw, Roland; and Schadlich, Gunther, to Hoechst Aktiengesellschaft. Comparison reader for holographic identification cards. 4,131,337, Cl. 350-3.860.
- Mordarski, Walter J.; and Roth, Jerome, to Combustion Engineering, Inc. Nuclear fuel element. 4,131,511, Cl. 176-68.000.
- Moreno, Jose A. Paper guide device for copying machines. 4,131,364, Cl. 355-106.000.
- Morgenstern, Johannes: *See—*
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- Morimoto, Ichiro: *See—*
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- Morimoto, Toshio, to Matsushita Electric Industrial Co., Ltd. Magnetic tape and recording method therefor. 4,131,926, Cl. 360-134.000.
- Morley, John R.; and Howe, Ralph E., to Surface Activation Corporation. Coating a substrate by glow discharge graft polymerization. 4,131,691, Cl. 427-41.000.
- Morokuma, Tadashi; and Oinoue, Kenichi, to Olympus Optical Co., Ltd. Illumination device. 4,131,361, Cl. 355-70.000.
- Morris, Don L., to Eastman Kodak Company. Catalytic rearrangement of cyclic acetals to carboxylic esters. 4,131,739, Cl. 560-179.000.
- Morris, Earl F.: *See—*
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- Morrow, James G., Sr., to Manitowoc Company, Inc., The. Collapsible crane backhitch and overload signal system. 4,131,078, Cl. 116-4.000.
- Mortelmans, Paul A.: *See—*
  - Van Poucke, Raphael K.; Baeyens, Freddy C.; and Mortelmans, Paul A., 4,131,735, Cl. 544-267.000.
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- Mossman, Ralph A., to Tektronix, Inc. Aging resistant mixtures in bistable storage tubes. 4,131,821, Cl. 313-398.000.
- Motor Wheel Corporation: *See—*
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- Motorola, Inc.: *See—*
  - Davis, Earl K.; and Hansen, Kent W., 4,131,478, Cl. 106-53.000.
  - Davis, William F.; and Stein, Marc T., 4,131,928, Cl. 361-56.000.
  - Freeburg, Thomas A.; Joglekar, Manohar A.; and Pajakowski, Lawrence R., 4,131,849, Cl. 325-54.000.
  - Keeling, Michael C.; Bailey, William L.; Coleman, Michael G.; Lesk, Israel A.; and Pryor, Robert A., 4,131,755, Cl. 136-89.00P.
  - Lesk, Israel A.; and Pryor, Robert A., 4,131,488, Cl. 148-1.500.
  - Meinel, Aden B.; and Meinel, Walter B., 4,131,485, Cl. 136-89.0PC.
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- Moyer, James T., to International Business Machines Corporation. Channel data buffer apparatus for a digital data processing system. 4,131,940, Cl. 364-200.000.
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- Muething, Gerald F., Jr.: *See—*
  - Siegel, Harvey L.; Muething, Gerald F., Jr.; and Radkowski, Edward J., 4,131,941, Cl. 364-200.000.
- Muller, Herbert: *See—*
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- Muller, Marcel: *See—*
  - Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,131,655, Cl. 260-946.000.
- Muller, Otto; Gugel, Georg; and Kastl, Hans, to Kraftwerk Union Aktiengesellschaft. Elbow or bent tube manipulator, especially for ultrasonic testing in nuclear reactor installation. 4,131,018, Cl. 73-432.00R.
- Mulvey, Dennis M.: *See—*
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- Mummenthey, Hans-Dieter; and Fischer, Hannes, to Hoechst Aktiengesellschaft. Low-viscosity air-drying alkyd resins. 4,131,579, Cl. 260-22.0EP.
- Munson, Robert E.; Sanford, Gary G.; and Murphy, Lawrence R., to Ball Corporation. Stacked antenna structure for radiation of orthogonally polarized signals. 4,131,892, Cl. 343-700.0MS.
- Munson, Robert E.; and Sanford, Gary G., to Ball Corporation. Microstrip radiator with folded resonant cavity. 4,131,893, Cl. 343-700.0MS.
- Murdock, Keith C: *See—*
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- Muroshima, Takashi: *See—*
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- Murphy, Lawrence R.: *See—*
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- Murray, Robert M.: *See—*
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- Murty, Hari N., to Carborundum Company, The. Granular activated carbon manufacture from low rank agglomerating but not good coking bituminous coal treated with dilute inorganic acid. 4,131,566, Cl. 252-423.000.
- Musschoot, Albert, to General Kinematics Corporation. Vibratory apparatus. 4,131,193, Cl. 198-533.000.
- Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., to International Flavors & Fragrances Inc. Flavoring with terpenyl ethers. 4,131,687, Cl. 426-3.000.
- Muukka, Esko. Apparatus for locating and moving heavy units. 4,130,923, Cl. 29-281.500.
- Muzhzhavlev, Konstantin D.; Yazev, Vladimir D.; Schegolev, Vladimir I.; Ivanov, Andrei B.; Vasiliev, Alexei V.; Romanenko, Oleg N.; Kosarev, Sergei P.; and Ovcharenko, Vladimir G. Process for electrolytically producing magnesium and chlorine from fused salt bath. 4,131,522, Cl. 204-60.000.
- Myles, Samuel: *See—*
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- Nadelson, Jeffrey, to Sandoz, Inc. Substituted 4-hydroxy pyridones. 4,131,679, Cl. 424-263.000.

- Nagao, Taku: *See—*
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- Nagasaka, Akira; Ashitaka, Hidetomo; Kusuki, Yoshihiro; Oda, Denichi; and Yoshinaga, Toshimune, to Ube Industries, Inc. Process for producing carbon fiber. 4,131,644, Cl. 423-447.500.
- Nagasaki, Katsumi; Tanimura, Koichi; Inoue, Yoshihiro; Yamazaki, Hiroyuki; and Momose, Tetsuo, to Kubota, Ltd. Telescopic assembly for pipes for conveying fluidized materials. 4,131,303, Cl. 285-302.000.
- Nagel, Hartmut: *See—*
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- Najibi, Nassir. Spark plug power enhancer. 4,131,817, Cl. 313-124.000.
- Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, to Kokusai Denshin Denwa Kabushiki Kaisha. Facsimile signal transmission system. 4,131,915, Cl. 358-260.000.
- Nakai, Kaichiro; and Saito, Hisao, to Tokyo Shibaura Electric Co., Ltd. Filter device for high frequency generating device. 4,131,824, Cl. 315-39.510.
- Nakajima, Hiromichi: *See—*
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- Nakamura, Akihisa: *See—*
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- Nakamura, Yoshitsugu; Kawamura, Takeo; Saiki, Noritsugu; and Tokashiki, Michiyuki, to Teijin Limited. Fire-resistant thermoplastic polyester resin compositions and process for rendering polyesters fire-resistant. 4,131,594, Cl. 260-40.00R.
- Nakanishi, Mutsuo: *See—*
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- Nakata, Hozumi, to Nihon Dempa Kogyo Co., Ltd. Mechanism and method for supporting a tuning fork-type quartz crystal element. 4,131,816, Cl. 310-348.000.
- Namba, Susumu; and Aoyagi, Yoshinobu, to Rikagaku Kenkyusho. Method of producing echelette gratings. 4,131,506, Cl. 156-643.000.
- Narang, Rajendra K. Alignment bushing. 4,131,385, Cl. 408-241.00B.
- Narasimha, Madihally J., to Granger Associates. Digital filter bank. 4,131,766, Cl. 179-15.0FD.
- Narita, Kenichi: *See—*
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- Nastasi, Guy. Lock top for folding carton. 4,131,229, Cl. 229-39.00R.
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  - Mansfield, Wilfred P., 4,131,093, Cl. 123-41.850.
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- Naumann, Gunter: *See—*
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- Neat, Frank: *See—*
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- Nelson, Frank M.: *See—*
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- Neuer, Gunther: *See—*
  - Abhat, Ashok; and Neuer, Gunther, 4,131,158, Cl. 165-104.00S.
- Newhard, Nelson J., Jr., to Amchem Products, Inc. Chromate conversion composition and method for coating aluminum using low concentrations of chromate, phosphate and fluoride ions. 4,131,489, Cl. 148-6.160.
- Newman, George R.; and Lund, Raymond R., to Canron Railgroup. Spike driver. 4,131,067, Cl. 104-17.00R.
- Newsome, Norman M.: *See—*
  - Brumfield, Walter T., Jr.; Newsome, Norman M.; and Schweikle, George E., 4,131,932, Cl. 361-356.000.
- Nichi-Ei Bussan Co., Ltd.: *See—*
  - Hara, Kunio; and Yoshida, Kohsaku, 4,131,009, Cl. 72-391.000.
- Nichicon Capacitor, Ltd.: *See—*
  - Nishikawa, Shigeyoshi; Muroshima, Takashi; Sakaguchi, Hirokazu; Hasebe, Morihiko; Katagiri, Katsuji; and Inoue, Kazuo, 4,131,931, Cl. 361-315.000.
- Nichols, Wayne C.: *See—*
  - Stewart, John A.; and Nichols, Wayne C., 4,131,877, Cl. 340-58.000.
- Niehenke, Edward C.; and Klein, Gerald I., to Westinghouse Electric Corp. Beam lead dual parametric amplifier. 4,131,858, Cl. 330-4.900.
- Niezgoda, Anna: *See—*
  - Kiedik, Maciej; Grzywa, Edward; Kolt, Jozef; Terelak, Kazimierz; Czyz, Jerzy; and Niezgoda, Anna, 4,131,749, Cl. 568-781.000.
- Nifco, Inc.: *See—*
  - Okuda, Seiji; and Yuda, Takuo, 4,131,258, Cl. 248-73.000.
- Nihon Dempa Kogyo Co., Ltd.: *See—*
  - Nakata, Hozumi, 4,131,816, Cl. 310-348.000.
- Nikitits, Edwin; and Demers, Jean G., to Markus, Franklyn M. Combined folding table and seat assembly. 4,131,311, Cl. 297-159.000.
- Ninomiya, Takeshi, to Sony Corporation. Parallel-serial analog to digital converters. 4,131,885, Cl. 340-347.0AD.
- Nippon Electric Company, Ltd.: *See—*
  - Fujine, Nobuhiko; and Nakajima, Masato, 4,131,911, Cl. 357-74.000.
  - Tsuchiya, Takuichi; and Shinagawa, Shinichi, 4,131,927, Cl. 361-6.000.
- Nippon Gakki Seizo Kabushiki Kaisha: *See—*
  - Okumura, Takatoshi; and Okamoto, Shimaji, 4,131,049, Cl. 84-1.010.
- Nippon Mining Co., Ltd.: *See—*
  - Mitsuo, Takahashi; and Yoshio, Kawasumi, 4,131,517, Cl. 204-27.000.
- Nippon Oil Company Limited: *See—*
  - Hirata, Masakuni; and Matsuzaki, Yukio, 4,131,658, Cl. 261-142.000.
- Nippon Soken, Inc.: *See—*
  - Noguchi, Masaaki; Bunda, Tsuchio; and Tanaka, Taro, 4,131,086, Cl. 123-3.000.
  - Sawada, Daisaku; Goto, Kenji; Shigemaut, Takashi; Takeda, Yuji; Hattori, Tadashi; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,131,097, Cl. 123-117.00R.
- Nippon Steel Corporation: *See—*
  - Oishi, Akiyoshi; Harada, Tamotsu; and Ishikawa, Takashi, 4,131,490, Cl. 148-9.500.
  - Sasaki, Minoru; Ito, Kaoru; Minamida, Katsuhiro; and Fujita, Keiki, 4,131,668, Cl. 264-40.400.
- Nippondenso Co., Ltd.: *See—*
  - Kosuge, Shuichi, 4,131,886, Cl. 340-378.00R.
- Nischk, Gunther: *See—*
  - Radlmann, Eduard; Reinehr, Ulrich; Hoffmann, Peter; Arlt, Dieter; and Nischk, Gunther, 4,131,724, Cl. 526-16.000.
- Nishida, Minoru: *See—*
  - Sawada, Daisaku; Goto, Kenji; Shigemaut, Takashi; Takeda, Yuji; Hattori, Tadashi; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,131,097, Cl. 123-117.00R.
- Nishikawa, Shigeyoshi; Muroshima, Takashi; Sakaguchi, Hirokazu; Hasebe, Morihiko; Katagiri, Katsuji; and Inoue, Kazuo, to Nichicon Capacitor, Ltd. Impregnated capacitor. 4,131,931, Cl. 361-315.000.
- Nishimura, Toshimichi: *See—*
  - Yamanaka, Seisuke; Nagumo, Fumio; and Nishimura, Toshimichi, 4,131,913, Cl. 358-44.000.
- Nissan Motor Company, Ltd.: *See—*
  - Asano, Masaharu; and Manaka, Nobuzi, 4,131,091, Cl. 123-32.0EH.
  - Fujishiro, Takeshi; Aono, Shigeo; Hosaka, Akio; Asano, Masaharu; Manaka, Nobuzi; and Ezoe, Mituhiko, 4,131,089, Cl. 123-32.0EE.
  - Fushimi, Shingi; and Miyata, Takeshi, 4,131,492, Cl. 148-16.600.
  - Ouchi, Keido, 4,131,095, Cl. 123-59.0EC.
- Niwa, Haruki: *See—*
  - Kurono, Masayasu; Toda, Masaaki; Niwa, Haruki; Kosuge, Syunji; Iida, Takahumi; and Narita, Kenichi, 4,131,747, Cl. 562-469.000.
- Niwa, Kazuo: *See—*
  - Matsuda, Takashi; Niwa, Kazuo; and Sumitomo, Yasusuke, 4,131,909, Cl. 357-49.000.
- Noda, Hideo, to Shimano Industrial Company Limited. Fishing reel having an improved drag mechanism. 4,131,245, Cl. 242-217.000.
- Noda, Shiro, to Okuma Machinery Works Ltd. Interference prevention system for machine tool movable members. 4,131,836, Cl. 318-565.000.
- Noguchi, Masaaki; Bunda, Tsuchio; and Tanaka, Taro, to Nippon Soken, Inc. Fuel reforming apparatus for use with internal combustion engine. 4,131,086, Cl. 123-3.000.
- Nojima, Shoiti: *See—*
  - Komori, Masakazu; Shiga, Kazuyuki; Kitazato, Hajime; Okajima, Hiroaki; Tanaka, Yoshiharu; Nojima, Shoiti; Fukamachi, Masashige; and Kurima, Akinori, 4,131,565, Cl. 252-417.000.
- Nomura, Masahiro; and Hirabayashi, Yutaka, to Somar Manufacturing Co., Ltd. Photographic method of making relief member with negative dye image. 4,131,466, Cl. 96-49.000.
- Nonoyama, Tikahiro, to Sanmeidenki Kabushikikaisha. Load-bearing surface for a solenoid. 4,131,719, Cl. 428-598.000.
- Norco Industries, Inc.: *See—*
  - John, Julius F., 4,131,263, Cl. 254-8.00B.
- Norcross, James E., to Arcos Corporation. Electroslag boss and process. 4,130,931, Cl. 29-527.500.
- Norris Industries, Inc.: *See—*
  - Beisch, Hans R.; and Hempelmann, Heinrich J., 4,131,322, Cl. 301-37.0PB.
- North, James C.: *See—*
  - Hartman, Adrian R.; North, James C.; Reutlinger, George W.; and Shackle, Peter W., 4,131,910, Cl. 357-49.000.
- Northern Electric Company Limited: *See—*
  - Jukes, John A.; and McGettigan, Philip A., 4,131,690, Cl. 427-32.000.
- Northern Instruments Corporation: *See—*
  - Boerwinkle, Fred P., 4,131,583, Cl. 260-29.6HN.
- Norton, Henry J.: *See—*
  - Gotchel, Joel P.; and Norton, Henry J., 4,130,915, Cl. 19-304.000.

Nouvertne, Werner: *See—*
Adelmann, Siegfried; Margotte, Dieter; Vernaleken, Hugo; and Nouvertne, Werner, 4,131,575, Cl. 260-17.40R.
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Emmons, William D.; Nyi, Kayson; and Sperry, Peter R., 4,131,580, Cl. 260-29.6RW.
Oaki, Mamoru: *See—*
Utsunomiya, Kei; Soga, Kazuya; Shimasaki, Katsunori; Mito, Yutaka; Oaki, Mamoru; Haseba, Shigeru; Miki, Hiroetu; and Masaki, Michiko, 4,131,643, Cl. 423-239.000.
O'Brien, John F., to Xerox Corporation. Duplex reproduction system employing copy sheet cleaner. 4,131,360, Cl. 355-15.000.
Obsomer, Marc: *See—*
Bodson, Luc; Obsomer, Marc; and Michel, Edmond, 4,131,665, Cl. 264-572.000.
Oce-Industries Inc.: *See—*
Kufrin, Fred W.; and Carpentier, John H., 4,131,273, Cl. 271-4.000.
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Boatright, Paul A., 4,131,815, Cl. 310-323.000.
Ochi, Shuhei: *See—*
Araki, Masakatsu; Ochi, Shuhei; Kusunoki, Toshio; Ishii, Teizi; and Sakata, Shinichi, 4,131,121, Cl. 132-7.000.
O'Connor, Burdett H.: *See—*
Milgram, Jerome H.; Bartoo, Vance S.; and O'Connor, Burdett H., 4,131,397, Cl. 417-404.000.
Oda, Denichi: *See—*
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O'Farrell, Charles P.: *See—*
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Offshore Devices Inc.: *See—*
Milgram, Jerome H.; Bartoo, Vance S.; and O'Connor, Burdett H., 4,131,397, Cl. 417-404.000.
Ofstead, Eilert A.: *See—*
Wideman, Lawson G.; and Ofstead, Eilert A., 4,131,629, Cl. 260-666.00A.
Ogden, John M. Tennis racket and stringing method. 4,131,279, Cl. 273-73.00D.
Ogren, Sven O.: *See—*
Amit, Zalman; and Ogren, Sven O., 4,131,671, Cl. 424-244.000.
Ohashi, Hiroshi: *See—*
Inoue, Hiromitsu; Katayama, Susumu; and Ohashi, Hiroshi, 4,131,872, Cl. 340-1.00R.
Ohashi, Yutaka, to Tonka Corporation. Running toy with a flywheel. 4,130,963, Cl. 46-209.000.
Ohio-Nuclear, Inc.: *See—*
Braden, Arthur B.; McBride, Thomas R.; Styblo, Donald J.; Taylor, Samuel K.; and Richey, Joseph B., 4,131,802, Cl. 250-445.00T.
Ohkubo, Kazuo: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,131,673, Cl. 424-247.000.
Oinoue, Kenichi: *See—*
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Oishi, Akiyoshi; Harada, Tamotsu; and Ishikawa, Takashi, to Nippon Steel Corporation. Method for scarfing surface defects of a metal piece. 4,131,490, Cl. 148-9.500.
Ojiri, Kozo; and Sakai, Kohzo, to Asahi Glass Company Limited. Removing rutile from zircon electrostatically. 4,131,539, Cl. 209-127.00A.
Okada, Minoru: *See—*
Tsujimoto, Minoru; Okada, Minoru; Suzuki, Yuji; and Hirai, Toshihiro, 4,131,528, Cl. 204-157.10R.
Okajima, Hiroaki: *See—*
Komori, Masakazu; Shiga, Kazuyuki; Kitazato, Hajime; Okajima, Hiroaki; Tanaka, Yoshiharu; Nojima, Shoiti; Fukamachi, Masashige; and Kurima, Akinori, 4,131,565, Cl. 252-417.000.
Okamoto, Shimaji: *See—*
Okumura, Takatoshi; and Okamoto, Shimaji, 4,131,049, Cl. 84-1.010.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, to Mitsubishi Chemical Industries, Limited; and Shosuke Okamoto. N^2-arylsulfonyl-L-argininamides and the pharmaceutically acceptable salts thereof. 4,131,673, Cl. 424-247.000.
Okamura, Yuichi: *See—*
Kawada, Tomoshi; and Okamura, Yuichi, 4,131,206, Cl. 214-1.0BB.
Okazaki, Kichizaemon: *See—*
Hara, Toshitsugu; Abe, Yoritsune; Ootuka, Katsuji; Kashiwabara, Yasushige; Oshiyama, Hiroichi; Yanadori, Michio; Kato, Eisaku; and Okazaki, Kichizaemon, 4,130,997, Cl. 62-504.000.
Okazaki, Yashushi: *See—*
Ikezaki, Muneyoshi; Okazaki, Yashushi; Ito, Nobuo; Hoshiyama, Masao; Nagao, Taku; and Nakajima, Hiromichi, 4,131,686, Cl. 424-330.000.
Okidata Corporation: *See—*
Gruczelak, Norman P., 4,131,921, Cl. 360-86.000.
Okuda, Seiji; and Yuda, Takuo, to Nifco, Inc. Connector for plates. 4,131,258, Cl. 248-73.000.
Okuma Machinery Works Ltd.: *See—*
Noda, Shiro, 4,131,836, Cl. 318-565.000.
Okumura, Nobuya: *See—*
Hashimoto, Satoshi; Okumura, Nobuya; and Kazama, Kiyoshi, 4,131,601, Cl. 528-279.000.
Okumura, Takatoshi; and Okamoto, Shimaji, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument having memories containing waveshapes of different type. 4,131,049, Cl. 84-1.010.
Olin Corporation: *See—*
Schaffling, Otto G., 4,131,051, Cl. 86-1.00R.
Olsen, Roger F.; and Cantley, George, to Incom International Inc. Adjustable interlock hand lever. 4,131,037, Cl. 74-876.000.
Olsson, Knut A. G.; Astrom, Karl P. E.; and Johansson, Johan C., to Ifo Sanitar AB. Method and apparatus for removing filterable substances from a liquid. 4,131,546, Cl. 210-77.000.
Olympus Optical Co., Ltd.: *See—*
Kimura, Tadashi, 4,131,335, Cl. 350-218.000.
Kimura, Tadashi; and Watanabe, Fumitaka, 4,131,355, Cl. 354-225.000.
Morokuma, Tadashi; and Oinoue, Kenichi, 4,131,361, Cl. 355-70.000.
Ono, Koichi; Takahara, Toshiyuki; and Ito, Tetsuyoshi, to Daicel Ltd. Gas generator for inflatable vehicle collision bag. 4,131,299, Cl. 280-736.000.
Ono Pharmaceutical Co., Ltd.: *See—*
Kurono, Masayasu; Toda, Masaaki; Niwa, Haruki; Kosuge, Syunji; Iida, Takahumi; and Narita, Kenichi, 4,131,747, Cl. 562-469.000.
Ono, Takatoshi; and Ikeda, Michio, to Disco Kabushiki Kaisha. Apparatus for holding workpiece by suction. 4,131,267, Cl. 269-21.000.
Ono, Yusuke: *See—*
Uchiyama, Takashi; Suzuki, Ryoichi; Tsunekawa, Tokuichi; Kawana, Hiroyoshi; Ono, Yusuke; and Matsuda, Mutsuhide, 4,131,350, Cl. 354-31.000.
Onoda Cement Company, Ltd.: *See—*
Uchikawa, Hiroshi; and Kato, Hajime, 4,131,474, Cl. 106-38.350.
Ontario Energy Corporation: *See—*
Porteous, Kenneth, 4,131,535, Cl. 208-11.0LE.
Ookuma, Hideo: *See—*
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Ootuka, Katsuji: *See—*
Hara, Toshitsugu; Abe, Yoritsune; Ootuka, Katsuji; Kashiwabara, Yasushige; Oshiyama, Hiroichi; Yanadori, Michio; Kato, Eisaku; and Okazaki, Kichizaemon, 4,130,997, Cl. 62-504.000.
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Orford, Raymond L., to Lucas Industries Limited. Method of producing a sintered composition. 4,131,460, Cl. 75-204.000.
Orion Research Incorporated: *See—*
Diggens, Albert A., 4,131,428, Cl. 23-230.00R.
Orscheln Lever Sales Co.: *See—*
Gordy, Donald G.; and Klosterman, David P., 4,131,379, Cl. 403-197.000.
Osborne, Bodwell D., to Standard Oil Company (Indiana). VMP riser horizontal bearing. 4,130,995, Cl. 405-224.000.
Oshima, Ryoichiro: *See—*
Sato, Isao; Uchiyama, Yoshihiro; Ishibashi, Youji; Tsukahara, Satoshi; Oshima, Ryoichiro; and Hishinuma, Yukio, 4,131,432, Cl. 422-177.000.
Oshiyama, Hiroichi: *See—*
Hara, Toshitsugu; Abe, Yoritsune; Ootuka, Katsuji; Kashiwabara, Yasushige; Oshiyama, Hiroichi; Yanadori, Michio; Kato, Eisaku; and Okazaki, Kichizaemon, 4,130,997, Cl. 62-504.000.
Osterloh, Rolf; Jacobi, Manfred; and Kuesters, Werner, to BASF Aktiengesellschaft. Photoinitiators for photopolymerizable coating compositions. 4,131,529, Cl. 204-159.140.
Otis Elevator Company: *See—*
Krauer, Otto A., 4,131,183, Cl. 187-29.00R.
Ouchi, Keido, to Nissan Motor Company, Ltd. Internal combustion engine operated on a reformed gas. 4,131,095, Cl. 123-59.0EC.
Outboard Marine Corporation: *See—*
Cavil, David T.; McAuliffe, Gerald N.; and Van Rens, Russell J., 4,131,832, Cl. 318-358.000.
McAuliffe, Gerald N.; and Wooters, Eldon W., 4,131,833, Cl. 318-440.000.
Outram, John D., to Plessey Handel und Investments AG. Spectral analysis. 4,131,890, Cl. 343-108.00M.
Ouyang, Paul H. Short-channel V-groove complementary MOS device. 4,131,907, Cl. 357-42.000.
Ovcharenko, Vladimir G.: *See—*
Muzhzhavlev, Konstantin D.; Yazev, Vladimir D.; Schegolev, Vladimir I.; Ivanov, Andrei B.; Vasiliev, Alexei V.; Romanenko, Oleg N.; Kosarev, Sergei P.; and Ovcharenko, Vladimir G., 4,131,522, Cl. 204-60.000.
Ovutime, Inc.: *See—*
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Owen, Wickersham & Erickson: *See—*
Lindberg, John E., 4,131,134, Cl. 137-808.000.
Oy Wartsila AB: *See—*
Joutsjoki, Jukka, 4,131,063, Cl. 100-162.00R.
Oyama, Tadao, to Hitachi, Ltd. Apparatus for removing a shadow mask assembly from a panel and inserting same into a dummy panel. 4,130,919, Cl. 29-25.190.
Paczuski, Andrew W.: *See—*
Privon, George T.; and Paczuski, Andrew W., 4,131,396, Cl. 417-372.000.

Paisker, Ernst: *See—*
Scheinman, Arnold H.; and Paisker, Ernst, 4,131,207, Cl. 214-6.0DK.
Pajakowski, Lawrence R.: *See—*
Freeburg, Thomas A.; Joglekar, Manohar A.; and Pajakowski, Lawrence R., 4,131,849, Cl. 325-54.000.
Pakulis, Ivars E., to Kay-Ray, Inc. Microwave moisture sensor chute. 4,131,845, Cl. 324-58.50A.
Pallant, Joseph; and Johndrow, John P., to H. R. Turner (Willenhall) Limited. Vehicle seats. 4,131,316, Cl. 297-341.000.
Pallaske, James: *See—*
Erickson, Richard W.; Pallaske, James; and Talbert, Stephen, 4,131,771, Cl. 200-11.0DA.
Palotay, Joseph C.: *See—*
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Pan, Yen-Chi: *See—*
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Panday, Vinod: *See—*
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Pap-et, Inc.: *See—*
Goldenberg, Joseph, 4,131,278, Cl. 273-67.00R.
Papadakis, Edythe A. Zipper-type window for homes. 4,131,150, Cl. 160-368.00R.
Paper Converting Machine Company: *See—*
Hartnig, Richard E., 4,131,272, Cl. 270-73.000.
Slawny, Howard J., 4,131,271, Cl. 270-40.000.
Park, Dong-Sil: *See—*
Breiter, Manfred W.; Chatterji, Debajyoti; King, Randall N.; and Park, Dong-Sil, 4,131,226, Cl. 228-198.000.
Patterson, William W., III; and Grapes, Eugene F. Load binder apparatus. 4,131,264, Cl. 254-67.000.
Patton, Donna J.; and Riess, Robert G., to Bell & Howell Company. Carrying and storage case. 4,131,227, Cl. 229-8.000.
Patton, Roy D.; and Rietveld, Frank P. Christmas tree holder. 4,130,965, Cl. 47-40.500.
Paulen, Hendrikus J. G., to Stamicarbon, B.V. Process for the preparation of tacky mixtures based on rubbery ethene copolymers. 4,131,634, Cl. 260-845.000.
Payette, Lionel J.: *See—*
Karkoski, Joseph; Payette, Lionel J.; and Shurboff, John D., 4,131,714, Cl. 428-379.000.
Pearce, Charles W.; and Zaleckas, Vincent J., to Western Electric Company, Inc. Gettering semiconductor wafers with a high energy laser beam. 4,131,487, Cl. 148-1.500.
Pedgonay, John S. Firing torque error control system for rifled ordinance. 4,130,959, Cl. 42-75.00B.
Peinecke, Ludwig: *See—*
Blankenmeister, Anton; Peinecke, Ludwig; and Koob, Dieter, 4,131,197, Cl. 206-387.000.
Pelly, Brian R.; and Wood, Peter, to Electric Power Research Institute, Inc. Naturally commutated voltage-fed converter for linking a DC source to an AC system. 4,131,937, Cl. 363-96.000.
Penco, Sergio; Angelucci, Francesco; and Arcamone, Federico, to Societa Farmaceutici Italia S.p.A. Daunorubicin derivatives, their preparation and their use. 4,131,649, Cl. 424-180.000.
Peng, Sung S. Eyelids-turning and eye-washing fixture. 4,131,115, Cl. 128-249.000.
Pennwalt Corporation: *See—*
Popoff, Ivan C.; and Haines, Paul G., 4,131,622, Cl. 260-576.000.
Peregudov, Lev V.; and Malashin, Mikhail M. Chill-free foundry iron. 4,131,456, Cl. 75-124.000.
Perkin-Elmer Corporation, The: *See—*
Minar, Frank M.; and Abitante, Peter A., 4,131,328, Cl. 339-14.00R.
Perolin Company, Inc., The: *See—*
Scott, James F., 4,131,433, Cl. 44-51.000.
Perrey, Hermann; Matner, Martin; and Sinn, Gustav, to Bayer Aktiengesellschaft. Heat sensitizing mixture comprising an amide and a heat sensitizing agent which is a poly(alkylene oxide) containing urethane groups. 4,131,603, Cl. 528-45.000.
Perrone, George L.; Boorman, Robert W.; Holbrook, Michael R.; and Zanelli, Eugene A., to Garrett Corporation, The. Centrifugal compressor with improved range. 4,131,389, Cl. 415-211.000.
Pert, Maurice R.: *See—*
Sheppard, Stewart A.; Arbib, Philip B.; and Pert, Maurice R., 4,130,912, Cl. 15-210.00R.
Pescetto, James R., to L. R. Nelson Corporation. Adjustable bubbler sprinkler head. 4,131,234, Cl. 239-457.000.
Pessolano, Arsenio A.: *See—*
Shen, Tsung-Ying; Clark, Robert L.; Pessolano, Arsenio A.; Witzel, Bruce E.; and Lanza, Thomas J., 4,131,677, Cl. 424-256.000.
Peterson, C. Lynn, to Peterson Filters Corporation. Rotary disc filter scraper apparatus. 4,131,548, Cl. 210-331.000.
Peterson, Dennis R. Method and apparatus for accelerating a filament and the like. 4,131,045, Cl. 83-403.000.
Peterson Filters Corporation: *See—*
Peterson, C. Lynn, 4,131,548, Cl. 210-331.000.
Petit, Leon; Davin, Andre; and Gueguen, Jacques, to Institut National de la Recherche Agronomique. Process for obtaining purified protein isolates. 4,131,607, Cl. 260-123.500.
Petitpierre, Jean C., to Ciba-Geigy Corporation. Azo color former containing heat-sensitive recording material. 4,131,695, Cl. 427-148.000.
Petropoulos, Constantine C., to Eastman Kodak Company. Radiation sensitive polymeric o-nitrophenyl acetals and element. 4,131,465, Cl. 96-35.000.
Pettit, Donald; and Abbott, Stephen G., to Shoe and Allied Trades Research Association, The. Providing control signals for machine operations. 4,131,918, Cl. 360-1.000.
Pevrick Engineering Company, Inc.: *See—*
Hedrick, John R., 4,131,116, Cl. 128-305.000.
Pews, R. Garth, to Dow Chemical Company, The. Preparation of 2-chloro-4-toluenesulfonyl chloride. 4,131,619, Cl. 260-543.00R.
Pfannmuller, Joachim: *See—*
Bottcher, Hubert; Pfannmuller, Joachim; Kaebernick, Hartmut; Steiniger, Wolfgang; and Preuss, Horst-Dieter, 4,131,501, Cl. 156-157.000.
Pfleiderer, Hans-Joerg: *See—*
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Pflieger, Bernard; Sauvage, Philippe; and Tombrel, Francis, to Compagnie Generale des Etablissements Michelin. Reactive gaseous cooling medium for the manufacture of wire. 4,131,151, Cl. 164-89.000.
Pham, Kha M.: *See—*
Dalibard, Gerard; and Pham, Kha M., 4,131,723, Cl. 429-81.000.
Philip Morris Incorporated: *See—*
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Reusser, Robert E., 4,131,561, Cl. 252-171.000.
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Berger, James K., 4,131,920, Cl. 360-51.000.
Piret, Norbert L.; Hopper, Meinolf; and Kudelka, Herbert, to Duisburger Kupferhutte. Process for recovering silver and gold from chloride solutions. 4,131,454, Cl. 75-83.000.
Pirovano, Dante, to Industrie Pirelli S.p.A. Device for the mutual centering of relatively movable mechanic elements, particularly used on tire curing presses. 4,131,402, Cl. 425-38.000.
Pitney-Bowes, Inc.: *See—*
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Poortman, Karel A. Electronic tee off device. 4,131,280, Cl. 273-184.00R.
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Porteous, Kenneth, to Canada, Her Majesty the Queen in right of, as represented by the Minister of Energy, Mines and Resources; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity; Ontario Energy Corporation; Imperial Oil Limited; Canada-Cities Service, Ltd.; and Gulf Oil Canada Limited. Treatment of tumbler reject. 4,131,535, Cl. 208-11.0LE.
Porterfield, Richard F., to SCM Corporation. Dual segment continuous motion ribbon feed mechanism. 4,131,374, Cl. 400-232.000.
Powell, Aaron. Illuminated dancing shoes. 4,130,951, Cl. 36-137.000.
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Price, Robert J. Outdoor furniture with removable weather cover. 4,131,312, Cl. 297-184.000.
Priddy, Duane B., to Dow Chemical Company, The. Method for polymerizing olefinically unsaturated monomers employing a catalyst composition comprising (a) shock-sensitive organic peroxide and (b) an olefinic unsaturated non-homopolymerizable monomer. 4,131,728, Cl. 526-204.000.
Pridy, Whetstine B. Tubular member straightening, descaling and hydraulic testing apparatus. 4,131,005, Cl. 72-40.000.
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Reusser, Robert E., to Phillips Petroleum Company. Azeotropic compositions. 4,131,560, Cl. 252-171.000.
Reusser, Robert E., to Phillips Petroleum Company. Azeotropic compositions. 4,131,561, Cl. 252-171.000.
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Ruben, Samuel. Method for making positive electrode for lead-sulfuric acid storage battery. 4,131,515, Cl. 204-2.100.

Ruby, Joseph H., to Sperry Rand Corporation. Pneumatic pressure control valve. 4,131,130, Cl. 137-596.170.

Ruddle, Ronald W.; and Neat, Frank, to Foseco Trading AG. Feeding unit for a casting. 4,131,152, Cl. 164-359.000.

Rumball, Kenneth F., to Airfix Industries Limited. Containers. 4,131,212, Cl. 215-252.000.

Rumyantsev, Leonid A.; Esenovsky-Lashkov, Jury K.; Avershin, Vasily T.; Ilnitsky, Vladimir Y.; and Jurin, Ivan L., to Tsentralny Nauchno Issledovatelsky Avtomobilny i Avtomotorny Institut Nami; and Proizvodstvennoe Obiedinenie "Baz". Vehicle hydraulic transmission. 4,131,184, Cl. 192-3.260.

Ruoff, Manfred, to Robert Bosch GmbH. Hydraulic steering arrangement. 4,131,176, Cl. 180-131.000.

Rusinek, Stanley, Jr.; and Spector, George. Energy saving fireplace. 4,131,106, Cl. 126-121.000.

Rutzmoser, Hermann: *See—*
Becker, Harry; Doerflinger, Karl; Ey, Klaus; Reiter, Georg; Rutzmoser, Hermann; and Theus, Richard, 4,131,934, Cl. 361-428.000.

Ryan, Charles W., to Eli Lilly and Company. Process for preparing cis-hexahydrodibenzopyranones. 4,131,614, Cl. 260-345.300.

Ryan, Charles W.: *See—*
Dominianni, Samuel J.; and Ryan, Charles W., 4,131,656, Cl. 260-951.000.

Ryan, Frederick M.; and Handke, Paul C., to Westinghouse Electric Corp. Tagging particles which are easily detected by luminescent response, or magnetic pickup, or both. 4,131,064, Cl. 102-1.00R.

Ryno, Robert W., to A. O. Smith Corporation. Self-contained electric igniter with rechargeable battery. 4,131,413, Cl. 431-44.000.

Safety Jet Skisicherheitsbugel GmbH: *See—*
Thon, Dieter, 4,131,291, Cl. 280-11.37E.

Safir, Sidney R.: *See—*
Fanshawe, William J.; Epstein, Joseph W.; Crawley, Lantz S.; Hofmann, Corris M.; and Safir, Sidney R., 4,131,611, Cl. 260-326.800.

Sagaser, Thomas M.: *See—*
Bauer, James J.; Albright, Larry E.; Werner, James L.; Sagaser, Thomas M.; and Hoechst, Lonnie D., 4,131,225, Cl. 228-161.000.

Saggio, Anthony S.: *See—*
Bode, Charles H., Jr.; Saggio, Anthony S.; Wagner, George J., Jr.; and Wessel, Richard L., 4,131,220, Cl. 222-607.000.

Saiki, Noritsugu: *See—*
Nakamura, Yoshitsugu; Kawamura, Takeo; Saiki, Noritsugu; and Tokashiki, Michiyuki, 4,131,594, Cl. 260-40.00R.

Saita, Hiroshi: *See—*
Kimura, Shinji; Godai, Tomokazu; Minato, Shoji; Kobayashi, Minoru; Yamaga, Makoto; Maki, Shingo; Hashimoto, Yoshizo; Suga, Tetsuo; and Saita, Hiroshi, 4,131,784, Cl. 219-137.0WM.

Saito, Hisao: *See—*
Nakai, Kaichiro; and Saito, Hisao, 4,131,824, Cl. 315-39.510.

Saito, Yuichi; Iijima, Masayuki; and Mayama, Osamu, to Mitsubishi Kinzoku Kabushiki Kaisha. Process for manufacturing cobalt-base reduced powder. 4,131,450, Cl. 75-0.5BA.

Sakaguchi, Hirokazu: *See—*
Nishikawa, Shigeyoshi; Muroshima, Takashi; Sakaguchi, Hirokazu; Hasebe, Morihiko; Katagiri, Katsuji; and Inoue, Kazuo, 4,131,931, Cl. 361-315.000.

Sakaguchi, Shinji: *See—*
Miyazako, Takushi; Sakaguchi, Shinji; Hanai, Sosuke; and Karino, Yukio, 4,131,469, Cl. 96-77.000.

Sakai, Kohzo: *See—*
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Sakata, Shinichi: *See—*
Araki, Masakatsu; Ochi, Shuhei; Kusunoki, Toshio; Ishii, Teizi; and Sakata, Shinichi, 4,131,121, Cl. 132-7.000.

Sakurai, Osamu: *See—*
Tatsukawa, Osami; Sakurai, Osamu; and Serizawa, Hisayuki, 4,131,779, Cl. 219-10.55R.

Sandegren, Owe, to Landstingens Inkopscentral, L I C. Device for emptying a container. 4,131,217; Cl. 222-82.000.

Sanders, James M.: *See—*
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,131,687, Cl. 426-3.000.

Sandoz, Inc.: *See—*
Nadelson, Jeffrey, 4,131,679, Cl. 424-263.000.

Sanford, Gary G.: *See—*
Munson, Robert E.; Sanford, Gary G.; and Murphy, Lawrence R., 4,131,892, Cl. 343-700.0MS.
Munson, Robert E.; and Sanford, Gary G., 4,131,893, Cl. 343-700.0MS.

Sankyo Company, Limited: *See—*
Brunetti, Heimo; Rody, Jean; Soma, Nobuo; and Kurumada, Tomoyuki, 4,131,599, Cl. 260-45.80N.

Sanmeidenki Kabushikikaisha: *See—*
Nonoyama, Tikahiro, 4,131,719, Cl. 428-598.000.

Sanuki, Tetsuo: *See—*
Kako, Yuji; Kiguga, Toyoji; and Sanuki, Tetsuo, 4,131,582, Cl. 260-29.300.

Sanyo Electric Co., Ltd.: *See—*
Houshi, Teruo, 4,131,828, Cl. 318-138.000.

Sasaki, Minoru; Ito, Kaoru; Minamida, Katsuhiro; and Fujita, Keiki, to Nippon Steel Corporation. Iron ore pellet process control. 4,131,668, Cl. 264-40.400.

Sasson, Steven J.: *See—*
Lloyd, Gareth A.; and Sasson, Steven J., 4,131,919, Cl. 360-9.000.

Sato, Isao; Uchiyama, Yoshihiro; Ishibashi, Youji; Tsukahara, Satoshi; Oshima, Ryoichiro; and Hishinuma, Yukio, to Hitachi, Ltd. Apparatus for the treatment of gas turbine exhaust gas. 4,131,432, Cl. 422-177.000.

Sato, Katsuya: *See—*
Yoshida, Masashi; Iino, Yasuo; and Sato, Katsuya, 4,131,922, Cl. 360-90.000.

Sato, Yasuhito; Tanaka, Minoru; and Nakamura, Akihisa, to Honda Giken Kogyo Kabushiki Kaisha. Flame guide channel for internal combustion engine. 4,131,092, Cl. 123-32.0ST.

Satoh, Mitsunori; Hijikata, Masayuki; Maeda, Hiroshi; and Morimoto, Ichiro, to National Research Institute for Metals. Electrical contact material of silver base alloy. 4,131,458, Cl. 75-173.00R.

Sattelmeyer, Richard: *See—*
Schunck, Erich; Schmelzer, Heinz; and Sattelmeyer, Richard, 4,131,709, Cl. 428-261.000.

Saunders, David H., to British Hydromechanics Research Association, The. High velocity liquid jet cutting nozzle. 4,131,236, Cl. 239-589.000.

Saunders, John C.: *See—*
Evans, Delme; Saunders, John C.; and Williamson, William R. N., 4,131,682, Cl. 424-275.000.

Sauvage, Philippe: *See—*
Pflieger, Bernard; Sauvage, Philippe; and Tombrel, Francis, 4,131,151, Cl. 164-89.000.

Sawada, Daisaku; Goto, Kenji; Shigemaut, Takashi; Takeda, Yuji; Hattori, Tadashi; Yamaguchi, Hiroaki; and Nishida, Minoru, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition system for internal combustion engines. 4,131,097, Cl. 123-117.00R.

Sawyer, Joseph J. Roller guard for swimming pool cleaning hoses. 4,131,136, Cl. 138-110.000.

Saxe, Robert L.: *See—*
Witte, Michael; Saxe, Robert L.; and Thompson, Robert I., 4,131,334, Cl. 350-147.000.

Schadlich, Gunther: *See—*
Moraw, Roland; and Schadlich, Gunther, 4,131,337, Cl. 350-3.860.

Schaefer, Frederick W.: *See—*
Melcher, Ronald E.; and Schaefer, Frederick W., 4,131,476, Cl. 106-38.350.

Schaffling, Otto G., to Olin Corporation. Process for preparing a rocket motor. 4,131,051, Cl. 86-1.00R.

Schall, Myron M., to Dana Corporation. Friction clutch synchronizer with resilient gear coupling. 4,131,185, Cl. 192-53.00B.

Schaner, Ferdinand: *See—*
Ludemann, Heinz; Fengler, Harald; and Schaner, Ferdinand, 4,131,041, Cl. 83-94.000.

Schegolev, Vladimir I.: *See—*
Muzhzhavlev, Konstantin D.; Yazev, Vladimir D.; Schegolev, Vladimir I.; Ivanov, Andrei B.; Vasiliev, Alexei V.; Romanenko, Oleg N.; Kosarev, Sergei P.; and Ovcharenko, Vladimir G., 4,131,522, Cl. 204-60.000.

Scheinman, Arnold H.; and Paisker, Ernst. Automatic sheet-stacking and transport machine. 4,131,207, Cl. 214-6.0DK.

Scheithauer, Steffen: *See—*
Fischer, Gunther; Wenzel, Beate; Scheithauer, Steffen; Franz, Udo; Junge, Karl-Wilhelm; Schroter, Christof; Gahler, Siegfried; and Morgenstern, Johannes, 4,131,470, Cl. 96-107.000.

Scherrer, Igor; Berney, Jean-Claude; and Robert-Grandpierre, Jean-Claude, to Ebauches S.A. Electronic circuit for electronic watch. 4,130,988, Cl. 58-85.500.

Schiavone, Frank J., to Ball Corporation. High efficiency microstrip antenna structure. 4,131,894, Cl. 343-700.0MS.

Schickedanz, Willi. Timepiece. 4,130,987, Cl. 58-50.00R.

Schiminski, Herbert: *See—*
Dammann, Peter; Schippers, Heinz; Turk, Herbert; and Schiminski, Herbert, 4,130,983, Cl. 57-5.000.

Schippers, Heinz: *See—*
Dammann, Peter; Schippers, Heinz; Turk, Herbert; and Schiminski, Herbert, 4,130,983, Cl. 57-5.000.

Schirmer, Ulrich: *See—*
Koenig, Karl-Heinz; Schirmer, Ulrich; Wuerzer, Bruno; and Fett, Kurt, 4,131,751, Cl. 560-29.000.

Schlage Lock Company: *See—*
Rodseth, William G., 4,130,913, Cl. 16-49.000.

Schlossberg, Howard, to United States of America, Air Force. Fabry-Perot diplexer. 4,131,792, Cl. 250-199.000.

Schlumberger Technology Corporation: *See—*
Ingram, John D., 4,131,875, Cl. 340-15.5BH.

Schmelz, Helmut; and Schwaen, Werner, to Siemens Aktiengesellschaft. Capacitor dielectric with inner blocking layers and method for producing the same. 4,131,903, Cl. 357-10.000.

Schmelzer, Heinz: *See—*
Schunck, Erich; Schmelzer, Heinz; and Sattelmeyer, Richard, 4,131,709, Cl. 428-261.000.

Schmid, Markus, to Concast AG. Roller aprons for a multiple strand billet- or bloom casting installation containing more than two strands for the continuous casting of metals, especially steel. 4,131,153, Cl. 164-442.000.

Schmidt, Dennis L.: *See—*
Doorakian, George A.; Schmidt, Dennis L.; and Cornell, Martin C., III, 4,131,633, Cl. 260-837.00R.

Schmidt, Gunter, to Cubic Productron. Sheet film processor. 4,131,356, Cl. 354-322.000.

Schmidt, Jacob, deceased (by Schmidt, Mia H., administratrix), to United States of America, Navy. Circulation controlled rotor blade. 4,131,390, Cl. 416-20.00R.

Schmidt, John, Jr.; and Aryamane, Avinash, to Littelfuse, Inc. Plug-in fuse assembly construction. 4,131,869, Cl. 337-264.000.

Schmidt, Mia H., administratrix: *See—*
Schmidt, Jacob, deceased, 4,131,390, Cl. 416-20.00R.

Schmitt, Frederick L.: *See—*
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,131,687, Cl. 426-3.000.

Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Zahler, Wolf-Dietrich, to ESPE Fabrik Pharmazeutischer Praparate GmbH. Dental compositions comprising acrylic esters of tricyclo [5.2.1.0^{2,6}] decane polymers. 4,131,729, Cl. 526-282.000.

Schmitz, James E. Earth working apparatus. 4,131,162, Cl. 172-138.000.

Schmitz, Norbert L.: *See—*
Hucker, David J.; and Schmitz, Norbert L., 4,131,844, Cl. 323-45.000.

Schneider, Jon A.: *See—*
Black, Stanley H.; and Schneider, Jon A., 4,131,862, Cl. 331-4.000.

Schnell, Hans G., to Van Kooten B.V. Pile driving device. 4,131,166, Cl. 173-43.000.

Schollmeier, Gero, to Siemens Aktiengesellschaft. Switching circuit for regulating the repetition rate of clock pulses. 4,131,854, Cl. 328-63.000.

Schrage, Linus. Lens cap holder for cameras. 4,131,147, Cl. 150-52.00J.

Schriber, Louis; and Blaha, John F., to Harris Corporation. Rotary knife mounting. 4,131,047, Cl. 83-698.000.

Schroter, Christof: *See—*
Fischer, Gunther; Wenzel, Beate; Scheithauer, Steffen; Franz, Udo; Junge, Karl-Wilhelm; Schroter, Christof; Gahler, Siegfried; and Morgenstern, Johannes, 4,131,470, Cl. 96-107.000.

Schumacher, Gunter: *See—*
Schumacher, Gustav, II; and Schumacher, Gunter, 4,130,981, Cl. 56-208.000.

Schumacher, Gustav, II; and Schumacher, Gunter. Control system and method for combine harvesters. 4,130,981, Cl. 56-208.000.

Schunck, Erich; Schmelzer, Heinz; and Sattelmeyer, Richard, to Hoechst Aktiengesellschaft. Adhesive compositions. 4,131,709, Cl. 428-261.000.

Schuster, Samuel R.: *See—*
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Schwaen, Werner: *See—*
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Schweikle, George E.: *See—*
Brumfield, Walter T., Jr.; Newsome, Norman M.; and Schweikle, George E., 4,131,932, Cl. 361-356.000.

SCM Corporation: *See—*
Porterfield, Richard F., 4,131,374, Cl. 400-232.000.

Scott, James F., to Perolin Company, Inc., The. Fuel additives, additive compositions and methods of employing same to prevent corrosion of metal surfaces in contact with hot gaseous combustion products. 4,131,433, Cl. 44-51.000.

Scott Paper Company: *See—*
Gotchel, Joel P.; and Norton, Henry J., 4,130,915, Cl. 19-304.000.
Worrell, Robert A., Sr., 4,131,195, Cl. 206-205.000.

Scott, Ronald K., to Caterpillar Tractor Co. Dynamic timing indicating apparatus. 4,131,014, Cl. 73-119.00A.

Scovill Manufacturing Company: *See—*
Aureli, William D., 4,131,223, Cl. 225-94.000.

Seebacher, Baerbel, to Siemens Aktiengesellschaft. Method for making ceramic electric resistor. 4,131,692, Cl. 427-101.000.

Segerstrom, Lars, to Aktiebolaget Imo-Industri. Hydraulic rotary screw machine with axial balancing piston. 4,131,400, Cl. 418-203.000.

Schulster, Joseph P.; Halbach, Stephen N.; Haar, Darrell; and Crawford, Theron L. Machine for making dry cast concrete pipe. 4,131,408, Cl. 425-410.000.

Seidel, Sigurd, to Skischuhfabrik Dynafit Gesellschaft. Fastening means for sports shoes. 4,130,949, Cl. 36-50.000.

Seitzer, Walter H.: *See—*
Chong, Victor M.; and Seitzer, Walter H., 4,131,514, Cl. 204-129.000.

Seiz, Carl G.: *See—*
Jacoby, Peter H.; and Seiz, Carl G., 4,131,204, Cl. 211-192.000.

Seiz Corporation: *See—*
Jacoby, Peter H.; and Seiz, Carl G., 4,131,204, Cl. 211-192.000.

Selecontrol S.A.S.: *See—*
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Serizawa, Hisayuki: *See—*
Tatsukawa, Osami; Sakurai, Osamu; and Serizawa, Hisayuki, 4,131,779, Cl. 219-10.55R.

Setter, Gerald A., Jr.: *See—*
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Shabalina, Roza I.: *See—*
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Shackle, Peter W.: *See—*
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Shah, Dinesh O.; and Sibley, Murray J., to Barnes-Hind Pharmaceuticals, Inc. Treatment of dry eye. 4,131,651, Cl. 424-78.000.

Shahryar, Ishaq M.: *See—*
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Shamah, Eliahu: *See—*
Thompson, Jerry L.; Deluga, Sigmund S.; Harnach, James W.; and Shamah, Eliahu, 4,131,551, Cl. 252-33.000.

Sharma, Lakshmi P.; and Kurtz, Bruce E., to Allied Chemical Corporation. Process for producing bromine. 4,131,626, Cl. 260-658.00R.

Sharp Kabushiki Kaisha: *See—*
Kuzumoto, Takatoshi; Kumata, Kiyoshi; and Yamamoto, Keizo, 4,131,864, Cl. 331-116.00R.

Shaw, John T.: *See—*
Isherwood, Harold; and Shaw, John T., 4,131,574, Cl. 260-17.300.

Shea, Vincent; and Wojcik, Walter J., to International Business Machines Corporation. Pellicle cover for projection printing system. 4,131,363, Cl. 355-75.000.

Shell Oil Company: *See—*
Entwistle, Ian D., 4,131,449, Cl. 71-98.000.

Shen, Tsung-Ying; Clark, Robert L.; Pessolano, Arsenio A.; Witzel, Bruce E.; and Lanza, Thomas J., to Merck & Co., Inc. Anti-inflammatory oxazolo [5,4-b]pyridines. 4,131,677, Cl. 424-256.000.

Sheppard, Stewart A.; Arbib, Philip B.; and Pert, Maurice R., to Bib Hi-Fi Accessories Limited. Tape head cleaning device. 4,130,912, Cl. 15-210.00R.

Sherrington, Paul R.: *See—*
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Shiga, Kazuyuki: *See—*
Komori, Masakazu; Shiga, Kazuyuki; Kitazato, Hajime; Okajima, Hiroaki; Tanaka, Yoshiharu; Nojima, Shoiti; Fukamachi, Masashige; and Kurima, Akinori, 4,131,565, Cl. 252-417.000.

Shigemaut, Takashi: *See—*
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Shimakura, Mamoru: *See—*
Takematsu, Shigeru; Yoshida, Tohji; Ikushima, Yukio; Takeuchi, Kunio; Kakinaka, Arao; Matsunaga, Koichi; Shimakura, Mamoru; and Komura, Yoji, 4,131,803, Cl. 250-563.000.

Shimano Industrial Company Limited: *See—*
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Shimasaki, Katsunori: *See—*
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Shinagawa, Shinichi: *See—*
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Shinohara, Hironobu: *See—*
Yoshida, Yoshinori; Kobayashi, Tutomu; Shinohara, Hironobu; and Hanari, Izumi, 4,131,743, Cl. 560-244.000.

Shiraogawa, Yukio, to Tokyo Shibaura Electric Co., Ltd. Microprogrammed computer employing a decode read only memory (DROM) and a microinstruction read only memory (ROM). 4,131,943, Cl. 364-200.000.

Shoberg, Robert D., to Photonic Systems, Inc. High speed movie camera. 4,131,343, Cl. 352-84.000.

Shoe and Allied Trades Research Association, The: *See—*
Pettit, Donald; and Abbott, Stephen G., 4,131,918, Cl. 360-1.000.

Shoei Electric Co., Ltd.: *See—*
Kohga, Masayuki; and Ishii, Katsuto, 4,131,847, Cl. 324-141.000.

Shoffner, James E.: *See—*
Moores, Peter R.; and Shoffner, James E., 4,131,708, Cl. 428-257.000.

Shopalovich, Predrag, to United States of America, Army. Flexible slide fastener. 4,130,917, Cl. 205.1 R-.

Shosuke Okamoto: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,131,673, Cl. 424-247.000.

Shurboff, John D.: *See—*
Karkoski, Joseph; Payette, Lionel J.; and Shurboff, John D., 4,131,714, Cl. 428-379.000.

Shuster, Edward J.: *See—*
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Shutt, James R., to Electro-Therm, Inc. Electrically heated liquid tank employing heat pipe heat transfer means. 4,131,785, Cl. 219-326.000.

Shy, Min-Ching. Folding means for supporting legs of roaster oven with high stability. 4,131,261, Cl. 248-439.000.

Siarto, Andrew V., to Siorto Machine & Tool Co., Inc. Machine tool. 4,130,920, Cl. 29-38.00R.

Sibley, Murray J.: *See—*
Shah, Dinesh O.; and Sibley, Murray J., 4,131,651, Cl. 424-78.000.

Sick, Erwin; Walter, Arthur; and Fetzer, Gunter, to Erwin Sick Gesellschaft m.b.H. Optik-Elektronik. Electrooptical scanning device. 4,131,804, Cl. 250-566.000.

Siegel, Harvey L.; Muething, Gerald F., Jr.; and Radkowski, Edward J., to Itek Corporation. Linked microprogrammed plural processor system. 4,131,941, Cl. 364-200.000.

- Siegfried Aktiengesellschaft: *See—*
  - Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, 4,131,608, Cl. 260-307.00D.
- Siemens Aktiengesellschaft: *See—*
  - Aulich, Hubert; and Grabmaier, Josef, 4,131,447, Cl. 65-325.000.
  - Becker, Harry; Doerflinger, Karl; Ey, Klaus; Reiter, Georg; Rutzmoser, Hermann; and Theus, Richard, 4,131,934, Cl. 361-428.000.
  - Dannhauser, Friedrich; and Porst, Alfred, 4,131,339, Cl. 357-13.000.
  - Franke, Kurt, 4,131,797, Cl. 250-322.000.
  - Hohne, Karl, 4,131,570, Cl. 252-473.000.
  - Ihlein, Walter; Kleeberg, Wolfgang; Markert, Helmuth; and Mertens, Willi, 4,131,600, Cl. 528-53.000.
  - Kirschner, Nikolaus, 4,131,806, Cl. 307-215.000.
  - Knauer, Karl; and Pfleiderer, Hans-Joerg, 4,131,810, Cl. 307-311.000.
  - Lange, Heinrich, 4,131,835, Cl. 318-562.000.
  - Michel, Alfred; Henkel, Hans-Joachim; Koch, Christian; and Kostka, Hana, 4,131,569, Cl. 252-462.000.
  - Schmelz, Helmut; and Schwaen, Werner, 4,131,903, Cl. 357-10.000.
  - Schollmeier, Gero, 4,131,854, Cl. 328-63.000.
  - Seebacher, Baerbel, 4,131,692, Cl. 427-101.000.
  - Wachs, Walter; and Stickel, Heinz, 4,131,923, Cl. 360-106.000.
  - Wiesner, Wolfgang, 4,131,840, Cl. 318-685.000.
  - Windele, Josef, 4,131,358, Cl. 355-3.0TR.
- Signorini, Ernesto: *See—*
  - Gozzo, Franco; Masoero, Marcella; Signorini, Ernesto; and Fabbrini, Riccardo, 4,131,621, Cl. 260-551.00C.
- Sika, Zigurd K.: *See—*
  - Apsit, Voldemar V.; Sika, Zigurd K.; and Kurkalov, Ivan I., 4,131,811, Cl. 310-12.000.
- Silverman, Avrum. False color photographic element and process. 4,131,464, Cl. 96-22.000.
- Silvers, Harold N.: *See—*
  - Lai, Kwo-Hrong; and Silvers, Harold N., 4,131,731, Cl. 528-370.000.
- Silvestrini, Bruno, to Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A. Use of combinations of L-DOPA with trazodone and L-DOPA with etoperidone in Parkinsonism. 4,131,675, Cl. 424-250.000.
- Simpson, George H.: *See—*
  - Ball, George A., Jr.; and Simpson, George H., 4,131,657, Cl. 261-39.00E.
  - Dombrowski, Joseph A.; Baxter, Clement T.; Howard, Frederick B.; and Simpson, George H., 4,131,868, Cl. 337-113.000.
- Singer Company, The: *See—*
  - Bayley, Donald S., 4,131,443, Cl. 65-17.000.
  - Carollo, Jerome T., 4,131,345, Cl. 352-132.000.
  - Johnson, Ralph E., 4,131,076, Cl. 112-210.000.
  - Stavis, Gus, 4,131,891, Cl. 343-112.00S.
  - Wurst, John W., 4,131,075, Cl. 112-158.00E.
- Sinn, Gustav: *See—*
  - Perrey, Hermann; Matner, Martin; and Sinn, Gustav, 4,131,603, Cl. 528-45.000.
- Siorto Machine & Tool Co., Inc.: *See—*
  - Siarto, Andrew V., 4,130,920, Cl. 29-38.00R.
- Siposs, George G. Blood shut-off valve. 4,131,431, Cl. 422-45.000.
- Sirtl, Erhard: *See—*
  - Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, 4,131,659, Cl. 264-25.000.
- Siy, Pepe; and Brown, Joseph R., to Burroughs Corporation. Signature verification pen. 4,131,880, Cl. 340-146.3SY.
- Sjoblom, Bror A. Method for transport of manure and a device according to the method. 4,131,394, Cl. 417-481.000.
- Skahill, Fred J., to United States of America, Army. Drum cam with anti hang-fire feature. 4,131,052, Cl. 89-11.000.
- Skeen, Lawrence, to Bauer Bros. Co., The. System and apparatus for milling corn starch and like raw materials. 4,131,061, Cl. 99-521.000.
- Skischuhfabrik Dynafit Gesellschaft: *See—*
  - Seidel, Sigurd, 4,130,949, Cl. 36-50.000.
- Skyline Corporation: *See—*
  - Werner, Michael F., 4,131,301, Cl. 280-789.000.
- Slama, Georges S.: *See—*
  - Randon, Jean-Louis R. G.; and Slama, Georges S., 4,131,697, Cl. 427-249.000.
- Slawny, Howard J., to Paper Converting Machine Company. Method and apparatus for interfolding. 4,131,271, Cl. 270-40.000.
- Smirnov, Anatoly G.: *See—*
  - Minachev, Khabib M.; Mortikov, Evgeny S.; Leontiev, Alexandr S.; Smirnov, Anatoly G.; Kononov, Nikolai F.; Masloboev-Shvedov, Alexei A.; Zhomov, Alexandr K.; and Kholdyakov, Nikolai I., 4,131,750, Cl. 568-901.000.
- Smith, Alfred H., Jr., to General Electric Company. Low vapor transmission rate silicone composition. 4,131,588, Cl. 260-37.0SB.
- Smith, Alfred H., Jr., to General Electric Company. Low temperature transmission room temperature vulcanizable silicone compositions. 4,131,589, Cl. 260-37.0SB.
- Smith, Edric R., to Smiths Industries Limited. Sensor-assemblies for engines. 4,131,756, Cl. 136-230.000.
- Smith, Grant H.; and Carlson, Ronald L., to Borg-Warner Corporation. Friction clutch apparatus. 4,131,187, Cl. 192-99.00A.
- Smith, Herman W., to Upjohn Company, The. 6-Hydroxy-PGE$_1$ compounds. 4,131,738, Cl. 560-121.000.
- Smith, James. Automatic spring-powered battery charging device. 4,131,842, Cl. 320-61.000.
- Smith, Leslie H., to Imperial Chemical Industries Limited. Pharmaceutical compositions and uses of alkanolamine derivatives. 4,131,685, Cl. 424-322.000.
- Smith, Paul L.: *See—*
  - Walker, Basil E.; Pohanka, Robert C.; Smith, Paul L.; and Rice, Roy W., 4,131,444, Cl. 65-32.000.
- SmithKline Corporation: *See—*
  - Gleason, John G., 4,131,734, Cl. 544-26.000.
  - Hill, David T.; Sutton, Blaine M.; and Lantos, Ivan, 4,131,732, Cl. 536-121.000.
- Smiths Industries Limited: *See—*
  - Smith, Edric R., 4,131,756, Cl. 136-230.000.
- Snow, Herman I. Folding grapple for traps. 4,130,961, Cl. 43-96.000.
- Societa Farmaceutici Italia S.p.A.: *See—*
  - Penco, Sergio; Angelucci, Francesco; and Arcamone, Federico, 4,131,649, Cl. 424-180.000.
- Societe Anonyme D.B.A.: *See—*
  - Tanguy, Christian, 4,131,125, Cl. 137-118.000.
- Societe Anonyme Dite: Les Cables de Lyon: *See—*
  - Dubost, Rene; Gauthier, Francis; and Mignien, Georges, 4,131,404, Cl. 425-129.00R.
- Societe d'Etudes de Produits Chimiques: *See—*
  - Esanu, Andre, 4,131,617, Cl. 260-465.00D.
- Societe dite: Gatrun Anstalt: *See—*
  - Corbic, Yves J., 4,131,211, Cl. 215-2.000.
- Societe Generale de Constructions Electriques et Mecaniques "Alsthom et Cie": *See—*
  - Chillier-Duchatel, Nicole; and Verger, Bernard, 4,131,532, Cl. 204-256.000.
- Soga, Kazuya: *See—*
  - Utsunomiya, Kei; Soga, Kazuya; Shimasaki, Katsunori; Mito, Yutaka; Oaki, Mamoru; Haseba, Shigeru; Miki, Hiroetu; and Masaki, Michiko, 4,131,643, Cl. 423-239.000.
- Sokol, Florence L.: *See—*
  - Sokol, John J.; and Sokol, Florence L., 4,131,083, Cl. 119-51.500.
- Sokol, John J.; and Sokol, Florence L. Bird unit. 4,131,083, Cl. 119-51.500.
- Sokoly, John; and Roberts, Kenneth N., to Essex Group, Inc. Door lock actuator with override mechanism. 4,131,306, Cl. 292-201.000.
- Solai Vignola di Fabiani Orlando e C.-Societa in nome collettivo: *See—*
  - Abate, Giorgio, 4,131,670, Cl. 264-256.000.
- Solec International, Inc.: *See—*
  - Della-Vedowa, Richard P.; and Shahryar, Ishaq M., 4,131,123, Cl. 136-89.00P.
- Sollars, Herbert M. Animal feeding equipment. 4,131,082, Cl. 119-51.500.
- Solon Manufacturing Company, The: *See—*
  - Holmes, Peter C., 4,131,050, Cl. 85-62.000.
- SOLVAY & Cie.: *See—*
  - Bodson, Luc; Obsomer, Marc; and Michel, Edmond, 4,131,665, Cl. 264-572.000.
- Soma, Nobuo: *See—*
  - Brunetti, Heimo; Rody, Jean; Soma, Nobuo; and Kurumada, Tomoyuki, 4,131,599, Cl. 260-45.80N.
- Somar Manufacturing Co., Ltd.: *See—*
  - Nomura, Masahiro; and Hirabayashi, Yutaka, 4,131,466, Cl. 96-49.000.
- Sony Corporation: *See—*
  - Hirai, Jun, 4,131,912, Cl. 358-4.000.
  - Hirano, Takayasu; Hisagen, Yoshiaki; Takamizawa, Minoru; and Yoshioka, Hiroshi, 4,131,717, Cl. 428-447.000.
  - Machida, Tetsuo, 4,131,243, Cl. 242-199.000.
  - Ninomiya, Takeshi, 4,131,885, Cl. 340-347.0AD.
  - Yamanaka, Seisuke; Nagumo, Fumio; and Nishimura, Toshimichi, 4,131,913, Cl. 358-44.000.
- Spar Aerospace Producs Ltd.: *See—*
  - English, Christopher D., 4,131,812, Cl. 310-13.000.
- Spector, George: *See—*
  - Rusinek, Stanley, Jr.; and Spector, George, 4,131,106, Cl. 126-121.000.
- Spectrum X-Ray Corporation: *See—*
  - Hogan, William F., 4,131,801, Cl. 250-439.00R.
- Speed-Saw, Inc.: *See—*
  - Mayo, George L., 4,131,143, Cl. 144-30.000.
- Speer, Thomas L.: *See—*
  - Watson, George H.; and Speer, Thomas L., 4,131,416, Cl. 299-2.000.
- Spengler, Heinz, to G. Rau. Heavy-duty heat-responsive bimetallic material. 4,131,720, Cl. 428-619.000.
- Sperry, Peter R.: *See—*
  - Emmons, William D.; Nyi, Kayson; and Sperry, Peter R., 4,131,580, Cl. 260-29.6RW.
- Sperry Rand Corporation: *See—*
  - Black, Stanley H.; and Schneider, Jon A., 4,131,862, Cl. 331-4.000.
  - Fletcher, Steven J.; Wright, Jeffrey L.; and Davis, Richard S., 4,131,949, Cl. 364-900.000.
  - Ruby, Joseph H., 4,131,130, Cl. 137-596.170.
- Spielau, Paul: *See—*
  - Alfter, Franz W.; Breitscheidel, Hans-Ulrich; Mecklenburg, Gunter; and Spielau, Paul, 4,131,702, Cl. 428-76.000.
- Spinner, Ulrich: *See—*
  - Menth, Anton; Nagel, Hartmut; and Spinner, Ulrich, 4,131,495, Cl. 148-31.570.
- Spitz, Edward K.; and Cox, Lawton E., to Raybestos-Manhattan, Inc. Waste asbestos recovery from production of asbestos products. 4,131,661, Cl. 264-38.000.

- Sprague Electric Company: *See—*
  - Bernard, Walter J.; and Szpak, Stanley P., 4,131,520, Cl. 204-42.000.
  - Clement, Warren J., 4,131,935, Cl. 361-433.000.
- Sprauer, Jerome W., to Du Pont de Nemours, E. I., and Company. Process for preparing polyamide from diacid-rich component and diamine-rich component. 4,131,712, Cl. 528-335.000.
- Spring, Peter: *See—*
  - Einstein, Bernard C.; and Spring, Peter, 4,131,782, Cl. 219-121.0LM.
- Springer, Barry R. System for multistation remote position indication and control. 4,131,839, Cl. 318-675.000.
- Square D Company: *See—*
  - Brumfield, Walter T., Jr.; Newsome, Norman M.; and Schweikle, George E., 4,131,932, Cl. 361-356.000.
  - Ehrenberger, Frank T., 4,131,776, Cl. 200-158.000.
- Stamicarbon, B.V.: *See—*
  - Paulen, Hendrikus J. G., 4,131,634, Cl. 260-845.000.
- Standard Oil Company: *See—*
  - Hardman, Harley F., 4,131,631, Cl. 260-683.300.
  - Thompson, Jerry L.; Deluga, Sigmund S.; Harnach, James W.; and Shamah, Eliahu, 4,131,551, Cl. 252-33.000.
- Standard Oil Company (Indiana): *See—*
  - Osborne, Bodwell D., 4,130,995, Cl. 405-224.000.
  - Watson, George H.; and Speer, Thomas L., 4,131,416, Cl. 299-2.000.
  - West, C. Thomas, 4,131,553, Cl. 252-33.000.
- Stanley-Mabo S.A.: *See—*
  - Quenot, Michel, 4,131,244, Cl. 242-107.200.
- Statni vyzkumny ustav materialu: *See—*
  - Kupf, Lubomir; and Kos, Vladimir, 4,131,411, Cl. 425-559.000.
- Staton, Marshall J.: *See—*
  - Bazzle, Lillian M.; and Staton, Marshall J., 4,130,950, Cl. 36-127.000.
- Stauffer Chemical Company: *See—*
  - Jacobs, Barry A., 4,131,660, Cl. 264-26.000.
- Stavis, Gus, to Singer Company, The. Passive microwave velocity sensor. 4,131,891, Cl. 343-112.00S.
- Steag Kernenergie G.m.b.H.: *See—*
  - Bahr, Werner; Drobnik, Stefan; Hild, Werner; Kroebel, Reinhard; Meyer, Alfred; and Naumann, Gunter, 4,131,563, Cl. 252-301.10W.
- Steckel, Thomas F., to Lubrizol Corporation, The. Overbased bridged phenol metal salt/halo carboxylic acid condensate additives for lubricants. 4,131,554, Cl. 252-33.600.
- Steigerwald, Conrad J.: *See—*
  - Rich, Dennis E.; and Steigerwald, Conrad J., 4,131,042, Cl. 83-100.000.
- Stein, Marc T.: *See—*
  - Davis, William F.; and Stein, Marc T., 4,131,928, Cl. 361-56.000.
- Steiner American Corporation: *See—*
  - Cassia, Antonio M., 4,131,044, Cl. 83-205.000.
- Steiner, Edward L.: *See—*
  - Gillett, Kenneth; Steiner, Edward L.; Fiske, Kenton W.; Davis, Kenneth A.; Kukucka, William P.; Criswell, Thomas; and Richardson, Philip, 4,131,942, Cl. 364-200.000.
  - Richardson, Philip; Steiner, Edward L.; Daughton, John W.; Fiske, Kenton W.; and Criswell, Thomas, 4,131,945, Cl. 364-200.000.
- Steiniger, Wolfgang: *See—*
  - Bottcher, Hubert; Pfannmuller, Joachim; Kaebernick, Hartmut; Steiniger, Wolfgang; and Preuss, Horst-Dieter, 4,131,501, Cl. 156-157.000.
- Stephanoff, Nicholas N., to Energy Processing and Equipment Co. Fluid energy mill for large particulate materials. 4,131,239, Cl. 241-39.000.
- Stephens, Daniel R. Safety apparatus for operating clutch actuated, movable ram machines. 4,131,189, Cl. 192-129.00B.
- Stephens, James B.: *See—*
  - United States of America, National Aeronautics and Space Administration; Miller, Charles G.; and Stephens, James B., 4,131,336, Cl. 350-292.000.
- Sterling, Maurice, to Eby Company. Stacking cable clamp. 4,131,257, Cl. 248-67.500.
- Sterndent Corporation: *See—*
  - French, Park; and Conaway, William H., 4,131,367, Cl. 356-405.000.
- Stewart, John A.; and Nichols, Wayne C., to General Motors Corporation. Low tire pressure indicator circuit. 4,131,877, Cl. 340-58.000.
- Stickel, Heinz: *See—*
  - Wachs, Walter; and Stickel, Heinz, 4,131,923, Cl. 360-106.000.
- Stieber, Volker A. W., to Applied Radiation Corporation. Ionization chamber. 4,131,799, Cl. 250-385.000.
- Stiles, Alvin B., to Du Pont de Nemours, E. I., and Company. Methanation catalyst. 4,131,616, Cl. 260-449.60M.
- Stone, Dennis C., to Dynascan Corporation. Meter control circuit. 4,131,846, Cl. 324-132.000.
- Stora Kopparbergs Bergslags AB: *See—*
  - Collin, Per H., 4,131,452, Cl. 75-60.000.
- Stork, Gilbert J.: *See—*
  - Untch, Karl G.; and Stork, Gilbert J., 4,131,746, Cl. 560-255.000.
- Stoutmeyer, Ronald G.; and Alltop, William O., to United States of America, Navy. Lateral photodetectors. 4,131,793, Cl. 250-211.00J.
- Strader, Don S., to Motor Wheel Corporation. Self-damping trailer hitch. 4,131,296, Cl. 280-485.000.
- Street, Anthony C.: *See—*
  - Lloyd, Robert G.; Street, Anthony C.; and Golden, Donald M. G. R., deceased, 4,131,251, Cl. 244-137.00R.
- Strohmeyer, Willi. Apparatus for severing a web. 4,131,046, Cl. 83-471.200.
- Stubben GmbH, Riding Equipment: *See—*
  - Bischeltsrieder, Lorenz, 4,130,979, Cl. 54-44.000.
- Stupay, Lawrence J., to Bunker Ramo Corporation. Mounting device for electrical connectors. 4,131,330, Cl. 339-125.00R.
- Styblo, Donald J.: *See—*
  - Braden, Arthur B.; McBride, Thomas R.; Styblo, Donald J.; Taylor, Samuel K.; and Richey, Joseph B., 4,131,802, Cl. 250-445.00T.
- Sue, Takaji, to Ricoh Company, Ltd. Sheet feed cassette. 4,131,274, Cl. 271-9.000.
- Suga, Tetsuo: *See—*
  - Kimura, Shinji; Godai, Tomokazu; Minato, Shoji; Kobayashi, Minoru; Yamaga, Makoto; Maki, Shingo; Hashimoto, Yoshizo; Suga, Tetsuo; and Saita, Hiroshi, 4,131,784, Cl. 219-137.0WM.
- Sugalski, Raymond K., to General Electric Company. Non-fouling resealable vent. 4,131,722, Cl. 429-55.000.
- Sugawara, Toru: *See—*
  - Amano, Matsuo; Kobori, Sigeyuki; and Sugawara, Toru, 4,131,930, Cl. 361-211.000.
- Sugiura, Katsumi: *See—*
  - Etoh, Kunihiko; and Sugiura, Katsumi, 4,131,838, Cl. 318-603.000.
- Sult, Gratz M. Refrigeration system and evaporator unit therefor. 4,130,996, Cl. 62-113.000.
- Sumitomo Chemical Company, Limited: *See—*
  - Iwahashi, Shunji; Yamasaki, Masahiro; and Fujita, Takanori, 4,131,483, Cl. 134-1.000.
- Sumitomo Durez Company, Ltd.: *See—*
  - Kako, Yuji; Kiguga, Toyoji; and Sanuki, Tetsuo, 4,131,582, Cl. 260-29.300.
- Sumitomo Metal Industries, Ltd.: *See—*
  - Ito, Yoshinori; and Nakanishi, Mutsuo, 4,131,781, Cl. 219-73.000.
- Sumitomo, Yasusuke: *See—*
  - Matsuda, Takashi; Niwa, Kazuo; and Sumitomo, Yasusuke, 4,131,909, Cl. 357-49.000.
- Sun Oil Company of Pennsylvania: *See—*
  - Chong, Victor M.; and Seitzer, Walter H., 4,131,514, Cl. 204-129.000.
  - Hansel, William B., 4,131,215, Cl. 222-26.000.
- Sunde, Paul B. Seismic safety cutoff device. 4,131,124, Cl. 137-45.000.
- Sundeen, Joseph E.; and Hauck, Frederic P., to E. R. Squibb & Sons, Inc. 4,5-Disubstituted-1-aminoalkyl cyclohexenes. 4,131,744, Cl. 560-252.000.
- Sundstrand Corporation: *See—*
  - Hucker, David J.; and Schmitz, Norbert L., 4,131,844, Cl. 323-45.000.
  - Mabe, William J., Jr., 4,131,386, Cl. 415-98.000.
  - Privon, George T.; and Paczuski, Andrew W., 4,131,396, Cl. 417-372.000.
- Sundstrand Data Control, Inc.: *See—*
  - Hugli, Hans W.; and Kubler, John M., 4,131,020, Cl. 73-517.00B.
- Sunworks, Inc.: *See—*
  - Hopper, Thomas P., 4,131,111, Cl. 126-271.000.
- Surface Activation Corporation: *See—*
  - Morley, John R.; and Howe, Ralph E., 4,131,691, Cl. 427-41.000.
- Sutton, Blaine M.: *See—*
  - Hill, David T.; Sutton, Blaine M.; and Lantos, Ivan, 4,131,732, Cl. 536-121.000.
- Suzuki, Ryoichi: *See—*
  - Uchiyama, Takashi; Suzuki, Ryoichi; Tsunekawa, Tokuichi; Kawana, Hiroyoshi; Ono, Yusuke; and Matsuda, Mutsuhide, 4,131,350, Cl. 354-31.000.
- Suzuki, Shuichi; and Wada, Moriyasu, to Tokyo Shibaura Electric Co., Ltd. Heat-resistant resin compositions. 4,131,632, Cl. 260-834.000.
- Suzuki, Yoshiaki: *See—*
  - Tsuboi, Masayoshi; Suzuki, Yoshiaki; and Tabei, Masatoshi, 4,131,463, Cl. 96-1.00E.
- Suzuki, Yuji: *See—*
  - Tsujimoto, Minoru; Okada, Minoru; Suzuki, Yuji; and Hirai, Toshihiro, 4,131,528, Cl. 204-157.10R.
- Svec, Paul S., to General Electric Company. Fabrication of shell investment molds. 4,131,475, Cl. 106-38.300.
- Swanson, Ron E.: *See—*
  - Husome, Robert G.; Fleming, Ron J.; and Swanson, Ron E., 4,131,540, Cl. 209-582.000.
- Swech, Melvin J. Front ski attachment for motor bike. 4,131,292, Cl. 280-14.000.
- Swift, Graham: *See—*
  - Emmons, William D.; and Swift, Graham, 4,131,736, Cl. 560-14.000.
- Switchcraft, Inc.: *See—*
  - Bailey, James R.; and Lavigne, Vernon W., 4,131,777, Cl. 200-311.000.
- Sybron Corporation: *See—*
  - Feigin, Robert, 4,131,585, Cl. 260-29.6MQ.
- Synres International B.V.: *See—*
  - Wilschut, Frits M. W., 4,131,635, Cl. 260-862.000.
- Syntex (USA) Inc.: *See—*
  - Untch, Karl G.; and Stork, Gilbert J., 4,131,746, Cl. 560-255.000.
- Szpak, Stanley P.: *See—*
  - Bernard, Walter J.; and Szpak, Stanley P., 4,131,520, Cl. 204-42.000.
- Szycher, Michael, to Thermo Electron Corporation. Polyurethane elastomer for heart assist devices. 4,131,604, Cl. 528-79.000.

Tabei, Masatoshi: *See—*
Tsuboi, Masayoshi; Suzuki, Yoshiaki; and Tabei, Masatoshi, 4,131,463, Cl. 96-1.00E.
Takahara, Toshiyuki: *See—*
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Takamizawa, Minoru: *See—*
Hirano, Takayasu; Hisagen, Yoshiaki; Takamizawa, Minoru; and Yoshioka, Hiroshi, 4,131,717, Cl. 428-447.000.
Takashima, Toshiyuki, to Fujisawa Pharmaceutical Co., Ltd. Antiallergic method. 4,131,681, Cl. 424-267.000.
Takayama, Katsuki; and Ando, Masamoto, to Aisin Seiki Kabushiki Kaisha. Anti-skid brake control apparatus. 4,131,326, Cl. 303-115.000.
Takeda, Yuji: *See—*
Sawada, Daisaku; Goto, Kenji; Shigemaut, Takashi; Takeda, Yuji; Hattori, Tadashi; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,131,097, Cl. 123-117.00R.
Takematsu, Shigeru; Yoshida, Tohji; Ikushima, Yukio; Takeuchi, Kunio; Kakinaka, Arao; Matsunaga, Koichi; Shimakura, Mamoru; and Komura, Yoji, to Toyo Boseki Kabushiki Kaisha; and Kasuga Denki Co., Ltd. Apparatus for detecting defects in sheet material. 4,131,803, Cl. 250-563.000.
Takenouchi, Matsuo, to Fuji Xerox Co., Ltd. Instant radiation image display element. 4,131,795, Cl. 250-315.00A.
Takeuchi, Kunio: *See—*
Takematsu, Shigeru; Yoshida, Tohji; Ikushima, Yukio; Takeuchi, Kunio; Kakinaka, Arao; Matsunaga, Koichi; Shimakura, Mamoru; and Komura, Yoji, 4,131,803, Cl. 250-563.000.
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Talbert, Stephen: *See—*
Erickson, Richard W.; Pallaske, James; and Talbert, Stephen, 4,131,771, Cl. 200-11.0DA.
Talbot, Claude J. Extension level. 4,130,943, Cl. 33-374.000.
Tamao, Yoshikuni: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,131,673, Cl. 424-247.000.
Tamura, Yoshihiro; and Togashi, Takeshi. Magazine vending machine. 4,131,213, Cl. 221-14.000.
Tanabe, Hisao, to Tokico Ltd. Gas filling method for gas spring. 4,131,139, Cl. 141-4.000.
Tanabe Seiyaku Co., Ltd.: *See—*
Ikezaki, Muneyoshi; Okazaki, Yashushi; Ito, Nobuo; Hoshiyama, Masao; Nagao, Taku; and Nakajima, Hiromichi, 4,131,686, Cl. 424-330.000.
Tanaka, Junzo; and Kai, Toshio, to Matsushita Electric Industrial Co., Ltd. Microwave oven. 4,131,778, Cl. 219-10.55F.
Tanaka, Minoru: *See—*
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Tanaka, Taro: *See—*
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Tanaka, Yoshiharu: *See—*
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Tanguy, Christian, to Societe Anonyme D.B.A. Charging valve for a fluid pressure accumulator. 4,131,125, Cl. 137-118.000.
Tanimura, Koichi: *See—*
Nagasaki, Katsumi; Tanimura, Koichi; Inoue, Yoshihiro; Yamazaki, Hiroyuki; and Momose, Tetsuo, 4,131,303, Cl. 285-302.000.
Tarpley, William B., Jr., to Energy and Minerals Research Co. Ultrasonic grinder. 4,131,238, Cl. 241-30.000.
Tatsukawa, Osami; Sakurai, Osamu; and Serizawa, Hisayuki, to Hitachi Heating Appliances Co., Ltd. High-frequency heating apparatus. 4,131,779, Cl. 219-10.55R.
Tatsuno, Hiyoshi, to Tokyo Tatsuno Co., Ltd. Apparatus for dispensing gasoline having an inverted U-shaped conduit. 4,131,218, Cl. 222-527.000.
Taylor, Samson R. Game board apparatus. 4,131,281, Cl. 273-248.000.
Taylor, Samuel K.: *See—*
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Taylor, William E., Jr.; and Moughalian, Artin P., to Versabar Corporation. Concrete insert. 4,130,977, Cl. 52-710.000.
Technigraph Corporation: *See—*
Eddy, Albert W.; and Lyngklip, Roger W. (said Roger W. Lyngklip assors. to), 4,130,956, Cl. 40-1.500.
Teijin Limited: *See—*
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Mossman, Ralph A., 4,131,821, Cl. 313-398.000.
Teledyne Industries, Inc.: *See—*
Lucy, Carl F., 4,131,498, Cl. 149-2.000.
Temtron Electronics Ltd.: *See—*
Lawrence, Noel L. W.; and Latti, Surinder S., 4,131,370, Cl. 366-273.000.
Tenneco, Inc.: *See—*
Laundy, James R., 4,131,007, Cl. 72-348.000.
Teramura, Hiroichi: *See—*
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,131,915, Cl. 358-260.000.
Terashima, Isamu, to Hitachi, Ltd. Toner concentration detecting apparatus. 4,131,081, Cl. 118-646.000.
Terelak, Kazimierz: *See—*
Kiedik, Maciej; Grzywa, Edward; Kolt, Jozef; Terelak, Kazimierz; Czyz, Jerzy; and Niezgoda, Anna, 4,131,749, Cl. 568-781.000.
Terschuren, Wolfgang; Ries, Karl; and Lather, Dieter, to Mannesmann Aktiengesellschaft. Apparatus for ultrasonic inspection of the welding seam of large pipes. 4,131,027, Cl. 73-638.000.
Texaco Inc.: *See—*
Lachowicz, Donald R.; and Holder, Charles B., 4,131,577, Cl. 260-17.4CL.
Maham, Robert M.; and Beasley, Matthew D., 4,131,773, Cl. 200-61.050.
Textron Inc.: *See—*
Rotmans, Richard J., 4,131,246, Cl. 244-3.220.
Tezuka, Tohru: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,131,673, Cl. 424-247.000.
Thelen, Franz: *See—*
Bitterlich, Eberhard; Thelen, Franz; and Weber, Henning, 4,130,992, Cl. 60-652.000.
Thermo Electron Corporation: *See—*
Szycher, Michael, 4,131,604, Cl. 528-79.000.
Whalen, Robert L., 4,130,904, Cl. 3-1.400.
Theus, Richard: *See—*
Becker, Harry; Doerflinger, Karl; Ey, Klaus; Reiter, Georg; Rutzmoser, Hermann; and Theus, Richard, 4,131,934, Cl. 361-428.000.
Thiele, Kurt: *See—*
Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, 4,131,608, Cl. 260-307.00D.
Thiokol Corporation: *See—*
Bertozzi, Eugene R., 4,131,716, Cl. 428-425.000.
Flanigan, David A., 4,131,499, Cl. 149-19.300.
Thomas, Manuel A.; and Cogan, Jerry A., Jr., to Milliken Research Corporation. Polymer-printed fabric and method for producing same. 4,131,422, Cl. 8-31.000.
Thompson, Jerry L.; Deluga, Sigmund S.; Harnach, James W.; and Shamah, Eliahu, to Standard Oil Company. Railway lubricating oil. 4,131,551, Cl. 252-33.000.
Thompson, Robert I.: *See—*
Witte, Michael; Saxe, Robert L.; and Thompson, Robert I., 4,131,334, Cl. 350-147.000.
Thomson-CSF: *See—*
Fyot, Jean-Jacques, 4,131,860, Cl. 330-279.000.
Thon, Dieter, to Safety Jet Skisicherheitsbugel GmbH. Tiltable and removable ski attachment. 4,131,291, Cl. 280-11.37E.
Thorogood, Robert M., to Air Products and Chemicals, Inc. Reversible heat exchanger or regenerator systems. 4,131,155, Cl. 165-1.000.
Thrower, Anthony: *See—*
Hind, Robert D.; Thrower, Anthony; and Cudby, Joseph W., 4,131,219, Cl. 222-603.000.
Tijburg, Rudolf P.; and van Dongen, Teunis, to U.S. Philips Corporation. Method of manufacturing a body having a gold pattern and body manufactured according to the method. 4,131,525, Cl. 204-129.650.
Toal, Hugh, to Congoleum Corporation. Wall edge trimmers for resilient floor coverings. 4,130,939, Cl. 30-293.000.
Tobias, Philip E. Low cost sensitometer which provides highly accurate readings. 4,131,349, Cl. 354-20.000.
Toda, Masaaki: *See—*
Kurono, Masayasu; Toda, Masaaki; Niwa, Haruki; Kosuge, Syunji; Iida, Takahumi; and Narita, Kenichi, 4,131,747, Cl. 562-469.000.
Todd, John A.: *See—*
Gerstenmaier, William J.; and Todd, John A., 4,131,216, Cl. 222-52.000.
Togashi, Takeshi: *See—*
Tamura, Yoshihiro; and Togashi, Takeshi, 4,131,213, Cl. 221-14.000.
Tokashiki, Michiyuki: *See—*
Nakamura, Yoshitsugu; Kawamura, Takeo; Saiki, Noritsugu; and Tokashiki, Michiyuki, 4,131,594, Cl. 260-40.00R.
Tokico Ltd.: *See—*
Tanabe, Hisao, 4,131,139, Cl. 141-4.000.
Tokyo Shibaura Denki K.K.: *See—*
Gocho, Choichi, 4,131,829, Cl. 318-139.000.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Asahi, Hiroji, 4,131,951, Cl. 365-203.000.
Ichinose, Noboru; Ookuma, Hideo; Mizutani, Toshiaki; and Hiraki, Hideaki, 4,131,479, Cl. 106-39.500.
Kinoshita, Hiroyuki, 4,131,906, Cl. 357-41.000.
Matsuda, Takashi; Niwa, Kazuo; and Sumitomo, Yasusuke, 4,131,909, Cl. 357-49.000.
Momose, Kenichiro; and Kumagai, Kiyoshi, 4,131,494, Cl. 148-31.570.
Nakai, Kaichiro; and Saito, Hisao, 4,131,824, Cl. 315-39.510.
Shiraogawa, Yukio, 4,131,943, Cl. 364-200.000.
Suzuki, Shuichi; and Wada, Moriyasu, 4,131,632, Cl. 260-834.000.

Washida, Hiroshi, 4,131,820, Cl. 313-377.000.
Tokyo Tatsuno Co., Ltd.: *See—*
Tatsuno, Hiyoshi, 4,131,218, Cl. 222-527.000.
Tombrel, Francis: *See—*
Pflieger, Bernard; Sauvage, Philippe; and Tombrel, Francis, 4,131,151, Cl. 164-89.000.
Tonka Corporation: *See—*
Ohashi, Yutaka, 4,130,963, Cl. 46-209.000.
Tonomura, Shinji: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,131,673, Cl. 424-247.000.
Torr, Alan C., to Expert Industrial Controls Limited. Solenoid devices. 4,131,866, Cl. 335-262.000.
'Totes', Incorporated: *See—*
Brooks, C. Robert, 4,131,122, Cl. 135-76.000.
Toth, Louis M.: *See—*
Friedman, Horace A.; Toth, Louis M.; and Bell, Jimmy T., 4,131,527, Cl. 204-157.10R.
Toyko Sanyo Electric Co., Ltd.: *See—*
Houshi, Teruo, 4,131,828, Cl. 318-138.000.
Toyo Boseki Kabushiki Kaisha: *See—*
Takematsu, Shigeru; Yoshida, Tohji; Ikushima, Yukio; Takeuchi, Kunio; Kakinaka, Arao; Matsunaga, Koichi; Shimakura, Mamoru; and Komura, Yoji, 4,131,803, Cl. 250-563.000.
Toyo Jihoki Manufacturing Co., Ltd.: *See—*
Hamagawa, Hiroshi, 4,131,855, Cl. 328-129.000.
Toyoda-Koki Kabushiki-Kaisha: *See—*
Etoh, Kunihiko; and Sugiura, Katsumi, 4,131,838, Cl. 318-603.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Sawada, Daisaku; Goto, Kenji; Shigemaut, Takashi; Takeda, Yuji; Hattori, Tadashi; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,131,097, Cl. 123-117.00R.
Trabbold, Harold J.; and Hummel, Jerry R., to Air Products and Chemicals, Inc. Underwater cutting and gouging torch. 4,131,780, Cl. 219-70.000.
Trelleborg Rubber Company, Inc.: *See—*
Andersson, Sven E., 4,131,194, Cl. 198-497.000.
Trio Kabushiki Kaisha: *See—*
Maeda, Yoichi, 4,131,180, Cl. 181-163.000.
Triumph Werke Nurnberg A.G.: *See—*
Hengelhaupt, Hans, 4,131,372, Cl. 400-196.100.
Trowbridge, Lyle N.: *See—*
Edwards, Lars T.; and Trowbridge, Lyle N., 4,131,455, Cl. 75-118.00R.
TRW Inc.: *See—*
Martin, Jon W., 4,131,726, Cl. 526-18.000.
Powers, Thomas R., 4,131,383, Cl. 407-114.000.
Tsentralny Nauchno Issledovatelsky Avtomobilny i Avtomotorny Institut Nami: *See—*
Rumyantsev, Leonid A.; Esenovsky-Lashkov, Jury K.; Avershin, Vasily T.; Ilnitsky, Vladimir Y.; and Jurin, Ivan L., 4,131,184, Cl. 192-3.260.
Tsuboi, Masayoshi; Suzuki, Yoshiaki; and Tabei, Masatoshi, to Fuji Photo Film Co., Ltd. Electric recording process of images using electron sensitive layer containing trivalent cobalt complex and compound having conjugated π bond system. 4,131,463, Cl. 96-1.00E.
Tsuchiya, Takuichi; and Shinagawa, Shinichi, to Nippon Electric Company, Ltd. A.C. power supply circuit with surge current suppression. 4,131,927, Cl. 361-6.000.
Tsujimoto, Kazumi N.; and McLeod, Paul S., to Airco, Inc. Multiple electron-beam vapor source assembly. 4,131,753, Cl. 13-31.0EB.
Tsujimoto, Minoru; Okada, Minoru; Suzuki, Yuji; and Hirai, Toshihiro, to Daido Sanso Kabushiki Kaisha. Process for the mass production of ozone. 4,131,528, Cl. 204-157.10R.
Tsukahara, Satoshi: *See—*
Sato, Isao; Uchiyama, Yoshihiro; Ishibashi, Youji; Tsukahara, Satoshi; Oshima, Ryoichiro; and Hishinuma, Yukio, 4,131,432, Cl. 422-177.000.
Tsunekawa, Tokuichi: *See—*
Uchiyama, Takashi; Suzuki, Ryoichi; Tsunekawa, Tokuichi; Kawana, Hiroyoshi; Ono, Yusuke; and Matsuda, Mutsuhide, 4,131,350, Cl. 354-31.000.
Tuftamatic, Inc.: *See—*
Randolph, Arthur J., 4,130,935, Cl. 29-706.000.
Turk, Herbert: *See—*
Dammann, Peter; Schippers, Heinz; Turk, Herbert; and Schiminski, Herbert, 4,130,983, Cl. 57-5.000.
Tuscarora Cotton Mill: *See—*
Lambert, John W., Jr., 4,130,984, Cl. 57-12.000.
Tyler, Hugh J., to Robertshaw Controls Company. Electrical heater construction. 4,131,787, Cl. 219-532.000.
Tyler, Hugh J., to Robertshaw Controls Company. Electrical heater construction. 4,131,789, Cl. 219-541.000.
Tynan, Daniel G., to Du Pont de Nemours, E. I., and Company. Corotating multiple screw processor. 4,131,371, Cl. 366-301.000.
Ube Industries, Inc.: *See—*
Nagasaka, Akira; Ashitaka, Hidetomo; Kusuki, Yoshihiro; Oda, Denichi; and Yoshinaga, Toshimune, 4,131,644, Cl. 423-447.500.
Uchikawa, Hiroshi; and Kato, Hajime, to Onoda Cement Company, Ltd. Molding sand mixtures. 4,131,474, Cl. 106-38.350.
Uchiyama, Hiroshi, to E. C. Chemical Ind. Co., Ltd.; and C. Itoh & Co. Process for purifying crude dibenzylidene sorbitol. 4,131,612, Cl. 260-340.700.
Uchiyama, Takashi; Suzuki, Ryoichi; Tsunekawa, Tokuichi; Kawana, Hiroyoshi; Ono, Yusuke; and Matsuda, Mutsuhide, to Canon Kabushiki Kaisha. Exposure control device for camera. 4,131,350, Cl. 354-31.000.
Uchiyama, Yoshihiro: *See—*
Sato, Isao; Uchiyama, Yoshihiro; Ishibashi, Youji; Tsukahara, Satoshi; Oshima, Ryoichiro; and Hishinuma, Yukio, 4,131,432, Cl. 422-177.000.
Udipi, Kishore, to Phillips Petroleum Company. Polymer epoxidation process. 4,131,725, Cl. 526-56.000.
Udipi, Kishore: *See—*
Hsieh, Henry L.; and Udipi, Kishore, 4,131,653, Cl. 260-880.00B.
Uhl, Richard G.: *See—*
Gellatly, Grant; and Uhl, Richard G., 4,131,118, Cl. 131-140.00C.
Kite, George F.; Gellatly, Grant; and Uhl, Richard G., 4,131,117, Cl. 131-140.00C.
Uhlmann, Georg, to Rheintechnik Weiland & Kaspar K.G. Cutter for animal hooves and claws. 4,130,938, Cl. 30-192.000.
Uminski, Jerzy: *See—*
Klopotek, Alojzy; Uminski, Jerzy; and Dziala, Gabriela, 4,131,556, Cl. 252-106.000.
Underwood, William C., to Martin Marietta Corporation. Wide instantaneous dynamic range proportional signal processor. 4,131,254, Cl. 244-3.160.
Union Carbide Corporation: *See—*
Hodakowski, Leonard E.; and Carder, Charles H., 4,131,602, Cl. 528-49.000.
Lustig, Stanley; and Vasudevan, Ganapathy, 4,131,137, Cl. 138-118.100.
Rinfret, Arthur P., 4,131,200, Cl. 206-484.000.
United States of America
Agriculture: *See—*
Koch, Peter, 4,131,146, Cl. 144-221.000.
Air Force: *See—*
Arnold, Fred E.; Loughran, Gerard A.; and Wereta, Anthony, Jr., 4,131,625, Cl. 260-607.0AR.
Arnold, Fred E.; and Wolfe, James F., 4,131,748, Cl. 562-488.000.
Debrotnic, John S., 4,131,438, Cl. 55-204.000.
De Pierre, Vincent; and Gurney, Ferdinand J., 4,131,461, Cl. 75-208.0CS.
Holland-Moritz, Ervin K., 4,131,852, Cl. 325-363.000.
Mar, Henry Y. B.; and Zimmer, Paul B., 4,131,593, Cl. 260-37.0SB.
Schlossberg, Howard, 4,131,792, Cl. 250-199.000.
Army: *See—*
F'Geppert, Erwin, 4,131,256, Cl. 248-3.000.
Shopalovich, Predrag, 4,130,917, Cl. 205.1 R-.
Skahill, Fred J., 4,131,052, Cl. 89-11.000.
Energy: *See—*
Cooper, Martin H., 4,131,510, Cl. 176-50.000.
Friedman, Horace A.; Toth, Louis M.; and Bell, Jimmy T., 4,131,527, Cl. 204-157.10R.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Miller, Charles G.; and Stephens, James B. Primary reflector for solar energy collection systems. 4,131,336, Cl. 350-292.000.
Phillips, Wayne M. High temperature resistant cermet and ceramic compositions. 4,131,459, Cl. 75-203.000.
National Aeronautics and Space Administration: *See—*
Brandhorst, Henry W., Jr., 4,131,486, Cl. 136-89.0SJ.
Navy: *See—*
Anderson, William B., 4,131,873, Cl. 340-6.00R.
Barzda, Justin J., 4,131,392, Cl. 416-142.000.
Dietz, Charles R., 4,131,065, Cl. 102-49.400.
Ferguson, Wilfred J., 4,131,053, Cl. 89-36.00A.
Schmidt, Jacob, deceased, 4,131,390, Cl. 416-20.00R.
Stoutmeyer, Ronald G.; and Alltop, William O., 4,131,793, Cl. 250-211.00J.
Walker, Basil E.; Pohanka, Robert C.; Smith, Paul L.; and Rice, Roy W., 4,131,444, Cl. 65-32.000.
Wynne, Kenneth J.; and Davison, John B., 4,131,609, Cl. 260-314.500.
U.S. Philips Corporation: *See—*
Baars, Nicolaas J., 4,131,809, Cl. 307-303.000.
Bruninx, Edward, 4,131,794, Cl. 250-272.000.
Claasen, Theodoor A. C. M.; and Mecklenbrauker, Wolfgang F. G., 4,131,764, Cl. 179-15.0FS.
Daub, Dirk; and Klaver, Olof E. H., 4,131,908, Cl. 357-42.000.
Gieles, Antonous C. M., 4,131,524, Cl. 204-129.300.
Korver, Jan A. C., 4,131,807, Cl. 307-228.000.
Mattsson, Lennart P. J., 4,131,825, Cl. 315-39.610.
Tijburg, Rudolf P.; and van Dongen, Teunis, 4,131,525, Cl. 204-129.650.
van Santen, Johannes G., 4,131,950, Cl. 365-183.000.
United States Steel Corporation: *See—*
Bode, Charles H., Jr.; Saggio, Anthony S.; Wagner, George J., Jr.; and Wessel, Richard L., 4,131,220, Cl. 222-607.000.
Felkel, Edward M., 4,131,757, Cl. 174-107.000.
Felkel, Edward M., 4,131,758, Cl. 174-107.000.
Felkel, Edward M., 4,131,759, Cl. 174-107.000.
Hind, Robert D.; Thrower, Anthony; and Cudby, Joseph W., 4,131,219, Cl. 222-603.000.
Kachik, Robert H.; and Pignocco, Arthur J., 4,131,473, Cl. 106-1.120.
United Technologies Corporation: *See—*
Brodell, Robert F., 4,131,388, Cl. 415-138.000.
Untch, Karl G.; and Stork, Gilbert J., to Syntex (USA) Inc. (dl)-13-Sub-

stituted sulfinyl-prostaglandin-like compounds and methods of making. 4,131,746, Cl. 560-255.000.

- UOP Inc.: *See—*
  - Adams, Frank H.; and Knapik, H. Peter G., 4,131,536, Cl. 208-139.000.
  - Antos, George J.; Hayes, John C.; and Pollitzer, Ernest L., 4,131,628, Cl. 260-666.00A.
- Upjohn Company, The: *See—*
  - Smith, Herman W., 4,131,738, Cl. 560-121.000.
- Usubov, Zokhrab G. O.: *See—*
  - Kagan, Naum Y.; Bortnik, Vladimir M.; Korenbljum, Isai V.; Razumeev, Jury A.; Lyass, Abram M.; Borsuk, Pavel A.; Usubov, Zokhrab G. O.; and Dmitrieva, Valentina A., 4,131,477, Cl. 106-38.350.
- Utsunomiya, Kei; Soga, Kazuya; Shimasaki, Katsunori; Mito, Yutaka; Oaki, Mamoru; Hasebe, Shigeru; Miki, Hiroetu; and Masaki, Michiko, to Kobe Steel Limited. Catalyst for converting nitrogen oxides and method for converting nitrogen oxides in exhaust gases by using said catalyst. 4,131,643, Cl. 423-239.000.
- Valade, Gerard. Radiator core support device. 4,131,268, Cl. 269-47.000.
- Valle, Pierre D., to Compagnie Industrielle des Telecommunications Cit-Alcatel. Method of compensation of intermodulation noise and devices for the implementing thereof. 4,131,859, Cl. 330-124.00R.
- Vallee, Bert L.: *See—*
  - Lange, Louis G., III; and Vallee, Bert L., 4,131,727, Cl. 526-23.000.
- Van Kooten B.V.: *See—*
  - Schnell, Hans G., 4,131,166, Cl. 173-43.000.
- VanAuken, Richard L., to Exxon Research & Engineering Co. Composite tubular elements. 4,131,701, Cl. 428-36.000.
- van den Berg, Henrikus J.; and Hurkmans, Gerardus C. A. M. Protective device particularly for welding and cutting work. 4,130,903, Cl. 2-8.000.
- Vanderburg, Raymond M.: *See—*
  - Crumrine, Albert W., Jr.; Fones, Theodore H.; Kostas, James M.; and Vanderburg, Raymond M., 4,131,156, Cl. 165-51.000.
- van der Lely, Ary; and Bom, Cornelis J. G., to C. van der Lely NV. Spreading implements. 4,131,237, Cl. 239-664.000.
- van der Lely, Cornelis. Tractor having dual side-by-side engines. 4,131,170, Cl. 180-53.0FE.
- Vandling, John M.: *See—*
  - Burton, Jack D.; and Vandling, John M., 4,131,917, Cl. 358-281.000.
- van Dongen, Teunis: *See—*
  - Tijburg, Rudolf P.; and van Dongen, Teunis, 4,131,525, Cl. 204-129.650.
- Van Loo, William R.: *See—*
  - Knapp, Robert L.; Blodee, Leif; and Van Loo, William R., 4,131,314, Cl. 297-248.000.
- Van Moss, John H., Jr. Artificial reef to prevent shoreline erosion. 4,130,994, Cl. 405-24.000.
- Van Poucke, Raphael K.; Baeyens, Freddy C.; and Mortelmans, Paul A., to AGFA-Gevaert, N.V. Preparation of α-acylacetamides using tetramethyl guanidine condensing agent. 4,131,735, Cl. 544-267.000.
- Van Rens, Russell J.: *See—*
  - Cavil, David T.; McAuliffe, Gerald N.; and Van Rens, Russell J., 4,131,832, Cl. 318-358.000.
- van Santen, Johannes G., to U.S. Philips Corporation. Charge transfer device. 4,131,950, Cl. 365-183.000.
- Varga, Joseph A., to Ceeco Machinery Manufacturing Limited. Reel carrying system fail-safe locking device. 4,130,985, Cl. 57-127.500.
- Varian Associates, Inc.: *See—*
  - Wilder, Marshall, deceased, 4,131,818, Cl. 313-95.000.
- Varker, Alan E.: *See—*
  - Bernstein, Philip; Coffey, James P.; and Varker, Alan E., 4,131,637, Cl. 260-877.000.
- Varlonga, Giovanni. Panel for soundproof and fireproof inner walls. 4,130,972, Cl. 52-241.000.
- Vasiliev, Alexei V.: *See—*
  - Muzhzhavlev, Konstantin D.; Yazev, Vladimir D.; Schegolev, Vladimir I.; Ivanov, Andrei B.; Vasiliev, Alexei V.; Romanenko, Oleg N.; Kosarev, Sergei P.; and Ovcharenko, Vladimir G., 4,131,522, Cl. 204-60.000.
- Vasudevan, Ganapathy: *See—*
  - Lustig, Stanley; and Vasudevan, Ganapathy, 4,131,137, Cl. 138-118.100.
- VEB Filmfabrik Wolfen: *See—*
  - Fischer, Gunther; Wenzel, Beate; Scheithauer, Steffen; Franz, Udo; Junge, Karl-Wilhelm; Schroter, Christof; Gahler, Siegfried; and Morgenstern, Johannes, 4,131,470, Cl. 96-107.000.
- Verger, Bernard: *See—*
  - Chillier-Duchatel, Nicole; and Verger, Bernard, 4,131,532, Cl. 204-256.000.
- Vermette, Howard H. Portable lift. 4,131,181, Cl. 187-11.000.
- Vernaleken, Hugo: *See—*
  - Adelmann, Siegfried; Margotte, Dieter; Vernaleken, Hugo; and Nouvertne, Werner, 4,131,575, Cl. 260-17.40R.
- Versabar Corporation: *See—*
  - Taylor, William E., Jr.; and Moughalian, Artin P., 4,130,977, Cl. 52-710.000.
- Vial, Raymond; Fastert, Herbert; and Marti, Heinrich, to Concast AG. Roller apron for a continuous casting installation for steel. 4,131,154, Cl. 164-448.000.
- Vilkomerson, David H. R.: *See—*
  - Mezrich, Reuben S.; and Vilkomerson, David H. R., 4,131,024, Cl. 73-606.000.
- Vinch, Samuel D.: *See—*
  - Flowers, Thomas A.; Marra, Anthony W.; and Vinch, Samuel D., 4,131,664, Cl. 264-510.000.
- Vock, Manfred H.: *See—*
  - Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,131,687, Cl. 426-3.000.
- Voet, Harry C., to Dayco Corporation. Fire-resistant construction, method of making same, and carpet construction employing same. 4,131,703, Cl. 428-95.000.
- Vogelsang, Alois. Mechanism for controlling movements of a tool. 4,130,968, Cl. 51-100.00R.
- Vogtherr, Burkhard, to Drabert Sohne, Firma. Chair with deformable armrest. 4,131,315, Cl. 297-286.000.
- Volat, Jean-Pierre; and Pichon, Jean-Louis E., to BERTIN & Cie. Conveyor device for letters, cards or other thin article. 4,131,320, Cl. 302-2.00R.
- von Bockh, Peter: *See—*
  - Chawla, Jogindar M.; von Bockh, Peter; and Dornemann, Manfred, 4,131,015, Cl. 73-199.000.
- von der Heyde, Richard C.; and Head, William J., to Goodyear Tire & Rubber Company, The. Method for mounting a tire bladder. 4,130,928, Cl. 29-450.000.
- Von Gruner, Horst: *See—*
  - Wendt, Hartmut; Von Gruner, Horst; and Janssen, Harald, 4,131,693, Cl. 427-117.000.
- von Kutepow, Nikolaus; Mueller, Franz J.; and Reuter, Peter, to BASF Aktiengesellschaft. Separating rhodium from solution containing rhodium carbonyl complexes and converting the separated rhodium into soluble rhodium carbonyl complexes. 4,131,640, Cl. 423-22.000.
- Vuilleumier, Ralph O., to Container Corporation of America. Feed mechanism for carton blanks. 4,131,208, Cl. 214-8.50F.
- Wachs, Walter; and Stickel, Heinz, to Siemens Aktiengesellschaft. Magnetic-head locating arrangement for floppy-disk mechanisms. 4,131,923, Cl. 360-106.000.
- Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See—*
  - Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, 4,131,659, Cl. 264-25.000.
- Wada, Moriyasu: *See—*
  - Suzuki, Shuichi; and Wada, Moriyasu, 4,131,632, Cl. 260-834.000.
- Wafilin B.V.: *See—*
  - de Putter, Warner J., 4,131,541, Cl. 210-23.00F.
- Wagner, George J., Jr.: *See—*
  - Bode, Charles H., Jr.; Saggio, Anthony S.; Wagner, George J., Jr.; and Wessel, Richard L., 4,131,220, Cl. 222-607.000.
- Wagner, Richard J. Automatic starter for vehicle. 4,131,304, Cl. 290-38.00C.
- Wakahara, Yasushi: *See—*
  - Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,131,915, Cl. 358-260.000.
- Walker, Basil E.; Pohanka, Robert C.; Smith, Paul L.; and Rice, Roy W., to United States of America, Navy. Method for increasing the strength and density of lead titanate ceramic bodies. 4,131,444, Cl. 65-32.000.
- Walker, Wendell C., to General Electric Company. Iron self-clean valve assembly. 4,130,954, Cl. 38-77.830.
- Wallshein, Melvin. Method of making orthodontic appliance having replaceable tooth engaging means. 4,130,921, Cl. 29-160.600.
- Walter, Arthur: *See—*
  - Sick, Erwin; Walter, Arthur; and Fetzer, Gunter, 4,131,804, Cl. 250-566.000.
- Walters, John P.: *See—*
  - Erickson, Wayne K.; and Walters, John P., 4,131,704, Cl. 428-95.000.
- Wang, Chih-Chung: *See—*
  - Kim, Jonathan J.; Loose, Thomas A.; and Wang, Chih-Chung, 4,131,453, Cl. 75-72.000.
- Wanner, Karl; Bleicher, Manfred; and Falchle, Jorg, to Robert Bosch GmbH. Hammer drill. 4,131,165, Cl. 173-48.000.
- Warland, George W.; and Crisp, Norman F., to Borg-Warner Limited. Rotary drive member. 4,131,032, Cl. 74-449.000.
- Warth, Guy M.: *See—*
  - Brown, Milton S.; Burch, Richard M.; and Warth, Guy M., 4,131,641, Cl. 423-34.000.
- Washida, Hiroshi, to Tokyo Shibaura Electric Co., Ltd. Secondary electron multiplication target. 4,131,820, Cl. 313-377.000.
- Watanabe, Fumitaka: *See—*
  - Kimura, Tadashi; and Watanabe, Fumitaka, 4,131,355, Cl. 354-225.000.
- Watanabe, Tsukasa: *See—*
  - Mizuno, Kiyohumi; Maeda, Hiroaki; Takahashi, Shigeo; and Watanabe, Tsukasa, 4,131,035, Cl. 74-866.000.
- Watson, George H.; and Speer, Thomas L., to Standard Oil Company (Indiana). Slurry backfilling of in situ oil shale retort. 4,131,416, Cl. 299-2.000.
- Watson, Ronald S. External portable propeller rotator. 4,131,249, Cl. 244-53.00A.
- Wavin B.V.: *See—*
  - de Putter, Warner J.; and den Hertog, Willem C., 4,131,407, Cl. 425-393.000.
- Weber, Henning: *See—*
  - Bitterlich, Eberhard; Thelen, Franz; and Weber, Henning, 4,130,992, Cl. 60-652.000.

- Webster, Desmond E. C. Locating lock cases in doors. 4,130,930, Cl. 29-466.000.
- Weckenmann, Albert; Brauticam, Rolf; and Haas, Lothar, to Robert Bosch GmbH. Switchbox and control unit assembly for automotive vehicles. 4,131,772, Cl. 200-61.540.
- Weigers, Wilhelmus J.: *See—*
  - Hall, John B.; and Weigers, Wilhelmus J., 4,131,555, Cl. 252-89.00R.
- Weiland, Richard H.: *See—*
  - Dean, Roy D.; and Weiland, Richard H., 4,131,252, Cl. 244-212.000.
- Weinstein, Stephen B., to Bell Telephone Laboratories, Incorporated. Echo cancellation in two-wire, two-way data transmission systems. 4,131,767, Cl. 179-170.200.
- Weinstock, Leonard M.; Wildman, Arthur S.; and Mulvey, Dennis M., to Merck & Co., Inc. Preparation of salicylic acid and derivatives. 4,131,618, Cl. 562-469.000.
- Weiss, Martin J.: *See—*
  - Floyd, Middleton B., Jr.; Weiss, Martin J.; Gredeinskas, Charles V.; and Chen, Sow-mei C., 4,131,737, Cl. 560-121.000.
- Weissenbach, Joseph. Contained volatile liquids vapor retention system. 4,131,141, Cl. 141-285.000.
- Weitzel, Charles E.; and Capewell, David R., to RCA Corporation. Method of making silicon on sapphire field effect transistors with specifically aligned gates. 4,131,496, Cl. 148-175.000.
- Wendt, Hartmut; Von Gruner, Horst; and Janssen, Harald, to Dr. Beck & Co AG. Hardenable polyesterurethane composition for producing a directly tinnable wire. 4,131,693, Cl. 427-117.000.
- Wenzel, Beate: *See—*
  - Fischer, Gunther; Wenzel, Beate; Scheithauer, Steffen; Franz, Udo; Junge, Karl-Wilhelm; Schroter, Christof; Gahler, Siegfried; and Morgenstern, Johannes, 4,131,470, Cl. 96-107.000.
- Wereta, Anthony, Jr.: *See—*
  - Arnold, Fred E.; Loughran, Gerard A.; and Wereta, Anthony, Jr., 4,131,625, Cl. 260-607.0AR.
- Werner, James L.: *See—*
  - Bauer, James J.; Albright, Larry E.; Werner, James L.; Sagaser, Thomas M.; and Hoechst, Lonnie D., 4,131,225, Cl. 228-161.000.
- Werner, Michael F., to Skyline Corporation. Chassis for a mobile home. 4,131,301, Cl. 280-789.000.
- Wessel, Karl-Heinz: *See—*
  - Keulertz, Werner; and Wessel, Karl-Heinz, 4,131,240, Cl. 242-72.100.
- Wessel, Richard L.: *See—*
  - Bode, Charles H., Jr.; Saggio, Anthony S.; Wagner, George J., Jr.; and Wessel, Richard L., 4,131,220, Cl. 222-607.000.
- Wessel, Wolf; and Grieshaber, Hermann, to Robert Bosch GmbH. Idling and warm-up fuel control device. 4,131,099, Cl. 123-119.00F.
- West, C. Thomas, to Standard Oil Company (Indiana). Alkylbenzene sulfonic acid modified mannich reaction products from oxidized polymers. 4,131,553, Cl. 252-33.000.
- West Electric Co., Ltd.: *See—*
  - Iwata, Hiroshi; and Yamaoka, Tetsuo, 4,131,351, Cl. 354-60.00F.
- Western Electric Company, Inc.: *See—*
  - Caruso, Robert D.; and Setter, Gerald A., Jr., 4,131,484, Cl. 134-1.000.
  - Pearce, Charles W.; and Zaleckas, Vincent J., 4,131,487, Cl. 148-1.500.
- Westinghouse Electric Corp.: *See—*
  - Bass, Jerry D., 4,131,182, Cl. 187-29.00G.
  - Crookston, Ronald W.; and Meyer, Thomas N., 4,131,774, Cl. 200-82.00B.
  - Gemp, Robert S., 4,131,936, Cl. 363-43.000.
  - Geohegan, Kenneth P., Jr., 4,131,874, Cl. 340-10.000.
  - Kub, Francis J., 4,131,902, Cl. 357-6.000.
  - Meyer, Jeffry R.; and Hess, Robert L., 4,131,775, Cl. 200-148.00R.
  - Milberger, Walter E.; and Rowe, Frederick J., 4,131,938, Cl. 363-101.000.
  - Miller, Coleman J., 4,131,896, Cl. 343-815.000.
  - Moeglich, Karl, 4,131,526, Cl. 204-149.000.
  - Niehenke, Edward C.; and Klein, Gerald I., 4,131,858, Cl. 330-4.900.
  - Ryan, Frederick M.; and Handke, Paul C., 4,131,064, Cl. 102-1.00R.
- Westvaco Corporation: *See—*
  - Brown, Wynford, 4,131,573, Cl. 260-17.500.
  - Dilling, Peter, 4,131,564, Cl. 252-353.000.
- Whalen, Robert L., to Thermo Electron Corporation. Prosthetic blood conduit. 4,130,904, Cl. 3-1.400.
- Wheeler, Raymond L., to British Hovercraft Corporation Ltd. Air cushion vehicles. 4,131,175, Cl. 180-127.000.
- Whetham, William J., to Boeing Company, The. Machine tool monitoring system. 4,131,837, Cl. 318-571.000.
- Whitaker, Thomas E.; Myles, Samuel; and Gardner, Ian P., to Johns-Manville Corporation. Process for the manufacture of calcium silicate hydrate objects. 4,131,638, Cl. 264-333.000.
- White, Jack D., Jr., to Dayco Corporation. Covering for power transmission belt. 4,131,030, Cl. 74-232.000.
- Whitehead Brothers Company: *See—*
  - Melcher, Ronald E.; and Schaefer, Frederick W., 4,131,476, Cl. 106-38.350.
- Whittaker, Roger L.; and Hewitt, Clyde, to Hanes Corporation. Yarn binder apparatus. 4,130,999, Cl. 66-145.00R.
- Whyte, Theodore R.: *See—*
  - Hill, Maynard L.; and Whyte, Theodore R., 4,131,013, Cl. 73-181.000.
- Wiand, Ronald C. Ophthalmic flat roughing wheel. 4,131,436, Cl. 51-309.00R.
- Wideman, Lawson G., to Goodyear Tire & Rubber Company, The. Continuous hydrogenation of cyclopentadiene to cyclopentene using a Raney nickel catalyst saturated with ammonia. 4,131,627, Cl. 260-666.00A.
- Wideman, Lawson G.; and Ofstead, Eilert A., to Goodyear Tire & Rubber Company, The. Selective hydrogenation of cyclopentadiene to cyclopentene using Raney nickel catalyst and water in the reaction mixture. 4,131,629, Cl. 260-666.00A.
- Wiechert, Rudolf: *See—*
  - Alig, Leo; Furst, Andor; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,131,655, Cl. 260-946.000.
- Wiegers, Wilhelmus J.: *See—*
  - Hall, John B.; and Wiegers, Wilhelmus J., 4,131,557, Cl. 252-132.000.
- Wiesner, Wolfgang, to Siemens Aktiengesellschaft. Circuit arrangement for setting a rotatable type carrier over the shortest path of rotation. 4,131,840, Cl. 318-685.000.
- Wilcox, Glade. Single side band radio apparatus. 4,131,850, Cl. 325-137.000.
- Wilde, Michael A.; and Lucas, David J., to Avon Tyres Limited. Tire building drum. 4,131,500, Cl. 156-131.000.
- Wilder, Marshall, deceased (by Wilder, Virginia H., executrix), to Varian Associates, Inc. Night vision system. 4,131,818, Cl. 313-95.000.
- Wilder, Virginia H., executrix: *See—*
  - Wilder, Marshall, deceased, 4,131,818, Cl. 313-95.000.
- Wildman, Arthur S.: *See—*
  - Weinstock, Leonard M.; Wildman, Arthur S.; and Mulvey, Dennis M., 4,131,618, Cl. 562-469.000.
- Wilke, Gerhard. Process for the production of dried food products. 4,131,689, Cl. 426-242.000.
- Willem, Michel, to Ceraver S.A. Method of producing a rod anchoring structure. 4,130,926, Cl. 29-421.00M.
- Williams, George C.: *See—*
  - Alden, John M.; and Williams, George C., 4,131,901, Cl. 346-165.000.
- Williams, George J.; and Boyer, Robert C., to Ecolaire Incorporated. Means for positioning steam condenser tube support plates. 4,131,270, Cl. 269-321.00W.
- Williams, Malcolm, to Lucas Electrical Company Limited, The. Fuel injection system for an internal combustion engine. 4,131,087, Cl. 123-32.0EA.
- Williamson, William R. N.: *See—*
  - Evans, Delme; Saunders, John C.; and Williamson, William R. N., 4,131,682, Cl. 424-275.000.
- Wilputte Corporation: *See—*
  - Eck, John C., 4,131,435, Cl. 48-61.000.
- Wilschut, Frits M. W., to Synres International B.V. Thermosetting polyester compositions. 4,131,635, Cl. 260-862.000.
- Wilson, Stephen G. Skate with replaceable blade. 4,131,288, Cl. 280-11.170.
- Windele, Josef, to Siemens Aktiengesellschaft. Device for moving a path of a moving data carrier toward and away from a surface area of a sub-carrier. 4,131,358, Cl. 355-3.0TR.
- Winter, William E.; and Luzarraga, Mamerto G., to Exxon Research & Engineering Co. Naphtha hydrofining process. 4,131,537, Cl. 208-216.000.
- Wirnitzer, Franz: *See—*
  - Dessauer, Guido; Ramlow, Kurt; Riecke, Kurt; and Wirnitzer, Franz, 4,131,710, Cl. 428-328.000.
- Wirth, Manfred N.: *See—*
  - Wirth, Richard E.; and Wirth, Manfred N., 4,130,989, Cl. 60-39.520.
- Wirth, Richard E.; and Wirth, Manfred N. Automotive turbine engine. 4,130,989, Cl. 60-39.520.
- Witte, Michael; Saxe, Robert L.; and Thompson, Robert I., to Research Frontiers Incorporated. Light polarizing materials, suspensions thereof, and process for manufacturing such suspensions. 4,131,334, Cl. 350-147.000.
- Witzel, Bruce E.: *See—*
  - Shen, Tsung-Ying; Clark, Robert L.; Pessolano, Arsenio A.; Witzel, Bruce E.; and Lanza, Thomas J., 4,131,677, Cl. 424-256.000.
- Wojcik, Ronald T., to Arizona Chemical Company. Catalyst for cationic polymerization process. 4,131,567, Cl. 252-435.000.
- Wojcik, Walter J.: *See—*
  - Shea, Vincent; and Wojcik, Walter J., 4,131,363, Cl. 355-75.000.
- Wolfe, James F.: *See—*
  - Arnold, Fred E.; and Wolfe, James F., 4,131,748, Cl. 562-488.000.
- Wolfgram, Kenneth C., to Caterpillar Tractor Co. Access panel for enclosures. 4,131,172, Cl. 180-69.00R.
- Wollam, Carl A.: *See—*
  - Chalmers, Alexander A.; Gailey, J. Lynn; and Wollam, Carl A., 4,130,974, Cl. 52-531.000.
- Wood, Peter: *See—*
  - Pelly, Brian R.; and Wood, Peter, 4,131,937, Cl. 363-96.000.
- Wood, Reggie D., to Campbell, Richard A., a part interest. Telephone switch control clip. 4,131,768, Cl. 179-178.000.
- Wooding Corporation: *See—*
  - Wooding, Patrick J., 4,131,752, Cl. 13-9.0ES.
- Wooding, Patrick J., to Wooding Corporation. Current conducting atmosphere control sleeve for electroslag furnace. 4,131,752, Cl. 13-9.0ES.
- Woods, Lee O.: *See—*
  - Haag, Donald L.; and Woods, Lee O., 4,131,871, Cl. 338-220.000.

- Wooters, Eldon W.: *See—*
  - McAuliffe, Gerald N.; and Wooters, Eldon W., 4,131,833, Cl. 318-440.000.
- Worrell, Robert A., Sr., to Scott Paper Company. Disposable, compactable moisture impervious package for premoistened sheets. 4,131,195, Cl. 206-205.000.
- Wright, Howard S. Hydraulic pumps. 4,130,991, Cl. 60-477.000.
- Wright, Jeffrey L.: *See—*
  - Fletcher, Steven J.; Wright, Jeffrey L.; and Davis, Richard S., 4,131,949, Cl. 364-900.000.
- Wright, Norman Z.; and Printy, Davey L., to Rockwell International Corporation. Push-pull and rotating knob. 4,131,033, Cl. 74-553.000.
- Wuerzer, Bruno: *See—*
  - Koenig, Karl-Heinz; Schirmer, Ulrich; Wuerzer, Bruno; and Fett, Kurt, 4,131,751, Cl. 560-29.000.
- Wurst, John W., to Singer Company, The. Speed limiter for pattern stitch sewing machine. 4,131,075, Cl. 112-158.00E.
- Wylain, Inc.: *See—*
  - Deters, Elmer M., 4,131,140, Cl. 141-206.000.
- Wyler, Sigfried: *See—*
  - Zahir, Abdul-Cader; and Wyler, Sigfried, 4,131,707, Cl. 428-251.000.
- Wynne, Kenneth J.; and Davison, John B., to United States of America, Navy. Silicon-phthalocyanine-siloxy monomers. 4,131,609, Cl. 260-314.500.
- Xerox Corporation: *See—*
  - Forbes, Richard L., 2nd, 4,131,357, Cl. 355-3.0DD.
  - Gillett, Kenneth; Steiner, Edward L.; Fiske, Kenton W.; Davis, Kenneth A.; Kukucka, William P.; Criswell, Thomas; and Richardson, Philip, 4,131,942, Cl. 364-200.000.
  - Mager, George E.; Nelson, Frank M.; and Hall, Warren L., 4,131,944, Cl. 364-200.000.
  - O'Brien, John F., 4,131,360, Cl. 355-15.000.
  - Richardson, Philip; Steiner, Edward L.; Daughton, John W.; Fiske, Kenton W.; and Criswell, Thomas, 4,131,945, Cl. 364-200.000.
- Yakovenko, Anatoly A.: *See—*
  - Lakernik, Mark M.; Shabalina, Roza I.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Golovachev, Anatoly I.; and Egorova, Tatyana S., 4,131,451, Cl. 75-14.000.
- Yamaga, Makoto: *See—*
  - Kimura, Shinji; Godai, Tomokazu; Minato, Shoji; Kobayashi, Minoru; Yamaga, Makoto; Maki, Shingo; Hashimoto, Yoshizo; Suga, Tetsuo; and Saita, Hiroshi, 4,131,784, Cl. 219-137.0WM.
- Yamaguchi, Hiroaki: *See—*
  - Sawada, Daisaku; Goto, Kenji; Shigemaut, Takashi; Takeda, Yuji; Hattori, Tadashi; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,131,097, Cl. 123-117.00R.
- Yamamoto, Keizo: *See—*
  - Kuzumoto, Takatoshi; Kumata, Kiyoshi; and Yamamoto, Keizo, 4,131,864, Cl. 331-116.00R.
- Yamanaka, Seisuke; Nagumo, Fumio; and Nishimura, Toshimichi, to Sony Corporation. Solid state television camera. 4,131,913, Cl. 358-44.000.
- Yamaoka, Tetsuo: *See—*
  - Iwata, Hiroshi; and Yamaoka, Tetsuo, 4,131,351, Cl. 354-60.00F.
- Yamasaki, Masahiro: *See—*
  - Iwahashi, Shunji; Yamasaki, Masahiro; and Fujita, Takanori, 4,131,483, Cl. 134-1.000.
- Yamazaki, Hiroyuki: *See—*
  - Nagasaki, Katsumi; Tanimura, Koichi; Inoue, Yoshihiro; Yamazaki, Hiroyuki; and Momose, Tetsuo, 4,131,303, Cl. 285-302.000.
- Yamazaki, Yasuhiro: *See—*
  - Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,131,915, Cl. 358-260.000.
- Yanadori, Michio: *See—*
  - Hara, Toshitsugu; Abe, Yoritsune; Ootuka, Katsuji; Kashiwabara, Yasushige; Oshiyama, Hiroichi; Yanadori, Michio; Kato, Eisaku; and Okazaki, Kichizaemon, 4,130,997, Cl. 62-504.000.
- Yaple, William R.: *See—*
  - Agard, Richard L.; Bocinski, Terrence E.; Brearley, Lawrence E.; and Yaple, William R., 4,131,933, Cl. 361-415.000.
- Yasuo, Sumi. Detector for a pneumatic tire. 4,131,878, Cl. 340-58.000.
- Yazev, Vladimir D.: *See—*
  - Muzhzhavlev, Konstantin D.; Yazev, Vladimir D.; Schegolev, Vladimir I.; Ivanov, Andrei B.; Vasiliev, Alexei V.; Romanenko, Oleg N.; Kosarev, Sergei P.; and Ovcharenko, Vladimir G., 4,131,522, Cl. 204-60.000.
- Yeager, Robert R., to Lambert Corporation. Planting and fertilizing apparatus. 4,131,221, Cl. 222-624.000.
- Yoshida Kogyo K.K.: *See—*
  - Ishii, Susumu; and Aoki, Tsunetaka, 4,130,918, Cl. 24-205.14A.
- Yoshida, Kohsaku: *See—*
  - Hara, Kunio; and Yoshida, Kohsaku, 4,131,009, Cl. 72-391.000.
- Yoshida, Masashi; Iino, Yasuo; and Sato, Katsuya, to Hitachi, Ltd. Operation device of tape recorder. 4,131,922, Cl. 360-90.000.
- Yoshida, Tohji: *See—*
  - Takematsu, Shigeru; Yoshida, Tohji; Ikushima, Yukio; Takeuchi, Kunio; Kakinaka, Arao; Matsunaga, Koichi; Shimakura, Mamoru; and Komura, Yoji, 4,131,803, Cl. 250-563.000.
- Yoshida, Yoshinori; Kobayashi, Tutomu; Shinohara, Hironobu; and Hanari, Izumi, to Japan Synthetic Rubber Co., Ltd. Process for preparing unsaturated diesters. 4,131,743, Cl. 560-244.000.
- Yoshinaga, Toshimune: *See—*
  - Nagasaka, Akira; Ashitaka, Hidetomo; Kusuki, Yoshihiro; Oda, Denichi; and Yoshinaga, Toshimune, 4,131,644, Cl. 423-447.500.
- Yoshio, Kawasumi: *See—*
  - Mitsuo, Takahashi; and Yoshio, Kawasumi, 4,131,517, Cl. 204-27.000.
- Yoshioka, Hiroshi: *See—*
  - Hirano, Takayasu; Hisagen, Yoshiaki; Takamizawa, Minoru; and Yoshioka, Hiroshi, 4,131,717, Cl. 428-447.000.
- Yuda, Takuo: *See—*
  - Okuda, Seiji; and Yuda, Takuo, 4,131,258, Cl. 248-73.000.
- Zabik, Andrew L.: *See—*
  - Easton, Ray D.; Jakobi, Phil F.; and Zabik, Andrew L., 4,130,967, Cl. 51-5.00D.
- Zahir, Abdul-Cader; and Wyler, Sigfried, to Ciba-Geigy Corporation. Stable resin solutions containing compounds having at least one furyl radical. 4,131,707, Cl. 428-251.000.
- Zahler, Wolf-Dietrich: *See—*
  - Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Zahler, Wolf-Dietrich, 4,131,729, Cl. 526-282.000.
- Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See—*
  - Eickhoff, Jurgen; and Binger, Bernhard, 4,131,169, Cl. 180-9.620.
- Zaleckas, Vincent J.: *See—*
  - Pearce, Charles W.; and Zaleckas, Vincent J., 4,131,487, Cl. 148-1.500.
- Zalewski, Henry M. Measurement of interpupillary distance. 4,131,338, Cl. 351-5.000.
- Zamkov, Vadim N.: *See—*
  - Gurevich, Samuil M.; Zamkov, Vadim N.; and Prilutsky, Valery P., 4,131,493, Cl. 148-23.000.
- Zanelli, Eugene A.: *See—*
  - Perrone, George L.; Boorman, Robert W.; Holbrook, Michael R.; and Zanelli, Eugene A., 4,131,389, Cl. 415-211.000.
- Zapel, Edwin J., to Boeing Company, The. Variable camber trailing edge for airfoil. 4,131,253, Cl. 244-219.000.
- Zhomov, Alexandr K.: *See—*
  - Minachev, Khabib M.; Mortikov, Evgeny S.; Leontiev, Alexandr S.; Smirnov, Anatoly G.; Kononov, Nikolai F.; Masloboev-Shvedov, Alexei A.; Zhomov, Alexandr K.; and Kholdyakov, Nikolai I., 4,131,750, Cl. 568-901.000.
- Zierden Company: *See—*
  - Zierden, Frank P., 4,131,132, Cl. 137-615.000.
- Zierden, Frank P., to Zierden Company. Mounting bracket assembly. 4,131,132, Cl. 137-615.000.
- Zimmer, Paul B.: *See—*
  - Mar, Henry Y. B.; and Zimmer, Paul B., 4,131,593, Cl. 260-37.0SB.
- Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, to Siegfried Aktiengesellschaft. Thioethers. 4,131,608, Cl. 260-307.00D.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF DECEMBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Boulogne, Jean: *See—*
  - Papantoniou, Christos; and Boulogne, Jean, Re. 29,871, Cl. 424-64.000.
- Ledford, James B.: *See—*
  - Niederer, Edward, Jr.; and Ledford, James B., Re. 29,869, Cl. 72-450.000.
- L'Oreal: *See—*
  - Papantoniou, Christos; and Boulogne, Jean, Re. 29,871, Cl. 424-64.000.
- McGowen, Harold E., Jr., deceased: *See—*
  - Moore, Howard H., Jr.; McGowen, Harold E., Jr., deceased; and McGowen, Wanda E. L., executrix, Re. 29,870, Cl. 166-117.500.
- McGowen, Wanda E. L., executrix: *See—*
  - Moore, Howard H., Jr.; McGowen, Harold E., Jr., deceased; and McGowen, Wanda E. L., executrix, Re. 29,870, Cl. 166-117.500.
- Moore, Howard H., Jr.; McGowen, Harold E., Jr., deceased; and by McGowen, Wanda E. L., executrix, to Sid W. Richardson Foundation; and Perry R. Bass, Inc. Apparatus for installing and removing flow valves. Re. 29,870, Cl. 166-117.500.
- Niederer, Edward, Jr.; and Ledford, James B. Pincer mechanism for pipelines. Re. 29,869, Cl. 72-450.000.
- Papantoniou, Christos; and Boulogne, Jean, to L'Oreal. Fatty compositions for use in cosmetic makeup compositions and said cosmetic makeup compositions. Re. 29,871, Cl. 424-64.000.
- Perry R. Bass, Inc.: *See—*
  - Moore, Howard H., Jr.; McGowen, Harold E., Jr., deceased; and McGowen, Wanda E. L., executrix, Re. 29,870, Cl. 166-117.500.
- Sid W. Richardson Foundation: *See—*
  - Moore, Howard H., Jr.; McGowen, Harold E., Jr., deceased; and McGowen, Wanda E. L., executrix, Re. 29,870, Cl. 166-117.500.

LIST OF PLANT PATENTEES

- Armstrong Nurseries, Inc.: *See—*
  - Christensen, Jack E., 4,355, Cl. 9.000.
  - Christensen, Jack E., 4,356, Cl. 10.000.
  - Sudol, Julia K., 4,354, Cl. 8.000.
- Bailey, Catherine: *See—*
  - Williams, Edwin B.; Janick, Jules; Emerson, Frank H.; Dayton, Daniel F.; Hough, L. Fredric; and Bailey, Catherine, 4,359, Cl. 34.000.
- Christensen, Jack E., to Armstrong Nurseries, Inc. Miniature moss rose plant. 4,355, 12-26-78, Cl. 9.000.
- Christensen, Jack E., to Armstrong Nurseries, Inc. Miniature moss rose plant. 4,356, 12-26-78, Cl. 10.000.
- Dayton, Daniel F.: *See—*
  - Williams, Edwin B.; Janick, Jules; Emerson, Frank H.; Dayton, Daniel F.; Hough, L. Fredric; and Bailey, Catherine, 4,359, Cl. 34.000.
- Duffett, William E.: *See—*
  - Meek, Jack M.; and Duffett, William E., 4,358, Cl. 74.000.
- Emerson, Frank H.: *See—*
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- Hough, L. Fredric: *See—*
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- Janick, Jules: *See—*
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- Purdue Research Foundation: *See—*
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- Donnelly, William B., to General Electric Company. Chime housing. 250,639, 12-26-78, Cl. D10-118.000.
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- Takai, Hiromitsu. Dispensing carton for deformable film or the like. 250,632, 12-26-78, Cl. D9-235.000.
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  - Ogawa, Iwakichi, 250,672, Cl. D34-15.0AJ.
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492	4,131,056
CLASS 93	
49 R	4,131,058
81 R	4,131,057
CLASS 96	
1 E	4,131,463
1.5 R	4,131,462
22	4,131,464
35	4,131,465
38.3	4,131,472
49	4,131,466
66.3	4,131,467
75	4,131,468
77	4,131,469
107	4,131,470
114	4,131,471
CLASS 98	
36	4,131,059
116	4,131,060
CLASS 99	
521	4,131,061
638	4,131,062
CLASS 100	
162 R	4,131,063
CLASS 102	
1 R	4,131,064
49.4	4,131,065
CLASS 104	
17 R	4,131,066
	4,131,067
172 S	4,131,068
CLASS 105	
168	4,131,069
273	4,131,070
CLASS 106	
1.12	4,131,473
38.3	4,131,475
38.35	4,131,474
	4,131,476
	4,131,477
39.5	4,131,479
53	4,131,478
93	4,131,480
CLASS 108	
53.1	4,131,071
CLASS 110	
106	4,131,072
	4,131,073
CLASS 112	
121.14	4,131,074
158 E	4,131,075
210	4,131,076
265	4,131,077
CLASS 116	
4	4,131,078
22 A	4,131,079
CLASS 118	
13	4,131,080
646	4,131,081
CLASS 119	
51.5	4,131,082
	4,131,083
CLASS 122	
33	4,131,084
382	4,131,085
CLASS 123	
3	4,131,086
32 EA	4,131,087
32 EE	4,131,089
32 EH	4,131,091
32 EJ	4,131,088
32 SP	4,131,090
32 ST	4,131,092
41.85	4,131,093
48 B	4,131,094
59 EC	4,131,095
90.15	4,131,096
117 R	4,131,097
	4,131,098
119 F	4,131,099
148 E	4,131,100
195 C	4,131,101
CLASS 124	
5	4,131,102
CLASS 125	
13 R	4,131,103
CLASS 126	
60	4,131,104
121	4,131,105
	4,131,106
270	4,131,109
271	4,131,110
	4,131,111
271.2 R	4,131,107
298	4,131,108
CLASS 127	
19	4,131,482
CLASS 128	
2 B	4,131,112
2 T	4,131,113
90	4,131,114
249	4,131,115
305	4,131,116
CLASS 131	
140 C	4,131,117
	4,131,118
187	4,131,119
235 R	4,131,120
CLASS 132	
7	4,131,121
CLASS 134	
1	4,131,483
	4,131,484
CLASS 135	
76	4,131,122
CLASS 136	
89 P	4,131,123
	4,131,755
89 PC	4,131,485
89 SJ	4,131,486
230	4,131,756
CLASS 137	
45	4,131,124
118	4,131,125
270	4,131,126
384.6	4,131,127
556	4,131,128
559	4,131,131
596.12	4,131,129
596.17	4,131,130
615	4,131,132
624.11	4,131,133
808	4,131,134
856	4,131,135
CLASS 138	
110	4,131,136
118.1	4,131,137
CLASS 139	
29	4,131,138
CLASS 141	
1	4,131,426
4	4,131,139
206	4,131,140
285	4,131,141
302	4,131,142
CLASS 144	
30	4,131,143
34 E	4,131,144
	4,131,145
221	4,131,146
CLASS 148	
1.5	4,131,487
	4,131,488
6.16	4,131,489
9.5	4,131,490
12 B	4,131,491
16.6	4,131,492
23	4,131,493
31.57	4,131,494
	4,131,495
175	4,131,496
187	4,131,497
CLASS 149	
2	4,131,498
19.3	4,131,499
CLASS 150	
52 J	4,131,147
CLASS 152	
209 B	4,131,148
357 A	4,131,149
CLASS 156	
131	4,131,500
157	4,131,501
179	4,131,502
250	4,131,503
384	4,131,504
580.1	4,131,505
643	4,131,506
CLASS 159	
23	4,131,507
CLASS 160	
368 R	4,131,150
CLASS 162	
30 K	4,131,508
CLASS 164	
89	4,131,151
359	4,131,152
442	4,131,153
448	4,131,154
CLASS 165	
1	4,131,155
51	4,131,156
86	4,131,157
104 S	4,131,158
166	4,131,159
CLASS 166	
117.5	Re.29,870
120	4,131,160
265	4,131,161
CLASS 172	
138	4,131,162
145	4,131,163
CLASS 173	
1	4,131,164
43	4,131,166
48	4,131,165
CLASS 174	
107	4,131,757
	4,131,758
	4,131,759
CLASS 175	
323	4,131,167
CLASS 176	
38	4,131,509
50	4,131,510
68	4,131,511
CLASS 177	
128	4,131,168

CLASSIFICATION OF PATENTS

CLASS 179	
1 P	4,131,760
15 AQ	4,131,762
15 BS	4,131,763
15 BY	4,131,761
15 FD	4,131,766
15 FS	4,131,764
15.55 R	4,131,765
84 L	4,131,770
170.2	4,131,767
178	4,131,768
189 D	4,131,769
CLASS 180	
9.62	4,131,169
53 FE	4,131,170
54 R	4,131,171
69 R	4,131,172
90	4,131,173
118	4,131,174
127	4,131,175
131	4,131,176
133	4,131,177
CLASS 181	
120	4,131,178
156	4,131,179
163	4,131,180
CLASS 187	
11	4,131,181
29 G	4,131,182
29 R	4,131,183
CLASS 192	
3.26	4,131,184
53 B	4,131,185
67 R	4,131,186
99 A	4,131,187
113 B	4,131,188
129 B	4,131,189
CLASS 194	
1 B	4,131,190
92	4,131,191
CLASS 195	
103.5 M	4,131,512
CLASS 198	
469	4,131,192
497	4,131,194
533	4,131,193
CLASS 200	
11 DA	4,131,771
61.05	4,131,773
61.54	4,131,772
82 B	4,131,774
148 R	4,131,775
158	4,131,776
311	4,131,777
CLASS 202	
185 B	4,131,513
CLASS 204	
2.1	4,131,515
15	4,131,516
27	4,131,517
38 A	4,131,518
38 B	4,131,519
42	4,131,520
59 R	4,131,521
60	4,131,522
129	4,131,514
129.1	4,131,523
129.3	4,131,524
129.65	4,131,525
149	4,131,526
157.1 R	4,131,527
	4,131,528
159.14	4,131,529
192 C	4,131,530
208	4,131,531
256	4,131,532
298	4,131,533
299 R	4,131,534
CLASS 206	
205	4,131,195
278	4,131,196
387	4,131,197
419	4,131,198
444	4,131,199
484	4,131,200
CLASS 208	
11 LE	4,131,535
139	4,131,536
216	4,131,537
352	4,131,538
CLASS 209	
127 A	4,131,539
582	4,131,540
661	4,131,201
CLASS 210	
23 F	4,131,541
31 C	4,131,542
36	4,131,543
40	4,131,544
47	4,131,545
77	4,131,546
198 C	4,131,547
331	4,131,548
359	4,131,549
CLASS 211	
2	4,131,202
88	4,131,203
192	4,131,204
200	4,131,205
CLASS 214	
1 BB	4,131,206
6 DK	4,131,207
8.5 F	4,131,208
85	4,131,209
147 G	4,131,210
CLASS 215	
2	4,131,211
252	4,131,212
CLASS 219	
10.55 F	4,131,778
10.55 R	4,131,779
70	4,131,780
73	4,131,781
121 LM	4,131,782
124.31	4,131,783
137 WM	4,131,784
326	4,131,785
487	4,131,786
532	4,131,787
535	4,131,788
541	4,131,789
CLASS 221	
14	4,131,213
CLASS 222	
1	4,131,214
26	4,131,215
52	4,131,216
82	4,131,217
527	4,131,218
603	4,131,219
607	4,131,220
624	4,131,221
CLASS 225	
3	4,131,222
94	4,131,223
CLASS 226	
8	4,131,224
CLASS 228	
161	4,131,225
198	4,131,226
CLASS 229	
8	4,131,227
23 R	4,131,228
39 R	4,131,229
40	4,131,230
CLASS 235	
89 R	4,131,790
CLASS 237	
8 R	4,131,231
CLASS 239	
314	4,131,232
381	4,131,233
457	4,131,234
533.15	4,131,235
589	4,131,236
664	4,131,237
CLASS 241	
30	4,131,238
39	4,131,239
49	4,131,247
CLASS 242	
1	4,131,242
72.1	4,131,240
74	4,131,305
107.2	4,131,244
156.2	4,131,241
199	4,131,243
217	4,131,245
CLASS 244	
3.16	4,131,248
	4,131,254
3.22	4,131,246
53 A	4,131,249
134 R	4,131,250
137 R	4,131,251
212	4,131,252
219	4,131,253
CLASS 246	
430	4,131,255
CLASS 248	
3	4,131,256
67.5	4,131,257
73	4,131,258
311.1 R	4,131,259
384	4,131,260
439	4,131,261
CLASS 249	
202	4,131,262
CLASS 250	
199	4,131,791
	4,131,792
211 J	4,131,793
272	4,131,794
315 A	4,131,795
319	4,131,796
322	4,131,797
328	4,131,798
385	4,131,799
439 R	4,131,801
445 T	4,131,802
461 B	4,131,800
563	4,131,803
566	4,131,804
CLASS 252	
8.6	4,131,550
29	4,131,552
33	4,131,551
	4,131,553
33.6	4,131,554
89 R	4,131,555
106	4,131,556
132	4,131,557
135	4,131,558
171	4,131,559
	4,131,560
	4,131,561
186	4,131,562
301.1 W	4,131,563
353	4,131,564
417	4,131,565
423	4,131,566
435	4,131,567
455 Z	4,131,568
462	4,131,569
473	4,131,570
CLASS 254	
8 B	4,131,263
67	4,131,264
CLASS 260	
17 R	4,131,571
	4,131,572
17.3	4,131,574
17.4 CL	4,131,577
17.4 GC	4,131,576
17.4 R	4,131,575
17.5	4,131,573
	4,131,578
22 EP	4,131,579
23.7 R	4,131,592
29.1 R	4,131,581
29.3	4,131,582
29.6 HN	4,131,583
29.6 MQ	4,131,585
29.6 N	4,131,584
29.6 RW	4,131,580
31.2 R	4,131,586
32.6 A	4,131,587
37 EP	4,131,590
37 N	4,131,591
37 SB	4,131,588
	4,131,589
	4,131,593
40 R	4,131,594
	4,131,595
42.18	4,131,597
	4,131,598
45.8 N	4,131,599
123.5	4,131,607
307 D	4,131,608
314.5	4,131,609
326 N	4,131,610
326.8	4,131,611
340.7	4,131,612
343.3 R	4,131,613
345.3	4,131,614
347.3	4,131,615
449.6 M	4,131,616
465 D	4,131,617
543 R	4,131,619
	4,131,620
551 C	4,131,621
576	4,131,622
601 R	4,131,623
606.5 P	4,131,624
607 AR	4,131,625
658 R	4,131,626
666 A	4,131,627
	4,131,628
	4,131,629
666 PY	4,131,630
683.3	4,131,631
834	4,131,632
837 R	4,131,633
845	4,131,634
862	4,131,635
875	4,131,636
877	4,131,637
880 B	4,131,653
897 B	4,131,654
946	4,131,655
951	4,131,656
CLASS 261	
39 E	4,131,657
142	4,131,658
CLASS 264	
25	4,131,659
26	4,131,660
38	4,131,661
40.2	4,131,663
40.4	4,131,668
40.5	4,131,596
51	4,131,662
138	4,131,415
178 F	4,131,669
256	4,131,670
333	4,131,638
510	4,131,664
521	4,131,666
571	4,131,667
572	4,131,665
CLASS 266	
275	4,131,265
CLASS 267	
34	4,131,266
CLASS 269	
21	4,131,267
47	4,131,268
321 W	4,131,270
CLASS 270	
40	4,131,271
73	4,131,272
CLASS 271	
4	4,131,273
9	4,131,274
CLASS 273	
1 R	4,131,275
58 C	4,131,276
63 D	4,131,277
67 R	4,131,278
73 D	4,131,279
184 R	4,131,280
248	4,131,281
271	4,131,282
282	4,131,283
CLASS 274	
23 R	4,131,284
CLASS 277	
1	4,131,285
152	4,131,286
191	4,131,287
CLASS 280	
11.17	4,131,288
11.37 E	4,131,291
11.37 K	4,131,289
11.37 R	4,131,290
14	4,131,292
166	4,131,293
179 R	4,131,294
475	4,131,295
485	4,131,296
682	4,131,297
727	4,131,298
736	4,131,299
737	4,131,300
789	4,131,301
CLASS 285	
114	4,131,302
302	4,131,303
CLASS 290	
38 C	4,131,304
CLASS 292	
201	4,131,306
268	4,131,307
CLASS 296	
1 S	4,131,308
	4,131,309
23 R	4,131,310
95 Q	4,131,269
CLASS 297	
159	4,131,311
184	4,131,312
188	4,131,313
248	4,131,314
286	4,131,315
341	4,131,316
CLASS 299	
2	4,131,416
31	4,131,317
CLASS 301	
6 A	4,131,321
36 R	4,131,323
37 PB	4,131,322
CLASS 302	
2 R	4,131,318
	4,131,320
58	4,131,319
CLASS 303	
7	4,131,324
93	4,131,325
115	4,131,326
CLASS 307	
147	4,131,805
215	4,131,806
228	4,131,807
270	4,131,808
303	4,131,809
311	4,131,810
CLASS 310	
12	4,131,811
13	4,131,812
	4,131,813
172	4,131,814
323	4,131,815
348	4,131,816
CLASS 312	
241	4,131,327
CLASS 313	
95	4,131,818
124	4,131,817
331	4,131,819
377	4,131,820
398	4,131,821
403	4,131,822
422	4,131,823
CLASS 315	
39.51	4,131,824
39.61	4,131,825
234	4,131,826
CLASS 318	
46	4,131,827
138	4,131,828
139	4,131,829
266	4,131,830
282	4,131,831
358	4,131,832
440	4,131,833
483	4,131,834
562	4,131,835
565	4,131,836
571	4,131,837
603	4,131,838
675	4,131,839
685	4,131,840
CLASS 320	
23	4,131,841
61	4,131,842
CLASS 323	
9	4,131,843
45	4,131,844
CLASS 324	
58.5 A	4,131,845
132	4,131,846
141	4,131,847
236	4,131,848
CLASS 325	
54	4,131,849
137	4,131,850
355	4,131,851
363	4,131,852
464	4,131,853
CLASS 328	
63	4,131,854
129	4,131,855
155	4,131,856
163	4,131,857
CLASS 330	
4.9	4,131,858
124 R	4,131,859
279	4,131,860
CLASS 331	
2	4,131,861
4	4,131,862
94.5 G	4,131,863
116 R	4,131,864
CLASS 335	
257	4,131,865
262	4,131,866
CLASS 336	
65	4,131,867
CLASS 337	
113	4,131,868
264	4,131,869
CLASS 338	
183	4,131,870
220	4,131,871
CLASS 339	
14 R	4,131,328
111	4,131,329
125 R	4,131,330
126 RS	4,131,331
177 R	4,131,332
CLASS 340	
1 R	4,131,872
6 R	4,131,873
10	4,131,874
15.5 BH	4,131,875
58	4,131,876
	4,131,877
	4,131,878
146.3 H	4,131,879
146.3 SY	4,131,880
167 R	4,131,881
310 A	4,131,882
324 AD	4,131,883
347 AD	4,131,885
347 CC	4,131,884
378 R	4,131,886
566	4,131,887
630	4,131,888
CLASS 343	
8	4,131,889
108 M	4,131,890
112 S	4,131,891
700 MS	4,131,892
	4,131,893
	4,131,894
792	4,131,895
815	4,131,896
908	4,131,897
CLASS 346	
75	4,131,898
140 R	4,131,899
162	4,131,900
165	4,131,901
CLASS 350	
3.86	4,131,337
16	4,131,333
147	4,131,334
218	4,131,335
292	4,131,336
CLASS 351	
5	4,131,338
118	4,131,340
132	4,131,341
CLASS 352	
43	4,131,342
84	4,131,343
130	4,131,344
132	4,131,345
CLASS 353	
15	4,131,346
28	4,131,347
72	4,131,348
CLASS 354	
20	4,131,349
31	4,131,350
60 F	4,131,351
86	4,131,352
197	4,131,353
224	4,131,354
225	4,131,355
322	4,131,356
CLASS 355	
3 DD	4,131,357
3 TR	4,131,358
15	4,131,359
	4,131,360
70	4,131,361
71	4,131,362
75	4,131,363
106	4,131,364
CLASS 356	
140	4,131,366
356	4,131,365

CLASSIFICATION OF PATENTS

405	4,131,367
CLASS 357	
6	4,131,902
10	4,131,903
13	4,131,339
17	4,131,904
30	4,131,905
41	4,131,906
42	4,131,907
	4,131,908
49	4,131,909
	4,131,910
74	4,131,911
CLASS 358	
4	4,131,912
44	4,131,913
100	4,131,914
260	4,131,915
281	4,131,917
285	4,131,916
CLASS 360	
1	4,131,918
9	4,131,919
51	4,131,920
86	4,131,921
90	4,131,922
106	4,131,923
	4,131,924
130	4,131,925
134	4,131,926
CLASS 361	
6	4,131,927
56	4,131,928
93	4,131,929
211	4,131,930
315	4,131,931
356	4,131,932
415	4,131,933
428	4,131,934
433	4,131,935
CLASS 363	
43	4,131,936
96	4,131,937
101	4,131,938
126	4,131,939
CLASS 364	
200	4,131,940
	4,131,941
	4,131,942
	4,131,943
	4,131,944
	4,131,945
466	4,131,946
900	4,131,947
	4,131,948
	4,131,949
CLASS 365	
183	4,131,950
203	4,131,951
CLASS 366	
81	4,131,368
146	4,131,369
273	4,131,370
301	4,131,371
CLASS 400	
196.1	4,131,372
208	4,131,373
232	4,131,374
CLASS 403	
12	4,131,376
13	4,131,375
14	4,131,377
93	4,131,378
197	4,131,379
217	4,131,380
353	4,131,381
CLASS 404	
69	4,131,382
CLASS 405	
24	4,130,994
224	4,130,995
CLASS 407	
114	4,131,383
CLASS 408	
68	4,131,384
241 B	4,131,385
CLASS 415	
98	4,131,386
119	4,131,387
138	4,131,388
211	4,131,389
CLASS 416	
20 R	4,131,390
140	4,131,391
142	4,131,392
CLASS 417	
22	4,131,393
271	4,131,395
372	4,131,396
404	4,131,397
418	4,131,398
477	4,131,399
481	4,131,394
CLASS 418	
203	4,131,400
CLASS 422	
45	4,131,431
177	4,131,432
CLASS 423	
20	4,131,639
22	4,131,640
34	4,131,641
193	4,131,642
239	4,131,643
447.5	4,131,644
501	4,131,645
591	4,131,646
CLASS 424	
10	4,131,647
22	4,131,648
28	4,131,650
64	Re.29,871
78	4,131,651
180	4,131,649
241	4,131,652
244	4,131,671
246	4,131,672
247	4,131,673
248.54	4,131,674
248.56	4,131,676
250	4,131,675
251	4,131,678
256	4,131,677
263	4,131,679
267	4,131,680
	4,131,681
275	4,131,682
277	4,131,683
315	4,131,684
322	4,131,685
330	4,131,686
CLASS 425	
2	4,131,401
38	4,131,402
127	4,131,403
129 R	4,131,404
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	188	250,625
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